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THE NEW PERTH STADIUM
DBFM PROJECT

PROJECT NO: SP0793712

Request for Proposals

Volume 3 of 4

Part A:

Schedule 12: Design Specifications

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TABLE OF CONTENTS

PART A: PROJECT OVERVIEW AND GENERAL REQUIREMENTS 4

A1 PROJECT BACKGROUND 4
A2 CONTEXT 4
A3 CONTINUANCE OF TASKFORCE PRINCIPLES 4
A4 MASTER PLAN 5
A5 DRAFT BURSWOOD PENINSULA DISTRICT STRUCTURE PLAN (2013) 5
A6 GENERAL REQUIREMENTS 6
A7 SCOPE OF DBFM WORKS 6
A8 FURNITURE, FITTINGS AND EQUIPMENT 10
A9 STATE WORKS 13
A10 INTERFACE MANAGEMENT 17
A11 AUTHORISATIONS 20
A12 SITE INFORMATION 20
A13 DESIGN CONSIDERATIONS AND CONSTRAINTS 23
A14 ENVIRONMENTAL MANAGEMENT 33
A15 CONSTRUCTION MANAGEMENT 39

PART B: PROJECT VISION, ASPIRATIONS AND OBJECTIVES 45

B1 PROJECT VISION 45
B2 NEW PERTH STADIUM PROJECT ASPIRATIONS 45
B3 DBFM PROJECT OBJECTIVES 46
B4 OPERATING PHASE OBJECTIVES 46
B5 STAKEHOLDER ENGAGEMENT OBJECTIVES 47
B6 ENVIRONMENTAL MANAGEMENT OBJECTIVES 48
B7 PROJECT BENEFITS 48
B8 OPERATIONAL PRINCIPLES 49

PART C: DESIGN BRIEF 51

C1 POLICY FRAMEWORK 51
C2 CULTURAL CONTEXT AND SIGNIFICANCE 52
C3 MASTER PLANNING 53
C4 SPORTS PRECINCT STRUCTURAL ELEMENTS 55
C5 SPORTS PRECINCT URBAN DESIGN PRINCIPLES 58
C6 LANDSCAPE 60
C7 PUBLIC ART 62
C8 ACCESS AND MOVEMENT 64
C9 WAYFINDING AND SIGNAGE 67
C10 UNIVERSAL ACCESS 69
C11 ARCHITECTURAL DESIGN 70
C12 ENGINEERING SERVICES 79

C13 ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD)....80
C14 FLEXIBILITY, RECONFIGURATION AND EXPANSION....82
C15 WHOLE OF LIFE DESIGN....85
C16 LIFECYCLE COSTING ANALYSIS....85
C17 SAFETY IN DESIGN....86
C18 INNOVATION....86
C19 DELAYED DESIGN AND PROCUREMENT....87
C20 MANAGING DESIGN QUALITY....88
C21 MANAGING DESIGN AND CONSTRUCTION PROJECT INFORMATION AND BIM....94

PART D: FUNCTIONAL BRIEF....95

D1 FUNCTIONAL DESIGN REQUIREMENTS....95
D2 SCHEDULE OF ACCOMMODATION....96
D3 ROOM DATA SHEETS....97
D4 SPORTS PRECINCT....97
D5 CIRCULATION AREAS....109
D6 TEAM FACILITIES....116
D7 SEATING BOWL....145
D8 GENERAL ADMISSION AREAS....156
D9 PREMIUM PRODUCT AREAS....169
D10 CATERING FACILITIES....205
D11 RETAIL FACILITIES....214
D12 WASTE MANAGEMENT FACILITIES....222
D13 STADIUM OPERATIONS AND EVENT DAY FACILITIES....224
D14 MEDIA FACILITIES....234
D15 PITCH AND ASSOCIATED FACILITIES....249
D16 COMMERCIAL FACILITIES....256
D17 EVENT OVERLAY....258

PART E: TECHNICAL BRIEF....260

E1 GENERAL REQUIREMENTS....260
E2 ARCHITECTURE....278
E3 LANDSCAPE ARCHITECTURE....320
E4 CIVIL ENGINEERING....331
E5 STORMWATER....340
E6 STRUCTURAL ENGINEERING....346
E7 ACOUSTICS....361
E8 FIRE ENGINEERING AND FIRE PROTECTION SYSTEMS....377
E9 HYDRAULIC SERVICES....383
E10 MECHANICAL SERVICES....394
E11 ELECTRICAL SERVICES....408

E12 LIGHTING SYSTEMS 412
E13 INFORMATION COMMUNICATIONS TECHNOLOGY (ICT) SYSTEMS....422
E14 AUDIO VISUAL (AV) SYSTEMS....426
E15 SECURITY SYSTEMS 441
E16 VERTICAL TRANSPORTATION....441
E17 BUILDING MANAGEMENT SYSTEMS (BMS) 444
E18 PITCH, PLAYING SURFACE AND ASSOCIATED FACILITIES 444

PART F: FUNCTIONAL RELATIONSHIP DIAGRAMS 532
F1 CIRCULATION ....
F2 TEAM FACILITIES ....
F3 GENERAL ADMISSION AREAS....
F4 PREMIUM PRODUCT AREAS ....
F5 CATERING FACILITIES....
F6 RETAIL FACILITIES....
F7 WASTE MANAGEMENT ....
F8 STADIUM OPERATIONS AND EVENT DAY FACILITIES ....
F9 MEDIA FACILITIES ....
F10 PITCH AND ASSOCIATED FACILITIES....

PART G: GLOSSARY ....
G1 GLOSSARY.... 563
G2 LIST OF ACRONYMS 590

PART H: APPENDICES ....
H1 SITE PLANS.... 594
H2 OGA GENERAL DESIGN STANDARDS 595
H3 DESIGN QUALITY BENCHMARKS.... 603
H4 SCHEDULE OF ACCOMMODATION.... 712
H5 ROOM DATA SHEETS TEMPLATE 713
H6 BIM IMPLEMENTATION REQUIREMENTS.... 718
H7 MINIMUM COMPLETION TESTS.... 722
H8 LIGHTING CRITERIA.... 751
H9 DESIGN DEPARTURES SCHEDULE 754

PART A: PROJECT OVERVIEW AND GENERAL REQUIREMENTS

A1 PROJECT BACKGROUND

In June 2011, the Western Australian Government committed to deliver a new major stadium for Perth. After reviewing the work of the Major Stadia Taskforce (**the Taskforce**), published in its June 2007 final report, and considering the views of a wide range of Project Stakeholders, the Western Australian Government nominated the Burswood Peninsula as its preferred site, and publicly committed to begin construction by 2014, with the completed stadium to be ready for the start of the Australian Football League (**AFL**) season in 2018.

The State has embarked on a Procurement Process to identify a private sector party, Project Co, which has the capacity to make a long term commitment to design, construct, partially finance and maintain what is to be a high profile stadium facility and sports precinct.

A2 CONTEXT

It is envisaged that the Stadium, Sports Precinct and Off-Site Infrastructure will be developed to:

(a) integrate with, and make use of, adjacent civic spaces, Commercial Facilities and community facilities in all of its operational modes to promote 7 day a week use;

(b) minimise operational costs and maximise commercial returns for the Stadium Operator and Hirers so that the Stadium is self-funded from its operations;

(c) minimise adverse impacts on, and enhance and protect, the Environment;

(d) be universally accessible such that it is welcoming and inclusive to all Stadium Users, including IRUA and persons from different cultural backgrounds;

(e) maximise utilisation of public transport to and from the Stadium and Sports Precinct;

(f) promote cycle and pedestrian access to and from the Stadium and Sports Precinct; and

(g) control and mitigate effects on local communities surrounding the Stadium and Sports Precinct, including existing users of the surrounding lands and water.

A3 CONTINUANCE OF TASKFORCE PRINCIPLES

Whilst the new Perth Stadium Project has evolved substantially since the time of the Taskforce report, there are some core principles that have continued to underpin all work on the DBFM Project since that time.

A3.1 SPECTATOR EXPERIENCE

The Taskforce found in its 2007 report that “the community desires facilities that provide high quality experiences, spectator comfort, (and) unencumbered views of the game.”

Early in the development of the new Perth Stadium Project Definition Plan (**PDP**) in 2012, through an extensive series of workshops with a wide range of Project Stakeholders, the State identified that a philosophy of putting “fans first” must be a key design and operational principle to underpin the long term success and viability of the Stadium and Sports Precinct. As such, the fans-first philosophy has guided the development of these Design Specifications and must be embraced by Project Co in the design and construction of the Stadium, Sports Precinct and Off-Site Infrastructure.

The Project Vision and Project Aspirations approved as part of the PDP are outlined in Part B (Project Vision, Aspirations and Objectives) of these Design Specifications.

A3.2 OPERATIONAL EFFICIENCY AND COST

The Taskforce based its operational and lifecycle cost (LCC) model analysis on a range of other Australian stadia as well as information provided by the Sporting Codes. Financial modelling undertaken by the Taskforce determined that after distribution of revenues to the Sporting Codes and other Hirers, the Stadium was expected to (on average) generate sufficient overall revenue to meet the cost of its operating overheads, fund lifecycle costs (set notionally at 1.5% of the original Stadium construction cost) and return a small net operating profit.

The financial analysis undertaken for the PDP reviewed and updated the Taskforce model on the basis that the venue's net surplus should be able to fund key expenditures necessary to ensure its sustainability (i.e. that the returns expected to be generated by the Stadium are able to meet its whole of life (WOL) costs which include the venue management fee, preventative maintenance and lifecycle costs). The PDP financial analysis tested that model using information provided by the Joint Football Working Group and other Sporting Codes and assumed Stadium utilisation that ranged from 32 to 37 Events per annum, plus a range of different Functions. Using conservative assumptions for AFL attendances (such as 39,000 average attendance and 77% utilisation of Premium Products) the analysis concluded that these revenues can fund the estimated WOL costs.

The PDP concluded that further analysis needs to be undertaken based on the following potential strategies:

(a) the Western Australian Government and the Stadium Operator negotiating hiring agreements to fund the WOL costs and management fee (at a minimum); or

(b) the Western Australian Government considering other means to raise revenue, such as the introduction of a venue membership; or

(c) the Western Australian Government funding (in full or partially) the ongoing recurrent shortfalls.

These strategies and the financial model will be reviewed again when the Governance Agency has been established.

A4 MASTER PLAN

A Master Plan prepared by the State establishes the regional and local context for the Stadium and Sports Precinct on the Burswood Peninsula, and provides a development concept based on the Master Plan Principles. It also provides a framework to guide future stages of growth within the Master Plan Area in the context of the draft District Structure Plan (**DSP**) for the Burswood Peninsula prepared by the Department of Planning.

Refer to Chapter C3 (Master Planning) of these Design Specifications for further details regarding the Master Plan and Project Co's obligations with respect to master planning.

A5 DRAFT BURSWOOD PENINSULA DISTRICT STRUCTURE PLAN (2013)

In 2010, the Western Australian Planning Commission endorsed the *Burswood Peninsula District Framework*. The framework set out the broad land use and planning objectives for the Burswood Peninsula. Since then, a number of major new initiatives have re-defined the planning intent of this framework, and promise to deliver a more diverse range of activities across the peninsula that will firmly establish the area as a significant metropolitan destination. These new initiatives include:

(a) the development of the Stadium and Sports Precinct;

(b) further development of the Crown Perth complex including a new 6-star hotel;

(c) redevelopment of land surrounding the Belmont Park Racecourse into a contemporary, high quality residential neighbourhood; and

(d) transit oriented development, with the introduction of two (2) high density, mixed use centres around Belmont Park and Burswood train stations.

Subsequent to the introduction of these initiatives, the Department of Planning prepared a draft DSP for the Burswood Peninsula for the purpose of providing a strategic framework for the planning, assessment, coordination and implementation of the major development initiatives across the Burswood Peninsula.

The draft DSP is currently with the Minister for Planning, and it is anticipated that once consent to advertise is granted the draft DSP will be publically advertised for a period of 42 days.

The draft DSP was prepared in consultation with a range of stakeholders including:

(a) Town of Victoria Park;

(b) Department of Transport;

(c) Department of Education;

(d) Department of Racing, Gaming and Liquor;

(e) Department of Sport and Recreation;

(f) Department of Treasury (Strategic Projects);

(g) Swan River Trust;

(h) Burswood Park Board;

(i) Western Power; and

(j) Water Corporation.

When finalised, the DSP will be used by State and local governments to inform future planning and development decisions made with respect to the Burswood Peninsula. The State's Master Plan has informed the draft DSP.

A6 GENERAL REQUIREMENTS

(a) (**Operational efficiency**) Project Co must design, construct, commission and complete the Stadium, the Sports Precinct and the Off-Site Infrastructure (as applicable) in accordance with the requirements of these Design Specifications such that the Stadium, the Sports Precinct and the Off-Site Infrastructure (as applicable) are suitable for:

(i) delivery of the Services by Project Co in an efficient and economic manner, in accordance with Schedule 13 (Services Specifications) and the Services Standards; and

(ii) efficient and economic delivery of the Stadium Activities.

(b) (**Fit For Purpose**) The Stadium, the Sports Precinct and the Off-Site Infrastructure must be Fit For Purpose.

(c) (**Comply with Quality Standards**) The design and construction of the Stadium, the Sports Precinct and the Off-Site Infrastructure must comply with all relevant Quality Standards.

(d) (**Good Industry Practice**) The design of the Stadium, the Sports Precinct and the Off-Site Infrastructure must be undertaken in accordance with Good Industry Practice.

(e) (**Best Construction Practices**) The construction of the Stadium, the Sports Precinct and the Off-Site Infrastructure must be undertaken in accordance with Best Construction Practices.

(f) (**Service Life**) The Stadium, the Sports Precinct and the Off-Site Infrastructure (as applicable) must be designed, constructed, commissioned and maintained to achieve a minimum Service Life of 50 years.

(g) (**Design Life**) In order to achieve the required Service Life it may be appropriate for some elements, components and equipment comprising the building fabric, building fitout (including FF&E) and Engineering Services systems within the Stadium, Sports Precinct and Off-Site Infrastructure to have a Design Life which is shorter than the Service Life, particularly where these are proposed to be located within zones designated for Lifecycle Services or Expansion. The minimum Design Life of certain elements, components and equipment comprising the building fabric, building fitout (including FF&E) and Engineering Services must be in accordance with the requirements set out in Part E (Technical Brief) of these Design Specifications.

A7 SCOPE OF DBFM WORKS

A7.1 GENERAL

(a) (**Works associated with the new Perth Stadium Project**) The DBFM Works, together with the State Works, comprise the works to be performed to deliver the new Perth Stadium Project, and form part of the works that will be undertaken on the Burswood Peninsula.

(b) (**DBFM Works**) The DBFM Works comprise the Stadium Works, the Sports Precinct Works (including the DBFM Transport Infrastructure Works), the Off-Site Infrastructure Works and the selection, procurement, installation (or location) and commissioning of all Project Co FF&E associated with these works, as described in this Chapter A7.

(c) (**PCS Works**) The PCS Works, which will be delivered under a separate contractual arrangement that will be managed by the State, are outside the scope of the DBFM Works.

(d) (**State Transport Infrastructure Works**) The State Transport Infrastructure Works, which will be delivered under a number of separate contract arrangements that will be managed by the State, are outside the scope of the DBFM Project. A summary of the components which are outside the scope of the DBFM Works is provided in **Table 2: State Transport Infrastructure Works** in clause A9.3 of these Design Specifications.

(e) (**Interface with State Transport Infrastructure Works**) Notwithstanding the separate delivery of the State Transport Infrastructure Works and the DBFM Works, public transport access will be a key feature of the greater Burswood Peninsula, and will give rise to many coordination and interface management considerations between the DBFM Works and the State Transport Infrastructure Works. These considerations are further outlined in Chapter A10 (Interface Managment) of these Design Specifications.

(f) (**Stadium Support Works**) The Stadium Support Works will be delivered under a number of separate contractual arrangements that will be managed by the State and are outside the scope of the DBFM Project. These works are summarised in clause A9.2 of these Design Specifications and include the selection, procurement, installation (or location) and commissioning of all State FF&E, as described in Chapter A8 (Furniture, Fittings and Equipment).

(g) (**Interface with Stadium Support Works**) Notwithstanding the separate delivery of the Stadium Support Works and the DBFM Works, the Stadium Support Works are integral components of the Stadium and Sports Precinct and will give rise to many coordination and interface management considerations as between the DBFM Works and the Stadium Support Works. These considerations are further outlined in Chapter A10 of these Design Specifications.

(h) (**Maintenance of Utility Infrastructure**) Project Co's obligations during the D&C Phase include maintenance of certain items of Utility Infrastructure (in a manner consistent with the Operating Phase requirements set out in Schedule 13 (Services Specifications) of this Agreement from the later of the date of practical completion of that Utility Infrastructure and Financial Close, through to the Date of Commercial Acceptance. These items comprise:

(i) the HV Switch Rooms; and

(ii) the Private Wastewater Main.

(i) (**Works pertaining to Commercial Facilities (including those to be accommodated in the Designated Commercial Areas)**) All work necessary for the design, construction, commissioning and completion of the Commercial Facilities is outside the scope of the DBFM Works notwithstanding that the Commercial Facilities form part of the Stadium or Sports Precinct (as the case may be, depending on their location) and this Agreement. Notwithstanding this, all work work necessary for the design, construction, commissioning and completion of the Commercial Facilities must still be undertaken by Project Co.

(j) (**Works pertaining to the Head Lease Area**) All works pertaining to the Head Lease Area, including Utilities connection, are outside the scope of the DBFM Works. Project Co must coordinate the timing of these works to ensure that the State's project team offices remain fully operational as required during the D&C Phase

A7.2 STADIUM WORKS

Without limiting Project Co's obligations under this Agreement, the Stadium Works includes all work necessary for the design, construction, completion and commissioning of the Stadium including:

(a) civil works for the Stadium (including the Controlled Area) and the Pitch, including removal and disposal or reuse of the surcharge materials once PCS Works Practical Completion has been certified by the PCS Works Independent Certifier;

(b) the substructure, superstructure and roof comprising the Stadium including the Controlled Area, the Seating Bowl, the Pitch and Playing Surface and all other Functional Units inside the Stadium as described in Part D (Functional Brief) of these Design Specifications;

(c) all Engineering Services as described in Part E (Technical Brief) of these Design Specifications; and

(d) certain fitout works, building signage, public artwork and Project Co FF&E,

(e) all work associated with the installation or location (as applicable, depending on whether the relevant Project Co FF&E is loose or fixed) and commissioning (if applicable to the relevant Project Co FF&E) of all Project Co FF&E;

(f) all work associated with the installation of all applicable Group 3 FF&E as set out in these Design Specifications;

(g) all Modifications, Minor Modifications and FF&E Modifications; and

(h) any rectification of Defects;

as further described in these Design Specifications.

A7.3 SPORTS PRECINCT WORKS

(a) Without limiting Project Co's obligations under this Agreement, the Sports Precinct Works includes all work necessary for the design, construction, completion and commissioning of the Sports Precinct including:

(i) civil works for the Sports Precinct areas;

(ii) internal roads, car parking areas, pedestrian footpaths, boardwalks and cycle paths;

(iii) stormwater drainage;

(iv) rehabilitation of the River-Fed Lake;

(v) rehabilitation of the Swan River foreshore;

(vi) recreational areas including children's play areas, picnic and barbeque areas and the Community Recreation Oval;

(vii) reticulation of Utilities from the Stadium USCZ to required locations within the Sports Precinct and to the Stadium and Pedestrian Underpass;

(viii) Sports Precinct lighting, PA System and Security Systems;

(ix) selected Event Day Facilities as described in Chapter D13 (Stadium Operations and Event Day Facilities), including Ticket Boxes, Ticket Control Points and Patron Services Offices;

(x) precinct landscaping; and

(xi) precinct signage and public artwork;

(b) all work associated with the installation or location (as applicable, depending on whether the relevant Project Co FF&E is loose or fixed) and commissioning (if applicable to the relevant Project Co FF&E) of all Project Co FF&E;

(i) all Modifications and Minor Modifications;

(ii) any rectification of Defects; and

(iii) the works to design, construct, complete and commission the DBFM Transport Infrastructure.

as further described in these Design Specifications.

(c) It should be noted that the works described at (a)(v) also form part of the Off-Site Infrastructure Works.

(d)

A7.3.1 TRANSPORT INFRASTRUCTURE WORKS

(a) A key component of the Sports Precinct Works is the DBFM Transport Infrastructure Works.

(b) Without limiting Project Co's obligations under this Agreement, Project Co must undertake the DBFM Transport Infrastructure Works, including all work necessary for the design, construction, completion and commissioning of:

(i) the Rail Passenger Assembly Areas including the path connections to the two (2) underpasses (i.e. the Pesestrian Underpass and vehicle underpass within the Rail Reserve) and the Stadium Station entries;

(ii) the Bus Passenger Assembly Area;

(iii) the Stadium Special Event Bus Stands (**Bus Hub**);

(iv) elements of the Pedestrian Underpass including as set out in clause A7.4(c)(i); and

(v) the connection pathways from the Swan River Pedestrian Bridge (**SRPB)** to the Controlled Area,

as further described in these Design Specifications.

(c) It should be noted that the works described at (b)(iv) are also Off-Site Infrastructure Works.

A7.4 OFF-SITE INFRASTRUCTURE WORKS

(a) Some elements of the DBFM Works are required to be performed off the Site.

(b) Without limiting Project Co's obligations under this Agreement, the Off-Site Infrastructure Works includes all work necessary for the design, construction, commissioning and completion of the Off-Site Infrastructure, as set out in Schedule 8 (Off-Site Infrastructure) of this Agreement and idicatively located on Plan 7 (Indicative Off-Site Infrastructure Works Location Plan) of Schedule 11 (Site Plans).

(c) Project Co's obligations for the Off-Site Infrastructure Works during the D&C Phase comprise:

(i) design, construction, completion and commissioning of the floor slab, drainage, floor, wall and ceiling / soffit finishes and other Engineering Services for the new underpass (**Pedestrian Underpass**) under Victoria Park Drive (**VPD**) including as described in Part E (Technical Brief) of these Design Specifications;

(ii) rehabilitation of the Swan River foreshore within the Site and that portion of the Swan River foreshore abutting the Site, limited to the area 2m below and 2m above the high water mark, in accordance with the Environmental Management Strategy Documents;

(iii) extension of the sewer service from its termination point in the Stadium USCZ to the Stadium, including as set out in Part E (Technical Brief) of these Design Specifications;

(iv) inspection and maintenance (as applicable) of the Private Wastewater Main (in a manner consistent with the Operating Phase requirements set out in Schedule 13 (Services Specifications) and Schedule 14 (Payment Schedule) of this Agreement from its date of practical completion through to the Date of Commercial Acceptance;

(v) extension of the HV incoming service from its termination point in the Stadium USCZ to the Stadium, Sports Precinct and Pedestrian Underpass,

including as set out in Part E (Technical Brief) of these Design Specifications;

(vi) maintenance of the HV Switch Rooms (in a manner consistent with the Operating Phase requirements set out in Schedule 13 (Services Specifications) and Schedule 14 (Payment Schedule)) from Financial Close through to the Date of Commercial Acceptance; and

(vii) all Sports Precinct / Road Reserve interface works, including design, construction, commissioning and completion of all soft landscaping works (including irrigation and barrier planting) within the verge on both sides of VPD. Without limiting Project Co's obligations in respect of the Pedestrian Underpass, this excludes all works required to design, construct and operate VPD, in particular retaining walls, drainage, batter protection, pathways, lighting and signage.

(d) Depending on the timing of the boundary adjustments to the Site (as contemplated in the Agreement), that part of the works that are off the Site for the works described in paragraphs (c)(iii) and (c)(v) to (c)(viii) inclusive are Off-Site Infrastructure Works.

A8 FURNITURE, FITTINGS AND EQUIPMENT

A8.1 OVERVIEW

(a) A majority of the FF&E required for the Stadium, Sports Precinct and Off-Site Infrastructure will be selected, procured, installed (or located) and commissioned by Project Co as part of the DBFM Works, and will subsequently be maintained by Project Co during the Operating Phase.

(b) The FF&E to be provided are grouped into four (4) categories, with responsibility for the selection, procurement, installation (or location), commissioning and maintenance divided between Project Co, the Stadium Operator and the State. **Table 1** summarises the FF&E categories and demarcation of responsibility.

Table 1: FF&E Categorisation and Demarcation of Responsibility

FF&E Category	Responsible Party (for selection , procurement, installation (or location), commissioning)	Responsible Party (for maintenance and Lifecycle Services)	FF&E Items
Group 1 FF&E	Project Co	Project Co	All FF&E which is required to meet the Design Requirements and can reasonably be anticipated to be required for the purposes of the Stadium Activities, excluding Group 2 FF&E, Group 3 FF&E and Group 4 FF&E.
Group 2 FF&E	Project Co	Stadium Operator	(a) All fixed catering equipment which: (i) is required to meet the Design Requirements; and (ii) can reasonably be anticipated to be required for the purposes of operating the Catering Facilities to deliver the Catering Service; and (iii) is fixed to the building fabric or wired to or plumbed in to the Engineering Services within the Stadium (including for example, stainless steel joinery and ovens). (b) Loose function and banqueting furniture,

FF&E Category	Responsible Party (for selection , procurement, installation (or location), commissioning)	Responsible Party (for maintenance and Lifecycle Services)	FF&E Items
			comprising: (i) portable banquet tables and associated trolleys; (ii) portable trestle tables and associated trolleys; and (iii) portable banquet chairs and associated accessories including seat linking mechanisms and trolleys.
Group 3 FF&E	State	Stadium Operator	Fixed items of FF&E required for the purposes of the Stadium Activities, to be integrated and installed by Project Co in accordance with clause E2.13.6 of these Design Specifications and Schedule 21 (Schedule of State Works and Surrounding Works) of this Agreement, and including: (a) sanitary accessories, specifically: (i) toilet roll holders; (ii) hand towel dispensers with integral waste receptacles; (iii) soap dispensers; (iv) glove dispensers; (v) hair net dispensers; (vi) kitchen towel dispensers; (vii) multi-liner receptacles; (viii) sharps receptacles; and (ix) hand sanitiser dispensers; Loose items of FF&E required for the purposes of the Stadium Activities, and comprising: (a) access equipment, forklifts and vehicles (excluding Services Equipment); (b) loose catering equipment, specifically: (i) kitchen smallwares; (ii) cutlery, crockery, glassware and hollowware; (iii) catering transport equipment and trolleys; and (iv) linen; (c) loose cleaning equipment; (d) loose crowd control and queuing equipment; (e) ATMs; (f) loose engineering tools and equipment;
Group 4 FF&E	Stadium Operator	Stadium Operator	

FF&E Category	Responsible Party (for selection , procurement, installation (or location), commissioning)	Responsible Party (for maintenance and Lifecycle Services)	FF&E Items
			(g) loose Event production equipment; (h) loose electrical equipment, comprising: (i) patch leads from wall outlets to Group 3 FF&E or Group 4 FF&E only; (ii) loose cable covers; and (iii) general use loose power leads and loose power distribution equipment; (i) loose first aid and medical equipment; (j) loose Stadium Operator information and communication technology (**ICT**) equipment, comprising: (i) administration personal computers, notebooks and software; (ii) printers, scanners and multifunction devices; (iii) facility booking system(s); and (iv) human resource management system(s); (k) loose safety equipment; (l) loose traffic control equipment; (m) loose television and broadcast equipment; (n) point of sale and inventory management system; (o) ticketing systems and equipment, excluding entry gates and screens; (p) trolleys and carts; (q) two-way radio system; (r) uniforms for Stadium Personnel; and (s) waste management, comprising: (i) waste receptacles within the Stadium, excluding the Controlled Area; (ii) waste compactors; and (iii) glass crushers.

(c) For all categories of FF&E, Project Co must:

(i) ensure that each Functional Unit of the Stadium, Sports Precinct and Off-Site Infrastructure is designed with suitable space and allowance to accommodate the required FF&E in locations that are fit for purpose to house and operate (as applicable) the FF&E as intended such that the

Stadium, Sports Precinct and Off-Site Infrastructure will be Fit For Purpose; and

(ii) ensure that the Engineering Services requirements for all FF&E are incorporated into the design of each Functional Unit of the Stadium, Sports Precinct and Off-Site Infrastructure such that the designed locations are fit for purpose to house and operate (as applicable) the FF&E as intended, such that the Stadium, Sports Precinct and Off-Site Infrastructure will be Fit For Purpose.

(d) The storage requirements for FF&E are not defined in these Design Specifications and must be determined by Project Co.

(e) Project Co must prepare and update the FF&E List in Schedule 18 (FF&E List) of the Agreement, which details all Project Co FF&E. The FF&E List must be grouped by Functional Area and then by Functional Unit, in accordance with the Schedule of Accommodation, and must be provided as a database or Microsoft Excel worksheet incorporating the following information at a minimum:

(i) Functional Area;

(ii) Functional Unit;

(iii) FF&E item code;

(iv) FF&E item name;

(v) FF&E item minimum output specifications, including: description, colour, dimensions, capacities, ratings, temperatures and other functional specifications (as relevant);

(vi) product selection (to be included when selected, i.e. make and model number with image or similar identifier);

(vii) quantity to be provided;

(viii) unit cost of each item;

(ix) FF&E category (i.e. Group 1 FF&E or Group 2 FF&E);

(x) Engineering Services requirements for each item of FF&E;

(xi) maintenance and cleaning requirements;

(xii) Design Life; and

(xiii) warranty provisions.

(f) Generic specifications may be included in the FF&E List where items of Project Co FF&E are subject to delayed design and procurement and are expressly included in the Delayed Design and Procurement Plan to be developed by Project Co pursuant to Chapter C19 (Delayed Design and Procurement) of these Design Specifications.

(g) The State, in conjunction with the Stadium Operator, will prepare a State FF&E List for all State FF&E. The State FF&E List will address the same information requirements as the FF&E List for the State FF&E but may include generic specifications for some State FF&E where product selections will be delayed to allow for Stadium Operator input. The State FF&E List will be provided to Project Co during the D&C Phase in accordance with dates which are to be agreed between Project Co and the State and set out in the DBFM Works Program.

A9 STATE WORKS

(a) A number of third parties will execute works on behalf of the State which:

(i) are required to deliver the new Perth Stadium Project but do not form part of the DBFM Works; and

(ii) will require access onto the Site (**State Works**).

(b) The State Works include:

(i) certain State Transport Infrastructure Works, as outlined in clause A9.3 and denoted by * in **Table 2**: State Transport Infrastructure Works in clause A9.3, and as further described in the Project Information; and

(ii) the Stadium Support Works, as outlined in clause A9.2.

(c) Schedule 21 (Schedule of State Works and Surrounding Works) of this Agreement provides further information in respect of the State Works.

A9.1 PRE-CONSTRUCTION SITE WORKS

PCS Works have been undertaken by the State in six (6) seperable portions in order to prepare the Site for construction and in particular to treat underlying ground conditions which currently give rise to differential settlement and lateral movement across the Site. These works are excluded from and separate to the State Works for the purposes of the Agreement.

A9.1.1 Preliminary civil works

Separable Portion 1 is the Preliminary Civil Works, and includes;

(a) fencing the site;

(b) providing signage and a webcam facility across the site;

(c) providing access into the site and hard standing areas;

(d) providing amenities for the PCS Works Contractor and the State;

(e) making alterations to existing Utilities within the site to ensure their continued operation where required;

(f) removing trees, topsoil and vegetation as required; and

(g) providing a temporary access road from VPD to the former Burswood Park Golf Course car park.

A9.1.2 Ground improvement works

(a) The remaining five (5) separable portions include ground improvement in order to meet specified long-term ground movement performance criteria. The ground improvement will minimise the ground movements that would otherwise occur due to past and future loading of the industrial landfill layer, the underlying river muds and the paleochannel which traverses the site. Those areas identified for ground improvement include:

(i) (**Separable Portion 2 Irrigation Lake**) draining and backfilling of the southern irrigation lake within the Stadium footprint;

(ii) (**Separable Portion 3 Pitch Works**) ground improvement for the subsequent construction of the Pitch;

(iii) (**Separable Portion 4 Bus Hub**) ground improvement for the Bus Hub (based on the proposed location in the Development Concept Plan (2013));

(iv) (**Separable Portion 6 Community Recreation Oval**) ground improvement for the subsequent construction of a grassed community recreation oval for sports events, informal temporary car parking and equipment and backup storage for major non-sporting Events such as Entertainment Events; and

(v) (**Separable Portion 7 Pedestrian Assembly Area (north)**) ground improvement for the subsequent construction of a pedestrian assembly area for Patrons to gather en route between the Stadium and the proposed new Stadium Station.

A9.1.3 Overlap with DBFM Works

(a) Project Co must provide access to the Site for the PCS Works Contractor to:

(i) conduct geotechnical monitoring and testing;

(ii) undertake any remedial work or rectification of defects as required in order to achieve PCS Works Practical Completion;

(iii) operate the groundwater management system;

(iv) continue to conduct environmental and groundwater monitoring of the PCS Works; and

(v) undertake remedial work arising out of the groundwater and environmental monitoring.

(b) From the point of Site Handover, Project Co will be required to:

(i) design and manage the construction of the Stadium, Sports Precinct and Off-Site Infrastructure to accommodate the ongoing performance of the surcharge material and its sensitive monitoring equipment in accordance with relevant management plans;

(ii) facilitate periodic access to the surcharge area by third parties to enable the ongoing monitoring of ground conditions and the completion of PCS Works Practical Completion activities; and

(iii) take full responsibility for the removal or on-site reuse of the surcharge material once PCS Works Practical Completion has been certified by the PCS Works Independent Certifier.

(c) Further information on the handover conditions for PCS Works is included in the Project Information.

A9.2 STADIUM SUPPORT WORKS

A9.2.1 Utility Infrastructure Works

Existing Utility Infrastructure is available in the Stadium USCZ, including power, telecommunications, water, sewer and gas. The Utilities are generally aligned along VPD to the boundary of the Site. The State is liaising with the relevant Authorities to ensure respective Utilities are extended to the Stadium USCZ in preparation for the DBFM Works as further described in Schedule 21 (Schedule of State Works and Surrounding Works) of this Agreement.

A9.2.2 State FF&E

A selection of FF&E will be procured, installed (or located) and commissioned by the State and the Stadium Operator as outlined in Chapter A8, and form part of the Stadium Support Works. Works in respect of the State FF&E are State Works on the basis that access to the Site for the State and the Stadium Operator will be required for the purpose of planning the State FF&E and for providing certain State FF&E (sanitary accessories) to Project Co for installation.

A9.2.2 Distributed antenna system

The distributed antenna system (DAS) in the Stadium will be procured by the State and.forms part of the Stadium Support Works. Works in respect of the DAS are State Works on the basis that access to the Site for the State will be required for the purpose of surveying for the DAS.

A9.3 STATE TRANSPORT INFRASTRUCTURE WORKS

The State Transport Infrastructure Works are summarised in **Table 2** below.

Table 2: State Transport Infrastructure Works

In this Table 2:

* *denotes State Works, as described in this Chapter A10.1 (State Works) of these Design Specifications*

** *denotes Surrounding Works, as further described in clause A10.1 (Surrounding Works) of these Design Specifications*

Element	Description of works:	Responsible

* Windan Bridge	Upgrade works to the existing bridge and road infrastructure to support pedestrian access to the Sports Precinct.	MRWA / PTA
* SRPB	Construction of a new pedestrian footbridge on the western boundary of the Site to facilitate pedestrian access from East Perth over the Swan River to the Stadium and Sports Precinct.	MRWA
** Nelson Avenue Special Event Bus Stands	Construction of new bus stands on Nelson Avenue on the western shore of the Swan River designed to cater for shuttle bus services to and from the Perth CBD.	MRWA
** VPD / Great Eastern Highway intersection	Modifications to the intersection of VPD / Burswood Road with Great Eastern Highway to cater for the increased traffic on Event Days.	MRWA
* VPD new roundabout	Construction of a new two-lane roundabout on VPD to serve the Bus Hub and facilities off it, as well as a re-aligned shared path to provide access to Stadium Station.	MRWA
* MRWA Bridge 9401 (comprising the main structure of the Pedestrian Underpass)	Construction of MRWA Bridge 9401 to form a new pedestrian underpass under VPD that links the Rail Passenger Assembly Areas. The scope of the State Transport Infrastructure Works excludes those elements of the Pedestrian Underpass which are to be constructed by Project Co as part of the DBFM Transport Infrastructure Works and Off-Site Infrastructure Works, including as set out in clause A7.4(c)(i).	MRWA
** VPD road and rail bridge modifications	Extensions and modifications to road and rail bridges on VPD, including extensions and modifications to the existing MRWA Bridge 1449 which carries VPD over the railway, including modification of the existing southern abutment to become a pier. The extension north (Bridge 1737) and the extension south (Bridge 1449A, which includes the former 1449) is necessary to accommodate six tracks and associated station platforms and a pedestrian link between the Rail Passenger Assembly Areas.	MRWA
** Modifications to existing footbridge over Graham Farmer Freeway	Modifications to the existing MRWA footbridge No. 9211 as a consequence of the widened Railway Reserve, modifications to the Graham Farmer Freeway on-ramp lane configurations and the connection of this footbridge into the proposed Belmont Park Racecourse redevelopment and the Sports Precinct.	MRWA (southern alterations) and Golden Group (northern alterations)
** Rail upgrade and realignment	Upgrade works to the rail tracks to increase the capacity of the railway line. This will require a widening of the Rail Reserve.	PTA
** Stormwater and sub-soil drainage works within the Rail Reserve	Modifications to existing and new stormwater and sub-soil drainage systems within the Rail Reserve between the Goongoongup Rail Bridge and the eastern extent of the modified track work associated with Stadium Station. The works will be undertaken in three stages and includes: • Stage 1: construction of underground stormwater	PTA

	collection and drainage tanks within the expanded Rail Reserve and construction of a drainage sump within the Rail Reserve; • Stage 2: construction of underground stormwater collection and drainage tanks within the expanded Rail Reserve and adjacent to the southern Rail Passenger Assembly Area; and • Stage 3: construction of a drainage sump within the Rail Reserve.	
* Stadium Station	Construction of a new train station with six (6) platforms, and which will replace the existing Belmont Park Train Station.	PTA
** New railway access ways	Construction of new railway access ways within the expanded Rail Reserve, and linkages of these to existing tracks and road access including the vehicle underpass described in clause D4.4.3(f).	PTA
** Bus Layover Area	Construction of a new bus layover compound immediately south of the State Tennis Centre, between the railway line and VPD.	PTA
** Transport signage	Construction of directional signage to the Stadium and Sports Precinct along: • all road arrival routes; • all rail arrival routes; and • pedestrian arrival routes including the Swan River Pedestrian BridgeSRPB, Windan Bridge, Belmont Park footbridge, Goongoongup Rail Bridge and the Pedestrian Underpass.	MRWA and PTA
** State Tennis Centre, Tennis West	Relocation or replacement of tennis courts affected by the rail works.	PTA

A10 INTERFACE MANAGEMENT

A10.1 SURROUNDING WORKS

(a) It is expected that a number of surrounding works will be undertaken by the State and third parties concurrent with the DBFM Works (**Surrounding Works**). The Surrounding Works include the works shown in **Table 3**.

(b) Access to the Site may be required by third parties for the purpose of undertaking the Surrounding Works.

Table 3: Surrounding Works

Element	Description of works	Responsible
State Transport Infrastructure Works	Includes the State Transport Infrastructure Works denoted by ** in the first column of **Table 2** (State Transport Infrastructure Works) in clause A9.3.	MRWA, PTA and Golden Group
New Hotel - Crown Perth complex	Proposed redevelopment of a portion of the 'southern nine' of the former Burswood Park Golf Course directly adjacent to the existing Crown Perth complex (southern-most 3 holes) as a new hotel.	Crown Limited Group

Belmont Park Racecourse redevelopment	Proposed redevelopment of the Belmont Park Racecourse to deliver 600,000+m^2 of residential, 80,000+m^2 of office and 40,000+m^2 of retail space.	Golden Group
The Springs, Rivervale development	Development of medium to high density residential including townhouses and apartments, and a mix of commercial opportunities.	Landcorp

A10.2 BRIDGE LANDINGS

(a) Four (4) bridges will land into the Site as follows:

(i) the SRPB;

(ii) a pedestrian bridge over the Graham Farmer Freeway and Rail Reserve from Belmont Park Racecourse;

(iii) a pedestrian bridge from Stadium Station into the northern Rail Passenger Assembly Area; and

(iv) a pedestrian bridge from Stadium Station into the southern Rail Passenger Assembly Area.

The bridge landings for the pedestrian bridges at items (iii) and (iv) will require a 2.5 metre exclusion zone for any metallic objects to ensure effective separation from potential 25kV earthing requirements.

(b) At each bridge landing location within the Site, bridge works will be designed and constructed by others on behalf of the State including:

(i) abutments, which may be piled; and

(ii) approach slabs or approach ramps.

(c) The bridge designs will consider long term vertical and lateral ground movements due to the site conditions at each location (as existing prior to the DBFM Works commencing).

(d) Project Co must design and construct the precinct path network and pedestrian assembly areas (including any associated Engineering Services, falls for drainage and landscaping) to abut seamlessly via each bridge landing to each bridge abutment and provide a transition that:

(i) is neat and is without damage to the bridge structures, foundations, approaches and associated services;

(ii) is aesthetically sympathetic to the bridge landing design, including with respect to landscape materials and colour palette; and

(iii) is suitable for the volume of pedestrian traffic anticipated across each bridge into and out of the Sports Precinct;

(iv) is safe, level and is suitable for all pedestrians (including IRUA), including being free of any trip hazard and is free of gaps or damage at or near the transition from the Sports Precinct to the bridge abutments;

(v) complies with all relevant Quality Standards and Laws, including:

A AS1428.1 Design for Access and Mobility (all parts); and

B the Disability (Access to Premises - Buildings) Standards under the *Disability Discrimination Act 1992* (Cth);

(vi) drains appropriately without causing ponding of water to occur on either side of the transition;

(vii) is functional, with all Engineering Services for the Sports Precinct being in an unbroken condition and able to operate as intended and in accordance with the requirements of the Output Specifications;

(viii) has all Engineering Services co-ordinated with services on the bridges, bridge structures and foundations, including in-ground and above ground co-ordination so that there are no scope gaps between the State Transport Infrastructure Works and the DBFM Works, including:

A ensuring that CCTV coverage is provided within the Sports Precinct up to each transition with the bridge landings:

B ensuring that safe lighting levels in accordance with relevant Quality Standards are achieved within the Sports Precinct up to and including at each transition to the bridge landings; and

C ensuring that the Engineering Services design and co-ordination with the Buried Services takes into account the Land Conditions;

(ix) is capable of being maintained throughout the Service Life to the standard described in items (d)(i) to (d)(viii) without the need for excessive repair, and where repairs are necessary, is able to be repaired without obvious signs of repairs undertaken where the repair is exposed to view.

(e) Without limiting any other obligations under this Agreement, as part of its obligations under Schedule 13 (Services Specifications) of this Agreement, Project Co will be responsible for the following during the Operating Phase:

(i) repair of all damage to, and maintenance of, the precinct path network, the pedestrian assembly areas and all Engineering Services within the Sports Precinct to ensure that at all times the transitions from the Sports Precinct via each bridge landing to the bridge abutment continues to satisfy the requirements set out in paragraph (d) including where any damage occurs as a result of the Land Conditions; and

(ii) ensuring that all required rectification works are included in the Annual Services Plan as set out in Schedule 13 (Services Specifications) of this Agreement.

(f) To the extent that Project Co causes any damage to the bridge structures, bridge landing areas and surrounds (including damage to bridge foundations, abutments, hinged and rotating approach slabs and associated in-ground services including cables, pipework and any other in-ground services leading up to but not on the bridge structures) during execution of the DBFM Works or during performance of the Services, Project Co will be responsible for the cost of rectifying such damage and the cost of the repairs undertaken by the State will be charged to Project Co by the State.

(g) Maintenance of the bridge structures, including their foundations and hinged approach slabs and on-bridge services (as applicable) will be the responsibility of the State at all times.

A10.3 INTERFACE WITH STATE WORKS AND SURROUNDING WORKS

(a) Project Co must manage all interfaces between the DBFM Works and the State Works and Surrounding Works, including by coordinating the design, construction and commissioning of the DBFM Works to ensure that:

(i) the design of the DBFM Works integrates seamlessly with the design of the State Works and the Surrounding Works (as applicable), including factoring the design assumptions, throughputs / outputs and constraints arising from those works into the design and construction of the Stadium, Sports Precinct and Off-Site Infrastructure; and

(ii) the construction of the DBFM Works is fully coordinated with the construction of the State Works and the Surrounding Works (as applicable),

including as further set out in Schedule 5 (Design Development) and Schedule 21 (Schedule of State Works and Surrounding Works) of this Agreement.

A11 AUTHORISATIONS

A11.1 STATE OBTAINED AUTHORISATIONS

The State will be responsible for obtaining the State Obtained Authorisations.

A11.2 AUTHORISATIONS TO BE OBTAINED BY PROJECT CO

(a) Without limiting clause 41 of this Agreement, with the exception of the State Obtained Authorisations (as set out in clause A11.1), Project Co must identify and obtain all Authorisations required to deliver the DBFM Project, including any Authorisation from:

(i) the Permit Authority under the *Building Act 2011* (WA);

(ii) the Department of Environment Regulation;

(iii) the Environmental Protection Authority;

(iv) the Department of Water;

(v) the Swan River Trust;

(vi) the relevant local government Authority;

(vii) the Department of Health (WA), including approval under Regulation 7 of the *Health (Aquatic Facilities) Regulations 2007* (WA) from the Executive Director, Public Health;

(viii) the Department of Racing, Gaming and Liquor (WA) for licensing under the Liquor Control Act 1988 (WA) for Commercial Facilities that require licensing;

(ix) the Department of Mines and Petroleum (WA) for licensing under the Dangerous Goods Safety Act 2004 (WA), if licensable quantities of Dangerous Goods, as that term is defined under the Act, are required to be stored within the Stadium or Sports Precinct;

(x) the Department of Fire and Emergency Services (DFES);

(xi) Utility Companies, including Western Power and Water Corporation; and

(xii) adjoining land owners.

(b) All fees and charges associated with Authorisations with the exception of State Obtained Authorisations are the responsibility of Project Co.

A11.3 BUILDING PERMIT AND OCCUPANCY PERMIT

Without limiting clause 41 of this Agreement, Project Co is responsible for engaging an independent building surveyor to:

(a) certify that the design and construction of the Stadium, Sports Precinct and Off-Site Infrastructure complies with the Design Requirements;

(b) obtain progressive Building Permits for the DBFM Works as required during construction; and

(c) obtain an Occupancy Permit for the completed DBFM Works prior to Technical Completion.

A12 SITE INFORMATION

The Parties acknowledge that this Chapter A12 of this Schedule 12 (Design Specifications) was prepared for the purposes of providing information for the RFP and has only partially been updated. In the event of any inconsistency, ambiguity or discrepancy between this Chapter A12 of this Schedule 12 (Design Specifications) and Clauses 1 - 55 of the Project Agreement, Clauses 1 - 55 of the Project Agreement will apply.

A12.1 SITE DESCRIPTION

(a) The Site is situated on the Burswood Peninsula which is approximately 280 hectares in area, located 2.9km east of the Perth central business district, and connected to East Perth via the Windan Bridge and the Goongoongup Rail Bridge.

(b) The Burswood Peninsula is accessed by road from the Graham Farmer Freeway, VPD and the Great Eastern Highway, with Belmont Park and Burswood train stations also servicing the area.

(c) In recent times a variety of land uses have been located within the Burswood Peninsula including the former Burswood Park Golf Course, the State Tennis Centre, the Crown Perth complex, the former Burswood Dome, the Burswood Peninsula residential development, the Belmont Park Racecourse and assorted parklands and car parks.

(d) The Site extends over the northern portion of the former Burswood Park Golf Course and a portion of the lot on which the State Tennis Centre is situated (but excludes the State Tennis Centre). A portion of the transport corridor accommodating the Armadale-Fremantle rail line and the Graham Farmer Freeway is included within the Site. The Site excludes all of the road reserve for VPD.

(e) The Site is bounded by the Swan River to the west, the rail corridor and the Graham Farmer Freeway to the north and east, the State Tennis Centre to the south east and the remainder of the former Burswood Park Golf Course to the south. VPD bisects the Site.

(f) The Burswood Park Board currently has control and management of the Site, excluding that portion of the Site which is within the transport corridor that is under the control and management of the Commissioner of MRWA. The Swan River Trust manages the abutting Swan River.

A12.2 SITE PLAN

(a) Without limiting this Agreement, the Site is identified in Plan 1 (Site Context Plan) included in Schedule 11 (Site Plans) of this Agreement and defines the indicative Site within which Project Co will undertake the DBFM Works (with the exception of the Off-Site Infrastructure Works).

(b) The Site boundaries are generally defined by the cadastral boundaries, however, the Swan River may encroach or abut the Site.

A12.3 STATE OBTAINED AUTHORISATIONS OVERLAY PLANS

(a) The 'approvals area' for the State Obtained Authorisations generally differs from the area that is the Site.

(b) The subject area for each State Obtained Authorisation is identified in the State Obtained Authorisations Plans which are included in Schedule 11 (Site Plans) of this Agreement and include:

(i) Plan 2 State Obtained Authorisations Plan – Environmental Protection Act 1986 (WA) (Section 38);

(ii) Plan 3 State Obtained Authorisations Plan – Contaminated Sites Act 2003 (WA);

(iii) Plan 4 State Obtained Authorisations Plan – Aboriginal Heritage Act 1972 (WA) (Section 18); and

(iv) Plan 5 State Obtained Authorisations Plan – Environmental Protection*, Biodiversity and Conservation Act 1999* (Cth).

A12.4 STATE TRANSPORT INFRASTRUCTURE WORKS ACCESS

Some of the State Transport Infrastructure Works will be undertaken within the Site by contractors of PTA, MRWA and third parties. Project Co must provide access to these contractors during the construction and future maintenance of the State Transport Infrastructure Works. The indicative location for these works is indicated on Plan 6 (Indicative State Transport Infrastructure Works Location Plan) in Schedule 11 (Site Plans) of this Agreement.

A12.5 LAND TENURE AND TITLE INFORMATION

A12.5.1 Title Information

(a) The Site is included within the following Crown land titles**:**

(i) Lot 300 on Deposited Plan 42394 (CT LR 3139-328). This is approximately 33 hectares and accommodates the northern portion of the former Burswood Park Golf Course. Lot 300 includes a portion of land extending north under the Goongoongup Rail Bridge and Windan Bridge. The Site comprises that portion of Lot 300 south of the Goongoongup Rail Bridge as identified on Plan 1 (Site Context Plan) included in Schedule 11 (Site Plans) of this Agreement ;

(ii) Lot 307 on Deposited Plan 42394 (CT LR 3139-335). This is approximately 7 hectares and accommodates the State Tennis Centre. The Site comprises the northern portion of Lot 307, as identified in Plan 1 (Site Context Plan) included in Schedule 11 (Site Plans) of this Agreement;

(iii) Lot 12057 on Deposited Plan 218634 (CT LR 3119-917). This is approximately 8 hectares and accommodates the former Burswood Park Golf Course Clubhouse (**Clubhouse**) and adjacent car parking area; and

(iv) Lot 304 on Deposited Plan 42394 (CT LR 3139-3320). This is approximately 6 hectares and accommodates a combination of rail and road infrastructure associated with the Armadale-Fremantle rail line and the Graham Farmer Freeway. The portion of Lot 304 within the Site may be subject to change based on PTA requirements.

(b) A memorial under the *Contaminated Sites Act 2003* (WA) is registered against Lots 300, 304 and 307, with Lots 300 and 307 classified as “possibly contaminated – investigation required”, and Lot 304 classified as “remediated for restricted use”. An easement is registered against Lot 304 to the State Energy Commission for transmission of high voltage electricity.

(c) The Site, excluding Lot 304, is included within Reserve 39361, a class reserve for the purposes of parks and recreation. Lot 304 is included within Reserve 44968 for road purposes controlled access.

A12.5.2 Casino (Burswood Island) Agreement Act

(a) Lots 300, 307 and 12057 are currently subject to the *Casino (Burswood Island) Agreement Act 1985* (WA) (**Agreement Act**) which generally extends 124 hectares over the Burswood Peninsula and includes the former Burswood Park Golf Course, the State Tennis Centre, the Crown Perth complex, the former Burswood Dome structure and associated parklands and car parks as shown on Plan 8 (MRS Reservations and Agreement Act Area) in Schedule 11 (Site Plans). Lot 304 is not subject to the Agreement Act.

(b) The Agreement Act ratified and authorised the implementation of the Casino (Burswood Island) Agreement, which created both a “Site” (comprising generally the Casino Entertainment complex and Dome) and a “Resort Site” (generally comprising the former Burswood Park Golf Course, the State Tennis Centre, public parkland and car parks). Lots 300, 307 and 12057 are currently within the “Resort Site”.

(c) In accordance with the Agreement Act, the “Resort Site” was set aside in 1986 under the now repealed *Land Act 1933* (WA) as a “C” Class Public Reserve (No. 39361) for the purposes of parks and recreation (and continued in effect by the *Land Administration Act 1997* (WA)). The reserve is in the control of the Burswood Park Board pursuant to the *Parks and Reserves Act 1895* (WA).

(d) It is intended that upon completion of the PCS Works, Lots 300, 307 and 12057 will be excised from the Agreement Act to facilitate construction and ongoing management of the Stadium and Sports Precinct. This process will be undertaken by the State.

A12.5.3 Metropolitan Region Scheme

Neither the Metropolitan Region Scheme (**MRS**) nor the Town of Victoria Park Town Planning Scheme (as the relevant scheme as at the date of these Design Specifications) applies to Lots 300, 307 and 12057 while they are captured by the provisions of the Agreement Act. It is anticipated, however, that prior to the excision referred to in clause A12.5.2(d) occurring the State will revive the MRS to facilitate future planning. Lot 304 is currently reserved "Railways" and "Primary Regional Roads" under the MRS. It is intended to subdivide Lot 304 to separate that portion included within the Site from the portion containing the rail and road infrastructure and to rezone the subdivided parcel to "Parks and Recreation" under the MRS. The intent is that the entire Site will be reserved "Parks and Recreation" under the MRS.

A13 DESIGN CONSIDERATIONS AND CONSTRAINTS

(a) Comprehensive desktop and baseline specialist investigations have been undertaken to establish the existing physical and environmental characteristics of the Burswood Peninsula and specifically, the northern portion of the former Burswood Park Golf Course which will accommodate the Stadium and Sports Precinct.

(b) Assessments have been undertaken in the areas of:

(i) geotechnical;

(ii) Contamination;

(iii) flora and fauna;

(iv) groundwater;

(v) surface water;

(vi) Aboriginal heritage;

(vii) European heritage;

(viii) transport; and

(ix) Utilities.

A13.1 GEOTECHNICAL

A13.1.1 Background

(a) Geotechnical investigations have been carried out in 3 phases in preparation for the new Perth Stadium Project.

(b) The Stadium, Sports Precinct and Off-Site Infrastructure are planned to be located on relatively low-lying ground adjacent to the Swan River, predominantly on the northern section of the former Burswood Park Golf Course. The shape and appearance of the Burswood Peninsula and adjacent Swan River has changed significantly over time. The Burswood Peninsula was originally described as mudflats with a series of island sand bars. The current shape and form of the Burswood Peninsula is a result of river bank works and infilling comprising a combination of dredged material sourced from the river, uncontrolled fill deposited when the Site was used as a refuse tip and a containment barrier of clean sand fill.

A13.1.2 Investigation of subsurface conditions

(a) (**Scope of geotechnical investigations**) The extent of the Phase 1, 2 and 3 geotechnical investigations for the Site includes the following:

(i) The Phase 1 geotechnical studies for the Sports Precinct comprised a desktop study, collation of existing data and limited cone penetration testing on site. The results of this work are reported by Proposed Master Plan-Burswood Peninsula, Summary of Available Geotechnical Information, Ref 117642147-001-R-Rev2, March 2012, Golder Associates.

(ii) The Phase 2 geotechnical and hydrogeological studies included field investigations and laboratory testing work. The results of this work are reported as follows:

A A factual geotechnical and hydrogeological report providing the results of the field investigation and laboratory tests for the Stadium and Sports Precinct, *Geotechnical Factual Report, Master Plan Study Phase, New Perth Stadium and Sports Precinct, Burswood*, Ref 127642046-002-Rev1, October 2012, Golder Associates;

B An interpretive report summarising conceptual engineering geological and hydrogeological models and key geotechnical issues and risks for the Sports Precinct development along with potential mitigation measures, *Geotechnical Interpretive Report, Master Plan Study Phase, New Perth Stadium and Sports Precinct, Burswood*, Ref 127642046-003-R-Rev0, October 2012, Golder Associates;

C A factual geotechnical report providing the results of field investigations and laboratory tests for the transport infrastructure upgrade, *Geotechnical Factual Report, Master Plan Study Phase, Transport Infrastructure for New Perth Stadium, Burswood*, Ref 127642046-010-Rev0, October 2012, Golder Associates;

D A report assessing the composition of fill encountered across the Sports Precinct and associated transport infrastructure sites, *Composition of Uncontrolled Fill, New Perth Stadium and Associated Transport Infrastructure, Burswood*, Ref 127642046-017-R-Rev1, November 2012, Golder Associates;

E A factual geotechnical report providing the results of supplementary field investigations and laboratory tests for the Stadium and Sports Precinct, *Supplementary Geotechnical Factual Report, Master Plan Study Phase, New Perth Stadium and Sports Precinct, Burswood*, Ref 127642046-012-Rev1, November 2012, Golder Associates);

F A preliminary hydrogeological investigation of the site including 2D modelling of the groundwater system, *Geotechnical Factual Report, Master Plan Study Phase, New Perth Stadium and Sports Precinct, Burswood*, Ref 127642046-008-R-Rev2, November 2012, Golder Associates;

G An interpretive report summarising conceptual engineering geological and hydrogeological models and key geotechnical issues and risks for transport infrastructure areas along with potential mitigation measures, *Geotechnical Interpretive Report, Master Plan Study Phase, Transport Infrastructure for the New Perth Stadium, Burswood*, Ref 127642046-011-R-Rev 0, November 2012, Golder Associates; and

H A conceptual design of ground improvement for the Irrigation Lake and Pitch areas in the site, *Conceptual Design of Ground Improvement, Preconstruction Site Works, Proposed New Perth Stadium and Sports Precinct, Burswood*, Ref 127642088-001-R-Rev0, October 2012, Golder Associates.

(iii) Subsequent Phase 3 investigations, which included field investigations, laboratory testing work and engineering analysis and interpretation, were conducted and comprise:

A A 3D hydrogeological modelling report for the site, *Groundwater* Modeling *Report, New Perth Stadium*, Ref 127643056-029-R-Rev0, May 2013, Golder Associates;

B A factual geotechnical investigation report for modifications to the State Tennis Centre, *Geotechnical Factual report,*

Proposed Modifications to State Tennis Centre, Victoria Park Drive, Burswood, Ref 127642133-019-Rev0, January 2013, Golder Associates;

C A factual geotechnical investigation report for the proposed bridges, retaining walls and Pedestrian Underpass on VPD adjacent to the existing Belmont Park train station, *Geotechnical Interpretive Report, Victoria Park Drive Bridges and Pedestrian Underpass, Burswood*, Ref 127642133-022-R-Rev0, Golder Associates;

D A ground improvement design for the Rail Reserve, *Ground Improvement Design, Rail Tracks and Platforms, Transport Infrastructure Upgrade for the new Perth Stadium Burswood*, Ref 127642133-024-R-Rev0, April 2013, Golder Associates;

E A factual report on additional geotechnical investigations in the Sports Precinct Area, *Geotechnical Factual Report, Phase 3A Geotechnical Investigation, New Perth Stadium and Sports Precinct, Burswood*, Ref 127642133-018-R-Rev0, March 2013, Golder Associates;

F A factual geotechnical investigation report for the proposed rail tracks and platforms associated with the rail infrastructure upgrade works for the new Perth Stadium, *Geotechnical Factual Report, Rail Tracks and Platforms, Transport Infrastructure Upgrade for the New Perth Stadium, Burswood*, Ref 127642133-025-R-Rev0, March 2013, Golder Associates; and

G An interpretive geotechnical report on the VPD bridges and Pedestrian Underpass, *Geotechnical Interpretive Report, Victoria Park Drive Bridges and Pedestrian Underpass, Burswood*, Ref 127642133-022-R-Rev0, March 2013, Golder Associates.

(iv) The State may undertake additional Phase 3B geotechnical investigations in the Sports Precinct, which may include:

A geotechnical site investigations at various borehole sites on land and over water in the Irrigation Lake; and

B geotechnical investigations over water on the alignment of the proposed SRPB, at likely bridge pier locations.

(b) (**Summary of findings**) The results of the geotechnical investigations have been used to develop conceptual engineering geological and hydrogeological models within the Site (refer to geotechnical reports for details).

A13.1.3 Geotechnical Risks

(a) Some of the key geotechnical issues and risks for the Stadium and Sports Precinct are outlined in this clause A13.1.3 (refer to geotechnical reports included in the Project Information for further details). Project Co is required to take into account all risks in relation to the Site notwithstanding whether or not it is listed in this clause A13.1.3.

(b) Potentially contaminated uncontrolled industrial landfill is present across the Site and typically extends to a depth of between about 4m and 8m, leading to the following risks:

(i) ground settlement or collapse caused by soil migration or collapse of voids within the landfill;

(ii) obstructions to piling and other construction works will be caused by items such as concrete, steel, wire and timber; and

(iii) temporary changes in groundwater quality and flow may be caused by the PCS Works. A groundwater management system may need to be designed and operated to accommodate these changes during construction.

(c) At least two palaeochannels run through the Site, one of which is infilled with relatively weak and highly compressible Swan River Alluvium to a maximum depth of about 32m, leading to the following risks:

(i) the Site is currently likely to be experiencing vertical and horizontal ground movements in response to previous placement of fill. Any new loading of the Site will trigger significant additional vertical and horizontal ground movement that may continue to occur over many decades;

(ii) excessive rapid loading of the Site without adequate design could lead to foundation failure through the relatively weak Swan River Alluvium;

(iii) the founding conditions for piles are variable; and

(iv) differential settlements and lateral ground movement will need to be considered between piled and non-piled areas or structures. Regular maintenance may be required to correct gradients, steps and cracks that develop in response to differential settlement.

(d) DBFM Works in the vicinity of Goongoongup Rail Bridge and Windan Bridge must consider the previous ground movements in this area and the history of movement related damage, assessment and repair at Goongoongup Rail Bridge. Subsequent works in the vicinity, especially loading, unloading or dewatering must consider the possible effects on the bridges, and be in accordance with PTA's *Guidelines for working in and around the PTA Rail Reserve*, Rev 0 dated 24 March 2012.

A13.1.4 Ground improvement and earthworks

(a) Significant vertical and horizontal movement of the ground surface is likely to be occurring currently and further movement will occur in the future in response to earthworks for the Stadium and Sports Precinct. These movements will have a significant bearing on the design and construction of the Stadium, Sports Precinct and Off-Site Infrastructure and future maintenance requirements.

(b) Project Co must undertake further investigation of the management of surface and sub-surface drainage at and from the Site to maintain serviceability of the Stadium, Sports Precinct and Off-Site Infrastructure.

(c) Project Co must prepare a Geotechnical Interpretive Report to demonstrate the basis of geotechnical and hydrogeological design for the various elements of the DBFM Works.

(d) Project Co must undertake a comprehensive program of geotechnical and structural monitoring during and post-construction, to be detailed in an Instrumentation and Monitoring Plan, to ensure the DBFM Works meet Project Co's geotechnical requirements.

(e) Prior to commencing site works, Project Co must ensure that property condition surveys are undertaken to establish the condition of all properties in the zone of influence determined by Project Co or as reasonably requested by the public, and of all Utilities (including railway services), buildings or infrastructure elements that could be affected by construction activities.

(f) Project Co must record and maintain a time history of movements and any defects from Technical Completion to Handover.

(g) The requirements for the Geotechnical Interpretive Report and the Instrumentation and Monitoring Plan are outlined in Schedule 19 (Plans) of this Agreement.

A13.1.5 Support of structures

Due to the relatively poor subsurface conditions across the Site, all major structures may need to be supported on piles. All piles may need to be designed to allow for down-drag forces caused by vertical soil movement and horizontal loading caused by horizontal soil movement.

A13.2 CONTAMINATION

A13.2.1 Background

(a) Lot 300 and 307 have been classified by the former Department of Environment and Conservation (**DEC**) under the *Contaminated Sites Act 2003* (WA) as 'possibly contaminated – investigation required'. Lot 304 is classified as 'remediated for restricted use', as remediation works have been carried out within the transport corridor to remove an area of soil containing free asbestos fibres and open areas have been capped with Clean Fill or mulch; however, it is presumed that asbestos impacted soil may remain within the transport corridor area. The classification on Lot 304 requires a site management plan to be prepared for any ground intrusive works within Lot 304. The Construction Environmental Management Plan to be prepared by Project Co must address any requirements of the *Contaminated Sites Act 2003* (WA) with respect to Lot 300, Lot 307 and Lot 304. Lot 12057 has not been classified by DEC under the *Contaminated Sites Act 2003* (WA), but must be managed in the same manner as all other contaminated parcels of land within the Site boundary.

(b) Project Co must provide all required information to assist the State in progressing classification or re-classification of the Site under the *Contaminated Sites Act 2003* (WA).

(c) Once the Site has been demonstrated to be suitable for the proposed land use with no unacceptable risks to human health or the environment resulting from this land use, the Contaminated Sites Auditor will make a recommendation to the Department of Environment Regulation (**DER**) to classify or re-classify the Site.

A13.2.2 Investigation of Site Contamination

(a) The State has commissioned a Preliminary Site Investigation (**PSI**) for the Project Area, a Sampling and Analysis Plan (**SAP**), and a Detailed Site Investigation (**DSI**) for the Site, in accordance with the DEC's Contaminated Sites Guidelines.

(b) (**Preliminary Site Investigation**) A Preliminary Site Investigation (**PSI**) was prepared in 2012 (*Preliminary Site Investigation Report, Proposed Perth Major Stadium*, Ref 117643077-005-R-Rev1, May 2012, Golder Associates) with the objective being to collate readily available environmental information, to assess the presence of site contamination concerns, and to identify the environmental constraints for the new Perth Stadium Project. The review identified that:

(i) the landscape and topography of the Project Area has been altered dramatically due to historic industries and the use of the Project Area for disposal of waste;

(ii) industrial activity and waste disposal has created a legacy of Contamination, potential Contamination and data gaps of unknown Contamination issues within the Project Area;

(iii) a number of limited investigations have been undertaken within the Project Area;

(iv) data gaps relate to assessment of Contaminated soil, groundwater, and landfill gas;

(v) there are potential Contamination and environmental constraints relevant to the development of the Stadium and Sports Precinct;

(vi) the major Contamination concerns are largely associated with the historical land use activities over the Burswood Peninsula.

(c) As a result, the PSI made the following recommendations:

(i) undertake Contaminated soil, groundwater, and landfill gas investigations for the Project Area, and assess potential impacts to the Swan River; and

(ii) assess the presence of potential Acid Sulphate Soil (ASS) and actual ASS, and the potential impact on nearby sensitive receptors i.e. Swan River, lakes and associated flora and fauna.

(d) (**Sampling and Analysis Plan**) A SAP was prepared in 2012 (*Sampling and Analysis Plan and Data Quality Objectives, Environmental Investigation, Proposed Perth Major Stadium,* Ref 117643077-006-R-Rev3, July 2012, Golder Associates*)* (**SAP Report**) based on findings of the PSI. The SAP provides a comprehensive guide for the collection of soil, landfill gas, groundwater, sediment, surface water and soil gas data for an evaluation of potential risks and remediation requirements.

(e) The Contaminated Sites Auditor has reviewed the desktop environmental assessment, PSI and SAP. The current audit boundary and the four stages for the contamination investigation are identified below and on Plan 3 (State Obtained Authorisations Plan – *Contaminated Sites Act 2003* (WA) in Schedule 11 (Site Plans) of this Agreement and include a portion of the Swan River and the East Perth area to allow for the location of the proposed SRPB:

(i) Stage 1 - the 'Northern Nine Holes' of the former Burswood Park Golf Course, including the Swan River foreshore;

(ii) Stage 2 - the Rail and Road Transport Network Upgrades;

(iii) Stage 3 - the East Perth foreshore and the Swan River; and

(iv) Stage 4 - the State Tennis Centre and the Clubhouse.

(f) (**Detailed Site Investigation**) The DSI has been undertaken in stages in accordance with the respective stages of the SAP Report. The Stage 1 DSI which extends over the Site implements the Stage 1 SAP included in the SAP Report

(g) The Stage 1 DSI includes soil, sediment, surface water, groundwater, acid sulfate soils and landfill gas sampling and analysis. The Stage 1 DSI was completed in late 2012 and the DSI report is currently being finalised in liaison with the Contaminated Sites Auditor (*New Perth Stadium Stage 1 Detailed Site Investigation Interpretive Site Contamination Report*, Ref 127643056-010-R-RevO, July 2013, Golder Associates). The DSI identified:

(i) elevated levels of contaminant concentrations, in particular nutrients and metals, in soil, sediment, surface water and groundwater;

(ii) ASS as being present in all lithologies within the Site (except the yellow and orange sandy fill capping layer). The high risk natural materials detailed in the SAP Report correlated to shallow expressions of the Swan River Alluvium. These river alluviums are known to be sufidic across the metropolitan area in locations close to the Swan River. The underlying Sandy Channel Deposits are also potentially ASS and the uncontrolled fill within the landfill areas has also been identified as ASS and is considered likely to have become ASS since placement at the Site; and

(iii) ground gases, including methane, were detected at high concentrations, but with nil to negligible flow rates and pressures. Ground gases will need to be appropriately managed.

(h) A SAP has been prepared for the land based Stages 2 and 3 and was implemented in late 2012 (*Sampling and Analysis Plan for Stage 2 and Stage 3, New Perth Stadium Detailed Site Investigation*, Ref 127643056-020-R-Rev1, November 2012, Golder Associates). Land based Stages 2 and 3 are external to the Site and include the areas that are likely to be affectedd through the adjacent rail and road works and the proposed SRPB.

(i) A separate SAP has been prepared for the water based Stages 1 and 3 which reflect the areas of potential impact from construction of the Sports Precinct. The Stages 1 and 3 portions of the Swan River are included within the audit boundary. As such, a separate SAP for the baseline estuarine studies has been prepared in general accordance with the DEC's Contaminated Sites Guidelines and was implemented in early 2013 (*Sediment and Water Quality Sampling and Analysis Plan, Proposed Burswood Stadium*, Ref 111214701, December 2012, RPS Environment and Planning Pty Ltd. Consultation with the Contaminated Sites Auditor has occurred through each step of the contaminated site investigation with submittal of each report to the Contaminated Sites Auditor for comment and clarification.

A13.3 FLORA AND FAUNA

(a) A series of ecological assessments were undertaken during the desktop environmental assessment including a search of the EPBC Act Protected Matters Register which resulted in no matters identified on the Register of National Estate being within the Project Area. No known occurrences of Threatened Ecological Communities (**TEC**) were recorded on the DEC Flora and Fauna Division database, similarly none were found on the Threatened Flora Database (**DEFL**), the WA Herbarium database (**WAHerb**) or the Priority Flora Species List. As part of the EPBC Act search and a subsequent request to the Birds Australia division, one bird species, Carnaby's Black Cockatoo, was identified on both the EPBC and WA Lists as an endangered species.

(b) A Level 1 flora survey was undertaken in 2012 over the former Burswood Park Golf Course area. The survey identified that the area contains little vegetation that is ecologically significant in itself and noted that most existing vegetation showed signs of degradation. Much of the vegetation observed was introduced and not representative of regional flora or vegetation, or consisted of species common to wetlands within the region. No remnant native vegetation was identified; however, the vegetation is likely to be of habitat value to many of the common waterbirds and amphibian species identified on the site.

(c) An avian and non-avian fauna survey was undertaken in 2012. The non-avian fauna survey found that the greatest ecological value of the survey area is likely to be estuarine fish and invertebrates using the northern lake that is hydraulically connected to the Swan River (River-Fed Lake). Findings from the specialist avian fauna survey noted that although the Burswood Peninsula area has a rich assemblage of bird species, it was advised that most of the birds present are not of listed conservation significance. A review of previous avian fauna surveys conducted over the former Burswood Park Golf Course identified migratory birds to be present, albeit in low population numbers, and noted the Carnaby's Black Cockatoo and Red-tailed Black Cockatoo to frequently visit the mature Sheoaks (*Casuarina obesa*). The Burswood Peninsula area is considered to be of local value for some fauna, but most notably for waterbirds that rely on the network of artificial lakes.

(d) An aquatic fauna survey conducted in late 2012 identified the presence of locally significant long-necked turtles within the artificial lakes of the former Burswood Park Golf Course. Turtles are to be captured and relocated from the southern Irrigation Lake prior to filling during the PCS Works.

A13.4 GROUNDWATER

(a) Various groundwater assessments have been completed for the new Perth Stadium Project. The principal hydrogeological issues identified are associated with changes in the groundwater levels and flow beneath the Site primarily as a result of the groundwater expelled from the Swan River Alluvium during the proposed construction period. The main components that may affect groundwater beneath the Site are ground improvement works, including surcharging with wick drain installation, piling and stone columns.

(b) Groundwater flow modelling and a nutrient load assessment based on the State's conceptual ground improvement design of surcharging with wick drains identified the potential for mobilisation of nutrient-rich groundwater from the Swan River alluvium unit. This could be expelled into the groundwater within the fill unit, which has the most direct connectivity with the Swan River. Based on the State's conceptual design of surcharging and wick drain installation, the groundwater modelling identified that groundwater management would be required to reduce additional nutrient loading to the Swan River. If nutrient rich or Contaminated groundwater is identified as mobilising towards the Swan River (or River-Fed Lake) during preparation and assessment of the detailed construction methodology, groundwater management and mitigation measures will be required to be developed and implemented by Project Co to maintain current water quality and if possible, improve water quality mobilising to the Swan River.

A13.5 SURFACE WATER

The Swan River is the dominant surface water feature and bounds the Burswood Peninsula to the north, east and west. Additionally, there are a number of artificial lakes of various sizes located within part of the former Burswood Park Golf Course, however only two (2) are located within the Site. The most southern lake is the Irrigation Lake and the northern lake is the River-Fed Lake which is hydraulically connected to the Swan River system.

A13.6 ABORIGINAL HERITAGE

(a) The Department of Aboriginal Affairs (**DAA**) has advised of Aboriginal Cultural Heritage Sites on or near the Site, as identified in **Table 4**: Summary of Sites Listed on Register of Aboriginal Heritage Sitesof this clause A13.6. As such the consent of the Minister for Aboriginal Affairs under Section 18 of the *Aboriginal Heritage Act* (1972) is required before works can commence.

(b) The State will retain responsibility for, and assume the risk of, Aboriginal heritage approvals in relation to the Site.

(c) The Section 18 Notice was lodged with the DAA on 16 November 2012 and was considered by the Aboriginal Cultural Material Committee (**ACMC**) on 8 May 2013. The Minister for Aboriginal Affairs granted conditional consent to the Section 18 Notice on 30 May 2013. The boundaries of the Section 18 consent are shown on Plan 9 (Aboriginal Cultural Heritage Sites) included in Schedule 11 (Site Plans) of this Agreement.

(d) The Minister's consent is subject to two conditions.

  (i) Condition 1 requires the provision of a written report to the Registrar of Aboriginal Sites within 60 days of the completion of the Purpose advising whether and to what extent the Purpose has impacted on all or any Aboriginal Sites located on the Land.

  (ii) Condition 2 requires the provision of records and reports to the Registrar of Aboriginal Sites, in consultation with the Aboriginal people consulted in relation to the Section 18 Notice and an archaeologist, the discovery of Aboriginal cultural material found during the performance of the Purpose. If the cultural material is assessed by the Aboriginal people consulted and the archaeologist as significant, it must be salvaged and stored in accordance with best practice.

(e) An Aboriginal Heritage Management Plan (incorporating a Monitoring Management Plan) and an Aboriginal Engagement Strategy will be prepared by the State in consultation with the Whadjuk Working Party to identify the engagement and management practices to be implemented for the DBFM Works.

(f) Project Co must provide all required information to assist the State in satisfying the requirements of the conditions of the Section 18 consent. Project Co must comply with the State's Aboriginal Heritage Management Plan and Aboriginal Engagement Strategy in performing the DBFM Works.

Table 4: Summary of Sites Listed on Register of Aboriginal Heritage Sites

Aboriginal Heritage Sites within Project Area (open access, no restriction)		
Site Name (ID)	Status	Site Type
Swan River (3536)	Registered Site	Mythological
Burswood Island (3701)	Registered Site	Ceremonial, Artefacts/Scatter
Burswood Island Burial (15914)	Registered Site	Skeletal material/Burial
Burswood Island Camp (15915)	Registered Site	Camp
Burswood Island	Registered Site	Artefacts/Scatter

A13.7 EUROPEAN HERITAGE

(a) A desktop review of the European heritage of the Burswood Peninsula and specifically the Site was commissioned by the State and is reported in *Burswood Stadium Heritage Review, April 2012, Dr Sue Graham Taylor.* The report examined historic land uses including recreation, waste disposal and redevelopment.

(b) The State will retain responsibility for, and assume the risk of, European heritage approvals in relation to the Site.

(c) (**Early settlement**) The desktop review identified that at early settlement the Burswood Peninsula had been used for agricultural activities including market gardens and a piggery, which continued until the turn of the 20th century under various owners and tenants. It was during this period that the Burswood Canal was constructed (1831) connecting the deeper waters found at Maylands to the east and East Perth to the west of the Burswood Peninsula . The Burswood Canal is generally acknowledged as one of Perth Colony's first public works programmes and is included on the State Register of Heritage Places pursuant to the *Heritage of Western Australia Act 1990* (WA). It is not anticipated that the Stadium or Sports Precinct works will affect the Burswood Canal.

(d) (**Recreation**) The Burswood Peninsula was used for recreation from its earliest days. In August 1895, Western Australia's first public golf course opened and operated on the Burswood Peninsula until 1900. Soon after the closure of the golf course, the Western Australian gold rush saw horse racing surge in popularity, with an unregistered race track being developed and made permanent in 1905, renamed as the Belmont Park Racecourse and formally registered with the Western Australian Turf Club (**WATC**) as the Belmont Park Racing Club.

(e) A second race course on the adjoining land to the south of Belmont Park, within the Site, was subsequently developed, to be known as the Goodwood Racecourse. This area was first built up with sand and railway ash before being planted with grass, with the track's first meeting held on 17 August 1912.

(f) Both Belmont Park and Goodwood were well patronised until in 1943, when the WATC purchased both tracks, putting an end to proprietary racing in Western Australia. Goodwood Track closed in 1950.

(g) (**Waste disposal**) As part of its Swan River Improvement Plan, which was being implemented under the *Swan River Improvement Act 1925* (WA), the Western Australian Government proposed to dredge the shallow waters of the Swan River in the vicinity of Maylands, East Perth, Victoria Park and South Perth. This required land upon which to dump the river soils. Industry was already established within the vicinity of Claisebrook, including the East Perth Power Station (1916), the gas works (1922) and the sewer works (1912) (the sewer works comprising of the treatment plant at Claisebrook with the filter beds located on the Burswood Peninsula linked by an underwater siphon pipe). The Western Australian Government proposed to fill the Burswood Peninsula with the river soils and ash from the Power Station and railway engines, to create an industrial estate. This was to be a continuation of the activities of Swan Portland Cement and James Hardie, which had established business operations on the Burswood Peninsula in 1914.

(h) The Western Australian Government purchased Goodwood Racecourse in 1950, but strong public opposition faced the industrial estate and the plan to develop Burswood as an industrial estate was eventually abandoned, due to the financial cost involved.

(i) In 1950 Cabinet set aside the Burswood Peninsula as a reserve for public recreation, with studies undertaken to further the area's use as a major sports centre. It was found that although the area had a derelict appearance, that with careful landscaping and improvements to the Belmont Park Race Course, the area could be developed as a comprehensive sporting precinct. The Stephenson Hepburn Report (1955) supported this concept of a comprehensive centre for sporting activities, and for all facilities to meet full Olympic standard, even elaborating on the concept of a football stadium.

(j) Despite the plans for a sporting complex, the Burswood Peninsula remained as an operational rubbish dump (which commenced operations circa 1942) until 1972, when it

was closed until December 1978, at which time the Perth City Council resumed dumping of household and commercial waste on the Burswood Peninsula.

(k) (**Redevelopment**) In the mid 1980's the role of the Burswood Peninsula as a sporting destination was realised, complementing the Belmont Park Racecourse. In June 1985 the Council was advised that the disposal services had to cease as the land was required for the former Burswood Park Golf Course, confirming the Burswood Peninsula as a recreational precinct.

A13.8 TRANSPORT

(a) The Burswood Peninsula is serviced by significant arterial road and rail infrastructure, including the Graham Farmer Freeway, Great Eastern Highway and the Armadale rail line through the Burswood Station (and the existing Belmont Park Train Station during events). The geography of the Burswood Peninsula, however, results in a site which is relatively isolated, with transport access limited to a single road (VPD).

(b) The physical challenges of the Peninsula as well as the unique nature of the Stadium land use with its associated transport demand profile have been considered and addressed in developing an appropriate transport strategy for the new Perth Stadium Project. Importantly, the transport demands of the Stadium have been considered in the context of the wider Perth metropolitan region, with the significant infrastructure and operational requirements of this facility addressed as part of a comprehensive transport solution.

(c) Transport planning has been undertaken by the PTA to inform the Master Plan and to provide the basis for the new Perth Stadium Transport Project Definition Plan **(Transport PDP)** prepared by PTA and approved by the Western Australian Government in December 2012. The following investigations were undertaken by the PTA in developing the transport strategy for the new Perth Stadium Project:

(i) capacity analysis of the road and public transport networks to determine current and future capacity of the transport network;

(ii) transport demand forecasting based upon the geographic location of potential Patrons. The demand forecasts and distributions are based upon analysis of current Patersons Stadium data, as well as analysis of membership details provided by the West Coast Eagles and the Fremantle Dockers football clubs;

(iii) "Paramics" micro-simulation traffic modelling for the Burswood Peninsula based on forecast Perth Metropolitan 2030 traffic volumes;

(iv) bus modelling considering forecast number of bus patrons and destinations to infill between existing rail services;

(v) pedestrian modelling to assess the required size for crowd circulation spaces within the Sports Precinct sized for all types of Events;

(vi) parking analysis undertaken by Department of Planning to determine the number and location of public car parking bays available in East Perth and the Perth CBD; and

(vii) bridge assessment to consider the role of the proposed SRPB, as well as capacity and to identify the recommended bridge landing point.

(d) The outcome is a transport strategy to service 60,000 Patrons, with approximately 83% accommodated by public transport (rail and bus), and the remainder by private vehicle, taxi, foot and bicycle. Limited on-site vehicle parking is offset by opportunities for external parking in the Perth central business district and East Perth, serviced by a shuttle-bus service providing a drop-off service at the proposed Nelson Avenue Special Event Bus Stands and pedestrian access to the Stadium via the SRPB.

A13.9 UTILITIES

(a) The existing Utilities servicing the Burswood Peninsula were investigated through a desktop review of servicing infrastructure reports previously prepared for other

developments on the Burswood Peninsula and through liaison with the Utility Companies including the Water Corporation, Western Power and Telstra. The investigations revealed the limited extent of Utilities supply on the Burswood Peninsula, mostly undertaken incrementally in association with development projects such as the Crown Perth complex and the Mirvac residential development. The existing Utilities have limited capacity and major new Utility Infrastructure is required to serve any major new development proposals within the Burswood Peninsula.

(b) The State will provide Utilities to the Site including water and power as part of the Stadium Support Works. Refer to Chapter A9 (State Works) of these Design Specifications and Schedule 21 (Schedule of State Works and Surrounding Works) of this Agreement.

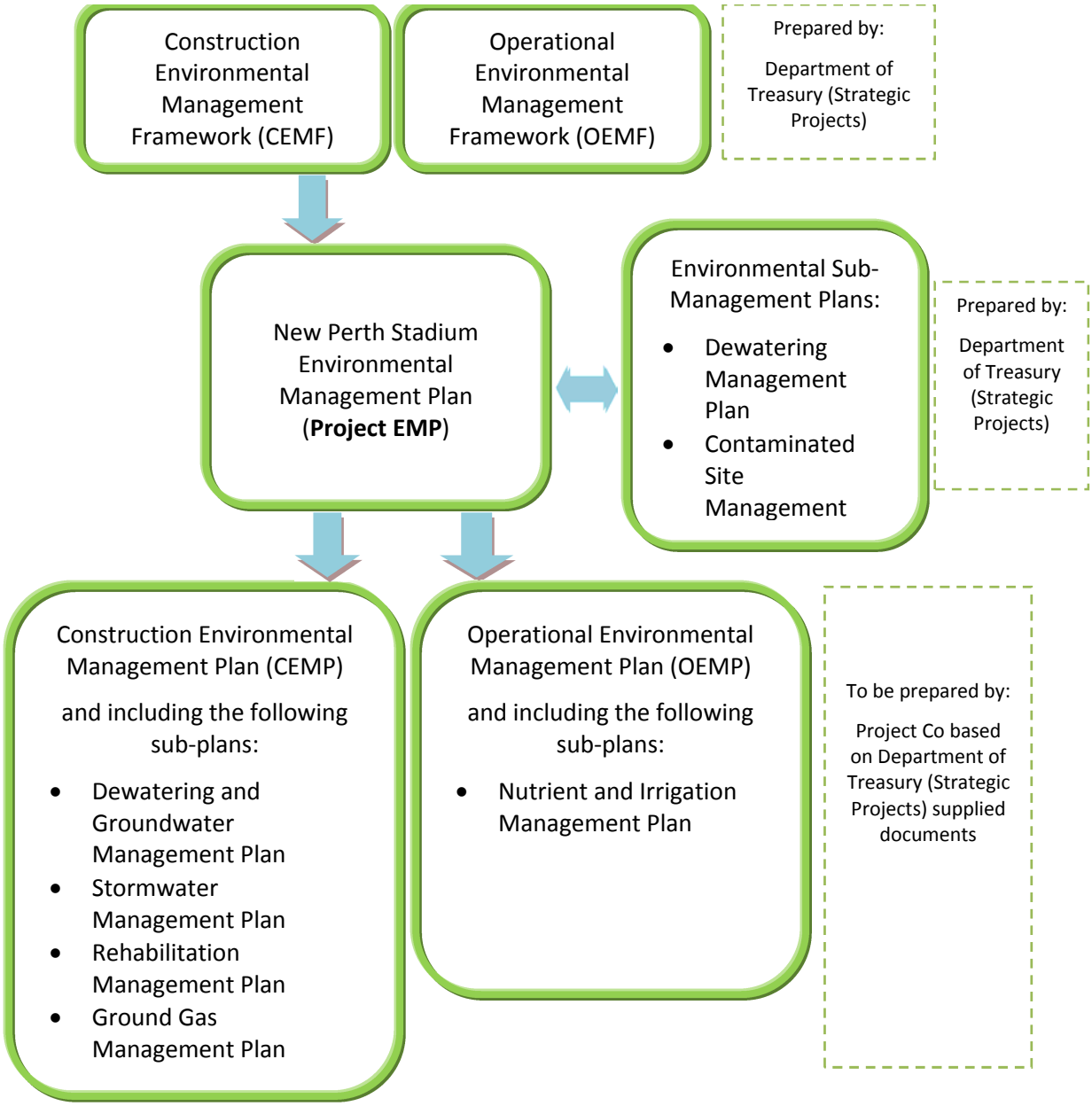
A14 ENVIRONMENTAL MANAGEMENT

A14.1 ENVIRONMENTAL MANAGEMENT STRATEGY

A14.1.1 General

(a) The Environmental Management Strategy adopted for the new Perth Stadium Project (which considers both environmental and social factors) is illustrated in Figure 1 and its objectives are outlined in the State's Environmental Management Strategy Documents.

Figure 1: New Perth Stadium Environmental Management Strategy



(b) The Environmental Management Strategy Documents include the:

(i) Construction Environmental Management Framework (CEMF);

(ii) Operational Environmental Management Framework (OEMF);

(iii) new Perth Stadium Environmental Management Plan (Project EMP) and

(iv) Environmental Sub-Management Plans:

A Dewatering Management Plan; and

B Contaminated Site Management Plan.

(c) The Environmental Management Strategy Documents recognise the Land Conditions and specify management and mitigation measures and monitoring procedures for avoiding potential environmental impacts (including social impacts).

(d) The environmental management objectives for the new Perth Stadium Project articulated in the Environmental Management Strategy Documents are to:

(i) minimise and manage the environmental and social impacts arising from new Perth Stadium Project works;

(ii) manage Contamination through monitoring of groundwater, surface water, soil, air quality and ground gas during the D&C Phase of the new Perth Stadium Project and into the Operating Phase;

(iii) implement environmental management practices to manage environmental and social impacts resulting from the new Perth Stadium Project;

(iv) manage emissions (including air and noise) so they do not adversely affect environment values or the health, welfare and amenity of people and land uses; and

(v) comply with conditions set on the new Perth Stadium Project, if any, and applicable legislation and guidelines produced by the relevant Authorities.

(e) In accordance with the Environmental Management Strategy Documents, Project Co must prepare and implement, as a minimum, the following:

(i) Construction Environmental Management Plan (CEMP);

(ii) Dewatering and Groundwater Management Plan;

(iii) Stormwater Management Plan;

(iv) Rehabilitation Management Plan;

(v) Ground Gas Management Plan; and

(vi) Operating Environmental Management Plan (**OEMP**).

(f) Project Co's Environmental Management Documents must be prepared and implemented to the satisfaction of the State as the holder of the Environmental Authorisations.

(g) Project Co's Environmental Management Documents will be provided by the State to the Swan River Trust, Department of Environment Regulation (**DER**), Department of Water (**DoW**) and the DER accredited Contaminated Sites Auditor for review and comment prior to approval by the State.

A14.1.2 Environmental Management Frameworks

(a) The purpose of the CEMF and OEMF is to outline the new Perth Stadium Project's environmental objectives and environmental commitments for the D&C Phase and Operating Phase.

(b) The CEMF and OEMF have been developed by the State. The content of the CEMF and OEMF was used to develop the environmental management and mitigation measures, and monitoring procedures for the new Perth Stadium Project within the Project EMP. The CEMF and OEMF were submitted with the Part 1 referral to the EPA under Section 38 of the EP Act, as outlined in A10.1.3.

A14.1.3 Project EMP

(a) The Project EMP is the key document in the Environmental Management Strategy for the new Perth Stadium Project and its purpose is to describe the:

(i) potential environmental impacts;

(ii) environmental management and mitigation measures;

(iii) environmental monitoring procedures;

(iv) applicable standards, guidelines and legislation;

(v) limits and targets for all work occurring during the new Perth Stadium Project;

(vi) reporting and audit schedule; and

(vii) other relevant environmental management mechanisms.

(b) The Project EMP includes the Environmental Sub-Management Plans that have been prepared by the State to meet specific environmental management of, and appropriate compliance with, any conditions, licences, permits, consents and approvals.

(c) The Project EMP was prepared by the State, and is based on the content of the CEMF, OEMF and the findings of the DSI, and supported by the relevant regulatory agencies and the DER accredited Contaminated Sites Auditor.

(d) Project Co must assist the State comply with its obligations under the Project EMP during both the D&C Phase and the Operating Phase.

A14.1.4 Environmental Sub-Management Plans

(a) The State has prepared the following Environmental Sub-Management Plans:

(i) Dewatering Management Plan; and

(ii) Contaminated Site Management Plan.

(b) The purpose of the Environmental Sub-Management Plans is to identify and manage particular key environmental issues including the management of groundwater that will potentially be mobilised to the Swan River and the management of contaminated media (soil, air, water) and ASS.

A14.1.5 Project Co's Environmental Management (D&C Phase)

(a) (**General**) To give effect to the Environmental Management Strategy Documents, Project Co's environmental commitments during the D&C Phase must, as a minimum, include the following:

(i) preparation of a CEMP;

(ii) preparation of a Dewatering and Groundwater Management Plan;

(iii) preparation of a Stormwater Management Plan;

(iv) preparation of a Ground Gas Management Plan;

(v) preparation of a Rehabilitation Management Plan;

(vi) preservation of the riparian flora and vegetation in the Swan River buffer zone between the Swan River and the River-Fed Lake to minimise erosion, maintain bank stability and maintain habitat for terrestrial and aquatic fauna;

(vii) retention and management of the River-Fed Lake to maintain a lake environment for fish and avian breeding to take place;

(viii) installation of a weather station and monitoring of weather conditions to ensure unfavourable works (e.g. causing excessive dust or odours or both) are not undertaken during unsuitable weather conditions;

(ix) development and implementation of environmental monitoring procedures, including groundwater, surface water, air quality and ground gas monitoring;

(x) preparation and implementation of a Materials Tracking System (MTS) to document all materials brought onto the Site and all stockpiling, placement of all materials (whether clean or otherwise) within the Site and the placement and movement of all materials (whether clean or otherwise) going off Site, including quantities. The PCS Works Contractor will provide Project Co with the PCS Works MTS for incorporation into the Project Co MTS. The MTS records must be provided to the State's Representative on request;

(xi) staging as much of the clearing and construction works as possible to manage the duration of unsightly works, and to minimise the disruption of public access to and along the foreshore adjacent to the new Perth Stadium Project area where possible;

(xii) preparation and implementation of an air quality monitoring programme (including requirements for both public and occupational monitoring) by a suitably qualified professional, including consideration of potential airborne asbestos impacts;

(xiii) minimisation of waste through the adoption of best practice waste reduction and disposal procedures consistent with the EPA waste hierarchy of avoidance, reduction, reuse, recycle and treat with disposal as the last resort, where possible;

(xiv) re-use and dispose of excavated soil material in an environmentally acceptable manner, consistent with requirements of the Project Environmental Management Documents, relevant Laws and relevant Authorities;

(xv) preparation and implementation of a separate noise management plan if required by and in accordance with the Environmental Protection (Noise) Regulations 1997 (WA);

(b) All environmental monitoring must be conducted by a suitably qualified environmental representative, and where appropriate, collection of samples should be undertaken in accordance with the SAP Report approved by the Contaminated Site Auditor and all samples are to be submitted to a NATA accredited laboratory.

(c) Project Co must engage a suitably experienced environmental auditor to conduct regular internal Environmental Audits to assess compliance with the Environmental Management Documents. The results of the internal audits and any non-conformances identified must be reported to the State in the monthly environmental compliance report.

(d) Project Co is responsible for obtaining relevant work specific Environmental Authorisations before commencement of the relevant Works and ensuring that all environmental approval commitments and conditions are integrated into the CEMP.

(e) Project Co must provide a monthly and annual environmental compliance report and an Environmental Compliance Completion Report at the end of the D&C Phase. The environmental compliance reports are to report on environmental activities, environmental monitoring results, audit results, non-conformances, environmental incidents, public complaints and rehabilitation progress. The Environmental Compliance Completion Report is to address the matters set out in section 16 of the Project EMP.

(f) (**Construction Environmental Management Plan**) Project Co must prepare a CEMP in accordance with the Environmental Management Strategy Documents, in which they will commit to managing the environmental factors relevant to their specific construction activities.

(g) The purpose of the CEMP is to detail how Project Co will comply with the content of the CEMF, the Project EMP and the Environmental Sub-Management Plans.

(h) As part of the CEMP, Project Co must comply with all conditions, licences, permits, consents and approvals relating to the new Perth Stadium Project , including State obtained Authorisations and all other Authorisations.

(i) The CEMP must be approved by the State before any form of work begins on Site.

(j) The CEMP will be provided to the Swan River Trust, DoW, DER and the DER accredited Contaminated Sites Auditor for review and comment prior to approval by the State.

(k) The requirements for the CEMP are outlined in Schedule 19 (Plans) of this Agreement.

(l) (**Dewatering and Groundwater Management Plan**) In accordance with the requirements of the Environmental Management Strategy Documents, Project Co must prepare a Dewatering and Groundwater Management Plan for the Stadium, and Off-Site Infrastructure Sports Precinct. The requirements for the Dewatering and Groundwater Management Plan are set out in Schedule 19 (Plans) of this Agreement.

(m) Project Co must prevent the mobilisation of nutrient-rich or contaminated groundwater to the Swan River (or River-Fed Lake). Active management of groundwater being mobilised

as a potential impact of PCS Works or Project Co Works, such as surcharging with wick drains, may be required to maintain and if possible improve the quality of water entering the Swan River (or River-Fed Lake). This includes treatment and on Site reuse of any groundwater abstracted as a result of the approved groundwater management strategy.

(n) The PCS Works Contractor will design and implement a groundwater management system to mitigate the potential risk of nutrient-rich Swan River Alluvium groundwater entering the Swan River (or River-Fed Lake) through the preferential flow pathways created by surcharging with wick drains.

(o) Project Co must maintain the groundwater management solution commenced during PCS Works, unless it is decommissioned with the State's approval.

(p) Project Co must assess the potential impact of the DBFM Works on groundwater movement towards the Swan River or River-Fed Lake as part of their CEMP.

(q) The Dewatering and Groundwater Management Plan will be provided to the Swan River Trust, DoW and DER for comment and review prior to approval by the State.

(r) (**Stormwater Management Plan**) In accordance with the requirements of the Environmental Management Strategy Documents, Project Co must prepare a Stormwater Management Plan for the Stadium, Sports Precinct and Off-Site Infrastructure which complies with the requirements of all relevant Authorities and is consistent with the following policies and guidelines:

(i) State Planning Policy 2.9 Water Resources (WAPC, 2006);

(ii) State Planning Policy 2.10 Swan-Canning River System (WAPC, 2006);

(iii) Better Urban Water Management (WAPC, 2008); and

(iv) Stormwater Management Manual for Western Australia (DoW, 2004-07).

The requirements for the Stormwater Management Plan are set out in Schedule 19 (Plans) of this Agreement.

(s) The Stormwater Management Plan will be provided to the Swan River Trust, DoW and DER for comment and review prior to approval by the State.

(t) (**Ground Gas Management Plan**) In accordance with the findings of the Detailed Site Investigation and requirements of the Environmental Management Strategy Documents, Project Co must prepare a Ground Gas Management Plan for the Stadium, Sports Precinct and Off-Site Infrastructure which complies with the requirements of all relevant Authorities and is consistent with the following policies and guidelines:

(i) Contaminated Site Management Series Guidelines, available at:http://www.der.wa.gov.au/your-environment/contaminated-sites/61-contaminated-sites-guidelines?showall=&limitstart= ;

(ii) Siting, Design, Operation and Rehabilitation of Landfills Draft (Dec 2005) at http://portal.environment.wa.gov.au/pls/portal/docs/PAGE/DOE_ADMIN/GUIDELINE_REPOSITORY/BPEM.PDF;

(iii) Best Practice Environmental Management Siting, Design, Operation and Rehabilitation of Landfills (EPA Victoria, 2010) at http://www.epa.vic.gov.au/~/media/publications/788%201.pdf;

(iv) Assessing Risks Posed by Hazardous Ground Gases to Buildings (CIRIA, 2007) at http://www.ciria.org/service/AM/ContentManagerNet/Search/SearchRedirect.aspx?Section=Home&content=product_excerpts&template=/contentmanagernet/contentdisplay.aspx&contentfileid=1452; and

(v) Risk Assessment for Methane and Other Gases from the Ground (CIRIA, 1995).

(u) Based on the ground gas monitoring results of the DSI, development within the Stadium and Sports Precinct is currently considered to have a *Characteristic Situation 2 or 3,* requiring two to three levels of gas protection measures and the sealing of all joints and

penetrations, when compared against the international criteria defined in the CIRIA C665 guidance document.

(v) Project Co will be required to prepare a Ground Gas Management Plan to the satisfaction of the State and the Contaminated Site Auditor to demonstrate that all infrastructure, in particular the Stadium superstructure, have been designed appropriately to mitigate the risks posed by ground gases at the Site. The requirements for the Ground Gas Management Plan are outlined in Schedule 19 (Plans) of this Agreement.

(w) The Ground Gas Management Plan will be provided to the Contaminated Sites Auditor for comment and review prior to approval by the State.

(x) (**Rehabilitation Management Plan**) In accordance with the requirements of the Environmental Management Strategy Documents, and in accordance with the landscape requirements in Part C (Design Brief) of these Design Specifications, Project Co must prepare a Rehabilitation Management Plan for the Stadium, Sports Precinct and Off-Site Infrastructure which complies with the requirements of all relevant Authorities.

(y) Rehabilitation will be required within the landscaped areas, River-Fed Lake, north-western area and sections of the Swan River foreshore.

(z) The rehabilitated areas surrounding the major infrastructure will be landscaped with the aim of maintaining the visual amenity of the area as well as creating a safe environment. Plant species used must be local to the region, where practicable (i.e. there will be areas that are lawn-scaped).

(aa) The north-west corner of the Site and River-Fed Lake must be rehabilitated to reflect a natural environmental state providing habitats for local fauna, particularly waterfowl, accessing the area. The objective will be to provide habitat and roosting sites for migratory and threatened birds that accessed the area prior to development of the new Perth Stadium Project. Plant species that are attractive to Black Cockatoos are to be planted in the north-west corner, where practicable.

(bb) The Rehabilitation Management Plan will be provided to the Swan River Trust for comment and review prior to approval by the State.

A14.1.6 Project Co's Environmental Management (Operating Phase)

Project Co's environmental commitments during the Operating Phase, as documented in the Environmental Management Strategy Documents (including the preparation of the OEMP) must, as a minimum, meet the requirements as outlined in Schedule 13 (Services Specifications).

A15 CONSTRUCTION MANAGEMENT

A15.1 WESTERN AUSTRALIAN GOVERNMENT POLICY AFFECTING THE DBFM WORKS

Project Co's obligation to comply with all applicable Western Australian Government policies includes the obligation to comply with the following.

A15.1.1 Better Places and Spaces: A Policy for the Built Environment in Western Australia

(a) The Better Places and Spaces policy was developed by the Office of the Government Architect and launched on 30 January 2013. The Office of the Government Architect is responsible for implementing the policy with the intention of delivering improvements in the quality and performance of Western Australia's built environment. The 'built environment' includes urban spaces; constructed landscapes and places; and elements of public infrastructure. The key to achieving improvements in the quality and performance of our places and spaces lies in recognising the significance and value of good design.

(b) The Better Place and Spaces policy highlights the following Good Design Principles:

(i) responsiveness to context;

(ii) functionality and build quality;

(iii) efficiency and sustainability; and

(iv) innovation and creativity.

(c) Further information on the Better Places and Spaces policy can be found at: http://www.finance.wa.gov.au/cms/uploadedFiles/Building_Management_and_Works/better_places_and_spaces_policy_revised.pdf?n=9793

A15.1.2 Western Australian Government's Building Local Industry Policy

(a) To help implement the Western Australian Government's Building Local Industry Policy, the Preferred Respondent will be required to develop a draft Industry Participation Plan (**IPP**), in accordance with the requirements in Schedule 19 (Plans) of this Agreement. The IPP will outline the Preferred Respondent's project specific approach to the use of competitive local suppliers and other economic and industry objectives.

(b) The Industry Participation Plan must be based on the guidelines produced by the Department of Commerce and provide details of how Project Co will maximise opportunities for local Australian and Western Australian companies to benefit from the DBFM Project.

(c) Project Co will also be required to monitor and report on its implementation of the IPP during the D&C Phase. The frequency of Project Co's reporting will be the subject of negotiation as part of the IPP approval process.

(d) Information relating to the Western Australian Government's Building Local Industry Policy, generic IPP template and reporting template applicable for capital works projects can be found at:

http://www.commerce.wa.gov.au/ScienceInnovation/Content/About_Us/Key_focus_areas/Local_Industry_Participation/Industry_participation_policy_.html

For further information relating to the development of IPPs please contact:

Stephen Grocott,
General Manager,
Industry Participation, Department of Commerce
Stephen.grocott@commerce.wa.gov.au

or

The Industry Participation Branch
Department of Commerce
industry.participation@commerce.wa.gov.au

A15.1.3 Priority Start Building Policy

(a) The Priority Start Building Policy is used by all Western Australian Government Agencies to ensure that the Western Australian Government achieves a significant contribution in the engagement of apprentices in the building and construction industry by:

(i) identifying and rewarding head contractors that maintain a minimum level of apprentice engagement;

(ii) increasing the role and responsibility of head contractors;

(iii) ensuring pre-determined target numbers of apprentices are met through Western Australian Government contracting arrangements; and

(iv) developing a stronger training culture and increased commitment to training within the whole of the building and construction industry through its private works contracts.

(b) The policy can be downloaded at:

http://www.trainingwa.wa.gov.au/apprenticentre/detcms/apprenticeships-and-training/apprenticentre/binary-files/priority-start---building-policy.en?oid=com.arsdigita.cms.contenttypes.FileStorageItem-id-7432615.

A15.1.4 The Western Australian Government's Percent for Art Scheme

The Western Australian Government Percent for Art Scheme allocates up to one percent of the estimated total construction cost of each State capital works project, valued at $2 million and over, to commission Western Australian artwork.

The Percent for Art Scheme is a partnership between the Department of Culture and the Arts and Department of Finance in recognition of the intrinsic value of arts being seen, heard and felt in our buildings and structures.

A provisional sum of $2,000,000.00 is allocated for the Percent for Art Scheme.

To find out more about the Percent for Art Scheme refer to:

http://www.finance.wa.gov.au/cms/content.aspx?id=3728 or

http://www.dca.wa.gov.au/DCA-Initiatives/spaces-and-places/public-art/242/

A15.1.5 Project Signboard Policy

The new Perth Stadium Project signboard erected on Site during the D&C Phase must comply with Building Management and Works' "Signage Guidelines: Capital Works". To find out more about the "Signage Guidelines: Capital Works" refer to:

http://www.finance.wa.gov.au/cms/content.aspx?id=3690

A15.1.6 Building Records Policy

The building records initiative collects stores and maintains hard copy and electronic drawings associated with all Western Australian Government buildings.

The *State Records Act 2000* (WA), in conjunction with the Department of Finance's Building Records Policy specifies CADD drawings as State Archives. Section 3 of the *State Records Act 2000* (WA) defines a State Archive as 'a State Record that is to be retained permanently'.

The CADD Protocols for Contractual Deliverables (**BMW Manual**) serve to meet Department of Finance's legislative obligation to retain State Archive Records in accordance with the requirements of the *State Records Act 2000* (WA).

The BMW Manual aims to:

(a) provide consultants with a set format for all Department of Finance CADD drawings at key project milestones (tender and completion);

(b) ensure Department of Finance is able to capture and retrieve drawings as required by the *State Records Act 2000* (WA); and

(c) enhance consistency across disciplines and improve readability for future users.

Techniques and methods used by consultants throughout the design documentation phase can vary from the requirements in the BMW Manual however 2D Supplementary Drawings related to tender, practical completion (or Technical Completion in the case of the DBFM Project) as well as changes made during the Defects Liability Period, which have been generated outside of the BIM Models, must conform to the prescribed protocols.

The CADD Protocols for Contractual Deliverables is available online at:
http://www.finance.wa.gov.au/cms/content.aspx?id=13146

A15.2 OCCUPATIONAL HEALTH AND SAFETY

A15.2.1 General

(a) Project Co must comply with all OHS Laws.

(b) Project Co must manage its OHS obligations through the implementation of a third party certified safety management system compliant with AS/NZS 4801 Occupational Health and Safety Management Systems and in accordance with OHS Laws.

(c) Project Co must nominate a Safety Representative(s) who is directly responsible to senior management and has defined authority and responsibility for implementing the safety management system operated by Project Co in accordance with AS/NZS ISO 4801 Occupational Health and Safety Management Systems

A15.2.2 Project Co's safety policy and commitment statement

(a) Project Co must have an OHS policy in accordance with AS/NZS 4801 and must include a copy of the policy in the Occupational Health and Safety Plan as outlined in Schedule 19 (Plans) of this Agreement.

(b) Project Co must develop a safety management commitment statement for the Project based on Project Co's OHS policy. Key Personnel must sign the commitment statement.

(c) Project Co must prominently display a copy of the OHS policy and commitment statement on the OHS notice board and include them in information provided to persons at induction. A copy of the policy and commitment statement must also be supplied to each subcontractor.

A15.3 CONSTRUCTION TRAFFIC MANAGEMENT

A15.3.1 General

(a) Project Co must prepare a Construction Traffic Management Plan, as a sub-plan of the Project Management Plan, as outlined in Schedule 19 (Plans) of this Agreement.

(b) Traffic flow on public roads must not be interrupted without the approval of the relevant Authority, and the State's Representative. Detouring of public transport services must be approved by PTA.

(c) Details of proposed changes to traffic flow and arrangements for control of traffic on roads must be to the satisfaction of the State's Representative and must be submitted in writing at least fourteen days before the proposed change. Subsequent minor changes to traffic flow must be submitted in writing at least two days before the proposed change.

(d) Appropriate advertising of the proposed changes to traffic flow must be undertaken prior to the proposed change being implemented. Subsequent advertising, updated as necessary, must be undertaken on a monthly basis as a reminder to motorists.

(e) Temporary road closures must be carried out in accordance with all applicable Laws.

(f) Traffic control measures must be in accordance with MRWA's Traffic Management for Works on Roads Code of Practice.

(g) Traffic changes or lane closures which are considered by the State's Representative, MRWA or the relevant local government Authority as likely to cause excessive delay to traffic will not be permitted. Excessive delay will include delays of greater than three minutes on VPD compared with pre-existing conditions. Where possible Project Co must quantify the predicted delay using accepted traffic engineering methods.

(h) Two way traffic flow must be maintained on all existing public roads without detours to other roads. Where it is necessary to stop traffic temporarily, delays of greater than three minutes will not be permitted. Queues must not extend beyond the area covered by traffic control signage.

(i) Where major sporting or cultural events or public holiday long weekends are expected to generate additional or abnormal traffic, Project Co must facilitate traffic flows in co-operation with the State's Representative and applicable Authority.

(j) Should the safety of the public or Project Co be at risk at the prevailing speed limit, temporary speed limit zones may be used with the express approval in writing by the State's Representative. In such cases Project Co must promptly notify the State's Representative in writing of the circumstances in which Project Co requests such approval. Such circumstances may include:

  (i) traffic or road safety barriers, rigid objects, construction plant or personnel close to traffic lanes;

  (ii) surface irregularities on traffic lanes; or

  (iii) traffic lane geometry unsuitable for travel at the posted speed.

(k) Street lighting must be maintained and operated to provide at least the existing lighting levels at all times during construction. Temporary lighting must be provided where lighting is diminished by Project Co's work or traffic is detoured.

(l) The State's Representative may order removal or cessation of any activity which causes excessive delay to traffic or threatens the safety of the public, notwithstanding that approval has been given to the traffic change.

(m) Project Co must maintain a comprehensive register which details all temporary traffic control measures in place during the course of the DBFM Works and the timing of their implementation and removal. This register must be available for inspection by the State's Representative at all times and must be supplied as part of the as constructed information.

A15.3.2 Project Co's responsibilities

Project Co is responsible for the following:

(a) carrying out all necessary work needed for the temporary modification to the roadwork to complete the DBFM Works including modifications to roads, intersections, traffic control devices and speed zone limits;

(b) requesting approvals for the modification or installation of traffic signals if required;

(c) obtaining approvals from all appropriate Authorities for the erection of signs, traffic control and traffic detours on roads affected by the Project;

(d) subject to the approval of the State's Representative, printing, publishing or broadcasting public notices in the news media advising of impending traffic delays in accordance with clause 50.2 (Public announcements) and clause 50.3 (Media releases) of this Agreement;

(e) supplying, erecting and removing any advance traffic advisory signs which warn the travelling public of likely delays;

(f) obtaining approvals of road works speed limit zones;

(g) obtaining approvals for temporary full width lane, road or carriageway closures;

(h) obtaining WA Police attendance if required for enforcement;

(i) carrying out road safety audits for all temporary traffic management proposals;

(j) allowing traffic to freely flow on existing major roads at all times without excessive delays;

(k) utilising haulage routes into and out of the Site which minimise the impact on the community and for the avoidance of doubt do not use VPD south of Roger Mackay Drive;

(l) constantly monitoring and reviewing construction operations to minimise any adverse impact on traffic;

(m) ensuring adequate provision for the safe and uninterrupted movement of all legal road users;

(n) ensuring compatibility with traffic control measures for road works implemented by others in the vicinity of the Site;

(o) ensuring vehicles involved in construction only enter a road in a manner which does not endanger the public and at a suitably designed location with appropriate traffic control measures, all of which must be to the approval of the State's Representative, WA Police and all other relevant Authorities; and

(p) collating the evidence necessary to demonstrate compliance with the Construction Traffic Management Plan and providing to the State or the relevant Authority when requested. Areas to be addressed include:

(i) traffic planning;

(ii) traffic control;

(iii) implementation; and

(iv) measurement and evaluation.

A15.3.3 Construction access

Construction vehicles must only enter or leave the Site via Graham Farmer Freeway then south onto VPD and then onto the Site. For the avoidance of doubt all Site construction vehicles must not access the Site by transiting the section of VPD south of Roger Mackay Drive;

A15.4 TECHNICAL COMPLETION TESTS

The minimum testing and commissioning works to be undertaken by Project Co to demonstrate Technical Completion are included in Appendix H7 (Minimum Completion Tests).

PART B: PROJECT VISION, ASPIRATIONS AND OBJECTIVES

B1 PROJECT VISION

The vision for the new Perth Stadium Project is that the Stadium and Sports Precinct will form the centrepiece for the redevelopment of the Burswood Peninsula. It will be one of the major sporting and entertainment venues for Perth and the third largest international sporting venue in Australia by capacity.

The prominent location underpins the potential of the Stadium to contribute to the distinctive identity of this important precinct, and demands a high-quality architectural design outcome which will support the delivery of an exceptional sporting and entertainment facility. The design will make a positive contribution to the city, local precinct and riverine environment, and to the State's reputation for promoting design quality and innovation.

B2 NEW PERTH STADIUM PROJECT ASPIRATIONS

The following aspirations have been adopted to guide the development of the new Perth Stadium Project (**new Perth Stadium Project Aspirations**)

(a) cater for the fans who use the Stadium by taking a fans-first approach to planning and design to create an exceptional event atmosphere:

  (i) the flexible design will deliver a multipurpose venue and a fans-first experience;

  (ii) the Stadium will be designed with cutting edge technology that caters for future trends; and

  (iii) the Stadium will bring a new experience in sports viewing and entertainment to Perth and Western Australia;

(b) the Stadium and Sports Precinct will transform the Burswood Peninsula and create a spectacular gateway to our city:

  (i) the Stadium and Sports Precinct will take advantage of its riverside views and central location; and

  (ii) the Stadium and Sports Precinct will be a catalyst for future development in the area, creating a new sports and entertainment precinct for Perth;

(c) together with other major development projects such as Elizabeth Quay and the Perth City Link, the Stadium and Sports Precinct will enhance Perth's reputation as a world-class destination:

  (i) the Stadium and Sports Precinct will enable Perth to attract more international events;

  (ii) the Stadium and Sports Precinct will acknowledge our State's rich sporting history and heritage; and

  (iii) the Stadium and Sports Precinct will attract more visitors to our State;

(d) the fan experience will be enhanced through the provision of an improved and integrated public transport system comprising upgrades to road, rail, bus and pedestrian services to allow maximum public transport usage:

  (i) the upgrades will plan for more than 70% of fans using public transport for major events;

  (ii) the upgraded system will not only improve public transport and access for Stadium events, it will also have flow on benefits for other Burswood Peninsula activities; and

  (iii) the upgrades will significantly improve connectivity to surrounding areas and support Perth's overall future transport requirements; and

(e) project management for the new Perth Stadium Project will focus on sound planning and strong contract management to achieve the best value for money and deliver a world class stadium on time and within the approved budget.

B3 DBFM PROJECT OBJECTIVES

In addition to the new Perth Stadium Project Aspirations that will continue to guide the development of the new Perth Stadium Project, a suite of key objectives (**DBFM Project Objectives**) have been developed that draw upon the new Perth Stadium Project Aspirations. The key objectives of the DBFM Project are to:

(a) deliver a world class stadium on time and within budget in order to provide value for money for the State;

(b) deliver a Stadium and Sports Precinct designed:

  (i) to cater for future users by adopting a fans-first approach;

  (ii) to meet the design, functional and technical requirements contained in these Design Specifications;

  (iii) to enable cutting edge stadium technology that caters for and accommodates future trends;

  (iv) with a world class Playing Surface and excellent support facilities for Sporting Teams, Performers and Media Personnel;

  (v) to maximise year round use with Events and Functions that may not require the use of the Playing Surface; and

  (vi) to take advantage of its riverside views and central location;

(c) deliver a Stadium and Sports Precinct:

  (i) that is efficient, functional and distinctive

  (ii) that is accessible, safe and secure for all Stadium Users; and

  (iii) with a Service Life of at least 50 years and with an environmentally sustainable, WOL approach to operations and maintenance; and

(d) design and deliver a vibrant Stadium and Sports Precinct that acknowledges Western Australia's rich sporting history and cultural and Aboriginal heritage and capitalises on the opportunity to activate the Burswood Peninsula, including through the development of experiences and activities outside of Event Days that encourages frequent, year round patronage of the Sports Precinct by Western Australians and tourists alike.

B4 OPERATING PHASE OBJECTIVES

A suite of key operational objectives have been developed for the Operating Phase of the DBFM Project (**Operating Phase Objectives**) that align to the new Perth Stadium Project Aspirations to:

(a) operate and maintain a Stadium and Sports Precinct that:

  (i) caters for Stadium Users by adopting a fans-first approach;

  (ii) continues to satisfy the FFP Warranty;

  (iii) is maintained to the standards specified in Schedule 13 (Services Specifications);

  (iv) is revered for its world class Playing Surface and excellent support facilities for Sporting Teams and Performers;

  (v) ensures the safety and security of all Stadium Users;

  (vi) responds and adapts to changes in technology; and

  (vii) adapts to changing trends within stadia and their usage;

(b) maximise year round use of the Stadium and Sports Precinct with Events and Functions to ensure that:

(i) the Stadium generates sufficient overall revenue to meet the cost of its operating overheads, fund lifecycle costs and return a net operating profit; and

(ii) the Sports Precinct is activated and becomes a destination in itself, including on Non-Event Days;

(c) design, construct and maintain the Stadium and Sports Precinct to minimise the risk of damage caused by Stadium Users;

(d) provide an environment in which the Stadium and Sports Precinct can host as many Events and Functions as the market allows;

(e) provide and enhance a positive image of the Stadium and Sports Precinct, the State, the Governance Agency and the Stadium Operator, particularly to Hirers, Stadium Users, potential Stadium Users and television audiences;

(f) support and enhance the Stadium Operator's ability to market and maximise the economic benefit and profitability, as well as the social benefit of the Stadium and Sports Precinct; and

(g) ensure that the Stadium Operator and Project Co are not hindered in performing their respective obligations under each of the their respective agreements with the State and can perform such obligations to maximise efficiencies and outcomes for the parties.

B5 STAKEHOLDER ENGAGEMENT OBJECTIVES

A stakeholder and community engagement strategy has been adopted by the State which employs open, transparent and inclusive engagement practices and methodologies to involve key Project Stakeholders, including Stadium Users (where appropriate), in the successful delivery of the new Perth Stadium Project.

The key objectives of the stakeholder and community engagement strategy (**Stakeholder Engagement Objectives**) are to:

(a) engage widely with Stadium Users and ensure the needs and expectations of Stadium Users, particularly fans and Sporting Teams, are considered by Project Co during the D&C Phase in order to achieve the best outcomes for Stadium Users;

(b) ensure that stakeholder involvement in and support of the DBFM Project is sustained during the D&C Phase;

(c) preserve confidence in the integrity of the stakeholder and community engagement strategy by ensuring that commitments made to Project Stakeholders are honoured and that good working relationships are maintained;

(d) uphold and foster the new Perth Stadium Project Aspiration and DBFM Project Objective of delivering a fans-first venue while managing Project Stakeholder expectations;

(e) identify and respond to Project Stakeholder concerns in a timely and responsible manner;

(f) provide guidance, advice and support to Project Co, Project Co Associates, State Associates and Stadium Personnel as required in order to facilitate effective communication with Project Stakeholders; and

(g) work closely with Project Co, the Department of Transport, PTA and MRWA and their personnel to manage public enquiries and complaints in a seamless manner during construction and delivery of all works relating to the DBFM Works and the State Transport Infrastructure Works.

B6 ENVIRONMENTAL MANAGEMENT OBJECTIVES

Due to the complex environmental conditions and sensitive riverside location of the Site, the State has developed the following environmental management objectives for the DBFM Project (**Environmental Management Objectives**):

(a) minimise and manage the environmental and social impacts arising from the DBFM Project including by implementing leading environmental management practices;

(b) minimise and manage impacts to the Swan River and other ecosystems surrounding the Site;

(c) minimise and manage Contamination using appropriate methods including monitoring groundwater, surface water, soil, air and landfill gas during the D&C Phase and Operating Phase of the DBFM Project;

(d) undertake and manage rehabilitation of the Site in accordance with the Rehabilitation Management Plan including by promoting a stable vegetation community of local species;

(e) minimise and manage impacts arising from the DBFM Project on indigenous or otherwise protected fauna that may visit the Site, including by protecting fauna habitats;

(f) minimise and manage emissions (including pollution and noise) so they do not adversely affect the Environment, the health or welfare of people or the amenity of the Site;

(g) protect Aboriginal and European heritage sites from impacts arising from the D&C Phase and the Operating Phase of the DBFM Project; and

(h) minimise waste through the adoption of best practice waste reduction and disposal procedures consistent with the DER waste hierarchy.

B7 PROJECT BENEFITS

The Stadium and Sports Precinct will deliver a range of benefits to Western Australia through the DBFM Project and beyond (**Project Benefits**).

B7.1 ECONOMIC BENEFITS

(a) As a world class facility, the Stadium and Sports Precinct will be suitable for, and allow the State to bid for and attract, national and international Events including international rugby union and rugby league matches, soccer matches and touring artists. The 60,000 seat capacity at the Stadium will provide greater opportunities for Western Australians to attend Events at the Stadium and interstate and overseas supporters of Away Teams to travel to Perth to support their teams. This will provide Perth with increased national and international exposure and attract tourism and wider economic benefits to Western Australia.

(b) The Stadium and Sports Precinct will create full time and part-time employment opportunities in the building and associated industries during the D&C Phase as well as create a range of full, part-time and casual employment opportunities during the Operating Phase.

B7.2 SOCIAL BENEFITS

(a) The investment in the public transport infrastructure for the Stadium and Sports Precinct will benefit all Western Australians. The development of a new transport rail hub in close proximity to the city will also service the development and rejuvenation of the entire Burswood Peninsula.

(b) The integration of the Stadium and Sports Precinct will be designed for passive recreational use and activation outside of Event Days including a new parkland setting for Perth residents to enjoy.

B7.3 CULTURAL BENEFITS

(a) Utilising design and public art, the Stadium and Sports Precinct will recognise and celebrate the achievement of the wider Western Australian community, inclusive of Aboriginal and sporting cultural heritage.

B7.4 ENVIRONMENTAL BENEFITS

(a) A sustainable and efficient design of the Stadium and Sports Precinct will minimise ongoing demands on resources and maintenance requirements.

(b) The public transport strategy will assist to reduce the environmental impact of commuting to the Stadium and Sports Precinct by minimising the number of Patrons travelling to the Stadium and Sports Precinct by private vehicle.

B8 OPERATIONAL PRINCIPLES

(a) The primary Hirers will be the Fremantle Football Club and the West Coast Eagles Football Club each of which participate in the AFL. The Stadium Operator will be responsible for securing and contracting additional Events with providers including the AFL, CA, ARU, ARL, FFA and concert promoters.

(b) The current business model assumes a maximum of thirty seven (37) and a minimum of thirty two (32) Events annually. **Table 5** is an Indicative Initial Annual Event Schedule for the Stadium. Additionally, the Stadium's Premium Product Areas will be used for Functions on Non-Event Days.

Table 5: Indicative Initial Annual Event Schedule for the Stadium

Event	Number of Events
Fremantle Football Club home matches	11
West Coast Eagles home matches	11
AFL pre-season matches	2
AFL international rules match	1 every four years
Cricket international "one day"	1
Cricket international "Twenty 20"	1 every two years
Cricket T20 Big Bash League matches (Twenty 20)	5
Rugby union international	1
Football (soccer) international	1 every three years
Rugby league premium match	1 every three years
Entertainment Events	3 every two years

(c) The following business principles, drawn from the new Perth Stadium Project Aspirations and DBFM Project Objectives, outline the basis of the service delivery profile under which the Stadium and Sports Precinct will be maintained and operated and which Project Co must support:

(i) the State will be seeking to maximise the Project Benefits during the Operating Phase and beyond. This includes maximising the number of Events and Functions, as well as maximising the number of visitors on Non-Event Days;

(ii) the Stadium will be used primarily by Sporting Teams competing in domestic, national or international competitions. The Stadium and Sports Precinct may also be used for ad hoc Sporting Events and Entertainment Events;

(iii) the Stadium and Sports Precinct will be utilised on Non-Event Days for a variety of uses including a range of Events (other than Sporting Events) and Functions. The uses and the frequency of use are only limited by the capacity of the relevant space within the Stadium and Sports Precinct, the

market demand for that space and the requirement that the use must not adversely affect the Stadium Activities on, and in preparation for, Game Days. The use of the Stadium and Sports Precinct on Non-Event Days will be complemented by the opportunity to make use of services within the Stadium, including the Catering Service and Commercial Facilities;

(iv) the Stadium Operator will be responsible for the day to day operations of the Stadium, securing content for the Stadium and carrying out any other activities delegated by the Governance Agency. The Stadium Operator will employ a small team of full time staff who, along with a large contingent of casual staff and contractors on Event Days, will be responsible for carrying out the Stadium Operator's duties. The Stadium Operator's full time staff will be accommodated within the Stadium on a day to day basis, and the casual staff and contractors will make use of the Stadium facilities as required;

(v) on Non-Event Days, the Stadium will be open and accessible (as the Stadium Operator sees fit) for authorised personnel and visitors (as applicable) for a variety of purposes, including meeting with the Stadium Personnel, deliveries, media activities, marketing and promotional activities, Permitted Training, attending Functions, maintenance of relevant FF&E, Stadium Personnel training, and other activities such as Stadium tours. Whilst these activities will generally be limited to 7.00am to 6.00pm on Business Days, the Stadium Operator may choose to undertake such activities at any time; and

(vi) notwithstanding the above, Project Co must at all times meet the State's reasonable requirements to conduct any Special Event that the State desires without being unreasonably constrained by other commitments including Scheduled Maintenance and other Events.

PART C: DESIGN BRIEF

C1 POLICY FRAMEWORK

C1.1 BETTER PLACES AND SPACES: A POLICY FOR THE BUILT ENVIRONMENT IN WESTERN AUSTRALIA, 2013

The design of the Stadium, Sports Precinct and Off-Site Infrastructure must demonstrate adherence to the Western Australian Government's commitment to high design quality in major public works projects, as outlined in the "Better Places and Spaces: A Policy for the Built Environment in Western Australia". The Office of the Government Architect's General Design Standard included at Appendix H2 (OGA General Design Standards) outlines design criteria for public buildings that are consistent with the Policy. Contact the Office of the Government Architect (located within the Department of Finance) for relevant guidance and for further information on the Policy see: www.finance.wa.gov.au/betterplaces.

C1.2 AUSTRALIAN URBAN DESIGN PROTOCOL

(a) The Sports Precinct will provide the contextual setting for the Stadium and will constitute the primary approach experience for all Stadium Users. Accordingly, the quality of urban design in the Sports Precinct is critical to the new Perth Stadium Project's success and outcomes should be exemplary. Key factors are the prominence of the Site; its environmental sensitivity; its exceptional riverside location and its role in connecting the Stadium with the community and establishing a strong sense of ownership amongst the people of Perth.

(b) In developing the urban design of the Sports Precinct, Project Co must seek to align with the principles of the Council of Australian Governments' endorsed Australian Urban Design Protocol (available at http://www.urbandesign.gov.au) for good urban design. The key principles which must inform the urban design solution include:

(i) (enhancing) stimulating the local economy, enhancing and protecting the environment and serving and enriching the community;

(ii) (connecting) connecting physically and socially;

(iii) (diverse) offering a diversity of recreational options and experiences that are accessible to all Stadium Users, including persons from different cultural backgrounds and IRUA;

(iv) (enduring) ecologically and economically sustainable, enduring as a place of interest and of resilient finish and construction to support its ongoing maintenance;

(v) (comfortable) comfortable and welcoming for all Stadium Users including persons from different cultural backgrounds and IRUA. This includes provision of a high quality pedestrian experience which is practical for all Stadium Users, including IRUA within an attractive, good quality public domain, with access to public open space and amenities;

(vi) (vibrant) promotes vibrancy such that it provides a reason for people to arrive early and depart late on Event Days and to otherwise visit the Stadium and Sports Precinct on Non-Event Days;

(vii) (safe) feels safe at all times for all Stadium Users through the application of Crime Prevention through Environmental Design (CPTED) principles in the design; and

(viii) (walkable) enjoyable and easy to walk and cycle around.

C1.3 CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

(a) Research into safety and urban design has informed the establishment of CPTED principles. The following key CPTED principles must be demonstrably incorporated into the design of the Stadium, Sports Precinct and Off-Site Infrastructure:

(i) (access and movement) places with well-defined routes, spaces and entrances that provide for convenient movement without compromising security;

(ii) (structure) places that are structured so that different uses do not cause conflict;

(iii) (surveillance) places where all publicly accessible spaces are overlooked;

(iv) (ownership) places that promote a sense of ownership, respect, territorial responsibility and community;

(v) (physical protection) places that include necessary, well-designed security features;

(vi) (activity) places where the level of human activity is appropriate to the location and creates a reduced risk of crime and a sense of safety at all times; and

(vii) (management and maintenance) places that are designed with management and maintenance in mind, to discourage crime in the present and the future.

Refer to Designing Out Crime Planning Guidelines, WA Planning Commission, June 2006 http://www.planning.wa.gov.au/dop_pub_pdf/DOCguidelines.pdf

(b) In considering the provision and design of security features in known higher risk areas within the Stadium, Sports Precinct and Off-Site Infrastructure (including for example, areas immediately external to the Ticket Control Points, at Ticket Boxes, in car park areas and at the interface with Surrounding Works), Project Co should find a reasonable balance between the objective of providing a welcoming facility for Stadium Users whist providing physical protection for Stadium Staff.

C2 CULTURAL CONTEXT AND SIGNIFICANCE

(a) A critical success factor for the new Perth Stadium Project is the extent to which it achieves support and stewardship from the public and is seen as making a positive contribution to the city's and the State's cultural vitality. Project Co's design must demonstrably respond to the cultural context of the Site and the new Perth Stadium Project, in particular it should acknowledge the:

(i) rich Aboriginal history of the Site and the Swan River;

(ii) significance of the Swan River to the community;

(iii) important role of the Stadium and the Sports Precinct in hosting the State's premier sporting facility; and

(iv) important role and place of sport within the community.

(b) (**Aboriginal culture and heritage**) The design of the Stadium, Sports Precinct and Off-Site Infrastructure must recognise and integrate the Aboriginal heritage and cultural significance of the Site and the Swan River in accordance with the State's Aboriginal Heritage Management Plan and Aboriginal Engagement Strategy.

(c) Attributes of local Aboriginal heritage and culture should be incorporated and referenced, particularly in the Sports Precinct landscape design, including:

(i) traditional Aboriginal stories;

(ii) dancing;

(iii) native flora suitable for bush tucker, bush medicine and representative of the male and female gender;

(iv) Aboriginal art that "tells the stories" and records the memories through images, sculpture and sound; and

(v) Aboriginal sports men and women.

(d) (**Non-Aboriginal culture and heritage**) The design of the Stadium, Sports Precinct and Off-Site Infrastructure may also be informed by the non-Aboriginal history of the Site, refer to clause A13.6 of Part A (Project Overview and General Requirements) of these Design Specifications.

C3 MASTER PLANNING

C3.1 NEW PERTH STADIUM MASTER PLAN (2012)

(a) In August 2012, the Western Australian Government released the Master Plan to guide the development of the Stadium on the Burswood Peninsula. The Master Plan is underpinned by comprehensive research, consultation and analysis to inform the strategic and local context of the Stadium within the Burswood Peninsula and included a study of other Australian stadia. This work has been subject to extensive input from key State and local government agencies and Authorities to consider and address commercial matters, complex land tenure matters, planning, environmental, geotechnical and other physical constraints and transport matters.

(b) The study area for the Master Plan (2012) extends over the 280 hectares of the Burswood Peninsula, including the main road and rail corridors comprising the Windan Bridge, the Goongoongup Rail Bridge, the Graham Farmer Freeway, VPD and the rail infrastructure associated with the existing Belmont Park and Burswood train stations. It also considers the regional road and rail network beyond the Burswood Peninsula, reflecting the strategic significance of the Stadium within the Perth metropolitan area.

(c) The predominant land use precincts within the Burswood Peninsula are identified in the Master Plan and include the former Burswood Park Golf Course, the Belmont Park Racecourse, the Burswood Peninsula residential development, the Crown Perth complex and the Burswood Train Station precinct.

(d) The Master Plan (2012) identifies and considers the redevelopment proposals identified on the Burswood Peninsula, including the Belmont Park racecourse redevelopment to incorporate a mixed use activity centre, the Crown Perth complex redevelopment proposal and the mixed –use activity proposals associated with the areas to the east and west of the existing Burswood Train Station.

(e) The boundary of the Master Plan is generally limited to the former Burswood Park Golf Course, an area of approximately 73 hectares which incorporates the former 18 hole golf course, the State Tennis Centre, and the Clubhouse and associated car park.

(f) The Master Plan supports the redevelopment of the former Burswood Park Golf Course generally for sport and entertainment purposes. It identifies a Sports Precinct extending over the northern portion of the former Burswood Park Golf Course area, within which the Stadium and associated infrastructure are located, as well as the existing State Tennis Centre, Clubhouse and associated car park. The southern portion of the former Burswood Park Golf Course is indicated as having the potential to develop additional community playing fields and sport facilities.

C3.2 DEVELOPMENT CONCEPT PLAN (2013)

(a) In 2012, the State prepared a development concept for the Stadium and Sports Precinct (**Development Concept Plan**) which identifies how the Master Plan Visions and Master Plan Principles can be integrated to deliver a comprehensive development solution in the short term to create a world class sporting, entertainment and recreational precinct focussed on the Stadium.

(b) The PDP released in 2012 incorporated pedestrian, vehicular and public transport infrastructure elements which were considered in collaboration with the PTA. A number of these transport infrastructure elements have been subject to further refinement and modification by the PTA in the preparation of the Transport PDP released in December 2012.

(c) The Development Concept Plan prepared in 2012 was subsequently updated in April 2013 and incorporated the modified transport infrastructure elements, and is included in the Project Information.

C3.3 MASTER PLAN VISION

(a) The overarching vision that guided development of the Development Concept Plan (2013) included:

(i) (**integration with the city**) developing Perth as a "river city" with a major park at each end (Kings Park and Burswood Sports Precinct), and enhancing the sense of place through a visual relationship with the city where the aspirations and lifestyle of Western Australia are reflected;

(ii) (**developing Burswood Peninsula as "Perth's Playground"**) identifying opportunities for places for permanent infrastructure to activate the precinct outside of Event Days while recognising the sensitivities of local residents;

(iii) (**integration of land use and transport planning**) capitalising on the central location to make the travel experience equitable to all residents of the Perth metropolitan area. This entails establishment of a safe and efficient precinct clearance rate, plan for the safe management of large crowds, and avoiding conflict between pedestrians and vehicles, as well as utilisation of existing parking infrastructure in the central city area and maximising the value of the SRPB; and

(iv) (**considering the Stadium design**) optimise the advantages of constructing the Stadium at this Site including the inherent differences in levels associated with a large stadium. Important design opportunities include working with the landscape, utilising light as a major contributor to character and sense of place, creating a unique waterfront experience using the River-Fed Lake, and enabling the Stadium to hold major Events other than Sporting Events.

C3.4 MASTER PLAN PRINCIPLES

The overarching principles that guided development of the Development Concept Plan (2013) are to create a sports, recreation and entertainment precinct that:

(a) contributes to a unique and identifiably Western Australian event experience, accommodating a range of national and international sporting and event experiences in an integrated and master planned precinct;

(b) supports the use of the Stadium on Event Days and Non-Event Days, and is a destination in itself;

(c) complements and enhances the Burswood Peninsula's sense of place through high quality urban design and landscaping;

(d) integrates and connects with other land uses on the Burswood Peninsula, as well as the Perth central business district, making the Burswood Peninsula a part of the city;

(e) connects the Stadium and the Swan River, both physically and via view corridors, in a way that complements and adds value to the public's experience;

(f) encourages the use of public transport, walking and cycling as the primary means of transport to the Stadium for Events, while also recognising that there is some requirement for limited car parking within the Sports Precinct;

(g) recognises the opportunity to deliver district and regional level sporting infrastructure, addressing an identified infrastructure need;

(h) incorporates environmentally sustainable and responsible development principles;

(i) supports land uses which complement rather than directly compete with the existing or planned residential, retail and commercial developments on the Burswood Peninsula, East Perth and the wider Perth city area; and

(j) recognises the potential for land uses and development options within and adjacent to the Master Plan area to evolve over time and create a framework within which this can occur, without compromising future development potentials.

C4 SPORTS PRECINCT STRUCTURAL ELEMENTS

C4.1 STRUCTURAL ELEMENTS OVERVIEW

(a) The Development Concept Plan (2013) identifies a number of structural elements for the Sports Precinct which are outlined in clauses C4.1 to C4.16 and further detailed in Chapter D4 (Sports Precinct) of these Design Specifications.

(b) The functional and technical requirements for those structural elements which must be provided as part of the DBFM Works are described in Parts D and E of these Design Specifications.

(c) There are some structural elements which are existing features of the Site or will be delivered by others, and must be treated as fixed in their location and function (**Fixed Elements**). The DBFM Works must seamlessly interface with these Fixed Elements in a manner which aligns with the Master Plan Vision and Master Plan Principles and ensures that the Fixed Elements are fit for purpose.

C4.2 LOCATION OF STADIUM

The location of the Pitch, and thus the location of the Stadium is depicted on the Development Concept Plan (2013) on the eastern side of the River-Fed Lake. This location provides for the Pitch to align with the area of ground treated as part of Separable Portion 3 of the PCS Works. It is noted that:

(a) the final footprint of the Stadium will be dependent on Project Co's design for the geometry of the Seating Bowl, the orientation and dimensions of the Pitch and the width of the Stadium itself (which may not be uniform throughout); and

(b) Project Co may propose design solutions for the Stadium and the Pitch which are not dependent on the location or performance of the PCS Works.

C4.3 PLAZA

A plaza is depicted on the Development Concept Plan (2013) of notionally uniform width and extending around the full perimeter of the Stadium. This location provides for a plaza structure to functionally serve the Stadium to operate as a Controlled Area.

C4.4 INTERFACE BETWEEN PLAZA AND SPORTS PRECINCT

The interface between the plaza and the Sports Precinct is depicted on the Development Concept Plan (2013) as follows:

(a) a line around the perimeter of the plaza represents a secure line between the plaza and the Sports Precinct on Event Days. This line is located at the base of ramps and stairs leading up to the plaza level to allow queuing for tickets and bag checks at grade before Patrons ascend to plaza level;

(b) vehicular access and Universal Access for pedestrians (via ramps) are shown between the Sports Precinct and the plaza; and

(c) for Non-Event Days, the Development Concept Plan (2013) assumes that the plaza is open for public access (i.e. the Controlled Area contracts to the Stadium Curtilage).

C4.5 RIVER TERRACES

(a) A potential terraced structure is depicted on the Development Concept Plan (2013) at the far western edge of the plaza. These 'river terraces' are depicted as a recreational space with a series of terraces that cascade down to a boardwalk and the River-Fed Lake. The terraces are located and orientated to provide seating opportunities with views to the River-Fed Lake and the Swan River and city beyond. Opportunity exists to incorporate a performance stage within this area.

(b) The terraces could be activated by cafés, bars and retail shops as part of the Commercial Opportunities provided those facilities are developed to satisfy the requirements for Commercial Facilities as outlined in Chapter D16 (Commercial Facilities) of these Design Specifications.

C4.6 RIVER-FED LAKE

(a) The River-Fed Lake located to the west of the Stadium is a Fixed Element of the Development Concept Plan (2013) which must be retained, however Project Co may propose minor modifications to the shape of the River-Fed Lake, which proposals will be subject to the State's approval by the State.

(b) The Development Concept Plan (2013) promotes opportunities to create an intimate waterside experience over or adjacent to the River-Fed Lake. The lake creates a setting for a potential boardwalk entertainment area, picnic spots, barbecues, grassy terraces, small concert events, an outdoor cinema or screenings of Sporting Events. Elements such as a performance stage and entertainment pavilions could be constructed so as to appear to be floating elements on the River-Fed Lake.

(c) The strip of land between the River-Fed Lake and the Swan River is identified as a shady and attractive riparian environment with discreet picnic lawns within the woodland adjacent to the river and the River-Fed Lake.

C4.7 BOARDWALK

A potential boardwalk is depicted on the Development Concept Plan (2013) with views westwards across the River-Fed Lake and the Swan River to the city beyond. It creates an outstanding setting for Commercial Facilities such as cafes, bars and restaurants, sleeved under the plaza but outside of the Controlled Area, to activate this perimeter of the Stadium with alfresco seating spilling onto the boardwalk.

C4.8 AMPHITHEATRE

The Development Concept Plan (2013) includes a potential amphitheatre to the south of the River-Fed Lake. An amphitheatre could be used for staging Precinct Events and would provide powerful activation of the Sports Precinct on both Event Days and Non-Event Days. It could also act as an assembly area on Event Days for Patrons travelling to the SRPB.

C4.9 COMMUNITY RECREATION OVAL AND OPEN SPACE

(a) The Community Recreation Oval is indicated on the Development Concept Plan (2013) as a grassed area of approximately 27,000m^2 to the north of the Stadium on the Development Concept Plan. This location provides for the Community Recreation Oval to align with the area of ground treated as part of Separable Portion 6 and for the Community Recreation Oval to functionally serve the Stadium as outlined in clause D4.4.7 of these Design Specifications.

(b) Additional open space of approximately 8,800m^2 is shown on the Development Concept Plan (2013) to the east of the Community Recreation Oval. Given the less prominent location and the proximity to Utility service corridors, this area could be utilised as a site for Engineering Services infrastructure (such as a central plant), a termination and take-off point for Utilities, or both.

C4.10 INTERFACE BETWEEN SRPB AND SPORTS PRECINCT

The SRPB which will link the Sports Precinct to East Perth will be constructed by others, and will land in the Sports Precinct to the west of the Clubhouse at grade. The indicative location of this landing point is shown on the Development Concept Plan (2013).

C4.11 BUS HUB, BUS PASSENGER ASSEMBLY AREA AND BUS LAYOVER AREA

(a) The Bus Hub and the Bus Passenger Assembly Area to be constructed as part of the DBFM Transport Infrastructure Works are depicted on the Development Concept Plan (2013) to the south of the Stadium and to the north of the Clubhouse and associated car park. This location provides for the Bus Hub and the Bus Passenger Assembly Area to align with the area of ground treated as part of Separable Portion 4 and to functionally serve the Stadium.

(b) The Bus Layover Area to be constructed as part of the State Transport Infrastructure Works is situated to the south east of the State Tennis Centre and is a Fixed Element of the Development Concept Plan (2013).

C4.12 GOLF COURSE CLUBHOUSE AND CAR PARK

(a) The Clubhouse, its associated car park and associated outbuildings have been retained on the Development Concept Plan (2013).

(b) The Clubhouse is located close to the Stadium with elevated views of the Swan River and is a potential hospitality venue within the Sports Precinct and may be made the subject of a Commercial Opportunity or Head Lease opportiunity. The associated car park situated to the south of the Bus Hub has the potential to be used as an area for coach, taxi and private vehicle drop-offs on Event Days without interfering with public transport bus operations and without mixing pedestrians with bus traffic, provided appropriate pedestrian routes are established. The car park could also serve as additional car parking when the Stadium is being used for Functions on Non-Event Days.

(c) The Clubhouse is being used to accommodate the State's project team during the D&C Phase. It is also used to accommodate the Burswood Park Board executive and must be kept fully operational during the D&C Phase.

(d) In the event that Project Co or a Head Lessee seeks to refurbish or redevelop the Clubhouse, the State is willing to relocate to alternative accommodation on the Site at the time when Project Co or the Head Lessee requires access for construction to undertake the refurbishment or development. Such alternative accommodation must be provided at Project Co's expense and must include the following as a minimum:

(i) perimeter security and access control;

(ii) carparking for forty five (45) persons;

(iii) four (4) lockable offices with workstations, each with a lockable mobile pedestal and lockable storage units / cupboards;

(iv) a secure work room for ten (10) persons to accommodate the State's contract management team;

(v) open plan workstations a for thirty five (35) persons each with a lockable mobile pedestal and open storage;

(vi) one (1) conference room of twenty (20) persons capacity;

(vii) two (2) meetings rooms of eight (8) persons capacity;

(viii) one (1) ICT server room;

(ix) one (1) printing and stationery room or bay;

(x) kitchen or tea preparation facilities including sink with filtered and boiling water;

(xi) toilet amenities;

(xii) one (1) presentation room; and

(xiii) power, data and communications outlets to all offices, secure work rooms, workstations, the conference rooms, meetings rooms, the presentation room, the ICT server room, printing bays, kitchen tea preparation areas; and power outlets for cleaning, with suitable quantities and distribution of outlets for the proposed uses (and otherwise of similar qualities and distribution to that formerly available to the State's project team when accommodated in the Clubhouse).

C4.13 STATE TENNIS CENTRE

The State Tennis Centre is likely to continue to operate in its current location and is therefore a Fixed Element of the Development Concept Plan (2013). Minor modifications will be made to the boundaries of the centre to accommodate proposed rail track and station works which form part of the State Transport Infrastructure Works.

C4.14 "SOUTHERN NINE"

(a) The "southern nine" portion of the former Burswood Park Golf Course is outside of the boundaries of the Site. The Development Concept Plan (2013) shows this land as unaffected by the development of the Sports Precinct. The "southern nine" and its boundary with the Sports Precinct are considered to be Fixed Elements of the Development Concept Plan (2013).

(b) A 5.8 hectare portion of the "southern nine" land will be affected by the Crown Perth complex development proposal for a hotel development.

(c) In the medium to longer term, the "southern nine" provides opportunities for use as a parkland for sporting, recreational and entertainment uses as well as for creating stronger linkages between the Stadium and Crown Perth complex.

C4.15 BELMONT PARK FOOTBRIDGE

(a) The existing footbridge between the Belmont Park Racecourse and the former Burswood Park Golf Course which crosses the rail and road corridors is a Fixed Element of the Development Concept Plan. Alterations to the landing of this footbridge to extend it over the realigned rail tracks into the Sports Precinct will be undertaken by third parties as part of the State Transport Infrastructure Works.

(b) The principal function of the footbridge is to provide access to Stadium Station from the Belmont Park Race Course for race-goers and future Belmont Park residents.

C4.16 VPD AND PEDESTRIAN UNDERPASS

The alignment of VPD and the location of the Pedestrian Underpass are Fixed Elements of the Development Concept Plan (2013). The exception to this is the location of the proposed roundabout for entry into the Sports Precinct which is flexible and can be relocated to accommodate Project Co's development concept for the Sports Precinct.

C4.17 BRIDGE LANDINGS

The locations of the bridge landings, as described in clause A10.2 (Bridge Landings), are Fixed Elements of the Development Concept Plan.

C4.18 AMENDMENTS TO THE DEVELOPMENT CONCEPT PLAN

(a) Project Co must review and is encouraged to propose amendments to the Development Concept Plan. Proposed amendments must:

  (i) be aligned with the Master Plan Vision, the Master Plan Principles and the Sports Precinct Urban Design Principles; and

  (ii) recognise the Fixed Elements of the Development Concept Plan.

(b) Where Project Co proposes amendments to the Development Concept Plan to suit its design for the Stadium and Sports Precinct, Project Co must prepare an amended Development Concept Plan to the satisfaction of the State.

C5 SPORTS PRECINCT URBAN DESIGN PRINCIPLES

(a) Consistent with the DBFM Project Objectives, the urban design of the Sports Precinct must create a distinctive identity, be of high quality commensurate with a significant civic place, and provide a landmark that will be readily identifiable with Perth and Western Australia.

(b) The urban design outcome must ensure the Sports Precinct is a sports, entertainment and recreational destination in its own right, offering a diversity of experience for Stadium Users and the wider community throughout the year.

(c) The quality and amenity of the Sports Precinct environment should communicate to Stadium Users and the wider community the significance of the Stadium as a world class venue with a distinctive character and a well-developed 'sense of place'.

(d) The 'sense of place' driving the urban design strategy should be informed by the Site's central location, its proximity to the Swan River, its visibility and the views it offers of Perth's key natural and urban settings.

(e) The urban design of the Sports Precinct must acknowledge and interpret the cultural and heritage significance of the Site and the Swan River.

(f) The majority of Stadium Users on Event Days will be travelling to the Stadium by public transport and therefore, consistent with the fans-first philosophy, the Sports Precinct must be designed to integrate fully with the public transport options to enhance and optimise the "door-to-door" experience and comfort of all Stadium Users.

(g) The pedestrian journey within the Sports Precinct and to the Stadium must be attractive, legible and safe for all Stadium Users including IRUA. It should be a memorable experience in its own right, establishing the atmosphere for Events hosted in and around the Stadium.

(h) The urban design of the Sports Precinct must be developed to:

(i) reflect Perth's unique culture and Aboriginal history;

(ii) enhance the connection of the Site to the Swan River, with vistas back to the city;

(iii) connect the wider community with the Sports Precinct on Event Days, accommodating the gathering and movement of large numbers of people associated with Events to and from public transport hubs and the Swan River bridges around the plaza and public gathering spaces;

(iv) provide a high quality urban and landscape environment, and a positive and distinctive experience for all users of the Sports Precinct on Non-Event Days;

(v) provide for a range of passive recreational and leisure activities, within accessible and connected spaces of varying scales that offer spatial and recreation flexibility, landscape character diversity and include areas of usable landscape to accommodate active recreational programmes such as 'kick to kick' and functional overflow areas for major Events;

(vi) minimise the impact on the local Environment and be sustainable, enduring and resilient;

(vii) create a comfortable, safe, lively and social environment;

(viii) integrate Commercial Facilities;

(ix) integrate with the State Transport Infrastructure Works;

(x) create a well-considered formal relationship with the public realm (massing, height and proportion);

(xi) provide excellent legibility and integrated wayfinding; and

(xii) respond to the requirement to provide a safe, flexible and efficient environment for:

A Stadium Personnel to deliver the Stadium Activities;

B Services Personnel to deliver the Services; and

C any Hirer to host Events and Functions at the Stadium and Sports Precinct.

(i) Project Co must ensure that the design of the Sports Precinct:

(i) is sustainable, efficient, coherent, flexible and responsive to context, visually appealing and a clear expression of the requirements of these Design Specifications;

(ii) results in a facility that is sensitive to its environmental setting, enhancing the Event Day experience and Non-Event Day activities and revenue

generation by the activation of the Controlled Area and the Sports Precinct, including Precinct Events;

(iii) facilitates branding to reflect the ethos and identity of a team and enhance a sense of belonging for the team's supporters;

(iv) provides opportunities and experiences that cannot occur anywhere except at the Stadium; and

(v) incorporates future-proofing measures within the design to respond to the changing needs of the Stadium Operator, Stadium Users and the community.

C6 LANDSCAPE

(a) Project Co must provide a high quality landscape environment that provides a positive experience for Stadium Users as they move between public transport options and the Stadium itself. The landscape should create a distinctive setting that mediates between the sensitive site environment and the scale and form of the Stadium. It should provide Stadium Users with a range of potential experiences, a welcoming and safe atmosphere and a high quality, high-amenity destination for the wider community.

(b) (**Landscape design**) The landscape design for, and structures within, the Sports Precinct must:

(i) respond to the concept of a 'stadium in a park' to create a landscaped environment that fosters a 'sense of place';

(ii) accommodate high quality experience for the wider community on Non-Event Days;

(iii) accommodate the gathering and movement of large numbers of people associated with Events at the Stadium, to and from public transport hubs and around the Sports Precinct;

(iv) maximise the visual access to the Swan River;

(v) enable future physical access to the Swan River;

(vi) provide for a range of passive recreational and leisure activities;

(vii) include accessible and connected spaces of varying scales that offer spatial and recreational flexibility, and diversity of landscape character;

(viii) be sensitive to the local history and Aboriginal culture of the Swan River and the Burswood Peninsula and interpret these in the landscape design;

(ix) acknowledge climate and its influence on lifestyle, landscape amenity and comfort;

(x) respond to climatic conditions providing adequate shade, shelter and ventilation;

(xi) engage creatively with the form and visual impact of the Stadium;

(xii) incorporate ESD Initiatives, including the use of Water Sensitive Urban Design principles, so that the Sports Precinct is sustainable; and

(xiii) utilise high quality materials, finishes and fixtures.

(c) (**Establish a high quality parkland setting**) Project Co must provide high quality active and passive parklands within the Sports Precinct including open spaces which support Events, including:

(i) community playing fields and parklands;

(ii) spaces for performances and other Precinct Events;

(iii) resting and gathering areas;

(iv) public amenities including drinking water fountains and toilet facilities; and

(v) barbeque facilities and play areas for families and children.

(d) (**Create a strong 'sense of place'**) To achieve the objective of a strong 'sense of place', Project Co:

(i) must create views and vistas to the Swan River and the Perth central business district from the Sports Precinct;

(ii) must utilise a variety of planting scales and forms, including trees, shrubs, herbs and ground covers – that are appropriate to adjacent uses and contribute to an exciting landscape environment;

(iii) must provide a Sports Precinct that includes buildings, structures and furniture with a high architectural quality that complements the landmark Stadium, including by utilising:

A sensitive and engaging forms, materials and colours;

B distinctive lighting;

C formal integration with landscape design and themes, and wayfinding strategies;

D robust and well detailed materials and finishes; and

E support for good access and movement; and

(iv) should utilise lighting as a major contributor to character and 'sense of place' adopting measures such as establishing a lighting strategy which:

A employs colour to create different moods for different Events or to reflect the colours of competing Sporting Teams;

B utilises a range of different lighting forms to complement different types of spaces and their intended functions and experiences; and

C employs light fittings and support structures with a consistent theme across the Sports Precinct.

(e) (**Respond sensitively to the Site**) Project Co:

(i) must rehabilitate or revegetate the riparian environment along the edge of the Swan River foreshore and the River-Fed Lake with appropriate native flora to the satisfaction of the Swan River Trust;

(ii) must establish native plant and tree species that tolerate Perth's climate without significant maintenance;

(iii) must establish native plant and tree species that are endemic to the Swan River riparian environment, and sufficiently salt tolerant, in locations adjacent to the Swan River;

(iv) must establish a 'forest by the lake' environment around the River-Fed Lake to complement the conservation objectives of the River-Fed Lake; and

(v) must adhere to the Environmental Management Strategy Documents.

(f) (**Optimise opportunities of adjacency to the Swan River**) Project Co:

(i) must provide continuous pedestrian access to the Swan River and River-Fed Lake foreshores;

(ii) must provide a range of landscape spaces suitable for sitting and for family picnics adjacent to the Swan River and River-Fed Lake foreshores;

(iii) must retain the shared path along the Swan River foreshore and enable connection with the existing and planned path network of the surrounding area;

(iv) should provide a path network that provides walking loops around the River-Fed Lake in the Sports Precinct;

(v) must establish public art that engages with the water, by either utilising water movement or being located in the River-Fed Lake;

(vi) should provide a lighting strategy that creates a distinctive and welcoming ambience; and

(vii) should consider connectivity between the Stadium and the River-Fed Lake by providing ancillary structures that engage with the Swan River and River-Fed Lake. This might include:

A structures with an attractive outlook of the Swan River;

B structures that either sit above or immediately adjacent to the River Fed Lake; and

C kiosks, cafes and restaurants under a plaza structure and associated al-fresco dining on a boardwalk.

(g) (**Create functional places and spaces**) Project Co:

(i) must provide a high level of amenity for all Stadium Users;

(ii) must provide adequate rest areas for Patrons along circulation routes that offer protection from the elements, incorporate drinking water fountains and meet the needs of IRUA;

(iii) should consider providing established regularly spaced shade trees that provide a canopy and create the impression of a natural 'ceiling' to open spaces such as plazas and rest areas;

(iv) should consider providing mature trees and structures around both natural and paved landscape spaces that help to visually define the edge of the spaces; and

(v) must provide natural and paved landscape spaces that have a clear function or can support multiple functions at different times.

(h) (**Create a robust and resilient landscape**) Project Co:

(i) must establish low maintenance plant and tree species that have a low demand for water and fertiliser;

(ii) must provide outdoor furniture, structures and fittings that are constructed with hardwearing and durable materials, designed to minimise vulnerability to damage from antisocial behaviour and with foundations suitable for the geotechnical conditions to prevent subsidence or other movement;

(iii) must provide light fittings selected and located to minimise vulnerability to damage from antisocial behaviour and with foundations suitable for the geotechnical conditions to prevent subsidence or other movement;

(iv) must ensure planting densities respond to the intensity of usage, proposed amount of public contact and overall design intent;

(v) must ensure nodes, intersections and major movement paths are given highest priority in terms of size and shade; and

(vi) must ensure all modified or exposed ground areas are fully planted with trees, shrubs, groundcovers and turf if and as appropriate.

C7 PUBLIC ART

(a) Project Co must provide public art which is integrated with the Stadium and Sports Precinct commensurate with a public facility of this nature.

(b) (**Percent for Art Scheme**) As outlined in clause A15.1.4 of these Design Specifications, the Western Australian Government Percent for Art Scheme requires all new Western Australian Government buildings to commission artwork. The Percent for Art Scheme is jointly managed by the Department of Culture and the Arts and the Department of

Finance using a defendable procurement framework. Project Co is encouraged to view the following Percent for Art Scheme web links:

http://www.finance.wa.gov.au/cms/content.aspx?id=3728; and

http://www.dca.wa.gov.au/DCA-Initiatives/spaces-and-places/public-art/242/.

(c) (**Public Art Objectives**) Objectives of the Percent for Art Scheme include:

(i) to improve the quality of the built environment and the value of public facilities;

(ii) to create opportunities for Western Australian artists through the commissioning of public artworks using an allocation of a percentage (up to one per cent) of the estimated total cost of the State's capital works and major infrastructure projects;

(iii) to foster the capacity of the Western Australian Government Percent for Art Scheme to recognise:

A aesthetic excellence and quality of artwork in the built environment;

B the social value added by arts and culture across Western Australian Government buildings and the broader community;

C the multidisciplinary qualities of contemporary art practice;

D the need for critical analysis of commissioned artworks;

E the role of art and artists in sustainable cultural development; and

F the diversity of community groups and importance of local perspectives in commissioned artwork projects.

(d) (**Public Art Provisional Sum allowance**) The provisional sum allowance for the artworks for the Stadium and Sports Precinct is $2,000,000.00. These funds may be applied to Art Coordinator fees, development and installation of artworks and builder's work in connection with the installation of the artworks. All costs associated with the project management, co-ordination, commissioning and administration of the artists undertaken by Project Co must be excluded from the provisional sums.

(e) (**Art Coordination Services Panel**) The Department of Finance operates a period contract for art coordinators that can be engaged to scope and deliver the artwork at predetermined competitive rates. Project Co must appoint an Art Coordinator to manage procurement and delivery of the art works, and may source this expertise from the Art Coordination Services Panel (this can be arranged through Charles Maclean, email: charles.maclean@finance.wa.gov.au or Lucy Fuchsbichler, email: Lucy.Fuchsbichler@finance.wa.gov.au).

(f) (**Public Art Strategy**) Project Co must prepare a Public Art Strategy for the Stadium and Sports Precinct identifying public art opportunities within the publicly accessible areas of the Stadium and Sports Precinct, and ensuring integration with the public art strategies for State Transport Infrastructure Works, including the SRPB andStadium Station.

(g) (**Artworks commissioning process**) Project Co must manage the art commissioning process in accordance with the Percent for Art Scheme as described in (h) to (k).

(h) Project Co must procure and install artworks in accordance with the requirements of the Percent for Art Scheme using a professional Art Coordinator familiar with the Percent for Art Scheme.

(i) Project Co must undertake transparent procurement processes for tendering, evaluation and selection of art commissions in accordance with the requirements of the Percent for Art Scheme. This includes establishment of an Artwork Selection Committee including representatives from the State (including from the Department of Sport and Recreation, Strategic Projects and the Office of the Government Architect), Stadium User representatives, Project Co's architectural consultant and the Art Coordinator.

(j) Project Co must co-ordinate, commission and administer the selected artists as nominated by the Artwork Selection Committee.

(k) The public art will comprise significant works that may require integration within the wayfinding strategy and landscaping building fabric in addition to more traditional forms of public art such as sculptures and murals. Irrespective of the form, Project Co must undertake and separately allow for all necessary liaison, provide all necessary attendance and ascertain all structural and other requirements to facilitate installation of the public art. All trade costs for Builder's work which is directly connected with the installation of the public art, including supply of materials (such as lighting and interpretative materials) may be funded from the provisional sum.

(l) (**Other requirements**) The public art in the Stadium and Sports Precinct must:

(i) be consistent with and complement the Stadium Activities;

(ii) be delivered by practising professional artists;

(iii) require minimal ongoing maintenance;

(iv) provide public art that complements and supports the history of the Burswood Peninsula; and

(v) consider the relationship with significant views of the Swan River and the city centre from the Sports Precinct.

(m) It is highly desirable that public artworks in the Stadium and Sports Precinct should:

(i) integrate with the wayfinding strategies;

(ii) contribute to the landscape architecture;

(iii) be visible during the day and at night;

(iv) integrate with and enhance the architectural design;

(v) include works that recognises the achievement of Western Australian sports people;

(vi) include works that recognise the Site's Aboriginal and European heritage;

(vii) include works that 'tell the stories' of the local Aboriginal community and records the significance and memories of the place through images, sculpture and sound;

(viii) include works that engage with the water, by either utilising water movement or being located in the lake system;

(ix) include works that are interactive for Stadium Users, including children; and

(x) complement the technology, lighting and activation features of the Stadium.

Refer to http://www.dca.wa.gov.au/DCA-Initiatives/spaces-and-places/public-art/242/ for information on the Western Australian Government's Percent for Art Scheme.

C8 ACCESS AND MOVEMENT

C8.1 TRAFFIC AND ACCESS PLAN

(a) A multi-modal public transport strategy has been developed by the Western Australian State Government for the Stadium and Sports Precinct to service 60,000 Patrons, with approximately 83% accommodated by rail and bus public transport, with limited on-site parking, but access to extensive public parking facilities in East Perth and the Perth central business district.

(b) The successful implementation of the transport strategy to ensure the safe and efficient movement of large crowds on Event Days is reliant on the integration of the Sports Precinct with the transport nodes.

(c) Project Co must prepare a Traffic and Access Plan which accords with the State's transport strategy and addresses the requirements detailed in this Chapter C8 (Access

and Movement) and the Universal Access Principles described in Chapter C10 (Universal Access) of these Design Specifications.

(d) The Traffic and Access Plan must recognise that:

(i) everyone who enters the Sports Precinct becomes a pedestrian at some stage; and

(ii) some pedestrians are of limited agility and /or require Universal Access.

(e) Project Co must prepare a Traffic and Access Plan in accordance with the requirements set out in Schedule 5 (Design Development) of this Agreement.

(f) Project Co must undertake traffic studies, and design as required to demonstrate the capacity and sustainability of the adjacent road network to accommodate its design for the Stadium and Sports Precinct on both Event Days and Non-Event Days.

(g) Further design and construction requirements in respect of traffic and access are included in Part E (Technical Brief) of these Design Specifications.

C8.2 PUBLIC TRANSPORT INTEGRATION

(a) The urban design interface with public transport should encourage public transport usage. Seamless integration of public transport is key to enhancing the “door-to-door” experience for Stadium Users. Access routes to public transport must be via secure, well lit and well-designed access routes with high passive surveillance.

(b) Public transport facilities wholly or partially located within the Sports Precinct must:

(i) be well-connected to pedestrian zones;

(ii) be clearly legible within the public realm;

(iii) be well-integrated with the form and materials of the Sports Precinct;

(iv) be safe, secure and robust;

(v) respond appropriately to environmental conditions;

(vi) provide cross-modal integration and facilities (including for rail, bus and bike); and

(vii) enable safe and efficient movement of large crowds on Event Days.

(c) The Bus Hub and Bus Passenger Assembly Area must:

(i) be suitably sized with direct and safe access to and from the Stadium; and

(ii) be located and designed to prevent pedestrians crossing the paths of buses and avoid pedestrian interaction with other vehicles.

C8.3 VEHICLE MOVEMENT INTEGRATION

(a) The integration of vehicle movement in all forms is particularly complex for the Stadium and Sports Precinct. This is due to the access requirements for a wide variety of vehicles, including Emergency Services vehicles, a wide array of service vehicles and vehicles from using visitor drop-off and parking and, Stadium Staff parking, Emergency Services vehicles and a wide array of service vehicles. The design must mitigate the impact of vehicles on the public realm. Successful integration of vehicle access is one of the core urban design requirements.

(b) The following objectives must be achieved:

(i) vehicular crossovers accessing the Stadium must be limited to maximise, and not compromise, the pedestrian focus and the quality of the Sports Precinct environment;

(ii) a coordinated delivery, drop-off and arrival system must be provided for in the design to minimise vehicular impact to the public realm. These areas must be clearly articulated, inviting and safe;

(iii) urban design and landscape quality should demonstrate excellence where there are conflicts between vehicular and pedestrian use; and

(iv) separation of bus priority access from pedestrians for Event Days.

C8.4 CARPARKING AND DROP-OFF

(a) The Burswood Peninsula has limited road access and the transportation of large numbers of Patrons to the Stadium and the Sports Precinct cannot be dependent upon private vehicle transport. The multi-modal transport strategy developed by the State for the Stadium and Sports Precinct, is dominated by public transport and includes limited on-site vehicle parking, with permanent car parking within the Stadium and temporary parking in the Sports Precinct.

(b) Project Co must provide a range of suitably sized and accessible areas comprising:

(i) drop-off area for private vehicles including taxis and coaches;

(ii) drop-off area for IRUA in private vehicles or vehicles with ACROD permits displayed (including minivans and minibuses), which minimises travel distance to Stadium Entry Points;

(iii) a generously sized 'red carpet' drop-off area for Premium Product Patrons arriving in private vehicles, limousines and coaches, which minimises travel distance to Premium Entry Points;

(iv) a discrete 'red carpet' drop-off area within the Stadium carpark for VIP Patrons with Direct Access into the Stadium; and

(v) a minimum of two hundred and fifty (250) car parking bays within the Stadium and a space suitable for the temporary parking of a minimum of seven hundred (700) cars within the Sports Precinct, excluding the bays in the former Burswood Park Golf Course carpark should this existing facility be retained.

(c) Use of the Bus Hub for Non-Event Day public access and parking must be accommodated in the design of the Bus Hub.

(d) Provision of additional car parking will be considered. Project Co must demonstrate how the additional car parking aligns with the Master Plan Vision and Master Plan Principles and addresses the requirements in this Chapter C8 (Access and Movement). Project Co must demonstrate the impact of the additional car parking on the surrounding road network.

C8.5 PEDESTRIAN ACCESS AND MOVEMENT

(a) A priority of the new Perth Stadium Project's fans-first objective is that pedestrian movement into and within the Sports Precinct is clear, simple, safe and legible from the moment that Stadium Users arrive.

(b) The approach to the Stadium itself should be an inspired journey for Stadium Users.

(c) Pedestrian linkages should be a high quality experience in their own right and should contribute positively to the experience of the Stadium and Sports Precinct by Stadium Users and the wider community. Movement should be fluid and legible through well considered integration of landscape, architecture and urban design. This should be supported by interaction with wayfinding, signage, public art, good quality views and clear visual connections with destinations from strategic points.

(d) Entrances to the Sports Precinct must be legible, accessible and welcoming and contribute positively to the pedestrian environment and the overall Stadium User experience.

(e) Pedestrian movement through the Sports Precinct should be well planned, safe and clearly articulated in both external and internal areas. The efficient movement of people from public transport options and carparks to buildings is essential in delivery of a user-friendly Stadium and Sports Precinct.

(f) Safe and efficient access must be provided between the Stadium and key arrival and departure nodes including the Windan Bridge and Goongoongup Rail Bridge, the Belmont Park footbridge, the SRPB, the Stadium and Sports Precinct car parking areas, the shared path cycle path, all other planned pedestrian paths and walkways, the Rail Passenger Assembly Areas, the Bus Passenger Assembly Area and the Bus Hub.

(g) Pedestrians must be able to move between the key arrival and departure nodes and the Stadium using footpaths that cross roads as infrequently as possible.

(h) Pedestrian crossings must be provided where footpaths cross main circulation carriageways.

(i) Provision for bicycle access, circulation and parking within the Sports Precinct must be provided.

(j) Public entrances to the Stadium must be clearly visible from ground level access points and must be well-lit, signed and easily identifiable spaces.

(k) Project Co must undertake pedestrian modelling and design as required to demonstrate the capacity of the pedestrian network, the Bus Passenger Assembly Area, the Rail Passenger Assembly Area and all other pedestrian gathering or holding areas to accommodate its design for the Stadium and Sports Precinct for both Event Days and Non-Event Days.

C9 WAYFINDING AND SIGNAGE

C9.1.1 Overview

(a) A high quality visitor experience of the Stadium and Sports Precinct will be supported by a distinctive, cohesive and integrated wayfinding and signage strategy that creates a welcoming and enjoyable, safe and easy to navigate environment. The integrated wayfinding and signage strategy should assist with efficient visitor navigation and accessibility and must be consistent with the State's expectation for a world class Stadium facility.

(b) Stadium Users and other visitors to the Sports Precinct must be able to move easily and intuitively across the Sports Precinct from strategic arrival points guided by clear and consistent wayfinding and signage devices that create a distinctive sense of place and a memorable experience.

(c) Navigation, direction, connectivity and safety should all be enhanced by a wayfinding and signage strategy that clearly communicates a hierarchy of information from the 'macro' in scale to the detailed as Stadium Users move from strategic points of arrival to destinations within the Sports Precinct and back out again.

(d) The quality of experience for Stadium Users and other visitors within the Sports Precinct should be greatly assisted by the quality and location of signage which may be directional, be used as a means of identification, or be a statutory requirement. In addition to assisting wayfinding, signage has an important role in the safety and security of Stadium Users and other visitors to the Sports Precinct.

C9.1.2 Requirements - Wayfinding

(a) Project Co must develop a wayfinding strategy that integrates architecture, landscape architecture, urban elements, public art, lighting, signage, graphics and the Stadium's identity and branding to the extent relevant. Care should be taken in the design to ensure that integration of signage with other elements does not undermine visibility, legibility or understanding for those IRUA that have visual impairment, hearing impairment, cognitive impairment or other impairment or physical disability.

(b) Whilst signage is an important element in the wayfinding system, other cues to assist wayfinding are equally important and must be demonstrably incorporated in the design of the Stadium, Sports Precinct and Off-Site Infrastructure (e.g. use of a hierarchy for circulation elements such as plazas and paths; use of finishes, colours, patterns for demarcation and identification and other visual cues).

(c) The wayfinding strategy for the Stadium, Sports Precinct and Off-Site Infrastructure must:

(i) comply with all relevant Quality Standards, including in respect of Universal Access;

(ii) foster a sense of place by responding to the local environmental, cultural and community context;

(iii) provide visual connectedness and intuitive paths to destination points;

(iv) provide reassurance to Stadium Users by confirming start and end points of the Stadium Users journey;

(v) include identification of all locations and destinations;

(vi) reinforce correct directions and orientation of Stadium Users;

(vii) reinforce the identity (and branding as relevant) of the Stadium and Sports Precinct;

(viii) include architectural, graphic, lighting, audible and tactile wayfinding cues;

(ix) include social props, for example reinforcement with bollards, barriers, surface treatments and street furniture;

(x) achieve a reduced reliance on signage and assistance by Stadium Personnel;

(xi) include interpretive possibilities, particularly regarding the rich Aboriginal history of the Site;

(xii) enable safe escape in an emergency; and

(xiii) be integrated with and supported by technology including portable personal media devices.

(d) The signage system must be flexible and adaptable to accommodate future development of the Sports Precinct without compromising the wayfinding strategy.

C9.1.3 Requirements - Signage

(a) A visible, readable, flexible and effective signage system must be provided to complement the integrated wayfinding strategy to support all Stadium Users in their use of the Stadium and the Sports Precinct.

(b) The signage strategy and design must incorporate and address the following:

(i) statutory signage (including in relation to Universal Access, emergency egress and management, hazard regulation and warnings and the location of Engineering Services);

(ii) general wayfinding signage (including directional, identification and reinforcement);

(iii) operational signage (to support display of Event information and to support Event Overlay);

(iv) commercial signage (including for advertising of Events, retail products, food and beverage and other services and sponsor or branding opportunities);

(v) prevention of vandalism and simple, fast and cost-effective reinstatement following vandalism; and

(vi) integration with the signage for the State Transport Infrastructure Works.

(c) All signage must:

(i) clearly indicate the locations of key facilities, destinations, entrances and routes which form part of the Stadium and Sports Precinct experience;

(ii) be easily legible at all times, consistent and understood by all Stadium Users;

(iii) be positioned such that it is clearly visible at strategic points of arrival and then at decision points along the route to the destination; and

(iv) promote and support access for IRUA.

(d) Signage should:

(i) be designed with the specific objective of satisfying the orientation needs of the first-time Patron;

(ii) be tactile and engaging; and

(iii) be integrated with and supported by technology including portable personal media devices.

(e) Further design and construction requirements in respect of Signage are included in Part E (Technical Brief) of these Design Specifications.

C10 UNIVERSAL ACCESS

(a) Universal Access is of high importance to the State and must be demonstrably incorporated into the built environments within the Stadium and Sports Precinct. A key aspect of delivering a fans-first Stadium and Sports Precinct is ensuring that the design of the facility is inclusive for all Stadium Users in a manner which seamlessly integrates Universal Access such that it is not perceived as an "add on" solution. IRUA must be afforded the opportunity to function as part of the community within the Stadium and Sports Precinct.

(b) All Stadium Users benefit from enhanced accessibility, including all Patrons, people making deliveries, people with young children, those people with prams and many older people.

(c) A majority of IRUA will attend Events or Functions at the Stadium not only as individuals, but with friends, family (including young children) and carers or assistance animals (or both). As such, for their experience at the Stadium and Sports Precinct to be inclusive, the facilities for IRUA must be sized appropriately to accommodate use by the IRUA together with those that accompany them on their visit. Design solutions for the Stadium and Sports Precinct must ensure that IRUA Patrons are not required to be separated from their friends, family and carers or assistance animals (or both) in their use of the facilities.

(d) Whilst compliance with all relevant Quality Standards must be achieved as a minimum, the State aims to deliver "above code or standard' solutions where it is practicable and feasible to do so.

(e) The Stadium and Sports Precinct must cater for IRUA who may be affected by physical, cognitive, mental, sensory (primarily vision and hearing), emotional or developmental impairment, or a combination of these.

(f) (**Universal Access Principles**) The following Universal Access design principles must be demonstrable in the design of the Stadium and Sports Precinct:

(i) (**equitable use**) the design is useful and marketable to people with diverse abilities;

(ii) (**flexibility in use**) the design accommodates a wide range of individual preferences and abilities;

(iii) (**simple and intuitive**) use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or education level;

(iv) (**perceptible information**) the design communicates necessary information effectively to the Stadium User, regardless of ambient conditions or the Stadium User's sensory abilities;

(v) (**tolerance for error**) the design minimises hazards and the adverse consequences of accidental or unintended actions;

(vi) (**low physical effort**) the design can be used efficiently and comfortably and with a minimum of fatigue; and

(vii) (**size and space for approach and use**) appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

(g) Further design and construction requirements in respect of Universal Access are included in clause D7.4.3 (Seating for IRUA), clause E1.5 (Universal Access) and throughout Part E (Technical Brief) of these Design Specifications.

C11 ARCHITECTURAL DESIGN

C11.1 OVERVIEW

(a) It is the State's expectation that the architectural design of the Stadium and Sports Precinct will be a high quality outcome with respect to:

(i) fitness for purpose and functionality;

(ii) operational efficiency and commercial viability;

(iii) flexibility and future adaptability;

(iv) environmental performance;

(v) contribution and response to context (built, natural, civic, cultural and social);

(vi) sense of place, character and identity; and

(vii) robustness, resilience and longevity.

C11.2 ARCHITECTURAL DESIGN PRINCIPLES

(a) The following architectural design principles must be demonstrated through a well-designed Stadium and Sports Precinct.

(b) The architectural design for the Stadium and Sports Precinct must:

(i) respect and enhance the Stadium's distinctive location within the city and the riparian environment of the Burswood Peninsula;

(ii) embody the culture and aspirations of the Western Australian community.

(iii) reduce WOL costs;

(iv) maximise operational efficiency and commercial viability;

(v) create a flexible, durable, sustainable and ecologically sound Stadium;

(vi) minimise waste of materials and Utilities during the D&C Phase and the Operating Phase;

(vii) provide functional, efficient and adaptable spaces;

(viii) contribute to construction which is quick, safe and efficient;

(ix) use space, building form, materials and resources with imagination and efficiency; and

(x) be easy to service, clean and maintain.

C11.3 OGA DESIGN STANDARDS

(a) The Office of the Government Architect (**OGA**) has developed design standards for major Western Australian Government projects. The standard which is applicable to the new Perth Stadium Project is the OGA General Design Standard (**OGA General Design Standard**). The guidance is organised under headings 'Functionality', 'Build Quality' and

'Impact' and will be used by the State in assessment of design quality throughout the D&C Phase. Refer to Appendix H2 (OGA General Design Standards) for details.

(b) The design and construction of the Stadium and all structures within the Sports Precinct must be demonstrably aligned to the OGA General Design Standard.

C11.4 CHARACTER AND BUILT FORM

(a) The Stadium will function as a landmark architectural element in its setting during both day and night time conditions. It will have a strong civic presence commensurate with its role as a major public building and premier sporting facility for Western Australia. It is envisaged that the Stadium will have a distinctive character and identity that will become readily identifiable as the Stadium to local, national and global audiences. The built form must address and positively respond to strategic views from surrounding areas, in particular those from the city centre and strategic approach points.

(b) The Stadium will serve as a gateway landmark for those arriving to the city from the east (traversing the Burswood Peninsula) and enhance the Stadium User and visitor experience of the Sports Precinct.

(c) The proposed built form for the Stadium should be well integrated with the Sports Precinct context and the thematic or conceptual approach to the Stadium design should be consistent with the strategies for the landscape and urban design. The key formal elements of the Stadium – the Controlled Area, Seating Bowl, facades and roof – should also be physically well integrated with each other and exploit the opportunity to articulate a consistent strong and dynamic architectural language.

(d) The design quality requirements described in clauses C11.4.1 to C11.4.6 are complementary to the functional and technical requirements described in Parts D (Functional Brief) and E (Technical Brief) of these Design Specifications respectively.

C11.4.1 Principles

The design principles for the Stadium character and built form are to:

(a) utilise built form, facades and structural elements to create an inspirational landmark building which embodies the culture and aspirations of the Western Australian community;

(b) create a clear and coherent built form that communicates the function of the Stadium and its civic role as the State's premier sporting facility;

(c) create a place-specific facility that is sensitive to the environmental conditions of the Site, such as topography, climate and ecology;

(d) integrate the built form of the Stadium structure and its Controlled Area sensitively into the Sports Precinct;

(e) propose built form for the Stadium that is physically well integrated with the Sports Precinct context and thematically consistent with the strategies for the landscape and urban design;

(f) utilise scale, proportion, colour, animation and material of building form to communicate to Stadium Users and the general public the hierarchy, significance and relationship between Stadium areas;

(g) integrate public art, wayfinding, lighting, signage and other multi-media opportunities within the Stadium built form wherever possible;

(h) integrate Engineering Services elements within the built form to minimise their visual impact wherever possible;

(i) ensure that the Stadium built form contributes to a safe and secure environment for all Stadium Users; and

(j) utilise built form and materials to assist with mitigating light and noise spill from the Stadium to minimise impacts to residents surrounding the Sports Precinct.

C11.4.2 Requirements - Materials

(a) The use of materials and finishes should assist in creating a building and internal environment that promotes the Stadium as a world class venue. The materials palette will be developed as part of the integrated architectural and interior design concept and resolution.

(b) The use of materials and finishes in the Stadium design must ensure:

(i) creation of a high quality, welcoming and coherent facility;

(ii) excellent WOL performance through robustness, durability and resilience;

(iii) environmental quality and comfort of internal and external spaces;

(iv) excellent ESD and embodied energy performance;

(v) structural efficiency;

(vi) buildability and consistency of finish;

(vii) adaptability and future proofed construction; and

(viii) ease of maintenance.

(c) External materials and finishes must meet the expected standards of finish for civic buildings ensuring:

(i) consistency of finish;

(ii) well-considered use of colour and texture;

(iii) durability of surface finishes and fixtures;

(iv) resistance to damage from water, UV, accidental and intentional damage, maintenance and pest invasion (particularly at ground and roof levels);

(v) resistance to graffiti and vandalism; and

(vi) minimum recurrent maintenance.

C11.4.3 Requirements – Controlled Area

(a) The relationship of the landscape setting and the Stadium is critical to the success of the Controlled Area and sensitive integration must be achieved. The Controlled Area edge must, as a minimum:

(i) provide a well-designed transition between the surrounding landscape character of the Sports Precinct and the civic function of the Controlled Area;

(ii) support good visual links, comfort and efficiency of movement when moving to and from the Controlled Area;

(iii) support the efficient movement and transition of Patrons to the Sports Precinct from the Controlled Area when evacuating the Stadium in an emergency;

(iv) ensure formal integration that creates high quality, pedestrian focussed spaces in immediate areas;

(v) enable opportunities for the flexible location of the ‘secure line’ for Events;

(vi) conceal parking within or beneath the Controlled Area without adverse visual impact on people using the Controlled Area, people using the Sports Precinct and people on areas outside the Sports Precinct; and

(vii) provide a clear entry point for vehicles with minimal impact to surrounding pedestrian areas and key views of the Stadium.

(b) The Controlled Area must be a high quality landscape space with public realm elements that:

(i) support circulation around the Stadium for Patrons and vehicles;

(ii) suit its use both as an activation space and as a gathering space for significant volumes of people, and a transient or transition space during emergency evacuations of the Stadium;

(iii) make a strong visual impact commensurate with the visual prominence of the Controlled Area, especially from elevated locations;

(iv) correspond to the Stadium's built form and facade design strategy;

(v) enable easy navigation and efficient movement of people;

(vi) maximise WOL benefits by utilising resilient and robust materials, finishes and fixtures;

(vii) are non-slip, without trip hazards and meet Good Industry Practice with regard to fall prevention;

(viii) are easy to maintain and clean;

(ix) integrate landscape, engineering, public art and architectural elements including signage and wayfinding;

(x) provide flexibility of use by carefully integrating services, power, data and lighting; and

(xi) include well-designed, comfortable and robust furniture and fixtures.

C11.4.4 Requirements – Facade

(a) The façades for the Stadium should be designed on the basis of:

(i) delivering robust and enduring, civic construction quality;

(ii) creating a visually coherent built form, sensitive to its context;

(iii) addressing passive solar design principles;

(iv) offering dynamic night-time character, animation and performance;

(v) demonstrating passive security design principles; and

(vi) creating the focal point of an open, welcoming, activated Sports Precinct.

(b) Project Co must orientate facade elements and proportion the built form to provide solar access to major public areas and avoid excessive overshadowing to both internal and external public areas.

(c) The Stadium facade must:

(i) include legible, well scaled, and welcoming Stadium Entry Pointswith a clear and distinctive sense of arrival;

(ii) mediate between the extensive scale of the Stadium and the human scale of the Stadium User experience;

(iii) include access to the main entry levels located above the ground level service zone of the building;

(iv) be dynamic and distinctive and contribute to a memorable experience for Stadium Users;

(v) incorporate lighting and other opportunities to animate the Stadium to create distinctive night time identities for different Events;

(vi) enable internal public areas and terraces and decks to be visually open to the Sports Precinct, city and Swan River to capitalise on views;

(vii) optimise opportunities for visual transparency when viewed from inside and outside;

(viii) include appropriate solar protection and weather protection to the Controlled Area level entry points, Stadium Entry Points, other pedestrian entrances into the Stadium, and openings and windows at upper levels;

(ix) achieve a comfortable level of thermal performance for Stadium Users;

(x) integrate and conceal Engineering Services to minimise their visual impact;

(xi) respond to the site environmental conditions and relate to their specific orientation; and

(xii) optimise natural ventilation.

(d) The façade must have excellent WOL performance and must:

(i) be resistant to damage from water, routine maintenance and pest invasion (particularly at ground level);

(ii) be watertight and disperse water so that all water and moisture is discharged outside of the building;

(iii) provide continuous thermal insulation to minimise heat losses and gains to enclosed spaces of the Stadium;

(iv) act as an acoustic barrier to minimise sound transmission from external noise sources;

(v) not generate audible noise or transmit or amplify other structure-borne noise;

(vi) minimise air leakage or infiltration into enclosed spaces while optimising permeability for natural ventilation to the Seating Bowl elsewhere; and

(vii) allow for adequate cleaning and maintenance.

C11.4.5 Requirements – Stadium roof

(a) The Stadium roof must:

(i) provide a high level of comfort, environmental performance and weather protection for Stadium Users;

(ii) ensure that the Stadium roof contributes to an exciting, intimate atmosphere and distinctive experience within the Seating Bowl;

(iii) ensure the junctions between the roof and facade system are attractive and contribute positively to the overall appearance of the Stadium's built form;

(iv) exploit its materiality so as to ensure high quality natural light conditions within the Seating Bowl;

(v) ensure healthy grass cultivation on the Playing Surface;

(vi) provide good acoustic performance;

(vii) ensure the integration of sports lighting and Engineering Services within the Stadium roof form is efficient and attractive;

(viii) ensure flexibility to accommodate additional lighting, sound systems, pyrotechnics and other structural loads as necessary for Special Events;

(ix) ensure an elegant engineering solution that optimises the quantity of material used in construction;

(x) ensure that the integration of the roof design into the overall built form of the Stadium provides a positive impact on the ambience and atmosphere of the Seating Bowl and contributes positively to the Stadium's context;

(xi) ensure clear views of the Field Of Play consistent with fans-first principles; and

(xii) incorporate opportunities to use the Stadium roof as an attraction, such as a roof climb or roof walk experience, to complement and enhance Stadium tour packages.

(b) The unique parkland surrounds, Swan River and city provide a magnificent contextual setting for aerial views of the Stadium. Opportunities to incorporate the Stadium's name

or an identifying feature that is uniquely Western Australian into the roof design should be considered.

C11.4.6 Requirements – Seating Bowl

(a) The design and construction of the Seating Bowl must:

(i) for all Seating Positions for all Events other than Athletics Events, facilitate continuous, uninterrupted views of the Field Of Play and all Key Viewing Elements for the relevant Event and comply with the Sightline Criteria as described in Part D (Functional Brief) of these Design Specifications;

(ii) for those Seating Positions which are counted in the Minimum Athletics Capacity, optimise views of the Athletics Track and Field and comply with the Key Viewing Elements for Athletics Events and the Athletics Sightline Criteria as described in Part D (Functional Brief) of these Design Specifications;

(iii) ensure that the Seating Bowl geometry, particularly the arrangement of upper seating areas relative to the lower Seating Bowl, contributes to an exciting and intimate atmosphere;

(iv) ensure there is provision within the Seating Bowl to enable efficient alteration and customisation of branding so that a strong sense of identity can be created for Hirers across various Events;

(v) utilise the colour of seating and other fixtures in the Seating Bowl to create a distinctive identity for the Stadium while being neutral to accommodate a range of Home Teams;

(vi) locate Vomitories appropriately relative to seating areas to ensure efficient movement of Patrons;

(vii) allow for logical and efficient Expansion of seating in the future, which retains high quality views from seating areas to the Field Of Play;

(viii) ensure that IRUA Positions are located and designed to provide:

A excellent views to the Field Of Play and Seating Bowl;

B good access to Outlets, amenities and primary Circulation Areas;

C excellent wayfinding; and

D a generally high quality experience;

(ix) ensure opportunities for including glazing within the Seating Bowl that has a high level of transparency to ensure optimum viewing conditions to the Field Of Play;

(x) provide good acoustic performance within the Seating Bowl to enhance the Patron's experience;

(xi) maximise Event atmosphere through well considered materials and design strategies for seating blocks and Vomitories;

(xii) utilise high quality and robust materials within Circulation Areas of the Seating Bowl;

(xiii) provide good quality, tactile materials, colour and fittings within seating areas that contribute to a positive experience for Patrons; and

(xiv) ensure wayfinding is integrated with the design and layout of the Seating Bowl to enable efficient movement and navigation.

C11.5 INTERIOR ENVIRONMENT

The interior environment of the Stadium is to be of a high quality and contribute positively to the fan experience to support the fans-first vision for the Stadium. It is expected that the character, ambience

and comfort of the interior environment will make a significant contribution to the overall Stadium User experience of the Stadium.

C11.5.1 Principles

The design principles for the interior environments within the Stadium are to:

(a) create well lit, open and generously scaled public areas;

(b) ensure a clearly legible internal environment that assists wayfinding and enables clear understanding of the Stadium's functions. Provide visual permeability between interior and exterior spaces;

(c) provide views to the Playing Surface, Swan River and city;

(d) ensure excellent environmental quality and Stadium User comfor;

(e) provide spaces that are flexible and adaptable; and

(f) ensure planning of internal spaces optimises access to daylight, where possible.

C11.5.2 Requirements – Interior environments

Interior environments must:

(a) accommodate large volumes of people in a way that is safe, clear and enjoyable;

(b) ensure that public Concourses are of a generous scale and provide volumetric interest to Stadium Users;

(c) ensure that Engineering Services are carefully integrated into public areas so that their visual impact is minimised;

(d) ensure clear visual links to strategic places or reference points such as entries and exits and vertical circulation, from key public areas;

(e) provide a clear, legible and permeable relationship between interior and exterior spaces. This includes enabling Stadium Users to use reference points of interest outside of the Stadium, such as to key elements in the Sports Precinct, the Swan River and the city;

(f) ensure planning of internal spaces optimises access to daylight, where possible;

(g) provide opportunities for access to break-out spaces adjacent to movement corridors and internal Concourses;

(h) ensure internal circulation areas and Concourses are organised to facilitate flexible use before and after Stadium Events to maximise user amenity and commercial activation opportunities;

(i) ensure toilets and amenities are welcoming environments, utilising robust and engaging materials, fittings and fixtures and good lighting;

(j) provide robust comfortable and engaging furniture to internal public spaces;

(k) coordinate the integration of wayfinding, signage and branding with internal layouts, materials and volumes to improve the experience of Stadium Users;

(l) provide quality staircase environments through good natural lighting, material selections and welcoming volumetric treatment to encourage their use;

(m) optimise internal environmental comfort by ensuring:

  (i) excellent acoustic performance;

  (ii) excellent daylighting while minimising glare and solar gain;

  (iii) good thermal comfort; and

  (iv) exploitation of natural ventilation opportunities; and

(n) incorporate lighting which:

  (i) enhances the overall ambience;

  (ii) provides a secure environment;

(iii) uses indirect lighting where appropriate;

(iv) minimises glare and provides areas of interest for Stadium Users;

(v) integrates with wayfinding and signage; and

(vi) is sustainable.

C11.6 STADIUM ACCESS AND CIRCULATION

(a) A large number of people will be entering and exiting the Stadium within short periods of time. This will include a broad range of Stadium Users including Patrons (including VIP Patrons), Media Personnel, Event logistics personnel, persons making deliveries, Stadium Staff, Players and Performers. These different needs and experiences of these people must be considered in relation to flows, efficiency, noise security and a sense of place.

(b) Access points and circulation areas within the Stadium including the public Concourse should contribute to an exciting and engaging atmosphere. The approach to the Stadium and movement within the Stadium should inspire Stadium Users and contribute to a positive and exciting atmosphere. Thresholds between key spaces and areas of the Stadium should be treated as opportunities to create a vivid and memorable experience for Stadium Users and should integrate wayfinding and signage to facilitate good legibility and efficient movement.

(c) The location and design of Stadium Entry Points, other entrances and Circulation Areas for the Stadium will need to consider the location of the transport infrastructure nodes, including the Bus-Hub, the SRPB, the Rail Passenger Assembly Areas, the Pedestrian Underpass and the Goongoongup Rail Bridge and Windan Bridge pedestrian assembly areas, and the expected direction and flow rates of pedestrian movements between the Stadium and the transport infrastructure nodes.

(d) Entrances and transitional spaces between external and internal areas will need to consider a range of people, including those of different ages, mobility and cultural backgrounds, who may not speak or read English and who may have an impairment or disability.

(e) As part of the new Perth Stadium Project's fans-first objective, from the moment that Patrons arrive on the public Concourses movement into and around the Stadium should be clear, simple, safe and legible. The circulation strategy should be immediately understandable to those entering the Stadium for the first time.

(f) The internal access and circulation of the Stadium must:

(i) be based on a legible plan that is easy to navigate with intuitive wayfinding;

(ii) be clear to the first time Stadium User and should allow maximum access to daylight, external views and outdoor spaces;

(iii) create clear hierarchies of movement and legible circulation networks especially from Stadium Entry Points, other entrances and Concourses;

(iv) ensure simple and clear Patron routes within the Stadium with clear delineation between Premium Product Areas, General Admission Areas, Back of House areas and Team Facility Areas; and

(v) simplify access to Concourses and to seating areas in the Seating Bowl for Patrons so as to reduce the potential for entering restricted areas and the potential for increased Patron movement volumes due to ineffective circulation or re-circulation.

(g) Access and egress must be designed in accordance with all relevant Quality Standards, including the **Green Guide**.

(h) (**Principles**) The design principles for Stadium access and circulation are to:

(i) provide clearly legible entrances into, and well-considered access around, the Stadium;

(ii) ensure all entrances are clearly legible;

(iii) provide appropriate separation of Stadium Users where required;

(iv) ensure well-designed Universal Access is provided without compromising legibility, connectivity and quality of experience;

(v) minimise distances of travel for Stadium Users;

(vi) provide 360 degree circulation Concourses without level changes on all levels of the Stadium that are accessed by Patrons;

(vii) provide 360 degree access around the edge of the Stadium for the Controlled Area;

(viii) provide visual permeability and links to points of arrival, vertical circulation, Vomitories, local landmarks and other strategic locations;

(ix) integrate signage and wayfinding within built form where possible; and

(x) ensure toilets and amenities are easy to locate from public areas and easy to access for all Stadium Users.

C11.6.1 Requirements – Circulation Routes

The circulation routes must:

(a) ensure that circulation and Concourse areas are appropriately scaled to facilitate good movement for high volumes of people and enable good connectivity to strategic locations, Vomitories and amenities;

(b) ensure adequate dedicated areas for Patron queuing and waiting associated with toilet facilities, bars, concessions, ATMs and other customer service functions without impeding on circulation and Concourse areas;

(c) maximise quality views both to external areas, or other internal spaces to create exciting journeys and aid in orientation;

(d) use visual transparency to internal and external spaces to enhance vertical and horizontal connectivity;

(e) minimise journey times by optimising functional adjacencies and co-locating similar or dependent functions in the same areas;

(f) ensure that Stadium User journeys are in themself enjoyable and exciting;

(g) ensure logistical, service and cleaning access does not disrupt the delivery of Services and the Stadium Activities, and is not readily accessible to other Stadium Users; and

(h) clearly establish service, delivery and waste management routes from the Loading Docks to all areas of the building as needed.

C11.6.2 Requirements - Wayfinding and Signage

Project Co must provide a wayfinding system within the Stadium that creates a welcoming, enjoyable, safe and easy to navigate environment. Requirements include:

(a) integration of wayfinding through architectural, graphical, public art, lighting, signage and Stadium branding elements;

(b) consistency of wayfinding strategy between the Stadium and Sports Precinct;

(c) confirmation of the start and end points of the Stadium User journey through the Stadium, Sports Precinct and Pedestrian Underpass;

(d) identification of location within a building or an external space;

(e) reinforcement of correct direction;

(f) orientation of Stadium Users within the Stadium;

(g) alerting Stadium Users to hazards;

(h) identifying destinations on arrival; and

(i) safe escape in an emergency.

C11.6.3 Requirements - Vertical Circulation

(a) Lifts and escalators for the Stadium must:

(i) be located so that they are clearly visible from internal public areas and Stadium Entry Points;

(ii) be legible and directly accessible within the main entry and the principal circulation paths on each floor and in accordance with travel activity projections; and

(iii) be integrated with comfortable, appropriately-sized, dedicated, embarkation areas.

(b) Escalators must be designed to minimise risk of injury or death, including by:

(i) provision of appropriately sized embarkation and disembarkation areas;

(ii) avoidance of entrapment locations;

(iii) avoidance of extra long runs without enclosure or fall protection; and

(iv) minimisation of falls opportunities.

(c) Primary stairs must be part of the primary circulation and must:

(i) be located in areas of maximum foot traffic to reduce the volume of lift usage;

(ii) be located adjacent to main Stadium Entry Points and common spaces to provide convenient access between all floors;

(iii) provide convenient Stadium Staff movement between secure and public areas of the Stadium;

(iv) be designed as engaging places to encourage their use; and

(v) have excellent acoustic performance to contribute to a positive Stadium User experience.

(d) The vertical circulation system must:

(i) facilitate safe egress for all Stadium Users in the event of an emergency in accordance with the requirements of all relevant Quality Standards; and

(ii) facilitate movement of all indoor electric vehicles that are likely to be used in the performance of the Services and the delivery of Stadium Activities, including scissor lifts and forklifts, to the Concourse of all levels of the Stadium.

C12 ENGINEERING SERVICES

C12.1 PRINCIPLES

The Engineering Services principles are to:

(a) utilise innovative design, technologies and analytical tools to optimise energy performance and minimise resource consumption where LCC analysis shows proven benefits;

(b) ensure systems are flexible, efficient and economical to use;

(c) ensure appropriate zoning of systems to optimise controllability, flexibility, and efficiency;

(d) integrate systems within an energy efficient building to maximise natural ventilation and lighting while minimising mechanical heating and cooling and artificial lighting;

(e) provide thermal comfort through correctly sized air-handling systems to control humidity and temperature;

(f) provide superior indoor air quality utilising both mechanical and passive ventilation systems where appropriate;

(g) ensure systems operate without compromising acoustic comfort;

(h) consider the use of standardised and prefabricated elements generally in the design of systems;

(i) select systems on the basis of well understood service and local maintenance requirements;

(j) ensure a high level of systems control, monitoring and metering where appropriate to Functional Units to enable identification of high demand areas for Utilities and wasted Utilities to assist ongoing optimisation of systems performance; and

(k) ensure Stadium Personnel can easily operate controls without compromising overall system performance.

C12.2 REQUIREMENTS

(a) (**Land Conditions**) Engineering Services associated with the development of the Stadium and Sports Precinct, and all Engineering Services installed as part of the Off-Site Infrastructure Works, must be designed, constructed and commissioned taking into account all Land Conditions and must minimise the degree of excavation and removal of soil from the Site.

(b) (**Integration**) Engineering Services associated with the development of the Stadium, Sports Precinct and Off-Site Infrastructure must be designed and executed to ensure that the works integrate seamlessly with all Engineering Services works including State Transport Infrastructure Works and all Utilities, FF&E and other works undertaken by the State as part of the Stadium Support Works.

(c) (**Service Life**) Engineering Services must be designed to enable the Stadium, Sports Precinct and Off-Site Infrastructure to achieve the required Service Life with proper maintenance.

(d) (**Design Life**) A minimum Design Life is specified for some Engineering Services components and structural elements. Project Co must ensure Engineering Services systems are selected to achieve the minimum nominated Design Life.

(e) (**Zoning**) The zoning of Engineering Services systems must:

  (i) take into account the Event Day and Non-Event Day uses of Functional Units;

  (ii) accommodate local control for Stadium Users with BMS override;

  (iii) provide for efficient use of Engineering Services systems;

  (iv) accommodate the sub-metering requirements of the Governance Agency, Stadium Operator and Project Co to facilitate on-charging of Utilities consumption; and

  (v) in the case of mechanical services works, not compromise thermal comfort for Stadium Users.

(f) (**Flexibility**) Engineering Services must be designed to accommodate Expansion, Reconfiguration and Lifecycle Services.

(g) (**Maintainability**) The design of the Engineering Services must consider maintenance during the Operating Phase. Consideration must be given to replacing plant in a manner which minimises the impact on Stadium Activities.

(h) Detailed design and construction requirements for Engineering Services are included in Part E (Technical Brief) of these Design Specifications.

C13 ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD)

(a) It is the State's intention that all public infrastructure projects, including the Stadium and Sports Precinct, are designed, constructed, maintained and operated to achieve a high

level of environmental sustainability. It is also the State's strong preference that any Commercial Facilities achieve similar standards.

(b) The design, construction, maintenance and operation of the Stadium and Sports Precinct should set a leading example of a sustainable sporting facility befitting the project vision for a world class Stadium.

C13.1 REQUIREMENTS

(a) Certification of Green Star compliance through the Green Building Council of Australia is not required, however Project Co must develop baseline ESD targets and demonstrate that the Stadium and Sports Precinct is capable of meeting and exceeding these targets to the extent quantified in Part E (Technical Brief) of these Design Specifications.

(b) Project Co must ensure that the Stadium and Sports Precinct incorporates ESD Initiatives that deliver a highly efficient and environmentally sustainable outcome. In determining the ESD Initiatives for the new Perth Stadium Project, Project Co must select initiatives that will deliver operational savings and tangible environmental benefits to the Stadium and Sports Precinct and the wider community.

C13.1.1 Requirements - ESD

(a) The ESD requirements for the Stadium and Sports Precinct (**ESD Requirements**) include:

(i) deliver the Stadium and Sports Precinct with minimal impact on the Environment during the D&C Phase and Operating Phase;

(ii) promote efficiency in all aspects of the design of the Stadium and Sports Precinct;

(iii) minimise impact on the Environment during the Operating Phase through minimising greenhouse gas emissions, waste and energy and water consumption;

(iv) provide infrastructure and Engineering Services that are adaptable to change and capable of supporting Scheduled Maintenance, Lifecycle Services, Reconfiguration and Expansion without significant alteration, and with minimal disruption to Stadium Activities and delivery of the Services;

(v) minimise vehicle dependency through provision of facilities for pedestrians and cyclists and through maximising the utilisation of public transport by ensuring convenient access to public transport nodes;

(vi) maximise energy efficiency and minimise energy consumption through the incorporation of design initiatives which target energy minimisation such as daylighting, solar energy harvesting, provision of low energy demand fittings and equipment, use of mechanical ventilation (where feasible) and providing a high level of control for Engineering Services systems to maximise efficiency of use;

(vii) incorporation of design initiatives which promote waste minimisation and recycling of waste during the D&C Phase and Operating Phase; and

(viii) active promotion of sustainability by communicating to Stadium Users information regarding the ESD Initiatives implemented in the design, construction, completion, commissioning and maintenance of the Stadium and Sports Precinct (e.g. using the Displays or LED Superscreen).

(b) (**ESD Management Plan**) Project Co must develop an ESD Management Plan for the Stadium and Sports Precinct in accordance with the requirements of Schedule 19 (Plans) of this Agreement.

(c) Further requirements in respect of ESD are included throughout Part E (Technical Brief) of these Design Specifications.

C14 FLEXIBILITY, RECONFIGURATION AND EXPANSION

C14.1 MULTI-USE AREAS

(a) Flexibility and adaptability of spaces to facilitate multiple uses and Expansion must be a key tenet upon which the design of the Stadium and Sports Precinct are based.

C14.2 TEAM FACILITIES

Team Facilities must be designed to be flexible to accommodate:

(a) Expansion of Team Facilities areas into adjacent soft space; and

(b) potential alteration to accommodate a third Home Team (AFL or otherwise).

C14.3 PREMIUM PRODUCT AREAS RECONFIGURATION

(a) (**Premium Product Areas Reconfiguration**) The Premium Product Areas must be designed to be flexible in order to accommodate Reconfiguration of the various Premium Product Areas (including clubs, Suites, lounges, terraces and decks) to suit alternative uses by Hirers (which may require unique room set-ups and configurations), including an array of Function types and Events.

(b) The Premium Product Areas must also be designed to allow conversion of areas from one Premium Product offering to another to give the Stadium Operator the ability to meet changes in product demands over time. Such changes may include:

(i) conversion of OCRs to a lounge based product;

(ii) replacement of terraces with OCRs;

(iii) alterations to Suite sizes and mix; and

(iv) conversion of a Function Room(s) into a lounge based product.

C14.4 RECTANGULAR RECONFIGURATION

(a) The Stadium must be designed to accommodate Reconfiguration of the Seating Bowl for Rectangular Events.

(b) Project Co must prepare a Rectangular Reconfiguration Works Plan in accordance with the requirements set out in Schedule 19 (Plans) of this Agreement.

(c) In developing the concept for Rectangular Reconfiguration, Project Co must ensure the solution is efficient and low cost to erect and dismantle. Conversion of the Seating Bowl to or from rectangular format for a Rectangular Event must be achievable within a 12 hour period with all aspects of the Stadium and Sports Precinct remaining Fit For Purpose with the exception of the Playing Surface, which must satisfy the FFP Warranty for the next Stadium Event or Permitted Training. The time limit for conversion includes ensuring Drop-In Seats are stored appropriately when not in use.

C14.5 EXPANSION

(a) The Stadium must be designed to accommodate future Expansion. This Expansion must be achieved via a self-contained solution such that no additional support, upgrades or capacity are required to the existing:

(i) Stadium structure;

(ii) Engineering Services; and

(iii) Utility Infrastructure to and within the Stadium and Sports Precinct;

to operate the expanded facility.

(b) The design and construction of the structure, facade and roof of the Stadium must be cognisant of the requirement for Expansion and take into account the Expansion Works Plan, to enable efficient implementation of the Expansion Works.

(c) The design of the structure and facade for the Expansion must integrate seamlessly with the balance of the Stadium to provide a coherent, logical, orderly and aesthetically consistent relationship between the old and new components of the Stadium when

viewed from all directions external to the Stadium (including from above) and from any position within the Seating Bowl.

(d) The design for the Stadium must take into consideration Project Co's design for the Athletics Reconfiguration such that the Expansion can be implemented without any requirement to alter the design and construction methodology for the Athletics Reconfiguration, and vice versa. In particular, the Expansion must be able to be implemented on an independent basis without detrimental impact to the Athletics Reconfiguration proposal.

(e) Sightline Criteria for Expansion Seats must be consistent with the Sightline Criteria outlined in clause D7.4.1 of these Design Specifications to the extent possible without adversely affecting Patron perception of safety or creating the potential for Patrons to experience vertigo, having regard to the angle of the rake of the extended Seating Bowl.

(f) The design and construction methodology for the Expansion must allow for the Expansion Works to be implemented with minimal impact on the Stadium Activities, and preferably with no impact on Sporting Events involving the Home Teams.

C14.6 ATHLETICS RECONFIGURATION

(a) The Stadium must be designed to accommodate the Athletics Reconfiguration for Athletics Events.

(b) Project Co must prepare an Athletics Reconfiguration Works Plan in accordance with the requirements set out in Schedule 19 (Plans) of this Agreement.

(c) In developing the concept for Athletics Reconfiguration, Project Co must ensure the following:

(i) that the Athletics Track can be accommodated within the Seating Bowl and:

A can host an Athletics Event;

B can achieve the required adjacencies to the ancillary facilities described in the IAAF Track and Field Facilities Manual 2008;

C can provide a favourable microclimate that achieves optimal athletic performance within the tolerances for wind assisted performance to promote the fastest legal performance times;

(ii) that the section of the Stadium which would be reconfigured for the Athletics Event:

A does not accommodate Functional Units which are expensive to relocate and essential for continuing Stadium operations, including (for example) Primary Production Kitchens, essential Engineering Services and critical structural elements;

B has a suitable substrate to allow the track to be certified by the IAAF; and

C when combined with the area of the Stadium which is not reconfigured, meets the IAAF gradient requirements for tracks and runways as specified in Chapter 2 Section 2.1.3 of the IIAF Track and Field Facilities Manual 2008 to achieve Certification; and

(iii) that the Athletics Reconfiguration can be undertaken in a manner which minimises impact on the Stadium to host other Events, through staging and construction timing of any Athletics Reconfiguration works to suit the annual Event schedule.

C14.7 FUTURE PROOFING

(a) The concepts of open ended planning, sharing of rooms, overflow design and modular planning must be incorporated during Design Stage 1 to ensure long term flexibility. Strategies may include:

(i) locating vertical circulation and emergency egress routes (including ramps, stairs and Vertical Transportation) so that they can continue to be extended logically for the Expansion;

(ii) ensuring that major areas of immovable plant, egress stairs, shafts and operational facilities such as Catering Facilities (Primary Production Kitchen) and Loading Docks are, wherever possible, located in positions that will not prevent or be adversely affected by changes of configuration (particularly to the Premium Product Areas and Rectangular Reconfiguration), or unduly limit Expansion and Athletics Reconfiguration should these need to occur;

(iii) locating areas that may expand with time next to 'soft' spaces or at the building's perimeter to provide an area to expand into;

(iv) within Functional Units or levels of the Stadium, promoting the sharing of facilities through the:

A provision of consolidated but enhanced amenities (to the extent permitted within Part D (Functional Brief));

B provision of shared administrative functions (where suited to circulation requirements); and

C clustering of facilities where this does not compromise required function and functional adjacencies;

D pooling of resources (e.g. in relation to loose furniture, loose audiovisual equipment).

(v) modular design that enables functions of areas to be completely replaced with an alternative use that fits into the same standard module or structural grid (e.g. to allow for increased or decreased capacity for OCRs); and

(vi) ensuring that rooms are generic where practicable to enable changes in use on a routine basis or over time (e.g. rooms are not permanently branded or have the ability to be branded to suit the Event and rooms are designed to accommodate multiple, complementary uses);

(b) Spatial planning in Engineering Services plant areas (or separate plant buildings), risers and ducts must allow for additional Engineering Services capacity as detailed in Part E (Technical Brief) of these Design Specifications; and

(c) Floor to ceiling heights must be as required for the Stadium Activities and for movement of vehicles, FF&E and Services Equipment used in the various areas of the Stadium. There must be adequate service spaces above ceilings which are zoned as required to facilitate the coordination of Engineering Services with each other and with structural elements.

C14.8 FLEXIBILITY, RECONFIGURATION AND EXPANSION REPORT

(a) The DBFM Works as outlined in the State Project Documents represent the first stage of the development of the Stadium and Sports Precinct.

(b) During the Service Life of the Stadium and Sports Precinct alterations to internal planning, implementation of Premium Product Areas Reconfiguration, implementation of Rectangular Reconfiguration, Expansion and implementation of Athletics Reconfiguration may be reasonably anticipated as a result of changes to Premium Product demand, operational requirements, scheduling of Rectangular Events, population growth and scheduling of the Athletics Events (as applicable). Accordingly, some allowances must be made for such alterations to the Stadium and Sports Precinct as part of this current stage of development.

(c) As a guiding principle with respect to determining these allowances, the required Reconfigurations and the future Expansion must be able to be delivered cost effectively and with minimal impact on delivery of the Services and operation generally of the Stadium and Sports Precinct.

(d) Project Co must prepare a Flexibility, Reconfiguration and Expansion Report in accordance with the requirements set out in of Schedule 5 (Design Development) of this Agreement.

C15 WHOLE OF LIFE DESIGN

(a) (**Low lifecycle cost**) The Stadium and Sports Precinct must be designed with the objective of achieving low LCC for the Western Australian Government.

(b) (**Economic needs over Service Life**) The design of the Stadium and Sports Precinct must address the economic needs of the Stadium and Sports Precinct over its Service Life through application of WOL design principles to ensure:

(i) minimisation of operating costs;

(ii) staffing efficiency;

(iii) durability;

(iv) minimisation of maintenance and asset replacement (to consequently minimise LCC and disruption to Stadium operations);

(v) minimisation of equipment replacement costs;

(vi) minimisation of cleaning costs;

(vii) minimisation of energy and water usage; and

(viii) minimisation of waste.

(c) (**Design for operational efficiency and viability**) The layout of the Stadium and Sports Precinct must seek to maximise operational efficiency and therefore minimise Operating Costs. This may be achieved in several ways including:

(i) promoting staff efficiency through careful schematic design of Functional Areas and Functional Units, including by minimising travel distances between frequently used spaces (e.g. locating kitchens in close proximity to the areas they will serve);

(ii) making efficient use of space by locating support areas so that they may be shared by adjacent Functional Areas or Functional Units; and

(iii) incorporating multi-purpose areas within the design.

(d) (**Daylighting and ventilation**) The use of controlled natural light and ventilation to offset the cost of artificial illumination and environmental management must be incorporated to the extent that it is not in conflict with the intended function of the Functional Area or Functional Unit.

(e) (**Materials and finishes selections**) The selection of materials and finishes must minimise the costs associated with ongoing repair and maintenance. In particular, materials and finishes should be selected, detailed and installed to resist the effects of accidental and intentional damage.

C16 LIFECYCLE COSTING ANALYSIS

(a) The design and construction of the Stadium should use a lowest LCC approach for all major elements where it is economically feasible and aesthetically and technically (including acoustically) appropriate to do so.

(b) During the Design Development Process, the principles of LCC should be applied to help optimise the choices for major elements including Engineering Services equipment, special technologies (e.g. sports lighting equipment), facade materials, finishes and FF&E. Project Co must report on the LCC analysis within the Design Development Plan and provide detailed justification where there is significant difference between the operating costs of selected elements compared to alternative selections. It is expected that where the LCC for given elements are not well defined within industry, analysis and decision making must be made with consideration of relevant qualitative issues.

C17 SAFETY IN DESIGN

(a) Safety and security of Stadium Users is of the highest priority and must be considered at every stage in the planning and design of the Stadium, Sports Precinct and Off-Site Infrastructure.

(b) Project Co must implement a Safety in Design process which focuses on minimising or eliminating hazards identified during the design phase that may pose a risk of injury or death throughout the Service Life of the Stadium, Sports Precinct and Off-Site Infrastructure. The process must be undertaken in accordance with relevant Quality Standards and Laws, and must consider all aspects of design including facilities, hardware, systems, equipment, products, tooling, materials, energy controls, layout and configuration.

(c) The Safety in Design process must be implemented early during the planning and Design Stage 1, with an emphasis on making appropriate choices with respect to design (layout and configuration), materials selection, construction methodology and maintenance approach.

(d) The Safety in Design process must consider the Service Life of the Stadium and Sports Precinct. Key principles to be considered include:

(i) (design for safe construction) to facilitate safe handling and installation;

(ii) (design to facilitate safe use) giving consideration to the intended function of the Stadium and Sports Precinct, including the type of Events it may host, the likely workflows and systems of work, the type of plant and equipment that may be used in the Stadium and Sports Precinct and any specific hazards to Stadium Users;

(iii) (design for safe maintenance) so that maintenance of the Stadium can be performed at ground level or safely from the structure and with sufficient access to undertake the work in a safe manner;

(iv) (design for safe Expansion, Reconfiguration and refurbishment) to enable easy and safe re-installation or removal of fittings and fixtures; and

(v) (design for safe demolition) to enable easy and safe demolition if required at the end of the Service Life of the Stadium and other facilities located on the Sports Precinct.

(e) The Safety in Design process must be based on a risk management approach and involve a multi-disciplinary approach and engagement with the relevant Project Stakeholders for both D&C Phase and Operating Phase (i.e. designers, construction personnel, operational staff and maintenance personnel).

(f) At the conclusion of the Safety in Design process Project Co must prepare a Safety In Design Review Report which fully documents residual risks upon completion of the Safety in Design process, in accordance with the requirements set out in Schedule 5 (Design Development) of this Agreement.

C18 INNOVATION

(a) It is recognised that Australian, international and industry standards do not necessarily keep pace with technological advances. This must not limit the Project Co's ability to pursue technological solutions and innovation in the design and construction of the Stadium and Sports Precinct. Technologies and innovations which may be considered for incorporation, or for which future provision may be made, include:

(i) alternative architectural design concepts;

(ii) alternative building materials, including facade and roof technologies;

(iii) alternative construction systems and methodologies (e.g. modularised);

(iv) integration of management systems for Engineering Services;

(v) flexible seating technologies;

(vi) Pitch technologies (e.g. aeration systems, protection technologies to protect Playing Surface and Pitch during Entertainment Events);

(vii) innovative roof designs which maximise seat coverage whilst allowing light levels and good ventilation to optimise the quality of the Playing Surface;

(viii) innovative features or attractions within the Stadium and Sports Precinct to encourage Patrons to arrive early and stay longer post game;

(ix) alternative access control technologies for Event operations, General Admission Patrons and Premium Product Patrons such as integration of ticketing and purchasing on personal electronic devices;

(x) alternative energy systems;

(xi) alternative water usage/storage systems;

(xii) alternative information and communication technologies;

(xiii) alternative audiovisual technologies;

(xiv) innovative design solutions which promote the ability to use the Stadium efficiently when it is less than full and also give the appearance and atmosphere of it being full;

(xv) innovative design features that maximise the flexibility of use for Premium Product Areas for the purposes of adapting easily between each Event or Function and for the purposes of altering the future mix of Premium Products;

(xvi) innovative design solutions for Reconfiguration and Expansion which are cost effective to implement and operationally efficient; and

(xvii) innovative lighting for profiling of the venue (i.e. transforming the venue to be the Home Team venue for a range of Hirers or sports and to support its identity as the most high profile sporting facility in WA).

(b) Project Co is encouraged to enter into dialogue with the State where it perceives that significant value / Stadium User benefit can be achieved through adoption of technologies, innovations and alternative solutions.

C19 DELAYED DESIGN AND PROCUREMENT

(a) The State recognises that a number of systems and equipment items required to be provided by Project Co as part of the DBFM Works are subject to change due to the evolution of technologies and the evolution of work practices and methods. For a number of systems and equipment items within the DBFM Works, the State wishes to delay the design and procurement of these as late as possible within the D&C Phase without creating a risk of delay to Technical Completion by the Date for Technical Completion. Currently the State anticipates these systems and equipment items to be limited to:

(i) (**ICT Systems and AV Systems**) The State recognises that the current day systems and equipment described in the ICT Systems and AV Systems Chapters of these Design Specifications are highly technological elements, and are subject to 'evolve' on a somewhat frequent, ongoing basis. The State wishes to delay the design and procurement of the ICT Systems and AV Systems so that it can take advantage of technologies evolving and emerging during the D&C Phase which include:

A emerging technology systems and equipment achieving better performance and functionality; and

B traditional technology systems and equipment evolving to achieve better performance and functionality;

(ii) (**Catering Facilities and Waste Management Facilities**) The State recognises that the catering operation and methodology in modern stadia is

an ever evolving model that can also change depending on the practices and preferences of the Stadium Operator and its Catering Operator. As the appointment of a Stadium Operator is expected to occur during the D&C Phase, the State wishes to delay the design and procurement of the Catering Facilities and Waste Management Facilities, including the design, layout and general operational strategies of the Catering Facilities and Waste Management Facilities, including types, quantities, locations and Engineering Services requirements of Group 2 FF&E;

(iii) (**Fitout to Team Facilities and Retail Facilities**) In accordance with Chapter D6 (Team Facilities) and Chapter D11 (Retail Facilities), the State seeks flexibility to facilitate:

A delayed design and procurement to facilitate customisation of fitout to limited areas of the Home Teams' Change Rooms; and

B delayed design and procurement to facilitate customisation of the Integrated Fitout of the Sports Retail Store;

(iv) (**State Partners**) In accordance with clause D16.4 (State Partners) of these Design Specifications the State seeks to enter into contractual arrangements with third parties for financial sponsorship for the fitout of certain Premium Product Areas, General Admission Arteas and key public spaces. The fitout of these areas must be delayed to facilitate customisation of fitout and integration of State Partner branding for the purposes of maximising the value of the sponsorship and the extent of benefit to all parties; and

(v) (**Stadium Operator facilities**) As the appointment of a Stadium Operator is expected to occur during the D&C Phase, the State wishes to delay the design and procurement of the:

A internal layout of the Stadium Operator's Administration Facilities to incorporate the Stadium Operator's operational requirements; and

B final design of the Ticket Control Points, Ticket Boxes and Patron Services Offices until the appointment of the Stadium Operator's ticketing agent, to incorporate the ticketing agent's functional, technical and operational requirements.

(b) Project Co must develop a Delayed Design and Procurement Plan in accordance with Schedule 5 (Design Development) of this Agreement.

C20 MANAGING DESIGN QUALITY

C20.1 GENERAL REQUIREMENTS

The design of the Stadium, Sports Precinct and Off-Site Infrastructure must be managed using a Quality System in accordance with the ISO 9001 series.

C20.2 COLLABORATION AND CONSULTATION

(a) (**Collaboration**) Improved design outcomes demand a more integrated team approach to the design process and a greater awareness of end user needs. Project Co must ensure that its multidisciplinary team is engaged and coordinated during the D&C Phase to promote a creative and innovative problem solving approach to ensure the best design outcomes are achieved.

(b) (**Consultation with Stadium Users**) A critical success factor for the new Perth Stadium Project will be the relationships formed with the Stadium Users that will attend Events, access Services or work within the Stadium, Sports Precinct and Off-Site Infrastructure. Consequently, the State places a high level of importance on engagement with Project Stakeholders throughout all phases of the new Perth Stadium Project, with an emphasis on regular interaction throughout all stages of design, to ensure that the Stadium, Sports

Precinct and Off-Site Infrastructure meet the requirements of its end users, including in particular the Patrons in line with the fans-first philosophy.

(c) Without limiting clause 26 of this Agreement, Project Co must, in conjunction with the State, consult User Groups in the development of the design of the Stadium, Sports Precinct and Off-Site Infrastructure.

(d) The State Stakeholder Management Plan may be amended by the State from time to time.

(e) A formal User Group process must be established to obtain end user and operational input across the range of Stadium Activities to inform the design in accordance with Schedule 5 (Design Development) of this Agreement.

C20.3 DESIGN REVIEW

(a) Research demonstrates that well-designed buildings and spaces can provide significant social, environmental and economic benefit to a community. The process of design review is geared towards maximising these potential benefits in a given development, representing better value for the Western Australian Government.

(b) As part of its commitment to ensuring the highest levels of design quality, Project Co must undertake a formal design review process at critical stages of the Design Development Process, including:

(i) at or near the completion of the Design Stage 1, prior to finalisation of the Stage 1 Design Deliverables;

(ii) at or near the completion of the Design Stage 2, prior to finalisation of the Stage 2 Design Deliverables; and

(iii) (iii) at or near the completion of the Design Stage 3, prior to finalisation of the Stage 3 Design Deliverables;

using peer reviewers nominated by Project Co and the State who are experts in the design, construction, maintenance and operation of stadia.

(c) The review process must be aligned with the DBFM Works Program to ensure that reviews take place sufficiently early in the design process to reduce the risk of abortive work and at key milestones, as part of a process of project sign-off before proceeding to the next stage.

(d) The review process must be co-ordinated by Project Co in a professional manner and must allow for:

(i) involvement of State Associates, including project team representatives, consultant advisors (including its nominated peer reviewers) and representatives from the Office of the Government Architect;

(ii) involvement of Project Co Associates, including project team representatives, consultant advisors (including its nominated peer reviewers) and Subcontractors responsible for delivery of the Services;

(iii) advance scheduling of each design peer review workshop with at least 4 weeks prior notice to all participants;

(iv) circulation of the most current Design Documentation at least two (2) weeks prior to each scheduled design peer review workshop;

(v) a two (2) day ‘design peer review workshop’ at each Design Stage as described at paragraph (b); and

(vi) preparation of a Design Peer Review Report detailing all matters considered and issues raised in the review, including a schedule of actions to be undertaken by Project Co to address the issues raised.

(e) At the conclusion of each review process, Project Co must address the actions described in the Design Peer Review Report in the Design Documentation and demonstrate ‘close out’ of these actions to the State.

(f) The outcomes from each 'design peer review workshop' must be reflected in the final drafts of the Design Stage 1 Report, the Design Stage 2 Report and the Design Stage 3 Report.

(g) While no specific milestone or formal review, presentation or report is required for the For Fabrication Design Deliverables, Project Co must submit the For Fabrication Design Deliverables as set out in Schedule 5 (Design Development).

C20.4 DESIGN QUALITY BENCHMARKING

(a) Design quality Benchmarking has been undertaken by the State to review precedents and current trends in Australian and international stadia.

(b) The intent of the design quality Benchmarking is:

(i) to support and clarify the State's design aspirations and requirements of the Stadium and Sports Precinct by demonstrating through images, appropriate outcomes that have been achieved in other projects;

(ii) to encourage Project Co to pursue innovative design solutions consistent with the State's Commitment to delivering high design quality in major public works projects; and

(iii) to support design review processes during the D&C Phase by enabling a qualitative comparison of Project Co's proposed outcomes for the Stadium and Sports Precinct against the aspects of the nominated reference projects indicated in the images.

(c) The design quality Benchmarking aims to clearly communicate the State's expectations with regards to the design quality of key elements of the Stadium and Sports Precinct, including the:

(i) Project Vision, Aspirations and Objectives;

(ii) urban design and landscape of the Sports Precinct;

(iii) plaza / forecourt;

(iv) Stadium facade;

(v) Seating Bowl;

(vi) Stadium roof;

(vii) interior environments, access and circulation; and

(viii) DBFM Transport Infrastructure.

(d) The images included in the reports attached at Appendix H3 (Design Quality Benchmarks) have been selected for being able to demonstrate achievement of specific design outcomes outlined in these Design Specifications which are indicative of the quality outcomes that the State requires for key elements of the Stadium and Sports Precinct. The benchmark images are for reference for the purpose of guiding design and quality standards and are intended to demonstrate through images where acceptable design quality outcomes have been achieved in other projects.

(e) No single project in its entirety will be suitable as an exemplar for the Stadium or Sports Precinct. For this reason, the images demonstrate what the aspect of the particular project to be used for design quality Benchmarking is. Each image is labelled with the aspects that the image actively demonstrates for the purpose of design quality Benchmarking, using lines or arrows to highlight the relevant parts of the image where necessary. Aspects of the images that do not reflect these Design Specifications should be disregarded.

(f) Where there is an inconsistency between the requirements of the Design Specification and any image in Appendix H3 (Design Quality Benchmarks), the Design Specifications will take precedence.

(g) During the Design Development Process, Project Co must undertake further Benchmarking to ensure the design options and solutions proposed for the Stadium

incorporates the latest accepted design trends and feedback from national and international projects. The outcomes of this Benchmarking must be incorporated into the relevant Design Stage Report for review and approval by the State prior to the incorporation into the design.

C20.5 SAMPLES AND PROTOTYPES

(a) Project Co must demonstrate that the performance requirements of these Design Specifications will be achieved in construction. To this end Project Co must establish a process whereby samples are reviewed with Stadium Users. Examples of samples that must be reviewed include, but are not limited to:

(i) items of high individual value (e.g. Displays, operable walls);

(ii) items of lower value that are used in large quantities in the design (e.g. each seat type in the Seating Bowl, lockers, door hardware);

(iii) FF&E to be provided in all Administration Facilities, Premium Product Areas, the Buffet Restaurant, the A La Carte Restaurant, on all Concourse and on the Controlled Area;

(iv) sanitary fittings, hand basins, sinks, tapware and hand dryers;

(v) interior finishes for all Functional Units;

(vi) exterior finishes;

(vii) permanently fixed speakers, microphones and all other publicly visible AV Systems elements;

(viii) permanently fixed access points, antennas, repeaters or other publically visible ICT Systems elements; and

(ix) light fittings.

(b) Project Co must implement a process for ensuring the quality and consistency of external and internal building finishes and fabricated items. Control samples must be provided and retained and must not form part of the Stadium building elements. Control samples must be agreed for major façade elements and special design features and items including:

(i) precast walls, addressing:

A consistency of surface finish (flatness, regularity of aggregate, colour variability); and

B joint types and finish;

(ii) off-form concrete, addressing;

A consistency of surface finish (flatness, regularity of aggregate, colour variability); and

B joint types and finish (joint flatness at formwork joints);

(iii) cladding materials, addressing:

A consistency of surface finish (surface undulation or pattern regularity, colour); and

B joint types and finish;

(iv) roof materials, addressing:

A consistency of surface finish (surface undulation or pattern regularity, colour); and

B joint types and finish;

(v) external and internal architectural design features which are reliant on quality and consistency of material or workmanship to deliver an architectural outcome, including feature walls or floors in public areas

constructed of stone products, timber products, pressed metal and the like to demonstrate the accepted variability of product (e.g. variability of grain and colour in timber or stone) and installation standard (i.e. workmanship for specified laying / install method, proposed extent of grain and colour matching between adjacent panels / boards / sheets); and

(vi) elements of the design which are highly repetitious, which if installed incorrectly are costly or time consuming to fix or for which functionality or quality or both are paramount, as determined by the State or the Stadium Operator. Examples may include:

A each seat type in the Seating Bowl;

B fixed barriers and hand rails in the Seating Bowl;

C block, row and seat numbers including locations for installation of these;

D repetitious signage including signage for toilet facilities, including locations for installation of these;

E ICT patch panels;

F broadcast cabling patch panels;

G sports lighting mounting system;

H a working panel of the proposed LED Signage;

I a working panel of the proposed LED Superscreen;

J fabricated stainless steel items in the Catering Facilities; and

K loose furniture and fixed joinery items in the Premium Product Areas.

(c) Project Co must construct the following prototypes for review with the State:

(i) a General Admission seating block, including Plats, fixed barriers and hand rails, IRUA Positions (including Enhanced Amenity Seats) and finishes;

(ii) a Fixed Outlet;

(iii) a bar facility;

(iv) a toilet facility;

(v) a Traditional Suite; and

(vi) an OCR.

(d) Project Co must engage Stadium Users in the review of prototypes and samples, with the focus of these reviews targeted at:

(i) avoiding costly errors;

(ii) establishing and recording the quality of finish to be achieved;

(iii) validating and refining the design;

(iv) communicating the design to Stadium Users and confirming their understanding and support; and

(v) ensuring the design meets the operational requirements of Stadium Users.

C20.6 STANDARDISATION

(a) Standardisation is an important and effective means of improving efficiencies and reducing errors (in both construction and future maintenance), ensuring equity of provision and ensuring the effective use of space and accommodation facilities.

(b) Standardisation of room design, dimensions, materials, fittings, fixtures and equipment enables improved efficiencies in procurement and can assist in independence from

single suppliers. A further benefit of repeatability is reduced construction errors and an improved quality outcome from construction.

(c) Standardisation of space utilisation, layout, services and equipment within duplicated operational areas of the Stadium (e.g. satellite kitchens, concessions, bars) can lead to increased productivity and safety and can also reduce training requirements. It is particularly beneficial for flexible deployment of Stadium Staff to different work areas.

(d) Project Co must demonstrate that the principles of standardisation are carried throughout the design process and incorporated into all Design Documentation for the Stadium and Sports Precinct, particularly for facilities which are duplicated for the purpose of performing the same function in a different area of the Stadium or Sports Precinct (e.g. Home Teams' Change Rooms, Coaches' Boxes, Interchange Benches, satellite kitchens, bars, concessions, cleaner's rooms).

C20.7 NAMING AND NUMBERING PROTOCOLS

(a) Project Co must develop protocols for:

(i) entrance / gate naming and numbering;

(ii) room naming and numbering;

(iii) block numbering and seat numbering;

in consultation with the State and the Stadium Operator.

(b) All naming and numbering protocols should be logical / intuitive and flexible, and must be developed giving consideration to wayfinding and ticketing agent's requirements.

(c) The block and seat numbering protocols should:

(i) be developed having regard for the potential for Reconfigurations;

(ii) seek to have Patrons enter the Seating Bowl as close as possible to their numbered seat to reduce the need for Patrons to disturb a large number of already seated Patrons when reaching their seat.

(d) All naming and numbering must be located such that is can easily be seen by Patrons irrespective of the direction of arrival. For seating rows and seat numbers in the Seating Bowl this includes being visible for Patrons ascending and descending aisles between blocks of seating.

(e) The preferred naming and numbering conventions for various elements of the Stadium are indicated in **Table 6**.

Table 6: Preferred Naming and Numbering Conventions

Facility Element	Naming and Numbering Conventions
Controlled Area outbuildings / entries (at transition to Controlled Area)	Service Gate 1 - x Gate 1 - x
Stadium Curtilage (at threshold of Stadium)	Entry 01 - xx
Stadium floor levels *(Indicative Only)*	Event Level level 1 level 2 level 3 level 4 level 5 / plant level level 6 / catwalk level level 7 / roof level
Seating blocks	Block 100 – 1xx Block 200 – 2xx Suite 300 – 3xx

	Block 400 – 4xx
Seating rows	Row A – Z* Row AA – ZZ* * Without use of rows “I”, “II”, “O”, “OO”, “Q” or “QQ”
Seats	1 – xx per Block, counted clockwise

C20.8 CONSISTENCY OF NOMENCLATURE

Project Co must ensure that the Design Documentation is prepared with consistent nomenclature within each design discipline, and to the extent practicable, between disciplines. This applies to:

(a) naming and numbering protocols;

(b) use of symbols and codes to denote FF&E;

(c) use of symbols and codes to denote individual components of each of the Engineering Services;

(d) numbering and lettering (grids, dimensions and references); and

(e) abbreviations and the use of acronyms.

C21 MANAGING DESIGN AND CONSTRUCTION PROJECT INFORMATION AND BIM

C21.1 OVERVIEW

With reference to the National BIM Initiative Report 2012, the State acknowledges it has a role to promote and encourage the adoption of Building Information Modeling (**BIM**) to support the design and construction of major projects, deliver long term benefits to the State and to assist the industry in making a transformation to more efficient design, construction and maintenance processes. This is of particular importance for assets that have a long Service Life.

C21.2 PRINCIPLES

(a) Project Co must have a philosophy of collecting and sharing DBFM Asset Information with the State and the Stadium Operator arising from the D&C Phase. This is with the objective to facilitate opportunities for reuse of information for efficiency gains for all parties involved. It is an important State objective that the information collected during D&C Phase is available for reuse, and is maintained, for operations and maintenance of the Stadium, Sports Precinct and Off-Site Infrastructure.

Project Co must store and maintain DBFM Asset Information in graphical and non-graphical data formats (to the extent possible) for reuse as required during the Term. This information must be gathered and inputted into the BIM or where this is not possible inputted directly into a combined Construction Operations Building Information Exchange (**COBie**) output file for sharing. DBFM Asset Information must be issued progressively to the State in data drops during the D&C Phase. The version of COBie, whether NBIMS-US or BIM Task Group (UK), is to be agreed with the State. Refer also to Appendix H6 (BIM Implementation Requirements) of these Design Specifications and Schedule 5 (Design Development) of this Agreement.

(BIM Management Plan) Project Co must prepare a BIM Management Plan in accordance with the requirements set out in Schedule 5 (Design Development) of this Agreement.

PART D: FUNCTIONAL BRIEF

D1 FUNCTIONAL DESIGN REQUIREMENTS

This Part outlines key functional requirements for the Stadium, Sports Precinct and Off-Site Infrastructure, including a detailed description of the functional and operational purpose of each Functional Area within the Stadium and Sports Precinct.

D1.1 FUNCTIONAL AREAS AND FUNCTIONAL UNITS

The individual elements that comprise the Stadium, Sports Precinct and Off-Site Infrastructure are broken down into Functional Areas and Functional Units as set out in Appendix H4 (Schedule of Accommodation) of these Design Specifications .

D1.2 SIZE OF THE STADIUM

(a) The Stadium and the Sports Precinct (as applicable), and each Functional Unit and Functional Area within these, must be designed so that they are suitably sized to:

(i) accommodate the Stadium Activities;

(ii) enable delivery of the Services by Project Co in accordance with Schedule 13 (Services Specifications), including accommodating Services Equipment;

(iii) accommodate all items of FF&E required to carry out all Stadium Activities as identified on the FF&E List and the State FF&E List;

(iv) accommodate all spares and consumable stock with appropriate space for operational management and maintenance;

(v) accommodate the required dimensions for the Pitch and Playing Surface as described in the Chapter D15 (Pitch and Associated Facilities) of these Design Specifications; and

(vi) accommodate plant, travel and circulation.

(b) The Schedule of Accommodation (**SOA**) nominates indicative minimum nett areas for each Functional Unit of the Stadium. Where dimensions or areas are provided these are nett functional space requirements and are measured wall to wall (i.e. not to centre lines of walls). Project Co must achieve the minimum room dimensions and areas wherever possible. Where Project Co proposes any departure from the minimum room dimensions and areas for a Functional Unit then Project Co must demonstrate that:

(i) the required 'Capacity' for the Functional Unit as stated in the SOA can be accommodated;

(ii) the Functional Unit is capable of functioning as intended and is fit for purpose, such that the Stadium, Sports Precinct and Off-Site Infrastructure will be Fit For Purpose; and

(iii) any requirements relating to room dimensions, room area and room access requirements (whether for IRUA, for Stadium Activities or for maintenance of the Stadium) outlined in the Quality Standards and pertaining to the Functional Unit are met.

D1.3 OPERATIONAL EFFICIENCY

The functional design of the Stadium and Sports Precinct must be influenced by operational efficiency considerations with respect to the carrying out of Stadium Activities. The functional design should:

(a) optimise the requirement for Stadium Staff so that staffing costs can be minimised in all modes of operation, including for small capacity crowds and on Non-Event Days;

(b) minimise travel distances for Stadium Staff;

(c) maximise natural ventilation and day lighting to reduce energy demands; and

(d) promote Event Overlay solutions that are efficient to implement with respect to cost and time required.

D1.4 FUNCTIONAL PLANNING REQUIREMENTS

(a) Within each Functional Unit, the functional planning must ensure maximum access to natural light, external views and outdoor areas to the extent that these are complementary to the nature of the activity within the Functional Unit.

(b) Where arrival or reception lobbies and concierge desks are to be provided to service a Functional Unit(s), these should be easily recognisable and logically positioned e.g. close to the point of arrival to the Functional Unit(s). These areas must be appropriately sized for the expected volume of Stadium Users they will service. Access to natural light and external views is highly desirable in these areas.

(c) The internal planning of the Stadium should be unambiguous, intuitive and easily navigated with a reduced reliance on signage or assistance from Stadium Personnel.

D2 SCHEDULE OF ACCOMMODATION

(a) An indicative SOA is included at Appendix H4 (Schedule of Accommodation) of these Design Specifications .

(b) The SOA describes the Functional Areas of the Stadium, Sports Precinct and Off-Site Infrastructure and the Functional Units within each Functional Area.

(c) The SOA is categorised by Functional Area and then by Functional Unit, and provides the following information in respect of the Functional Units:

(i) capacity (number of persons);

(ii) nett area;

(iii) units (i.e. quantity to be provided); and

(iv) total nett area based on the number of units to be provided.

(d) Subject to paragraph (h) below, the nett area is not to be viewed as being restrictive or absolute but is to be used as a guide to the expected size or standard required for each Functional Area.

(e) All nett areas represent the functional floor area for the room or space. Functional floor areas do not include any allowance for:

(i) waiting, queuing and circulation space and common use amenities or facilities such as lobbies, stairways, landings, fire escapes, balconies, corridors, toilets, cleaner's storerooms, and tea-making and similar amenities areas;

(ii) Engineering Services plant spaces such as plant rooms, risers, ducts, cupboards, communications rooms, switch rooms and similar functioning spaces; and

(iii) non-habitable space:

A that is occupied by internal columns and other structural supports, internal walls and partitions, lift shafts, service risers and ducts; and

B that is impeded or rendered not fit for purpose by shape, height or volume limitations.

(f) The SOA specifies nett areas for toilet provisions in some Functional Areas (such as the Team Facilities) but does not schedule the requirements to service Stadium Users (including Patrons and Stadium Staff) in other Functional Areas. Project Co must determine the requirements and distribution of toilet facilities throughout the Stadium in accordance with the requirements of these Design Specifications .

(g) The SOA specifies nett areas for some Functional Units which will be used by Project Co to deliver the Services during the Operating Phase, including for example some maintenance facilities, however it does not specify accommodation requirements for Services Personnel. Project Co must determine its accommodation requirements and

provide all the accommodation it requires to deliver the Services in accordance with Schedule 13 (Services Specifications).

(h) With respect to any nett areas in the SOA, where a higher or greater requirement is imposed by a Quality Standard then that higher or greater requirement is absolute and must be complied with.

(i) During the D&C Phase, Project Co must update the SOA to reflect its design for the Stadium, Sports Precinct and Off-Site Infrastructure, and keep the SOA updated at all times such that the information in the SOA continues to reflect Project Co's design as shown in the Design Documentation.

D3 ROOM DATA SHEETS

(a) Project Co must develop a Room Data Sheet (**RDS**) for each Functional Unit of the Stadium and Sports Precinct, including all administration areas, workstations, public circulation areas, all toilets and amenities, plant rooms, external spaces and operational areas.

(b) During the D&C Phase, Project Co must update the RDS to reflect its design for the Stadium and Sports Precinct and keep the RDS updated at all times such that the information in the RDS continues to reflect Project Co's design for the Stadium and Sports Precinct as shown in the Design Documentation.

(c) The Room Data Sheets must address the content in the template for Room Data Sheets included at Appendix H5 (Room Data Sheets Template), but may be provided in Microsoft Excel 2007 format.

(d) Qualitative attributes of Functional Units must be provided through the nomination of benchmarks on the RDS and the submission of samples.

D4 SPORTS PRECINCT

D4.1 OVERVIEW

(a) The Stadium will be established within a parkland setting forming an integrated sports and recreation precinct. The Sports Precinct will support the Event Day activities of the Stadium including the safe transit of Stadium Users, and also provide passive and active recreational uses on Non-Event Days.

(b) This component of the Design Specifications covers:

(i) the requirements for the Sports Precinct to support the use of the Stadium and Sports Precinct by Stadium Users on Event Days; and

(ii) the multi-purpose functionality of Sports Precinct to support the use of the Stadium and Sports Precinct on Non-Event Days.

(c) A Functional Relationship Diagram depicting the key functional relationships for the Functional Units that comprise Circulation Areas, including those located within the Sports Precinct, are included in Chapter F1 (Circulation).

(d) Where there is an apparent discrepancy between any of the functional requirements for circulation within the Sports Precinct as set out in this Chapter of the Design Specifications and the Functional Relationship Diagram included in Part F, then the description in Part D will take precedence to the extent of the inconsistency.

(e) Further technical requirements in respect of the Sports Precinct are detailed in the Part E (Technical Brief) of these Design Specifications.

D4.2 OPERATIONAL PRINCIPLES

(a) The Sports Precinct will provide a sports and entertainment precinct that can be used seven (7) days a week by ensuring the Stadium integrates with, and makes use of, adjacent civic spaces and commercial and community facilities in all of its operational modes.

(b) On Non-Event Days, the Sports Precinct will be a destination in its own right. The Sports Precinct will provide opportunities for active and passive recreation, social gathering, children's play activities and support Stadium Activities, including Functions and community uses.

(c) (**Event Days**) On Event Days, the Sports Precinct will serve as a place of arrival, circulation, gathering and recreation, and as a place of safety in the event of an emergency in the Stadium. The functional design and layout of the Sport Precinct will enable the Stadium Operator to operate the Sports Precinct in a manner which:

(i) provides safe, efficient and enjoyable circulation routes for pedestrians to and from all the arrival points into the Sports Precinct to the Ticket Control Points and to the Stadium Entry Points;

(ii) prioritises pedestrian movement over vehicle movement and minimises pedestrian/vehicle interaction;

(iii) provides for the safe management of large numbers of Patrons, particularly around the Rail Passenger Assembly Areas, Bus Passenger Assembly Area, the pedestrian assembly areas for the SRPB, Goongoongup Rail Bridge and Windan Bridge;

(iv) provides priority access to the Sports Precinct for PTA and country charter buses from VPD and restricts access to the Bus Hub for PTA use only;

(v) provides vehicle access to the Stadium Carpark and Community Recreation Oval parking that acknowledges that entry and departure from these areas may be restricted during peak pedestrian loading times;

(vi) provides access for private vehicles, taxis, coaches and IRUA permit holder vehicles from VPD to the drop-off areas within the Sports Precinct in a manner which minimises conflict with PTA buses and pedestrians within the Sports Precinct;

(vii) minimises conflict with vehicle access to the State Tennis Centre; and

(viii) minimises travel distances for IRUA Patrons from car parking areas and drop-off areas to the Stadium.

(d) The Sports Precinct design will allow the Stadium Operator to modify the Controlled Area on Event Days with the Stadium Curtilage providing the boundary of the secured area on Non-Event Days, enabling visitors to have permeable access to the Sports Precinct and Controlled Area.

(e) (**Non-Event Days**) On Non-Event Days, the Sports Precinct will serve as a place of arrival, circulation, gathering and recreation, and as a place of safety in the event of an emergency in the Stadium. The functional design and layout of the Sport Precinct will enable the Stadium Operator to operate the Sports Precinct in a manner which:

(i) activates the Sports Precinct and optimises access by visitors to both the Stadium and Sports Precinct;

(ii) facilitates community uses;

(iii) enables the Sports Precinct to be used as a public space incorporating passive and active recreation spaces and supporting amenities that are accessible for use at all times as appropriate;

(iv) optimises vehicular, pedestrian and bicycle access around the Sports Precinct;

(v) provides car parking for visitors to the Sports Precinct and the Stadium that utilises facilities including the Bus Hub and Precinct Service Roads; and

(vi) provides a safe environment for visitors and restricts opportunities for anti-social behaviour.

(f) (**Vehicle access**) Access to the Sports Precinct on Event Days will be in accordance with the approved Traffic and Access Plan.

(g) Public parking will not be permitted within the Sports Precinct on Event Day. Parking will be provided on an allocated basis via the Stadium Operator and the Hirer.

Drop off facilities will be provided to cater primarily for Premium Product Patrons, IRUA, taxis, small charter vehicles and private buses.

(h) [*Not disclosed*]

(i) (**Event Overlay**) The Stadium will host Special Events and Entertainment Events which will require areas of the Sports Precinct to be flexible in their design and functionality.

(j) (**Integration with transport related facilities**)

(i) The Transport PDP outlines the intended journeys for Patrons and is the basis for the design/capacities for the public transport facilities provided within or adjacent to, the Sports Precinct.

(ii) The Sports Precinct will integrate seamlessly with transport related facilities such as Stadium Station and the SRPB. There will be a high degree of coordination between Project Co and transport agencies to ensure the integration of both design and operation.

(k) (**Additional Facilities**) The following facilities are located within the Sports Precinct, however the functional and technical requirements for these are set out in other Chapters of Part D (Functional Brief) and Part E (Technical Brief) of these Design Specifications:

(i) Ticket Control Points, Ticket Boxes and Patron Services Offices (described in Chapter D13 (Stadium Operations and Event Day Facilities) of these Design Specifications);

(ii) Catering Facilities (described in Chapter D10 (Catering Facilities) of these Design Specifications);

(iii) Retail Facilities (described in Chapter D11 (Retail Facilities) of these Design Specifications);

(iv) Stadium Carpark (described in Chapter D5 (Circulation) of these Design Specifications); and

(v) Commercial Facilities (described in Chapter D16 (Commercial Facilities) of these Design Specifications).

D4.3 GENERAL DESIGN REQUIREMENTS

(a) The general design requirements which apply to the Sports Precinct are described in this clause D4.3.

(b) The design and construction of the Sports Precinct must be demonstrably aligned with the principles and requirements set out in Part C (Design Brief) of these Design Specifications.

(c) The network of pathways, plazas and forecourts must be designed to enhance the Patron and visitor experience of attending the Sports Precinct and ensure the Stadium is safe, efficient, and provides a vibrant experience, achieved through quality design as well as the programming of the spaces.

(d) Project Co must ensure that the design of the Sports Precinct avoids or substantially minimises the requirement for pedestrians to cross roads and or car park areas, and otherwise minimises cross over and conflict between pedestrians and vehicles (especially buses).

(e) Project Co must ensure that structures and facilities that are required for Stadium Activities on Event Days are well integrated within, and supported by, a high quality Sports Precinct environment. Engineering Services within the Sports Precinct must be properly integrated into the hard and soft landscaping design without compromising visual amenity and functional performance of the Sports Precinct.

(f) (**Universal Access**)

(i) The Sports Precinct must be designed for Universal Access throughout to ensure equitable access to all facilities and amenities.

(ii) Universal Access design features within the Sports Precinct must be thoughtfully integrated into the architectural, urban and landscape design so as not to detract from the overall aesthetic of the precinct and the experience of IRUA.

(g) (**Assembly Areas**) The Rail Passenger Assembly Areas, the Bus Passenger Assembly Area and other pedestrian assembly areas within the Sports Precinct must:

(i) provide a strong sense of arrival at the Stadium for Patrons;

(ii) be capable of managing the queuing associated with the modelled number of Patrons at the end of a capacity Event at the Stadium; and

(iii) ensure there is clear and safe separation between Patrons and vehicles, with pedestrians having unimpeded access to the Stadium.

(h) Project Co must demonstrate through pedestrian modelling the suitability of the design and configuration of the Rail Passenger Assembly Areas, the Bus Passenger Assembly Area and other pedestrian assembly areas within the Sports Precinct for their intended purpose. The modelling should clearly demonstrate the ability of the design to safely and efficiently manage the flow and queuing of crowds after a full capacity event and establish a benchmark for future review.

(i) The drainage of the Rail Passenger Assembly Areas, the Bus Passenger Assembly Area and other pedestrian assembly areas within the Sports Precinct must be integrated into the overall Site drainage, to ensure no free standing water exists in the assembly areas or within the Pedestrian Underpass linking the Rail Passenger Assembly Areas.

(j) (**Bus Hub**) The general layout of the bus stands must comply with the requirements of PTA set out in Part E (Technical Brief) of these Design Specifications .

(k) (**Precinct Service Roads**) A network of Precinct Service Roads must be provided within the Sports Precinct which must be designed and located such that it:

(i) provides access for delivery, service, maintenance and emergency vehicles and their circulation around the Sports Precinct;

(ii) provides vehicular access to the temporary car parking area on the Community Recreation Oval;

(iii) is capable of functioning as a pedestrian thoroughfare on Event Days; and

(iv) provides access to, and connects with, the Bus-Hub, the Stadium Service Road and VPD.

(l) The Precinct Service Roads must be designed and constructed to:

(i) facilitate Stadium Activities, including those associated with Entertainment Events and Special Events;

(ii) enable the provision of the Services, including the operation of the Drop-In Cricket Wicket Transporter; and

(iii) allow safe and easy movement of Heavy Vehicles through the Sports Precinct, in a forward direction only and without causing damage.

(m) The geotechnical conditions adjacent to the Swan River may render this area unsuitable for frequent use by Heavy Vehicles. As such, Precinct Service Roads in this location may require restriction to use by Light Vehicles only.

(n) The Precinct Service Roads must provide road access to VPD, the Stadium, the Bus Hub and the temporary car park area on the Community Recreation Oval.

(o) Where the road network is required to traverse pedestrian paths there must be flush kerbs and the paving design must maintain priority for pedestrians as vehicular use will be restricted at key times on Event Days.

(p) (**Shared Use Path**) The Swan River foreshore includes an existing Shared Use Path on the western boundary of the Site which is part of the extensive pedestrian and cycling path network beyond the Sports Precinct boundary that connects and integrates with the Burswood Peninsula network. This Shared Use Path must be retained. Modifications to a limited section of this Shared Use Path must be undertaken by Project Co to address flooding during king tides as described in Part E (Technical Brief) of these Design Specifications.

(q) (**Pedestrian path network**) Project Co must provide a pedestrian path network which:

(i) provides continuous and safe circulation around the Sports Precinct;

(ii) is fully integrated with the Shared Use Path on the western boundary of the Sports Precinct and any other pedestrian paths or infrastructure abutting the Sports Precinct.

(iii) accommodates the anticipated Patron and visitor movement associated with Events and this must be demonstrated through pedestrian modelling, between the Stadium and:

A Goongoongup Rail Bridge;

B the Rail Passenger Assembly Areas;

C The Bus Passenger Assembly Area;

D the taxi drop-off zone;

E the SRPB;

F the pedestrian footbridge across the Graham Farmer Freeway;

G the Community Recreation Oval (temporary car park area); and

H the River-Fed Lake.

(iv) ensures continuous flow of pedestrian crowd movement through a hierarchy of primary and secondary paths to facilitate a mix of Patrons and visitors and uses:

(v) provides paths that are consistently level or where unavoidable, incorporate gradual gradient falls to mitigate abrupt level changes;

(vi) provides appropriate path finishes of high quality that ensure both safety and amenity for walking;

(vii) considers the use of trees or shade structures to provide a reasonable degree of shade and shelter along paths, particularly at pedestrian assembly areas;

(viii) ensures permeability of pedestrian movement through the Sports Precinct on Non-Event Days through measures such as:

A providing choices in a variety of directions;

B minimising the use of barriers, security fences and locked gates and ensuring that, where these are required to restrict movement on Event Days, they can opened to provide free-flowing movement on Non-Event Days; and

C maintaining public access to the Controlled Area; and

(ix) facilitates pedestrian safety and security through measures such as:

A a landscape design that avoids the use of inappropriate vegetation adjacent to pedestrian paths;

B illuminating paths with sufficient lighting to ensure safe and clear travel whilst also engendering a sense of personal security;

C encouraging passive surveillance to pedestrian paths and pedestrian holding areas where possible from occupied buildings within the Sports Precinct;

D providing active surveillance through CCTV coverage strategically located, such as on the principal paths, junctions, plaza area, and locations where there is significant potential for anti-social activity; and

E must ensure compliance with Universal Access requirements.

(r) (**Car parking and drop-off**)

(i) Parking areas within the Stadium must have a high standard of lighting and finish.

(ii) The Stadium Carpark and Precinct Service Roads will need to accommodate minimal interaction between Patrons and vehicles. Restricted access to and from the Stadium Carpark and parking areas within the Sports Precinct is acknowledged as an acceptable management solution if no other design solutions can be found.

(iii) Provision for bus and van drop-off for Sporting Teams, individual Players and Patrons with a valid ACROD permit must be provided adjacent to the various lobbies off the Stadium Service Road.

(iv) Clearly delineated pedestrian pathways within the Stadium Service Road area must be provided with bollard or barrier protection provided where potentially unsafe or of limited visibility.

(v) All car parking bays must comply with all relevant Quality Standards.

(vi) The drop-off zones must:

A be accessible from VPD;

B not obstruct pedestrian movement around the Sports Precinct and between the Stadium and transport nodes;

C minimise obstruction of bus movement between the Bus Hub and VPD; and

D ensure sufficient pedestrian connection to the Stadium which minimises conflict with other pedestrian movement corridors and vehicular access ways, including the buses.

(s) Consideration should be given to retaining the existing car park located east of the Clubhouse.

(t) Project Co must address the interface of the Sports Precinct with the former Burswood Park Golf Course to the south, utilising soft landscaping and minimising fencing in order to encourage transparency and permeability.

D4.4 ACCOMMODATION REQUIREMENTS

D4.4.1 Stadium

(a) (**Location**)

(i) The Stadium must be located to the east of the River-Fed Lake as indicated on the Development Concept Plan (2013) such that the centre of the Pitch coincides approximately with the centre of Separable Portion 3 of the PCS Works.

(ii) The location of the Stadium within the Sports Precinct, and the design of associated egress routes through the Controlled Area and the Sports Precinct, must optimise the management of crowd dispersal targets for a full capacity crowd.

(b) (**Orientation**) The Stadium must be orientated for:

(i) the Field Of Play to run east – west for AFL Events and Rectangular Events consistent with the PCS Works, for which the orientation of Separable Portion 3 is 11 degrees off direct east-west as indicated on the Development Concept Plan (2013); and

(ii) the Cricket Wicket to be aligned north-south for Cricket Events and no greater than 10 degrees off true north.

(c) (**Plaza / forecourt (Controlled Area)**)

(i) The Stadium plaza / forecourt must be designed to act as a transition space between the Sports Precinct and the Stadium, and must facilitate the following functions:

A use as a Controlled Area on Event Days at the discretion of the Hirer; and

B use as an activation space on Event Days, where Sponsor Merchandise Pods and Temporary Event Day Stalls can be established and readily connected to recessed Engineering Services boxes with power, data, and communications outlets and water and wastewater service connections.

(ii) The Controlled Area must provide continuous circulation around the full perimeter of the Stadium for pedestrians and service vehicles allowing for the concurrent activities of waiting and gathering, pedestrian movement and activation.

(iii) The geometry and form of the Controlled Area must be designed to accommodate the anticipated Patron volumes and activities at each location (based on the overall capacity of the Stadium), having regard for:

A the design of the Stadium (including for example, the location of Stadium Entry Points and other entrances);

B the design of the interface between the Sports Precinct and the Stadium plaza /forecourt (including for example, the location of Ticket Control Points);

C the location of Serviced Zones with termination points for Engineering Services on the Controlled Area to service Sponsor Merchandise Pods and Temporary Event Day Stalls;

D the location of Commercial Facilities within the Sports Precinct relative to the Controlled Area;

E the location of retail and dining facilities within the relative to the Stadium Controlled Area;

F the location of drop-off and car parking areas relative to the Controlled Area;

G the locations of pedestrian and transport connections to the Stadium and Sports Precinct, and the estimated pedestrian volumes associated with arrival to and departure from the Stadium; and

H the design of the Stadium itself, including in particular the emergency egress routes from the Stadium.

(d) (**Interface between Sports Precinct and Controlled Area**)

(i) In designing the Sports Precinct interface with the Controlled Area, if there is a change of levels, the transition must be such that the level change:

A is not imposing;

B facilitates the moving of the outer extents of the Controlled Area from the Sports Precinct and Controlled Area interface to

the Stadium Curtilage for Non-Event Days and for those Events where the Hirer does not require a Controlled Area;

C can be safely traversed by all visitors, including IRUA; and

D is landscaped to soften the visual impact of obtrusive structural elements and fencing.

(ii) The interface between the Sports Precinct and the Controlled Area must allow for:

A queuing for tickets and bag checks to occur at grade prior to Patrons ascending to Controlled Area level;

B easy transition from the Controlled Area to the Sports Precinct to facilitate Patrons egressing the Stadium in an emergency to continue to move beyond the Controlled Area to a place of final safety; and

C IRUA to access the Stadium in an equitable manner such that they can remain in the company of carers, family or friends accompanying them to the Stadium.

D4.4.2 Sports Precinct Amenities

Project Co must provide a range of formal and informal sports and recreation facilities which are available for use on both Event Days and Non-Event Days, including:

(a) a minimum of two (2) children's playscapes or playgrounds with capacity for a minimum of fifty (50) children which meet the requirements of Kidsafe (WA). Provision of shade structures is desirable;

(b) provision of bicycle parking in multiple locations associated with facilities and amenities within the Sports Precinct to allow passive surveillance;

(c) a minimum of two (2) public toilet facilities incorporating female, male and IRUA provision, with an external tap;

(d) a minimum of two (2) barbeque areas (with gas or electrical barbeques without coin operation but with timed operation) drinking fountains and localised lighting, with picnic facilities incorporating benches or tables with seating in a location that does not impede the flow of Patrons to and from the Stadium and is connected to the Sports Precinct path network; and

(e) a number of Serviced Zones within the Sports Precinct for Temporary Event Day Stalls on Event Days, periodic markets or trade displays on Non-Event Days, as set out in Chapter D11 (Retail Facilities). Thirty (30) Serviced Zones must be provided distributed across the Controlled Area and the Sports Precinct.

D4.4.3 Rail Passenger Assembly Areas

(a) (**Functionality**)

(i) The Rail Passenger Assembly Areas must allow Patrons to safely queue for rail services after Events.

(ii) The Rail Passenger Assembly Areas must be fully integrated with Stadium Station being constructed as part of the State Transport Infrastructure Works and the urban design of the remainder of the Sports Precinct.

(b) (**Capacity**) Two (2) Rail Passenger Assembly Areas must be provided to accommodate the 14,000 Patrons who are expected to access the northern entrance to Stadium Station and the 14,000 Patrons who are expected to access the southern entrance to Stadium Station after a full-capacity Event.

(c) (**Location**) One of the (2) Rail Passenger Assembly Areas must be located to service the northern train station entrance and the other must be located to service the southern train station entrance.

(d) (**Proximity**) Each Rail Passenger Assembly Area must have Easy Access to the Stadium and Stadium Station.

(e) (**Amenity**) Each Rail Passenger Assembly Area must:

(i) be capable of being utilised as an outdoor function space for activities such as festivals markets and small public events on Non-Event Days with the provision of Engineering Services including power, data, communications, water and waste water;

(ii) be fully integrated with the Pedestrian Underpass to ensure the safe and efficient movement of Stadium Users between the Stadium and Sports Precinct and the southern entrance to Stadium Station prior to and following an Event;

(iii) be fully integrated with the passenger concourse of the train station to ensure the safe and efficient movement of Stadium Users between the Rail Passenger Assembly Areas and Stadium Station;

(iv) be integrated into the overall Site drainage, to ensure no free standing water exists within the assembly areas;

(v) have 100% CCTV coverage which is recorded and linked to Security Systems in the Stadium and to external facilities which may include the PTA, the relevant local government Authority and WA Police;

(vi) be well lit for Stadium User safety and comfort and to facilitate quality recording via the CCTV system; and

(vii) [*not disclosed*]

(f) (**Vehicle underpass**) The southern Rail Passenger Assembly Area must extend to the eastern boundary of the Site and connect to the vehicle underpass located adjacent to the rail infrastructure located under VPD to be constructed as part of the State Transport Infrastructure Works.

D4.4.4 Pedestrian assembly areas for Goongoongup Rail Bridge and Windan Bridge

(a) (**Functionality**) The Sports Precinct must be fully integrated with the pedestrian access facilities of the Goongoongup Rail Bridge and the Windan Bridge being upgraded as part of the State Transport Infrastructure Works.

(b) (**Capacity**) A pedestrian assembly area must be provided to accommodate the 9,000 Patrons who are expected to travel between the Stadium, the East Perth Train Station and car parking in East Perth after a full-capacity Event.

(c) (**Location**) The pedestrian assembly area must be located to service the pedestrian access facilities of the Goongoongup Rail Bridge and the Windan Bridge.

(d) (**Proximity**) The pedestrian assembly area must have Ready Access to the Stadium and to the pedestrian access facilities of the Goongoongup Rail Bridge and the Windan Bridge.

(e) (**Amenity**) The pedestrian assembly area must:

(i) be integrated into the overall Site drainage, to ensure no free standing water exists within the assembly area;

(ii) have 100% CCTV coverage which is recorded and linked to the Security Systems in the Stadium and to external facilities which may include the PTA, the relevant local government Authority and WA Police; and

(iii) be well lit for Patron safety and comfort and to facilitate quality recording via the CCTV system.

(f) Project Co must ensure that the pedestrian assembly area does not impact the structures of the Goongoongup Rail Bridge and the Windan Bridge, including the abutments and any associated works to be undertaken as part of the State Transport Infrastructure Works.

D4.4.5 Bus Hub

(a) (**Functionality**) A street based Bus Hub must be provided within the Sports Precinct, which serves as the arrival/departure point for approximately 8,300 Patrons travelling on special Event bus services.

(b) (**Capacity**) The Bus Hub must include a minimum of twenty (20) active bus stands and twenty (20) layover bays. Each stand must be a minimum of 20 metres long and 3.5 metres wide.

(c) (**Dimensions**) The Bus Hub must comprise two (2) 3.5m wide bus stands, two (2) 4.5m wide central circulating lanes and two (2) 3.5m wide central bus layover stands. The bus turning area on the western end must be a minimum of 16m outside radius.

(d) (**Location**) The Bus Hub must be located and configured to:

(i) provide clear and safe pedestrian access to and from the Stadium;

(ii) minimise conflict between Patrons moving between the Stadium and the Bus Hub, the SRPB and the Rail Passenger Assembly Areas;

(iii) avoid conflicts between pedestrians and vehicles where at all possible; and

(iv) mitigate potential conflicts between bus passengers and buses.

(e) (**Proximity**) The Bus Hub must:

(i) have Direct Access to the Bus Passenger Assembly Area; and

(ii) provide Patrons with Easy Access to the Stadium.

(f) (**Amenity**) The Bus Hub must:

(i) be provided with a pavement which is suitable to accommodate the expected bus traffic volumes and usage pattern, and must be able to accommodate bus turning movements without surface rutting or deterioration;

(ii) be integrated into the overall Site drainage, to ensure no free standing water exists within the Bus Hub;

(iii) have 100% CCTV coverage which is recorded and linked to the Security Systems in the Stadium and to external facilities which may include the PTA, the relevant local government Authority and WA Police;

(iv) be well lit in accordance with the operational requirements of the PTA and to facilitate quality recording via the CCTV system, in a manner which is integrates with the overall lighting solution for the Sports Precinct;

(v) have a locally controlled PA System which also covers the Bus Passenger Assembly Area; and

(vi) be provided as a street-based facility which on Non-Event Days is suitable for use as a road and on-street parking.

(g) The design and construction of the Bus Hub must be undertaken in accordance with the urban design principles and requirements set out in Part C (Design Brief) and the technical requirements set out in Part E (Technical Brief) of these Design Specifications.

D4.4.6 Bus Passenger Assembly Area

(a) (**Functionality**)

(i) The Bus Passenger Assembly Area must allow Patrons to safely queue for bus services after Events.

(ii) The Bus Passenger Assembly Area must be fully integrated with the Bus Hub and the urban design of the remainder of the Sports Precinct.

(b) (**Capacity**) The Bus Passenger Assembly Area must accommodate the 8,300 Patrons who are expected to access the bus services at the Bus Hub after a full-capacity Event.

(c) (**Location**) The Bus Passenger Assembly Area must be provided adjacent to the Bus Hub and be located to allow Patrons to queue at the nearest Ticket Control Point without affecting the Bus Hub.

(d) (**Proximity**) The Bus Passenger Assembly Area must:

(i) have Direct Access to the Bus Hub; and

(ii) provide Patrons with Easy Access to the Stadium.

(e) (**Amenity**) The Bus Passenger Assembly Area must:

(i) include bus shelters for the twenty (20) active bus stands, which must provide wind, rain and sun protection for the length of the bus stand and allow for appropriate circulating gaps between shelters;

(ii) be integrated into the overall Site drainage, to ensure no free standing water exists within the assembly area;

(iii) have 100% CCTV coverage which is recorded and linked to the Security Systems in the Stadium and to external facilities which may include the PTA, the relevant local government Authority and WA Police;

(iv) be well lit for Patron safety and comfort and to facilitate quality recording via the CCTV system;

(v) [*not disclosed*]

(vi) have a locally controlled PA System which also covers the Bus Hub.

(f) The design and construction of the Bus Passenger Assembly Area must be undertaken in accordance with the urban design principles and requirements set out in Part C (Design Brief) of these Design Specifications .

D4.4.7 Community Recreation Oval

(a) (**Functionality**) A grassed and reticulated Community Recreation Oval must be provided as a recreational facility suitable for community and leisure activities on Non-Event Days. It must also be suitable for the following uses on Event Days:

(i) use as a Temporary Carpark for regular but temporary informal parking for a minimum of 700 cars;

(ii) use as a temporary 'boneyard' for storage, logistics and ancillary equipment deployment associated with major Entertainment Events such as concerts;

(iii) use as an area to accommodate expanded media facilities for major Sporting Events; and

(iv) use as an area for expanded Back of House facilities during Special Events, for outside broadcast vehicles connected to the Stadium AV Systems and ICT Systems and for temporary facilities associated with Event Overlay including supplementary facilities for Media Personnel, Event security, Stadium Staff, catering and other essential Event services.

(b) The Community Recreation Oval must be designed to be suitable as a community playing field for Australian Rules Football and as an area for 'kick to kick'.

(c) (**Capacity**) The Community Recreation Oval must have a minimum area of approximately 27,000m^2 and must have the capacity to park a minimum of 700 vehicles on Event Days.

(d) (**Location**) The Community Recreation Oval must be located in the Sports Precinct in close proximity to the Stadium to minimise the walking distance between the Temporary Carpark and Stadium Entry Points.

(e) (**Proximity**) The Community Recreation Oval must have:

(i) Direct Access to and from the Precinct Service Roads; and

(ii) Ready Access to Premium Entry Points, Team Facilities, Stadium Operations and Event Day Facilities and Media Entry Point(s).

(f) (**Amenity**)

(i) The vehicular entry to the Community Recreation Oval must be designed to facilitate access and egress by multiple vehicles on Event Days and must be secured on Non-Event Days to prevent unauthorised access by vehicles.

(ii) Lighting must be provided for the comfort and safety of Patrons for night parking and during night, evening and twilight use without compromising its primary function as a community recreational facility.

D4.4.8 IRUA Parking

(a) (**Functionality**) Parking must be provided which is suitable for IRUA and their vehicles, allowing for loading to rear and both sides of their vehicles.

(b) (**Capacity**) Sixty (60) parking spaces in total must be provided for IRUA. Twenty (20) spaces should be provided within the Stadium and forty (40) spaces within the Sports Precinct.

(c) (**Proximity**) The parking within the Stadium Carpark must have Ready Access to Vertical Transportation to all Concourses.

(d) The parking contained within the Sports Precinct must have Ready Access to the IRUA drop-off area and to the Stadium.

(e) (**Amenity**) IRUA parking must at a minimum comply with all relevant Quality Standards.

(f) Parking areas must be free of kerbs or other obstructions that may impede travel for IRUA.

D4.4.9 IRUA drop-off area(s)

(a) (**Functionality**) The IRUA drop-off area(s) must provide drop-off access for private motor vehicles, taxis, minivans and minibuses.

(b) (**Location**) The IRUA drop-off area(s) must be located either adjacent to or within the Stadium.

(c) (**Proximity**) The IRUA drop-off area(s) must have:

(i) Direct Access to the Stadium; and

(ii) Ready Access to Patron lifts.

(d) (**Amenity**)

(i) The IRUA drop-off area(s) must be well lit with rest facilities provided, secure for IRUA to wait if their companion is required to park their vehicle and be provided with cover or in a covered location.

(ii) Clear wayfinding along Precinct Service Roads must be provided to direct IRUA to the IRUA drop-off area(s).

D4.4.10 General drop-off area

(a) (**Functionality**) Private vehicle access and car parking within the Sports Precinct on Event Days will be limited to ensure Bus Hub priority access and mitigate vehicle and pedestrian conflicts. A clearly designated general drop-off area must be provided within the Sports Precinct for use on Event Days that accommodates taxis, coaches, private charter buses and private vehicles.

(b) (**Location**) The general drop-off area must be located within the Sports Precinct. The existing car park located east of the Clubhouse should be retained and may provide a suitable general drop-off zone and restricted parking area.

(c) (**Proximity**) The general drop-off area must have:

(i) Ready Access to and from VPD; and

(ii) Easy Access to the Stadium and its Controlled Area.

(d) (**Amenity**) The general drop-off area must:

(i) avoid conflict with other modes of transport or pedestrian movement within the Sports Precinct or around the Stadium;

(ii) have minimal interference with bus movement between the Bus Hub and VPD; and

(iii) be well lit and have clear wayfinding to direct Patrons to the Stadium.

D4.4.11 [*Not disclosed*]

D4.4.12 [*Not disclosed*]

D4.4.13 River-Fed Lake

(a) With its adjacency to the Stadium, the River-Fed Lake provides opportunities to create an intimate waterside experience. The lake and surrounds offer a potential setting for an extended boardwalk or terraced area to accommodate casual leisure use, Precinct Events and outdoor screenings of movies and Stadium Events.

(b) The River-Fed Lake must be retained and rehabilitated in accordance with the requirements of the Environmental Management Framework, and as further described in Part C: Design Brief of these Design Specifications.

D4.4.14 Swan River foreshore

The Swan River foreshore is considered an important environmental asset within the Site and as such must be rehabilitated in accordance with the Environmental Management Strategy and the landscape requirements set out in Part C (Design Brief) of these Design Specifications. The design for this area must take into consideration that it is an integral part of the Sports Precinct and has special significance for the Aboriginal community.

D5 CIRCULATION AREAS

D5.1 OVERVIEW

(a) This Chapter outlines the essential circulation requirements for the Stadium, covering all Stadium Users, from the Controlled Area into and throughout the Stadium to their destination including:

(i) the requirements for Circulation Areas to support the use of the Stadium and Sports Precinct by Patrons on Event Days;

(ii) the multi-purpose functionality of the Circulation Areas to support the use of the Stadium and Sports Precinct for Non-Event Day activities; and

(iii) the inter-relationship with other Functional Areas, such as General Admission Areas, Retail Facilities and Catering Facilities.

(b) Functional Relationship Diagrams depicting the key functional relationships for the Functional Units that comprise Circulation Areas are included in Chapter F1 (Circulation).

(c) Functional requirements for circulation within the Sports Precinct are set out in Chapter D4 (Sports Precinct) of these Design Specifications.

(d) Where there is an apparent discrepancy between any of the functional requirements for circulation as set out in this Chapter of the Design Specifications and the Functional Relationship Diagrams included in Part F, then the description in Part D will take precedence to the extent of the inconsistency.

(e) Where there is an apparent discrepancy between any of the functional requirements for circulation within the Sports Precinct as set out in Chapter D4 (Sports Precinct) of these Design Specifications and the Functional Relationship Diagrams included in Part F, then the description in Part D will take precedence to the extent of the inconsistency.

(f) Further technical requirements for the Circulation Areas are detailed in Part E (Technical Brief) of these Design Specifications.

D5.2 OPERATIONAL PRINCIPLES

D5.2.1 General

(a) (**Circulation Areas generally**) Circulation Areas will accommodate the movement of Stadium Users throughout the Stadium and Sports Precinct on Event Days and Non-Event Days.

(b) Within the Circulation Areas there are some areas that will have restricted access for some Stadium Users.

(c) (**Controlled Area**)

(i) The Sports Precinct and the Stadium Curtilage will be separated by an area that allows external circulation by Stadium Users and activation of this space on Event Days for activities as part of the fans-first philosophy.

(ii) On Event Days, the Controlled Area will accommodate a range of activities depending on the Event, including Patron circulation, entertainment and Emergency Services vehicle access space.

(iii) The Controlled Area will provide a safe and attractive public space on Non-Event Days that is well connected with the rest of the Sports Precinct.

(iv) For Non-Event Days, and potentially for some Events, there will be no Controlled Area and the Stadium Curtilage will be the secure line of the Stadium for Non-Event Days.

(d) [*not disclosed*]

(e) [*not disclosed*]

D5.3 GENERAL DESIGN REQUIREMENTS

D5.3.1 Functional Planning to optimise Circulation Areas

The blocking and stacking of Functional Units within the Stadium must allow for efficient movement of Stadium Users between the areas they would typically access for an Event, including for example:

(a) efficient movement between Media Facilities for Media Personnel; and

(b) efficient movement within Premium Product Areas for Premium Product Patrons; and

(c) efficient movement between General Admission Areas for General Admission Patrons to access amenities,

so as to minimise unnecessarily long travel distances to destinations and reduce congestion on Concourse and other circulation routes.

D5.3.2 Circulation Areas

(a) Circulation Areas for the Stadium including the Controlled Area must:

(i) provide clear, logical and obvious routes to promote natural wayfinding and provide the initial means of preventing Patrons and visitors from unintentionally entering areas which are restricted for authorised Stadium Staff;

(ii) provide a direct, smooth flowing and seamless journey for all Patrons, which where feasible, is weatherproof with minimal level changes;

(iii) integrate physically and aesthetically with adjoining areas;

(iv) be designed for the expected Stadium User movement volumes and patterns;

(v) support the emergency evacuation strategy described in the Fire Engineering Brief, which:

A must comply with all relevant Quality Standards, including the Green Guide;

B must outline the role of the Pitch in emergency evacuation of the Stadium;

C must be operationally efficient to implement so as to minimise the number of Event Staff required to implement the plan.

(vi) provide an inclusive experience for IRUA Patrons so that their Event experience is integrated with that of any other Patron in a seamless and effortless manner;

(vii) be durable and easy to maintain; and

(viii) comply with all relevant Quality Standards and Laws.

(b) The design of Circulation Areas must be based on a clear hierarchy of movement, with legible circulation networks and visual links to key destinations that includes sculpture, artworks and other landmarks to assist in wayfinding and circulation in the Controlled Area in particular.

(c) Project Co must make all necessary allowances for plant, travel and circulation within the Stadium to accommodate:

(i) the performance of the Services;

(ii) the carrying out of all Stadium Activities; and

(iii) all Engineering Services plant;

(iv) taking into account the potential for either, or both of, the Expansion and Athletics Reconfiguration to occur in the future.

(d) Circulation routes must be suitably wide to allow full accessibility for all Stadium Users and all functions occurring within or adjacent to the routes including:

(i) queuing generated by other Functional Areas, including Retail Facilities and Outlets; and

(ii) people flows at peak times such as during all Event intervals and following Events when all Stadium Users depart the Stadium.

(e) Service, delivery and waste management routes must be clearly established throughout the Sports Precinct and within the Stadium, including for access to the Pitch, so that all areas can be serviced with minimal disruption to the Stadium Activities and with minimal visibility of service functions for those functions that will be undertaken during Events.

(f) Routes for Emergency Services vehicles must be clearly established throughout the Sports Precinct and into the Stadium so that all areas can be accessed as required to attend emergencies at the Stadium and within the Sports Precinct.

D5.3.3 Controlled Area

(a) The Controlled Area must operate in many different configurations depending on the Event and must be flexible to accommodate Special Events, Athletics Events as well as Events and Functions including as circulation, entertainment and Emergency Services vehicle access space.

(b) A full Stadium perimeter (360 degrees) Controlled Area must be provided that is adjacent to the Stadium Curtilage. This must support entry from the Sports Precinct by the most efficient route and offer a level of choice for Patrons. The design must take into account the likely cross circulation movements of all Stadium Users.

(c) The Controlled Area must provide an appropriately sized and controlled arrival to the Stadium, managing large numbers of persons in short spaces of time to their chosen location and vertical transport solution.

D5.3.4 Concourses

(a) There must be level entry onto a Concourse at the Stadium Curtilage to continue the Patron's journey from the Controlled Area into the Stadium.

(b) Concourses must be designed to enable Patrons to remain visually connected to the Seating Bowl and Field Of Play during an Event.

(c) For Non-Event Days, it must be possible to restrict movement on each level for operational control, without compromising the emergency evacuation in accordance with the emergency evacuation strategy.

(d) The location of toilet facilities and concessions must be clearly identifiable to all Patrons upon emerging from Vomitories and take into consideration the potentially curved geometry of the Concourse.

D5.3.5 Vomitories

(a) Vomitories must be a safe, direct and efficient access and egress route for Patrons to and from the Seating Bowl and must be integrated into the overall ingress and egress for and within the Stadium.

(b) Vomitories must be designed and sized to ensure IRUA have safe access to their seat or IRUA Position and should have sufficient clear width for two wheelchairs to pass each other in the Vomitory.

(c) Wayfinding to seating blocks within the Seating Bowl must be clearly located on the outside of Vomitories within the Concourse and located so that signage can be easily identified by all Patrons from a distance within the Concourse and at peak times.

(d) Wayfinding to exit routes and facilities on the Concourse must be easily identifiable when emerging from the Vomitory to the Concourse.

D5.3.6 Seating Bowl

(a) Detailed requirements for the Seating Bowl are set out in Chapter D7 (Seating Bowl) of these Design Specifications.

(b) Patrons should walk no further than 30m from their seat in order to enter the mouth of the nearest Vomitory. The last Patron should reach this position in no more than eight (8) minutes.

(c) There must be no seating block within the Seating Bowl that is disadvantaged by the circulation strategy for the Circulation Areas, whether through convenience, availability or efficiency. In particular the upper tiers must provide a comfortable journey that does not deter Patrons, including IRUA, from wanting seats at these levels.

(d) Access to and egress from the Drop-In Seats for Rectangular Events must be given careful consideration in terms of protection of the Pitch and the impact on Event operations and security.

D5.3.7 Vertical Circulation

(a) The design of vertical circulation must achieve separation between Stadium Users as described in Chapters D6 (Team Facilities), D9 (Premium Product Areas) and D14 (Media Facilities) of these Design Specifications.

(b) Vertical circulation must support the requirement for IRUA to be able to experience the Event from all levels of the Stadium and from any Premium Product Area.

D5.3.8 Vertical Transportation

(a) (**Lifts**) Project Co must ensure that the range, distribution and performance of lifts is appropriate for:

(i) the scale and complexity of the Stadium and Stadium Activities;

(ii) the need for discreet access for some Stadium Users, as described in Chapters D6 (Team Facilities), D9 (Premium Product Areas) and D14 (Media Facilities) of these Design Specifications;

(iii) the expectations of Patrons; and

(iv) the location, adequacy and quality of the alternative vertical transport solutions.

(b) Lifts must:

(i) service all levels of the Stadium;

(ii) be sized to ensure easy use by IRUA in motorised wheelchairs;

(iii) prevent or deter the unauthorised use of lifts, including by Patrons trying to access restricted areas including Premium Product Areas and facilities on the Event Level;

(iv) be suitable to deliver Catering Product as described in Chapter D10 (Catering Facilities) of these Design Specifications; and

(v) include designated emergency evacuation lifts as part of the emergency evacuation strategy.

(c) (**Escalators**) must be provided to Patron levels for ingress at all times and at times for egress. Escalators must be bi-directional and must incorporate a high level of fall protection. The design must allow for the free flow of Stadium Users when boarding or alighting the escalators.

(d) (**Ramps**) should be considered by Project Co to facilitate the movement of large volumes of Patrons to and from all Patron levels and also as a way of enabling access to each level of the Stadium by vehicles to undertake Stadium Activities. Where ramps are provided they should also be associated with staircases and lifts.

D5.3.9 Stadium Service Road

(a) A Stadium Service Road must be provided within the Event Level which must be designed and located such that it:

(i) can function as a dual lane service road to enable Stadium Activities, including Events, to be undertaken;

(ii) provides 360 degree vehicular access;

(iii) is capable of functioning as a pedestrian thoroughfare on Event Days;

(iv) provides access to, and connects with, the network of Precinct Service Roads, the Bus Hub and VPD; and

(v) provides access to the Vehicular Vomitories that access the Pitch.

(b) The Stadium Service Road must be designed and constructed to:

(i) facilitate Stadium Activities, including those associated with Entertainment Events and Special Events; and

(ii) allow safe and easy movement of Heavy Vehicles through the Stadium and Sports Precinct, in a forward direction only and without causing damage.

D5.3.10 Vehicular Vomitories

(a) A minimum of four (4) Vehicular Vomitories must be provided leading to the Pitch as follows:

(i) two (2) of which must be not less than 6.0m clear width; and

(ii) two (2) not less than 4.8m clear width.

(b) The Vehicular Vomitories must be sized, including for height, according to the operational and design requirements, and to accommodate heavy machinery and large Heavy Vehicles for Entertainment Events, Drop-In Cricket Wickets, Services Equipment, roof and essential works requiring access inside the Seating Bowl, and to facilitate large Event items such as major event opening and closing ceremony floats.

(c) Corresponding connections to the Precinct Service Roads should be provided.

D5.3.11 Stadium Carpark

[*Not disclosed*]

D5.4 ACCOMMODATION REQUIREMENTS

D5.4.1 Controlled Area

(a) (**Capacity**) The Controlled Area must be sized to accommodate the number and flow and contra flows of Stadium Users for a full capacity Event plus the activation of spaces that support the Event including providing for emergency egress.

(b) (**Location**) The Controlled Area must link the Stadium to the Sports Precinct and provide the boundary to the Stadium and Event.

(c) (**Proximities**) The Controlled Area must have:

(i) Ready Access to and from the Sports Precinct; and

(ii) Ready Access to and from the Stadium's vertical circulation routes.

(d) (**Amenity**)

(i) The Controlled Area must:

A have clearly marked, well lit and clear wayfinding signage to direct Stadium Users to their respective Stadium Entry Points or other entrances (as applicable to the Stadium User);

B provide for the activation aims of Stadium Users, including provision of light, power, data and waste services as part of the proposed Event Overlay for each Event;

C accommodate access for Emergency Services vehicles and other Heavy Vehicles of up to 23 tonnes to the full perimeter of the Stadium; and

D provide a secure boundary between the Sports Precinct and the Controlled Area.

(ii) Project Co should consider utilising landscaping features, augmented by retractable barriers that integrate with the landscaping to form a boundary for the Controlled Area.

D5.4.2 Stadium Carpark

[*Not disclosed*]

D5.4.3 Concourses – General Admission Concourses

(a) (**Capacity**) Concourses must satisfy the Stadium's requirements for emergency egress plus provide an appropriate number of activation spaces that support the Event.

(b) (**Location**) General Admission Concourses must link the vertical circulation routes to the Vomitories and or the viewing area or Seating Bowl for the General Admission Patron seating areas.

(c) (**Proximities**) General Admission Concourses must have the following proximities:

(i) Direct Access to and from vertical circulation routes and Vertical Transportation;

(ii) Direct Access to the Vomitories leading to the Seating Bowl;

(iii) Direct Access to support facilities including toilets, Changing Places Toilets, Outlets, restaurants, Retail Facilities, Premium Product sales and ticketing, designated meeting points, information kiosks, first aid facilities, the Interfaith Prayer Room, ATMs and information counters.

(d) (**Amenity**) General Admission Concourses must provide:

(i) visual and physical connections to the Event including internal views from the Concourses to the Field Of Play, supported by AV Systems;

(ii) external views from the level 1 external Concourses over the Sports Precinct, Swan River and City of Perth from Patron gathering spaces,

designed to enable fans to enjoy the Event, before, during and after an Event, supported by Concourse facilities and temporary concessions, Displays and appropriate sound systems;

(iii) light, power, data and waste services provisions to support additional Event Overlays;

(iv) access for vehicles up to two (2) tonnes at all levels, with continuous access to the full perimeter of the Stadium for Stadium Activities;

(v) convenient Patron access to food and beverage waste disposal bins, and designated locations for installation of such which facilitate integration into the overall aesthetic whilst also taking into account Patron movement, including in an emergency;

(vi) AV Systems suitable for the space where larger meeting places are proposed; and

(vii) unimpeded access to toilets, first aid rooms, food and beverage facilities and their associated queuing spaces, the Seating Bowl and other circulation routes during full capacity Events.

(e) Facilities requiring high levels of service such as the production kitchens and bars should be located to allow for Ready Access at a minimum to storage and access routes that are separate from Patron circulation spaces, to minimise the cross-over of catering servicing and Patrons in the busiest areas.

D5.4.4 Concourses – Premium Concourses

(a) Premium Concourses relate to those parts of the Stadium Concourses that have restricted access for Patrons.

(b) (**Capacity**) Premium Concourses must be designed to meet the requirements for emergency egress.

(c) (**Location**) Premium Concourses must link the vertical circulation routes to the Premium Product spaces and provide access to seating areas.

(d) (**Flexibility**) Premium Concourses must be designed to allow all Patron access depending on the Event.

(e) (**Proximities**) Premium Concourses must have:

(i) Direct Access to and from vertical circulation routes and transport;

(ii) Direct Access to the Vomitories or access points leading to the Seating Bowl; and

(iii) Direct Access to support facilities including toilets, Changing Places Toilets, Outlets and restaurants, Retail Facilities, Premium Products sales and ticketing, designated meeting points and ATMs.

(f) (**Amenity**) Premium Concourses must:

(i) provide flexibility for use of Premium Product Areas for Functions;

(ii) accommodate Event Overlay;

(iii) where exposed, provide areas of protection to Patrons from the elements including sun, wind and rain in areas where Patrons will assemble and queue;

(iv) prevent unauthorised access to Premium Product Areas from General Admission levels using the vertical circulation connections. This must be controlled by design as far as practical;

(v) provide Patron access to food and beverage waste disposal bins, and designated locations for installation of such which facilitate integration into the overall aesthetic whilst also taking into account Patron movement, including in an emergency;

(vi) provide visual and physical connections to the Event including views from the Concourses to the Seating Bowl;

(vii) separate Patron circulation spaces from service access to facilities requiring high levels of service, such as the Retail Facilities and Outlets;

(viii) provide access, to Premium Product Areas through dedicated entrances, circulation, lifts, escalators and stairs. However, where General Admission Areas and Premium Product Areas are provided on the same level, shared use of vertical transport routes with Patrons accessing the same level is acceptable;

(ix) provide views from the Stadium to the surrounding areas including Sports Precinct, Swan River, Perth city and beyond. It is important that the Stadium and Patrons get a sense of being connected to the environs and the city in particular; and

(x) provide access to the Sky View Lounge via a lift with Ready Access. When the Sky View Lounge is in use there must also be a stair or ramp exit route available for alternate or emergency egress.

D5.4.5 Vertical Transportation

(a) (**Lifts**) Lifts must be provided for:

(i) VIP Patrons;

(ii) Premium Product Patrons;

(iii) Catering and goods movement;

(iv) Coaches' Boxes; and

(v) IRUA serving all levels.

(b) (**Escalators**) Escalators must be provided for:

(i) Premium Product Patrons; and

(ii) upper levels of the Seating Bowl.

(c) All escalators must include protection to prevent falling from the escalator and using the rails or housings for sliding.

(d) (**Stairs**) Stairs may be required to achieve the access requirements set out in Chapters D6 (Team Facilities), D9 (Premium Product Areas) and D14 (Media Facilities) of these Design Specifications.

D6 TEAM FACILITIES

D6.1 OVERVIEW

(a) The Team Facilities will provide a high quality environment, comparable to the best facilities currently available in Australia, for all the Sporting Teams. The areas will support the pre-match, during and post-match activities of Sporting Teams on Game Days.

(b) Whilst the Team Facilities described in this Chapter are categorised as "Home Team" environments and "Away Team" environments, this categorisation generally befits their use for AFL Events. One (1) Home Teams' Change Room and one (1) Generic Change Room will on occasion be used to accommodate Away Teams, and depending on the requirements of the Hirer, the Away Team would have access to the facilities shared by the Home Teams (described in clause D6.4.2) or to nearby Away Team Facilities. For example, it is envisaged that:

(i) a Generic Change Room (or potentially a Home Teams' Change Room) may be used to accommodate the Away Team for Cricket Events;

(ii) a Home Teams' Change Room or Generic Change Room may be used to accommodate Away Teams for triple header Rectangular Events; and

(iii) the Generic Change Rooms will frequently be used to accommodate AFL Curtain Raiser teams and Auskick teams;

(c) It is a key objective that the Team Facilities will support the unique fans-first experiences planned for Patrons, through:

(i) visual and partial physical contact from within the Field Club, promoting a real sense of connection between the Home Teams' Players and fans; and

(ii) highly visible media engagement from within the Field Club to further enhance the Game Day experience for Patrons.

(d) This Chapter describes:

(i) the accommodation requirements for Sporting Teams to support their use of the Stadium on Game Days and for Permitted Training; and

(ii) the accommodation requirements for Match Officials, Team Support Personnel and other Accredited Event Personnel associated with the conduct of Sporting Events.

(e) Functional Relationship Diagrams depicting the key functional relationships for the Functional Units that comprise the Team Facilities are included in Chapter F2 (Team Facilities).

(f) Further technical requirements in respect of the Team Facilities are detailed in Part E (Technical Brief) of these Design Specifications.

D6.2 OPERATIONAL PRINCIPLES

(a) This clause D6.2 describes the envisaged use of the Team Facilities by the Sporting Codes for Sporting Events. The Hirer may choose to utilise the Team Facilities differently to the manner described to suit its requirements for an Event. Accordingly, flexibility of use should be a key tenet of the design philosophy for the Team Facilities.

(b) (**Competition venue**) The Stadium is primarily a competition venue for Sporting Events. The Home Teams will not use the Stadium as their primary training venue or administrative headquarters.

(c) Through multi-purpose design and sharing of facilities all Home Teams that use the Stadium will have access to enhanced facilities which could provide added "home game advantage" for Home Teams.

(d) (**Permitted Training**) Sporting Teams will have the opportunity to use the Stadium for Permitted Training, for example a captain's run for each team prior to a Sporting Event. For AFL and cricket Home Teams, the full playing squad will typically participate in Permitted Training sessions whilst for other sports, it will be the Players that have been selected to play in the match that will attend the captain's run / pre-match training. At the completion of Permitted Training, a large amount of equipment may be left in the Team Facilities. Access to the Team Facilities will be limited to Sporting Teams, Match Officials, the FM Subcontractor (without limiting any Restricted Access requirements), Stadium Personnel and other Accredited Event Personnel from this point until the completion of the Event.

(e) (**Home Teams' Change Rooms**) Two (2) Home Teams' Change Rooms will be available for the dedicated but non-exclusive use of the AFL Home Teams. As there are currently two (2) AFL Home Teams, the Main Locker Room within each of these change rooms will be fitted out to incorporate the temporary branding for an AFL Home Team. Notwithstanding this, these change rooms will still be used to accommodate Home Teams, and on occasion Away Teams, for other Sporting Events.

(f) (**Generic Change Rooms**)

(i) Two (2) Generic Change Rooms will typically be used by the Home Team and Away Team for Cricket Events and one (1) will typically be used by the Home Team for Rectangular Events. Whilst these change rooms can each operate as a standalone facility, they can each also be used to augment a Home Teams' Change Room for AFL Events. The standard and fit out of

the Generic Change Rooms will be equivalent to that of the base fitout (prior to customisation by the Home Teams) of the Home Teams' Change Rooms. These change rooms will be dividable into two separate change rooms to increase the flexibility of their usage.

(ii) The Generic Change Rooms will also be used to accommodate Auskick teams (for AFL Events), Curtain Raiser teams (for AFL Events and Rectangular Events) and ball boys and girls (for Rectangular Events). Depending on the extent of utilisation by others, cheerleaders for Rectangular Events may be accommodated within the Generic Change Rooms, or within the Green Room described in Chapter D13 (Stadium Operations and Event Day Facilities) of these Design Specifications.

(g) (**Shared Facilities**)

(i) Each pairing of a Home Teams' Change Room and Generic Change Room will share a Home Teams' Players' Warm-up Room (and associated Interview Booths), the Shared Recovery Facility and the Home Teams' Coaches' Briefing Rooms among other facilities.

(ii) For AFL Events and for Permitted Training, the Generic Change Room associated with the Home Teams' Change Room that is in use will be used to provide increased capacity to accommodate Coaches and Team Support Personnel of the AFL Home Team. The other Generic Change Room, which is not in use by the AFL Home Team, will be available for use by AFL Curtain Raiser teams and Auskick teams.

(h) (**Away Team Change Room**) An Away Team Change Room will be available for use by Away Teams for all Sporting Codes (with the potential exception of Cricket Events where the Away Team may be located in the Generic Change Room which is not being used by the cricket Home Team).

(i) Two (2) Primary Officials' Change Rooms will be provided to separately cater for male and female Umpires and Referees. Two (2) Secondary Officials' Change Rooms will be provided to cater for male and female officials for Curtain Raiser Events and Auskick.

(j) (**Coaches' Boxes**) Two (2) Coaches' Boxes will be available for the dedicated but non-exclusive use of the AFL Home Teams with each box accommodating the coaches and statisticians of an AFL Home Team. The statisticians will be seated within a co-located room with Direct Access from the Coaches' Box or in an acoustically treated area within the Coaches' Box. Each Home Team will have use of the Coaches' Box that is most closely connected to their respective Home Teams' Change Room.

(k) (**Players' Races**)

(i) A dedicated Players' Race will be provided for each Home Teams' Change Room and the Away Team Change Room to provide independent Pitch access for Sporting Teams.

(ii) For AFL Events, the Home Team and Away Team will access the Pitch separately, each using a different Players' Race (being that most closely connected to their respective changerooms). An alternative entry route will be provided through the Field Club to the Field Of Play for use by Home Teams.

(iii) For other Sporting Events the Home Team and Away Team will usually access the Pitch using the same Players' Race, however the Field Club alternative will be available for all sports, including for use by the Home Team and Away Team for an Event.

(l) Umpires and Referees will have independent Pitch access via the Officials' Race.

(m) A range of facilities will support the conduct of Sporting Events, including facilities for timekeepers, decision review officials and Match Officials' assessors. The facilities provided for Match Officials will be flexible to cater for the demands of the range of Sporting Events.

(n) (**Use of facilities for AFL Triple Header Event**) It is envisaged, for an AFL Triple Header Event:

(i) each Home Team will have use of its Home Teams' Change Room and the associated Generic Change Room;

(ii) the Away Team will be accommodated in the Away Team Change Room; and

(iii) AFL Curtain Raiser teams and Auskick teams will have use of the Green Room described in Chapter D13 (Stadium Operations and Event Day Facilities) of these Design Specifications;

(iv) the Home Team which is designated as the home team on the fixture for the AFL Triple Header Event will have access to the majority share of the Shared Recovery Facility described in clause D6.4.2(e) and the larger of the Home Teams' Coaches' Briefing Rooms described in clause D6.4.2(d);

(v) each Home Team will have the dedicated but non-exclusive use of the Coaches' Box that is most closely connected to their respective Home Teams' Change Rooms; and

(vi) the Away Team will have use of the Secondary Television Studio which will be capable of use as a third coaches' box as described in clause D6.4.14(a)(ii).

(o) (**Use of facilities for AFL Derby Event**)

For an AFL Derby Event:

(i) each Home Team will have use of its Home Teams' Change Room and the associated Generic Change Room;

(ii) AFL Curtain Raiser teams and Auskick teams will have use of the Away Team Change Room or the Green Room described in Chapter D13 (Stadium Operations and Event Day Facilities) of these Design Specifications;

(iii) the Home Team which is designated as the home team on the fixture for the AFL Derby Event will have access to the majority share of the Home Teams' Shared Recovery Facility described in clause D6.4.2(e) and the larger of the Home Teams' Coaches' Briefing Rooms described in clause D6.4.2(d). As an alternative, the Home Team which is designated as the away team on the fixture for the AFL Derby Event may use the Away Team Recovery Facility; and

(iv) each Home Team will have the dedicated but non-exclusive use of the AFL Coaches' Box that is most closely connected to their respective Home Teams' Change Rooms.

(p) (**Game Day routine**) On Game Day for Sporting Events, the operational timing and pattern of movement for Players and Match Officials follows a structured, concisely timed schedule which is controlled tightly by each Sporting Team, the Sporting Code and the television broadcaster.

(q) [*Not disclosed*]

(r) (**Cricket Events and the Players and Match Officials' Area (PMOA)**)

(i) For Cricket Events, there are a number of key differences with respect to control and management of the Sporting Teams and Match Officials on Game Day. Whilst all Sporting Events will have strict control measures around access to Team Facilities (including facilities for Match Officials), for Cricket Events there is a requirement for a PMOA. A similar concept applies for some Special Events (e.g. Athletics Events). Some permanent security systems are required within the Team Facilities to support the implementation of the PMOA which are described in clause D6.4.3 and Part E (Technical Brief) of these Design Specifications.

(ii) Media Personnel are not permitted within the PMOA.

(s) Other requirements which are unique to Cricket Events include:

(i) Players "on the bench" and support staff will view the Event from a Players' Viewing Room which facilitates reliable, fast and easy access to the Field Of Play.

(ii) Should Outdoor Practice Cricket Wickets be installed at the Stadium, training for Cricket Events such as test matches will take place at the Stadium for up to three (3) days prior to the Event. Any Outdoor Cricket Practice Wickets will be accessed during training and throughout the Event for Players to warm up and form part of the PMOA.

(iii) The teams will warm up on the Field Of Play prior to the commencement of play on each day for approximately forty five (45) minutes. Individual Players may access the Outdoor Practice Cricket Wickets (if provided) to warm up throughout the Event.

(iv) The Home Teams' Players Warm-up Rooms will be multi-purpose to allow them to be used as an Indoor Cricket Practice Facility. They will primarily be used as warm-up facilities for batsmen when rain interrupts the conduct of the Cricket Event or if Outdoor Practice Cricket Wickets are not available.

(t) (**Player injuries on the Field Of Play**) In the event of an on-field incident requiring the assisted removal of a Player or Players from the Field Of Play for medical reasons, the Player or Players will:

(i) if ambulant, be assisted off the Field Of Play to the Medical Room that their team is using; or

(ii) if unable to walk, be:

A placed on a stretcher on the Field Of Play and brought to the Medical Room as appropriate for the Event; or

B placed in a Medicart on the Field Of Play and brought to the Medical Room as appropriate for the Event; or

C placed directly into an ambulance for transfer to an off-site medical facility.

(u) (**Doping Control Station**)

(i) The Doping Control Station is for testing Players by an accredited authority for tests when Players are present in the Stadium.

(ii) The Doping Control Station must be provided as a dedicated facility and not be used for other purposes.

(iii) Doping control officers will generally arrive together at the Stadium by vehicle with testing equipment, documents and computers.

(iv) A high level of privacy must be afforded for Players and officials visiting the Doping Control Station.

(v) It is anticipated that the following persons will generally be authorised to be present at the Doping Control Station:

A on duty doping control officers;

B on duty chaperone(s);

C on duty sample collection personnel;

D Player being tested;

E Players' representative;

F interpreter (if required);

G relevant sporting code representative for the Sporting Event (e.g. AFL or FIFA representative);

H doping control officers' support; and

I other individuals authorised by an doping control officer (e.g. auditors, independent observers).

D6.3 GENERAL DESIGN REQUIREMENTS

(a) (**Compliance with Quality Standards**)

(i) The Team Facilities must comply with all relevant Quality Standards including in particular the:

A the AFL Venue Guidelines 2013;

B the AFL ICT Guidelines 2013; and

C all other Sporting Standards.

(ii) Where the requirements of these Design Specifications differ from those set out in the relevant Quality Standards, the higher or greater requirement must be met.

(iii) The requirement at paragraph (a)(i) extends to all Project Co FF&E, fitout and Engineering Services provisions described within the relevant Quality Standards.

(b) (**Atmosphere**)

(i) The overall form and interior fitout of the Team Facilities, and in particular the Home Teams' Change Rooms and the Generic Change Rooms, should convey an atmosphere of high performance, strength, power, affiliation, experience and achievement. These areas should promote a multi-sensory experience for the Players, Coaches and Team Support Personnel that:

A is visually stimulating through incorporation of branding, imagery, room colour and the use of strong architectural elements;

B is aurally stimulating, through the use of sound (music) to raise arousal levels;

C promotes touch and sensory awareness, through tactile design, form, shape, light and texture; and

D promotes soul, through interpretation of history and heritage of local sporting teams.

(ii) The Home Teams' Players' Warm-up Rooms should convey an atmosphere of hype, adrenalin, energy and excitement through visual and aural stimuli, colour and scale. These areas must incorporate:

A a mounted panel, rail or magnetic system for efficient and easily interchangeable display of branding and logos of major partners; and

B a high quality acoustic sound system to play loud, fast tempo music.

(c) (**Home Teams' Change Rooms**) The Home Teams' Change Rooms should provide for a high standard locker room environment, be column-free and symmetrical in shape, incorporate enhanced facilities for kick up or Player warm up and active aquatic recovery (hot and cold), and provide appropriate Player care, including medical care, to maximise the opportunity for success and home team advantage for the local Sporting Teams. The Home Teams' Change Rooms should convey a home-away-from-home feel for local Sporting Teams, be flexible in design, allow for privacy and solitude in areas (as some Players prepare in quiet and seek to be away from the glare and hype of pre-game preparation) and allow for foreseeable changes to the locker room environment to

accommodate the evolving needs of the Home Teams (e.g. inclusion of technologies or future-proofing for same).

(d) [*Not disclosed*]

(e) (**Players' Races**) All Players' Races must meet the following requirements:

(i) each Players' Race must be suitably sized to accommodate easy transfer of injured Players from the Field Of Play to the Medical Room using a Medicart;

(ii) each Players' Race must have an even floor finish with minimal gradient to facilitate safe Pitch access for Players running through;

(iii) as part of the Event Overlay for some Events, it must be possible to cover each Players' Race to provide overhead protection from the Seating Bowl for Players and other Stadium Users that will use the Players' Race without affecting Viewing Quality for Patrons in the Seating Bowl or the capacity of the Seating Bowl for the Event;

(iv) each Players' Race must have adequate separation from other Players' and Officials' Races to avoid unintended interactions between Players from different Sporting Teams when entering and leaving the Pitch;

(v) each Players' Race must have Direct Access from the associated Players' Warm-up Room and the associated Interchange Bench; and

(vi) there must be Easy Access internally within the Team Facilities between each Players' Race to allow competing Sporting Teams to enter the Field Of Play from their respective changing rooms using the same Players' Race if desired, notwithstanding the requirement at paragraph (iv).

(f) (**Finishes**) Safe, anti-slip non-laminated rubber flooring surfaces must be provided throughout all change rooms within the Team Facilities and to and from the Pitch, with the exception of wet areas. Floor surfaces to wet areas must be safe, anti-slip, impervious, self-draining, mould resistant and easy to clean and maintain. Wall surfaces to wet areas must be impervious, mould resistant and easy to clean and maintain.

D6.4 ACCOMMODATION REQUIREMENTS

The accommodation described in this Chapter comprises the Team Facilities and must be provided by Project Co.

D6.4.1 Home Teams' Change Rooms

(a) (**Location**) Two (2) air-conditioned Home Teams' Change Rooms must be provided on the Event Level for the dedicated but non-exclusive use of the AFL Home Teams.

(b) (**Proximities**)

(i) Each Home Teams' Change Room must be located to facilitate:

A Direct Access to the Players' entrance located off the Stadium Service Road;

B Ready Access to an associated Players' Race described at clause D6.4.2(f);

C Ready Access to the Home Teams' Shared Facilities described at clause D6.4.2; and

D Easy Access to an associated Home Teams' Coaches' Box.

(ii) The access route from the Home Teams' Change Rooms to the Home Teams' Coaches' Box must be reliable, discreet and restrict interaction with Patrons and Media Personnel. Stair access is preferred for timeliness and reliability.

(c) (**Privacy**) Sightlines into each Home Teams' Change Room from adjacent areas must preserve the privacy of occupants at all times, with the exception that limited viewing of some areas is permitted for Field Club Patrons as described at paragraph (k).

(d) (**Customisation of fitout**)

(i) The AFL Home Teams have a desire to customise certain elements of the AFL Home Teams' Change Rooms above the base level, at their expense, to reflect their individual requirements and branding. As part of the DBFM Works and during each Design Stage, Project Co must engage with the AFL Home Teams, together with the State, to customise the designs of the Home Teams' Change Rooms and submit the customised designs to the State for approval in accordance with the requirements of Schedule 3 (Review Procedures) of this Agreement.

(ii) Notwithstanding that the Main Locker Room and Medical Room of the Home Team's Change Rooms will have some level of customisation by the AFL Home Teams, these areas must achieve a level of flexibility to enable their efficient use for non AFL Events.

(e) (**Provisions**) Each Home Teams' Change Room must be designed as a self-contained suite of facilities and must include the accommodation and facilities described in paragraphs (f) to (l).

(f) (**Main Locker Room**)

(i) (**Capacity**) One (1) Main Locker Room must be provided to accommodate fifty (50) Players.

(ii) (**Proximities**) The Main Locker Room must have:

A Direct Access to a co-located Players' Wet Area;

B Direct Access to a co-located Physio / Player Massage and Strapping Area; and

C Direct Access to the Locker Room of an adjacent Generic Change Room to enable the Main Locker Room to be augmented by the locker room of the Generic Change Room such that the combined locker areas can serve up to ninety (90) persons total including Players, Coaches and Team Support Personnel.

(iii) (**Amenity**) The Main Locker Room must:

A have fifty (50) "carrel" style lockers with hanging space and benches in front. The lockers must be 750mm wide x 600mm deep individual full height lockers with integral bench, hanging space, integral boot and small items locker. The design of the lockers must incorporate removable branding, and provide for assigning and naming a locker for each individual in a full AFL playing squad;

B have locker positions arranged around a common column free area and allow a minimum space of 2.5m wide to be available as an informal briefing area; and

C incorporate a permanent interior fitout that allows for customisation of the respective Home Team's colours, club branding and mottos, including mounted panels, rails or magnetic systems for efficient and easily interchangeable display of sponsor branding and logos of major partners, with customisation to occur as part of the delayed design and procurement process as described in Chapter C19 (Delayed Design and Procurement). Opportunities for branding and display of motivational messages / imagery should be maximised within the locker room.

(g) (**Players' Wet Area**)

(i) Shower, drying and toilet areas co-located with the Main Locker Room must include:

A twelve (12) showerheads;

B six (6) hand basins;

C four (4) urinals;

D four (4) toilets;

E four (4) jet hand dryers; and

F locations for fixed soap dispensers.

(ii) An accessible shower and an accessible toilet must be provided in the Players' Wet Area for injured Players as part of the provision at paragraph (g) of this clause D6.4.1.

(h) (**Physio / Massage and Strapping Area**)

(i) (**Capacity**) A Physio / Massage and Strapping Area or room of 50m^2 must be provided.

(ii) (**Proximities**) The Physio / Massage and Strapping Area must have:

A Direct Access to the Medical Room;

B Direct Access to the Main Locker Room; and

C Easy Access to the Home Teams' Players' Warm-up Room.

(iii) (**Amenity**) The Physio / Massage and Strapping Area must accommodate and include the following equipment:

A six (6) standard massage tables;

B six (6) standard strapping tables / benches; and

C storage facilities for tape and peripherals between each position with a comfortable height work top over.

(i) (**Medical Room**)

(i) (**Capacity**) A Medical Room of 25m^2 must be provided.

(ii) (**Proximities**) The Medical Room must have:

A Direct Access to the Physio / Massage and Strapping Area;

B Direct Access through double doors to and from the nearest Players' Race;

C Ready Access to the ambulance parking area via a route that is suitable for movement of stretchers, trolleys and wheelchairs.

(iii) (**Amenity**) The Medical Room must have:

A sufficient entry width for a Medicart to be driven in and out of the room from the Players' Race;

B sufficient circulation to accommodate 360 degree movement around two (2) adjustable medical treatment tables;

C lockable storage;

D localised temperature control; and

E floor, ceiling and wall finishes which are durable and easy to clean to minimise infection control risks.

(j) (**Home Teams' Players' Warm-up Room**)

(i) (**Capacity**) A Home Teams' Players' Warm-up Room must be provided of minimum dimensions 35m long x 10m wide x 6m high (clear of obstructions), with a height of 8m being desirable. The length of this room is of importance to enable its dual use as an Indoor Cricket Practice Facility.

(ii) (**Proximities**) The Home Teams' Players' Warm-up Room must have:

A Direct Access to the Players' Race;

B Ready Access to the Main Locker Room and the Locker Room within the associated Generic Change Room;

C Ready Access to and from the Medical Rooms and the Physio / Massage and Strapping Area in the Home Teams' Change Room and the associated Generic Change Room;

D Ready Access to the Coaches' Briefing Rooms described at clause D6.4.2(d); and

E Direct Access to the Interview Booths described at clause D14.4.20.

(iii) (**Amenity**) The Home Teams' Players' Warm-up Room must:

A be a predominantly if not totally column free symmetrical space with robust finishes, fixtures and fittings to accommodate ball kicking, stretching and limbering up activities within the room;

B have netting to the walls and ceilings to provide protection to finishes, fixtures and fittings. Kicking nets must be provided to facilitate warm-up for all sports including AFL;

C have a floor surface that is suitable and safe for its purpose as a warm-up space for Sporting Teams competing in AFL Events and Cricket Events, as further described in paragraph (iv);

D have space provided for a drinks fridge and freezer, storage and viewing within the room in view of the remote broadcast feed and designed and located to minimise intrusion into the open area to maximise the available space when the room is being used in its capacity as an Indoor Cricket Practice Facility;

E have a patch point and fitting for a remote broadcast camera;

F have a local patch point for screens;

G have a locally controlled, high quality acoustic sound system. This system must be separately zoned from the other Home Teams' Players' Warm-up Room and the Away Team Players' Warm-up Room, and must be linked to the PA System to allow override emergency announcements; and

H have window shared with the Field Club to facilitate viewing of activities within the Home Teams' Players' Warm-up Rooms from the Field Club. This window must have window treatments or an integrated capacity to enable the Team Officials at their discretion to shut off the view from the Field Club (with control for this to be from within the Home Teams' Players' Warm-up Room).

(iv) (**Floor surface**)

A With respect to paragraph (iii)C, it is highly desirable that a single floor surface is selected that meets the requirements of AFL Events and Cricket Events. If this cannot be achieved, an interchangeable flooring solution must be provided, which must be cost effective and operationally simple to readily change the floor surface or covering and nets to convert both Home

Teams' Players' Warm-up Rooms into an Indoor Cricket Practice Facility. A suitably sized storage facility must be provided for storage of all cricket equipment and the flooring surface.

B For AFL Events, the floor surface must be safe and level, anti-slip, shock absorbing (offering point elastic deflection), easy to clean and maintain and otherwise suitable for the warm-up and ball kicking activities to be undertaken in the room; and

C For Cricket Events, the floor surface must be safe and level, anti-slip, hard and fast playing, easy to clean and maintain and otherwise suitable for indoor cricket batting practice that will be undertaken in the room.

(k) (**Viewing Area**) A Viewing Area with views directly into the Home Teams' Players' Warm-up Room must be provided for the purpose of allowing invited Patrons and other guests of the Home Team to view the team warm-up from "inside" the warm up space. The Viewing Area must be open to the Players' Warm-up Room but must be provided with protection to prevent Patrons and other guests being hit by footballs. The Viewing Area must have Ready Access to, but be separate from, the Field Club and vertical transport connections.

(l) (**Property Room**)

(i) (**Capacity**) A lockable Property Room of minimum 32m^2 must be provided.

(ii) (**Proximities**) The Property Room must have:

A Ready Access to the Home Teams' Players' Warm-up Room; and

B Ready Access at a minimum to the Stadium Service Road, with Direct Access being desirable.

(iii) (**Amenity**) The Property Room must have:

A suitable shelving to accommodate storage of Home Team property including team clothing and uniforms, team valuables, team branding and sponsor signage, sporting equipment, team drinks and other team property; and

B a sink and counter area for hydration preparation.

D6.4.2 Home Teams' Shared Facilities

(a) In addition to the dedicated facilities described above, each Home Teams' Change Room and the Generic Change Rooms must have Ready Access to the Home Teams' Shared Facilities described in this clause D6.4.2.

(b) Notwithstanding its categorisation as a "Home Teams" facility, the Home Teams' Shared Facilities may on occasion be used by Away Teams using a Generic Change Room, including for example for Cricket Events where the Away Team would need access to such facilities inside the PMOA.

(c) The Home Teams' Shared Facilities must be located discretely from each of the Home Teams' Change Rooms and both Generic Change Rooms and:

(i) must facilitate equitable access between each of the Home Teams' Change Rooms; and

(ii) should facilitate equitable access between each of the Generic Change Rooms.

(d) (**Coaches' Briefing Rooms**) Two (2) Coaches' Briefing Rooms must be provided for use by all Home Teams for briefings, instruction, feedback and presentations during the Event and Permitted Training. The Coaches' Briefing Rooms must be provided as follows:

(i) (**Capacity**) Two (2) Coaches' Briefing Rooms must be provided as follows:

A One (1) for seventy (70) Players; and

B One (1) for forty (40) Players.

(ii) (**Location**) The Coaches' Briefing Rooms must be located on the Event Level as part of the shared facilities for the Home Teams' Change Rooms and the Generic Change Rooms.

(iii) (**Proximities**) Each of the Coaches' Briefing Rooms must have:

A Ready Access from and to both Home Teams' Change Rooms and from both Generic Change Rooms; and

B Ready Access from and to both Home Teams' Players' Warm-up Rooms.

(iv) (**Amenity**) Each of the Coaches' Briefing Rooms must incorporate:

A a presentation wall (directly viewable from the tiered seating) with whiteboard;

B a space for up to four (4) computer workstations to enable Players to watch recorded Event footage;

C a fixed audiovisual projection equipment and screen including one (1) Display and patch panel;

D a minimum of four (4) double GPOs (with one (1) located at the back of the room and three (3) located at the front); and

E a mounted panel, rail or magnetic system for efficient and easily interchangeable display of club branding and logos of major partners. As an alternative means to achieve the easily interchangeable branding, strong consideration should be given to technology solutions within the Coaches' Briefing Rooms.

(e) (**Shared Recovery Facility**) A Shared Recovery Facility must be provided for use by all Home Teams. Access to part of this facility will on occasions be required for use by a non-AFL Away Team that is using a Generic Change Room. The Shared Recovery Facility must be provided as follows:

(i) (**Proximities**) The Shared Recovery Facility must have Ready Access from and to each of the Home Teams' Change Rooms and Generic Change Rooms.

(ii) (**Capacity**) The Shared Recovery Facilities must include:

A four (4) 6-person cold plunge pools / ice baths (min 1.5m deep); and

B two (2) 12-person spas / hot tubs.

C space to expand to include increased recovery facilities including a potential 22-person endless pool and its associated plant and infrastructure. Further details are set out in clause D16.2.2 of this these Design Specifications.

(iii) (**Amenity**) The Shared Recovery Facility must be designed for flexibility so as to enable the amenities to be fully used by one Sporting Team or divided and separately accessed by two competing Sporting Teams for their concurrent use. There must be the ability to separate two (2) of the 6-person cold plunge pools and one (1) 12-person person hot spa from the remainder of the aquatic recovery facilities. The entry route must be planned to avoid cross circulation of Players entering the facility.

(f) (**Players' Race**) A dedicated Players' Race must be provided for each pairing of Home Teams' Change Room and Generic Change Room, with as a minimum:

(i) Ready Access to and from the Main Locker Room in the Home Teams' Change Room;

(ii) Ready Access to and from the Locker Room in the Generic Change Room;

(iii) Direct Access to and from the associated Home Teams' Players' Warm-up Room;

(iv) Direct Access to and from the Medical Rooms associated with the Home Teams' Change Room and Generic Change Room; and

(v) Ready Access to and from the associated Home Teams' Interchange Bench.

(g) (**Home Teams' Interchange Bench**) A Home Teams' Interchange Bench must be provided to accommodate twenty four (24) persons including Players and Team Support Personnel with unobstructed views of the Field Of Play. The Home Teams' Interchange Bench must:

(i) be located with sufficient distance from all other interchange benches accommodating Players and Match Officials to permit communication but also ensure privacy;

(ii) have an area, not in front of the Home Teams' Interchange Bench and not within the Runoff Area, suitable to accommodate two exercise bikes and massage mats; and

(iii) incorporate cover to provide protection to all Players and Team Support Personnel using the Home Teams' Interchange Bench from weather and Patron anti-social behaviour, without affecting the view of the Highball.

(h) (**Players' Lounge**) An air conditioned Players' Lounge must be provided for use by the Home Teams and as a Players' and Match Officials dining room for Cricket Events.

(i) (**Capacity**) The Players' Lounge must accommodate fifty (50) people.

(ii) (**Proximities**) The Players' Lounge must have Easy Access to each of the Home Teams' Change Rooms and the Generic Change Rooms.

(iii) (**Amenity**) The Players' Lounge must have:

A a bar servery and a finishing kitchen to serve snacks and light meals;

B fifty (50) seat capacity for dining with tables and chairs to suit;

C lounge chairs and coffee tables;

D spatial allowance and Engineering Services provisions for installation of vending machines by others;

E a unisex accessible toilet room with baby changing facilities; and

F four (4) Displays.

(i) (**Interview Booths**) Four (4) fully cabled Interview Booths must be provided to conduct informal one-on-one interviews with Players. These must be provided immediately adjacent to, and with Ready Access from and to, the Home Teams' Players' Warm-up Room, such that all four (4) booths can be accessed for all Stadium Events. Further requirements for these facilities are set out in Chapter D14 (Media Facilities) of these Design Specifications.

(j) (**Media Interview Room**)

(i) A fully cabled media facility for media conferences must be provided adjacent to the Home Teams' Players' Warm-up Room to conduct media conferences. This room must also have Easy Access from the Away Team Change Room. Further functional and technical requirements for this facility are set out in Chapter D14 (Media Facilities) of these Design Specifications.

(ii) For Cricket Events it must be possible to isolate the Media Interview Room from the PMOA as Media Personnel are not permitted within the PMOA.

D6.4.3 Requirements for the PMOA

The functional layout and Engineering Services for the Team Facilities must allow for efficient implementation of the PMOA for Cricket Events through the permanent infrastructure provisions, including through:

(a) a functional layout that minimises the extent of the PMOA for efficiency purposes;

(b) CCTV coverage, for monitoring and recording all Stadium User activity at all entry and exit points to the PMOA on an individual user and event basis; and

(c) electronic access control system (**EACS**), recording the identity of all Stadium Users that access all entry doors to, and exit doors from, the PMOA on an individual event basis,

so that all recorded content from the CCTV system and the EACS can be made freely available to the Hirer immediately after an Event. The technical requirements for the CCTV system and the EACS are set out in Chapter E15 (Security Systems) of these Design Specifications.

D6.4.4 Away Team Change Room

(a) (**Capacity**) One (1) air conditioned Away Team Change Room must be provided for use by the Away Teams for all Sporting Codes.

(b) (**Proximities**)

(i) The Away Team Change Room must be located to facilitate:

A Direct Access to the Players' entrance located off the Stadium Service Road;

B Direct Access to an associated Players' Race described at paragraph (m) of this clause D6.4.4;

C Easy Access to the Green Room at a minimum, with Ready Access desirable; and

D Easy Access to the Secondary Television Studio which will be used as the Away Team Coaches' Box for AFL Events.

(ii) The access route from the Away Team Change Room to the Secondary Television Studio / Away Team Coaches' Box must be reliable, discreet and secure to minimise interaction with Patrons and avoid interaction with Media Personnel. Stair access is preferred for timeliness and reliability.

(c) (**Privacy**) Sightlines into the Away Team Change Room from adjacent areas must preserve the privacy of occupants at all times.

(d) (**Provisions**) The Away Team Change Room must be designed as a self-contained suite of facilities comprising the accommodation and facilities described under paragraphs (e) to (o) of this clause D6.4.4.

(e) (**Main Locker Room**)

(i) (**Capacity**) One (1) Main Locker Room must be provided to accommodate forty (40) Players.

(ii) (**Proximities**) The Main Locker Room must have:

A Direct Access to a co-located Players' Wet Area; and

B Direct Access to a co-located Physio / Player Massage and Strapping Area.

(iii) (**Amenity**) The Main Locker Room must:

A have forty (40) "carrel" style lockers with hanging space and benches in front. The lockers must be 750mm wide x 600mm deep individual full height lockers with integral bench, hanging space, integral boot and small items locker;

B have locker positions arranged around a common column free area and allow a minimum space of 2.5m wide to be visible for additional briefing; and

C incorporate a mounted panel, rail or magnetic system for efficient and easily interchangeable display of team branding and logos of major partners.

(f) (**Players' Wet Area**)

(i) Shower, drying and toilet areas co-located with the Main Locker Room must include:

A ten (10) showerheads;

B four (4) hand basins;

C four (4) urinals;

D four (4) toilets;

E four (4) jet hand dryers;

F locations for fixed soap dispensers.

(ii) An accessible shower and an accessible toilet must be provided in the Players' Wet Area for injured Players as part of the provision at paragraph (f).

(g) (**Away Team Recovery Facility**) A dedicated recovery facility must be provided for Away Teams using the Away Team Change Room. The Away Team Recovery Facility may on occasion be used by an AFL Home Team where that team is designated as the away team on the fixture for the AFL Derby Event.

(i) (**Capacity**) The Away Team Recovery Facility must include:

A two (2) 6-person cold plunge pool / ice baths;

B two (2) 6-person spas / hot tubs; and

C warm / rub down area.

(ii) (**Proximities**) The Away Team Recovery Facility must have Direct Access to Players' Wet Area.

(h) (**Physio / Massage and Strapping Area**)

(i) (**Capacity**) A Physio / Massage and Strapping Area or room of 50m2 must be provided.

(ii) (**Proximities**) The Physio / Massage and Strapping Area within the Away Teams Change Room must have:

A Direct Access to the Medical Room;

B Direct Access to the Main Locker Room; and

C Easy Access to the Away Team Players' Warm-up Room.

(iii) (**Amenity**) The Physio / Massage and Strapping Area must accommodate and include the following equipment:

A six (6) standard massage tables;

B six (6) standard strapping tables / benches; and

C storage facilities for tape and peripherals between each position with a comfortable height work top over.

(i) (**Medical Room**)

(i) (**Capacity**) A Medical Room of 20m2 must be provided.

(ii) (**Proximities**) The Medical Room must have:

A Direct Access to the Physio / Massage and Strapping Area;

B Direct Access through double doors to and from the nearest Players' Race;

C Ready Access to the ambulance parking area.

(iii) (**Amenity**) The Medical Room must have:

A sufficient entry width for a Medicart to be driven in and out of the room from the Players' Race;

B sufficient circulation to accommodate 360 degree movement around two (2) adjustable medical treatment tables;

C lockable storage;

D localised temperature control; and

E floor, ceiling and wall finishes which are durable and easy to clean to minimise infection control risks.

(j) (**Away Team Players' Warm-up Room**)

(i) (**Capacity**) An Away Team Players' Warm-up Room must be provided with a minimum spatial allowance of 173m2 (indicative acceptable dimensions are 17.5m x 10m) and a minimum height clear of obstructions of 4.8m high, with a height greater than 4.8m being desirable.

(ii) (**Proximities**) The Away Team Players' Warm-up Room must:

A Direct Access to the Players' Race;

B Ready Access to the Main Locker Room; and

C Ready Access to the Medical Room and the Physio / Massage and Strapping Area;

D Ready Access to the Coaches' Briefing Rooms described at clause D6.4.2(d); and

E Direct Access to the Interview Booths described at paragraph (k).

(iii) (**Amenity**) The Away Team Players' Warm-up Room must:

A be a predominantly if not totally column free symmetrical space with robust finishes, fixtures and fittings to accommodate ball kicking, stretching and limbering up activities within the room;

B have netting to the walls and ceilings to provide protection to finishes, fixtures and fittings. Kicking nets must be provided to facilitate warm-up for all sports including AFL;

C have a floor surface that is suitable and safe for its purpose as a warm-up space for Sporting Teams competing in AFL Events, which must be safe and level, anti-slip, shock absorbing (offering point elastic deflection), easy to clean and maintain and otherwise suitable for the warm-up and ball kicking activities to be undertaken in the room;

D have space provided for a drinks fridge and freezer, storage and viewing within the room in view of the remote broadcast feed and without encroaching on the minimum spatial allowance at paragraph A;

E have a patch point and fitting for a remote broadcast camera;

F have a local patch point for screens; and

G have a locally controlled, high quality acoustic sound system which is separately zoned from the Home Teams' Players'

Warm-up Rooms and must be linked to the PA System to allow override emergency announcements.

(k) (**Interview Booths**) Two (2) fully cabled Interview Booths must be provided to conduct informal one-on-one interviews with Players. These must be provided immediately adjacent to, and with Ready Access from and to, the Away Team Players' Warm-up Room. Further requirements for these facilities are set out in Chapter D14 (Media Facilities) of these Design Specifications.

(l) (**Coaches' Briefing Room**) One (1) Coaches' Briefing Room must be provided for use for the Away Team for briefings, instruction and presentations.

(i) (**Capacity**) The Coaches Briefing Room must have capacity for forty (40) Players.

(ii) (**Proximities**) The Coaches' Briefing Room must have:

A Ready Access from and to the Away Team Change Room; and

B Ready Access from and to the Away Team Players' Warm-up Room.

(iii) (**Amenity**) The Away Coaches' Briefing Room must incorporate:

A a presentation wall (directly viewable from the tiered seating) with whiteboard;

B a fixed audiovisual projection equipment and screen including one (1) Display and patch panel;

C a minimum of three (3) double GPOs (with one (1) located at the back of the room and two (2) at the front); and

D a mounted panel, rail or magnetic system for efficient and easily interchangeable display of club branding and logos of major partners.

(m) (**Players' Race**) A dedicated Players' Race must be provided for the Away Team Change Room, with:

(i) Direct Access to and from the Away Team Players' Warm-up Room;

(ii) Direct Access to and from the Away Team Interchange Bench;

(iii) Ready Access to and from the Main Locker Room; and

(iv) Direct Access to and from the Medical Room.

(n) (**Away Team Interchange Bench**) An Away Team Interchange Bench must be provided to accommodate twenty four (24) Players and Team Support Personnel with unobstructed views of the Field Of Play. The Away Team Interchange Bench must:

(i) be located with sufficient distance from all other interchange benches accommodating Players and Match Officials to permit communication but also ensure privacy;

(ii) have an area, not in front of the Away Team Interchange Bench and not within the Run Off Area, suitable to accommodate two exercise bikes and massage mats; and

(iii) incorporate cover to provide protection to all Players and Team Support Personnel using the Away Team Interchange Bench from weather and Patron anti-social behaviour, without affecting the view of the Highball .

(o) (**Property Room**)

(i) (**Capacity**) A lockable Property Room of minimum 9m2 must be provided.

(ii) (**Proximities**) The Property Room must have:

A Ready Access to the Away Team Players' Warm-up Room; and

B Ready Access at a minimum to the Stadium Service Road, with Direct Access being desirable.

(iii) (**Amenity**) The Property Room must have:

A suitable shelving to accommodate storage of Away Team property including team clothing / uniforms, team valuables, team branding and sponsor signage, sporting equipment, team drinks and other team property; and

B a sink and counter area for hydration preparation.

D6.4.5 Generic Change Rooms

(a) (**Location**) Two (2) air conditioned Generic Change Rooms must be provided on the Event Level. The Generic Change Rooms will typically be used by the Home Team and Away Team for Cricket Events and by the Home Team for Rectangular Events, and will augment the Home Teams' Change Rooms for AFL Events.

(b) (**Proximities**)

(i) Each Generic Change Room must have:

A Direct Access to the Players' entrance located off the Stadium Service Road;

B Direct Access from and to the Home Teams' Change Room it supports;

C Ready Access to the Players' Race serving its associated Home Teams' Change Room; and

D Ready Access to the Home Teams' Shared Facilities as described at clause D6.4.2.

(c) (**Privacy**) Sightlines into the Generic Change Room from adjacent areas must preserve the privacy of occupants at all times.

(d) (**Flexibility of use**) The Locker Room described at paragraph (f) and the Players' Wet Area described at paragraph (g) for each Generic Change Room must be capable of:

(i) independent operation as a change facility for thirty (30) persons with a single wet area; or

(ii) independent operation as two (2) independently accessed change facilities for fifteen (15) persons each with their own wet area to separate males and females or Auskick Teams; or

(iii) operating such that it augments the Main Locker Room of the adjoining Home Teams' Change Room as a change facility for up to eighty (80) persons with associated wet areas; or

(iv) operating such that it augments the Main Locker Room of the adjoining Home Teams' Change Room as a change facility for up to eighty (80) persons, with the Locker Room still operating as two (2) independently accessed change facilities for fifteen (15) persons each (out of the eighty (80) total) with their own wet areas to separate males and females.

(e) (**Provisions**) Each Generic Change Room must be designed as a self-contained suite of facilities and must include the accommodation and facilities described in paragraphs (f) to (k).

(f) (**Locker Room**)

(i) (**Capacity**) The Locker Room must be of equal size to the Main Locker Room of the Away Team Change Room for the purpose of ensuring that Home Teams for Rectangular Events are not disadvantaged, however it will accommodate thirty (30) Players.

(ii) (**Proximities**) The Locker Room must have:

(iii) Direct Access to a co-located Players' Wet Area; and

(iv) Direct Access to a co-located Physio / Player Massage and Strapping Area.

(v) (**Amenity**) The Locker Room must:

A have thirty (30) "carrel" style lockers with hanging space and benches in front. The lockers must be 750mm wide x 600mm deep individual full height lockers with integral bench, hanging space, integral boot and small items locker. The design of the lockers must incorporate removable branding, and provide for assigning and naming a locker for each individual in the full playing squad;

B have locker positions arranged around a common column free area and allow a minimum space of 2.5m wide to be visible for additional briefing;

C incorporate a mounted panel, rail or magnetic system for efficient and easily interchangeable display of team branding and logos of major partners; and

D be provided in a manner that allows for the room to be partitioned to achieve two equal sized spaces with equivalent provisions including independent room access, lockers and wet area amenities, with the exception that one side will have an accessible shower and toilet.

(g) (**Players' Wet Area**)

(i) The Players' Wet Area in each Generic Change Room must be provided in a manner that allows each Generic Change Room to be used as two (2) separate facilities for separation of males and females.

(ii) The Players' Wet Area must include the following fixtures (to be split equally for males and females (as applicable))

A eight (8) showerheads in separate stalls;

B four (4) hand basins;

C two (2) urinals;

D four (4) toilets; and

E two (2) hand dryers.

(iii) An accessible shower and an accessible toilet must be provided in the Generic Change Room for injured Players as part of the provision at paragraph (g). This is only required to one (1) side of the divided Players' Wet Area facility;

(h) (**Physio / Massage and Strapping Area**)

(i) (**Capacity**) A Physio / Massage and Strapping Area of 15m^2 must be provided.

(ii) (**Proximities**) The Physio / Massage and Strapping Area must have:

A Direct Access to the Medical Room;

B Ready Access to the Locker Room; and

C Easy Access to the Home Teams' Players' Warm-up Room; and ideally be adjacent to the Physio / Massage and Strapping Area within the associated Home Teams' Change Room.

(iii) (**Amenity**) The Physio / Player Massage and Strapping Area must accommodate and include the following equipment:

A two (2) standard massage tables;

B two (2) standard strapping tables or benches; and

C storage facilities for tape and peripherals between each position with a comfortable height work top over.

(i) (**Medical Room**)

(i) (**Capacity**) A Medical Room of 20m2 must be provided.

(ii) (**Proximities**) The Medical Room must have:

A Direct Access to the Physio / Massage and Strapping Area;

B Direct Access through double doors to and from the nearest Players' Race; and

C Ready Access to the ambulance parking area; and ideally be adjacent to the Medical Room within the associated Home Teams' Change Room.

(iii) (**Amenity**) The Medical Room must have:

A sufficient entry width for a Medicart to be driven in and out of the room from the Players' Race;

B sufficient circulation to accommodate 360 degree movement around two (2) adjustable medical treatment tables;

C lockable storage;

D localised temperature control; and

E floor, ceiling and wall finishes which are durable and easy to clean to minimise infection control risks.

(j) (**Players' Race**) Each Generic Change Room must have Ready Access to the Players' Race serving the associated Home Teams' Change Room, including as described in clause D6.4.2(f).

(k) (**Interchange Bench**) Each Generic Change Room must have Easy Access to the Home Teams' Interchange Bench, including as described in clause D6.4.2(g).

(l) (**Property Room**)

(i) (**Capacity**) A lockable Property Room of minimum 9m2 must be provided.

(ii) (**Proximities**) The Property Room must have:

A Ready Access to the Home Teams' Players' Warm-up Room; and

B Ready Access at a minimum to the Stadium Service Road, with Direct Access being desirable.

(iii) (**Amenity**) The Property Room must have:

A suitable shelving to accommodate storage of property including team clothing / uniforms, team valuables, team branding and sponsor signage, sporting equipment, team drinks and other team property; and

B a sink and counter area for hydration preparation.

D6.4.6 Interchange Benches for Rugby Events and Soccer Events

Interchange benches for Rugby Events and Soccer Events must be accommodated as temporary seats provided on the edge of the Field Of Play as part of the Event Overlay.

D6.4.7 Players' Prayer Room

(a) (**Capacity**) A private interfaith chapel / meditation room must be provided for six (6) Players at one time in a suitable location to undertake prayer, contemplation and quiet reflection.

(b) (**Proximities**) The Players' Prayer Room must have Easy Access to and from the Home Teams' Change Rooms, the Away Team Change Room and the Generic Change Rooms.

(c) (**Amenity**)

(i) The Players' Prayer Room must be non-denominational and should have a basic level of wall, floor and ceiling finishes including a carpeted floor.

(ii) The room must also incorporate washing facilities suitable for washing hands and feet and FF&E to support its purpose including a shoe rack and a bookshelf.

D6.4.8 Primary Officials' Change Room (Males)

(a) (**Capacity**) One (1) air conditioned Primary Officials' Change Room (Males) of minimum 45m^2 must be provided as a self-contained suite of facilities to accommodate fourteen (14) male Umpires and Referees.

(b) (**Location**) The Primary Officials' Change Room (Males) must be located on the Event Level adjacent to the Primary Officials' Change Room (Females), the Secondary Officials' Change Room (Males) and the Secondary Officials' Change Room (Females).

(c) **(Proximities**) The Primary Officials' Change Room (Males) must have:

(i) Ready Access to the Officials' Bench; and

(ii) Easy Access to the Stadium Service Road.

(d) (**Privacy**) Sightlines into the Primary Officials' Change Room (Males) from adjacent areas must preserve the privacy of occupants at all times.

(e) (**Amenity**) The Primary Officials' Change Room (Males) must incorporate:

(i) fourteen (14) individual (full height) lockable lockers The lockers must be 300mm wide x 600mm deep with integral bench, hanging space, integral boot and small items locker;

(ii) a bench, seating and writing area for the purpose of writing of Event reports;

(iii) co-located shower, drying and toilet areas consisting of:

A two (2) showerheads;

B one (1) hand basin;

C two (2) toilets; and

D one (1) hand dryer;

(iv) one (1) 2-person ice bath;

(v) one (1) standard massage table;

(vi) one (1) bar size fridge; and

(vii) three (3) double GPOs, two (2) data outlets, one (1) telephone and two (2) Displays.

D6.4.9 Primary Officials' Change Room (Females)

(a) (**Capacity**) One (1) air conditioned Primary Officials' Change Room (Females) of minimum 37m^2 must be provided as a self-contained suite of facilities to accommodate six (6) female Umpires and Referees.

(b) (**Location**) The Primary Officials' Change Room (Females) must be located on the Event Level adjacent to the Primary Officials' Change Room (Males), the Secondary Officials' Change Room (Males) and the Secondary Officials' Change Room (Females).

(c) (**Proximities**) The Primary Officials' Change Room (Females) must have:

(i) Ready Access to the Officials' Bench; and

(ii) Easy Access to the Stadium Service Road.

(d) (**Privacy**) Sightlines into the Primary Officials' Change Room (Females) from adjacent areas must preserve the privacy of occupants at all times.

(e) (**Amenity**) The Primary Officials' Change Room (Females) must incorporate:

(i) six (6) individual (full height) lockable lockers The lockers must be 300mm wide x 600mm deep individual full height lockers with integral bench, hanging space, integral boot and small items locker.;

(ii) a bench, seating and writing area for the purpose of writing of Event reports;

(iii) co-located shower, drying and toilet areas consisting of:

A two (2) standalone shower cubicles;

B one (1) vanity bench;

C one (1) hand basin;

D two (2) toilets; and

E one (1) hand dryer;

(iv) one (1) 2-person ice bath;

(v) one (1) standard massage table;

(vi) one (1) bar size fridge;

(vii) two (2) double GPOs, one (1) data outlets, one (1) telephone and one (1) Display.

D6.4.10 Secondary Officials' Change Room (Male)

(a) (**Capacity**) One (1) air conditioned Secondary Officials' Change Room (Males) of minimum 20m^2 must be provided as a self-contained suite of facilities to accommodate twelve (12) officials for Curtain Raiser and Auskick matches.

(b) (**Location**) The Secondary Officials' Change Room (Males) must be located on the Event Level adjacent to the Secondary Officials' Change Room (Females), the Primary Officials' Change Room (Males) and the Primary Officials' Change Room (Females).

(c) (**Proximities**) The Secondary Officials' Change Room (Male) must have:

(i) Ready Access to the Field Of Play; and

(ii) Easy Access to the Stadium Service Road.

(d) (**Privacy**) Sightlines into the Secondary Officials' Change Room (Male) from adjacent areas must preserve the privacy of occupants at all times.

(e) (**Amenity**) The Secondary Officials' Change Room (Male) must be designed as a self-contained suite of facilities comprising the following:

(i) twelve (12) hooks for hanging space with bench underneath;

(ii) co-located shower, drying and toilet areas consisting of:

A two (2) showerheads;

B two (2) hand basin;

C two (2) toilets; and

D one (1) hand dryer;

(iii) two (2) double GPOs and one (1) data outlet.

D6.4.11 Secondary Officials' Change Room (Female)

(a) (**Capacity**) One (1) air conditioned Secondary Officials' Change Room (Female) of minimum 20m^2 must be provided as a self-contained suite of facilities to accommodate twelve (12) officials for AFL Curtain Raiser and Auskick matches.

(b) (**Location**) The Secondary Officials' Change Room (Females) must be located on the Event Level adjacent to the Secondary Officials' Change Room (Males), the Primary Officials' Change Room (Males) and the Primary Officials' Change Room (Female).

(c) (**Proximities**) The Secondary Officials' Change Room (Female) must have:

(i) Ready Access to the Field Of Play; and

(ii) Easy Access to the Stadium Service Road.

(d) (**Privacy**) Sightlines into the Secondary Officials' Change Room (Female) from adjacent areas must preserve the privacy of occupants at all times.

(e) (**Amenity**) The Secondary Officials' Change Room (Female) must be designed as a self-contained suite of facilities comprising the following:

(i) twelve (12) hooks for hanging space with bench underneath.

(ii) co-located shower, drying and toilet areas consisting of:

A two (2) standalone shower cubicles;

B two (2) hand basin;

C two (2) toilets; and

D one (1) hand dryer;

(iii) two (2) double GPOs and one (1) data outlets.

D6.4.12 Officials' Race

(a) An independent Pitch Access Vomitory must be provided for use by Match Officials to access the Officials' Bench and Field Of Play.

(b) (**Proximities**) The Officials' Race must have:

(i) Ready Access from and to the Primary Officials' Change Room (Males) and the Primary Officials' Change Room (Females); and

(ii) Direct Access to the Officials' Bench and Field Of Play.

(c) (**Amenity**) The Officials' Race must incorporate cover to provide protection to all Match Officials using the race from weather and Patron anti-social behaviour without affecting Viewing Quality for Patrons in the Seating Bowl.

D6.4.13 Officials' Bench

(a) (**Capacity**) One (1) Officials' Bench must be provided to cater for ten (10) Match Officials in a single row.

(b) (**Location**) The Officials' Bench must be located on the northern side of the Pitch between the Away Team Interchange Bench and the nearest of the Home Teams' Interchange Benches, and on the centreline of the Field Of Play for AFL.

(c) (**Proximities**) The Officials' Bench must have:

(i) Ready Access to the Officials' Race; and

(ii) Direct Access to the Home Teams' Interchange Benches and the Away Team Interchange Bench. There must be a sufficient break or gap in between each bench to ensure visual and certain audible communication is possible whilst maintaining privacy for the Players' and Team Support Personnel at each bench as required.

(d) (**Amenity**) The Officials' Bench must incorporate:

(i) cover to provide protection to all Match Officials using the bench from weather and Patron anti-social behaviour, without affecting the view of the Highball; and

(ii) space to accommodate kit bags, storage boxes, eskies and a spinal stretcher.

D6.4.14 Coaches' Boxes

(a) (**Overview**)

(i) Two (2) Home Team Coaches' Boxes must be provided for primary use by the AFL Home Teams during AFL Events. These Coaches' Boxes will be used to accommodate a Home Team and Away Team Coach for other Sporting Events.

(ii) An Away Team Coaches' Box must be provided within the Secondary Television Studio as detailed in clause D14.4.5. This Coaches' Box will be used on occasion to accommodate Home Teams and Away Teams for other sports and will be made available for the AFL Away Team. It is important that this conversion is easily achieved as fixtures may occur relatively close together with either arrangement. This will enable the two local Home Teams to establish their equipment fitout on a more seasonal basis, subject to other Sporting Events.

(b) (**Capacity**) The Home Team Coaches' Box must accommodate up to twenty (20) Coaches and ten (10) team statisticians in a co-located and acoustically separate room. The Away Team Coaches' Box must accommodate up to sixteen (16) Coaches and eight (8) team statisticians.

(c) (**Location**) The Coaches' Boxes must be located in an elevated position on the northern side of the Stadium as close as possible to the lateral centreline of the Field Of Play for AFL Events.

(d) (**Proximities**)

(i) Each Home Team's Coaches' Box must have:

A Easy Access to an associated Home Teams' Change Room;

B Ready Access to stairs, leading directly to the Event Level and the access point to the associated Home Teams' Change Room and Players' Race to facilitate Easy Access to the Field Of Play; and

C Ready Access to toilet facilities (not required to be exclusive).

(ii) The Secondary Television Studio (which is to be used as the Away Team Coaches' Box) must have:

A Easy Access to the Away Team Change Room;

B Ready Access to stairs, leading directly to the Event Level and the access point to the Away Team Change Room and Players' Race to facilitate Easy Access to the Field Of Play; and

C Ready Access to toilet facilities (not required to be exclusive).

(e) The journey for the Coaches to the team meeting points must restrict interaction with Media Personnel and Patrons to a minimum.

(f) (**View**)

(i) Each Seating Position within the Coaches' Boxes must have a continuous, uninterrupted view of the Field Of Play and all Key Viewing Elements for all Events. Each Seating Position must also comply with the Sightline Criteria.

(ii) The glazing to the Coaches' Boxes must provide a clear view in all lighting conditions, free from glare or other effects that might impair the view.

(g) (**Customisation of fitout**) The AFL Home Teams have a desire to customise certain elements of the Coaches' Boxes above the base level, at their expense, to reflect their individual requirements and branding. As part of the DBFM Works, and during each Design Stage, Project Co must engage with the AFL Home Teams, together with the State, to customise the designs of the Coaches' Boxes and submit the customised

designs to the State for approval in accordance with the requirements of Schedule 3 (Review Procedures) of this Agreement.

(h) (**Amenity**) The Coaches' Boxes must have:

(i) two (2) rows of tiered seating behind the glass line for Coaches;

(ii) a co-located but acoustically separate space or room for statisticians;

(iii) each Coaches' and Statisticians' area must be provided with Displays positioned to provide clear viewing of the screens from all points in the room;

(iv) cable management system to be integrated within the benches;

(v) two (2) Seating Positions must be accessible to IRUA;

(vi) acoustic treatment of wall and ceiling must be sufficient between the rooms to ensure sound transfer does not allow understanding of what is being said within either room;

(vii) incorporate a mounted panel, rail or magnetic system for efficient and easily interchangeable display of team branding or sponsorship to the tiered benches; and

(viii) adequate secure storage space for equipment for Home Teams.

D6.4.15 Official Statistics Box

(a) (**Overview**)

(i) One (1) air-conditioned room must be provided as the AFL Official Statistics Box as designated for AFL Events.

(ii) The Official Statistics Box must also function as:

A the Scorers Box for Cricket Events;

B the Citing Commissioners Box for ARU Events;

C the Match Commissioners Box for FFA Events; and

D designated by the ARL for their Sporting Events,

as defined in the relevant Sporting Standards.

(b) (**Capacity**) The Official Statistics Box must have the capacity to seat up to six (6) personnel with additional space at the rear of the room for Bump-In equipment required to perform the room functions described at items (a)(i) and (a)(ii). Up to four (4) of the statisticians will be located at a front work bench at the front of the box against the glazing with up to two (2) others located at a rear workbench.

(c) (**Location**) The Official Statistics Box must be located in an elevated position on the northern side of the Stadium.

(d) (**Proximities**) The Official Statistics Box must have:

(i) Easy Access to the Primary Officials' Change Rooms (Male), the Primary Officials' Change Rooms (Female), and the Field Of Play; and

(ii) Ready Access to the Umpire Observer's Box.

(e) (**View**)

(i) Each Seating Position within the Official Statistics Box must have a continuous, uninterrupted view of the Field Of Play and all Key Viewing Elements for all Events. Each Seating Position must also comply with the Sightline Criteria.

(ii) The glazing to the Official Statistics Box must provide a clear view in all lighting conditions, free from glare or other effects that might impair the view.

(f) (**Amenity**)

(i) The front work bench as described at paragraphs (b) and (c) must be continuous and be a minimum of 450mm deep and 600mm wide (per person). The work bench must be placed as close to the glazing or edge of the tier as practicable. An 80mm hole at each Seating Position must be provided for cable access underneath the bench.

(ii) The rear work bench as described at paragraphs (b) and (c) must be continuous and be a minimum of 450mm deep and 600mm wide (per person). An 80mm hole at each Seating Position must be provided for cable access underneath the bench.

(iii) A space at the back of each box must be provided for temporary equipment to be housed within a lockable closet with suitable ventilation and cable management. This cable management must be accessible by the respective front and rear workbenches of each box.

(iv) The entry door to the Official Statistics Box must be a minimum 920mm clear opening width to allow for equipment accessibility.

(v) For Cricket Events, the Official Statistics Box must have an internal phone line to allow communication with the Scoreboard Control Room and the Match Officials' Working Area (Third Umpires Room) as defined in the relevant Sporting Standards.

(g) (**Displays**) The Official Statistics Box must be provided with a minimum of one (1) Display, allowing Match Officials to view and hear the Event. The Display should be located so that it does not impede vision to the Playing Surface or LED Superscreens yet is still easily viewable by Personnel using the Official Statistics Box. Audio, synchronous with the content on the Displays must be provided and be locally controlled via fixed, user friendly devices.

D6.4.16 Timekeepers' Box

(a) (**Overview**) One (1) air-conditioned room must be provided as the Timekeepers' Box to accommodate the AFL Official Timekeeper for AFL Events.

(b) (**Capacity**) The Timekeepers' Box must have the capacity to seat up to three (3) personnel located at a front work bench at the front of the box against the glazing.

(c) (**Location**) The Timekeepers' Box must be located in an elevated position on the northern side of the Stadium.

(d) (**Proximities**) The Timekeepers' Box must have:

(i) Easy Access to the Primary Officials' Change Rooms (Male), the Primary Officials' Change Rooms (Female) and the Field Of Play; and

(ii) Ready Access to the Umpire Observer's Box.

(e) (**View**)

(i) Each Seating Position within the Timekeeper's Box must have a continuous, uninterrupted view of the Field Of Play and all Key Viewing Elements for all Events. Each Seating Position must also comply with the Sightline Criteria.

(ii) The glazing to the Timekeeper's Box must provide a clear view in all lighting conditions, free from glare or other effects that might impair the view.

(f) (**Amenity**)

(i) The work bench as described at (b) and (c) must be continuous and be a minimum of 450mm deep and 600mm wide (per person). The work bench must be placed as close to the glazing or edge of the tier as practicable. An 80mm hole at each Seating Position must be provided for cable access underneath the bench.

(ii) A space at the back of the box must be provided for temporary equipment to be housed within a lockable storage cupboard with suitable ventilation and cable management. This cable management must be accessible by the front workbench.

(iii) The entry door to the Timekeeper's Box must be a minimum 920mm clear opening width to allow for equipment accessibility.

(iv) The Timekeepers' Box must have local control for the primary and back up siren and the AFL time clocks.

(v) The Timekeeper's Box must have a signal light which is clearly visible from all areas of the Field Of Play.

(g) (**Displays**) The Timekeeper's Box must be provided with a minimum of one (1) Display, allowing Match Officials to view and hear the Event. The Display should be located so that it does not impede vision to the Playing Surface or LED Superscreen yet is still easily viewable by personnel using the Timekeeper's Box. Audio, synchronous with the content on the Displays must be provided and be locally controlled via fixed, user friendly devices.

D6.4.17 Umpire Observers' Box

(a) (**Overview**)

(i) One (1) air-conditioned room must be provided as the Umpire Observers' Box for AFL Events.

(ii) The Umpire Observers' Box must also function as:

A the Match Officials' Working Area (Third Umpires Room) for Cricket Events;

B the Television Match Official (TMO) and Timekeepers' Room for IRB and NRL Events; and

C as designated by the FIFA for their Sporting Events,

as defined in the relevant Sporting Standards.

(b) (**Capacity**) The Umpire Observers' Box must have the capacity to seat up to eight (8) personnel with additional space at the rear of the room for Bump-In equipment required to perform the room function for Sporting Events. Up to five (5) of the Match Officials must be located at a front work bench at the front of the box against the glazing with up to three (3) others located at a rear workbench.

(c) (**Location**) The Umpire Observers' Box must be located in an elevated position on the northern side of the Stadium.

(d) (**Proximities**) The Umpire Observers' Box must have Easy Access to the Primary Officials' Change Rooms (Male), the Primary Officials' Change Rooms (Female) and the Field Of Play.

(e) (**View**)

(i) Each Seating Position within the Umpire Observers' Box must have a continuous, uninterrupted view of the Field Of Play and all Key Viewing Elements for all Events. Each Seating Position must also comply with the Sightline Criteria.

(ii) The glazing to the Umpire Observers' Box must provide a clear view in all lighting conditions, free from glare or other effects that might impair the view.

(f) (**Amenity**)

(i) The front work bench as described at (b) and (c) must be continuous and be a minimum of 450mm deep and 600mm wide (per person). The work bench must be placed as close to the glazing or edge of the tier as practicable. An

80mm hole at each Seating Position must be provided for cable access underneath the bench.

(ii) The rear work bench as described at (b) and (c) must be continuous and be a minimum of 450mm deep and 600mm wide (per person). An 80mm hole at each Seating Position must be provided for cable access underneath the bench.

(iii) A space at the back of each box must be provided for temporary equipment to be housed within a lockable storage cupboard with suitable ventilation and cable management. This cable management must be accessible by the respective front and rear workbenches of each box.

(iv) The Umpire Observers' Box must be provided with a mounting rail within the Seating Bowl, accessible from within the box by opening operable glazing, where personnel can attach antennas, relays or the like to operate Match Officials communication equipment, as well as reticulating the relevant cabling back into the box.

(v) The entry door to the box must be a minimum 920mm clear opening width to allow for equipment accessibility.

(vi) The Umpire Observers' Box must have a local control for the siren and the Event time clock displayed on the LED Superscreen to allow the room to operate as the Timekeeper location for rugby union and rugby league.

(vii) The Third Umpire / Video Referee booth must have:

A direct video feed from the video control room;

B red and green indicator lights above the booth visible from all points on the Field Of Play;

C Match Officials' communications system must have access to the in-house video and outside broadcast video feeds; and

D four (4) Displays and DVD recorder, six (6) double GPO's, three (3) data points, two (2) telephone outlets must be provided.

(g) (**Displays**) The Umpire Observers' Box must be provided with a minimum of one (1) Display, allowing Match Officials to view and hear the Event. The Display should be located so that it does not impede vision to the Playing Surface or LED Superscreens yet are still easily viewable by personnel using the Umpire Observers' Box. Audio, synchronous with the content on the Displays must be provided and be locally controlled via fixed, user friendly devices.

D6.4.18 Independent Medical Room

An Independent Medical Room for the independent assessment of Players, as currently required for IRB Events, will be accommodated through the Event Overlay by use of one of the four (4) Medical Rooms available within the Home Teams' Change Rooms and the Generic Change Rooms which is not in use.

D6.4.19 Players' Viewing Rooms

(a) (**Overview**) Two (2) Players' Viewing Rooms must be provided for use for Cricket Events to provide a location for Players and Team Support Personnel to view the Event.

(b) (**Location**) The Players' Viewing Rooms must be located on the northern side of the Stadium within the lower tier of the Seating Bowl.

(c) (**Capacity**) Each Players' Viewing Room must accommodate twenty five (25) persons.

(d) (**Proximities**)

(i) The Players' Viewing Rooms must have secure Easy Access to the associated Home Teams' Change Rooms and the Generic Change Rooms.

(ii) The Players' Viewing Rooms must have reliable and secure Easy Access to the Field Of Play, with a maximum travel time of forty five (45) seconds.

(e) (**View**) The Players' Viewing Rooms must have a view of the entire Playing Surface.

(f) (**Amenity**) The Players' Viewing Rooms must:

(i) include seating for twenty five (25) persons, which may be within the Players' Viewing Room, located on a balcony to the front or provided as a combination of both. Where the seats are contained with the room, operable windows must be provided and where they are provided on a balcony, protection from Patrons in the Seating Bowl must be provided;

(ii) include basic kitchenette facilities including lockable cupboards, hot and cold water supply, a 240 litre fridge, space for eskies, a sink and counter top;

(iii) be an air conditioned space with localised temperature control;

(iv) include a workbench to the front for three (3) persons, with a minimum depth of 450mm and width of 600mm per person. The work bench must be placed as close as possible to the front of the Players' Viewing Room. An 80mm hole at each Seating Position must be provided for cable access under the bench. The workbench must also be provided with appropriate power and ICT requirements including broadcast program feed; and

(v) include one (1) Display.

D6.4.20 Doping Control Station

(a) (**Overview**) One (1) Doping Control Station must be provided in accordance with relevant Quality Standards, including the World Anti-Doping Agency (WADA) Doping Control Station guideline.

(b) (**Location**) The circulation route and entry to the Doping Control Station must not be shared with or visible from any circulation routes or Functional Units used by Patrons or by Media Personnel.

(c) (**Proximities**) Ready Access from the associated Change Rooms and must be located within a restricted access area on the Event Level.

(d) (**Amenity**)

(i) Universal Access to, from and within the Doping Control Station must be provided.

(ii) Access to the Doping Control Station must be secured by electronic access control with override control inside the Doping Control Station.

(iii) There must be space to place security / access control personnel outside the Doping Control Station.

(iv) The accommodation must comprise an interview room with a separate reception and waiting room as described at items (v) and (vi).

(v) (Interview **room**) The interview room must include:

A six (6) meeting chairs with durable finish;

B a meeting table for six (6);

C two (2) lockable low level cabinets for storage of samples and documentation;

D identification of the room name and number;

E one (1) lockable 300L fridge including freezer and electronic temperature readings;

F space to accommodate blood testing equipment;

G power and data connections for two (2) computers;

H toilet cubicle including toilet, wash hand basin; and

I two (2) viewing mirrors of 2.0m x 0.5m dimensions positioned either side of the toilet.

(vi) (**Reception and waiting room**) The reception and waiting room must include:

A an L shaped reception and computer desk;

B an overhead and under counter desk locker;

C an ergonomic office chair;

D eight (8) meeting chairs and coffee table;

E two (2) Displays;

F space for water cooler; and

G a magnetic whiteboard.

D6.4.21 Outdoor Practice Cricket Wickets Area

(a) (**Overview**) A planned area for the future installation of high quality cricket wickets must be identified (**Outdoor Practice Cricket Wickets Area**).

(b) (**Location**) The Outdoor Practice Cricket Wickets Area must be located with an excellent aspect for grass growing conditions and with secure connectivity to the Team Facilities.

(c) (**Capacity**) The Outdoor Practice Cricket Wickets Area must be sized to accommodate the future installation of twelve (12) full size cricket wickets in a north-south orientation, preferably in the same alignment as the Cricket Wicket;

(d) (**Proximities**) The Outdoor Practice Cricket Wickets Area must have Easy Access at a minimum to the Home Teams' Change Rooms, with Ready Access being desirable;

(e) (**Amenity**) The following must be demonstrable in the planned location for the Outdoor Practice Cricket Wickets Area:

(i) the ability to achieve a secure access way for Players between the Home Teams' Change Rooms and the Outdoor Practice Cricket Wickets Area so that the access way and the Outdoor Practice Cricket Wickets Area can be included in the PMOA as is required;

(ii) that capacity exists within the Engineering Services to support the future installation of extensive fixed camera CCTV coverage for the Outdoor Practice Cricket Wickets Area and immediate surrounds;

(iii) that the further requirements for the Outdoor Practice Cricket Wickets Area described in Chapter D15 (Pitch and Associated Facilities) of these Design Specifications can be achieved.

D7 SEATING BOWL

D7.1 OVERVIEW

(a) The Seating Bowl is the heart and hub of the Stadium on Event Days and its design is critical to delivering a fans-first Stadium that has an excellent event atmosphere.

(b) This Chapter of the Design Specifications sets out the requirements for the Seating Bowl for accommodating Patrons on Event Days.

(c) Further technical requirements in respect of the Seating Bowl are detailed in Part E (Technical Brief) of these Design Specifications.

D7.2 OPERATIONAL PRINCIPLES

(a) The Seating Bowl is the primary viewing location for Stadium Events.

(b) Every Patron will have an allocated Seating Position:

(i) for AFL Events and Athletics Events the allocated Seating Positions are in the Seating Bowl; and

(ii) for Rectangular Events, Entertainment Events and Special Events this Seating Position will be in the Seating Bowl and on Drop-In Seats on the Pitch.

(c) Each Seating Position in the Seating Bowl will have a minimum sightline of C60 as set out in clause D7.4.1(b) and an applied Viewing Quality rating.

(d) The Seating Bowl will have a high level of interaction to the Concourse due to the ancillary activities for the fans-first experience external to the Seating Bowl, including access to Catering Facilities, Retail Facilities and toilet amenities.

(e) The Seating Bowl will be designed to allow smaller capacity Events to restrict access to sections and levels of the Seating Bowl for operational efficiency.

(f) The Seating Bowl will be an activated area and allow other entertainment activities to occur during the Event.

(g) (**Integration with other Functional Areas**) The Seating Bowl will integrate seamlessly with the following Functional Areas and their described facilities:

(i) Pitch and Associated Facilities;

(ii) Premium Product Areas;

(iii) General Admission Areas;

(iv) Retail Facilities;

(v) Media Facilities;

(vi) Catering Facilities;

(vii) Stadium Operations and Event Day Facilities; and

(viii) Circulation Areas.

(h) The Seating Bowl will accommodate the potential for a small proportion of Patrons to stand at designated places in the Seating Bowl, should they choose, to watch the Event. Patrons that choose to stand in the designated areas will have a ticket for a Seating Position in the Seating Bowl.

(i) The seats in the Seating Bowl will be of different sizes and quality between those provided for General Admission and Premium Products, and between the Premium Products to reflect their position in the pricing continuum. There will also be points of difference with respect to the Viewing Quality from the seats between those provided for General Admission and Premium Products, and between the Premium Products.

(j) The number of seats in a row will minimise the distances required by the Patron to reach the aisle from the mid-point of the row and be in accordance with all relevant Quality Standards and Laws.

(k) The operation of the Seating Bowl will facilitate Patron security and safety, consistent with all relevant Quality Standards and Laws.

(l) The Seating Bowl will cater for Expansion, while:

(i) preserving the Operational Principles stated in this clause D7.2;

(ii) facilitating Events with minimal disruption to capacity; and

(iii) facilitating Stadium Activities, and reducing disruption to such operations.

D7.3 GENERAL DESIGN REQUIREMENTS

(a) Project Co must provide a purpose-built, Seating Bowl as set out in this Chapter D7 (Seating Bowl) of these Design Specifications.

(b) (**Seating Bowl geometry and form**)

(i) The Seating Bowl must:

A be consistent with the State's preference for a coliseum style design that maximises the atmosphere for the Patron;

B achieve a minimum roof coverage of 85% of Seating Positions within the bowl under the drip line; and

C be consistent with the State's preference for future Expansion to occur outside of the planned curtilage of the Stadium for 60,000 seats.

(ii) The Seating Bowl must be designed to facilitate retention of the Event's atmosphere by bringing Patrons close to the Field Of Play, in a compact and efficient, column free bowl with quality viewing while providing maximum comfort for Patrons accessing and using the Seating Bowl for the duration of the Event.

(iii) The Seating Bowl geometry should be similar to Etihad Stadium in Melbourne particularly with respect to achieving proximity to the Field Of Play, acknowledging the inherent differences of Etihad Stadium in that it is a smaller stadium with retractable seating.

(c) (**Compliance with Quality Standards**) The Seating Bowl must comply with all relevant Quality Standards. Where departures from the relevant Quality Standards are proposed, Project Co must provide details of and justification for those departures and evidence of all required Authorisations for the proposed departures.

(d) (**Key design requirements**) The Seating Bowl design must:

(i) integrate with all other Functional Areas and their facilities;

(ii) bring Patrons as close to the action on the Field Of Play as possible;

(iii) create a "wall of faces" with optimal unobstructed sightlines of the Pitch;

(iv) ensure a vibrant atmosphere for Patrons and Sporting Teams;

(v) meet or exceed the Sightline Criteria and Viewing Quality for all Patrons;

(vi) optimise the varying sightline needs and requirement for all Events;

(vii) meet all requirements specified in Part E (Technical Brief) of these Design Specifications including those relating to acoustics, AV Systems and ICT Systems;

(viii) minimise Patrons' viewing of non-public areas of the Stadium;

(ix) accommodate the potential for Patrons to leave their Seating Position during the Event and return with minimal inconvenience to other Patrons; and

(x) allow designated areas within the Seating Bowl to be used as a stage or entertainment platform on a temporary basis, and should consider how this could also be achieved on a permanent basis, without affecting the Sightline Criteria and Viewing Quality for Patrons.

(e) (**Consultation with Project Stakeholders**) Project Co must consult with Stadium Users, relevant Authorities and relevant Government Agencies to ensure that the needs of all Stadium Users are addressed in the design and construction of the Seating Bowl.

(f) (**Capacity**)

(i) The Seating Bowl must achieve a capacity of 60,000 Patrons for AFL Events and should achieve minimum Patron capacities as follows:

A Cricket Events: 55,000;

B Rectangular Events: 60,000;

C Entertainment Events: 70,000; and

D Athletics Events: the stated capacities in clause D7.4.12(a).

(ii) The capacity of the Seating Bowl must be flexible to meet the specific demands of each Event. During AFL Events, seated Patrons must be accommodated in Fixed Seating. During Rectangular Events, the capacity of the Seating Bowl will be augmented using Drop-In Seats.

(iii) The design of access and egress from the Stadium must address the Seating Bowl's seating capacities for all Event types.

(g) (**Seating Bowl Plan**)

(i) The Seating Bowl must meet the Sightline Criteria, Viewing Quality and Key Viewing Elements requirements set out in Project Co's Seating Bowl Plan.

(ii) The Seating Bowl Plan must identify the location, grouping and rationale for IRUA seating.

(h) Plat widths must comply with the minimum plat widths set out in clause D7.4.7(a),

(i) Seat centres must comply with the minimum seat centres set out in clause D7.4.8(a).

(j) The Aisles and Gangways must comply with all relevant Quality Standards and allow for Patrons' ease of movement, safety and comfort.

(k) (**Provision for IRUA**)

(i) The Seating Bowl design must allow IRUA to experience all Events at all levels and all Premium Products;

(ii) As part of the fans-first philosophy IRUA Positions and their associated journey must be inclusive and seamlessly integrated in the Seating Bowl.

D7.4 ACCOMMODATION REQUIREMENTS

D7.4.1 Sightline Criteria and Key Viewing Elements

(a) (**Design Principle**) The Seating Bowl geometry should be based on a balanced bowl design that seeks to achieve the best balance between sightlines and proximity to play. This design principle extends to the design of Drop-In Seats for Events.

(b) (**Sightline Criteria**)

(i) There are three (3) criteria which comprise the Sightline Criteria, and these apply to:

A all Seating Positions (including IRUA Positions) in Fixed Seating; and

B all Seating Positions described in Media Facilities, Team Facilities and the Stadium Operations and Event Day Facilities that overlook the Field Of Play.

(ii) (**Criterion 1: extent of Obstructions**) In the absence of Patrons in front, a sightline must be achieved to the closest point on the nearest AFL boundary line. This sightline must be uninterrupted by any solid part of any balustrade or balustrade mounted signage panel except as follows:

A Any metal balustrade that interrupts this sightline must be of 'open' construction such that less than 20% of its area presents a solid Obstruction when measured normal to the sightline.

B Notwithstanding the above, there must be no Obstructions to sightlines from Media Facilities and Team Facilities that overlook the Field Of Play.

(iii) (**Criterion 2: focal point**)

A The minimum Sightline Criteria is C60 (as calculated using the Green Guide), however it is highly desirable that higher C values are achieved for a majority of Seating Positions.

B When a sightline from any Patron is projected through a point which is 60mm above the eye level of a Patron (C value = C 60), either directly in front of, or at an angle in front of another Patron, the sightline must meet at a point on the Pitch at a distance which is 15m measured from the outer edge of the Pitch Perimeter.

(iv) (**Criterion 3: Highball**) A sightline from eye level for all Patrons must have an uninterrupted view to a point in space 18m high above the centre point of the Field Of Play (measured from the top of the Playing Surface) and to a point 12m high at the centre of the goal posts at each end of the Field Of Play. This may be reduced upon agreement with the State where Displays are provided to mitigate the impact on affected Seating Positions.

(c) (**Key Viewing Elements**) The following are Key Viewing Elements:

(i) AFL Events:

A both Goal Squares;

B the Centre Square;

C the Boundary;

D for Seating Positions within the Team Facilities, Media Facilities and Premium Product Areas, the Interchange Area, excluding the Interchange Benches and the Officials' Bench; and

E one (1) LED Superscreen;

(ii) Cricket Events:

A the Cricket Wicket;

B the Boundary; and

C one (1) LED Superscreen;

(iii) Rectangular Events:

A the Halfway Line;

B both Side Lines;

C both Try Lines for Rugby Events and both Penalty Areas for Soccer Events;

D both Goal Areas; and

E one (1) LED Superscreen;

(iv) Athletics Events:

A for Seating Positions within the Media Facilities, Premium Product Areas and those Seating Positions counted within the Minimum Athletics Capacity, the whole of the Athletics Track and the whole of the outer jump pit of the Jumping Facilities;

B for all other Seating Positions which are not described at paragraph (A), all lanes of the straights and the inner two lanes of the bends of the Athletics Track;

C the whole of the Field; and

D one (1) LED Superscreen.

D7.4.2 Seating Bowl Plan

(a) Project Co must prepare a Seating Bowl Plan covering all Seating Positions in the Seating Bowl for each Event Type, and as set out in Volume 2, Schedule 5 (Design

Development). The Seating Bowl Plan must demonstrate the following for each Seating Position:

(i) the Sightline Criteria or Athletics Sightline Criteria (as applicable to the Event type) that will be achieved in the form of a contour map;

(ii) the extent of the Field Of Play that is viewable for AFL Events, Cricket Events, Rectangular Events and Athletics Events;

(iii) the lowest and highest point on the Field Of Play that is viewable for each Event Type,

(iv) the extent to which each of the Key Viewing Elements are viewable as a pass or fail for AFL Events, Cricket Events, Rectangular Events and Athletics Events; and

(v) the nature and extent of any Obstruction causing Restricted View, including for:

A broadcast cameras;

B balustrade or other railings;

C structural elements of the Stadium;

D Drop-In Seats; and

E temporary structures and services erected as part of the Event Overlay (including for example an end stage overlay for an Entertainment Event and Cricket Sightscreens for a Cricket Event).

(b) The Seating Bowl Plan must outline the extent of provision of Supplementary Displays, including the Seating Positions affected and the locations for the Supplementary Displays.

(c) The Seating Bowl Plan must include the numerical value for the Viewing Quality of each Seating Position for each Event type in the required configuration for the Event (including Rectangular Reconfiguration and Athletics Reconfiguration (as applicable)) and demonstrate this using a colour-coding system. Project Co must provide all assumptions and data used in determining the Viewing Quality.

D7.4.3 Seating for IRUA

(a) The Seating Bowl must contain a minimum of seven hundred and fifty (750) IRUA Positions distributed across all Stadium levels, with equitable distribution through General Admission Areas and all Premium Product Areas.

(b) Calculations to determine the number of wheelchair positions must exceed the minimum requirement under the National Construction Code (NCC) 2013 and must be undertaken for all sections of the Seating Bowl, including for individual Functional Units within Premium Product Areas.

(c) IRUA Positions must be located such that IRUA may sit with other Patrons, regardless of whether those other Patrons are IRUA or not.

(d) Where an area of the Seating Bowl is designated for Away Team Patrons, a proportion of IRUA Positions must be provided in that location.

(e) IRUA Positions must allow for large motorised wheelchairs to manoeuvre without affecting the comfort and safety of other Patrons, including IRUA using a wheelchair.

(f) A proportion of IRUA Positions must be provided as Enhanced Amenity Seats. These must be provided for ambulant disabled Patrons who may require additional space in front or to the rear for additional seat or leg room, mobility aids or assistance animals, and should include removable arm rests.

(g) Enhanced Amenity Seats must be available around the Seating Bowl, at all price points, and must be located at the end of rows with Ready Access to Aisles and Vomitories.

(h) IRUA Positions must have Ready Access from the Seating Bowl to the following:

(i) accessible toilets;

(ii) Changing Places Toilets;

(iii) Parenting Rooms; and

(iv) suitable Vertical Transportation.

(i) Chapter C10 (Universal Access) of these Design Specifications sets out the Universal Access Principles which must inform the design of the Seating Bowl.

(j) In the instance that an IRUA Position is not required for a wheelchair then there must be a replacement seat to be used by an IRUA or Patron. The replacement seat must be designed to be integrated into the Seating Bowl and must meet all requirements for an IRUA, as well as meet the Sightline Criteria and Viewing Quality for that Seating Position.

D7.4.4 Standing Areas

(a) Dedicated Standing Areas with direct views to the Pitch must be provided within the Seating Bowl at lower and upper tier levels for Patrons to optionally stand in one level area.

(b) Standing Areas and their use by Patrons must not obstruct the views of any seated Patron.

(c) If Standing Areas are placed behind seats, there must be separation between the start of the Standing Area and the back of the seat to preserve the viewing experience of those in the seats, and protect against falling objects, food and beverages.

(d) Standing Areas must be clearly marked and incorporated into the design of the Concourse to accommodate the capacity of the Standing Area without reducing the functionality of the Concourse so as to create congestion and choke points.

(e) Project Co should consider the use of the floor finishes, such as decking, to delineate the Standing Areas.

(f) Standing Areas must have a designated “name” reference and an associated capacity and must have a nameplate fixed locally indicating this.

(g) The Sightline Criteria for the Standing Area should only be applied to the first row of standing Patrons assuming the Patron is of an average height.

D7.4.5 LED Superscreens

(a) Two (2) LED Superscreens of a minimum dimension of two hundred and thirty two (232) square metres and their associated plant, structure and all other operating requirements must be integrated into the design of the Seating Bowl.

(b) (**Location**) The LED Superscreens must be located in the Seating Bowl to maximise Patrons’ ability to view them during an Event.

(c) The locations of the LED Superscreens must not prohibit the use of either or both of the LED Superscreens during an Event (as a result of their location), including through

(i) the location (or locations) affecting the ability for a Player (or Players) and the Match Officials to be able to participate in the Sporting Event; or

(ii) the location (or locations) affecting the ability for the Event to be televised due to conflict in the television arc.

(d) The Seating Bowl must allow for LED Superscreens to be replaced efficiently and with minimum impact to the Stadium Activities.

(e) The Seating Bowl must allow for replacement LED Superscreens to be of a greater dimension than those initially installed.

(f) The Technical requirements for the LED Superscreens are set out in Part E (Technical Brief) of these Design Specifications.

D7.4.6 LED Signage in the Seating Bowl

(a) The Seating Bowl must be designed to accommodate LED Signage on the vertical risers at the front of each level and at the front of any Drop-In Seats.

(b) (**Location**) The LED Signage must be located in the television arc for AFL Events on the circumference of the Seating Bowl. This must be on the Event Level and on one other level, with capacity to expand to full TV arc in AFL mode on all levels being desirable.

(c) The locations for LED Signage must not prohibit the use of a part or all of the LED Signage during an Event (as a result of its location), including through

(i) the location (or locations) affecting the ability for a Player (or Players) and Match Officials to be able to participate in the Sporting Event; or

(ii) the location (or locations) affecting the ability for the Event to be televised due to conflicting advertising in the television arc.

(d) The location for LED Signage should also minimise the impact or distraction to Patrons seated opposite the LED Signage, when it is operating during an Event.

(e) The Seating Bowl must allow for LED Signage to be replaced efficiently and with minimum impact to the Stadium Activities.

(f) The Seating Bowl must allow for future LED Signage to expand to cover a greater area in the Seating Bowl, as designed for at paragraph (a).

(g) The Engineering Services required to program, operate and power the LED Signage during the Event must be integrated into the design of the Seating Bowl; and

(h) The Technical requirements for the LED Signage are set out in Part E (Technical Brief) of these Design Specifications.

D7.4.7 Plats

(a) The following minimum standards apply to the Fixed Seat Plats with a 10mm variance to accommodate bowl facets;

(i)	General Admission Area	825mm wide plats
(ii)	Premium Product Areas (excluding Suites)	900mm wide plats
(iii)	Suites including Chairman's Club	950mm wide plats

(b) The plats for Drop-In Seats must be a minimum of 900mm wide, with a 10mm variance to accommodate bowl facets.

(c) The Plats must:

(i) be robust, non-slip, hardwearing, and easy to clean and maintain;

(ii) be aesthetically consistent with the style and finishes used throughout the Stadium;

(iii) resist both static and dynamic loading potential from wind and spectator excitation;

(iv) allow for adequate drainage for rainwater and wash down whilst addressing Patron comfort and safety considerations; and

(v) minimise the risk of objects rolling from, or off, the Plats.

(d) In meeting the requirements of paragraph (c):

(i) if non-slip finishes are used, those finishes must be of type which is easy to clean;

(ii) where coloured finishes are used, those coloured finished must conceal the scuff-marks left by Patrons; and

(iii) for Premium Product Areas resilient floor finishes must be used.

D7.4.8 Seats in the Seating Bowl

(a) Each seat must be individually numbered by a vandal-proof proprietary metal numbering system by the seat manufacturer.

(b) The following minimum standards apply to seat centres:

(i) Fixed Seats in General Admission Areas 500mm

(ii) Fixed Seats in Premium Product Areas 550mm

(iii) Drop-In Seats 500mm

(c) There must be a minimum clear aisle width of 500mm when measured from the edge of the armrest (including any cup holder as part of the armrest) to the back of the seat in the row immediately in front.

(d) General Admission Area seats must:

(i) be ergonomically contoured, folding seats;

(ii) be beam mounted such that seat modules mount independent of the bracket attachment to sub-structure;

(iii) not be a colour that is a team colour of any Home Team; and

(iv) be flame retardant, light stable and resistant to degradation (including fading and chalking) as a result of exposure to the elements.

(e) A seat in Chairman's Club must be a minimum of executive style, high backed, ergonomically contoured, cushioned and upholstered full width seat and backrest with motorised reclining to the backrest and armrests and a conveniently located "at hand" cup holder (or side table with cup holder). Cup holders for these seats must not be mounted on the seat in front. There must be no more than ten (10) contiguous seats in any row.

(f) A seat in the remaining Premium Product Areas must be consistent with that of a General Admission seat as a minimum, and must be cushioned and have a cup holder.

(g) The quality of the seat for the Drop-In Seats must be consistent with that of a seat in the General Admission Area.

D7.4.9 Access and egress - Aisles and Gangways

(a) Aisles and Gangways must comply with all relevant Quality Standards.

(b) The design and layout of Aisles and Gangways must also incorporate the effect of Drop-In Seats on Patrons' access and egress through the Seating Bowl and to the Concourse.

(c) For Entertainment Events, a strategy for the access and egress of Patrons to and from the Pitch must be provided. This strategy must be incorporated in the overall design of the Seating Bowl. The strategy must demonstrate access and egress for Entertainment Event Patrons where a concert stage is placed in any location of the Playing Surface and as a minimum the following three orientations:

(i) back to north stand;

(ii) back to east stand; and

(iii) centre pitch;

(d) All Aisles and Gangways that have multiple functions (such as IRUA Positions or Standing Areas), must be clearly marked so that critical egress paths are not impeded. These marked areas must also be free of all obstacles, potential or otherwise.

(e) Aisles and Gangways must have a hardwearing sealed non-slip finish (including when wet). Stair treads must include luminescent safety nosings that are visible at night and during the day.

D7.4.10 Balustrades and Handrails

(a) Balustrades and handrails must be designed in accordance with all relevant Quality Standards and Laws.

(b) Balustrades and handrails must be non-climbable and must exceed minimum code requirements at vulnerable areas such as at the lowest end of access aisles in the Seating Bowl, whilst not impeding sightlines.

(c) The front balustrade and rail of the upper levels must be designed to prevent the resting of objects or drinks and to minimise the risk of any items falling onto Patrons below.

D7.4.11 Seating Bowl Reconfiguration for Rectangular Events

(a) The Seating Bowl must be designed to accommodate Drop-In Seats to suit Reconfiguration for Rectangular Events. A key objective of the relevant Project Stakeholders in respect of the Rectangular Reconfiguration is for the Drop-In Seats to present the Seating Bowl in a manner which feels rectangular from the perspective of a Patron and a Player so as to mitigate adverse effects arising from the viewing distances and oval bowl shape.

(b) For Rectangular Events the Rectangular Reconfiguration must:

(i) address any loss of atmosphere and connection due to the increased distances between Patrons and the Field Of Play in a smaller pitch format;

(ii) address any loss of functionality and any impact on Premium Products located on the Event Level and level 1;

(iii) include a minimum capacity of 5,000 Drop-In Seats;

(iv) ensure Patrons in Drop-In Seats have essentially the same experience as General Admission Patrons on the lower tier, including sightlines to the Pitch and LED Superscreens; equal priority of entry; access to Retail Facilities, Outlets and toilets; and equivalent public address audibility standards, quality of seating and plat dimensions. It is accepted that the level of roof cover for the Drop-In Seats may be different to the lower tier;

(v) provide access to the Drop-In Seats from the lower Concourse level via aisles through the Fixed Seating. Fixed Seats, Aisles, Gangways and Vomitories must be designed to accommodate the additional designed seating capacity;

(vi) be in accordance with the Viewing Quality for Rectangular Events; and

(vii) provide ability for LED Signage to be used.

(c) Any Drop-In Seats structures must be a modular construction designed for fast erection and minimal disturbance to the Pitch, fixed structures and seating.

(d) The required access and vehicle movements to install and dismantle the Drop-In Seats must be planned and be accommodated in the design of the Pitch.

(e) Drop-In Seats and associated structures must be stored in an appropriate location for ease of handling and to protect the assets.

(f) The maximum time for Reconfiguration from AFL mode to be ready for a Rectangular Event should be less than 12 hours, and the Reconfiguration back to AFL mode should also take less than 12 hours.

D7.4.12 Seating Bowl Reconfiguration for Athletics Events

(a) The Seating Bowl must be designed to be capable of Reconfiguration for Athletics Events such that the Stadium is able to:

(i) accommodate a minimum capacity of 60,000 Patrons in Seating Positions within the Seating Bowl for an opening ceremony for an Athletics Event;

(ii) as a minimum, accommodate a minimum capacity of 40,000 Patrons in Seating Positions within the Seating Bowl to facilitate hosting of a

Commonwealth Games Athletics Event (**Minimum Athletics Capacity**), and

(iii) for the scenarios in items (a)(i) and (a)(ii) above, ensure that IRUA Positions are provided within the stated minimum capacities in accordance with relevant Quality Standards and Laws.

(b) With respect to the Minimum Athletics Capacity**:**

(i) each Seating Position which is counted in the Minimum Athletics Capacity must comply with the requirements set out in clause D7.4.1(c)(iv) and paragraph (e) below;

(ii) additional Seating Positions over and above the Minimum Athletics Capacity are desirable to provide a competitive edge for the State when bidding to secure some Athletics Events however such additional Seating Positions should not be provided where these are detrimental to the primary use of the Stadium; and

(iii) the State may choose to use Seating Positions which are not counted in the Minimum Athletics Capacity on a limited or Restricted View basis, and this must be reflected in the Event Overlay Plan.

(c) The required capacities in paragraph (a) may be achieved through implementation of the Expansion, however it is desirable that the Seating Positions gained through Expansion supplement the Minimum Athletics Capacity to all extents possible.

(d) The Athletics Reconfiguration should be designed so that it can be implemented with minimal impact on the ability to use the Stadium for other Events. It is acceptable that a small proportion Seating Positions, other than those associated with the Team Facilities and the Media Facilities, will not be available during the Reconfiguration Works.

(e) (**Athletics Sightline Criteria**) For Athletics Events, a sightline of C60 with the sightline focus being the centre of the outer lane of the Athletics Track or the centre line of the outer long jump pit where this is located outside the Athletics Track, must be provided for Seating Positions within the Media Facilities, Premium Product Areas and those Seating Positions counted within the Minimum Athletics Capacity, as each of those Seating Positions are nominated in the Event Overlay Plan for Athletics Events, consistent with the requirements of the relevant Quality Standards and Laws.

(f) The design of the Seating Bowl must be optimised for its primary use being for AFL Events. With respect to the Athletics Sightline Criteria specified at paragraph (e) above, it is acknowledged that this criteria may not be achievable for some Seating Positions within the Seating Bowl to preserve the optimisation for AFL Events. Such Seating Positions must not be counted in the Minimum Athletics Capacity.

D7.4.13 Expansion of Seating Bowl

(a) The overall design and construction of the Stadium must facilitate future Expansion to 70,000 seats. This is to be achieved substantially by a self-contained solution to minimise the need for associated infrastructure during the initial construction of the Stadium.

(b) The additional capacity seats will have a similar level of service as the General Admission sections of the remainder of the Stadium, including roof cover. The Expansion should enhance the Stadium and be a natural addition to the Stadium both functionally and aesthetically.

(c) The Expansion Works must be reasonably feasible while still operating the Stadium to a reduced minimum capacity of 50,000 at all times.

D8 GENERAL ADMISSION AREAS

D8.1 OVERVIEW

(a) One of the key Project Aspirations is to adopt a fans-first approach in the planning and design of the Stadium. The General Admission Areas will service the majority of the capacity of the Stadium and are crucial to delivering on the fans-first commitment.

(b) This Chapter of these Design Specifications sets out:

(i) the requirements for the General Admission Areas to support the use of the Stadium and Sports Precinct by General Admission Patrons on Event Days; and

(ii) the multi-purpose functionality of General Admission Areas to support the use of the Stadium and Sports Precinct for Non-Event Day activities.

(c) A Functional Relationship Diagram depicting the key functional relationships for the Functional Units that comprise the General Admission Areas is included in Chapter F3 (General Admissions Areas) of these Design Specifications.

(d) Further technical requirements in respect of the General Admission Areas are detailed in Part E (Technical Brief) of these Design Specifications.

D8.2 OPERATIONAL PRINCIPLES

(a) General Admissions Areas will comply with all relevant Quality Standards and Laws.

(b) (**Capacity**) The majority of the Patrons using the Stadium and Sports Precinct will be General Admission Patrons, who are the catalyst for the new Perth Stadium Project and the fans-first philosophy. The General Admission Areas are the point of difference for many Patrons in their decision making process to attend an Event. The quality of the General Admission Areas and the services provided within them will be the main source of Patron judgement as to whether attendance at an Event is a successful experience.

(c) General Admission Areas will be extensively scrutinised by Patrons, and unless they are well designed and maintained, will be a main source of complaint and criticism in regard to appearance, cleanliness and accessibility.

(d) The General Admission Areas will provide an inclusive experience for IRUA so that their Event experience is integrated to that of other Patrons in a seamless and effortless manner.

(e) (**Changing Places Toilets**) will enable IRUA to have their toileting needs met and, if required, to be cleaned and to have their clothing changed in a dedicated purpose built facility, without having to leave the Stadium.

(f) The General Admission Areas will be designed to be flexible to meet the varied requirements of each Event, including:

(i) the proportion of pre-purchased tickets compared to tickets purchased on Event Day;

(ii) the proportion of Home Team members and supporters compared to Away Team supporters;

(iii) the number of regular Patrons compared to those that use the Stadium on a one-off or occasional basis;

(iv) the spending habits of Patrons at different Events; and

(v) the potential use by Hirers of Premium Products Areas for General Admission Patrons.

(g) (**General Admission Patron journey**) There is no parking provision in the Stadium or Sports Precinct on Event Days for General Admission Patrons, other than for IRUA. After arrival at the Sports Precinct, General Admission Patrons will enter the Controlled Area after passing through a Ticket Control Point. After entering the Controlled Area, Patrons will have access to the Stadium and a range of General Admission Areas along the route to the Seating Bowl.

(h) (**Controlled Area**) The Controlled Area will be activated on Event Days to enhance the atmosphere of the Event. Activations will include:

(i) Hirer activities such as interactive displays for Patrons and sponsor activities;

(ii) a Kids' Zone;

(iii) Mobile Outlets, including for sale of Catering Product by the Catering Operator; and

(iv) Temporary Event Day Stalls, including for sale of merchandising by the Hirer.

(i) (**Stadium Facilities**) Within the Stadium, General Admission Patrons will enjoy facilities that are equal to or superior to the best existing General Admission Areas in Australian stadia.

(j) The majority of General Admission Areas will only operate on Event Days, aside from facilities such as the Buffet Restaurant and A La Carte Restaurant that may operate on Non-Event Days. Some of the General Admission Areas associated with the upper levels of the Seating Bowl may only be used for a full capacity Event.

(k) (**Buffet Restaurant**) The Buffet Restaurant will be accessible to all Patrons. The Buffet Restaurant will provide a meeting place for all Patrons, where they can enjoy a good quality meal in a pleasant environment prior to, during and after an Event.

(l) (**A la Carte Restaurant**) The A La Carte Restaurant will be accessible to all Patrons. It will provide all Patrons with an intimate dining experience within the Stadium.

(m) (**Public Bar**) The Public Bar will be accessible by General Admission Patrons and provide a meeting place before, during and after an Event. The Public Bar will provide General Admission Patrons with an area to sit and enjoy hot and cold beverages.

(n) (**First Aid**) Where first aid is required by a Patron, as far as possible, that treatment will be provided on-site in a First Aid Room. When a Patron requires medical services beyond those which can be provided in a First Aid Room, the Patron will be transferred via ambulance to a hospital.

(o) (**Additional facilities**) With the exception of those parts that are located within the Premium Product Areas, the following facilities form part of, or are located within the General Admission Areas however the functional and detailed requirements are described in other Chapters of these Design Specifications:

(i) Circulation (described in Chapter D5 (Circulation) of these Design Specifications);

(ii) Seating Positions for General Admission Patrons within the Seating Bowl (described in Chapter D7 (Seating Bowl) of these Design Specifications);

(iii) Outlets (described in Chapter D10 (Catering Facilities) of these Design Specifications; and

(iv) Retail Facilities (described in Chapter D11 (Retail Facilities) of these Design Specifications).

(p) (**Functional integration with Outlets and Circulation**) The food and beverage Outlets for General Admission Patrons, described in Chapter D10 (Catering Facilities) of these Design Specifications, will provide an opportunity for Patrons to consume Catering Product in spaces within the Stadium in addition to the Seating Bowl. These spaces are described in Chapter D5 (Circulation) of these Design Specifications. These elements will be seamlessly integrated to accommodate peak loads, avoid congestion and choke points, and accommodate Patrons queuing and gathering to purchase and consume food and beverages without reducing the functionality of the circulation.

(q) (**Functional integration with Retail and Circulation**) The retail outlets for General Admission Patrons described in Chapter D11 (Retail Facilities) of these Design Specifications will provide the opportunity for Patrons to purchase merchandise within

the Stadium. These spaces are described in Chapter D5 (Circulation) of these Design Specifications and identify how Patrons will queue to make these purchases. These spaces will be seamlessly integrated to accommodate peak loads, avoid congestion and choke points, and to accommodate Patrons queuing and purchasing merchandise without reducing the functionality of the circulation.

(r) (**Functional integration with Sports Precinct and Circulation**) The Ticket Control Points for General Admission Patrons form the transition point from the Sports Precinct to the Controlled Area on Event Days. These spaces are described in Chapter D5 (Circulation) of these Design Specifications, which describes how Patrons will arrive in the Sports Precinct and enter the Controlled Area. These elements will be integrated to accommodate seamless transition from the perspective of the Patron, and will accommodate the requirement for queuing without reducing the functionality of the Sports Precinct and minimising congestion and choke points.

D8.3 GENERAL DESIGN REQUIREMENTS

(a) (**Key Design Parameters**) The accommodation and amenity provided in each General Admission Area must comply with the requirements described under clause D8.4 and must reflect the fans-first philosophy.

(b) (**Location and separation**) The General Admission Areas must be located to:

(i) be easily accessible and minimise travel distances to toilet facilities and Catering Facilities for General Admission Patrons;

(ii) enable General Admission Patrons to maintain views to the Field Of Play and frame views back to the city and surroundings;

(iii) enable General Admission Patrons to have maximum exposure to the Event by minimising queuing to access, use and leave the facilities within the General Admission Areas during the peak periods of the Event; and

(iv) maximise purchases at facilities within the General Admission Areas without compromising items (i) to (iii).

(c) (**Proximities**)

(i) There must be Direct Access between the Controlled Area and the General Admission Areas.

(ii) General Admission Areas with particular proximities are described in clause D8.4 (Accommodation Requirements).

(d) (**Amenities**) The level of amenity for General Admission Areas must be comparable to equivalent facilities in contemporary Australian stadia. The level of amenity and quality of General Admission Areas will be consistent with that of the Premium Product Areas at the lower end of the pricing continuum, such as:

(i) Terraces;

(ii) Function Rooms; and

(iii) Sky View Lounge.

(e) The Buffet Restaurant and A La Carte Restaurant must be accessible for use by all Patrons.

(f) (**Universal Access**) All General Admission Areas must be designed for IRUA to ensure equitable access to all facilities and amenities within. Universal Access design within the General Admission Areas must be thoughtfully integrated into the architectural design so as not to detract from the overall aesthetic of these areas.

(g) (**Toilet facilities**) Toilet facilities must be provided as follows:

(i) with fixtures numbers in compliance with the requirements of “Toilet Facilities at Stadia – Planning, Design and Type Installations” published by the Football Stadia Development Committee (FSADC) (1993), the National Construction Code and the Access to Premises Standards; and, to the

extent that any part of those documents imposes a higher or greater requirement, standard, quality, level of service, quantum or scope than any other part of the documents, Project Co must comply with that higher or greater requirement, standard, quality, level of service, quantum or scope;

(ii) for a crowd of 110% capacity with an overall distribution of 70% male and 40% female split of General Admission Patrons. The 110% overall capacity caters for higher Patron use between quarters or at intervals. Each level within the Stadium that caters for General Admission Patrons must meet this criteria; and

(iii) with compliant unisex accessible toilet facilities which have Ready Access from and to the IRUA Positions within the Seating Bowl.

(h) (**Changing Places Toilets**) Changing Places Toilets must be provided to enable IRUA the opportunity to remain at an Event if they require changing. These are a relatively new concept in stadia and must be developed in consultation with Project Stakeholders. Changing Places Toilets must be designed to discourage use by other Patrons.

(i) (**Parenting Rooms**) Parenting Rooms must be provided to enable Patrons with children and infants the opportunity to maintain contact with an Event while undertaking parenting activities. Parenting Rooms should be designed to discourage use by other Patrons.

(j) (**Fitout quality**) The quality of fitout, finishes and level of appointment of FF&E to General Admission Areas must match or exceed provisions for similar areas at contemporary Australian and international stadia. For clarity this requirement extends to the fitout of the toilet facilities and circulation areas, the design of which should also be consistent with and act as an extension of the interior design concepts for the General Admission Areas they serve.

(k) (**Flexibility and future proofing**) General Admission Areas must be designed to be flexible to accommodate reduced capacity Events, future changes in overall demand (increases and decreases) while still remaining efficient and viable to operate in a reduced capacity.

(l) (**Seating in the Seating Bowl**) The minimum seating standards to be met for seats in the Seating Bowl associated with the General Admission Areas are described in Chapter D7 (Seating Bowl) of these Design Specifications.

(m) (**Food and beverage opportunities for General Admission Patrons**) The General Admission Areas must accommodate the service of Catering Product to General Admission Patrons, in both formal and informal environments. Facilities must be provided to serve Catering Product, as further described in Chapter D10 (Catering Facilities) of these Design Specifications, including:

(i) a wide range of menu items, including hot and cold foods, and catering to specialist dietary requirements;

(ii) healthy food options;

(iii) food from a fixed menu and made to order;

(iv) cold alcoholic beverages in both tap and pre-packaged form;

(v) cold non-alcoholic beverages in both tap and pre-packaged form;

(vi) hot beverages; and

(vii) the facility for Patrons to have their own food heated in a sanitary manner, such as baby formula and blended foods.

(n) (**Wayfinding**) All General Admission Areas must be provided with wayfinding and signage that clearly identifies the function of each facility.

D8.4 ACCOMMODATION REQUIREMENTS

D8.4.1 General Admission Patron Toilets

(a) (**Capacity**) Toilet facilities must be provided and designed in accordance with all relevant Quality Standards. This requirement must be met, and separate calculations must be undertaken, for each level and block of the of the Stadium.

(b) (**Location**) Toilet facilities must be provided at convenient locations at each level used by General Admission Patrons. They must be distributed along the Concourse to minimise travel distances and located a sufficient distance from Outlets to minimise odour at Outlets and to eliminate clashing of queues.

(c) (**Proximity**) The toilet facilities must have Ready Access from each block of seats within the Seating Bowl and the Concourse to facilitate Easy Access from the Seating Bowl for all Patrons.

(d) The toilet facilities must be designed such that the male and female facilities (and unisex Universal Access facilities) are adjacent in “blocks” around the Concourse.

(e) (**Amenity**) Consideration should be given to designing the toilet facilities to provide a separate entry and exit allowing one way flow of Patrons through the area.

(f) Entries to toilet blocks must be fitted with lockable roller grilles that are concealed from view when retracted and of a high quality appearance when deployed.

(g) All sanitary fittings used in the toilet facilities must be of a durable, robust and high quality nature that permits heavy intermittent use and mitigates the effects of vandalism.

(h) Consideration should be given to the selection of toilets and urinals that provide both a sensor flush design and auto-flush and a settable regularity.

(i) The mounting height for at least two (2) urinals in each toilet block must be suitable for use by children.

(j) All hand basins must provide cold water only and incorporate taps that are press action spray with auto timers, and be vandal-resistant in design where possible. Project Co must ensure the locations of soap dispensers are such that they avoid spillage over either bench tops or floors.

(k) Both paper towel dispensers and electronic jet-type hand dryers must be provided.

(l) Full width mirrors must be provided behind all hand basins.

(m) Toilet paper dispensers must be provided that are durable, robust, vandal-resistant and lockable.

(n) The PA System within the toilet facilities must be able to receive and playback the match radio commentary.

(o) Toilet facilities should be designed to address the higher expectations of Stadium Users with regard to hygiene and safety through the provision of doorless entry, sensor taps and high quality jet hand dryers (or alternatively integrated wash and dry taps), soap dispensers located directly over hand basins and coat / bag hooks within cubicles.

D8.4.2 Changing Places Toilets

(a) (**Functionality**) Changing Places Toilets vary from the statutory requirements of disabled toilets in that they incorporate extra features including additional area and provide IRUA with a dedicated facility where they can:

(i) have their toileting needs met; and

(ii) be showered and have their clothing changed without having to leave the Stadium.

(b) (**Compliance with Quality Standards**) Changing Places Toilets must be designed in accordance with all relevant Quality Standards, including British Standard 8300:2009 and the design standards available at http://www.changing-places.org.

(c) (**Capacity**) A minimum of two (2) Changing Places Toilets must be provided.

(d) (**Location**) One (1) Changing Places Toilet should be provided on each of the General Admission levels and must reflect the location of IRUA Positions in the Seating Bowl.

(e) (**Amenity**) Each Changing Places Toilet must include the following:

(i) automatic doors suitable for IRUA;

(ii) a height adjustable adult-sized changing bench;

(iii) a hoist that runs between each of the functional sections of the room;

(iv) a centrally placed toilet with room either side for two (2) carers;

(v) a screen or curtain to allow the disabled person and carer privacy;

(vi) a wide tear off paper roll to cover the bench;

(vii) a sanitary waste bin; and

(viii) a non-slip floor.

D8.4.3 Parenting Rooms

(a) (**Functionality**) The Parenting Rooms must enable Patrons to move their children away from the atmosphere and noise of the Event to a quiet location for activities including feeding and changing.

(b) The Parenting Rooms must enable male Patrons to use these rooms.

(c) The Parenting Rooms must enable Patrons with children or young adults to use these spaces for the purpose of providing a quiet space removed from the stimulation of the Event.

(d) (**Capacity**) A minimum of five (5) Parenting Rooms must be provided in the Stadium.

(e) (**Location**) Two (2) Parenting Rooms must be located on level 1 of the Stadium with the remaining being equitably distributed on the other levels excluding the Event Level.

(f) (**Proximity**) Consideration should be given to the dispersal of Parenting Rooms around the Stadium to ensure Easy Access is available to Patrons.

(g) (**Amenity**) All Parenting Rooms must provide:

(i) a waiting area with easy chairs;

(ii) automatic doors suitable for IRUA;

(iii) two (2) feeding cubicles;

(iv) two (2) toilet cubicles, one to cater for adults and one for children;

(v) two (2) nappy change benches and sinks with integral waste bins;

(vi) wall and floor finishes of equivalent quality to the General Admission toilets but also of a nature which is sympathetic to their use by young children and infants;

(vii) a kitchenette incorporating a sink, tap and space for a microwave to enable the preparation of baby formula, child food and special dietary requirements for IRUA; and

(viii) one (1) Display.

D8.4.4 Buffet Restaurant

(a) (**Functionality**) The Buffet Restaurant must be able to operate on Event Day for all Patrons.

(b) It must be able to operate on Non-Event Days with only minimum activation of the Stadium.

(c) (**Capacity**) One (1) Buffet Restaurant must be provided to service a total minimum capacity of five hundred (500) Patrons concurrently. The Buffet Restaurant will operate continuously during an Event Day.

(d) (**Viewing criteria**) The Buffet Restaurant should be located to maximise views of the Sports Precinct and Swan River.

(e) (**Location**) The Buffet Restaurant must be located on the same level as the Controlled Area and must also be able to operate on Non-Event Days with only a minimum activation of the Stadium.

(f) (**Proximity**)

(i) There must be Easy Access at a minimum from the Controlled Area areas to the Buffet Restaurant.

(ii) There must be Easy Access from the Stadium Carpark and from street parking and any other permanent parking in the Sports Precinct that will be used on Non-Event Days.

(g) (**Amenity**) The Buffet Restaurant must:

(i) be a predominantly column free space. Where columns are necessary due to engineering requirements these must be carefully integrated into the interior design concept, located to minimise intrusion and must not impede on the functionality of the space for both its Event Day and Non-Event Day uses;

(ii) have an open plan configuration;

(iii) have permanent room naming and numbering adjacent to the door;

(iv) be an enclosed, air-conditioned space with integrated localised controls for air-conditioning, lighting and AV Systems;

(v) have lighting dimming controls;

(vi) have generous provision and distribution of power and data points to facilitate flexible room use;

(vii) have security access controls at the entrance;

(viii) have recessed ceiling pelmets with motorised blinds provided to all external windows (including at the glass line to the Seating Bowl where this occurs) to provide a high degree of solar control (i.e. ranging from control of glare for Patrons to total blackout to support alternative uses of the Buffet Restaurant on Non-Event Days).

(h) (**Dining**)

(i) The Buffet Restaurant must include an open plan dining area with external views to the surrounding Sports Precinct and the Swan River maximised.

(ii) The open plan formal dining area must be designed to facilitate operation of a fixed, buffet menu service capable of servicing five hundred (500) General Admission Patrons seated at the same time.

(iii) The dining area should also be able to operate in a reduced capacity through the use of dividers or partitioning to enable smaller Events and Functions to occur while still achieving the experience outlined in D8.4.4(j).

(iv) The Buffet Restaurant must have dedicated bar facilities which must be designed to facilitate the service of hot and cold drinks and light snacks / finger foods, which may be ordered at the bar or via waitpersons. There must be the capacity to run the bar areas as full cash bars.

(i) (**Catering Facilities**)

(i) The Buffet Restaurant must have the capacity to locally prepare, cook fresh, store and serve both hot and cold Catering Product of a high quality.

(ii) A Satellite Production Kitchen suitable for preparation, cooking fresh, storage and service of Catering Product must be provided with Ready Access to a service lift and to the Buffet Restaurant and within a maximum

service distance of fifty (50) metres. Refer to Chapter D10 (Catering Facilities) of these Design Specifications for detailed requirements.

(j) (**Experience**)

(i) On Event Days, the Buffet Restaurant must achieve an atmosphere of inclusiveness and excitement for fans. Light and bright spatial quality, Displays and quality audio are envisaged as key elements in delivering the Event Day atmosphere.

(ii) For Non-Event Day uses, the Buffet Restaurant should achieve an atmosphere similar to that of a comparative Buffet-style restaurant operating in the Perth metropolitan area.

(k) (**Interior fitout**) The interior fitout of the Buffet Restaurant should be casual, hard wearing and reflective of an equivalent style restaurant in Perth.

(l) (**FF&E**)

(i) Dining tables and chairs must be provided to accommodate different sized groups.

(ii) The FF&E for the Buffet Restaurant must be comfortable, easily cleanable, casual and of good aesthetic quality. Flexibility for configuration of different layouts and Patron comfort must be key considerations in the selection of all furnishings.

(iii) Use of soft furnishings or acoustic panelling must be considered within the Buffet Restaurant to mitigate reverberation effects.

(m) (**Branding**) The Buffet Restaurant must be capable of being branded by the Stadium Operator at the entrance and internally such that the branding is easily and efficiently changeable for the purposes of a specific Event.

(n) (**Toilet facilities**) Dedicated toilet facilities must be provided to service the Buffet Restaurant with Ready Access. The location of the toilets must minimise the activation of the Stadium when the Buffet Restaurant is in use on Non-Event Days. The toilet facilities must incorporate a high standard of finish and amenity with tempered water to taps, individual urinals for men and a full length mirror for females. These facilities must be appointed with high quality, contemporary fixtures, fittings and finishes.

(o) (**Storage**)

(i) The Buffet Restaurant must have a lockable general storage area (or areas) to store furnishings and items pertaining to the operation of the area, including marketing materials, audiovisual equipment and catering supplies, when not in use.

(ii) A dedicated furniture storage room must be provided to complement the operation of the Buffet Restaurant.

(p) (**AV Systems**) The Buffet Restaurant must incorporate Displays and audio quality speakers mounted at ceiling level for live streaming or Event network broadcast, in-house broadcast channels including special camera views and in-house IPTV feeds. Displays must be sized and provided in quantities to suit the capacity of the Buffet Restaurant and to enable good viewing by Patrons throughout the Buffet Restaurant

D8.4.5 A La Carte Restaurant

(a) (**Functionality**) The A La Carte Restaurant must be able to operate on Event Day for all Patrons.

(b) It must be able to operate on Non-Event Days with only minimum activation of the Stadium.

(c) (**Capacity**) One A La Carte Restaurant must be provided to service a total minimum capacity of one hundred and fifty (150) General Admission Patrons. The A La Carte Restaurant will operate with a minimum of three sittings over the course of an Event Day.

(d) (**Location**) The A La Carte Restaurant must be located on the same level as the Controlled Area and must also be able to operate on Non-Event Days with only a minimum activation of the Stadium.

(e) (**Proximity**)

(i) There must be Easy Access from the Controlled Area areas to the A La Carte Restaurant.

(ii) There must be Easy Access from the Stadium Carpark and from street parking and any other permanent parking in the Sports Precinct that will be used on Non-Event Days.

(f) (**Amenity**) The A La Carte Restaurant must:

(i) be a predominantly column free space. Where columns are necessary due to engineering requirements these must be carefully integrated into the interior design concept, located to minimise intrusion and must not impede on the functionality of the space for both its Event Day and Non-Event Day uses;

(ii) have permanent room naming and numbering adjacent to the door;

(iii) be an enclosed, air-conditioned space with integrated localised controls for air-conditioning, lighting and AV Systems;

(iv) have lighting dimming controls; and

(v) have security access controls at the entrance to the Restaurant.

(g) (**Dining**)

(i) The A La Carte Restaurant must incorporate external views to the surrounding Sports Precinct, the city and the Swan River.

(ii) The dining area must be designed to facilitate operation of an a la carte menu service capable of servicing one hundred and fifty (150) General Admission Patrons seated at the same time.

(iii) The A La Carte Restaurant must have dedicated bar facilities which must be designed to facilitate the service of hot and cold drinks. There must be the capacity to run the bar areas as full cash bars.

(h) (**Catering facilities**)

(i) The A La Carte Restaurant must have the capacity to locally prepare, cook fresh, store and serve both hot and cold Catering Product of a high quality.

(ii) A Satellite Production Kitchen suitable for preparation, cooking fresh, storage and service of Catering Product to the dining and lounge areas must be provided with Ready Access to a service lift and to the A La Carte Restaurant and within a maximum service distance of fifty (50) metres. Refer to Chapter D10 (Catering Facilities) of these Design Specifications for detailed requirements.

(i) (**Experience**)

(i) On Event Days, the A La Carte Restaurant must achieve an atmosphere of inclusiveness and excitement for fans. Light and bright spatial quality, Displays and quality audio are envisaged as key elements in delivering the Event Day atmosphere.

(ii) For Non-Event Day uses, the A La Carte Restaurant should achieve an atmosphere similar to that of a comparative restaurant operating in the Perth metropolitan area.

(j) (**Interior fitout**) The interior fitout of the A La Carte must be comfortable, spacious and of high aesthetic quality.

(k) (**FF&E**)

(i) Dining tables and chairs must be provided to accommodate different sized groups.

(ii) The FF&E for the A La Carte must be comfortable, easily cleanable, casual, restrained and of good aesthetic quality. Flexibility for configuration of different layouts and Patron comfort must be key considerations in the selection of all furnishings.

(iii) Use of soft furnishings or acoustic panelling must be considered within the A La Carte Restaurant to mitigate acoustic and reverberation effects.

(l) (**Branding**) The A La Carte must be capable of being branded by the Stadium Operator at the entrance and internally such that the branding is easily and efficiently changeable for the purposes of a specific Event.

(m) (**Toilets**) Dedicated toilet facilities must be provided to service the A La Carte with Ready Access. The location of the toilets must minimise the activation of the Stadium when the A La Carte Restaurant is in use on Non-Event Days. The toilet facilities must incorporate a high standard of finish and amenity with tempered water to taps, individual urinals for men and a full length mirror for females. These facilities must be appointed with high quality, contemporary fixtures, fittings and finishes.

(n) (**Storage**)

(i) The A La Carte Restaurant must have a lockable general storage area (or areas) to store furnishings and items pertaining to the operation of the area, including marketing materials, audiovisual equipment and catering supplies, when not in use.

(ii) A dedicated furniture storage room must be provided to complement the operation of the A La Carte Restaurant.

(o) (**AV Systems**) The A La Carte Restaurant must incorporate Displays and audio quality speakers mounted at ceiling level for live streaming or Event network broadcast, in-house broadcast channels including special camera views and in-house IPTV feeds. Displays must be appropriately sized and provided in appropriate quantities to suit the capacity of the A La Carte Restaurant to enable good viewing by Patrons throughout the A La Carte Restaurant.

D8.4.6 Public Bar

(a) (**Functionality**) The Public Bar is informal social space that will be available for use by Premium Product Patrons and General Admission Patrons. The Public Bar must have a view of the Field Of Play and should be located to also offer views of the city skyline and river or of the Perth foothills. Patrons will be able to gather to discuss the Event in an informal atmosphere that captures the excitement of being at the Stadium for an Event.

(b) (**Capacity**) One Public Bar must be provided to service a total minimum capacity of two hundred (200) General Admission Patrons.

(c) (**Location**) The Public Bar must be located on a level of the Stadium that has General Admissions Areas.

(d) (**Proximity**) There must be Easy Access from General Admission Areas to the Public Bar.

(e) (**Amenity**) The Public Bar must:

(i) be a predominantly column free space. Where columns are necessary due to engineering requirements these must be carefully integrated into the interior design concept, located to minimise intrusion and must not impede on the functionality of the space for its Event Day uses;

(ii) have capacity for permanent room naming and numbering adjacent to the door;

(iii) be an enclosed, air-conditioned space with integrated localised controls for air-conditioning, lighting and AV Systems;

(iv) have lighting dimming controls; and

(v) have security access controls at the entrance to the Public Bar.

(f) (**Dining**) The Public Bar must have dedicated bar facilities which must be designed to facilitate the service of hot and cold drinks and light snacks / finger foods, which may be ordered at the bar. The bar will operate as a full cash bar.

(g) (**Experience**) On Event Days, the Public Bar must achieve an atmosphere of inclusiveness and excitement for fans. Light and bright spatial quality, Displays and quality audio are envisaged as key elements in delivering the Event Day atmosphere.

(h) (**Interior fitout**) The Public Bar should have a basic, utilitarian fitout with limited seating areas and predominantly comprised of social standing room allowing people to mingle and move freely throughout.

(i) (**FF&E**)

(i) A combination of café style furniture, cocktail tables and high bar stools and communal tables must be provided.

(ii) The FF&E for the Public Bar must be comfortable, easily cleanable, casual, restrained and of good aesthetic quality.

(j) Use of soft furnishings or acoustic panelling must be considered within the Public Bar to mitigate reverberation effects.

(k) (**Branding**)

(i) The Public Bar must be capable of being branded by the Stadium Operator at the entrance and internally such that the branding is easily and efficiently changeable for the purposes of a specific Event.

(ii) The Governance Agency will consider ways to recognise future sponsors in the design and branding of the Public Bar. Accordingly, the entry and interior design must give consideration to how sponsor branding can be architecturally integrated.

(l) (**Toilets**) Ready Access to toilet facilities must be provided with Ready Access as a minimum.

(m) (**Storage**)

(i) The Public Bar must have lockable general storage areas to store furnishings and items pertaining to the operation of the area, including marketing materials, audiovisual equipment and catering supplies, when not in use.

(ii) A dedicated furniture storage room must be provided to complement the operation of the Public Bar.

(n) (**AV Systems**) The Public Bar must incorporate Displays and audio quality speakers mounted at ceiling level for live streaming or Event network broadcast, in-house broadcast channels including special camera views and in-house IPTV feeds. Displays must be appropriately sized and provided in appropriate quantities to suit the capacity of the Public Bar and to enable good viewing by Patrons throughout the Public Bar.

D8.4.7 Kids' Zone

(a) (**Functionality**) The Kids' Zone will be activated by the Hirer as a zone where Patrons can take their children to participate in supervised interactive activities and displays as part of their Event experience.

(b) (**Capacity**) A dedicated space for a Kids' Zone must be able to service a range of children's activities such as jumping castles, face painting and 'pass the ball' structures.

(c) (**Location**) The Kids' Zone must be located on the same level as the Controlled Area and be within the Controlled Area on Game Days. The location of the Kids' Zone must be in a high traffic area such that it is visible by Patrons arriving at the Stadium but must be positioned so that it does not impede circulation of Patrons.

(d) (**Proximity**) The Kids' Zone must have Easy Access from General Admission Areas.

(e) (**Amenity**) The Kids' Zone must:

(i) be flexible to cater for a range of activities conducted by Hirers;

(ii) provide Serviced Zones with sufficient Engineering Services to cater for activities such as inflatable jumping castles; and

(iii) provide suitable weather protection.

D8.4.8 First Aid Rooms

(a) Three (3) First Aid Rooms must be provided. The First Aid Rooms will be comprised of:

(i) One (1) Main First Aid Room; and

(ii) Two (2) Satellite First Aid Rooms.

(b) Provision must be made for Easy Access from each First Aid Room to the ambulance waiting area. A priority access route must be identified through the Stadium, preferably utilising non-public areas for transfer of patients from public levels.

(c) (**Amenity**) All First Aid Rooms must:

(i) have clear signage;

(ii) have double leaf doors to allow for a Patron on a stretcher to be moved in and out of the room;

(iii) be provided as an air conditioned space with localised temperature control;

(iv) have floor, ceiling and wall finishes which are durable and easy to clean to minimise infection control risks;

(v) have a screening area at the entrance, large enough for a stretcher and waiting space for a minimum of two (2) Patrons;

(vi) have lockable, in built medical cabinets for storage of supplies;

(vii) have a work counter with sink and hot/cold water;

(viii) have a hand basin;

(ix) have one (1) landline phone;

(x) have a refrigerator and ice bin; and

(xi) have a unisex accessible toilet room.

D8.4.9 Main First Aid Room

(a) (**Overview**) A Main First Aid treatment suite for the management of Patron medical care in the Stadium must be provided. This will act as the control point for the Satellite First Aid Rooms located at each level of the venue.

(b) (**Capacity**) The Main First Aid Room must cater for three (3) treatment beds with sufficient space provided for 360 degree access around each treatment bed.

(c) (**Location**) The Main First Aid Room must be situated on the Event Level, with Ready Access to the Concourse and ambulance access to the Stadium.

(d) (**Proximity**) The Main First Aid Room must have:

(i) Direct Access to two (2) ambulance parking bays;

(ii) Ready Access to a lift that can accommodate a Patron on a stretcher; and

(iii) Easy Access to the Satellite First Aid Rooms.

(e) (**Amenity**) The Main First Aid Room must have:

(i) three (3) treatment areas with treatment beds and screening curtains;

(ii) be fitted with a shower facility, with shower hose, for the emergency treatment of burns victims; and

(iii) sufficient corridor and entry width for a Medicart to be driven in and out of the room.

D8.4.10 Satellite First Aid Rooms

(a) (**Capacity**) Each Satellite First Aid Room must cater for one (1) treatment bed with sufficient space provided for 360 degree access around each treatment bed.

(b) (**Location**) One Satellite First Aid Room must be situated on each of the General Admission levels of the Stadium.

(c) (**Proximity**) The Satellite First Aid Rooms must have:

(i) Ready Access to a lift that can accommodate a Patron on a stretcher; and

(ii) Easy Access to the Main First Aid Rooms.

(d) (**Amenity**) The Satellite First Aid Rooms must have:

(i) one (1) treatment area with a treatment bed and screening curtain; and

(ii) sufficient entry width for a Patron on a stretcher to be moved in/out of the room.

D8.4.11 Automatic Teller Machines (ATMs)

(a) (**Capacity**) Provision must be made for the inclusion for a minimum of seven (7) ATMs.

(b) (**Location**) The spaces for the ATMs must be located in the minimum following areas:

(i) four (4) on the same level as the Controlled Area; and

(ii) remainder to be distributed evenly across the other levels of the Stadium.

(c) The ATMs must be located such that the anticipated queues associated with the ATMs do not impede access to other General Admission Areas or impede general circulation.

(d) (**Proximity**) The ATM facilities must have Ready Access to Outlets and Retail Facilities located in the General Admission Areas.

D8.4.12 Interfaith Prayer Room

(a) (**Capacity**) One (1) Interfaith Prayer Room / meditation room which can accommodate a minimum of fifteen (15) Patrons or Stadium Staff must be provided.

(b) (**Location**) The Interfaith Prayer Room should be accessible to all Patrons.

(c) (**Proximity**) The Interfaith Prayer Room must have Easy Access to the General Admission and Premium Product Areas of the Stadium.

(d) (**Amenity**)

(i) The Interfaith Prayer Room must be non-denominational and should have a basic level of wall, floor and ceiling finishes including a carpeted floor.

(ii) The room must also incorporate washing facilities suitable for washing hands and feet and Project Co FF&E to support its purpose including a shoe rack and a bookshelf.

(iii) The Interfaith Prayer Room must be able to accommodate male and female users concurrently.

D8.4.13 Telephone facilities

(a) (**Functionality**) The telephone facilities must be able to be used by a minimum of four (4) Patrons at any one time to make and receive calls from their mobile phones in an environment where they can communicate at a normal conversational level and must be capable of shielding the noise of the Concourse during an Event.

(b) The telephone facilities must allow a minimum of ten (10) Patrons to recharge their mobile phones simultaneously.

(c) (**Capacity**) The spatial and services requirements for seven (7) telephone facilities must be provided across all levels of the Stadium:

(d) (**Location**) Three (3) telephone facilities must be located on level 1 adjacent to the main Stadium Entry Points with four (4) located on the other levels of the Stadium.

(e) (**Amenity**) The telephone facilities must provide:

(i) a power and data connection for future installation of a public telephone;

(ii) acoustic separation to allow Patrons to make and receive calls at a normal conversational level; and

(iii) mobile telephone recharging stations.

D8.4.14 Smoking areas

(a) (**Capacity**) A minimum of three (3) designated smoking areas must be provided.

(b) (**Location**)

(i) The designated smoking areas must be located outside the Controlled Area and meet the requirements of the all relevant Quality Standards and Laws; and.

(ii) The smoking areas must be located away from circulation routes and children's playgrounds.

(c) (**Proximity**) The smoking areas must have Easy Access to the General Admission Areas and Premium Product Areas of the Stadium.

(d) (**Amenity**) The smoking areas must:

(i) be clearly delineated and signed:

(ii) not be an enclosed space: and

(iii) be provided with appropriate waste receptacles that are easily cleaned and maintained.

D9 PREMIUM PRODUCT AREAS

D9.1 OVERVIEW

(a) Premium Products provide a higher standard of experience than is available with General Admission. This is generally achieved through the provision of Catering Product, higher quality seating and access to Premium Product Areas which form private and exclusive social zones within the Stadium. Additionally, Premium Product Areas may be complimented by dedicated entry routes and access to a designated car parking area in the Stadium or within the Sports Precinct, or access to off-site car parking with dedicated transport to the Stadium as arranged by the Hirer.

(b) This Chapter of the Design Specifications sets out:

(i) the requirements for the Premium Product Areas to support the use of the Stadium and Sports Precinct by Premium Product Patrons on Event Days; and

(ii) the multi-purpose functionality of Premium Product Areas to support the use of the Stadium and Sports Precinct for Non-Event Day activities.

(c) A Functional Relationship Diagram depicting the key functional relationships for the Functional Units that comprise the Premium Product Areas is included in Chapter F4 (Premium Product Areas) of these Design Specifications.

(d) Further technical requirements in respect of the Premium Product Areas are detailed in Part E (Technical Brief) of these Design Specifications.

D9.2 OPERATIONAL PRINCIPLES

(a) (**Capacity**) The percentage of the initial capacity of 60,000 Patrons (when the Stadium is operating in AFL mode) that will have access to Premium Product Areas will be 12.4%. This percentage has been determined based on research and an analysis of the market demand for the Premium Product, while also ensuring provision is made for latent demand. Although this percentage is based on the initial capacity it is expected that the Premium Product Areas will be designed to be flexible to accommodate future changes in overall demand (increases and decreases) and in the mix of Premium Products, as required.

(b) (**Premium Products mix**) The Premium Product mix reflects the outcomes of both extensive research and Benchmarking of major Australian and American stadia as well as the findings of detailed market analysis of local demand, and includes the introduction and evolution of a number of new products to the Australian market (e.g. Field Suites and Coaches' Clubs). These investigations indicate a strong appetite from the corporate sector and committed fans for high quality Premium Products.

(c) The range or mix of Premium Products envisaged will be wider than is available at other comparable Australian stadia.

(d) The proposed Premium Product mix retains a large amount of product that the local market is familiar with but also a large number of new products. It is expected that over time the new products may become more popular and some of the existing products may become less popular and may require an alteration to the Premium Product mix.

(e) The provisions of the Premium Product Areas and associated services are based on a pricing continuum which seeks to cater for a wide customer base from members, individuals and small businesses through to sponsors, major corporate and high net worth individuals. The hierarchy of products is indicated in **Table 7** (Information on Premium Products supplied by Joint Football Working Group) at paragraph (h).

(f) (**Pricing continuum**) The proposed Premium Products have differing price points which have been determined by a number of factors, including:

(i) comfort and quality of finish;

(ii) viewing quality from the Premium Product Area to the Field Of Play or views across the Swan River;

(iii) quality and variety of Catering Product options;

(iv) access to secondary benefits including pre and post-Event activities, Players and coaching staff and potentially Media Activities,

(v) the nature of any designated car parking area or dedicated transport services included with the Premium Product (e.g. on-site car parking, off-site car parking provided by the Hirer or dedicated shuttle / limousine transport provided by the Hirer; and

(vi) demand for each type of Premium Product and its corresponding exclusivity.

(g) Each of the Premium Products will attract a different demographic of Patrons and will have a point of difference not only in price but also in the Event experience.

(h) The following table summarises the information provided by the Joint Football Working Group (**JFWG**) in terms of their intended use of the Premium Products.

Table 7: Information on Premium Products supplied by Joint Football Working Group

Place on Pricing Continuum	Premium Product	Key Selling Feature	Target Audience
1 (most	Chairman's Club	Best of everything	High net worth individuals, VIP Patrons, major partners,

Place on Pricing Continuum	Premium Product	Key Selling Feature	Target Audience
exclusive)			official partners
2	Coaches' Club	Exclusive Coaches' Box access	Corporates, high net worth individuals
3	Field Club	Exclusive access to Players	Corporates / high net worth individuals
4	Traditional Suite (including Social Suites)	Popular luxury suite product	Sponsors / large corporates
5	Field Suites (including Field Social Suites)	Suite product at field level	Sponsors / large corporates
6	Dining - for 500 Patrons, located in the Function Room	Traditional sit down function experience	Sponsors and medium to large corporates
7	Open Corporate Reserves	Next generation of OCRs	Small to medium sized corporates
8	Sky View Lounge	Product showcases Perth and the Stadium	Gold Premium plus members
9	Club Lounge	Relaxed but exclusive corporate product offering environment and F&B flexibility within the one club	Individuals and small corporates
10	Supporter's Club - 1,000 Patrons, located in the Function Rooms	Casual premium member social club with pre and post Event hospitality	Gold Premium members
11	Terraces	Outside barbeque deck style experience at the football	Premium Members

(i) (**Chairman's Club**) The Chairman's Club will be the most exclusive product in the Stadium and will have the best of everything, from the best seats in the house to the highest quality Catering Product available. The Chairman's Club will be priced at a point where it will be an exclusive experience that everyone in Perth will know about but very few will ever experience.

(j) (**Coaches' Club**) The Coaches' Club is a unique Suite and will be the product every hard core fan will want to be part of. It will provide 48 Patrons with the opportunity to feel as though they are part of the extended coaching team and to know what is happening before the Players do. There will be interaction with the coaching team but in a way that does not impede on the coaching activities.

(k) (**Field Club**) The Field Club will provide an "on the ground" experience for 300 Patrons in an informal, high-end bar / nightclub environment. Patrons will have the opportunity to view the Players during warm-up, media interviews and entry to the Pitch via the Field Club Players' Race. It is envisaged that set up of, and Player access through, the Field Club Players' Race will be managed by Event staff.

(l) (**Suites**) There will be five (5) types of Suites available in the Stadium offering a diversity of experience including

(i) Traditional Suites offering and Social Suites offering an intimately scaled, semi-formal environment at an elevated position within the Stadium to allow an excellent viewing angle to the Pitch for a range of Patron group sizes;

(ii) Field Suites and Field Social Suites offering an intimately scaled, semi-formal, "on the ground" experience for a range of Patron group sizes; and

(iii) a Coaches' Club (described at paragraph (j)).

(m) (**Other Premium Product experiences**) Other Premium Product experiences will include Open Corporate Reserve seating, Club Lounges, Function Rooms, Terraces and a Sky View Lounge.

(n) (**Location within the Stadium**) It is envisaged that the Premium Products will be distributed across all levels of the Stadium and most of the Premium Products will be located on the northern and southern sides for optimised viewing of Events and access to external vistas.

(o) (**Allocation of Premium Product Areas**)

(i) For an AFL Derby Event:

A The Coaches' Club must be "blacked out" from the Home Team Coaches' Box for the Home Team that is the designated away team for the match / AFL fixture; and

B The Coaches' Club must be "blacked out" from the Home Team Players' Warm-up Room for the Home Team that is the designated away team for the AFL Event.

(ii) For an AFL Triple Header Event and for any AFL Finals Event:

A some of the Premium Product Areas are retained for hosting Hirer's functions and the remaining Premium Product Areas are sold on behalf of the Hirer by the Home Team/s; and

B where the Coaches' Club or Field Club are sold on behalf of the Hirer by only one Home Team, the Coaches' Club and Field Club must be "blacked out" from the Home Team Coaches' Box and Home Team Players' Warm-up Room respectively for the other Home Team.

(p) [*Not disclosed*]

(q) [*Not disclosed*]

(r) [*Not disclosed*]

(s) [*Not disclosed*]

D9.3 GENERAL DESIGN REQUIREMENTS

(a) The general accommodation requirements which apply to the Premium Product Areas are described in this clause D9.3.

(b) (**Location and separation**) The Premium Product Areas must be located on designated levels of the Stadium in order to:

(i) ensure that Premium Product Patrons have minimal crossover with General Admission Patrons;

(ii) preserve a private space and provide efficient and enjoyable circulation for Premium Product Patrons; and

(iii) facilitate minimal control pressures at entries to, or interfaces with, Premium Product Areas.

(c) (**Proximities**) The Premium Product Areas must have Ready Access to:

(i) Premium Entry Points situated on the perimeter of the Controlled Area for Premium Product Patrons;

(ii) Premium Entry Points situated on the perimeter of the Stadium, including in the undercroft, in close proximity to designated car parking areas and drop-off points for Premium Product Patrons arriving by private vehicle; and

(iii) their associated seating areas in the Seating Bowl.

(d) (**Amenities**) The Premium Product Areas must be designed:

(i) to be generally self-contained for social areas and circulation for Premium Product Patrons;

(ii) with dedicated toilet facilities servicing each Premium Product Area as further detailed in (f); and

(iii) with dedicated Outlets servicing each Premium Product Area as further described in this Chapter D9 (Premium Product Areas) and Chapter D10 (Catering Facilities) of these Design Specifications.

(e) (**Universal Access**)

(i) All Premium Product Areas must be designed for Universal Access throughout (acknowledging that there will be some limitations within the Seating Bowl as identified in clause D7.4.3) to ensure equitable access to all facilities and amenities within, in line with the higher expectations of Premium Product Patrons.

(ii) Universal Access design features within the Premium Product Areas must be thoughtfully integrated into the architectural design so as not to detract from the overall aesthetic of these areas.

(f) (**Toilet facilities**) Toilet facilities must be provided as follows:

(i) with fixtures in compliance with the requirements of "Toilet Facilities at Stadia – Planning, Design and Type Installations" published by the Football Stadia Development Committee (FSADC) (1993), the National Construction Code and the Access to Premises Standards; and, to the extent that any part of those documents imposes a higher or greater requirement, standard, quality, level of service, quantum or scope than any other part of the documents, Project Co must comply with that higher or greater requirement, standard, quality, level of service, quantum or scope;

(ii) for the Chairman's Club, Coaches' Club and the Field Club, as dedicated toilet facilities which only service each of those areas respectively on an exclusive basis;

(iii) for Premium Product Areas other than those referenced at (ii) the requirement at (i) may be satisfied by providing shared toilet facilities provided that the locations and clustering of such facilities:

A only facilitate access for Premium Product Patrons;

B allows for Ready Access from each Premium Product Area they serve;

C ensures each Premium Product Area is compliant with the requirements at (i); and

D in connection with Non-Event Day uses, does not create the need for visitors to circulate widely to access toilets, such that security implications are minimised;

(iv) for fixture provisions, the ratio of fixtures must be based on a distribution of 60% male and 50 % female attendance for the capacity of Premium Product Patrons served by each set of toilet facilities. 110% overall capacity must be provided to cater for high use between quarters or at intervals;

(v) with compliant unisex accessible toilet facilities which have Ready Access from and to the IRUA Positions within the Premium Product Areas; and

(vi) the speaker system within the toilet facilities must be able to receive and play back the Event radio commentary.

(g) (**Fitout quality**) The quality of fitout, finishes and level of appointment with FF&E to Premium Product Areas must be graduated to reflect the hierarchy of Premium Products and their respective price points. The quality must exceed the provisions within General Admission Areas and must match or exceed provisions for similar products / areas at contemporary Australian and international stadia. For clarity this requirement extends to the fitout of the toilet facilities and circulation areas, the design of which should also be consistent with and act as an extension of the interior design concepts for the Premium Product Areas they serve. Refer to **Table 7** (Information on Premium Products supplied by Joint Football Working Group) at clause D9.2(f) and Appendix H2 (OGA General Design Standards).

(h) (**Flexibility and future proofing**) Premium Product Areas must be designed to be flexible to accommodate future changes in overall demand (increases and decreases) and in the mix of Premium Products, as required. Opportunities to alter the overall quantity and proportion of Premium Products in the future must be demonstrably incorporated into the design of the Premium Product Areas and adjacent Functional Areas.

(i) The layout and fitout of the Premium Product Areas must also accommodate the requirement for flexibility and re-configuration of Premium Product Areas to facilitate alternative uses on Non-Event Days, without compromising the relevant area's primary function. These alternative uses include:

(i) business meetings;

(ii) conferences;

(iii) education and training;

(iv) expos;

(v) sporting / social corporate functions; and

(vi) private hire for formal dinners, buffet dinners, cocktail functions and other functions.

(j) It is envisaged that the requirement at (h) will be met through:

(i) carefully considered location of each Premium Product Area with respect to the Stadium Entry Points, with simple and efficient circulation routes to allow visitors to self-navigate;

(ii) incorporation of design features that promote flexibility of use including:

A open plan configuration;

B dual room access;

C operable walls to enable division or amalgamation of rooms / spaces;

D selection of modular loose furnishings that enable different standing and seating configurations; and

E integration or concealment of technology items (including projectors, screens, smart boards) and presentation materials (including static whiteboards) in recesses or in joinery;

(iii) carefully considered shape and placement of structural and facade elements (including columns, mullions, transoms and windows) so as not to limit flexibility of use;

(iv) provision, distribution and layout of Engineering Services in a manner that accommodates flexibility of use, room division or amalgamation as required and a variety of room set-up configurations, including:

A distribution of power, data and communications outlets throughout the room rather than consolidation of these services,

B provision of mechanical services, fire protection services and lighting to enable independent room operation and operation as an enlarged room / space with the ability to control the environment as a whole and independently; and

C provision and placement of fixed audiovisual equipment in locations that support the design with respect to room division or amalgamation and room set-up options; and

D carefully considered location of toilet facilities and emergency egress routes so as not to limit flexibility of use.

(k) (**Seating in the Seating Bowl**) The minimum seating standards which must be met for seats in the Seating Bowl associated with the Premium Product Areas are described in Chapter D7 (Seating Bowl) of these Design Specifications.

(l) (**Formal and informal dining, bar facilities and concessions**) The Premium Product Areas must be designed to accommodate the service of Catering Product to Premium Product Patrons, in both formal and informal environments. Facilities must be provided as further described in Chapter D10 (Catering Facilities) of this Project to serve Catering Product including:

(i) a wide range of menu items, including hot and cold foods, multiple courses, and catering to specialist dietary requirements;

(ii) food from a fixed menu and made to order;

(iii) cold alcoholic beverages in both tap and pre-packaged form;

(iv) cold non-alcoholic beverages in both tap and pre-packaged form; and

(v) hot beverages.

(m) Further details regarding the Catering Product requirements for each Premium Product Area are provided in clause D9.4 and Chapter D10 (Catering Facilities) of these Design Specifications.

D9.4 ACCOMMODATION REQUIREMENTS (LOCATION, PROXIMITIES AND PROVISIONS)

D9.4.1 Chairman's Club

(a) (**Exclusivity and quality**) The Chairman's Club will afford the ultimate in Patron experience at the Stadium. It will operate as the most exclusive Premium Product available at the Stadium. Accordingly, all aspects of the Chairman's Club must have a significantly higher level of finish and amenity than any other Premium Product in the Stadium, commensurate with its higher value and status.

(b) (**Viewing comfort**) The Chairman's Club must achieve the status of having the best seats in the Stadium through a combination of luxurious comfortable seating and good quality viewing.

(c) (**Capacity**) The Chairman's Club must be designed to comfortably accommodate 200 Patrons. This Patron capacity must be accommodated for concurrent formal dining as described in paragraph (k)(ii) and for concurrent seating within the associated section of the Seating Bowl as described in paragraph (j)(i).

(d) (**Location**) The Chairman's Club must be located on the northern side of the Stadium between the 50m arc of the Field Of Play for AFL, in the mid to upper tier.

(e) (**Viewing criteria**)

(i) Each Seating Position for the Chairman's Club must have a continuous, uninterrupted view of the Field Of Play and all Key Viewing Elements for all Events. Each Seating Position must also comply with the Sightline Criteria.

(ii) To optimise viewing of the Field Of Play from within the club, the glazing to the Chairman's Club must provide a clear view in all lighting conditions, free from glare or other effects that might impair the view.

(f) (**Proximity**) There must be Direct Access from the designated car parking areas in the Stadium Carpark to the Chairman's Club without requiring interaction with General Admission Patrons and Media Personnel.

(g) [*Not disclosed*]

(h) (**Reception**) A spacious, stylishly appointed reception foyer / area with a two (2) person concierge desk must be provided for the Chairman's Club to provide a sense of arrival at a key destination within the Stadium. The concierge desk must be sized to allow for computer and write-up work space for each of the concierge staff working concurrently.

(i) (**Cloaking facilities**) A cloak room or inbuilt cloak storage joinery cupboards must be provided for storage of coats and umbrellas within the reception foyer / area with sufficient capacity to service the needs of the Premium Product Patrons admitted to the Chairman's Club.

(j) (**Amenity**) The Chairman's Club must:

(i) be a predominantly, if not entirely, column free space. Where columns are necessary due to engineering requirements these must be carefully integrated into the interior design concept, located to minimise intrusion and must not impede on the functionality of the space for both its Event Day and Non-Event Day uses;

(ii) be an enclosed, air-conditioned space with integrated localised controls for air-conditioning, lighting and AV Systems;

(iii) have lighting dimming controls;

(iv) have generous provision and distribution of power and data points to facilitate flexible room use and accommodate all of the functions of the Chairman's Club;

(v) have security access controls at all entry and exit points to the club;

(vi) be provided with a full height glass line along its perimeter with the Seating Bowl to maximise views to the Field Of Play from club areas; and

(vii) have recessed ceiling pelmets with motorised blinds provided to all external windows (including at the glass line to the Seating Bowl) to provide a high degree of solar control (i.e. ranging from control of glare for Patrons to total blackout to support alternative uses of the Chairman's Club on Non-Event Days).

(k) (**Seating within the Seating Bowl**)

(i) There must be a designated seat in the Seating Bowl to accommodate every Premium Product Patron admitted to the Chairman's Club. The designated seats must:

A be located directly in front of the glass line (without conflicting with sightlines to the Field Of Play from the dining and lounge areas inside the Chairman's Club);

B for each Seating Position must satisfy the viewing criteria described at (d);

C have Direct Access to/from the open plan formal dining area (see paragraph (m)), including for IRUA;

D provide an exceptionally high level of Patron comfort (which is exclusive to the Chairman's Club); and

E be designed and configured to optimise sightlines to the Field Of Play.

(ii) The minimum seating standards which must be met for the seats in the Seating Bowl associated with the Chairman's Club are described in Chapter D7 (Seating Bowl) of these Design Specifications.

(l) (**Dining**)

(i) The Chairman's Club must include an open plan formal dining area with a full height glass line along its perimeter with the Seating Bowl to maximise views to the Field Of Play from the dining area. Where the opportunity exists, external views to the surrounding Sports Precinct and the Swan River should be maximised.

(ii) The open plan formal dining area must be designed to facilitate operation of a full a la carte dining service comparable to a fine dining restaurant and capable of servicing 200 Premium Product Patrons for seated formal dining at the same time.

(iii) As part of the 200 Premium Product Patron capacity for dining, there should be the ability to partition off an area to create a private dining room to accommodate up to 25 persons in formal dining mode. This room should incorporate display screens for display of all content listed at (v) within the room such that all persons seated at the dining table can view the screens. This room should be flexible to function as a board / conference room on Non-Event Days. Power and ICT Systems and audiovisual equipment and screens should be concealed in ceiling, in floor and in joinery as appropriate to their location so that these do not detract from the interior aesthetic of the room.

(iv) The open plan formal dining area must be fitted with an acoustic operable wall to facilitate division of the space into smaller function areas to support Non-Event Day uses.

(v) The open plan formal dining area must be designed to suit its primary purpose as a fine dining restaurant but must be capable of accommodating alternative use for Functions on Non-Event Days. Power and ICT Systems, audiovisual equipment and screens must be concealed in the ceiling and in the floor and in joinery as appropriate to their location, so that the services and equipment do not detract from the interior aesthetic of the room.

(m) (**Dry bar**) A dry bar standing area must be provided inside the glass line for Premium Product Patrons who wish to stand. Consideration should be given to providing a further small dry bar area outside the glass line on an empty section of the first plat, located to minimise conflict with sightlines to the Field Of Play from the dining and lounge areas inside the Chairman's Club.

(n) (**Bar and lounge**) High end bar facilities suitable for making tailored drinks, private dining booths and an armchair lounge area must also be provided to offer alternative settings in which to socialise within the Chairman's Club.

(o) (**Catering facilities**)

(i) The Chairman's Club must have the capacity to locally prepare, store and serve both hot and cold Catering Product of a quality consistent with that available at a fine dining restaurant.

(ii) A Satellite Production Kitchen suitable for preparation, cooking fresh, storage and service of Catering Product to the dining and lounge areas must be provided with Ready Access to a service lift and to the Chairman's Club and within a maximum service distance of 50m. Refer to Chapter D10 (Catering Facilities) of these Design Specifications for detailed requirements.

(p) (**Experience**) The Chairman's Club must achieve an atmosphere of exclusivity and intimacy with individual members and guests, where the experience of the Catering Product and the quality of the space almost makes the outcome of the any Event incidental to the total Event Day experience.

(q) (**Interior fitout**) The interior fitout of the Chairman's Club should evoke luxury and comfort through spaciousness, increased amenity and aesthetic quality. The finishes must be distinctive, stylish and reflective of the exclusiveness of the product. Patron comfort must be a key consideration in the selection of all furnishings.

(r) (**FF&E**)

(i) Consistent with the quality of the interior finishes, the FF&E for the Chairman's Club must also be distinctive, stylish and reflective of the exclusiveness of the product. Patron comfort must be a key consideration in the selection of all furnishings.

(ii) Use of soft furnishings or acoustic panelling must be considered within the Chairman's Club to promote the notion of luxury and mitigate reverberation effects.

(iii) Formal sit down dinners will be held in the open plan formal dining area of the Chairman's Club. Dining tables and chairs must be provided in this area and should accommodate different sized groups. Built-in joinery seating and private dining booths should be provided against the walls to provide some diversity with respect to seating options and add visual interest within the room.

(iv) Hot and cold drinks, light snacks / finger foods will be consumed in the bar and lounge areas of the Chairman's Club. A mix of fixed furniture and occasional furniture must be provided to the bar and lounge areas to suit the Patron activities in these areas of the club including:

A cocktail tables and high bar stools;

B regular height bar stools (at the bar);

C arm chairs and side tables;

D lounge chairs and coffee tables; and

E fixed, stand-up, dry bar facilities at the glass line with the Seating Bowl.

(v) Seating provision within the lounge and bar areas of the Chairman's Club must accommodate approximately 25% of Patrons at any one time.

(s) (**Branding**) The Chairman's Club must be stylish and must have the capacity to be branded for the purposes of a specific Event. This must be easily and efficiently implemented in a manner which does not destroy the interior aesthetic of the club.

(t) (**Toilets**) Dedicated toilet facilities must be provided with Direct Access from the open plan formal dining area. These toilets must be located within the secure zone of the Chairman's Club such that they are not accessible to any other Patrons. The toilet facilities must incorporate a very high standard of finish and amenity with tempered water to taps, individual urinals for men and powder room facilities with a full height mirror for females. These facilities must be appointed with high quality, contemporary and luxurious fixtures, fittings and finishes. Furnishings should be provided within the powder room where appropriate. Displays must be provided to enable viewing of in-house broadcast from within the toilet facilities.

(u) (**Storage**) The Chairman's Club must have a lockable storage area (or areas) to store furnishings and items pertaining to the operation of the area, including marketing materials, audiovisual equipment and catering supplies, when not in use.

(v) (**AV Systems**)

(i) Displays and speakers must be provided to televise the Event and provide synchronous audio in the open plan formal dining area, lounge and bar areas.

(ii) Display screens must be provided in both singular and video wall configurations to allow flexible use for televising the Event and for branding purposes, including as a backdrop for speakers / presenters.

(iii) A portable speaker's / presenter's podium or stage must be provided for use in multiple appropriately serviced locations within the room.

(iv) Fixed audiovisual projection equipment must be provided in a suitable location to facilitate Event Day and Non-Event Day uses.

(v) All audiovisual equipment, including the Displays, speakers and projection equipment must be integrated into the architectural design to form a seamless interior aesthetic.

(vi) The speaker system within the toilet facilities must be able to receive and play back the Event radio commentary.

(w) (**Portable personal media devices**) A critical factor in delivering the ultimate in Patron experience for Chairman's Club Patrons is accessibility and connectivity to content and services which may not be available to other Patrons. It is envisaged that Premium Product Patrons of the Chairman's Club will have the opportunity to make use of a portable personal media device (i.e. a tablet) which, via a seamless user interface (i.e. application), will provide wireless connectivity to a range of services and content within the Chairman's Club and from the associated seats in the Seating Bowl. These contents and services include:

(i) live streaming of the Event network broadcast (i.e. all free to air and Pay TV channels);

(ii) live streaming of the Stadium's in-house broadcast channels, including special camera views;

(iii) live streaming of any 'special purpose' IP based CCTV cameras within the Stadium and Sports Precinct;

(iv) live streaming of any in-house IPTV feeds;

(v) menu, ordering and transaction capability for Catering Services, retail purchasing (e.g. merchandise) and placing bets; and

(vi) access to the internet.

(x) It is anticipated that the portable personal media devices, mounting devices and the user interface application (including interfaces with other Stadium applications) will be supplied and installed by the Stadium Operator. Project Co's design and selection of the seats in the Seating Bowl must accommodate the fixing of the mounting devices.

(y) It is envisaged that the Chairman's Club will keep a stock of approximately one hundred (100) portable personal media devices for use by Chairman's Club Patrons upon request. There must be provision to store all devices and charge twenty (20) of these devices concurrently in a suitably sized and serviced storage hutch located near the doors leading from the Chairman's Club into the Seating Bowl. Suitable wireless networking (wi-fi) coverage and capacity must be provided to the entire Chairman's Club to allow all of the portable personal media devices to be used concurrently to their full functionality from any location within the Chairman's Club, including dining areas, lounge areas and from the club reserve seating in the Seating Bowl which is expected to be the highest use location.

(z) Whilst hand held use of the portable personal media devices may occur within the Chairman's Club, when used in the Seating Bowl there must be the capacity to mount the portable personal media devices on an easy to use, Patron or Hirer installed, mounting device. The mounting device must be mounted to allow the Patron full visibility, use and functionality of the portable personal media device at an 'arms reach' location when seated in the seats designated for use by Premium Product Patrons admitted to the Chairman's Club without obstructing views for other Patrons.

D9.4.2 Coaches' Club

(a) (**Exclusivity and quality**) The Coaches' Club is classified as a Suite but is of a higher standard and price point than a Traditional Suite, It is ranked high on the pricing continuum just below the Chairman's Club. A high quality fitout must be provided but of a less formal nature than for the Chairman's Club.

(b) (**Capacity**)

(i) The overall capacity for the Coaches' Club is included in the total Suite capacity.

(ii) The Coaches' Club must be provided as one (1) club with a capacity of forty eight (48) Patrons.

(iii) The stated Patron capacity must be accommodated for concurrent formal dining as described in paragraph (m)(ii) and for concurrent seating within the associated section of the Seating Bowl as described in paragraph (l)(i).

(c) (**Location**) The Coaches' Club must be located between the Coaches' Boxes used by the Home Teams so that the Coaches' Club has an association with each Coaches' Box.

(d) (**Viewing criteria**)

(i) Each Seating Position for the Coaches' Club must have a continuous, uninterrupted view of the Field Of Play and all Key Viewing Elements for all Events. Each Seating Position must also comply with the Sightline Criteria.

(ii) To optimise viewing of the Field Of Play from within the club, the glazing to the Coaches' Club must provide a clear view in all lighting conditions, free from glare or other effects that might impair the view.

(e) [*Not disclosed*]

(f) [*Not disclosed*]

(g) (**Reception**) A contemporary, well-appointed reception foyer / area with a single person concierge desk must be provided for the Coaches' Club to provide a sense of arrival at a key destination within the Stadium. The concierge desk must be sized to allow for computer and write-up work space for the concierge in attendance. The schematic planning must ensure that all Premium Product Patrons attending the Coaches' Club will enter via this reception foyer / area so that mobile phones can be collected prior to accessing the remainder of the club facilities.

(h) (**Cloaking facilities**) A cloak room or inbuilt cloak storage joinery cupboards for storage of coats and umbrellas must be provided within the reception foyer / area with sufficient capacity to service the needs of the Premium Product Patrons admitted to the Coaches' Club.

(i) (**Mobile phone storage**) Secure storage for mobile phones must be provided within the reception foyer / area as mobile phones will not be permitted in the Coaches' Club.

(j) (**Amenity**)

(i) The Coaches' Club must:

A function as a Suite together with the associated designated seating in the Seating Bowl;

B be a predominantly, if not entirely, column free space. Where columns are necessary due to engineering limitations these must be carefully integrated into the interior design concept, located to minimise intrusion and must not impede on the functionality of the space for both its Event Day and Non-Event Day uses;

C be an enclosed, air-conditioned space with integrated localised controls for air-conditioning, lighting and AV Systems;

D have lighting dimming controls;

E have generous provision and distribution of power and data points to facilitate flexible room use and accommodate all of the functions of the Coaches' Club;

F have security access controls at all entry and exit points to the club; and

G have full width windows from bench height to ceiling overlooking the Field Of Play at the threshold to the Seating Bowl with a dry bar bench positioned under the window for the full width.

(ii) Consideration should be given to providing openable windows at the glass line to the Seating Bowl for the Coaches' Club to deliver enhanced atmosphere within the Suites.

(k) (**Interaction with Coaches' Boxes**)

(i) The Coaches' Club should achieve an atmosphere that promotes the feeling with Premium Product Patrons that they are getting a unique insight into the coaching activities of the Home Team using the adjacent Coaches' Box.

(ii) The setup of the Coaches' Club must facilitate a "fly on the wall" view of the coaching staff inside either of the adjacent Coaches' Boxes while an Event is underway, including the ability to listen to the activities and be privy to the general feeling or mood within the box. Refer to paragraph (v).

(iii) To minimise distraction to the coaching staff the glass between the Coaches' Club and the Coaches' Boxes must provide for one way vision from the Coaches' Club into each Coaches' Box without interrupting sightlines to the Field Of Play from each Coaches' Box.

(iv) There must be the capacity to promptly "black out" the Coaches' Box from the Coaches' Club both visually and audibly, at the Coach's discretion, and without interrupting sightlines to the Field Of Play from the Coaches' Box and from the Coaches' Club.

(v) For most AFL fixtures one (1) Coaches' Box will not be in use. There must be the capacity to "black out" the Coaches' Box that is not in use both visually and audibly from the Coaches' Club.

(l) (**Seating within the Seating Bowl**)

(i) There must be a designated seat in the Seating Bowl to accommodate every Premium Product Patron using the Coaches' Club.

(ii) The designated seats in the Seating Bowl:

A should be located directly in front of the glass line (without conflicting with sightlines to the Field Of Play from the Coaches' Club or Coaches' Box);

B for each Seating Position must satisfy the viewing criteria described at paragraph (d);

C must have Direct Access to/from the Coaches' Club, including for IRUA;

D must provide a very high level of Patron comfort; and

E must be designed and configured to optimise sightlines to the Field Of Play and maximise Patron exposure to the coaching atmosphere.

(iii) The minimum seating standards which must be met for the seats in the Seating Bowl associated with the Coaches' Club are described in Chapter D7 (Seating Bowl) of these Design Specifications.

(m) (**Dining and bar facilities**)

(i) The Coaches' Club must include an open plan social area and a service bar area.

(ii) It must be possible to view activities within the adjacent Coaches' Box from the open plan social area.

(iii) The open plan social area of the Coaches' Club must be designed to facilitate a range of dining / function formats for the full Patron capacity including formal dining for made to order meals, cocktail format, casual seated dining for finger foods and snacks and full bar services suitable for making tailored drinks.

(iv) The open plan social area must also be capable of accommodating alternative use for Functions on Non-Event Days. Power and ICT Systems, audiovisual equipment and screens must be concealed in the ceiling and in the floor and in joinery as appropriate to their location, so that the services and equipment do not detract from the interior aesthetic of the room.

(n) (**Dry bar**) A dry bar standing area must be provided inside the glass line for Premium Product Patrons who wish to stand.

(o) (**Catering facilities**)

(i) The Coaches' Club must have the capacity to locally prepare, store and serve both hot and cold Catering Product.

(ii) A Satellite Production Kitchen facility suitable for preparation, cooking fresh, storage and service of Catering Product to the open plan social area within the club must be provided with Ready Access to a service lift and to the Coaches' Club and within a maximum service distance of 50m. Refer to Chapter D10 (Catering Facilities) of these Design Specifications for detailed requirements.

(iii) Within the Suite, the Coaches' Club must include a kitchenette with base and overhead storage cupboards, island units, a sink with splashback and a microwave. There must be sufficient access to electrical points within the Coaches' Club to accommodate all of its functions including for the steward to use the kitchenette, plug in reheat / heat maintain equipment, undertake cleaning and to support the Non-Event Day usage.

(p) (**Experience**) The Coaches' Club must achieve an atmosphere of exclusivity and intimacy with individual members and guests where the experience of the Catering Product and the quality of the space almost makes the outcome of any Event incidental to the total Event Day experience

(q) (**Interior fitout**) The interior fitout of the Coaches' Club, and in particular the fixtures, fitting and finishes and FF&E, must be stylish and contemporary, reflective of the exclusiveness of the product and pitched in between the level of the Chairman's Club and the Traditional Suites. Patron comfort must be considered in the selection of all furnishings.

(r) (**FF&E**)

(i) Hot and cold drinks, light meals and light snacks / finger foods will be consumed throughout the open plan social area of the Coaches' Club. FF&E selections and interior finishes within the Coaches' Club must be robust and easy to clean.

(ii) A mix of contemporary, high quality, fixed and occasional furniture must be provided throughout the Coaches' Club to suit the informal yet exclusive social environment of the club including:

A cocktail tables and high bar stools;

B regular height bar stools (at the bar);

C informal rectangular table and chair settings and other types of informal seating (e.g. lounges or multi-person ottomans); and

D fixed, stand-up, dry bar facilities at the glass line with the Seating Bowl.

(iii) Seating provision within the lounge and bar areas of the Coaches' Club must accommodate approximately 50% of Patrons at any one time.

(s) (**Branding**) The Coaches' Club must be capable of being branded by the Hirer at the entrance of the Coaches' Club and inside the Coaches' Club, such that the branding is easily and efficiently changeable for the purposes of a specific Event.

(t) (**Toilets**) Dedicated toilet facilities must be provided to service the Coaches' Club with Ready Access from the open plan social area of the club. These toilets must be located within the secure zone such that they are not accessible to General Admission Patrons. The toilet facilities must incorporate a very high standard of finish and amenity with tempered water to taps, individual urinals for men and powder room facilities with a full height mirror for females. These facilities must be appointed with high quality, contemporary and luxurious fixtures, fittings and finishes.

(u) (**Storage**) The Coaches' Club must have a lockable storage area (or areas) to store furnishings and items pertaining to the operation of the area, including marketing materials, audiovisual equipment and catering supplies, when not in use.

(v) (**AV Systems**)

(i) To facilitate the candid view of coaching activities, the Coaches' Club must incorporate:

A multiple large Displays for live streaming or Event network broadcast, in-house broadcast channels including special camera views and in-house IPTV feeds; and

B presentation technologies including an audiovisual projector with screen or a smart board for visual presentations, such as display of match up boards.

(ii) Other initiatives to promote a "fly on the wall' experience should be considered, including dedicated camera feeds from the Coaches' Box into the Coaches' Club.

(iii) Fixed audiovisual projection equipment must be provided in a suitable location to facilitate Event Day and Non-Event Day uses.

(iv) All audiovisual equipment, including the Displays, speakers and projection equipment must be integrated into the architectural design to form a seamless interior aesthetic. The speaker system within the toilet facilities must be able to receive and play back the Event radio commentary.

D9.4.3 Field Club

(a) (**Exclusivity and quality**) The Field Club is ranked high on the pricing continuum just below the Coaches' Club and is of a higher standard and price point than a Traditional Suite. The Field Club provides an "on the pitch" experience for fans that want to get up close to the action. A contemporary fitout with high quality but robust finishes must be provided that provides informal social setting similar to a nightclub.

(b) (**Capacity**) The Field Club must be designed to comfortably accommodate 300 Patrons. This Patron capacity must be accommodated in an informal social setting as described in clause D9.4.3(n) and for concurrent seating within the associated section of the Seating Bowl as described in paragraph (l)(i).

(c) (**Location**)

(i) The Field Club must be provided in the northern stand, nominally at Event Level, with a direct view of and interaction with the Home Teams' Players' Races and Home Teams' Players' Warm-up Room associated with each of the Home Teams' Change Rooms.

(ii) The front edge of the Field Club's open terrace area (described at paragraph (h)) should abut the Pitch Perimeter to facilitate the "on the pitch" experience (without interfering with sightlines for Patrons seated in the lower tier above).

(iii) The height difference between the top of the Playing Surface and the finished floor level of the open air terrace area of the Field Club must be no more than -500mm to provide a good viewing experience for the range of Premium Product Patrons using the Field Club, including IRUA and children and to allow Players to safely traverse the Field Club Players' Race.

(iv) As a consequence of location, a barrier must be provided at the front boundary of the Field Club to the Pitch Perimeter to discreetly discourage Patrons from attempting to access the Playing Surface. The barrier must be designed to minimise adverse impact on views to the Playing Surface from within the Field Club.

(d) (**Viewing criteria**)

(i) Each Seating Position for the Field Club must have a continuous, uninterrupted view of the Field Of Play and all Key Viewing Elements for all Events. Each Seating Position must also comply with the Sightline Criteria.

(ii) To optimise viewing of the Field Of Play from within the club, the glazing to the Field Club must provide a clear view in all lighting conditions, free from glare or other effects that might impair the view.

(iii) The view from open air terrace areas of the Field Club must include as much of the Seating Bowl as practical (envisaged as being 180 degrees) and views above and across to the adjacent Home Teams' Players' Races, allowing Patrons to view and experience as much of the atmosphere as practical.

(e) [*Not disclosed*]

(f) [*Not disclosed*]

(g) (**Reception and cloaking facilities**) A reception desk should be provided at the entry to the Field Club to accommodate concierge and cloaking services. The reception desk must be sized to allow for computer and write-up work space for three (3) concierge staff working concurrently. The desk must be located:

(i) to facilitate meeting and greeting Patrons on arrival;

(ii) to facilitate monitoring / controlling Patron entry and egress to/from the Field Club; and

(iii) with Direct Access to cloak storage facilities that are suitable for the storage of coats and umbrellas.

(h) (**Amenity**) The Field Club must:

(i) be a predominantly column free space. Where columns are necessary due to engineering requirements these must be carefully integrated into the interior design concept, located to minimise intrusion and must not impede on the functionality of the space for both its Event Day and Non-Event Day uses;

(ii) be an enclosed, air-conditioned space with integrated localised controls for air-conditioning, lighting and AV Systems;

(iii) have lighting dimming controls, with zoning within the room to suit the nature of the activities in different areas (e.g. the area for Viewing of Players' Warm-up should be able to be independently controlled to make this zone darker than the rest of the Field Club to avoid distraction to Players);

(iv) have generous provision and distribution of power and data points to facilitate flexible room use and accommodate all of the functions of the Field Club;

(v) have security access controls at all entry and exit points to the club; and

(vi) be able to be fully secured along its full perimeter with the Seating Bowl when not in use, at the transition to the open air terrace.

(i) (**Viewing of Players' Warm-up activities**)

(i) It must be possible for Premium Product Patrons in the Field Club to view the activities within each Home Teams' Players' Warm-up Room.

(ii) To minimise distraction to the Players and coaching staff, a glass wall must be provided for one way vision from the Field Club into each Home Teams' Players' Warm-up Room. It must be possible to open up sections of this wall to allow the audio from the Home Teams' Player's Warm-up Room to penetrate the Field Club to experience the intensity of the atmosphere in the Home Teams' Player's Warm-up Room.

(iii) There must be the capacity to promptly "black out" the Home Teams' Players' Warm-up Room from the Field Club both visually and audibly, at the Coaches' discretion. The solution should provide acoustic separation sufficient to ensure that the coaches' briefing to the team is not intelligible within the Field Club when implemented. This "black out" feature must also be effective to remove an association with the Field Club for a Home Teams' Players' Warm-up Room that is not in use.

(j) (**Viewing of media activities**) It must be possible to view activities within and receive and hear intelligible audio from the Media Interview Room and flash interviews conducted in the Media Booths outside the Home Teams' Players' Warm-up Rooms from within the Field Club. The viewing must be one-way to avoid distracting Media Personnel and interviewees.

(k) (**Field Club Players' Race**)

(i) It must be possible for Premium Product Patrons in the Field Club to line both sides of a semi-permanent Players' Race that runs through the middle of the Field Club (Field Club Players' Race) to watch the Players run out to the Field Of Play.

(ii) The Field Club Players' Race must:

A be connected to the Home Teams' Change Rooms;

B provide a safe surface and route for the Players to run out to the Field Of Play through the Field Club; and

C form a clearly designated pathway through the Field Club lounge area through use of delineated floor and ceiling finishes and temporary, moveable barriers.

(iii) It must be possible for injured or commiserating Players to enter the Home Teams' Change Rooms through the permanent Players' Race connected to their Home Teams' Change Room discretely without the need to traverse the Field Club.

(l) (**Seating within the Seating Bowl**)

(i) There must be a designated seat in the Seating Bowl to accommodate every Premium Product Patron using the Field Club.

(ii) The designated seats must:

A be located directly above the Field Club and in close proximity to the Home Team Interchange Bench, to support the notion that the Field Club Patrons are part of the Team;

B have Ready Easy to and from the Field Club, including for IRUA;

C for each Seating Position must satisfy the viewing criteria described at (d);

D provide additional comfort for Premium Product Patrons (over and above the comfort offered by the seating within the General Admission Areas of the Seating Bowl);

E be designed and configured to optimise sightlines to the Field Of Play and maximise exposure to the Home Team atmosphere / closeness to the Pitch; and

F be integrated into the strategy for Rectangular Reconfiguration of the Seating Bowl such that the Field Club is still able to be used for Rectangular Events.

(iii) The minimum seating standards which must be met for the seats in the Seating Bowl associated with the Field Club are described in Chapter D7 (Seating Bowl) of these Design Specifications.

(m) (**Universal Access**) Given the location of the designated seats for Field Club Patrons in the Seating Bowl and the required functionality to view activities occurring in adjacent areas to the Field Club, some floor level changes will need to be negotiated by Field Club Patrons. All floor level changes or separations between areas of the Field Club must be serviced by a dedicated vertical transport solution for the Field Club that caters for all Premium Product Patrons admitted to the Field Club, including IRUA.

(n) (**Social standing areas, lounge areas and bar facilities**)

(i) The Field Club must comprise a large indoor open plan area suitable to accommodate the Patron capacity in a range of dining / function formats as outlined in paragraph (ii) and a service bar area (or areas).

(ii) When not set up for formal dining, the open plan area must accommodate social standing areas, lounge areas and bar facilities that allow Patrons to mix in an informal environment, similar to the Club Lounges described in clause D9.4.7.

(iii) The social standing areas and lounge areas must achieve an atmosphere that continues the notion of the Premium Product Patron being connected with, or part of, the Home Team. This may be achieved through display of team branding and motivational imagery / words. There must be the capability to efficiently change the branding on a per Event basis so that it reflects the branding of the Home Team for the given match or fixture. Strong, contemporary architectural forms and fitout elements should be incorporated throughout this area so that it reads as a refined extension of the adjacent Home Teams' Change Rooms (i.e. the area continues to convey the strength and power of the Home Teams). The atmosphere should feel like an upmarket sports bar or nightclub.

(o) (**Open air terrace area**) The Field Club must incorporate an open air terrace area, preferably along its full width, in front of the indoor open plan area to provide an outdoor social area that enables Patrons to engage with the game at Pitch level.

(p) (**Dining and bar facilities**)

(i) The Field Club lounge must be designed to facilitate formal dining during an Event (for limited Event types) and formal dining on Non-Event Days for corporate or large private dinner functions for the full Patron capacity. In particular, the open plan social area of the Field Club must be designed to facilitate a range of dining modes for the full Patron capacity including formal dining for made to order meals, cocktail format, casual seated dining for finger foods and snacks and full bar services suitable for making tailored drinks.

(ii) The open plan social area must also be capable of accommodating alternative use for Functions on Non-Event Days. Power and ICT Systems, audiovisual equipment and screens must be concealed in the ceiling and in the floor and in joinery as appropriate to their location, so that the services and equipment do not detract from the interior aesthetic of the room.

(iii) The Field Club must be designed to accommodate entertainment of Premium Product Patrons admitted to the Field Club in a range of informal and formal dining modes and allow for free movement and interaction with Patrons in and around the Field Club.

(iv) The Field Club bar facilities must be designed to facilitate the service of hot and cold drinks and light snacks / finger foods, which may be ordered at the bar or via waitpersons. There must be the capacity to run the bar areas as full cash bars.

(q) (**Dry bars**) Dry bar standing areas must be provided in various locations throughout the Field Club to cater for Premium Product Patrons who wish to stand.

(r) (**Catering Facilities**)

(i) The Field Club must have the capacity to locally prepare, store and serve both hot and cold Catering Product.

(ii) A Satellite Production Kitchen suitable for preparation, cooking fresh, storage and service of Catering Product to the Field Club must be provided with Ready Access to a service lift and to the Field Club and within a maximum service distance of 50m. Refer to Chapter D10 (Catering Facilities) of these Design Specifications for detailed requirements.

(s) (**Experience**) The Field Club must promote an atmosphere of energy and excitement so that Premium Product Patrons experience the pre-game tension and warm-up activities, half-time interactions and the post-Event celebration and commiseration. There should be a sense that the Premium Product Patron is enjoying a unique experience and a feeling of being more intimately involved, through having a direct visual and aural connection with the Players and coaching staff and an ability to observe their physical activities and rituals.

(t) (**Interior fitout**) The interior fitout of the Field Club must have a contemporary, strong aesthetic to reflect the strength of the Players and the physicality of the activities being viewed. The look and feel of this area should be similar to a nightclub due to the furnishings and the lower lighting levels provided to aid viewing into the Players' Warm-up Room, Media Interview Room and Media Booths.

(u) (**FF&E**)

(i) Hot and cold drinks, light meals and light snacks and finger foods will be consumed throughout the open plan social / lounge areas and open air terrace areas of the Field Club. FF&E selections and interior finishes (particularly floor finishes) within the Field Club must be robust and easy to clean.

(ii) A mix of fixed furniture and occasional furniture must be provided throughout the Field Club to suit the informal social environment of the club including:

A cocktail tables and high bar stools within the social standing areas and the open terrace area;

B regular height bar stools (at the bar);

C informal rectangular table and chair settings and other types of informal seating (e.g. multi-person ottomans) within the lounge areas;

D informal fixed seating benches, fixed seating alcoves or fixed standing bar tables located at the perimeter / edges of the open

plan area of the Field Club to complement the nature of the food and beverage service and to maximise flexibility for different configurations of the Field Club;

E fixed, stand-up, dry bar facilities at the glass line with the Seating Bowl; and

F dining tables and chairs suitable for the alternate uses of the Field Club described in items (p)(i) and (z)(i).

(v) (**Branding**)

(i) The Field Club must be capable of being branded by the Hirer at the entrance of the Field Club and inside the Field Club, such that the branding is easily and efficiently changeable for the purposes of a specific Event.

(ii) Illuminated / electronic branding displays must be incorporated as part of the overall branding solution for this area given the low lighting levels within the Field Club. Consideration should be given to using a combination of individual Displays and arrays of Displays to enable a diversity of branding opportunities.

(w) (**Toilets**) Dedicated toilet facilities must be provided to service the Field Club with Direct Access from the lounge areas. These toilets must be located within the secure zone such that they are not accessible to General Admission Patrons. The toilet facilities must incorporate a very high standard of finish and amenity with tempered water to taps, individual urinals for men and powder room facilities with a full height mirror for females. These facilities must be appointed with high quality, contemporary fixtures, fittings and finishes.

(x) (**Storage**) The Field Club must have a lockable storage area (or areas) to store furnishings and items pertaining to the operation of the area, including marketing materials, audiovisual equipment and catering supplies, when not in use.

(y) (**AV Systems**)

(i) To facilitate connectivity with the Players and to build on the “sports bar” atmosphere, the Field Club must incorporate multiple large Displays for live streaming or Event network broadcast, in-house broadcast channels including special camera views and in-house IPTV feeds. Other initiatives to promote a “part of the team” experience should be considered, including dedicated camera feeds from the Home Teams’ Players’ Warm-up Rooms into the Field Club.

(ii) Fixed audiovisual projection equipment must be provided in a suitable location to facilitate Event Day and Non-Event Day uses.

(iii) All audiovisual equipment, including the Displays, speakers and projection equipment must be integrated into the architectural design to form a seamless interior aesthetic. The speaker system within the toilet facilities must be able to receive and play back the Event radio commentary.

(z) (**Use of the Field Club for Cricket Events**) There are two (2) potential uses of the Field Club for Cricket Events that must be considered in the design.

(i) (**Use as a Players’ dining room**) The Field Club must be able to accommodate up to fifty (50) people when used in this capacity in a formal, seated dining environment, with the ability for the teams to dine together or separately as desired.

(ii) (**Use as a Premium Product**) The Field Club may be used as a Premium Product for some Cricket Events. It is recognised that the Cricket Sightscreens may place a limitation on this use however it is desirable that as much Field Club frontage as is possible retains a direct view of the Pitch to facilitate this use.

D9.4.4 Suites

(a) (**Suite types**)

(i) Five (5) Suite types must be provided:

A the Coaches' Club, described at clause D9.4.2;

B Traditional Suites, offering an intimately scaled, semi-formal environment at an elevated position within the Stadium to allow an excellent viewing angle to the Pitch;

C Social Suites, offering a semi-formal environment, at an elevated position within the Stadium that allows an excellent viewing angle to the Pitch, which is suitable for larger social groups that still desire the intimacy of a Suite as opposed to a club or function room;

D Field Suites, offering an intimately scaled, semi-formal environment as a Field Of Play side experience; and

E Field Social Suites, offering a Field Of Play side experience, which is suitable for larger social groups that still desire the intimacy of a Suite as opposed to the Field Club.

(b) (**Total Suite capacity**)

(i) A minimum capacity of 1,612 Premium Product Patrons must be accommodated within the range of Suites provided, with each Patron having a Seating Position within the section of the Seating Bowl associated with the Suite.

(ii) A range of Suites of varying sizes and capacities must be provided to accommodate a minimum of 1,612 Patrons in Suites. The Suite mix must include:

A 1 x 48 person capacity Coaches' Club, as described at clause D9.4.2; and

B a reasonable mix of twelve (12), sixteen (16) and twenty four (24) person capacity Suites; and

C a reasonable mix of Field Suites, Field Social Suites, Traditional Suites and Social Suites.

(c) (**Preferred Suite mix**) The following is provided as a guide with respect to the preferred breakdown of Suite types:

Suite Type	Quantity	Capacity (No. of Patrons)	Total Capacity (No. of Patrons)
Coaches' Club	1	48	48
Traditional Suites	49	12	588
	31	16	496
	10	24	240
Social Suites	6	24	144
Field Suites	4	12	48
Field Social Suites	2	24	48
			1,612

(d) (**Exclusivity and quality**) The Traditional Suites and Social Suites are ranked on the pricing continuum just below the Field Club, with the Field Suites and Field Social Suites ranked directly below these.

(e) (**Design flexibility**)

(i) It is highly desirable that some of the twenty four (24) person capacity Suites are designed such that they are capable of being operated as two (2) independent twelve (12) person capacity suites via an acoustic operable wall. The kitchenette and Catering Product serving facilities should be designed to support a divided suite that does not require the Patrons of each suite to mix. Independent room access must also be provided.

(ii) Suites must be designed on a modular grid to accommodate expansion or amalgamation of Suites to create larger capacity space, including larger Suites or club type Premium Products.

(iii) The Field Suites and Field Social Suites should be designed to allow for these Premium Products to be adapted into a Field Club over time.

(f) (**Location**)

(i) (**Suites generally**) The location for all Suites must afford good quality viewing with continuous, uninterrupted views of the entire Field Of Play as a minimum for all Seating Positions in the Seating Bowl.

(ii) (**Traditional Suites and Social Suites**) The Traditional Suites and the Social Suites must be located on the northern and southern sides of the Stadium between the 50m arcs of the Field Of Play for AFL at mid to upper tier level (with a preference for level 3).

(iii) (**Field Suites and Field Social Suites**)

A The Field Suites and the Field Social Suites must be located on the northern and southern sides of the Stadium between the 50m arcs of the Field Of Play for AFL, nominally at Event level. The front edge of the terrace to each Field Suite and Field Social Suite should abut the Pitch Perimeter to facilitate the “on the pitch” experience.

B The height difference between the top of the Playing Surface and the finished floor level of the open air terrace area of the Field Suites and the Field Social Suites must be no more than -500mm to provide a good viewing experience for the range of Premium Product Patrons using the Field Suites and the Field Social Suites, including IRUA and children and to allow Players to safely traverse the Field Club Players’ Race.

C As a consequence of location, a barrier must be provided at the front boundary of the Field Suites and the Field Social Suites to the Pitch Perimeter to discreetly discourage Patrons from attempting to access the Playing Surface. The barrier must be designed to minimise adverse impact on views to the Playing Surface from within the Field Suites and the Field Social Suites.

(g) (**Viewing criteria**)

(i) Each Seating Position for the Field Suites, Field Social Suites, Traditional Suites and Social Suites must have a continuous, uninterrupted view of the Field Of Play and all Key Viewing Elements for all Events. Each Seating Position must also comply with the Sightline Criteria.

(ii) To optimise viewing of the Field Of Play from within the Field Suites, Field Social Suites, Traditional Suites and Social Suites, the glazing to the Suites must provide a clear view in all lighting conditions, free from glare or other effects that might impair the view.

(iii) The view from open air terrace areas of the Field Suites and Field Social Suites must include as much of the Seating Bowl as practical (envisaged as being 180 degrees) and views above and across adjacent Suites, allowing Patrons to view and experience as much of the atmosphere as practical.

(h) (**Proximity**) There must be Easy Access from the designated car parking area situated on the Community Recreation Oval and from the Controlled Area areas to the Suites with minimal requirement to circulate once inside the Stadium to find Vertical Transportation.

(i) (**Entry**) Dedicated Premium Entry Points at the Event Level and at the Controlled Area level must be provided to facilitate entry into the Stadium for Premium Product Patrons, including Patrons of the Suites. Once inside the Stadium, there must be Ready Access from the Premium Entry Points to Vertical Transportation serving all levels which accommodate Suites.

(j) (**Cloaking facilities**) A cloak cupboard suitable for the storage of coats and umbrellas must be provided in each Traditional Suite, Social Suite and Field Suite. Cloaking facilities for the Coaches' Club are described in clause D9.4.2(h).

(k) (**Amenity**) Each Suite must:

(i) have its own entrance door and individual lockset, with permanent suite numbering adjacent to the door;

(ii) function as a suite together with the associated designated seating in the Seating Bowl;

(iii) be a column free space;

(iv) have a recessed ceiling suitable for mounting Displays at ceiling level;

(v) have full width windows, as a minimum from bench height to ceiling, overlooking the Field Of Play at the threshold to the Seating Bowl, with a dry bar bench positioned inside the window line for the full width;

(vi) be internally laid out to provide opportunity for Patrons to view the Event from inside the Suite;

(vii) be an enclosed, air-conditioned space with integrated localised controls for air-conditioning, lighting and audiovisual systems;

(viii) have a telephone located in a suitable position for use by the steward;

(ix) have lighting dimming controls;

(x) have generous provision and distribution of power and data points to facilitate flexible room use and accommodate all of the functions of the Suite;

(xi) have wireless networking (wi-fi) access;

(xii) have security access controls at the entrance to the Suite level / area and at the entry door to each Suite;

(xiii) have acoustic separation from the adjacent Suite in accordance with the requirements of Part E (Technical Brief) of these Design Specifications;

(xiv) in the case of Field Suites and Field Social Suites:

A be able to be fully secured along its full perimeter with the Seating Bowl when not in use; and

B have an open air terrace area, preferably along its full width, that provides an outdoor social area to view the Event; and

(xv) have blinds at the glass line to the Seating Bowl where necessary for glare and solar control.

(l) Consideration should be given to providing openable windows at the glass line to the Seating Bowl for some Suites types to deliver enhanced atmosphere within the Suites.

(m) (**Special design requirements**)

(i) (**Field Suites and Field Social Suites**) The Field Suites and Field Social Suites must incorporate an open air terrace area, preferably along their full width, in front of the indoor open plan area to provide an outdoor social area that enables Patrons to engage with the game at Pitch level in a manner similar to the Field Club, but on a more intimate scale.

(ii) (**Social Suites and Field Social Suites**) These larger style Suites must incorporate a cash bar capable of serving hot and cold (alcoholic and non-alcoholic) beverages and hot and cold bar food / snacks, bar stools, cocktail tables and high bar stools and lounge areas, similar but on a smaller scale to, the Field Club.

(n) (**Seating within the Seating Bowl**) The seating provisions in this clause D9.4.4 apply to all Suites unless stated otherwise, and with the exception of the Coaches' Club (the requirements for which are described in clause D9.4.2):

(i) There must be a designated seat in the Seating Bowl to accommodate every Premium Product Patron using the Suites.

(ii) The designated seats in the Seating Bowl must:

A be in tiered rows and be segregated from the Seating Positions within the Seating Bowl associated with adjacent Suites, General Admission Areas and other Premium Product Areas such that they are only accessible by Patrons of the Suite;

B in the case of the Traditional Suites and the Social Suites, be located directly in front of the glass line of the Suite they serve (without conflicting with sightlines to the Field Of Play from inside the Suite) and have Direct Access to/from the Suite they serve;

C in the case of the Field Suites and the Field Social Suites, be located directly above the Suite they serve in the lower tier with separation from General Admission seating, and have Easy Access to/from the Suite they serve;

D provide a very high to high level of Patron comfort consistent with the Suite type;

E for each Seating Position must satisfy the viewing criteria described at (g);

F in the case of the Field Suites and the Field Social Suites, be designed and configured to maximise closeness to the Pitch; and

G in the case of the Field Suites and the Field Social Suites, be integrated into the strategy for Rectangular Reconfiguration of the Seating Bowl such that the Field Suites and Field Social Suites are still able to be used for Rectangular Events.

(iii) The minimum seating standards which must be met for the seats in the Seating Bowl associated with the Suites are described in clause D7.4.8 for the Traditional Suites and Field Suites.

(o) (**Dining and bar facilities**) The dining and bar facilities provisions in this clause apply to the Traditional Suites and the Social Suites. Similar provisions are described in clause D9.4.2(m) for the Coaches' Club and clause D9.4.3(p) for the Field Suites.

(i) Each Suite must be designed to accommodate a range of informal and formal dining modes while also allowing free movement and interaction with Patrons in and around the Suite.

(ii) Irrespective of the Suite capacity, a minimum of 12 Patrons must be able to be accommodated in a formal dining environment.

(iii) The bar facilities Field Social Suites must be designed to facilitate the service of hot and cold drinks and light snacks / finger foods, which may be ordered at the bar or via waitpersons. There must be the capacity to run the bar areas as full cash bars.

(p) (**Dry bar**) A dry bar standing area must be provided inside the glass line of each Suite for Premium Product Patrons who wish to stand.

(q) (**Catering facilities**) The catering facilities provisions in this clause D9.4.4(q) apply to the Traditional Suites, the Social Suites, the Field Suites and the Field Social Suites.

(i) The Suite levels must have the capacity to locally prepare, store, serve and finish both hot and cold Catering Product. The Field Suites and Field Social Suites, which are to be located nominally on the Event Level, may be services by the Primary Production Kitchen where the Point to Service does not exceed 50m.

(ii) Kitchens suitable for undertaking limited preparation and finishing, storage, reheating and service of Catering Product must be provided on the Suite level with Ready Access to a service lift and to the Suites, and within a maximum service distance of 50m. This capacity must include the requirement to accommodate multiple courses and unique dietary requirements. Refer to Chapter D10 (Catering Facilities) of these Design Specifications for detailed requirements.

(iii) Each Suite must include a kitchenette with base and overhead storage cupboards, island units, a sink with splashback, filtered water and boiling water points, refrigerator, dishwasher and a microwave. There must be sufficient access to electrical points within each Suite to accommodate all of its functions including for the steward to use the kitchenette, plug in reheat / heat maintain equipment, undertake cleaning and to support the Non-Event Day usage.

(r) (**Experience**) The Suites must achieve an atmosphere of exclusivity and intimacy with individual members and guests where the experience of intimate socialisation, the Catering Product and the quality of the space almost makes the outcome of any Event incidental to the total Event Day experience. The Social Suites and Field Social Suites should feel like an intimate, upmarket lounge / club.

(s) (**Interior fitout**) The interior fitout of the Suites, and in particular the fixtures, fitting and finishes and fixed joinery, must be stylish and contemporary, robust and reflective of the exclusiveness of the product. Patron comfort must be considered in the selection of all furnishings and FF&E. Two distinct interior fitout types must be provided, with each comprising a coordinated palette of finishes, fixed joinery and FF&E:

(i) a high quality fitout reflecting a formal, business-like ethos must be provided for the Traditional Suites whilst a high quality;

(ii) a more informal fitout must be provided for the Social Suites, Field Suites and Field Social Suites. Patron comfort must be considered in the selection of all furnishings; and

(iii) hot and cold drinks, multi-course dinners, light meals and light snacks / finger foods will be consumed within the Suites. FF&E selections and interior finishes (particularly floor finishes) within the Suites must be robust and easy to clean.

(t) (**Furniture**) Three (3) different interior design furniture options must be developed by Project Co, each comprising a coordinated set of furniture for the entire Suite. Each Suite must be designed adopting one (1) of the three (3) interior design furniture options and, so far as is possible having regard to the total number of Suites, an equal number of Suites must adopt each interior design furniture option. The interior design furniture option for each Suite must be consistent with the respective interior fitout for that Suite

(u) (**Branding**) All Suites must be capable of being branded by the Hirer at the entrance of, and inside the Suite, such that the branding is easily and efficiently changeable for the purposes of a specific Event.

(v) (**Toilets**) Dedicated toilet facilities must be provided to service the Suites with Ready Access from each individual Suite. These toilets must be located within a secure zone such that they are not accessible to General Admission Patrons. The toilet facilities must incorporate a high standard of finish and amenity with tempered water to taps, individual urinals for men and a full length mirror for females. These facilities must be appointed with high quality, contemporary and fixtures, fittings and finishes.

(w) (**Storage**) The Suites must have a lockable storage area (or areas) to store furnishings and items pertaining to the operation of the area, including marketing materials, audiovisual equipment and catering supplies, when not in use.

(x) (**AV Systems**)

(i) The Suites must incorporate Displays and audio quality speakers mounted at ceiling level for live streaming or Event network broadcast, in-house broadcast channels including special camera views and in-house IPTV feeds. Displays must be appropriately sized and provided in appropriate quantities to suit the capacity of the Suite to enable good viewing by Patrons from within the Suite.

(ii) Presentation technologies, including a ceiling mounted audiovisual projector with screen for visual presentations must be provided in all Social Suites and Field Social Suites. Fixed audiovisual projection equipment must be provided in a suitable location to facilitate Event Day and Non-Event Day uses.

(iii) All audiovisual equipment, including the Displays, speakers and projection equipment must be integrated into the architectural design to form a seamless interior aesthetic.

D9.4.5 Open Corporate Reserves

(a) (**OCR types**) There are four (4) types of Open Corporate Reserves (OCRs) which must be provided comprising designated seating areas in the Seating Bowl which are split into small, segregated blocks of between six (6) seat and twelve (12) seats to provide an open air, informal, seated and semi-exclusive social environment for Premium Product Patrons.

(b) (**OCR total capacity**) A minimum capacity of 1,250 Premium Product Patrons must be accommodated in OCRs.

(c) (**Preferred OCR mix**) The following is provided as a guide with respect to the preferred breakdown of OCRs:

OCR Type	Quantity	Capacity (No. of Patrons)	Total Capacity (No. of Patrons)
OCR type 1	38	6	228
OCR type 2	60	8	480
OCR type 3	38	10	380
OCR type 4	14	12	168
			1,256

(d) (**Exclusivity and quality**) The OCRs are ranked midway on the pricing continuum below the Field Suites and Field Social Field Suites and above the Sky View Lounge.

(e) (**Design flexibility**) The Governance Agency may wish to replace the OCR provision in the future as other Premium Products become in greater demand. The OCRs must be designed to be converted to conventional row seating by removing the barriers that delineate each OCR block (as described at paragraph (h)).

(f) (**Location**) The OCRs must be located on the northern and southern sides of the Stadium above the lower tier between the 50m arcs of the Field Of Play for AFL.

(g) (**Viewing criteria**) Each Seating Position for the OCRs must have a continuous, uninterrupted view of the Field Of Play and all Key Viewing Elements for all Events. Each Seating Position must also comply with the Sightline Criteria.

(h) (**Proximity**) There must be Easy Access to the OCRs from the Controlled Area. Access into the OCRs must not be provided from a General Admission Concourse.

(i) (**Amenity**) A delineated barrier must be provided between each of the OCRs and between the OCRs and the General Admission area. The delineating barrier must be able to be removed to allow for flexibility of capacity of the OCRs.

(j) (**Seating within the Seating Bowl**) The minimum seating standards described in clause D7.4 apply to all Seating Positions within the OCRs. Each OCR must also have:

(i) space for storage of an esky (to be supplied by others); and

(ii) a fold out drinks table for each Seating Position.

(k) (**Dining**) From within each OCR, Premium Product Patrons must be able to communicate directly with the Catering Operator to order Catering Products to be delivered to their seat.

(l) (**Branding**) All OCRs must be capable of being branded by the Hirer at the entrance of the OCR, such that the branding is easily and efficiently changeable for the purposes of a specific Event.

(m) (**Toilets**) Premium Product Patrons in the OCRs must have Easy Access to toilet facilities on the Concourse which are dedicated for the use of Premium Product Patrons, but do not necessarily serve the OCRs exclusively.

D9.4.6 Function Rooms

(a) (**Capacity**)

(i) Three (3) contiguous Function Rooms of equal capacity must be provided to service a total minimum capacity of 1,500 Premium Product Patrons.

(ii) It must be possible to operate two (2) of the Function Rooms together as a venue for 1,000 Premium Product Patrons.

(iii) It must be possible to operate all three (3) of the Function Rooms together as a venue for 1,500 Premium Product Patrons.

(iv) One (1) Function Room must have the ability to be used as two smaller dining rooms that are capable of concurrent operation, through provision of an acoustic operable wall, zoned Engineering Services, independent room access and egress, access to toilet facilities and emergency egress that complies with all relevant Quality Standards.

(b) (**Viewing criteria**) The Function Rooms must be located to maximise views of the city skyline and river.

(c) (**Location**)

(i) The Function Rooms must be located together and in a location such that they can operate on Non-Event Days with only minimal activation of the Stadium.

(ii) It is desirable that one (1) Function Room is adjacent to a Club Lounge to provide increased flexibility for Non-Event Day uses.

(d) (**Proximity**)

(i) There must be Easy Access from the Controlled Area areas to the Function Rooms with minimal requirement to circulate once inside the Stadium to find Vertical Transportation.

(ii) There must be Easy Access from the Stadium Carpark and from street parking and any other permanent parking in the Sports Precinct that will be used on Non-Event Days.

(iii) One Function Room must as a minimum have Easy Access to a Club Lounge.

(e) (**Entry**) Dedicated Premium Entry Points at the Event Level and at the Controlled Area level must be provided to facilitate entry into the Stadium for Premium Product Patrons, including Patrons of the Function Rooms. Once inside the Stadium, there must be Ready Access from the Premium Entry Points to Vertical Transportation serving the Function Rooms.

(f) (**Cloaking facilities**) A cloak cupboard suitable for the storage of coats and umbrellas must be provided inside the entrance of each Function Room.

(g) (**Amenity**) Each Function Room must:

(i) be a predominantly column free space. Where columns are necessary due to engineering requirements these must be carefully integrated into the interior design concept, located to minimise intrusion and must not impede on the functionality of the space for both its Event Day and Non-Event Day uses;

(ii) have an open plan configuration;

(iii) have dual room access;

(iv) have permanent room naming and numbering adjacent to the door;

(v) function as a Premium Product together with the associated designated seating in the Seating Bowl;

(vi) have all Engineering Services zoned to allow individual control from each room when divided;

(vii) be an enclosed, air-conditioned space with integrated localised controls for air-conditioning, lighting and audiovisual systems;

(viii) have lighting dimming controls;

(ix) have generous provision and distribution of power and data points to facilitate flexible room use and accommodate all of the functions of the Function Room;

(x) have wireless networking (wi-fi) access;

(xi) have security access controls at the entrance to the Function Room;

(xii) have acoustic separation from the adjacent Function Room (or rooms in the case of the end locations) in accordance with the requirements of Part E (Technical Brief) of these Design Specifications to facilitate concurrent operation of al Function Rooms; and

(xiii) have recessed ceiling pelmets with motorised blinds provided to all external windows (including at the glass line to the Seating Bowl where this occurs) to provide a high degree of solar control (i.e. ranging from control of glare for Patrons to total blackout to support alternative uses of the Function Rooms on Non-Event Days).

(h) (**Seating within the Seating Bowl**)

(i) There must be a designated seat in the Seating Bowl to accommodate every Premium Product Patron that has access to a Function Room. The designated seats must:

A for each Seating Position, have an uninterrupted view of the Field Of Play and satisfy the viewing criteria described in clause D9.4.6(b);

B have Ready Access to/from the Function Rooms, including for IRUA; and

C be designed and configured to optimise sightlines to the Field Of Play.

(ii) The minimum seating standards which must be met for the seats in the Seating Bowl associated with the Function Rooms are described in Chapter D7 (Seating Bowl) of these Design Specifications.

(i) (**Dining**)

(i) The Function Rooms must include an open plan formal dining area with external views to the surrounding Sports Precinct, the city and the Swan River maximised.

(ii) The open plan formal dining area in each Function Room must be designed to facilitate operation of a fixed, multi-course menu dining service and capable of servicing 500 Premium Product Patrons for seated formal dining at the same time.

(iii) The Function Rooms will at times be used in cocktail dining mode with hot and cold drinks, light snacks and finger foods available.

(iv) The open plan formal dining area must be fitted with an acoustic operable wall to facilitate division of the space into smaller function areas to support Non-Event Day uses.

(v) The Function Rooms must be capable of accommodating alternative uses for different function formats for Functions on Non-Event Days, including Meetings, Conferences, corporate parties and private parties such as weddings. Power and ICT Systems, audiovisual equipment and screens must be concealed in the ceiling and in the floor and in joinery as appropriate to their location, so that the services and equipment do not detract from the interior aesthetic of the room.

(vi) Each Function Room must have dedicated bar facilities which must be designed to facilitate the service of hot and cold drinks and light snacks / finger foods, which may be ordered at the bar or via waitpersons. There must be the capacity to run the bar areas as full cash bars.

(j) (**Catering Facilities**)

(i) The Function Rooms must have the capacity to locally prepare, cook fresh, store and serve both hot and cold Catering Product of superior quality.

(ii) A Satellite Production Kitchen suitable for preparation, cooking fresh, storage and service of Catering Product to the dining and lounge areas must be provided with Ready Access to a service lift and to the Function Rooms and within a maximum service distance of 50m. Refer to Chapter D10 (Catering Facilities) of these Design Specifications for detailed requirements.

(k) (**Experience**)

(i) On Event Days, the Function Rooms must achieve an atmosphere of inclusiveness and excitement for fans. Light and bright spatial quality, Displays and quality audio are envisaged as key elements in delivering the Event Day atmosphere.

(ii) For Non-Event Day uses, the Function Rooms should achieve an atmosphere similar to that of a hotel/resort conference facility or ballroom.

(l) (**Interior fitout**) The interior fitout of the Function Rooms should be relatively restrained to enable the rooms to be 'dressed up' for their many different uses. The fitout should utilise timeless finishes, be comfortable, spacious and of high aesthetic quality.

(m) (**FF&E**)

(i) Formal sit down dinners will be held in the in the open plan Function Rooms. Dining tables and chairs must be provided for these rooms and should accommodate different sized groups.

(ii) The FF&E for the Function Rooms must be comfortable, easily cleanable, casual, restrained and of good aesthetic quality. Flexibility for configuration of different layouts and Patron comfort must be key considerations in the selection of all furnishings.

(iii) Use of soft furnishings or acoustic panelling must be considered within the Function Rooms to mitigate reverberation effects.

(n) (**Branding**) All Function Rooms must be capable of being branded by the Hirer at the entrance of, and inside the Function Rooms, such that the branding is easily and efficiently changeable for the purposes of a specific Event.

(o) (**Toilets**) Dedicated toilet facilities must be provided to service the Function Rooms with Ready Access from each Function Room. These toilets must be located within a secure zone such that they are not accessible to General Admission Patrons. The toilet facilities must incorporate a high standard of finish and amenity with tempered water to taps, individual urinals for men and a full length mirror for females. These facilities must be appointed with high quality, contemporary and fixtures, fittings and finishes.

(p) (**Storage**)

(i) The Function Rooms must have a lockable general storage area (or areas) to store furnishings and items pertaining to the operation of the area, including marketing materials, audiovisual equipment and catering supplies, when not in use.

(ii) A dedicated furniture storage room must be provided to complement the operation of the Function Rooms.

(q) (**AV Systems**)

(i) The Function Rooms must incorporate Displays and audio quality speakers mounted at ceiling level for live streaming or Event network broadcast, in-house broadcast channels including special camera views and in-house IPTV feeds. Displays must be appropriately sized and provided in appropriate quantities to suit the capacity of the Function Rooms to enable good viewing by Patrons throughout the Function Rooms.

(ii) Audiovisual projection equipment must be provided in suitable locations to facilitate Event Day and Non-Event Day uses having regard for how the Function Rooms may be configured.

(iii) Displays and speakers must be provided within the Function Rooms for televising the Event (with synchronous audio) and for branding purposes, including as a backdrop for speakers / presenters.

(iv) A portable speaker's / presenter's podium or stage and microphone must be provided for each Function Room for use in multiple appropriately serviced locations within the room.

(v) All audiovisual equipment, including the Displays, speakers and projection equipment must be integrated into the architectural design to form a seamless interior aesthetic.

D9.4.7 Club Lounges

(a) (**Exclusivity and quality**) The Club Lounges are elevated indoor, semi-formal lounge areas that offer breathtaking views of the city skyline and river or views of the Playing

Surface. For the purpose of AFL Events, the Club Lounges are below the midpoint of the pricing continuum and ranked under the Sky View Lounge, and will be a casual individual or corporate social facility.

(b) (**Capacity**) Two (2) Club Lounges of equal capacity must be provided to service a total minimum capacity 1,250 Patrons.

(c) (**Viewing criteria**) The Club Lounges must be located to maximise views of the city skyline and river or views of the Playing Surface. A concurrent view of both is desirable.

(d) (**Location**) One (1) Club Lounge should be located adjacent to a Function Room in the mid to upper tier to provide increased flexibility for Non-Event Day uses.

(e) (**Proximity**)

(i) There must be Easy Access from the Controlled Area areas to the Club Lounges with minimal requirement to circulate once inside the Stadium to find Vertical Transportation.

(ii) There must be Easy Access from the Stadium Carpark and from street parking and any other permanent parking in the Sports Precinct that will be used on Non-Event Days.

(iii) One (1) Club Lounge must as a minimum have Easy Access to a Function Room.

(f) [*Not disclosed*]

(g) (**Cloaking facilities**) A cloak cupboard suitable for the storage of coats and umbrellas must be provided inside the entrance of each Club Lounge.

(h) (**Amenity**) Each Club Lounge must:

(i) be provided as an open plan, predominantly column free space. Where columns are necessary due to engineering requirements these must be carefully integrated into the interior design concept, located to minimise intrusion and must not impede on the functionality of the space for both its Event Day and Non-Event Day uses;

(ii) have permanent room naming and numbering adjacent to the door;

(iii) function as a Premium Product together with the associated designated seating in the Seating Bowl;

(iv) be an enclosed, air-conditioned space with integrated localised controls for air-conditioning, lighting and AV Systems;

(v) have lighting dimming controls;

(vi) have generous provision and distribution of power and data points to facilitate flexible room use and accommodate all of the functions of the Club Lounge;

(vii) have wireless networking (wi-fi) access;

(viii) have security access controls at the entrance to the Club Lounge;

(ix) have acoustic separation from adjacent rooms (including the adjacent Function Room) in accordance with the requirements of Part E (Technical Brief) of these Design Specifications; and

(x) have motorised blinds to external windows (where provided) to provide a high degree of solar control (i.e. ranging from control of glare for Patrons to total blackout to support alternative uses of the Club Lounge on Non-Event Days).

(i) (**Seating within the Seating Bowl**)

(i) There must be a designated seat in the Seating Bowl to accommodate every Premium Product Patron that has access to a Club Lounge. The designated seats must:

A for all Seating Positions, facilitate continuous, uninterrupted views of the Field Of Play and all Key Viewing Elements for all Events and meet all Sightline Criteria in accordance with Part D (Functional Brief) of these Design Specifications;

B have Ready Access to/from the Club Lounges, including for IRUA; and

C be designed and configured to optimise sightlines to the Field Of Play.

(ii) The minimum seating standards which must be met for the seats in the Seating Bowl associated with the Club Lounges are described in Chapter D7 (Seating Bowl) of these Design Specifications.

(j) (**Informal dining and bar facilities**)

(i) The Club Lounges must have dedicated bar facilities which must be designed to facilitate the service of hot and cold drinks and light snacks / finger foods, which may be ordered at the bar or via waitpersons. There must be the capacity to run the bar areas as full cash bars.

(ii) The Club Lounges must be capable of accommodating alternative uses for different function formats for Functions on Non-Event Days, including corporate and private functions or parties. Power and ICT Systems, audiovisual equipment and screens must be concealed in the ceiling, in the floor and in joinery as appropriate to their location, so that the services and equipment do not detract from the interior aesthetic of the room.

(k) (**Catering facilities**)

(i) The Club Lounges must have the capacity to locally prepare, cook fresh, store and serve a limited range of hot and cold Catering Product.

(ii) A Satellite Production Kitchen suitable for preparation, cooking fresh, storage and service of Catering Product to the dining and lounge areas must be provided with Ready Access to a service lift and to the Club Lounges and within a maximum service distance of 50m. Refer to Chapter D10 (Catering Facilities) of these Design Specifications for detailed requirements.

(l) (**Experience**) On Event Days, the Club Lounges must achieve an atmosphere similar to an upmarket sports bar. Lighting, quality audio and Displays are envisaged as key elements in delivering the Event Day atmosphere.

(m) (**Interior fitout**) The fitout design of the Club Lounges should be casual and sophisticated, reflective of an upmarket sports bar.

(n) (**FF&E**)

(i) A combination of robust FF&E including communal tables and benches, internal and external lounge seating, ottomans, arm chairs and side tables, cocktail tables and high bar stools, regular height bar stools (at the bar) and multiple Displays must be provided.

(ii) Fixed, stand-up, dry bar facilities should be provided at the glass line with the Seating Bowl (to the extent that the Club Lounges overlook the Seating Bowl).

(iii) Seating provision within the lounge and bar areas of the Club Lounges must accommodate approximately 25% of Patrons at any one time.

(iv) The FF&E for the Club Lounges must be comfortable, easily cleanable, casual, contemporary and of good aesthetic quality.

(o) (**Branding**)

(i) All Club Lounges must be capable of being branded by the Hirer at the entrance of, and inside the Club Lounges, such that the branding is easily and efficiently changeable for the purposes of a specific Event.

(ii) The Governance Agency will consider sponsorship opportunities for the Club Lounges. Accordingly, the entry and interior design should give consideration to how sponsor branding can be architecturally integrated.

(p) (**Toilets**) Dedicated toilet facilities must be provided to service the Club Lounges with Ready Access from each Club Lounge. These toilets must be located within a secure zone such that they are not accessible to General Admission Patrons. The toilet facilities must incorporate a high standard of finish and amenity with tempered water to taps, individual urinals for men and a full length mirror for females. These facilities must be appointed with high quality, contemporary and fixtures, fittings and finishes.

(q) (**Storage**) The Club Lounges must have a lockable storage area (or areas) to store furnishings and items pertaining to the operation of the area, including marketing materials, audiovisual equipment and catering supplies, when not in use.

(r) (**AV Systems**)

(i) The Club Lounges must incorporate Displays and audio quality speakers mounted at ceiling level and on walls for live streaming or Event network broadcast, in-house broadcast channels including special camera views and in-house IPTV feeds. Displays must be appropriately sized and provided in appropriate quantities to suit the capacity of the Club Lounges to enable good viewing by Patrons throughout the Function Rooms.

(ii) Mobile audiovisual equipment will be used in the Club Lounges.

D9.4.8 Sky View Lounge

(a) (**Exclusivity and quality**) The Sky View Lounge is an elevated outdoor/ indoor seating area that offers breathtaking views of the city skyline and river as well as the Field Of Play. There must be some shade cover and protection from prevailing winds and rain including cover from above and to the side for the outdoor portion of the lounge. For the purpose of AFL Events, the Sky View Lounge is just below the midpoint of the pricing continuum and may be considered as a premium upgrade membership offering.

(b) (**Capacity**) The Sky View Lounge must be designed to comfortably accommodate 300 Patrons. This Patron capacity must be accommodated in an informal social setting that has an indoor and outdoor component.

(c) (**Location**)

(i) The Sky View Lounge should be located on level 4 behind goal line on west side of the Stadium or the best possible location to take advantage of the city/ river vista, whilst overlooking the Field Of Play. It must be accessible off a General Admission Concourse.

(ii) It is expected that the Sky View Lounge will operate on Non-Event Days as a Function space. As such, The Sky View Lounge must also be able to operate on Non-Event Days with only minimum activation of the Stadium.

(d) (**Proximity**)

(i) There must be Easy Access between the Sky View Lounge and seating within the Seating Bowl associated with Premium Product Areas.

(ii) There must be Easy Access between the Sky View Lounge and the Controlled Area. A private entrance and elevator should be considered for easy access on Non-Event Days.

(e) (**Amenity**) The Sky View Lounge must:

(i) be provided as an open plan, predominantly column free space. Where columns are necessary due to engineering requirements these must be carefully integrated into the interior design concept, located to minimise

intrusion and must not impede on the functionality of the space for both its Event Day and Non-Event Day uses;

(ii) have permanent room naming and numbering adjacent to the door;

(iii) function as a Premium Product together with the associated designated seating in the Seating Bowl;

(iv) for the enclosed portion to be air-conditioned space with integrated localised controls for air-conditioning, lighting and audiovisual systems;

(v) for the outside portion to have shade cover and protection from prevailing winds and rain including cover from above and to the side;

(vi) have lighting dimming controls;

(vii) have generous provision and distribution of power and data points to facilitate flexible room use and accommodate all of the functions of the Sky View Lounge;

(viii) have wireless networking (wi-fi) access; and

(ix) have security access controls at the entrance to the Sky View Lounge.

(f) (**Seating within the Seating Bowl**)

(i) There must be a designated seat in the Seating Bowl to accommodate every Premium Product Patron that has access to the Sky View Lounge. The designated seats must:

A for all Seating Positions, facilitate continuous, uninterrupted views of the Field Of Play and all Key Viewing Elements for all Events and meet all Sightline Criteria in accordance with Part D (Functional Brief) of these Design Specifications;

B have Easy Access to/from the Function Rooms (see paragraph (m)), including for IRUA; and

C be designed and configured to optimise sightlines to the Field Of Play.

(ii) The minimum seating standards which must be met for the seats in the Seating Bowl associated with the Sky View Lounge are described in Chapter D7 (Seating Bowl) of these Design Specifications.

(g) (**Informal dining and bar facilities**)

(i) The Sky View Lounge will have informal and cocktail dining with hot and cold drinks, light snacks and finger foods available. Informal dining settings, communal dining benches, cocktail tables and high bar stools, lounges and ottomans must be provided.

(ii) The Sky View Lounge must be capable of accommodating alternative uses for different function formats for Functions on Non-Event Days, including corporate and private functions / parties. Power and ICT Systems, audiovisual equipment and screens must be concealed in the ceiling and in the floor and in joinery as appropriate to their location, so that the services and equipment do not detract from the interior aesthetic of the room.

(iii) The bar facilities in the Sky View Lounge must be designed to facilitate the service of hot and cold drinks and light snacks / finger foods, which may be ordered at the bar. There must be the capacity to run the bar areas as full cash bars.

(iv) All Outlets and bars located in the Sky View Lounge must be able to be secured to minimise theft risk and avoid the requirement to de-stock between Events.

(h) (**Catering facilities**)

(i) The Sky View Lounge must have the capacity to locally prepare, cook fresh, store and serve a limited range of hot and cold Catering Product.

(ii) A Satellite Production Kitchen suitable for preparation, cooking fresh, storage and service of Catering Product to the dining and lounge areas must be provided with Ready Access to a service lift and to the Sky View Lounge and within a maximum service distance of 50m. This may be a kitchen associated with General Admission Outlets. Refer to Chapter D10 (Catering Facilities) of these Design Specifications for detailed requirements.

(i) (**Experience**) On Event Days, the Sky View Lounge must achieve an atmosphere similar to an upmarket roof top bar. Weather protection, lighting, quality audio and Displays are envisaged as key elements in delivering the Event Day atmosphere.

(j) (**Interior fitout**) The interior environment within the Sky View Lounge must offer a a high level of sophistication through a high quality fitout.

(k) (**FF&E**)

(i) A combination of robust FF&E including communal tables and benches, external lounge seating, cocktail tables and high bar stools, regular height bar stools (at the bar) and multiple Displays must be provided.

(ii) The FF&E for the Sky View Lounge must be comfortable, weatherproof, easily cleanable, casual, contemporary and of high aesthetic quality.

(l) (**Branding**)

(i) The Sky View Lounge must be capable of being branded by the Hirer at the entrance of, and inside the Sky View Lounge, such that the branding is easily and efficiently changeable for the purposes of a specific Event.

(ii) The Governance Agency will consider sponsorship opportunities for the Sky View Lounge. Accordingly, the entry and interior design should give consideration to how sponsor branding can be architecturally integrated.

(m) (**Toilet facilities**) The Sky View Lounge must have Direct Access to toilet facilities located within the lounge.

(n) (**Storage**) The Sky View Lounge must have a lockable storage area (or areas) to store furnishings and items pertaining to the operation of the area, including marketing materials, audiovisual equipment and catering supplies, when not in use.

(o) (**AV Systems**)

(i) The Sky View Lounge must incorporate Displays and audio quality speakers mounted at ceiling level and on walls for live streaming or Event network broadcast, in-house broadcast channels including special camera views and in-house IPTV feeds. Displays must be appropriately sized and provided in appropriate quantities to suit the capacity of the Sky View Lounge to enable good viewing by Patrons. Weatherproof Displays must be provided to the outdoor areas.

(ii) Mobile audiovisual equipment will be used in the Sky View Lounge.

D9.4.9 Terraces

(a) (**Exclusivity and quality**) Terraces are an elevated, open air, informal social space that will be available for use by Premium Product Patrons. The Terraces must have a view of the Field Of Play and should be located to also offer views of the city skyline and river or of the Perth foothills. For the purpose of AFL Events, the Terraces are at the lower end of the pricing continuum and may be considered as a premium upgrade membership offering. The Terraces provide a standing zone for watching the Event however all Patrons having access to the Terraces will also have a designated seat in the Seating Bowl.

(b) (**Capacity**) The Terraces must be designed to comfortably accommodate 1,000 Patrons in total. This Patron capacity must be accommodated in an informal social setting that is outdoors with shade cover and protection from prevailing winds and rain including cover from above and to the side.

(c) (**Design flexibility**) The Terraces may be converted to an enclosed space in the future if demand for lounge based products increases.

(d) (**Location**)

(i) The Terraces must overlook the Field Of Play.

(ii) The Terraces should be located on level 4 overlooking the Field Of Play in the best possible location to take advantage of the city skyline and river vista or the vista to the Perth foothills. It must be accessible off a General Admission Concourse.

(e) (**Proximity**) There must be Easy Access between the Terraces and seating within the Seating Bowl associated with Premium Product Areas.

(f) (**Amenity**) The Terraces must:

(i) be provided as a defined and delineated space in the Seating Bowl, with appropriate security access control;

(ii) function as a Premium Product together with the associated designated seating in the Seating Bowl;

(iii) have shade cover and protection from prevailing winds and rain including cover from above and to the side;

(iv) have power and data points; and

(v) have wireless networking (wi-fi) access.

(g) (**Seating within the Seating Bowl**)

(i) There must be a designated seat in the Seating Bowl to accommodate every Premium Product Patron that has access to the Terraces. The designated seats must:

A for all Seating Positions, facilitate continuous, uninterrupted views of the Field Of Play and all Key Viewing Elements for all Events and meet all Sightline Criteria in accordance with Part D (Functional Brief) of these Design Specifications;

B have Easy Access to/from the Terraces (see paragraph (m)), including for IRUA; and

C be designed and configured to optimise sightlines to the Field Of Play.

(ii) The minimum seating standards which must be met for the seats in the Seating Bowl associated with the Terraces are described in Chapter D7 (Seating Bowl) of these Design Specifications.

(h) (**Informal dining and bar facilities**)

(i) The Terraces will have informal dining with barbeque style food, hot and cold drinks and light snacks and finger foods equivalent to that available in General Admission Areas. Communal dining benches, cocktail tables and high bar stools, outdoor lounges must be provided.

(ii) The bar facilities on the Terraces must be designed to facilitate the service of hot and cold drinks and light snacks / finger foods, which may be ordered at the bar. There must be the capacity to run the bar areas as full cash bars.

(iii) All Outlets and bars located on the Terraces must be able to be secured to minimise theft risk and avoid the requirement to de-stock between Events.

(i) (**Catering facilities**) The Terraces must have the capacity to locally prepare barbeque food and serve a limited range of hot and cold Catering Product sourced from a nearby Outlet.

(j) (**Experience**) On Event Days, the Terraces must achieve an atmosphere similar to a home barbeque on a larger scale under a partly enclosed patio or a pub beer garden. Robust concrete finishes, weather protection, lighting, quality audio and Displays are envisaged as key elements in delivering the Event Day atmosphere.

(k) (**Fitout**) The Terraces should have a basic, utilitarian fitout with limited seating areas and predominantly comprised of social standing room allowing people to mingle and move freely throughout.

(l) (**FF&E**)

(i) A combination of robust external lounge seating, cocktail tables and high bar stools, communal tables, barbeques and patio heaters.

(ii) The FF&E for the Terraces must be comfortable, weatherproof, easily cleanable, casual, contemporary and of good aesthetic quality.

(m) (**Branding**) The Terraces must be capable of being branded by the Hirer at the entrance of, and on the Terraces, such that the branding is easily and efficiently changeable for the purposes of a specific Event.

(n) (**Toilet facilities**) The Terraces must have Ready Access to toilet facilities.

(o) (**Storage**) The Terraces must have a lockable storage area (or areas) to store furnishings and items pertaining to the operation of the area, including marketing materials, audiovisual equipment and catering supplies, when not in use.

D10 CATERING FACILITIES

D10.1 OVERVIEW

(a) The catering strategy will form an important part of the Stadium and Sports Precinct's ability to deliver on the fans-first objective. The catering strategy must be prepared by Project Co in accordance with the requirements set out in Schedule 5 (Design Development), in consultation with the State, for implementation by the Stadium Operator.

(b) This component of the Design Specifications covers the functional and accommodation requirements for the Catering Facilities.

(c) Design and procurement associated with the Catering Facilities must be delayed to facilitate Stadium Operator input into the design, in accordance with Chapter C19 (Delayed Design and Procurement) of these Design Specifications.

(d) Functional Relationship Diagrams depicting the key functional relationships for the Functional Units that comprise the Catering Facilities are included in Chapter F5 (Catering Facilities) of these Design Specifications.

(e) Further technical requirements in respect of the Catering Facilities are detailed in Part E (Technical Brief) of these Design Specifications.

D10.2 OPERATIONAL PRINCIPLES

(a) (**Catering Services**) The Catering Services will deliver a broad range of food and drinks (Catering Product) for differing types and styles of Events and Functions at the Stadium and other Stadium Activities on Non-Event Days. Adaptive and innovative secondary uses of Catering Facilities are highly desirable.

(b) The Catering Services will set a new benchmark for the variety, quality and standard of food service at an international stadium.

(c) (**Catering Product**) In alignment with the fans-first aspiration for the Stadium, the Catering Product to be provided by the Catering Operator will be of high quality and easily accessible to Stadium Users, with a particular emphasis on Patrons.

(d) (**Food preparation**) Food will be prepared and cooked as close to the time and Point Of Service as possible. No food will be prepared or pre-cooked more than seventy two (72) hours before an Event and fresh produce will be used in preference to frozen, tinned or packaged produce when it is available. This may necessitate greater space allocation for the storage and preparation of ingredients.

(e) A range of purpose-built, dedicated Catering Facilities as further described in this Chapter D10 (Catering Facilities) will be available within the Stadium for use by the Catering Operator to enable preparation and distribution of the Catering Product to Stadium Users.

(f) (**Catering Facilities**) The Catering Facilities will at a minimum:

(i) facilitate the Catering Operator's provision of both quality and diversity of the Catering Product in an efficient manner and to enable the maximising of nett returns from the Catering Service;

(ii) facilitate the Stadium Operator's (and Catering Operator's) compliance with applicable OHS, HACCP and other relevant Quality Standards and Laws, including licensing requirements such as liquor licensing;

(iii) allow for the Catering Service to expand or contract as the operational and commercial demand requires, in terms of the number of Patrons per Event and Function, the number of Events and Functions, and the demand per Event or Function;

(iv) enable the Catering Service to meet peak demand periods during Events and Functions. As such, no Patron using an Outlet should have to queue for more than six (6) minutes at peak times before being served. In Premium Product Areas customers must be served within three (3) minutes at any Point of Service;

(v) be located and distributed efficiently to facilitate a timely and efficient Catering Service and delivery of Catering Product in order to limit the time a Patron is absent from their seat;

(vi) enable safe, timely and efficient transport and distribution of Catering Product throughout the Stadium and Sports Precinct, considering the journey in its entirety, including Catering Loading Dock, preparation, Point of Service, cleaning, storage and waste management activities;

(vii) allow all elements of the Catering Service to remain Back of House up until the Point of Service; and

(viii) accommodate waste management and environmental issues by measures such as minimisation of waste at the source, waste sorting and storage and the use of energy efficient equipment.

(g) (**Location**) The location of the Catering Facilities, particularly the location of the Fixed Outlets in relation to the Seating Bowl, will be carefully considered so not to affect the continuous view of the Field Of Play and to achieve the flexibility of serving internal to the Concourse and within the Controlled Area.

(h) (**Flexibility**) It is likely that the Stadium and Sports Precinct will move to a predominantly cashless operation in the future. The ability to move to a cashless system must be incorporated into the design so that this transition can take place with minimum disruption.

D10.3 GENERAL DESIGN REQUIREMENTS

(a) (**Compliance**) The Catering Facilities must comply with relevant Quality Standards and Laws including applicable OHS, HACCP and relevant Authority requirements, including public health and licensing requirements. Without the unreasonable compromise of any of the above Operational Principles, and for those elements that are reasonably within Project Co's control, the Catering Facilities must:

(i) enable the Stadium Operator (and Catering Operator) to achieve HACCP compliance;

(ii) enable the Stadium Operator (and Catering Operator) to obtain all required Authorisations, including in respect of public health and liquor licensing compliance; and

(iii) allow the Stadium Operator (and Catering Operator) to maximise the nett returns from the Catering Service.

(b) (**Services and efficiencies**) The Catering Facilities must be fitted with all required power, data and communications outlets, hydraulic and mechanical services, lighting systems, and other FF&E necessary to support the required functionality of each Functional Unit.

(c) The Catering Facilities must be designed to promote and allow for efficiencies in the Stadium Activities by providing for efficient and effective systems and work practices for the Catering Operator. All Catering Facilities, including Project Co FF&E and associated equipment provided by third parties must be designed (or integrated into the design for the third party supplied equipment) to operate efficiently, with maximised economy of Utility usage and staffing requirements.

(d) All equipment must be designed to minimise energy usage, including on Non-Event Days, in order to reduce operating costs and CO_2 emissions.

(e) (**Fitout**) The interior fitout and furnishings to the Catering Facilities should be contemporary, of good quality, appropriate for the specific area and must not impede on the required functionality of the Functional Units. Those Catering Facilities located within view of Premium Product Areas must have a higher standard of fitout commensurate with their location. Finish materials and detailing must be appropriately hygienic, easy to clean and food acid resistant. Flooring materials must have the appropriate slip rating with coved skirting and ceiling materials must be moisture resistant.

(f) (**Capacity**) Fixed Outlets and the Catering Facilities for Premium Product Areas must accommodate the requirements of peak demand for a minimum of 60,000 Patrons. The use of Mobile Outlets is intended to supplement these facilities for Events. At a minimum, the collective Fixed Outlets, the Catering Facilities for Premium Product Areas and the Mobile Outlets must accommodate the requirements of peak demand for a minimum of 70,000 Patrons.

(g) There should be one (1) Point Of Service for every one hundred and fifty (150) General Admission Patrons.

(h) The size, number, locations and design of the Catering Facilities must ensure that the operation can function effectively, and efficiently, including during peak times and ensure flexibility of design so that during Events with reduced attendances there is the capability to partition areas while maintaining efficient operations.

(i) (**Location**) Catering Facilities in General Admission Areas should be distributed around the Concourses to minimise Patron travel distances. Patrons should be able to have a direct sightline of at least two different Catering Facilities from the Vomitory nearest to their seat and in any case they should be within no more than thirty (30) metres from the entry to the Vomitory. An even and uniform distribution of Catering Facilities in General Admission Areas may not provide 'even' demand and queuing time per Outlet, producing a sub-optimal Catering Service. Project Co must undertake pedestrian movement analysis to determine the appropriate location of Catering Facilities in General Admission Areas.

(j) Consideration must be given to the spatial requirements for Mobile Outlets, queuing systems and casual seating areas throughout the Concourses and Controlled Area and their implications on the fire engineering solution and access and egress.

(k) Adequate storage space must be provided to all Catering Facilities.

(l) On Event Days some Points of Service will remain open and functioning for a short period post-Event and suitable localised storage space for these Outlets must be provided to accommodate this function.

(m) (**Functionality**) At a minimum, half of the Fixed Outlets must have the capability for prime cooking (frying, grilling and baking) and all Fixed Outlets must have the capability for reheating. Suitable extraction and fire suppression systems must be provided to these Outlets.

(n) Access to the Catering Facilities will be limited to the Catering Operator and all Catering Facilities must have the ability to be secured individually when not in use. At a minimum, any area in which Catering Product is stored must be lockable.

(o) (**FF&E**)

(i) The Catering Facilities and the Project Co FF&E provided within the Catering Facilities must be flexible to enable the changeover of catering equipment. Where practicable, the use of proprietary fittings and non-standard equipment must be avoided.

(ii) Project Co must supply, install and commission the Project Co FF&E including as described in Chapter A8 (Furniture, Fittings and Equipment) within the Catering Facilities.

(iii) Project Co must integrate the State FF&E described in Chapter A8 (Furniture, Fittings and Equipment) into the design of the Catering Facilities, including ensuring:

A suitable spatial allowances for installation and safe operation and access;

B suitable storage provisions; and

C suitable Engineering Services provisions and location.

(p) (**Catering Product distribution**)

(i) Vertical distribution of goods and services to each floor should be via Service Lifts not accessible by Patrons. These lifts should have the capacity to allow restocking of Catering Facilities during Events and Functions and should be located such that they limit interaction with Patrons during Events and Functions. There should be separate lifts for clean and dirty items i.e. refuse should never travel in a lift used for food.

(ii) As much horizontal distribution of goods and services as possible should take place at the Event Level so as to limit interaction with Patrons during Events and Functions.

(iii) It is envisaged that all kegs and post mix will be delivered to a central cellar store at Event Level from where the products will be distributed to beverage cellars on other levels and empty kegs stored post Event.

(iv) Localised beverage cellars must be provided throughout the Stadium. Beer pythons and post mix lines must not exceed 30m from cellar to tap.

(v) A centralised food gas system should be investigated on a WOL LCC basis. A centralised CO_2 distribution and storage facility should be investigated on a WOL LCC basis.

(q) (**AV Systems**)

(i) Displays must be able to switch content between menu boards, live action from the Event or exclusive advertising content.

(ii) Displays should be positioned so that they are only in direct view of those standing in queue lines at Fixed Outlets rather than facing the flow of traffic on the Concourses.

(r) (**ICT Systems**) The IP Network must allow for fully integrated venue Point Of Sale, inventory management and menu management systems, including back office administration, storage and reporting. Fixed Outlets must be able to make use of the wired network. It is desirable that Mobile Outlets or temporary Catering Facilities also make use of the wired network, however where this cannot be achieved, robust and reliable wireless networking must be provided.

(s) (**Waste Management**) Waste management must be considered with provision being made for temporary storage before managed collection and provision made for recycling and glass crushing, including as described in Chapter D12 (Waste Management).

D10.4 ACCOMMODATION REQUIREMENTS (PROVISIONS, LOCATION AND PROXIMITIES)

D10.4.1 General

(a) This clause D10.4 describes the location, access and functions of each of the Catering Facilities including:

(i) Primary Production Kitchen(s);

(ii) Satellite Production Kitchens;

(iii) Regeneration Kitchens;

(iv) Pantries;

(v) Fixed Outlets;

(vi) Mobile Outlets;

(vii) Mobile Bars;

(viii) Premium Product Areas; and

(ix) storage areas.

(b) Accommodation requirements for Catering Personnel are included in Chapter D13 (Stadium Operations and Event Day Facilities) of these Design Specifications.

(c) Accommodation requirements for waste management personnel are included in Chapter D12 (Waste Management) of these Design Specifications.

(d) An overview of the Catering Services to be provided within the Premium Product Areas is included in Chapter D9 (Premium Product Areas) of these Design Specifications.

(e) An overview of the Catering Services to be provided within the A La Carte Restaurant and Buffet Restaurant is included in Chapter D8 (General Admission Areas) of these Design Specifications.

D10.4.2 Primary Production Kitchen

(a) (**Location**) The Primary Production Kitchen must be located on the Event Level of the Stadium to support the Catering Service.

(b) (**Proximity**) The Primary Production Kitchen must be located with:

(i) Ready Access at a minimum to the Catering Loading Dock;

(ii) Direct Access to the dry storage, cold storage and freezer storage; and

(iii) Direct Access to Services Lifts.

(c) (**Functionality**) The Primary Production Kitchen must support the following functions:

(i) dry storage;

(ii) cold storage (including cold larders);

(iii) freezer storage;

(iv) blast chilling;

(v) food preparation;

(vi) cooking;

(vii) portioning;

(viii) equipment, pot and ware washing;

(ix) mobile equipment placement including mobile trolleys, mobile hotboxes; and

(x) loose FF&E storage including: crockery, cutlery, glassware and hollow ware and equipment including mixers, blenders and processors.

(d) The entire travel path from the Catering Loading Dock to the Primary Production Kitchen must facilitate the movement of a pallet, and be a minimum of 1300mm wide.

(e) In order to avoid cross contamination there should be a clear flow of products in and out of the Primary Production Kitchen. Separate areas should be clearly designed to reflect that flow as follows:

(i) goods in;

(ii) unpacking and de-boxing;

(iii) storage;

(iv) preparation;

(v) production;

(vi) prepared storage; and

(vii) distribution.

(f) Returned trays, trolleys and containers should access the Primary Production Kitchen via the pot wash sanitising area to avoid the possibility of dirty containers entering the preparation or production areas.

(g) The Primary Production Kitchen will also be used to provide food service to Stadium Personnel and Back of House functions, including Media Personnel. These will be fully prepared in the Primary Production Kitchen for distribution by mobile trolleys to required areas.

(h) Central storage should be separated into chilled, ambient and frozen storage. Raw meat and other high risk products should have their own separate chilled storage area. It is highly desirable that any deliveries to the Primary Production Kitchen's storage facilities do not interfere with or disrupt the activities occurring in the Primary Production Kitchen. Consideration should be given to providing dual access doors to these storage facilities so that stock can be delivered in a rear fill method. All doors to all storage facilities must facilitate the movement of a pallet and have a clear opening of a minimum of 1300mm wide.

(i) There should be clearly designated waste routes throughout the building that minimise any cross over with freshly prepared food. Waste should be separated as far as possible before it reaches the waste area. The waste storage area should be enclosed and refrigerated to minimise waste odours prior to collection.

D10.4.3 Satellite Production Kitchens

(a) Satellite Production Kitchens must be provided to accommodate the Catering Service including to the following Functional Units:

(i) Chairman's Club (200 covers);

(ii) Function Rooms (1,500 covers);

(iii) Club Lounges (1,250 covers);

(iv) Field Lounge (300 covers);

(v) Terraces (1,000 covers);

(vi) Sky View Lounge (300 covers);

(vii) A La Carte Restaurant (150 covers, multiple sittings); and

(viii) Buffet Restaurant (500 Patrons).

(b) Satellite Production Kitchens should be located within 50m of the Point Of Service so as to minimise travel distance between the kitchen and the Point Of Service. They should have Direct Access to Back of House areas and the Service Lifts.

(c) The Satellite Production Kitchens must support the following functions;

(i) dry storage;

(ii) cold storage (including cold larders);

(iii) food preparation;

(iv) cooking;

(v) plate up and ready to serve functions;

(vi) dish and pot washing, including cutlery and glassware;

(vii) mobile equipment placement including mobile trolleys, mobile hotboxes; and

(viii) storage for loose FF&E including crockery, cutlery, glassware and hollow ware and equipment including mixers, blenders and processors.

(d) Catering Product will be transported to the Satellite Production Kitchens via the Service Lifts from the Main Production Kitchen(s) or the Catering Loading Dock in the case of pre-packaged deliveries for storage.

D10.4.4 Regeneration Kitchens

(a) Regeneration Kitchens should be provided on levels that include Premium Product Areas.

(b) Regeneration Kitchens should be located so as to minimise travel distance to the Point Of Service. They should have Ready Access to Back of House areas and Services Lifts.

(c) The Regeneration Kitchens must support the following functions:

(i) dry storage;

(ii) cold storage;

(iii) food regeneration;

(iv) plate up and ready to serve functions;

(v) dish and pot washing, including cutlery, glassware;

(vi) mobile equipment placement including mobile trolleys, mobile hotboxes; and

(vii) storage for loose FF&E including crockery, cutlery, glassware, hollow ware and equipment including mixers, blenders and processors.

(d) Catering Product will be transported to the Regeneration Kitchens via the Service Lifts from the Main Production Kitchen or the Catering Loading Dock in the case of pre-packaged deliveries for storage.

D10.4.5 Pantries

(a) Pantries must be provided to service the following Premium Product Areas:

(i) OCR Seating (1,256 covers);

(ii) Suites (1,564 covers); and

(iii) Coaches Club (48 covers).

(b) Pantries should be located so as to minimise travel distance between the designated Pantries and associated Premium Product Areas. They should have Ready Access to Back of House areas and Service Lifts.

(c) The Pantries must support the following functions:

(i) dry storage;

(ii) cold storage;

(iii) food regeneration; and

(iv) plate up and ready to serve functions.

(d) Catering Product will be transported to the Pantries via Services Lifts from the Primary Production Kitchen or the Catering Loading Dock in the case of pre-packaged deliveries for storage.

D10.4.6 Fixed Outlets

(a) Fixed Outlets must be able to operate in the following modes:

(i) food only;

(ii) beverage only; and

(iii) food and beverage.

(b) All Fixed Outlets must be designed to be visually exciting and contemporary in feel.

(c) Fixed Outlets should be distributed such that an Outlet is no more than thirty (30) metres from the entry to any Vomitory in the General Admission Area, with a good distribution of prime cooking and reheating type facilities. Dedicated dry and cold storage facilities must be provided at each Outlet with deliveries accessible via the Service Lifts.

(d) Point Of Sale and Point Of Service facilities should be provided at each Fixed Outlet. Fixed Point Of Sale facilities are desirable, however mobile Point Of Sale units may also be used. Project Co must provide Engineering Services to facilitate flexible Point Of Sale arrangements.

(e) Each Fixed Outlet should be able to accommodate a minimum of four (4) Point Of Sale workstations and associated Displays.

(f) Each Fixed Outlet must have dry and cold storage and wash-up facilities.

(g) At high traffic General Admission Areas, consideration should be given to 'grouping' Fixed Outlets together to offer a broader choice in a single location.

(h) All Fixed Outlets must provide clear and prominent signage on the outside of the Outlet that assists customers making a purchasing decision prior to being inside the Outlet. All signage, including any Displays, must be integrated into the design of the Fixed Outlet, to complement, not detract from, the aesthetics of the space.

(i) Planning should be based on "speed line" type service, however the provision of a variety of service types, including "point of sale" or "belly-up" service should be considered.

(j) Queue lines, waste disposal areas and condiment stations must be incorporated into the design of the Fixed Outlets, in order to both minimise congestion on the Concourses and to avoid general emergency egress complications. The queue lines must not impede queue lines for the toilets or any other activities on the Concourses.

(k) (**Hawking**) 'Hawking' will be provided in General Admission Areas. Hawkers will use Fixed Outlets as the base for their hawking activity and as such there needs to be additional space in the Fixed Outlets for the storage of the hawkers' equipment and stock.

(l) (**Fixed Outlets – Food**) All Fixed Outlets - Food must provide visual transparency to the kitchen area of the Outlet or other design elements which bring the cooking experience to the Patron which may create a visual and aromatic experience for Patrons that supports 'fresh products' being produced. Fixed Outlets – Food kitchens should support the operation of in-seat vending services at the Stadium. In-seat vending services will include both Patron pre-ordering and collecting from a pre-determined Outlet, and Patron ordering with delivery to their seat within the Seating Bowl.

(m) (**Fixed Outlets – Beverage**) Fixed Outlets - Beverage must be provided on all levels associated with General Admission seating. These must be conventiently located for

General Admission Patrons to purchase both hot and cold alcoholic and non-alcoholic beverages during Events.

(n) The Fixed Outlets - Beverage will sell a mixture of dispensed beverages (i.e. from a keg or post mix type systems), as well as pre-packaged products including alcoholic beverages such as wine and pre-mixed spirits. All beverages from Fixed Outlets - Beverage will require dispensing into plastic cups before being sold. Project Co must include a 'multi-pour/rapid dispense beer system' so as to minimise Patron time spent at Fixed Outlets - Beverage.

(o) All Fixed Outlets - Beverage must be able to supply a range of pre-packaged food and beverages. Fixed Outlets - Beverage should be able to serve a menu similar to that of Fixed Outlets - Food. Consideration should be given to collocating the Fixed Outlets - Beverage with Fixed Outlets - Food so that food production facilities can be shared.

(p) All Fixed Outlets – Beverage must provide potable drinking water, accessible by Patrons.

D10.4.7 Franchised Fixed Outlets

(a) The State has a desire for franchised Outlets in a number of Fixed Outlets. Project Co must deliver the following Fixed Outlets as an Integrated Fitout:

(i)	Fixed Outlets – Food	25% (approximately); and
(ii)	Fixed Outlets – Beverage	25% (approximately).

(b) The Integrated Fitout must incorporate "designed in" opportunities for customisation of the Integrated Fitout limited to the designated areas for the franchisor.

(c) The Final Fitout beyond that of the Integrated Fitout for the nominated Fixed Outlets will be undertaken by others. The Integrated Fitout must allow for the Final Fitout to be undertaken in an efficient manner.

(d) (**Customisation of Integrated Fitout**) Should the State provide agreement for the franchisors to customise Fixed Outlets then Project Co must, as part of the DBFM Works, engage with the franchisor (together with the State), amend the Integrated Fitout design and submit the amended design to the State for approval in accordance with the requirements of Schedule 3 (Review Procedures) of this Agreement.

(e) (**Delayed design and procurement for Integrated Fitout**) The Integrated Fitout of the Franchised Fixed Outlets must be accommodated in the Delayed Design and Procurement Plan as described in Schedule 19 (Plans) of this Agreement.

D10.4.8 Mobile Outlets

(a) Mobile Outlets, capable of delivering limited product lines should be considered to complement the service provided by the Fixed Outlets in high traffic areas and to add variety or regional specialities for specific Events. The Mobile Outlets must be visually attractive and capable of being moved easily to other locations within the Stadium.

(b) Dedicated pantry facilities should be provided for all Mobile Outlets. These should be located with Easy Access to anticipated locations of their associated Mobile Outlets. Provision should include dry and cold storage, basic workspace and wash-up facilities.

(c) Serviced Zones with required Engineering Services provision should be provided at anticipated Mobile Outlet locations including power, data and water (supply only) and in accordance with Part E (Technical Brief) of these Design Specifications. Dedicated Mobile Outlet storage areas must be provided on each level of the Stadium, for the storage of the Mobile Outlets when not in use, including provision for washdown facilities for the Mobile Outlets.

(d) Consideration should be given to the location of the Mobile Outlets in respect of queuing and fire engineering, including in terms of non-build zones and the choice of materials utilised.

(e) Interchangeable signage and branding must be provided with each Mobile Outlet.

D10.4.9 Micro-brewery

(a) The State has a desire for the introduction of a Micro-brewery in order to provide greater choice for Patrons and to provide a unique selling point.

(b) The spatial requirement for the Micro-brewery should be achieved through the amalgamation or use of Franchised Fixed Outlets. The Micro-brewery should be incorporated into the Stadium design with a capability of providing at least 5% of the Stadium's beer requirement during any Event.

(c) The Micro-brewery must operate as a Franchised Fixed Outlet and meet all the requirements referred to in clause D10.4.7.

D10.4.10 Dry bars

(a) Consideration should be made for integration of dry bar areas into the general architectural fitout of the Stadium, such as incorporating drink rails on the Concourses to disperse Patrons away from concentrated service areas.

(b) Any position of dry bars must not result in seated Patrons having a greater risk of drinks or containers spilled onto them.

D10.4.11 Mobile bars

(a) A number of Mobile Bars must be provided and distributed throughout the Controlled Area. In order to facilitate this requirement Mobile Bar stands should be developed with Serviced Zones for electricity, data, water and waste in order to ensure the Mobile Bars can deliver the range and quality of Catering Products required and must be able to meet all licensing and other requirements. Provision should be made to provide and incorporate tables and seating in association with these. The ability to provide light meals to these areas should also be considered.

(b) The Mobile Bars will sell a mixture of dispensed beverages, including beverages from mobile keg or post mix type systems, as well as pre-packaged products and pre-packaged food. All beverages from Mobile Bars will require dispensing into plastic cups before being sold.

(c) Mobile Bars must incorporate dry and cold storage, wash-up facilities, product display and Point Of Sale facilities.

(d) The Mobile Bars must provide clear and prominent signage on the outside of outlets that assists customers making a purchasing decision prior to being inside the outlet. All signage, including any Displays, must be integrated into the design of the Mobile Bars, to complement the overall aesthetic.

(e) Waste management should be considered with provision made for recycling and glass crushing to Mobile Bars.

D11 RETAIL FACILITIES

D11.1 OVERVIEW

(a) Retail Facilities will potentially operate every day of the year and will operate in different capacities on Event Days and Non-Event Days.

(b) Retail Facilities will provide the opportunity for Patrons to purchase Event merchandise and other items to heighten the Event Day experience and for visitors to purchase these items on Non-Event Days. This will be achieved through an integrated strategy of providing various opportunities and locations to purchase products. The strategy is based on a hierarchy of retail facilities with the larger facilities providing the greatest product range. Through the co-location of other Patron services, such as membership queries and tours, there is the opportunity to increase Patron traffic to the Retail Facilities to create a larger customer base.

(c) Retail Facilities will have a connection to Stadium Operator led commercial opportunities in the Stadium including tours, Functions and other Stadium Activities.

(d) This component of the Design Specifications covers:

(i) the requirements for the Retail Facilities to support the use of the Stadium and Sports Precinct by Patrons on Event Days;

(ii) the multi-purpose functionality of the Retail Facilities to support the use of the Stadium and Sports Precinct for Non-Event Day activities; and

(iii) the requirements for base construction and fitout of the Retail Facilities.

(e) A Functional Relationship Diagram depicting the key functional relationships for the Functional Units that comprise the Retail Facilities is included in Chapter F6 (Retail Facilities) of these Design Specifications.

(f) Further technical requirements in respect of the Retail Facilities are detailed in the Part E (Technical Brief) of these Design Specifications.

D11.2 OPERATIONAL PRINCIPLES

(a) (**availability**) The Retail Facilities will operate on a year round basis but in two distinct modes:

(i) on Event Days, only Patrons that are inside the Controlled Area will be able to access the Retail Facilities. The number of Retail Facilities within the Controlled Area that will be operational will be based on the anticipated demand for retail products; and

(ii) on Non-Event Days, visitors to the Stadium and Sports Precinct will be able to access the Sports Retail Store directly from the Stadium and Sports Precinct as the Controlled Area on these days will contract to the Stadium Curtilage.

(b) (**retail mix**) The Retail Facilities will operate based on a hierarchy with the larger sized facilities offering a greater range of merchandise.

(c) (**flexibility between Events**) With the exception of the Sports Retail Store, the Retail Facilities will be tailored to the Hirer's merchandise and all merchandise will be de-stocked between Events.

(d) The Sports Retail Store will be the subject of a lease or licence (potentially with more than one (1) lessee or licensee (as applicable)) that will have conditions relating to fitout, security, flexibility of operation and payment of Utilities.

(e) During the AFL season the Sports Retail Store is expected to be used by the AFL Home Teams. During the cricket season the Sports Retail Store may be used by the cricket Home Team.

(f) The Sports Retail Store will be sized to provide retail space for at least three (3) licensees operating together with a shared zone for Point Of Sale, changing facilities and entry.

(g) Access may be required by the State prior to Technical Completion to allow for State FF&E to be installed with sufficient time for Project Co to complete final fitout of all Engineering Services where these are integral with the State FF&E.

(h) (**Merchandise Shops**)

(i) The Merchandise Shops are permanent Retail Facilities located within the Stadium which are smaller than the Sports Retail Store. These will be used to sell merchandise on Event Days.

(ii) The Merchandise Shops will operate on a Bump-In and Bump-Out philosophy.

(iii) The Merchandise Shops will enable Patrons to conveniently buy merchandise during the Event.

(i) (**Sponsor Merchandise Pods**) Sponsor Merchandise Pods are semi-permanent stand-alone facilities located inside the Controlled Area but not in the Stadium. These will be available to augment Retail Facilities or Event promotions and sponsorships.

(j) (**Temporary Event Day Stalls**) Temporary Event Day Stalls are structures that Hirers will Bump-In and Bump-Out for an Event. These will be located within the Controlled Area and the Sports Precinct at a range of locations that offer Engineering Services connections and provide high Patron foot traffic.

(k) (**Pod Storerooms**) There will be storage provision to secure the Sponsor Merchandise Pods and Temporary Event Day Stalls when not in use.

(l) (**Safety and Security**) All Retail Facilities will afford a safe and secure environment for the Hirer, Stadium Personnel and Patrons for cash and stock handling and control.

D11.3 GENERAL DESIGN REQUIREMENTS

(a) (**Capacity**) Retail Facilities must be sized to accommodate the expected peak patronage on Event Days having regard for pre-Event, during and post-Event Patron flows. The mix, sizes, locations and design of the Retail Facilities should be scalable to reflect the difference in requirement for Non-Event Days so that the Retail Facilities will be efficient to operate.

(b) (**Ease of Access during the Event**) The locations of Retail Facilities must facilitate Easy Access for Patrons from and back to their seat in the Seating Bowl so that it is simple and efficient for Patrons to make purchases during the Event.

(c) (**Location and separation**)

(d) The Retail Facilities must be distributed across all levels of the Stadium which are frequented by Patrons.

Retail Facilities must be located:

(i) in areas that encounter high Patron traffic volumes on Event Days, and particularly on Game Days;

(ii) to facilitate access for Patrons to purchase merchandise on Event Days and for visitors to purchase merchandise on Non-Event Days;

(iii) to ensure that the Hirer has the maximum opportunity to sell merchandise to Patrons on Events Days; and

(iv) to prevent associated queuing zones impeding non-retail Patron traffic flows.

(e) (**Proximities**) The Retail Facilities must have Easy Access to:

(i) entrances situated on the outer perimeter of the Controlled Area;

(ii) entrances situated on the external perimeter of the Stadium which are in close proximity to designated car parking areas and drop-off points for Non-Event Days;

(iii) ATMs;

(iv) The Loading Dock and storerooms where stock is controlled when not in use; and

(v) toilet facilities for use by retail staff and visitors on Non-Event Days.

(f) (**Universal Access**)

(i) The Retail Facilities and Patron amenities within the Retail Facilities (including change rooms and the family area in the Sports Retail Store) must be accessible to all Patrons including IRUA.

(ii) Universal Access must be provided in accordance with the relevant Quality Standards.

(g) (**Amenities**) The Retail Facilities must be designed, and where applicable constructed:

(i) to be self-contained and integrated into the Stadium;

(ii) to be able to operate independently in a secure and safe manner with access to all power, data and communications services required to operate

on Non-Event Days including the ability to undertake cash handling, electronic transactions, membership and stock control; and

(iii) with dedicated storage servicing each of the Retail Facilities.

(h) (**Fitout quality**) The quality of fitout, finishes and level of appointment of FF&E to Retail Facilities must be consistent with their locations within the Stadium.

(i) (**Supplementary Non-Event Day uses**) The layout and construction of the Retail Facilities must accommodate the requirement for flexibility to facilitate additional uses on Non-Event Days, without compromising the Event Day function. These additional uses could include:

(i) membership queries;

(ii) purchase of tickets;

(iii) start and finish point of Stadium tours; and

(iv) small promotional events involving Sporting Teams and Hirers.

(j) (**Flexibility and future-proofing**) Retail Facilities must be designed to be flexible to accommodate future changes in overall demand (increases and decreases) and in the mix of Retail Facilities, as required. It is envisaged that the requirement for flexibility and future-proofing will be met through:

(i) incorporating design features that promote flexibility of use including:

A operable walls to enable division or amalgamation of rooms or spaces;

B integration or concealment of storage items with the joinery; and

C the use of technology for the branding of spaces through signage and lighting.

(ii) carefully considered shape and placement of structural and facade elements (including columns, mullions and windows) so as not to limit flexibility of use;

(iii) provision, distribution and layout of Engineering Services in a manner that accommodates flexibility of use, room division or amalgamation as required and a variety of set-up configurations, including:

A distribution of power, data and communications outlets throughout the room rather than consolidation of these services;

B provision of mechanical services, fire services and lighting to enable either independent room operation or operation as an enlarged room / space with the ability to control the environment as a whole and independently; and

C provision and placement of fixed audiovisual equipment in locations that support the design with respect to room division or amalgamation and set-up options.

(iv) carefully considered location of toilet facilities and emergency egress routes so as not to limit flexibility of use; and

(v) the use of temporary facilities.

D11.4 ACCOMMODATION REQUIREMENTS (LOCATION, PROXIMITIES AND PROVISIONS)

D11.4.1 Sports Retail Store

(a) (**Functionality**) The Sports Retail Store will be the largest Retail Facility and must be designed to provide a dedicated area for each AFL Home Team and an area for a third licensee or lessee to sell non-AFL merchandise for Cricket Events, Rectangular Events

and other Events. A shared zone must be provided for Point Of Sale, changing facilities and entry.

(b) (**Capacity**)

(i) The Sports Retail Store must be sized to comfortably accommodate Patrons at peak times on Game Days. When one of the dedicated areas described at paragraph (a) is not available the Sports Retail Store should be able to accommodate a greater number of Patrons at any one time.

(ii) The Sports Retail Store must be sized to accommodate a centrally located counter for multiple points of sale, changing facilities for males and females and a family area.

(c) (**Location**) The Sports Retail Store must be located with Easy Access from and to on street parking for convenience on Non-Event Days. It must be located to have a primary entrance from the Stadium Curtilage and a secondary entrance onto the Stadium Concourse. Queue lines for the Sports Retail Store on Game Days must be considered and incorporated into the design of the Controlled Area and Stadium Concourse (net of the circulation requirement) to accommodate peak Patron loads without reducing the functionality of these spaces.

(d) (**Proximity**) On Event Day the Sports Retail Store will be in the Controlled Area and all Patrons will be required to hold a valid ticket for access to the Sports Retail Store. On Non-Event Days there must be Easy Access from the Sports Precinct without requiring the visitor to pass through a security checkpoint or similar access control.

(e) (**Amenity**) The Sports Retail Store must:

(i) be an enclosed, air conditioned space with security access controls at entry and exit points; and

(ii) have a high degree of solar control to all external windows suitable to prevent spoiling of merchandise.

(f) (**Stocking and storage**)

(i) The Sports Retail Store must have a storeroom to be able to handle stock for upcoming Events. There should be consideration as to how the storeroom can meet the requirements of the AFL Home Teams. The storeroom must have Ready Access to the Loading Dock and should also have Easy Access to the Merchandise Shops.

(ii) There must be space for the storage and distribution of programs or other similar publications for Events.

(g) (**Fitout Sports Retail Store**)

(i) Project Co must deliver the Sports Retail Store as an Integrated Fitout.

(ii) The Integrated Fitout must incorporate “designed in” opportunities for customisation of the Integrated Fitout limited to the designated areas for the AFL Home Teams.

(iii) The Final Fitout beyond that of the Integrated Fitout for the Sports Retail Store will be undertaken by others. These works comprise part of the State FF&E and include:

A service desks and counters;

B cabinets;

C shelving;

D displays,

E shop fittings, including racks, hooks, spinners, flat panel, wall stripping, gondolas and showcases;

F loose furniture,

G window treatments; and

H branding.

(iv) The Integrated Fitout must allow for the Final Fitout to be undertaken in an efficient manner.

(h) (**Integration of Integrated Fitout with Final Fitout**) The design and construction of the Integrated Fitout for the Sports Retail Store must be carefully coordinated with the design and construction of the Final Fitout to ensure the delivery of a seamlessly integrated interior aesthetic with respect to design detailing, materials and finishes, colour palette and FF&E.

(i) (**Customisation of Integrated Fitout**) Should the State provide agreement for the AFL Home Teams to each customise a designated areas of the Sports Retail Store then Project Co must, as part of the DBFM Works, engage with the AFL Home Teams (together with the State), amend the Integrated Fitout design and submit the amended design to the State for approval in accordance with the requirements of Schedule 3 (Review Procedures) of this Agreement.

(j) (**Delayed design and procurement for Integrated Fitout**) Given the potential requirement for customisation of the Integrated Fitout it is highly desirable that the design and procurement of the Integrated Fitout for the Sports Retail Store is delayed to provide an opportunity for the State to confirm any requirements in respect of customisation (or otherwise), to the extent possible without affecting the Date for Technical Completion in the DBFM Works Program.

(k) (**Signage and Wayfinding**) The Sports Retail Store must have external signage in the Sports Precinct for the purpose of wayfinding to the Sports Retail Store on Non-Event Days.

(l) (**Toilets**) Ready Access must be provided to toilet facilities from the Sports Retail Store. The location of toilet facilities must promote and must be minimal activation of the Stadium on Non-Event Days.

(m) (**Security**) The Sports Retail Store must have an electronic security system connected to Project Co's Security Systems and be covered by Project Co's CCTV system as it relates to the Controlled Area and Concourse.

(n) (**Staff Amenity**) An amenity area for the staff of the Sports Retail Store must be provided within the overall area allocation for the Sports Retail Store.

D11.4.2 Merchandise Shops

(a) (**Functionality**) A minimum of four (4) Merchandise Shops must be provided. The Shops will have a smaller range and quantity of merchandise compared to the Sports Retail Store and will primarily stock the merchandise of the Home Team on Game Days and will stock the merchandise of the Performers during Entertainment Events.

(b) (**Capacity**) The Merchandise Shops must have the ability to operate up to three (3) points of sale concurrently and to display the stock that is available, with a storage area behind the sales area. There must be consideration as to how the storeroom can meet the requirements of the various Hirers, to facilitate the bumping in and out of stock between Events.

(c) Queue lines for Merchandise Shops must be incorporated into the design of the Concourse to accommodate peak loads without reducing the functionality of the Concourse so as to create congestion and choke points.

(d) (**Location**) One (1) Merchandise Shop should be provided on each level and should ideally be located near the lift lobbies and the entrances of Premium Product Areas on those Premium Product levels.

(e) (**Amenity**) The Merchandise Shops must:

(i) be a secured space;

(ii) be designed to maximise the frontage and serving area of the Merchandise Shop to be able to operate three (3) points of sale concurrently;

(iii) allow patrons using the Merchandise Shops to have the ability to try on clothing sold at the Merchandise Shops prior to purchase and should include a minimum of two (2) changing areas;

(iv) have a level of finish that integrates with their location in the Stadium; and

(v) be able to be secured so that on Non-Event Days the stock located in the Merchandise Shops is secured and protected from the elements including wind and rain.

(f) (**Stocking and storage**) The Merchandise Shops must have a storeroom to be able to handle stock for the coming Event. There should be consideration as to how the storeroom can meet the requirements of at least three (3) Events in a one (1) week period. The storeroom must have Easy Access to the Loading Dock and should also have Easy Access to the Sports Retail Store.

(g) (**Fitout Merchandise Shops**) The fitout of all Merchandise Shops will be undertaken by Project Co and will not reflect the branding or colours of any Home Team.

(h) (**Branding**) External signage for the Merchandise Shops must reflect the branding of the Hirer on Event Days.

(i) (**Security**) The Merchandise Shops must connect to Project Co's Security Systems and be covered by Project Co's CCTV system.

D11.4.3 Sponsor Merchandise Pods

(a) (**Functionality**) A minimum of four (4) Sponsor Merchandise Pods must be provided. The pods will be used by the Hirer to augment the Retail Facilities or to provide the opportunity for their sponsors to promote their products or services.

(b) (**Location**) The Sponsor Merchandise Pods must be located within the Controlled Area.

(c) (**Proximity**) The Sponsor Merchandise Pods on the Controlled Area must be in areas of high Patron foot traffic and have Ready Access to Outlets. Queue lines for Sponsor Merchandise Pods must be incorporated into the design of the Controlled Area to accommodate peak loads without reducing the functionality of the Controlled Area by creating congestion and choke points.

(d) (**Amenity**) The Sponsor Merchandise Pods must:

(i) be an enclosed space with security access controls at all entry and exit points to the pod;

(ii) be positioned in locations that have lockable, recessed pits or boxes for timely and convenient connection to Engineering Services including power, data, communications, water and waste water.

(iii) be designed to maximise the frontage and serving area such that two (2) points of sale operate concurrently;

(iv) have a level of finish that is aesthetically consistent with their location in the Controlled Area;

(v) have opportunity for spaces for branding by the Hirer including signage and the display of banners and flags. This requirement must be included in the identification of the location of the Sponsor Merchandise Pod so as not to impede Patron traffic flow and circulation;

(vi) be able to be secured so that on Non-Event Days the stock located in the Sponsor Merchandise Pods can be secured and protected from the elements if the pod is not de-stocked; and

(vii) be able to be relocated in a cost efficient and timely manner if they are not required for an Event or need to be relocated to maximise sales.

(e) (**Fitout**) The fitout of the Sponsor Merchandise Pods above the Base Build will be undertaken by others.

(f) (**Security**) The Sponsor Merchandise Pods must be covered by the external CCTV system.

D11.4.4 Temporary Event Day Stalls

(a) (**Functionality**) A minimum of ten (10) designated Serviced Zones for set up of Temporary Event Day Stalls must be distributed within the Controlled Area. These designated areas will be used by the Hirer on occasion to set up Temporary Event Day Stalls to sell and promote their products, particular events or services. The Hirer will bring their structure to the designated area and connect to the Engineering Services that are provided.

(b) (**Location**) The designated areas for set up of Temporary Event Day Stalls must:

(i) be located within the Controlled Area; and

(ii) be located in areas of high Patron traffic and with Ready Access to Outlets.

(c) (**Proximity**) The Temporary Event Day Stalls must be in areas of high Patron foot traffic and should be in close proximity to Outlets. Queue lines for Temporary Event Day Stalls must be incorporated into the design of the Controlled Area to accommodate peak loads without reducing the functionality of the Controlled Area so as to avoid congestion and choke points.

(d) (**Amenity**) The designated areas for Temporary Event Day Stalls must:

(i) be suitably sized to accommodate some variety with respect to the size of Temporary Event Day Stalls and to provide designated space for queuing without impeding on the free movement of Patrons or on queues for adjacent Functional Areas and

(ii) have lockable, recessed pits or boxes for timely and convenient connection to Engineering Services including power, data, communications, water and waste water.

(e) (**Security**) The designated areas for Temporary Event Day Stalls must be covered by the external CCTV system, and have connection to the Security Systems.

D11.4.5 Pod Storerooms

(a) (**Functionality**) Four (4) Pod Storerooms must be provided to accommodate storage of Temporary Event Day Stalls and Sponsor Merchandise Pods when not in use. Each Pod Storeroom should have additional capacity beyond this to accommodate the temporary storage of Event materials including flags, signs and other promotional items.

(b) (**Capacity**) Each Pod Storeroom must be a minimum size of $45m^2$ and must have a minimum height to store the Sponsor Merchandise Pods.

(c) Each Pod Storeroom and designated storage areas within must be sized to enable a loaded forklift with tines to be able to manoeuvre, pick up and set down loads within the room.

(d) (**Location**)

(i) The Pod Storerooms must have Ready Access to the designated locations for Sponsor Merchandise Pods.

(ii) The Pod Storerooms can be co-located to enable a larger and more efficient storage space.

(e) (**Amenity**) Each Pod Storeroom must have:

(i) shelving, cages or other systems for the storage of Event materials;

(ii) space for the storage of Temporary Event Day Stalls and Sponsor Merchandise Pods when not in use; and

(iii) an appropriately ventilated area for parking of forklifts, tractors and other internal combustion equipment.

(f) (**Security**) The Pod Storerooms must have an electronic security access system and must have stand-alone entry and egress points covered by the external CCTV system, both of which must be connected to the Security Systems.

D12 WASTE MANAGEMENT FACILITIES

D12.1 OVERVIEW

(a) The waste management strategy will form an important part of the Stadium and Sports Precinct's environmental sustainability as outlined in clause 0. A Waste Management Plan must be prepared by Project Co, in consultation with the State, for implementation by the Stadium Operator.

(b) This component of the Design Specifications covers the functional and accommodation requirements for the Waste Management Facilities.

(c) Design and procurement associated with the Waste Management Facilities must be delayed to facilitate Stadium Operator input into the design, in accordance with Chapter C19 (Delayed Design and Procurement).

(d) Functional Relationship Diagrams depicting the key functional relationships for the Functional Units that comprise the Waste Management Facilities are included in Chapter F7 (Waste Management) of these Design Specifications.

(e) Further technical requirements in respect of the Waste Management Facilities are detailed in Part E (Technical Brief) of these Design Specifications.

D12.2 OPERATIONAL PRINCIPLES

(a) The design of the Stadium and Sports Precinct will support the operational objective of promoting waste minimisation at the source and the recycling of waste.

(b) The Stadium Operator will be responsible for the implementation of the Waste Management Plan, which must take into account the requirements set out in clause A8.1, **Table 1** (FF&E Categorisation and Demarcation of Responsibility) and Chapter C19 (Delayed Design and Procurement) of the Design Specifications and must specifically address the requirements set out in clause 5.4 of Schedule 5 (Design Development). A key purpose of this plan is to identify strategies and the required infrastructure and operational processes for:

(i) reduction of waste produced in the Stadium and Sports Precinct;

(ii) separation of waste streams;

(iii) efficient collection of waste; and

(iv) safe storage and disposal of waste.

(c) Key components of the Waste Management Facilities will be informed by third party suppliers contracted by the Stadium Operator to deliver Waste Management Services and the processes they have in place for the treatment of waste. Notwithstanding this, the waste management strategy in the Waste Management Plan should be as flexible as possible so as not to limit contracting opportunities for the Stadium Operator.

(d) Waste Management Services will include the following:

(i) reduction of waste produced in the Stadium and Sports Precinct;

(ii) general waste;

(iii) recycling;

(iv) organic and green waste;

(v) medical and sanitary waste;

(vi) secure document disposal; and

(vii) liquid and hazardous waste.

(e) [*Not disclosed*]

(f) [*Not disclosed*]

(g) [*Not disclosed*]

(h) (**General Admission Patrons**) General Admission Patrons will require access to bins located throughout the General Admission Concourse areas and the Controlled Area. The spatial allowance provided for bins will be based on the anticipated volumes and types of waste produced at Events. Bins will be located so that they are readily identifiable by Patrons and so that they do not interfere with anticipated circulation patterns and emergency egress.

(i) [*Not disclosed*]

(j) [*Not disclosed*]

D12.3 GENERAL DESIGN REQUIREMENTS

(a) The Waste Management Facilities must be suitable for the Services and the Stadium Activities, including with respect to size, location and access.

(b) Project Co must provide the spatial allowances and areas to accommodate the Waste Management Facilities described in this Chapter D12 (Waste Management Facilities).

(c) (**Location**) Waste Management Facilities must:

(i) be distributed throughout the Stadium and Sports Precinct in accordance with this Chapter D12 (Waste Management Facilities);

(ii) be located to maximise efficiency of use; and

(iii) with the exception of bins provided for Patrons for Events, be located so that they are out of view of Patrons.

(d) (**Capacity**) Waste Management Facilities must be designed to cater for anticipated waste streams and the volume of waste associated with each stream.

(e) (**Proximity**) Waste Management Facilities must be provided with Ready Access to the Functional Units they serve and Ready Access at a minimum to the designated Service Lifts for transferring waste.

(f) (**Amenity**) Waste Management Facilities must be provided with adequate ventilation to prevent the build-up of odours. They must be designed with appropriate hard wearing, easy to clean surfaces.

D12.4 ACCOMMODATION REQUIREMENTS

D12.4.1 Waste Enclosures

[*Not disclosed*]

D12.4.2 [*Not disclosed*]

D12.4.3 [*Not disclosed*]

D12.4.4 Bin locations

(a) (**Functionality**) Bin locations must allow Stadium Users to readily dispose of waste on Event and Non-Event Days within the Stadium and Sports Precinct. Additionally, each bin location must not interfere with access and egress paths, including the fire engineering design.

(b) (**Capacity**) The number and size of bin locations must take into account anticipated waste volumes, the Stadium Activities and Stadium User movement patterns.

(c) (**Location**) The distribution of bin locations must take into account anticipated waste volumes, the Stadium Activities and Stadium User movement patterns.

(d) (**Amenity**) The bin locations must:

(i) have spatial allowance for general waste and recyclable waste bins;

(ii) be easily identifiable by Stadium Users; and

(iii) provide proper ventilation to prevent odours spreading to other areas.

D12.4.5 **[*Not disclosed*]**

D13 STADIUM OPERATIONS AND EVENT DAY FACILITIES

D13.1 OVERVIEW

(a) Stadium Staff are integral to the fans-first experience through operational elements, including customer service experience, cleanliness and presentation of the Stadium and Sports Precinct. To carry out the Stadium Activities and Services, it is essential that appropriate, high quality facilities for Stadium Staff are provided.

(b) The Stadium Operations and Event Day Facilities described in this Chapter D13 must be considered in the context of the required interfaces between the Functional Units and their functionality for Stadium Staff.

(c) This component of the Design Specifications covers:

(i) the requirements for the Stadium Operations and Event Day Facilities to support the operation and use of the Stadium and Sports Precinct on Event Days and Non-Event Days; and

(ii) considerations regarding overarching operational practices, including for the Catering Services, security, Waste Management Services and Cleaning Services.

(d) Requirements for dedicated accommodation for Project Co are not prescribed in these Design Specifications and must be determined by Project Co, however reference to such accommodation is made within this Chapter D13.

(e) Any facilities used to accommodate Services Personnel directly associated with the delivery of a Service that is a Reviewable Service must be clearly identified and demarcated, such that their use and accommodation can be transferred to the Stadium Operator should the Reviewable Service be terminated.

(f) Functional relationship diagrams depicting the key functional relationships for the Functional Units that comprise the Stadium Operations and Event Day Facilities are included in Chapter F8 (Stadium Operations and Event Day Facilities) of these Design Specifications.

(g) Further technical requirements in respect of the Stadium Operations and Event Day Facilities are detailed in Part E (Technical Brief) of these Design Specifications.

D13.2 OPERATIONAL PRINCIPLES

(a) The Stadium Operations and Event Day Facilities incorporate a range of facilities required to operate the Stadium on Event Days and Non-Event Days.

(b) The Stadium Operator will seek to maximise the use of the Stadium and will conduct Functions that will require the use of Event Operations Facilities in a reduced capacity.

(c) (**Administration Facilities**) The Stadium Operator will have a team of staff whose Administration Facilities will be based at the Stadium. This team will work with both Project Co and the Governance Agency to carry out the day to day management of the Stadium and Sports Precinct, with roles and responsibilities including:

(i) Event and Function booking and procurement;

(ii) Event and Function management;

(iii) sales, marketing and promotion, including the sale and management of supplier rights, naming rights and all other commercial rights;

(iv) finance and general administration;

(v) executive management;

(vi) contract management for subcontracted services;

(vii) reporting obligations;

(viii) Catering Services;

(ix) Cleaning Services (excluding those undertaken by Project Co as set out in Schedule 13 (Services Specifications) of this Agreement);

(x) Waste Management Services;

(xi) those facility management and maintenance activities not undertaken by Project Co, as outlined in Schedule 13 (Services Specifications) of this Agreement; and

(xii) other Stadium Activities.

(d) The Governance Agency will have a small team of staff (indicatively up to 3 personnel) whose administration facilities will be based at the Stadium. This team will work with both Project Co and the Stadium Operator to carry out the day to day management of the Stadium and Sports Precinct, with their primary role being contract administration.

[*Not disclosed*]

D13.3 [*NOT DISCLOSED*]

D13.4 ACCOMMODATION REQUIREMENTS

D13.4.1 Administration Facilities

(a) (**General**) The Administration Facilities described in this clause D13.4.1 must provide a friendly business-like ambience and atmosphere as well as providing for an active, engaging place of work. The Administration Facilities should assist the Stadium Personnel and Services Personnel to reinforce a 'one-team' culture for the mutual benefit of their respective activities. Access to natural light and external views is highly desirable in these areas.

(b) (**Capacity**) The capacities of the individual elements of the Administration Facilities are described in paragraphs (f) through (s).

(c) (**Location**) The Administration Facilities should be located so that the Stadium Activities required to be carried out by Stadium Personnel using these facilities, on both Event Days and Non-Event Days, can be performed in an efficient and effective manner.

(d) [*Not disclosed*]

(e) (**FF&E**)

(i) Built in fittings in the Administration Facilities must be finished in a material reflecting the nature and intended use of the area. All built-in furniture must accommodate all built-in technology to achieve ergonomic functionality and maximise aesthetic appeal, as well as optimising sightlines between Functional Units, where appropriate.

(ii) Each staff member accommodated in the Administration Facilities must be provided with lockable stationary and document storage. Lockable stationary and document storage may be either built-in joinery, loose furniture or a combination of both. Lockable equipment storage must be integrated within built-in joinery as required.

(iii) FF&E and overall fitout and décor must adopt an integrated interior design approach and encapsulate the objectives articulated in clause C11.5 (Interior Environment) of these Design Specifications.

(iv) Executive standard, fully ergonomic gas operated height adjustable chairs, with arms and multiple locking positions must be provided in the Administration Facilities. The standardised proprietary selection for task and visitors chairs must have a range of varying seat pad sizes and back

heights. Armrests must be adjustable or retractable to allow the chair to fit under benches or workstations and facilitate ergonomic keyboard access.

(v) Furniture, generally, and workstations, in particular, must be provided on a 'system' basis that is consistent in construction, look and finish with each of the Administration Facilities. Workstations must be modular and capable of being modified (with inter-changeable sections) to suit particular functional demands. Workstations must be provided with all necessary ICT and electrical services requirements.

(f) (**Administration Entrance Lobby**)

(i) (**Functionality**) The Administration Entrance Lobby must allow pedestrian visitors, Stadium Personnel, Hirers and other guests to access the Stadium on Non-Event Days.

(ii) (**Capacity**) The Administration Entrance Lobby must be able to function as a waiting area for guests and must accommodate a minimum of six (6) seated guests.

(iii) [*Not disclosed*]

(g) (**Reception Desk**)

(i) (**Functionality**) The Reception Desk will serve as the Stadium Operator's main reception during Non-Event Days. The design must enable staff located at the Reception Desk to be able to welcome, sign in and provide appropriate accreditation to guests to the Stadium, answer and distribute phone calls from an operator terminal, respond to complaints and queries and provide ticketing services.

(ii) (**Capacity**) The Reception Desk must be able to accommodate a minimum of three (3) Stadium Personnel at any one time.

(iii) (**Location and Proximity**) The Reception Desk must be co-located with the Administration Entrance Lobby and have Ready Access to the Conference Room, Meeting Room, the Executive Offices, the Executive Assistant Office and the CEO Office.

(h) (**General Administration area**)

(i) (**Functionality**) The General Administration area must be an open plan area allowing for Stadium Personnel to perform administrative tasks in planning for and conducting Stadium Activities.

(ii) (**Capacity**) The General Administration area must accommodate a minimum of forty-five (45) Stadium Personnel and respective FF&E in an open plan office environment.

(iii) (**Location**) The General Administration area must be located within the Administration Facilities.

(iv) (**Amenity**) In addition to the general FF&E requirements described in paragraph (e) there must be provision for informal meeting spaces and associated FF&E, including meeting tables and chairs within this area.

(i) (**Executive Offices**)

(i) (**Functionality**) Each Executive Office must be able to accommodate a senior manager of the Stadium Operator to perform administrative tasks in planning for and conducting Stadium Activities. These offices must be able to accommodate informal one-on-one style meetings of a confidential nature.

(ii) (**Capacity**) A minimum of twelve (12) secure Executive Offices must be provided. Each Executive Office must accommodate one (1) staff member and provide visitor seating for a minimum of two (2) guests at any one time.

(iii) (**Proximity**) The Executive Offices must be located with Ready Access to the General Administration area. Direct Access or co-location is desirable.

(j) (**CEO Office**)

(i) (**Functionality**) A CEO Office must be provided for the Stadium Operator's most senior on-site manager to perform their role. Not only will this entail administrative tasks, but also conducting small meetings, confidential discussions and presentations.

(ii) (**Capacity**) The CEO Office must accommodate one (1) staff member and provide a small meeting table for a minimum of six (6) people.

(iii) (**Proximity**) The CEO Office must have Ready Access to the Reception Desk and the Executive Offices. Ready Access to the Conference Room must also be provided. Access to the CEO Office must be via the Executive Assistant Office.

(iv) (**Amenity**) In addition to the general FF&E requirements described in paragraph (e), the CEO Office must have a higher, commensurate level of finishes and fitout than the General Administration area and the Executive Offices. As described in item (ii) of this paragraph (j), the CEO Office must be provided with high quality meeting tables and chairs.

(k) (**Executive Assistant Office**)

(i) (**Functionality**) An Executive Assistant Office must be provided for one (1) staff member to perform administrative tasks, including printing and filing, as well as other Stadium Activities relevant to this area. This includes meeting and greeting guests of the CEO, and must incorporate a waiting area for these guests.

(ii) (**Capacity**) The Executive Assistant Office must accommodate one (1) staff member and provide visitor seating for a minimum of two (2) guests at any one time.

(iii) (**Location and proximity**) The Executive Assistant Office must be provided directly adjacent to and with connectivity to the CEO Office.

(iv) (**Amenity**) In addition to the general FF&E requirements described in paragraph (e) the Executive Assistant Office must have a higher, commensurate level of finishes and fitout than the General Administration area and the Executive Offices. As described in (ii) of this paragraph (k), visitor seating must be provided. There must be provision for a greater volume of secure storage in this area.

(l) (**Conference Room**)

(i) (**Functionality**) A Conference Room must be provided for the Stadium Operator to conduct meetings, presentations and conferences (including of a confidential nature), typically around a large board room table. It must be suitable for both casual and executive meetings on Non-Event Days and conferences and briefings on Event Days.

(ii) (**Capacity**) The Conference Room must be able to accommodate a minimum of 30 people for meetings. Without limiting this, it must also be able to be used for smaller meetings of approximately ten (10) people, without the room feeling too large.

(iii) (**Location and proximity**) The Conference Room must have Ready Access to the CEO Office, the Executive Offices and the Reception Desk. Easy Access to the Main Security Office must also be provided.

(iv) (**Amenity**) The Conference Room must be provided with high quality moveable trestle tables with the ability to reconfigure the room for a variety of meeting formats and associated seats as well as AV Systems that allow clear and legible audio visual presentations to all seated positions within the

room. Minor kitchenette facilities, including related storage are desirable in this space.

(m) (**Meeting Room**)

(i) (**Functionality**) A Meeting Room must be provided for the Stadium Operator to conduct meetings, presentations and conferences, as well as teleconferences, around a board room table. It must be suitable for both casual and executive meetings on both Non-Event Days and Event Days.

(ii) (**Capacity**) The Meeting Room must be able to accommodate a minimum of fifteen (15) people for meetings (including of a confidential nature) around a board room table.

(iii) (**Location and proximity**) The Meeting Room must have Ready Access to the General Administration area, the Executive Offices and the Reception Desk.

(iv) (**Amenity**) The Meeting Room must be provided with high quality moveable trestle tables with the ability to reconfigure the room for a variety of meeting formats and associated seats as well as AV Systems that allow clear and legible audiovisual presentations and teleconferencing to all seated positions within the room. Minor storage provisions must be provided.

(n) (**Administration Break Room**)

(i) (**Functionality**) An Administration Break Room must be provided for the Stadium Personnel accommodated in the Administration Facilities to take breaks from their work activities. It will be used as a lunch, morning tea, and afternoon tea point.

(ii) (**Capacity**) The Administration Break Room must be able to accommodate a minimum of twelve (12) Stadium Personnel at any one time.

(iii) (**Location and proximity**) The Administration Break Room must have Ready Access to the General Administration area.

(iv) (**Amenity**) The Administration Break Room must incorporate a kitchenette, including storage cupboards, pin boards, a fridge, sink, microwave, hot and cold beverage making facilities, café style tables and chairs and spatial and Engineering Services provision for two (2) vending machines.

(o) (**General office storage**) General office storage with associated shelving for stationary supplies, media and promotional materials, of a minimum 12m² and 2.4m overhead height, must be provided.

(p) (**Utilities Room**) A Utilities Room must be provided, including perimeter storage for consumables such as paper and toner, layout space for viewing plans, document preparation, publishing and photocopying facilities. This must accommodate a minimum of two (2) multi-function devices and also be provided with benches for layout space and publishing equipment.

(q) (**Equipment Store**) An Equipment Store, of a minimum 12m² and 2.4m overhead height, must be provided for general office equipment. This room must be able to accommodate a compactus style storage system at a point in the future.

(r) (**End of Trip Facilities**) End of Trip Facilities for Stadium Personnel who choose to cycle to the Stadium must be provided in accordance with the TravelSmart Workplace fact Sheet "*Workplace cycle facilities*". Change room facilities must be provided as described in paragraph (s).

(s) (**Administration Change Rooms**)

(i) (**Functionality**) Change rooms for full-time Stadium Personnel must be provided, with shower, toilet and locker facilities for male and female staff.

(ii) (**Capacity**) The Administration Change Rooms must accommodate a minimum of sixty (60) Stadium Personnel.

(iii) (**Proximity**) The Administration Change Rooms must have Ready Access to the General Administration area and Executive Offices.

(iv) (**Amenity**) The female change room must accommodate thirty (30) Stadium Personnel and, must include:

A benches;

B twenty (20) full height 300mm wide lockers, incorporating hanging space for towels;

C toilets and hand basins in accordance with relevant Quality Standards;

D four (4) standalone shower cubicles; and

E two (2) hand dryers.

(v) The male change room must accommodate thirty (30) Stadium Personnel and, must include:

A benches;

B twenty (20) full height 300mm wide lockers, incorporating hanging space for towels;

C toilets, urinals and hand basins in accordance with relevant Quality Standards;

D four (4) standalone shower cubicles; and

E two (2) hand dryers.

(vi) One (1) wheelchair accessible unisex toilet and shower cubicle must be provided as part of the Administration Change Rooms, with independent access from the male and female facilities.

D13.4.2 Project Co Maintenance Facilities

(a) (**General**) The Project Co Maintenance Facilities as described in this clause D13.4.2, are accommodation for Services Personnel involved in the provision of the Services. Without limiting this clause D13.4.2, Project Co must provide on-site Project Co Maintenance Facilities, which are suitable for carrying out the Services in accordance with this Agreement.

(b) (**Obligations**) The following paragraphs (c) through (m) represent the State's vision for the Project Co Maintenance Facilities, however, Project Co is not bound by this and must provide the Maintenance Facilities it requires to perform the Services in accordance with this Agreement.

(c) (**Flexibility**) In consideration of fostering a "one team" culture between the Stadium Operator and Project Co, the State will consider innovative designs which allow for Services Personnel to be accommodated with, or in close proximity to, the Administration Facilities. The State will consider 'shared' spaces, including change rooms and break rooms between Stadium Personnel and Services Personnel where a demonstrable efficiency is provided.

(d) [*Not disclosed*]

(e) [*Not disclosed*]

(f) (**Maintenance Office**) A Maintenance Office for two (2) people, anticipated to be located adjacent to the General Trades Workshop, should be provided. The Maintenance Office will be required to cater for management and administration staff associated with the provision of the Services.

(g) (**Grounds Office**) A Grounds Office for two (2) people, anticipated to be located adjacent to the irrigation pump room, should be provided. The Grounds Office will be required for administration associated with Playing Surface Services and should house the irrigation control workstations and other Pitch related control systems.

(h) (**Services Break Room**) A Services Break Room to accommodate up to ten (10) personnel seated at tables should be provided. A kitchenette should be provided which should include hot and cold beverage making, storage cupboards, a 240L fridge, sink and microwave. It is envisaged that both general maintenance and Playing Surface Services personnel will utilise the Services Break Room.

(i) (**Services Change Rooms**)

(i) Services Change Rooms for both male and female staff should be provided, for both general maintenance and Playing Surface Services personnel.

(ii) The female change room should include:

A benches;

B five (5) full height 300mm wide lockers;

C toilets and hand basins in accordance with relevant Quality Standards;

D one (1) standalone shower cubicle; and

E one (1) hand dryer.

(iii) The male change room should include:

A benches;

B ten (10) full height 300mm wide lockers;

C toilets, urinals and hand basins in accordance with relevant Quality Standards;

D one (1) standalone shower cubicle; and

E one (1) hand dryer.

(iv) One (1) wheelchair accessible unisex toilet and shower cubicle should be provided as part of the Services Change Room facilities, with independent access from the male and female facilities.

(j) [*Not disclosed*]

(k) [*Not disclosed*]

(l) [*Not disclosed*]

(m) [*Not disclosed*]

D13.4.3 [*Not disclosed*]

D13.4.4 [*Not disclosed*]

D13.4.5 [*Not disclosed*]

D13.4.6 [*Not disclosed*]

D13.4.7 [*Not disclosed*]

D13.4.8 [*Not disclosed*]

D13.4.9 [*Not disclosed*]

D13.4.10 [*Not disclosed*]

D13.4.11 [*Not disclosed*]

D13.4.12 [*Not disclosed*]

D13.4.13 Green Rooms

(a) (**Capacity**) Three Green Rooms must be provided. The Green Rooms must be a minimum of 80m^2 to accommodate a range of uses including:

(i) use by Performers for Entertainment Events; and

(ii) use by Performers for entertainment at Sporting Events.

(b) (**Location**) The Green Rooms must be located on the Event Level in close proximity to the Team Facilities and the proposed stage positions for Entertainment Events.

(c) (**Proximity**) The Green Rooms must have:

(i) Direct Access to a Pitch Access Vomitory or the Officials' Race;

(ii) Ready Access to the Field of Play; and

(iii) Easy Access to the Team Facilities and the Stadium Service Road.

(d) (**Amenity**) Each Green Room must provide:

(i) restricted sightlines into the Green Rooms from adjacent areas to preserve the privacy of occupants;

(ii) a change area to accommodate up to ten (10) personnel; and

(iii) a wet area incorporating:

A two (2) standalone shower cubicles;

B two (2) hand basins;

C two (2) toilets; and

D one (1) hand dryer.

D13.4.14 Ticket Control Points

(a) The Ticket Control Points will facilitate entry into and exit from the Stadium on Event Days.

(b) (**Capacity**) Each Ticket Control Point must be designed to accommodate the anticipated maximum flow of Patrons through the entry gate relative to its position in relation to arrival points.

(c) (**Location**) The Ticket Control Points must be positioned around the Controlled Area to minimise travel times from arrival points to the Stadium.

(d) (**Proximity**) Each Ticket Control Point must have:

(i) Ready Access to the Ticket Boxes and Patron Services Office; and

(ii) Ready Access to the Patron arrival points and to the Stadium.

(e) (**Amenity**) Each Ticket Control Point must:

(i) be integrated into the architectural expression of the Stadium and Sports Precinct;

(ii) provide shelter for Stadium Staff and Patrons;

(iii) be permeable to allow the Stadium to be secured in preparation for the Event, but allow access to the Controlled Area on Non-Event Days;

(iv) incorporate storage for temporary infrastructure required by the Stadium Operator to operate the Ticket Control Points, including crowd control barriers and trestle tables;

(v) incorporate speakers and an audio system to support the PA System announcements to Patrons, receive and play back music and the Event radio commentary;

(vi) be well lit with provisions for power and ICT requirements associated with the entry control system and ticketing systems;

(vii) incorporate infrastructure requirements for queuing, security checks and ticket scanning;

(viii) provide for delineated access points for General Admission Patrons, Premium Product Patrons, Accredited Event Personnel and for IRUA Patrons; and

(ix) have a dedicated exit point to facilitate the eviction of Patrons.

D13.4.15 Ticket Boxes

(a) (**Functionality**) The Ticket Boxes must be provided for the Stadium Operator's appointed ticketing agent to sell tickets to Events, facilitate the collection of tickets pre-purchased for Events and answer questions in relation to ticketing for Events.

(b) (**Capacity**)

(i) The total number of service windows and counters for each Ticket Box must be determined by the location of the Ticket Box in relation to arrival points and the expected number of Patrons to be serviced. There must be a minimum of thirty (30) service windows in total across all Ticket Boxes and not less than five (5) service windows in any one Ticket Box.

(ii) Serviced Zones must be provided adjacent to each of the Ticket Boxes to facilitate the establishment of temporary ticket boxes as part of Event Overlay when a larger number of walk-ups is expected.

(c) (**Location**) One Ticket Box must be located at each of the Ticket Control Points.

(d) (**Proximity**) The Ticket Boxes must have:

(i) Ready Access to the Ticket Control Point and Patron Services Office; and

(ii) Ready Access to the Patron arrival points and to the Stadium.

(e) (**Amenity**) Each Ticket Box must:

(i) be integrated into the architectural expression of the Stadium and Sports Precinct;

(ii) have built in fittings, including service counters to the front, finished in a material reflecting the nature and intended use of the area. All built in furniture must accommodate all in-built technology to achieve ergonomic functionality and maximise aesthetic appeal;

(iii) include a minimum of one (1) service point that has Universal Access;

(iv) be fitted with acoustically suitable windows that allow for clear and intelligible two-way conversation between Stadium Staff and Patrons without the need for raised vocal effort or unnatural posture;

(v) be fitted with lockable roller shutters that are concealed from view when retracted and of a high quality appearance when deployed to secure the area between Events;

(vi) incorporate separate secure access to the Ticket Box and be covered by the external CCTV systems;

(vii) be incorporated into the IP Network;

(viii) be fitted with an internal office out of the view of Patrons to allow for cash counting and a safe;

(ix) have clear signage to indicate to Patrons the function of the Ticket Box;

(x) provide a hard stand queuing area with supporting infrastructure and cover. The queuing area and infrastructure must not impede access to the Ticket Control Points; and

(xi) be provided as an air conditioned space with localised temperature control.

(f) (**Toilets**) Each Ticket Box must have Ready Access to staff toilets located within the Controlled Area, that service Stadium Personnel working at the Ticket Control Points, Ticket Boxes and Patron Services Offices.

D13.4.16 Patron Services Offices

(a) (**Functionality**)

(i) Patron Services Offices must be provided for the Stadium Operator and the Hirer to manage enquiries for Events.

(ii) The Patron Services Offices located outside of the Controlled Area, within the Sports Precinct, will be used to distribute tickets and accreditation for Events and to cloak items for Patrons.

(iii) The Patron Services Offices within the Controlled area must be able to cloak additional items, including prams, that will be allowed into the Controlled Area, but not into the Stadium.

(b) (**Capacity**) Each Patron Services Office must allow a minimum of two (2) staff to service Patrons simultaneously.

(c) (**Location**) One (1) Patron Services Office must be located at each of the Ticket Control Points and a minimum of two (2) Patron Services Offices must be provided on the Stadium Curtilage. The Patron Services Office(s) located within the Stadium, must be located in high pedestrian traffic areas.

(d) (**Proximity**) The Patron Services Offices located outside of the Controlled Area, within the Sports Precinct, must have:

(i) Ready Access to a Ticket Box;

(ii) Direct Access to a Ticket Control Point;

(iii) Ready Access to the Patron arrival points, toilets in the Sports Precinct and to the Stadium.

(e) The Patron Services Offices located in the Stadium must have Ready Access to the Sports Retail Store.

(f) (**Amenity**) Each Patron Services Office must:

(i) be integrated into the architectural expression of the Stadium and Sports Precinct;

(ii) have built in fittings, including service counters to the front and shelving to the rear, finished in a material reflecting the nature and intended use of the area. All built in furniture must accommodate all in-built technology to achieve ergonomic functionality and maximise aesthetic appeal;

(iii) include a minimum of one (1) service point that has Universal Access;

(iv) be fitted with acoustically suitable windows that allow for clear and intelligible two-way conversation between Stadium Personnel and Patrons without the need for raised vocal effort or unnatural posture;

(v) be fitted with in built cabinetry for the storage of items cloaked by Patrons, with provisions for an electronic cloaking system provided by the Stadium Operator;

(vi) be fitted with lockable roller shutters that are concealed from view when retracted and of a high quality appearance when deployed to secure the area between Events;

(vii) incorporate separate secure access to the Patron Services Office and be covered by the external CCTV systems;

(viii) be incorporated into the IP Network;

(ix) have clear signage to indicate to Patrons the function of the Patron Services Office;

(x) provide a hard stand queuing area with supporting infrastructure and cover. The queuing area and infrastructure must not impede access to the Ticket Control Points; and

(xi) be provided as an air conditioned space with localised temperature control.

(g) The external Patron Services Offices must be fitted with basic kitchenette facilities including hot and cold water, sink, counter space and a bar fridge. The kitchenette facilities must be out of view of Patrons.

(h) The Patron Services Offices within the Stadium must:

(i) have both internal and external access from the Stadium; and

(ii) incorporate sufficient storage space for bulky Patron items including prams.

(i) (**Toilets**) Each external Patron Services Office must have Ready Access to staff toilets located within the Controlled Area, that service Stadium Personnel working at the Ticket Control Points, Ticket Boxes and Patron Services Offices.

D13.4.17 [*Not disclosed*]

D13.4.18 [*Not disclosed*]

D14 MEDIA FACILITIES

D14.1 OVERVIEW

(a) Media activities and the respective Media Personnel will play an important role in the broadcast and reporting of Events conducted at the Stadium.

(b) This component of the Design Specifications covers the functional and accommodation requirements for the Media Facilities.

(c) (**The Media**) Facilities described in this Chaptern of the Design Specifications are considered appropriate for most Events to be held at the Stadium. It is anticipated however that there will be occasions where the demand for Media Facilities will exceed the capacity of the dedicated Media Facilities described in this Chapter D14 (Media Facilities) of these Design Specifications and supplementary / secondary facilities will be needed for the purposes of a specific Event. The requirements for Media Facilities in such circumstances may be met through:

(i) temporary utilisation of other facilities in the Stadium which have been designed to accommodate media activities as a secondary purpose; or

(ii) Event Overlay; or

(iii) a combination of these approaches.

(d) A Functional Relationship Diagram depicting the key functional relationships for the Functional Units that comprise the Media Facilities is included in Chapter F9 (Media Facilities) of these Design Specifications.

(e) Further technical requirements in respect of the Media Facilities are detailed in Part E (Technical Brief) of these Design Specifications.

D14.2 OPERATIONAL PRINCIPLES

(a) For most Sporting Events a large contingent of local, national and potentially international Media Personnel will be in attendance at the Stadium to present, produce, broadcast or report on the Event and associated activities. A smaller contingent of Media Personnel may be in attendance for other Events, such as concerts.

(b) A range of purpose-built, dedicated Media Facilities as further described in this Chapter D14 (Media Facilities) of these Design Specifications, will be available within the Stadium for use by Media Personnel in their recording, written reporting and production of television and radio broadcasts of Events at the Stadium.

(c) A range of secondary media facilities will be needed to cater for Events where the demand for Media Facilities exceeds the capacity of the dedicated Media Facilities. It is envisaged that the number of these Events would be typically be one or two per year. A Secondary Television Studio will be used during large international rugby and Cricket Events between Australia and England, India and South Africa, and potentially for Special Events. For example, it is anticipated that the Away Team Players' Warm-Up

Room or the Green Rooms will be overlayed to accommodate large media conferences for international Cricket Events on the basis that this can accommodate the required 180 person capacity and will be located outside of the PMOA.

(d) Television broadcasters may commence Bump-In for Events up to three (3) days prior to the Event scheduled at the Stadium depending on the amount of equipment and infrastructure to be set up. On Event Day, they will arrive at the Stadium approximately eight (8) hours prior to the commencement of the Event to finalise Bump-In. Broadcasters will generally commence Bump-Out as soon as the broadcast of the Event has completed.

(e) Camera positions for Sporting Events will vary. The main camera platforms situated on the Primary Camera Deck and the Secondary Camera Deck will be used for all Sporting Events. Other camera positions will require permanent patch points to be installed with flexibility required for infrastructure such as platforms to be fitted to meet the requirements of the individual sport broadcast requirements.

[*not disclosed*]

D14.3 GENERAL DESIGN REQUIREMENTS

(a) Project Co must provide purpose-built, dedicated Media Facilities within the Stadium as described in this Chapter D14 (Media Facilities) of these Design Specifications.

(b) (**User Group consultation**) As part of its User Group consultation, Project Co must consult Project Stakeholders representing the full range of Media Personnel that will operate from the Stadium in the design and construction of the Media Facilities to ensure that all functional requirements relating to the work of Media Personnel and production of their outputs is catered for within the facilities. In particular, Project Co must ensure that the Media Facilities are suitable for local newspaper and online print media, all Australian radio networks and all free to air and pay television networks broadcasting from and within Australia.

(c) (**Key Design Parameters**)

(i) The Media Facilities must be designed to be suitable to host, conduct and broadcast Sporting Events for all Sporting Codes.

(ii) The Media Facilities must comply with all relevant Quality Standards including in particular the:

A the AFL Venue Guidelines 2013;

B the AFL ICT Guidelines 2013; and

C all other Sporting Standards.

Where the requirements of these Design Specifications differ from those set out in the relevant Quality Standards, the higher or greater requirement must be met.

(iii) The requirement at paragraph (c)(i) extends to all fitout and Engineering Services provisions described within the relevant Quality Standards.

(d) (**Location and separation**) Unless noted otherwise, all Media Facilities must be located on the northern side of the Stadium or Sports Precinct.

(e) The locations for Media Facilities within the Stadium, particularly those with a view of the Playing Surface, are anticipated to be commercially valuable locations. Given the natural tension for the more valuable seating locations within the Stadium, the Media Facilities overlooking the Playing Surface must be sized efficiently to ensure the Premium Product Areas and Team Facilities in these locations are not compromised. Without limiting the required functionality described in this Chapter D14 (Media Facilities) of these Design Specifications, Project Co should consider limiting the frontage of Playing Surface facing Media Facilities to efficient levels. In respect to this, tiered rows should be considered in appropriate locations. Should tiered rows be used, careful consideration must be given to ensure that Media Personnel can safely and easily access their seat in these spaces without disturbing any other seated Media Personnel.

(f) Unless designated in clauses D14.4.1 to D14.4.22, the positioning of Media Facilities in relation to the levels of the Stadium on which they are located should:

(i) ensure that Media Personnel have minimal crossover with General Admission Patrons, Players, Coaches, Team Support Personnel and Match Officials; and

(ii) facilitate minimal control pressures at entries to, or interfaces with, Media Facilities.

(g) [*Not disclosed*]

(h) [*Not disclosed*]

(i) (**Amenities**) The Media Facilities must:

(i) be designed to promote and allow for efficiencies in carrying out of media activities by Media Personnel by providing:

A fixed cabling and good cabling access for efficient Bump-In and Bump-Out; and

B efficient movement of Media Personnel throughout the Stadium;

(ii) be fitted with all required power, data and communications outlets, services, racks, cable trays, locally controlled lighting and other fixtures and furnishings necessary to support the required functionality of each area, such that Media Personnel can safely and efficiently perform their activities;

(iii) have robust finishes and fittings in high traffic and high impact areas;

(iv) have acoustical treatments to provide excellent acoustic conditions which are favourable to the activities to be undertaken in the rooms / areas, particularly where these are used for conducting interviews and capturing and producing audio and video of the Event; and

(v) have reliable ICT Systems.

(j) (**Accessibility**)

(i) All Media Facilities must have Universal Access to accommodate IRUA. This includes provision of accessible work benches.

(ii) Access to all Media Facilities should take into consideration the requirement to use trolleys to Bump-In equipment with the provision of suitable flooring, ramps and access to Service Lifts. This includes provision of wall, door and corner protection for heavily trafficked routes.

(k) (**Toilet facilities**)

(i) Dedicated toilets for Media Personnel must be provided with Direct Access from the Media Lounge. For fixture provisions, the ratio of fixtures must be based on a distribution of 70% male and 30% female attendance for the capacity of Media Personnel served by the toilet facilities. One (1) unisex accessible toilet must be provided as part of the overall fixture provisions to this area.

(ii) Access to toilets for male and female Media Personnel must be provided on the Event Level. This must include access to one (1) unisex accessible toilet.

(iii) Toilets and amenities for Media Personnel working in the Outside Broadcast Compound should be located no more than 50m away from the Outside Broadcast Compound. Whilst these do not have to be dedicated for Media Personnel, co-locating these with the Outside Broadcast Crew Room should be considered.

(l) (**Fitout quality**) The interior fitout and furnishings to the Media Facilities should be contemporary, modest and of good quality and must not impede on the required

functionality of the rooms. Those Media Facilities which may be televised (including for example the Media Interview Rooms within the Team Facilities) must have a higher standard of fitout commensurate with their more 'public' display.

(m) (**Flexibility and future proofing**) The design of the Stadium must demonstrably be able to cater for all media requirements for AFL Events and increased media requirements for other Events through:

(i) Event Overlay;

(ii) temporary utilisation of other facilities in the Stadium which have been designed to accommodate a secondary purpose; or

(iii) through a combination of these approaches.

The required capacities for Cricket Events are outlined in **Table 8**.

Table 8: Required capacities for Media Facilities for Cricket Events

Media Facilities' Functional Unit	Briefed Capacity (Media Personnel)	Crickets Events (excluding Ashes and Indian test matches) Required Capacity (Media Personnel)	Crickets Events (Ashes and Indian test matches) Required Capacity (Media Personnel)
Written Press Box	30	50	125
Photographers Work Room	10	30	30
Media Interview Room	30 (with cameras behind back row)	100 (with 15 cameras at front row)	180 (with 15 cameras at front row)
Outside Broadcast Compound	1 x Broadcaster 600m^2	2 x Broadcasters 1000m^2	2 x Broadcasters 1000m^2
Outside Broadcast Patch Room	1 x Broadcaster	2 x Broadcasters	2 x Broadcasters
Outside Broadcast Crew Room	20	60	60

(n) The design and construction of the Media Facilities should be based on the principle of ensuring maximum flexibility to facilitate future modifications to meet the changing demands, trends and standards of the media industry over the Service Life of the Stadium. This consideration should extend to the choice of construction materials and type of construction for floors, walls and ceilings, the extent of spare capacity provided in conduit and cable trays and the selection of routes for cable runs.

(o) (**Acoustic performance requirements**) Refer to Part E (Technical Brief) of these Design Specifications for the acoustic performance requirements relating to the Media Facilities.

(p) (**ICT Systems and broadcast cabling requirements**) Refer to Part E (Technical Brief) of these Design Specifications for ICT Systems and broadcast cabling requirements relating to the Media Facilities.

D14.4 ACCOMMODATION REQUIREMENTS

D14.4.1 Primary Television Studio

(a) A Primary Television Studio must be provided at an elevated position above the Playing Surface which allows for Media Personnel (television broadcasters) to capture and broadcast the Event, produce and broadcast 'during-play' commentary and conduct, produce and broadcast interviews with the commentators and other Stadium Users before, during and after Events.

(b) The Primary Television Studio is comprised of three functional sub areas:

(i) the Primary Camera Deck ;

(ii) the Primary Commentary Box; and

(iii) the Primary Studio Box.

(c) [*Not disclosed*]

(d) [*Not disclosed*]

(e) (**Amenity**) The floor of the Primary Television Studio must be flat, level and horizontal. The Primary Television Studio must have floor to ceiling glazing.

(f) The following functional sub-areas detailed in clauses D14.4.2 to D14.4.4 inclusive must be provided within the Primary Television Studio.

D14.4.2 Primary Camera Deck

(a) The Primary Camera Deck is where the primary cameras for television broadcast will be located.

(b) (**Capacity**) The Primary Camera Deck must have the capacity to cater for five (5) broadcast cameras with suitable operating room around each camera.

(c) (**Dimensions**) The Primary Camera Deck must be a depth and width that allows three (3) cameras to be located behind the bowler's arm for each of the Drop-In Cricket Wickets for Cricket Events.

(d) (**Location**)

(i) The Primary Camera Deck must be located so that the centreline of the Camera Deck is on the lateral centre line of the Field Of Play for AFL and Rectangular Events and on the longitudinal centre line of the Cricket Wicket for Cricket Events.

(ii) The Primary Camera Deck must be above, below or alongside the Primary Commentary Box and the Primary Studio Box. It must not be placed in front of the Primary Commentary Box and the Primary Studio Box.

(iii) The Primary Camera Deck must be positioned so that the cameras and their operators do not restrict the view of Patrons seated within the Seating Bowl or situated within the Premium Product Areas.

(e) (**Proximity**)

(i) Consideration should be given to co-locating the Primary Camera Deck with the Primary Commentary Box and the Primary Studio Box. Where this cannot be achieved, the Primary Camera Deck should have Ready Access to these areas.

(ii) The Primary Camera Deck must have Ready Access to a goods lift or lift designated for the use of Media Personnel which travels to the Event Level.

(iii) There must be Easy Access from the Primary Camera Deck to the Outside Broadcast Compound and to the Media Facilities situated on the Event Level.

(f) (**View**) Each camera position must:

(i) have a continuous, uninterrupted view of the Playing Surface (including a clear view of the Key Viewing Elements for AFL Events, Cricket Events and Rectangular Events);

(ii) have a continuous, uninterrupted view of the ball when in the air for AFL Events, Cricket Events and Rectangular Events, based on the Highball criteria set out for each sport in the Sporting Standards; and

(iii) a continuous, uninterrupted view of the Key Viewing Elements for Athletics Events.

This functionality must be achieved without requiring the Media Personnel operating these cameras to wear a harness.

(g) (**Amenity**)

(i) The floor of the Primary Camera Deck must be stabilised with no rocking or vibration.

(ii) Where a parapet or rail is positioned on the leading edge of the Primary Camera Deck it must meet all operational requirements for camera operators (including not obstructing camera views) and comply with all safety regulations at all times.

(iii) The entry to the Primary Camera Deck must be a minimum double-door clear opening width to allow for television broadcasting equipment accessibility.

(iv) Where glazing is provided at the interface to the Seating Bowl, it must be operable to allow cameras to directly capture vision from the Playing Surface and Seating Bowl.

D14.4.3 Primary Commentary Box

(a) (**Capacity**) The Primary Commentary Box will be used by the television broadcast commentators for Sporting Events and must include seating for a minimum of seven (7) Media Personnel including four (4) commentators at a work bench at the front of the box plus three (3) associated network personnel.

(b) (**Dimensions**) The minimum room dimensions for the Primary Commentary Box must be:

(i) 5.0 metres in width, with a width of 8.0 metres being desirable (across the glazing line to the Seating Bowl which overlooks the Playing Surface);

(ii) 6.0 metres in depth; and

(iii) 3.0 metres in height, with a height of 4.0 metres being desirable.

(c) (**View**) Each of the four (4) Primary Commentary Box Seating Positions must:

(i) have a continuous, uninterrupted view of the Playing Surface (including a clear view of the Key Viewing Elements for AFL Events, Cricket Events and Rectangular Events);

(ii) have a continuous, uninterrupted view of the ball when in the air for AFL Events, Cricket Events and Rectangular Events, based on the Highball criteria set out for each sport in the Sporting Standards; and

(iii) a continuous, uninterrupted view of the Key Viewing Elements for Athletics Events.

(d) It is highly desirable that each of these positions also has full visibility of the Home Teams' Interchange Benches and the Away Team Interchange Bench for AFL Events.

(e) (**Amenity**)

(i) The work bench as described at paragraph (a) must be continuous and be a minimum of 750mm deep and 850mm wide (per person). The work bench must be placed as close to the glazing or edge of the tier as practicable. An 80mm hole at each position must be provided for cable access underneath the bench.

(ii) Fully ergonomic gas operated height adjustable chairs with arms and multiple locking positions of an executive standard must be provided. Armrests must be adjustable or retractable to allow the chair to fit under benches or workstations when using a computer keyboard.

(iii) The Media Personnel using the Primary Commentary Box must be able to 'feel' the atmosphere of the crowd during Events. Operable windows which open to the Seating Bowl must be provided.

D14.4.4 Primary Studio Box

(a) The Primary Studio Box must be able to be used as a television set for presenting, producing and broadcasting, usually live television in association with Events.

(b) (**Capacity**) The Primary Studio Box must accommodate a minimum of four (4) presenters (located at the front of the booth), camera operators and sound engineers, for a total of ten (10) Media Personnel at any one time.

(c) (**Dimensions**) The minimum room dimensions for the Primary Studio Box must be:

(i) 6.0 metres in width (across the glazing line to the Seating Bowl which overlooks the Playing Surface);

(ii) 5.0 metres in depth; and

(iii) 3.0 metres in height, with a height of 3.5 metres being desirable.

(d) (**View**) The television broadcasters must be able to use the Playing Surface and Seating Bowl as a backdrop for their telecasts. The area immediately in front of the Primary Studio Box must be free of infrastructure or any other Stadium element which may restrict this view.

(e) (**Amenity**) The Primary Studio Box must be provided with both front and rear, ceiling mounted lighting bars for the broadcaster's production lighting. The lighting bars must be able to be accessed by Media Personnel without removing ceiling panels or fixtures. As a minimum the Primary Studio Box must be able to support two (2) x 2000W lights from both the front and rear lighting bars at any one time.

(f) The Primary Studio Box will be used in different configurations from broadcaster to broadcaster and Event to Event. It must therefore have an appropriate, efficient and easy access method of distributing any temporary cabling requirements for the broadcaster. Project Co must provide for this with consideration for either underfoot cable paths or overhead cable baskets or otherwise.

(g) The floor to ceiling glazing separating the Primary Studio Box to the Seating Bowl must be seamless, unhindered by joints, transoms or mullions.

(h) Glare and light reflectivity must be minimised as much as is practicable in the Primary Studio Box. Project Co should consider fixing all glazing with anti-reflective glass or the use of non-vertical glazing.

(i) The Primary Studio Box area should be built as a shell space, with basic floor, wall and ceiling finishes, to be subsequently customised by the television networks. All Engineering Services must be provided in accordance with the minimum requirements of the Technical Brief.

(j) The entry door to each Primary Studio Box must be a minimum double-door clear opening width to allow for television broadcasting equipment accessibility.

D14.4.5 Secondary Television Studio

(a) A Secondary Television Studio must be provided at an elevated position above the Playing Surface which allows for a second television broadcaster to capture and broadcast the Event, produce and broadcast 'during-play' commentary and conduct, produce and broadcast interviews with the commentators and other Stadium Users before, during and after Events.

(b) The Secondary Television Studio is comprised of two functional sub areas:

(i) the Secondary Commentary Box; and

(ii) the Secondary Studio Box.

(c) (**Location**) The Secondary Television Studio should be located as close as practicable behind the Cricket Wicket for Cricket Events.

(d) (**Proximity**) The Secondary Television Studio must have:

(i) reliable, Easy Access to the Media Interview Room and Playing Surface, for the Media Personnel using the Secondary Television Studio immediately after the 'final siren' of the Event; and

(ii) Easy Access to the Media Lounge.

(e) (**Amenity**) The floor of the Secondary Television Studio must be flat, level and horizontal. The Secondary Television Studio should have floor to ceiling glazing.

(f) The following functional sub-areas detailed in clauses D14.4.6 to D14.4.8 inclusive must be provided within the Secondary Television Studio.

(g) (**Dual use**) As it will only be required to function as a television studio for a limited number of Events per annum, the Secondary Television Studio must be provided as a non-dedicated facility that serves a dual purpose as an Away Team Coaches' Box for AFL Events. Engineering Services must be provided in appropriate locations to facilitate use of the room for each purpose.

(h) The Secondary Television Studio must be able to be readily converted (within 12 hours) between its use as a television studio and its alternative use as an Away Team Coaches' Box for AFL Events with minimal effort and expense. All temporary fitout components required to achieve the alternative use or overlay solution for this room must be provided (e.g. tiered flooring). Given the very premium location within the Stadium, dual room access should be considered to enable areas that are surplus to requirements for accommodating the Away Team Coaches' Box to be utilised for other purposes during an Event.

D14.4.6 Secondary Commentary Box

The Secondary Commentary Box must meet the same minimum requirements as the Primary Commentary Box.

D14.4.7 Secondary Studio Box

The Secondary Studio Box must meet the same minimum requirements as the Primary Studio Box.

D14.4.8 Secondary Camera Deck

(a) The Secondary Camera Deck must be able to provide 'behind the wicket' camera views for the television broadcasters during Cricket Events and must be located on the southern side of the Stadium at the same level as the Primary Camera Deck.

(b) (**Capacity**) The Secondary Camera Deck must have the capacity to cater for five (5) broadcast cameras with suitable operating room around each camera.

(c) (**Dimensions**) The Secondary Camera Deck must be a depth and width that allows three (3) cameras to be located behind the bowler's arm for each of the Drop-In Cricket Wickets.

(d) (**Location**)

(i) The Secondary Camera Deck must be located on the southern side of the Stadium so that the centreline of the Secondary Camera Deck is on the lateral centre line of the Field Of Play for AFL and Rectangular Events and on the longitudinal centre line of the Cricket Wicket for Cricket Events.

(ii) The Secondary Camera Deck should be positioned on the same finished floor level as the Primary Camera Deck to ensure consistency of vision during broadcast.

(iii) The Secondary Camera Deck must be positioned so that the cameras and their operators do not restrict the view of Patrons seated within the Seating Bowl or situated within the Premium Product Areas.

(e) (**Proximity**) The Secondary Camera Deck must have Ready Access to a goods lift which travels to the Event Level.

(f) (**View**) Each camera position must:

(i) have a continuous, uninterrupted view of the Playing Surface (including a clear view of the Key Viewing Elements for AFL Events, Cricket Events and Rectangular Events);

(ii) have a continuous, uninterrupted view of the ball when in the air for AFL Events, Cricket Events and Rectangular Events, based on the Highball criteria set out for each sport in the Sporting Standards; and

(iii) a continuous, uninterrupted view of the Key Viewing Elements for Athletics Events.

This functionality must be achieved without requiring the Media Personnel operating these cameras to wear a harness.

(g) (**Amenity**)

(i) The floor of the Secondary Camera Deck must be stabilised with no rocking or vibration.

(ii) Where a parapet or rail is positioned on the leading edge of the Secondary Camera Deck it must meet all operational requirements for camera operators (including not obstructing camera views) and comply with all safety regulations at all times.

(iii) The entry to the Secondary Camera Deck must be a minimum double-door clear opening width to allow for television broadcasting equipment accessibility.

(iv) Where glazing is provided at the interface to the Seating Bowl, it must be operable to allow cameras to directly capture vision from the Playing Surface and Seating Bowl.

D14.4.9 Outside Broadcast Compound

(a) An Outside Broadcast Compound must be provided which allows for the temporary location and operation of the television broadcaster's outside broadcast vans.

(b) The design of the Stadium and Sports Precinct must facilitate the required level of access for broadcast vans associated with all free to air and pay TV broadcasters to and within the Stadium and Sports Precinct to perform their functions.

(c) (**Dimensions**) The Outside Broadcast Compound must be of a minimum size of 600m² hardstand area. It must have a minimum overhead height of 4.6 metres and appropriate Engineering Services provisions. It must have the capacity to expand to 1000m² for large Cricket Events and large Rectangular Events.

(d) [*Not disclosed*]

(e) [*Not disclosed*]

(f) [*Not disclosed*]

(g) (**Amenity**) The Outside Broadcast Compound must be a 'hard stand' environment, with flat and level solid flooring with appropriate drainage. The Outside Broadcast Compound must be able to accommodate the installation, operation and removal of temporary electrical generators as Event Overlay.

D14.4.10 Outside Broadcast Patch Room

(a) An Outside Broadcast Patch Room must be provided which allows for the television broadcaster to tie and patch in their cabling with the Stadium's ICT and broadcast cabling infrastructure. It must be a clean, simple, well lit environment that enables the Media Personnel to efficiently perform patching functions, as well as pre-Event testing and conducting a television broadcast of the Event. Patch panels, signage and other elements of this room must be logically arranged and clearly labelled to facilitate ease of use for Media Personnel.

(b) (**Dimensions**) The Outside Broadcast Patch Room must be of minimum dimensions:

(i) 4 metres in width;

(ii) 4 metres in depth; and

(iii) 3 metres in height (to ceiling).

(c) [*Not disclosed*]

(d) [*Not disclosed*]

D14.4.11 Outside Broadcast Producer's Room

(a) An Outside Broadcast Producer's Room must be provided which allows for the television broadcaster's producer to produce the broadcast of the Event.

(b) (**Capacity**) The Outside Broadcast Producer's Room must accommodate one (1) person and must be of a minimum area of 8m² with proportionate dimensions to suit the activities to be undertaken in the room.

(c) [*Not disclosed*]

(d) [*Not disclosed*]

(e) [*Not disclosed*]

D14.4.12 Outside Broadcast Crew Room

(a) (**Capacity**) An Outside Broadcast Crew Room must be provided which provides a lounge and casual dining setting for a minimum of twenty (20) Media Personnel at any one time.

(b) [*Not disclosed*]

(c) [*Not disclosed*]

(d) [*Not disclosed*]

D14.4.13 Camera Positions and Cabling Requirements

Notwithstanding the requirements for the Primary Camera Deck and the Secondary Camera Deck, final camera positions will be subject to the requirements of individual broadcasters and producers for each particular sport. However, the camera and cabling requirements must satisfy the following as a minimum:

(a) Television camera positions must be located around the Playing Surface in accordance with all relevant Quality Standards, including the Sporting Standards.

(b) For AFL Events, all camera positions described in the AFL Venue Guidelines 2013 must be incorporated into the design of the Stadium.

(c) All camera positions must be designed to minimise obstructing sightlines from Seating Positions within the Seating Bowl and must not reduce the Patron capacity of 60,000 seats.

(d) Patch panels associated with each camera position must be located to ensure that when temporary cabling is installed between it and any camera on the respective camera position, no cabling is located in public areas and no cabling is located across pedestrian access routes.

(e) Where camera positions are located such that the lenses of the cameras are elevated above an area of the Seating Bowl, safety nets must be provided to prevent lenses and other equipment falling into such seated areas.

(f) Cable trays, ducting, tunnels, trenches and penetrations must allow for future improvements to technology and the requirement to provide additional cabling on a temporary basis for the purposes of an Event or on a permanent basis including, for example, erection of a temporary 5-person media desk on the Pitch Perimeter prior to an AFL Game. All conduits provided must not have any angled joins that would affect the installation of future cabling requirements.

(g) Project Co must provide the Stadium and Sports Precinct to accommodate specialist camera equipment commonly used in the broadcast and officiating of Sporting Events and Special Events including flown wire rigs.

D14.4.14 Radio Commentary Boxes

(a) A total of eight (8) Radio Commentary Boxes must be provided at an elevated position above the Playing Surface which allow for Media Personnel (radio broadcasters) to capture and broadcast audio descriptions of the Event, produce and broadcast 'during-play' commentary and conduct, produce and broadcast interviews with the commentators and other personnel before, during and after Events.

(b) (**Capacity**) Six (6) of the Radio Commentary Boxes must be able to accommodate a minimum of six (6) Media Personnel and their equipment. It is envisaged that four (4) of the Media Personnel will be located at a work bench at the front of the box against the glazing with two (2) radio technicians/producers located at a workbench towards the rear of the box. Should this be the case, each Radio Commentary Box must have either a raised rear tier or lowered front tier. The Media Personnel located at the front of each Radio Commentary Box must have a continuous, interrupted view to the Playing Surface, Interchange Area and at least one (1) LED Superscreen for all Radio Commentary Box users. Two (2) of the Radio Commentary Boxes must be provided with an access door, lockable from both sides, between them to provide for a larger box when required for large radio broadcast crews.

(c) Two (2) of the Radio Commentary Boxes must be able to accommodate a minimum of eight (8) Media Personnel and their equipment. It is envisaged that five (5) of the Media Personnel will be located at a workbench at the front of the box against the glazing with three (3) radio technicians/producers located at a workbench towards the rear of the box. Should this be the case, each Radio Commentary Box must have either a raised rear tier or lowered front tier. The Media Personnel located at the front of each Radio Commentary Box must have a continuous, uninterrupted view to the Playing Surface, Interchange Area and at least one (1) LED Superscreen to all Radio Commentary Box users.

(d) Consideration should be given to accommodating the Media Personnel in the Radio Commentary Boxes in three (3) tiers providing the requirements of this clause D14.4.14 can be met.

(e) The eight (8) Radio Commentary Boxes must be provided so that a small amount of radio broadcast equipment can be brought in on an Event by Event basis. The equipment which will be brought in includes small mixing desks, personal computers and notebooks, monitors and talkback equipment.

(f) (**Dimensions**) The minimum room dimensions for each Radio Commentary Box must be:

  (i) 3.4m metres in width (across the glazing line to the Seating Bowl which overlooks the Playing Surface);

  (ii) 5 metres in depth; and

  (iii) 3.0 metres in height.

(g) [*Not disclosed*]

(h) [*Not disclosed*]

(i) [*Not disclosed*]

(j) (**View**)

  (i) Media Personnel seated at the front of each Radio Commentary Box must:

    A have a continuous, uninterrupted view of the Playing Surface (including a clear view of the Key Viewing Elements for AFL Events, Cricket Events and Rectangular Events);

    B have a continuous, uninterrupted view of the ball when in the air for AFL Events, Cricket Events and Rectangular Events, based on the Highball criteria set out for each sport in the Sporting Standards; and

C a continuous, uninterrupted view of the Key Viewing Elements for Athletics Events.

(ii) It is highly desirable that each of these positions also has full visibility of the Home Teams' Interchange Benches and the Away Team Interchange Bench for AFL Events.

(iii) Any Seating Position in the Radio Commentary Box which cannot achieve this functionality must have their views supplemented by Displays showing live Event coverage.

(k) (**Amenity**)

(i) The front work bench as described at paragraphs (c) and (d) must be continuous, be a minimum of 750mm deep and 850mm wide (per person) and incorporate space at both ends for the placement of temporary radio broadcast equipment. The work bench must be placed as close to the glazing or edge of the tier as practicable. An 80mm hole at each position must be provided for cable access underneath the bench.

(ii) The rear work bench as described at paragraphs (c) and (d) must be continuous and be a minimum of 750mm deep and 850mm wide (per person). An 80mm hole at each position must be provided for cable access underneath the bench.

(iii) Each Radio Commentary Box must be provided with operable glazing that opens from the centre to allow for the option of noise and atmosphere of the Seating Bowl to be heard from within the box.

(iv) A space at the back of each box must be provided for temporary radio broadcast equipment to be housed within a lockable closet with suitable ventilation and cable management. This cable management must be accessible by the respective front and rear workbenches of each box.

(v) Each Radio Commentary Box must be provided with a mounting rail within the Seating Bowl, accessible from within the box by opening the operable glazing, where Media personnel can attach microphones and other broadcasting equipment, as well as reticulating the relevant cabling back into the box.

(vi) The entry door to each Radio Commentary Box must be a minimum 920mm clear opening width to allow for radio broadcasting equipment accessibility.

(l) (**Displays**) Each Radio Commentary Box must be provided with a minimum of one (1) Display, allowing Media Personnel to view and hear the Event, the activities in the Media Interview Room, media activities in the Team Facilities (as appropriate) and other sporting events being broadcast concurrently. Each Display should be located so that it does not impede vision to the Playing Surface or LED Superscreens yet are still easily viewable by Media Personnel using the Radio Commentary Boxes. Audio, synchronous with the content on the Displays, must be provided within each respective Radio Commentary Box and be locally controlled via fixed, user friendly devices.

(m) The Media Personnel using the Radio Commentary Boxes must have fast, reliable access to statistics for the Event. This should be via the IPTV systems.

D14.4.15 Written Press Box

(a) (**Capacity**) A Written Press Box must be provided for thirty (30) Media Personnel to accommodate Media Personnel who are members of newspapers, sporting magazines, and online publications when carrying out their activities on Event Days.

(b) [*Not disclosed*]

(c) [*Not disclosed*]

(d) (**View**)

(i) Media Personnel seated within the Written Press Box should:

A have a continuous, uninterrupted view of the Playing Surface (including a clear view of the Key Viewing Elements for AFL Events, Cricket Events and Rectangular Events);

B have a continuous, uninterrupted view of the ball when in the air for AFL Events, Cricket Events and Rectangular Events, based on the Highball criteria set out for each sport in the Sporting Standards; and

C a continuous, uninterrupted view of the Key Viewing Elements for Athletics Events.

(ii) It is highly desirable that each of these positions also has full visibility of the Home Teams' Interchange Benches and the Away Team Interchange Bench for AFL Events.

(iii) Any Seating Position in the Radio Commentary Box which cannot achieve this functionality must have their views supplemented by Displays showing live Event coverage.

(e) Any seated areas within the Written Press Box which cannot achieve the viewing functionality described at paragraph (d) must have their views supplemented by Displays showing live Event coverage.

(f) To optimise direct visibility of the Playing Surface from all Seating Positions with the Written Press Box tiered rows must be provided.

(g) (**Displays**) A minimum of two (2) appropriately sized Displays must be provided in the Written Press Box. The Displays must allow Media Personnel in the box to view and hear the Event, the activities in the Media Interview Room and media activities in the Team Facilities (as appropriate), and other sporting events being broadcast concurrently. Each Display should be located so that it does not impede vision to the Playing Surface or LED Superscreens yet are still easily viewable by Media Personnel using the Radio Commentary Boxes. Audio, synchronous with the content on the Displays, must be provided within each respective Radio Commentary Box and be locally controlled via fixed, user friendly devices.

(h) (**Amenity**)

(i) The Written Press Box must be provided with good quality, ergonomic, comfortable and robust furniture including mobile, ergonomically designed, height, tilt and back angle adjustable chairs to suit.

(ii) Workbenches of a minimum 450mm deep and 600mm wide (per person) must be provided. The workbenches must be provided in sets of two with an aisle between each set to allow Media Personnel to access or leave their seat with minimal disruption to adjacent Media Personnel. Each workbench must provide an 80mm hole for each Seating Position to provide cable access to power and data outlets below and should provide an under-bench storage solution for each Seating Position, suitable for the safe and temporary storage of workbags. Workbenches must accommodate two Media Personnel.

(iii) The Media Personnel using the Written Press Box must be able to 'feel' the atmosphere of the crowd during Events. Operable windows which open to the Seating Bowl must be provided.

(i) (**Event Overlay**)

(i) A Secondary Written Press Box must be provided at an elevated position above the Playing Surface which allows for the expansion of the working space for written press media during large international Cricket Events, large international Rectangular Events and potentially for Special Events.

(ii) As its function will only be required for a limited number of Events per annum, the Secondary Written Press Box may be provided as a non-dedicated facility within a room which serves an alternative primary purpose,

provided that the selected room is not normally required for Cricket Events or Rectangular Events and the primary purpose of the room is not compromised by the dual functionality.

(iii) Where a non-dedicated facility within a room which serves an alternative primary purpose is proposed, the room must be capable of ready conversion from its primary purpose to a Secondary Written Press Box with minimal additional infrastructure and expense. Any temporary fitout components required to achieve the dual use or Event Overlay solution to this room must be provided.

D14.4.16 Photographers' Work Room

(a) (**Capacity**) A Photographers' Work Room must be provided to accommodate ten (10) press photographers.

(b) [*Not disclosed*]

(c) [*Not disclosed*]

(d) (**Amenity**)

(i) The Photographers' Work Room must be able to accommodate a minimum of ten (10) work spaces for Media Personnel photographers and their equipment. Each work space must be a minimum of 450mm deep & 700mm wide (per person) with good quality, ergonomic, comfortable and robust furniture including mobile, ergonomically designed, height, tilt and back angle adjustable chairs to suit.

(ii) The Photographers' Work Room must include provision for Media Personnel to securely store and access equipment before, during and after Events, as well as undertake post-Event work such as using a notebook computer and uploading high resolution images and other content to the internet.

(iii) A minimum area of 3m² of open floor space must be provided in an unobtrusive location within the Photographers' Work Room to allow for the temporary storage of equipment trolleys (which Media Personnel using this room use to transport their equipment to the Stadium) and collapsible seating.

(iv) The Photographers' Work Room must be provided with ten (10) individual personnel lockers with digital locking, suitable for the safe and secure storage of professional camera equipment.

(v) The Photographers' Work Room must be provided with a basic kitchenette with lockable cupboards for stock, hot/cold water supply, 120L fridge, sink and space for drink tubs.

D14.4.17 Media Lounge

(a) (**Capacity**) The Media Lounge must have facilities for serving food and beverages to Media Personnel (written press, TV and radio broadcasters). In particular, it must be capable of providing an informal casual lounge-type experience for a minimum of twenty-five (25) Media Personnel at any one time. A food and beverage servery point must be provided within the Media Lounge for light snacks and pre-packaged beverages.

(b) [*Not disclosed*]

(c) (**Amenity**) The Media Lounge must have capacity to serve as a location for Media Personnel to discuss the Event with each other before, during and after the Event. During an Event, these times would typically be quarter, half and three quarter time for AFL Events; during lunch and tea for Cricket Events and half time for Rectangular Events. The Media Lounge will also be a point of information for Media Personnel. As such, it must be provided with pin boards and whiteboards for the Stadium Operator or the Hirer to post venue and Event information.

(d) (**Displays**) A minimum of three (3) Displays must be located within the Media Lounge, allowing Media Personnel to view and hear the Event, the activities in the Media

Interview Room and other sporting events being broadcast. Audio, synchronous with the content on the Displays, must be provided within the Media Lounge and be locally controlled via fixed, user friendly devices.

D14.4.18 Media Interview Room

(a) A Media Interview Room will be used for press conferences, both prior to and after a Sporting Event has been held. It is anticipated that all forms of Media Personnel will use this space for these purposes. The Media Interview Room must make provision for the interviewing of Players, Coaches and other relevant persons in an 'official' setting and must have appropriate lighting for this purpose.

(b) [*Not disclosed*]

(c) (**Amenity**)

(i) The Media Interview Room must be able to accommodate minimum of thirty (30) seated journalists with a removable elevated platform at the front of the room to contain a desk and chairs for a minimum of four (4) interview subjects. The Media Interview Room must be provided with a removable elevated camera platform at the rear to accommodate five (5) camera and camera operator positions.

(ii) The Media Interview Room must be configured to support optimum viewing from within the Field Club and good visibility within the room for Media Personnel.

(iii) The Media Interview Room must be provided with a simple and efficient method of storing room related equipment such as backdrops and furniture.

(d) (**Branding**) The Media Interview Room must have the capacity to be branded by the Hirer within the television arc. This must be easily changeable for the purposes of a specific Event.

D14.4.19 Interview Zones

Interview zones will be used by Media Personnel to conduct one-on-one interviews with Players, Coaches and other relevant persons in an opportunity setting. The Interview Zones should make use of other functional spaces to meet the following:

(a) A Mixed Zone must be provided adjacent to the Players' entrance that will serve the Home Team and the Away Team for Rectangular Events where the Sporting Teams depart the Stadium post Event. This will be used primarily for international Sporting Events, where written press journalists can interview Players in a spontaneous environment. The Mixed Zone must be able to accommodate a temporary barrier to separate Players from Media Personnel.

(b) A Flash Interview Zone must be provided in each Players' Race to allow primary broadcasters to interview Players as they leave the Playing Surface. The Flash Interview Zone must be able to accommodate mobile TV crew lights and a sponsor's logo backdrop.

D14.4.20 Interview Booths

(a) Interview Booths, similar to those available at Emirates Stadium (UK), will offer a more discrete setting to conduct interviews without distraction.

(b) Fully cabled Interview Booths, sized to accommodate two (2) persons (interviewer and Player / Coach) and a television broadcast camera must be provided on the Event Level to conduct informal one-on-one interviews with Players.

(c) Four (4) Interview Booths must be provided with Ready Access from the Home Teams' Players' Warm-up Rooms and two (2) Interview Booths must be provided with Ready Access from the Away Team Players' Warm-up Room.

(d) Each Interview Booth must incorporate a back-drop wall which can be branded by the Stadium Agency, the Stadium Operator or the Hirer. The branding must be easily and efficiently changeable for the purposes of a specific Event.

(e) With the exception of the back-drop wall for branding pyramid style acoustic foam should be provided to all walls for sound absorption to achieve favourable acoustic conditions for conducting interviews.

D14.4.21 Boundary Rider Position

A Boundary Rider Position should be provided which provides for the comfort and protection for Media Personnel (television and radio boundary riders). This should accommodate four (4) Media Personnel at any one time and be located adjacent to the Playing Surface (but outside of the Field Of Play) and be designed in line with the AFL Interchange Areas or the Officials' Bench.

D14.4.22 Storage

(a) A lockable storage area must be provided with Ready Access from the Secondary Television Studio to store temporary fitout components (e.g. tiered flooring), furnishings and other items pertaining to the dual use operation of the area, when not in use.

(b) A lockable storage area must be provided within, or with Ready Access from, the Photographers' Work Room for storage of property belonging to Media Personnel, including camera boxes.

(c) A lockable storage area (or areas) must be provided within, or with Ready Access from the broadcast camera platforms for storage of property belonging to Media Personnel, including camera boxes.

D15 PITCH AND ASSOCIATED FACILITIES

D15.1 OVERVIEW

(a) This Chapter D15 (Pitch and Associated Facilities) outlines the essential requirements for the Pitch and associated facilities to support the use of the Playing Surface by Hirers for Stadium Events and maintenance of the Playing Surface by Services Personnel undertaking the Playing Surface Services, and includes:

(i) the functional requirements for the design of the Pitch and Playing Surface;

(ii) the multi-purpose requirements of the Pitch and Playing Surface to support the use of the Stadium for a variety of Events, including the use of Drop-In Cricket Wickets and Drop-In Seats; and

(iii) the operational considerations in the design, operation and maintenance of the Pitch and Playing Surface.

(b) Functional Relationship Diagrams depicting the key functional relationships for the Functional Units that comprise the Pitch and associated facilities are included in Chapter F10 (Pitch and Associated Facilities) of these Design Specifications.

(c) Further technical requirements for the Pitch and associated facilities are detailed in Part E (Technical Brief) of these Design Specifications.

D15.2 OPERATIONAL PRINCIPLES

(a) (**Reputation**) Stakeholders and Hirers have emphasised the importance of the Pitch and associated facilities for all Stadium Events. It is vital that the Playing Surface is regarded by Stadium Users as an excellent surface to play on, from the first Event, and a facility that can be maintained to that high standard at all times throughout the year and for the mixed Event schedule.

(b) As the centrepiece for most Stadium Events, the Pitch and the Playing Surface are a key component of the Stadium's success, particularly with reference to operational, commercial and reputational drivers.

(c) (**Location**) The Pitch location will be used to determine the Event Level and all subsequent levels. It will also be used as the basis for the calculation of the Sightline Criteria for Seating Positions.

(d) (**Event schedule**) The Pitch and associated facilities will be used for a variety of Stadium Activities throughout each operating year, including Sporting Events and Entertainment Events, and on occasion for Special Events. Typically the number of

Stadium Events using the Playing Surface will be in the order of 32 to 37 per annum, however this may increase or decrease with market demand or with the addition of a third AFL team in the State of Western Australia.

(e) The Event schedule will require that the Playing Surface is able to accommodate a variety of Events over consecutive days.

(f) The Stadium Events using the Pitch and associated facilities will typically occur in a year round fashion.

(g) (**Use during Events**) During Stadium Events the Playing Surface will be used for a variety of activities including:

(i) Sporting Events with pre and post-match entertainment, as well as half-time entertainment;

(ii) triple header Sporting Events or Sporting Events over multiple (typically consecutive) days;

(iii) Special Events; and

(iv) Entertainment Events such as concerts which will use the Playing Surface for Event staging, Patron access and temporary catering and toilet facilities.

(h) During Entertainment Events, up to twenty thousand (20,000) Patrons will access the Playing Surface.

(i) (**Size and dimensions**) The size and dimensions for the Field Of Play for an AFL Event reflects:

(i) the outcomes of extensive research and Benchmarking of major Australian stadia;

(ii) the findings of detailed consultation with the two Western Australian AFL teams; and

(iii) alignment with the fans-first aspiration to ensure the best Seating Bowl atmosphere and close-up viewing of the Event.

(j) (**Pitch Perimeter**) The Pitch Perimeter will minimise the undue wearing of the Playing Surface where it interfaces with the inner perimeter of the Seating Bowl. This will primarily be used by vehicles to undertake Stadium Activities and should also assist in avoiding excessive maintenance in maintaining a viable Playing Surface quality in this area.

(k) (**Turf Farm**) Access to an off-Site Turf Farm will be provided by Project Co to provide Turf for initial establishment and replacement of areas of the Playing Surface.

(l) (**Nursery**) A Nursery will be provided by Project Co for the locating of the Drop-In Cricket Wicket trays for the Stadium Operator to develop, maintain and curate the cricket wickets within these trays.

(m) (**Synthetic reinforcement**) The use of synthetic or artificial reinforcement systems within the top layer of the Pitch's growing medium and profile will be considered by the State if there is a demonstrable WOL LCC saving.

D15.3 GENERAL DESIGN REQUIREMENTS

(a) (**Quality**) The Pitch and associated facilities must be of a standard suitable for national and international Sporting Events and comply as a minimum with the relevant Quality Standards including those which are codes and guidelines.

(b) The Pitch and associated facilities, with particular emphasis on the Playing Surface, must be robust and resilient to allow the Stadium to have a flexible usage pattern and Bookings Schedule, as the market requires.

(c) The Pitch must be designed, constructed, commissioned and completed so that it is fit for purpose, such that the Stadium will be Fit For Purpose, and so that, with proper maintenance in accordance with Best Operating Practices, it is able to remain fit for

purpose such that the Stadium will be in a Fit For Purpose condition throughout the Operating Phase.

(d) (**Safety**) The Pitch and associated facilities must allow Stadium Users to safely use the facilities:

(i) in the manner their relevant sport or code intends;

(ii) in the manner required to perform the Playing Surface Services in accordance with Schedule 13 (Services Specifications) of this Agreement; and

(iii) including ensuring:

A a physical separation between the Playing Surface and Patrons in the Seating Bowl;

B access to the Playing Surface from the Event Level; and

C access to the Playing Surface via helicopter or other aerial vehicle.

(e) (**Engineering Services**) The Pitch and Playing Surface must have all required Engineering Services required to support its use for the Stadium Activities, including as set out in Chapter E18 (Pitch and Playing Surface) and other Chapters of Part E (Technical Brief) of these Design Specifications.

(f) (**Operational Considerations**) The Pitch and associated facilities must be designed to accommodate the following operational requirements:

(i) access for the Drop-In Cricket Wicket Transporter to install and remove the Drop-In Cricket Wickets, including movement from the Nursery to the Pitch, without damage to the Stadium and Sports Precinct;

(ii) protection of the Pitch during Entertainment Events, including during Bump-In and Bump-Out activities;

(iii) protection of the Pitch during the installation, use and removal of the Drop-In Seats;

(iv) changing Sporting Code requirements;

(v) protection and security of the Nursery, Outdoor Practice Cricket Wickets Area (when developed for its purpose) and Drop-In Cricket Wickets;

(vi) that the irrigation solution for the Pitch takes account of the Land Conditions and the micro-climate within the Seating Bowl; and

(vii) to all extents practicable, to minimise the requirements to use supplementary lighting systems to support growth of the Turf.

D15.4 ACCOMMODATION REQUIREMENTS (LOCATION, PROXIMITIES AND PROVISIONS)

D15.4.1 Playing Surface

(a) (**Functional Units**) The Playing Surface consists of the Field Of Play and the Run Off Area.

(b) (**Size and dimensions**) The Playing Surface must provide adequate Fields Of Play and safety area for all Sporting Codes, including for Australian Rules Football, International Cricket, Rugby Union, Rugby League, Football (Soccer) and Athletics. The required dimensions for each of these Fields Of Play must be in accordance with the relevant Sporting Standards, however for AFL the requirements are:

(i) 165 metres from goal line to goal line on the east-west axis;

(ii) 130 metres from boundary line to boundary line on the north-south axis;

(iii) a minimum 5m safety zone (Run Off Area) between the boundary line and fence line, clear of any intrusion including for example from signage fixed to the fence line and from Premium Product Areas; and

(iv) the pockets should be based on a geometry similar to that of Etihad Stadium (in Melbourne).

(c) (**Capacity**) The capacity of the Playing Surface will vary by Event type and must be determined for each Event type by Project Co ensuring compliance with relevant Quality Standards and Laws. Minimum Patron capacities for each Event type are described in clause D7.3(f).

(d) (**Direct sunlight**) A minimum of 4 hours of direct sunlight on every section of the Playing Surface is desirable to ensure that the Turf can withstand high intensity use.

(e) (**Proximity**) The Playing Surface must have:

(i) Direct Access to the Players' Races, Officials' Race and Pitch Access Vomitories;

(ii) Easy Access (which is rapid and reliable and able to be achieved within less than 45 seconds) to the Players' Viewing Room; and

(iii) Easy Access to other Team Facilities.

D15.4.2 Pitch

(a) (**General**) The Pitch must be able to consistently achieve the quality of Playing Surface required by each of the individual Sporting Codes using the Stadium. The Pitch must be resilient enough to recover between Events, being mindful of the Indicative Initial Annual Event Schedule and the likelihood of consecutive Events over consecutive days, so that there is no risk of not being able to host additional Events above the Indicative Initial Annual Event Schedule.

(b) (**Pitch performance criteria**) The performance criteria for the Pitch, including the drainage, growing medium and Turf profile, must:

(i) comply with all relevant Quality Standards and Laws, including the Sporting Standards; and

(ii) be able to accommodate all dead loads and live loads associated with the Stadium Activities, including:

A all types of Events (including Entertainment Events and Special Events), including loads associated with Event staging and production equipment and the number of Patrons that can safely be accommodated on the Playing Surface in accordance with all relevant Quality Standards and Laws;

B loads imposed in association with the performance of the Playing Surface Services; and

C as a minimum complying with the loads in **Table 9**: Pitch Design Loads (Applied at Finished Design Level) below.

Table 9: Pitch Design Loads (Applied at Finished Design Level)

Load Type	Load (kPa)
Dead Loads	10 (SLS)
Live Loads	20 over 20m x 20m area anywhere (ULS)

(c) (**Turf**) The Turf must cater for the specific requirements of the Stadium, including:

(i) intended use, including recovery timeframes and aesthetics;

(ii) the local climate, in particular that the majority of use will occur during winter periods as part of the AFL season; and

(iii) the Stadium micro-climate, including the extent of shade from stands and roof coverage and the amount of ventilation across the Turf.

(d) The turf species must be a base of couch grass, which must be oversown with the ryegrass species in autumn, remaining in this configuration until mid to late spring where it must be transitioned back to couch grass only for the summer months.

(e) (**Branding**) The Turf must be able to be branded for the relevant Event's marketing and broadcast requirements.

(f) (**Surface profile**) The surface profile of the Turf must not be concave and at a minimum must be flat. Should the drainage design require a domed Pitch the rise or fall should be no greater than 1:150 along the longitudinal axis of the AFL Field Of Play (and whatever fall is required on the lateral axis to ensure the Pitch is level along the boundary line). Without limiting this paragraph, the surface profile must:

(i) be fit for purpose, such that the Stadium is Fit For Purpose, for the safe conduct of the Stadium Activities and the safe performance of the Services; and

(ii) accommodate high rainfall and other environmental events, including provision for a one in one hundred year rain event.

(g) (**Growing medium and profile**) The growing medium and profile must cater for the specific requirements for the Stadium, including:

(i) Stadium Activities on the Pitch;

(ii) Heavy Vehicle access, including reach equipment, pantech trucks, the Drop-In Cricket Wicket Transporter, and other Heavy Vehicle traffic or loadings associated with the Services or the Stadium Activities, including as described in **[Not** disclosed]; and

(iii) maintaining drainage and infiltration requirements and aeration porosity at all times.

(h) The growing medium and profile should consist of:

(i) a specified processed root zone sand layer (min 300mm thick) overlaying a 7mm nominal sized drainage gravel layer (min 100mm thick) that produces a perched water table;

(ii) a non-reactive subgrade to ensure minimal subsurface movement; and

(iii) a sloped subgrade to ensure subsurface flow.

(i) (**Drainage**) The Pitch, including the Turf, the growing medium and profile and the subsurface drainage network, must have a drainage (infiltration) rate of a minimum 100mm/hour (post the adding of soil improvement agents and other compounds that facilitate drainage);

(j) (**Irrigation system**) The irrigation system must cater for the specific requirements for the Stadium, including:

(i) Stadium Activities and Services on, or using, the Playing Surface;

(ii) availability and reliability of the water supply;

(iii) the quality of the water supply, including use filtering systems to prevent staining; and

(iv) the location of the Drop-In Cricket Wicket trays, as well as the travel path(s) of the Drop-In Cricket Wicket Transporter.

(k) (**Turf Farm**) Project Co must provide access to an off-site Turf Farm to meet the design requirements to allow for panelised turf replacement of the Drop-In Cricket Wickets when they are installed in the Pitch and when they are removed from the Pitch. The turf at the

Turf Farm must also allow for the replacement of damaged Turf on an as required basis. The Turf Farm must be based in the Perth metropolitan region.

(l) (**Athletics Track**) The Pitch must allow for the insertion of an Athletics Track into the Pitch.

(m) (**Sporting equipment**) Project Co must provide the following Sporting Equipment in accordance with the relevant Quality Standards, including the Sporting Standards:

(i) goal posts and point posts for Australian Rules football;

(ii) goal posts for Rugby Events (both ARU and NRL);

(iii) goals for Soccer Events;

(iv) a behind goals netting system for the protection of Patrons during AFL Events;

(v) goal post pads and wraps; and

(vi) flooring associated with the Indoor Cricket Practice Facility provided as part of the Event Overlay for Cricket Events in the Home Teams' Players' Warm-up Rooms.

(n) The design of the Pitch and Playing Surface must accommodate equipment required for Sporting Events in accordance with the relevant Sporting Standards, including:

(i) the Sporting Equipment; and

(ii) Cricket Sightscreens, which may be installed post Technical Completion.

(o) (**Footings**) Appropriately sized and rated footings must be provided to allow for the temporary installation, use and removal of up to five (5) Drop-In Cricket Wickets, as set out in clause D15.5(d). When used, the Drop-In Cricket Wickets must be located in the centre of the Pitch and must be on a north-south orientation and no greater than 10 degrees off true north.

(p) Appropriately sized and rated footings and sleeves must be provided to allow for the temporary installation and removal of the following:

(i) goal posts and point posts for Australian Rules football;

(ii) goal posts for Rugby Events (both ARU and NRL); and

(iii) goals for Soccer Events.

(q) (**Allowance for Drop-In Seats**) The Pitch and Pitch Perimeter must allow for and accommodate the temporary installation, use and removal of the Drop-In Seats consistent with the Stadium Activities.

(r) (**Interfaces**) As a critical element of the Stadium design and functionality, the Pitch interfaces with a number of other Functional Units, FF&E and Engineering Services. Project Co must ensure that appropriate interfaces are provided for these items including:

(i) drainage from Plats within the Seating Bowl;

(ii) perimeter signage, including electronic or LED Signage;

(iii) any electronic equipment used by Media Personnel and associated with the Team Facilities;

(iv) vehicular and pedestrian Vomitories;

(v) Sporting Equipment;

(vi) broadcasting requirements; and

(vii) Cricket Sightscreens (to be provided by others).

D15.4.3 Pitch Perimeter

(a) Project Co must design a Pitch Perimeter system around the circumference of the Pitch including:

(i) a support slab, which should be used to suspend all perimeter in-ground services ring mains and junction pits;

(ii) a synthetic grass strip consisting of an AFL/IRB/FIFA approved synthetic grass product and shock pad, which is suitable for the Perth climate; and

(iii) a perimeter trench and spoon drain for run off from the Pitch Perimeter.

(b) The Pitch Perimeter system must be a minimum of 2 metres and should ideally be 3 metres in width and a minimum 3 metres from the boundary of the Field Of Play for AFL Events and Cricket Events. At all locations there must be a minimum of 5 metres from the boundary of the Field Of Play for AFL Events and Cricket Events to the fence line (including any signage fixed to the fence line).

(c) The Pitch Perimeter system must be able to accommodate large vehicle loads, including the Drop-In Cricket Wicket Transporter, and point loads from other equipment, including as it applies to the Pitch and Playing Surface in **[Not** disclosed].

D15.4.4 Service Duct

[*Not disclosed*]

D15.5 DROP-IN CRICKET WICKETS

(a) (**Drop-In Cricket Wicket trays**) Project Co must provide nine (9) Drop-In Cricket Wicket trays.

(b) The trays will have cricket wickets installed, curated and maintained by the Stadium Operator. The trays must be able to accommodate the cricket wickets and must be able to be transported to and from the Pitch and their storage location with ease and without:

(i) bending, twisting or warping the tray; or

(ii) cracking, damaging or otherwise rendering the curated cricket wicket unusable for its intended purpose.

(c) When the trays are not in use for an Event, they must be stored with Ready Access to the Pitch. The access requirements are also such that the complete trays, including the curated cricket wickets, must be able to be moved by the Drop-In Cricket Wicket Transporter to the respective footings in the Pitch with minimal changes of elevation or direction.

(d) (**Drop-In Cricket Wicket footings**) Appropriately sized and rated footings must be provided in the Nursery and in the centre of the Pitch to allow for the temporary installation, use and removal of the Drop-In Cricket Wickets. When not in use, the Drop-In Cricket Wickets must be stored on a north-south orientation, preferably in the same alignment as the Cricket Wicket. The footings for the Drop-In Cricket Wickets must:

(i) accommodate four (4) Drop-In Cricket Wickets in the centre of the Pitch and a fifth future Drop-In Cricket Wicket;

(ii) accommodate five (5) Drop-In Cricket Wickets within the Nursery;

(iii) contain concrete strip footings and Turf growing medium composition and sub grade drainage; and-

(iv) coordinate with, and seamlessly accommodate the Drop-In Cricket Wicket trays.

(e) (**Drop-In Cricket Wicket Transporter**) A dedicated Drop-In Cricket Wicket Transporter must be provided which enables Project Co to deliver the Services in an efficient manner without disruption to the Stadium Activities. The Drop-In Cricket Wicket Transporter must be designed so that it does not damage the Stadium or the Sports Precinct in its operation and without:

(i) bending, twisting or warping the Drop-In Cricket Wicket tray; and

(ii) cracking, damaging or otherwise rendering the curated cricket wicket unusable for its intended purpose.

D15.5.2 Outdoor Practice Cricket Wickets Area and Nursery

(a) (**General**)

(i) A Nursery must be provided for the curation of the Drop-In Cricket Wickets.

(ii) An Outdoor Practice Cricket Wickets Area must also be provided as described in clause D6.4.21.

(b) (**Amenity**) Serviced Zones, including power, data, water and wastewater, must be provided to the Nursery and the Outdoor Practice Cricket Wickets Area.

(c) (**Location and proximity**) The Nursery, if located on Site, should be located to the northern side of the Stadium in the Sports Precinct.

(d) (**Security**) The Nursery must be secured to limit access to only authorised or accredited Stadium Users at all times.

D16 COMMERCIAL FACILITIES

The development of the Stadium and Sports Precinct will create opportunities for allied commercial operations. The State supports the creation of these opportunities, provided it adds to the overall amenity and objectives of the Stadium and Sports Precinct.

D16.1 COMMERCIAL OPPORTUNITIES

(a) The State has a strong desire to encourage active community use of the Sports Precinct on Non-Event Days. Commercial Opportunities and the development of associated Commercial Facilities will play a vital role in achieving this year-round activation, whilst also broadening and complementing the Stadium's hospitality and retail options on Event Days.

D16.2 [*NOT DISCLOSED*]

D16.3 PARTNERSHIP OPPORTUNITIES

D16.3.1 Technology Partner

(a) The State wishes to make use of technology to facilitate and achieve the fans-first aspiration. Building elements which it is anticipated will be critical to achieving this aspiration include the ICT Systems, LED Superscreens, IPTV systems, point of sale systems and other emerging technologies.

(b) As the design and operation of these technology elements is constantly evolving, it is challenging to determine what will be the most appropriate technology systems in 2018 when the Stadium will open. Predicting what technology will be relevant and appropriate to evolving Stadium Activities in the years 2028 or 2038 becomes even more difficult.

(c) The State also recognises that, particularly for manufacturers of consumer level electronics, there may be benefits with associating their brand with the Stadium. As a Commercial Opportunity, the State may consider an arrangement with Project Co whereby as part of the DBFM Project, the State allows Project Co to procure a partner (**Technology Partner**) to provide mutually beneficial outcomes for all parties, including:

(i) utilising the Stadium as a showcase for the Technology Partner's new and emerging products and technologies;

(ii) allowing the design and operation of the technology elements to best suit and exploit their available functionality to maximise brand impact and Stadium User engagement;

(iii) ensuring that, throughout the Operating Phase, the technology elements in the Stadium are current, up-to-date, leading edge products; and

(iv) ensuring the technology partner is motivated to ensure the technology elements are functioning as best as possible and remain fit for purpose, such that the Stadium is Fit For Purpose.

(d) The State generally expects that if a Commercial Opportunity with a Technology Partner is approved by the State, such a partner would be responsible for the provision of systems and elements described in Part E (Technical Brief) of these Design Specifications. Without limiting this, the State will also consider proposals with technology partners proposing other technology elements which it feels would add value to the State.

(e) For the avoidance of doubt, the provision of ticketing systems and ticketing services is excluded from the scope of a technology partner or any Commercial Opportunity and will not be considered by the State.

(f) Whilst the State will consider any reasonable proposal with respect to a Technology Partner, it generally anticipates the respective benefits to each party to be as follows:

Table 10: Respective benefits

State	Project Co / Technology Partner
- Improve the fans-first experience - More frequent refurbishment and replacement frequencies of technology elements - Enhance Service Standards - Provision of technology elements to Project Co at reduced rates, with this benefit passed onto the State as lower Monthly Service Payments. - Enhance Patron satisfaction and engagement - Enhance facilities and revenue opportunities for Hirers - Increase value of the Stadium's commercial inventory - Enhance venue reputation - A fair share of any upside in variable revenue from the Commercial Opportunity	- Increases profile of the technology partner in the State of Western Australia - Branding opportunities on technology elements - Branding and signage opportunities on other Stadium commercial inventory - Joint promotional opportunities - Potential technology partner retail store / space within the Stadium or Sports Precinct - Patron interactivity and engagement opportunities.

D16.4 STATE PARTNERS

(a) The State intends to develop partnerships with third parties that are willing to contribute financially to the development of discrete areas of the Stadium in return for naming and promotional opportunities within these areas (**State Partners**). Such areas include Premium Product Areas, General Admission Areas and key public spaces within the Stadium and Sports Precinct, including:

(i) the Chairman's Club;

(ii) the Club Lounge;

(iii) the Sky View Lounge;

(iv) the Field Club;

(v) public bar facilities;

(vi) Outlets;

(vii) Stadium Entry Points; and

(viii) major Concourse.

(b) Early engagement of State Partners, in collaboration with the State, and key stakeholders will maximise the value of the sponsorship and the extent of benefit to all parties.

(c) Project Co must work collaboratively with the State and key stakeholders to:

(i) identify the partnership opportunities in its design of the Stadium and Sports Precinct; and

(ii) identify potential State Partners for consideration and approval of the State which approval will be at the State's sole and absolute discretion.

(d) In designing the areas listed at paragraph (a), Project Co should incorporate opportunities within the design for successfully integrating State Partner branding and signage, and for customising elements of the fitout, to achieve a coherent integration of the State Partner's brand into the overall aesthetics of the Stadium.

D16.5 COMMUNITY BENEFIT

(a) The development of the Stadium and Sports Precinct creates opportunities to deliver benefits to the community beyond those which will already be delivered by the infrastructure investment.

(b) Project Co is strongly encouraged to consider initiatives it can foster and implement with a high degree of certainty to deliver benefits to the community. Such initiatives should be focused on the Operating Phase to deliver recurring benefits over the longer term but may also arise during the D&C Phase of the DBFM Project. Community benefit initiatives may include:

(i) a mechanism (whether by infrastructure, public art or otherwise) by which charitable and community organisations can undertake fundraising and awareness campaigns for matters of community importance;

(ii) a focal point (whether by infrastructure, public art or otherwise) to recognise matters of community importance and promote wider public awareness;

(iii) a mechanism by which the community can develop, promote and express "ownership" of the Stadium and Sports Precinct as the largest piece of sporting infrastructure in the State; and

(iv) mechanisms by which, through consultation and engagement with the community, Project Co in partnership with the Governance Agency can develop new initiatives for the benefit of the community.

D17 EVENT OVERLAY

D17.1 OVERVIEW

This Chapter D17 (Event Overlay) outlines the essential requirements for Project Co to consider in the development of the Event Overlay Plans for the Stadium and Sports Precinct.

D17.2 OPERATIONAL PRINCIPLES

(a) (**Reputation**) Stakeholders and Hirers have emphasised the importance of the Stadium and Sports Precinct having the capability to host large scale Entertainment Events and Special Events including the Commonwealth Games or the FIFA World Cup.

(b) (**Event Bid Process**) The State would notify Project Co of its intent to bid for Special Events and would also work with Project Co when Entertainment Events requiring Event Overlay are being booked for the Stadium and Sports Precinct.

(c) (**Guidelines**) Each Special Event has its published requirements for stadiums to be used for these events. Entertainment Events relate to the individual requirements of the promoter and Performer and in accordance with Quality Standards and Laws.

(d) (**Bookings Schedule**) The Event Overlay for Special Events and Entertainment Events will be incorporated into the booking for these Events.

(e) (**Impact on Events**) In the instance that the Event Overlay period overlaps with a scheduled Stadium Event the Event Overlay will need to be contained to allow the Stadium Event to occur, notwithstanding that there may be impacts on the functionality of the Sports Precinct during this period, including for example with respect to carparking.

D17.3 GENERAL DESIGN REQUIREMENTS

(a) (**Event Overlay Plans**) Project Co must develop Event Overlay Plans for Event types in accordance with the requirements set out in Schedule 5 (Design Development) of this Agreement.

(b) (**Use of Functional Units and additional facilities**) Project Co must provide a strategy outlining its recommended approach to the use of Functional Units and the need to supplement these with additional temporary facilities including:

(i) General Admission Areas;

(ii) Premium Product Areas;

(iii) Media Facilities;

(iv) Team Facilities;

(v) Retail Facilities; and

(vi) Catering Facilities.

(c) (**Vehicle and pedestrian movements**) Project Co must provide a strategy for the additional vehicle and pedestrian movements when the Event Overlay is in use to reflect the impact on normal uses of the Stadium and Sports Precinct. This strategy must also outline any changes to the assumptions or requirements of Project Co's Traffic and Access Plan.

(d) (**Security overlay**) Project Co must ensure the Stadium and Sports Precinct is capable of meeting all additional security requirements for Special Events including:

(i) security fence lines;

(ii) barrier queue lines;

(iii) space and services for security screening devices including magnetometers and x-ray machines;

(iv) spaces for supplementary screening and containment including bag search, wanding space, offices and interview and search rooms; and

(v) space for supplementary Emergency Services personnel and vehicles.

(e) (**Wayfinding and signage strategy**) Project Co must provide a strategy for wayfinding during the Event Overlay period which includes the modification of existing signage, introduction of supplementary signage and additional human resources.

D17.4 ACCOMMODATION REQUIREMENTS

(**Event Overlay Plans**) Project Co must develop Event Overlay Plans for Events in accordance with Schedule 5 (Design Development) of this Agreement. Any accommodation requirements associated with these plans must be detailed in accordance with the requirements of Schedule 5 (Design Development) of this Agreement).

PART E: TECHNICAL BRIEF

E1 GENERAL REQUIREMENTS

E1.1 OVERVIEW

(a) (**General**) The requirements set out in this Chapter E1 apply to all design disciplines and all Chapters of this Part E (Technical Brief) of these Design Specifications.

(b) (**Documentation**) Documentation of design, construction, commissioning and completion must be managed using a Quality System in accordance with the ISO 9001 series.

E1.2 DESIGN INFORMATION

E1.2.1 Land Conditions

Project Co must design, construct, commission and complete the Stadium, the Sports Precinct and the Off-Site Infrastructure, including all Engineering Services, to accommodate the effects of the Land Conditions, including in accordance with the requirements set out in clauses E1.2.2 and E4.6.2 and paragraphs (b) and (c) of clause E6.1.

E1.2.2 [*Not disclosed*]

E1.2.3 Pedestrian Underpass

(a) Project Co must liaise with MRWA to determine the extent and location of Utilities that will be provided by MRWA as part of its works for the Pedestrian Underpass to be undertaken as part of the State Transport Infrastructure Works, which are expected to commence earlier than the associated Off-Site Infrastructure Works.

(b) To the extent that any Utilities are required by Project Co and these will not be provided by MRWA, Project Co must arrange all those Utilities (which may include power, communications, water and waste water) to be extended to the Pedestrian Underpass and connected as part of the Off-Site Infrastructure Works.

(c) Supply and installation of light fittings for general lighting of the Pedestrian Underpass (i.e. excludes feature lighting) is included in the scope of the State Transport Infrastructure Works however connection to power supply and commissioning are excluded.

(d) Project Co must provide power, LV switchboard and LCS, and connect all underpass lighting (i.e. general and feature lighting) to the Stadium as part of the Off-Site Infrastructure Works.

E1.3 QUALITY STANDARDS AND LAWS

(a) Without limiting clause 14.1 of this Agreement, Project Co must undertake the DBFM Works and deliver the DBFM Services in accordance with, and to meet the requirements of, all relevant Quality Standards and Laws.

(b) (**Quality Standards**) Without limiting Project Co's obligations under this Agreement, Quality Standards which are relevant to the DBFM Works, the Services, the Stadium, the Sports Precinct and the Off-Site Infrastructure (or any of them) include:

(i) (**Australian Standards**) all relevant Australian Standards, codes and guides of Standards Australia and Standards New Zealand, including:

A AS1428.1 Design for Access and Mobility: Part 1: General Requirements for Access - New Building Work;

B AS 1428.2 Design For Access and Mobility: Part 2: Enhanced and Additional requirements - Buildings and Facilities;

C AS 3861-1991 Spa baths;

D AS1926.3-2010 Swimming pool safety – water recirculation systems;

E HB 241-2002 Water Management for Public Swimming Pools and Spas;

F AS/NZS 3136-2001 Approval and test specification – Electrical equipment for spas and swimming pools;

G AS 2610.1-2007 Spa pools – Public spas;

H AS 1926.2-2007 – Swimming pool safety – Location of safety barriers for swimming pools;

I AS 2818-1993 – Guide to swimming pool safety;

J AS 3780-208 – The storage and handling of corrosive substances;

K AS 3979-2006 – Hydrotherapy pools and

L other standards, codes and guides of Standards Australia and Standards New Zealand and British and International standards referenced in these Design Specifications or Schedule 13 (Services Specifications).

(ii) (**Sporting Standards**) all Sporting Standards, including:

A AFL Venue Guidelines (May 2013);

B Australian Football League (AFL) – Information and Communications Technology (ICT) Guidelines 2013;

C Australian Rules Football Professional Level Lighting Guidelines 2013 (the **AFL Lighting Requirements**);

D IAAF Track and Field Facilities Manual 2008 (which includes the **Athletics Lighting Requirements**);

E FIFA Technical Recommendations and Requirements, Fifth Edition (2011);

F FIFA Lighting Guidelines 5th Edition 2011 (the **Soccer Lighting Requirements**);

G Union of European Football Associations (UEFA) Guide To Quality Stadiums (2012);

H Cricket Australia's Draft International Cricket Venue Guidelines;

I ICC Playing Handbook 2013-2014;

J ICC Minimum Standards for Players and Match Officials' areas at International Matches;

K ICC International Venue Requirements (2009);

L IESANZ Cricket Lighting Guidelines 2013 (the **Cricket Lighting Requirements**);

M Rugby League International Laws of the Game 2013 approved by the Rugby League International Federation;

N Australian Rugby Union Minimum Facility Standards 2012;

O National Rugby League Operations Manual 2013;

P Super Rugby Manual 2013 (which includes Venue Minimum Standards);

Q WADA Doping Control Guidelines; and

R anti-doping and doping control standards, guidelines and other like concepts of professional sporting bodies and their national and State representatives, which apply to or govern the Sporting Codes;

(iii) relevant national and State policies, including:

A *End of Trip Facilities in Government Buildings* published by the Department of Transport and available at http://www.transport.wa.gov.au/mediaFiles/active-transport/AT_CYC_P_end_of_trip.pdf;

B *Designing Out Crime Planning Guidelines* (June 2006), published by the WA Planning Commission and available at http://www.planning.wa.gov.au/dop_pub_pdf/DOCguidelines.pdf; and

C other national and State policies referenced in these Design Specifications or Schedule 13 (Services Specifications); and

(iv) all other relevant standards, codes,specifications, guidelines, policies and requirements relevant to the DBFM Works, the Services, the Stadium, the Sports Precinct and the Off-Site Infrastructure (or any of them), including:

A all relevant standards, codes and guidelines published by the Sports Ground Safety Authority, including those available at http://www.flaweb.org.uk/publications, including the Guide to Safety at Sports Grounds (the **Green Guide**), Safety Management, Accessible Stadia, Control Rooms; CCTV Code of Practice, Concourses, Counter Terrorism Protective Security Advice, Dynamic Performance, Dynamic Testing of Grandstands and Seating Decks, Electronic Gates, Guide to Electrical and Mechanical Services at Sports Grounds and Temporary Demountable Structures (**SGSA Publications**);

B the Event Safety Guide – a guide to health, safety and welfare at music and similar events HSG195- as published by HMSO (1999 Edition Revision 2);

C Counter Terrorism Protective Security Advice for Stadia and Arenas, National Counter Terrorism Security Office (NaCTSO);

D Toilet Facilities at Stadia – Planning, Design and Type Installations published by the Football Stadia Design Advisory Council (FSADC) (1993);

E Accessible Sports Facilities formerly known as Access for Disabled People Design Guidance Note, Updated 2010 guidance, Sport England (2010);

F the Changing Places standards published by the Changing Places Consortium (www.changing-places.org);

G Free TV Australia Operational Practice OP – 33 TV Coverage Plan for AFL Matches, Issue 3, June 2007, Free TV Australia Engineering Committee;

H Free TV Australia Operational Practice OP - 35 TV Coverage Plan for International First Class and One Day Cricket, Issue 3, June 2007, Free TV Australia Engineering Committee;

I Free TV Australia Operational Practice OP - 32 TV Coverage Plan for Rugby League, Rugby Union and Soccer Matches Issue 3, June 2007, Free TV Australia Engineering Committee;

J all other relevant Free TV Australia Operational Practice - Engineering Guides as published by Free TV Australia Engineering Committee including Operational Practice OP - 31 Lighting Requirements for Colour Television issue 2, 2005 and Operational Practice OP - 54 Free TV Coverage Plan for Major Event Long Distance TVOB Operations, Issue 1, May 2006; and

K relevant policies, standards and guidelines of MRWA and PTA, including as set out in paragraph (c) below.

(c) Project Co must liaise with all relevant bodies, such as MRWA and PTA (as applicable) for the DBFM Transport Infrastructure Works and for all works that interface with the State Transport Infrastructure Works, including obtaining relevant information and complying with their relevant policies, standards and guidelines (unless agreed otherwise) and including the following Quality Standards:

(i) Public Transport Bus Stop Site Layout Guidelines 2010;

(ii) PTA Lighting Design and Maintenance Guideline, January 2012;

(iii) PTA Safety Instructions for the Electrified Area, June 2007;

(iv) PTA Guidelines for Earthing and Bonding in the 25kV AC Electrified Areas – 228E:

A Part.1 - Traction Power & Overhead Wiring Equipment, June 2011;

B Part 3: Communications Equipment, August 2010;

C Part 4 - General Light & Power Supplies; June 2007;

(v) PTA Technical Specification No. 836M for Optical Fibre & Metallic Cables for Backbone Communications Cabling;

(vi) PTA Standard Specification for Communications Equipment Racks;

(vii) PTA Standard Specification 598M for Public Address Systems for Urban Railway Stations;

(viii) PTA Standard Specification for PTA Urban Asset Security Closed Circuit Television (cctv) Design;

(ix) PTA Standard Specification for Equipment Rooms, Shelters, Enclosures and Cable Access Ways;

(x) PTA Guidelines for working in and around the PTA Rail Reserve, Rev 0, 24 March 2012;

(xi) PTA - A Practitioner's Guide to Bus Movement and Priority;

(xii) PTA Traffic Management and Control Devices;

(xiii) PTA Maintenance and Constructability Guideline;

(xiv) PTA Accessibility Policy; and

(xv) PTA Disability Access and Inclusion Plan.

(d) With reference to the SGSA Publications and the National Construction Code:

(i) to the extent that these Quality Standards include a conflicting requirement, standard, quality, level of service, quantum or scope, the greater or higher requirement, standard, quality, level of service, quantum or scope will prevail; and

(ii) where the SGSA Publications make reference to a Quality Standard that is a British Standard the corresponding Australian Standard is to be adopted provided that the minimum requirements of the NCC are always met.

(e) (**Laws**) Without limiting Project Co's obligations under this Agreement, national and State Laws which are relevant to the DBFM Works, the Services, the Stadium, the Sports Precinct and the Off-Site Infrastructure (or any of them) include:

A OHS Laws;

B *Environmental Protection (Noise) Regulations 1997* (WA);

C *Health (Public Buildings) Regulations 1992* (WA); and

D *Dangerous Goods Safety Act 2004* (WA) and the associated *Dangerous Goods Safety Regulations 2007* (WA).

(f) (**Not exhaustive**) The list of Quality Standards and Laws included in this clause E1.3 is not intended to be exhaustive but provides an indication of the primary reference documents that must inform the design, construction, commissioning and completion of the Stadium, the Sports Precinct and the Off-Site Infrastructure.

E1.4 PERFORMANCE REQUIREMENTS

E1.4.1 Service Life

(a) The Stadium, the Sports Precinct and those parts of the Pedestrian Underpass constructed by Project Co must, with reasonable maintenance, be capable of achieving a Service Life of at least 50 years.

(b) (**Design Life**) The State recognises that replacement of some elements of building fabric, building fitout, FF&E, landscaping and Engineering Services (including sub-systems, equipment and components) will be required to achieve the Service Life. Project Co must provide those elements to achieve the expected Design Life as set out in the relevant discipline Chapters of this Part E (Technical Brief). Design Life must be estimated based on recognised industry guidance or information from manufacturers and suppliers.

(c) (**Operating Phase Lifecycle Maintenance Plan**) Project Co must provide an Operating Phase Lifecycle Plan, as set out in Schedule 13 (Services Specifications) that demonstrates its replacement strategies for those components that will need replacement during the Operating Phase.

(d) (**LCC benefit analysis**) Project Co must consider specific Engineering Services component requirements in the form of LCC benefit analyses submitted to the State at Design Stage 1, including consideration of:

(i) practical or aesthetic requirements;

(ii) utilising natural daylight, ventilation, rainwater and the like to minimise consumption;

(iii) motion sensors; and

(iv) colour temperature selections.

(e) (**WOL design and operational efficiency**) Project Co must ensure WOL design is incorporated into the design of the Stadium and Sports Precinct, as set out in Chapter C15 (Whole of Life Design) of these Design Specifications. Design must take into account operational cost considerations including:

(i) staff efficiency;

(ii) maintenance costs; and

(iii) cleaning costs.

E1.4.2 Construction quality

(a) (**Quality generally**) Without limiting Chapter A6 (General Requirements) of these Design Specifications the construction of the Stadium, Sports Precinct and Off-Site Infrastructure must comply with the following quality requirements:

(i) all elements must be selected to suit the location in which they are installed;

(ii) all elements must be securely fixed and robust;

(iii) all plant, materials and Project Co FF&E must:

A be installed, commissioned and completed in accordance with the manufacturer's recommendations;

B be installed by accredited installers where accreditation is required;

C be selected and installed to withstand all applied loads and including as may be anticipated for the Stadium Activities and provision of the Services; and

(iv) all substrates must be selected and finished to suit the finishes to be applied;

(v) all finishes must be selected and installed to suit the function of the space in which they are located including consideration of:

A quality and character;

B moisture resistance;

C environmental exposure, including to the Land Conditions;

D durability; and

E ease of cleaning;

(vi) all finishes must be free from cracking, decay, rust, fractures, splits, holes, delaminating, spalling and mould growth.

(vii) all finishes must be uniform in their respective colour, unbroken and free from cracking;

(viii) all dissimilar metals must be physically separated to prevent galvanic action;

(ix) fully enclosed buildings must be weather tight;

(x) all fitments must operate freely and smoothly; and

(xi) all roads, pavements, paths and other civil and landscape works must be free of potholes, sinking or trip hazards and ponding.

(b) (**Selection of Project Co FF&E**) Project Co must select Project Co FF&E for the Stadium, Sports Precinct and Off-Site Infrastructure which minimise maintenance requirements and operating costs associated with ongoing repair or replacement.

(c) (**Samples**) Project Co must provide schedules, specifications, samples and finishes boards for all items of plant, equipment, finishes, materials and Project Co FF&E to the State for approval prior to their finalisation of selection and procurement.

E1.4.3 Hazardous substances and dangerous or flammable goods

Project Co must assess the requirements for storage of hazardous substances and dangerous or flammable goods and provide facilities that comply with the requirements set out in relevant Quality Standards and Laws. Project Co must submit a dangerous goods risk assessment to the State for review in accordance with the requirements set out in Schedule 5 (Design Development) of this Agreement.

E1.4.4 Flexibility, Reconfiguration and Expansion

(a) (**Modularity**) The Engineering Services design for the Stadium and Sports Precinct must be based on the principle of maximised modularity to facilitate flexibility of use and ESD considerations.

(b) (**Penetrations**) Any penetrations through fire or acoustic walls should be via fire rated cable ports that can be modified to accommodate temporary changes on the number of cables.

(c) (**Flexibility for use**) Project Co must ensure Engineering Services systems can be zoned to minimise use and consumption of energy. Zoning of areas must be aligned with operational, general occupancy and Event and Function mode use.

(d) (**Flexibility for Expansion and Reconfiguration Works**) Project Co must ensure that the Stadium and Engineering Services are designed, constructed, commissioned and completed to accommodate the future Expansion and Reconfiguration Works as set out in Chapter C14 (Flexibility, Reconfiguration and Expansion) of these Design Specifications and further development of the Sports Precinct over time as contemplated in the Master Plan.

(e) (**Engineering Services plant**) Project Co must ensure that the Engineering Services plant is suitably located to:

(i) accommodate co-location of supplementary plant associated with the Expansion, Reconfiguration Works and further development of the Sports Precinct; and

(ii) not affect the proposed location, or impede the execution, of the potential works described in paragraph (d) above.

(f) (**Event Overlay**) The Engineering Services systems must take into consideration the variable nature of Events and modes of use of both the Stadium and Sports Precinct and the potential requirement for temporary services. This will include the need to accommodate provision of routes for temporary cabling and service runs to ensure temporary controls can be installed without temporary supports as set out in Chapter D17 (Event Overlay) of these Design Specifications.

E1.4.5 Metering, Monitoring and Reporting

(a) Engineering Services designs must incorporate the ability to meter, monitor and report on systems status and the use of individual systems and their components. This functionality must be provided via the BMS or an alternative integrated ELV system.

(b) A recording and analysis system must be provided, breaking down the various Functional Areas and Functional Units of the Stadium and Sports Precinct, and providing numerical and graphical data output.

(c) Metering must be provided to comply with the requirements of Utility Companies and sub metering must also be provided to:

(i) comply with NCC requirements;

(ii) support the ESD Requirements set out in clause C13.1.1;

(iii) invoice energy use to tenants and Hirers;

(iv) identify energy used at individual Events and Functions; and

(v) provide remote access for monitoring and logging of water and energy consumption.

(d) Without limiting the requirements set out elsewhere in these Design Specifications, this must include metering, monitoring and reporting of the following as a minimum:

(i) irrigation water to landscaped areas and the Pitch;

(ii) power usage, including to:

A sports lighting;

B if provided, supplementary lighting systems to support growth of the Turf;

C 3-phase power outlets within the Sports Precinct and Controlled Area;

D Engineering Services systems, plant and equipment;

E high energy usage areas; and

F power draw within any individual Functional Unit that is over 100amp or 50kW;

(iii) all Utilities to the following:

A each of the Serviced Zones;

B each of the Retail Facilities;

C each of the Catering Facilities;

D each of the Home Teams' Change Rooms;

E each of the Generic Change Rooms;

F the Home Teams' Shared Facilities;

G the Away Team Change Room;

H each of the Premium Product Areas; and

I each of the Commercial Facilities (including those to be accommodated within the Designated Commercial Areas), as appropriate to the tenancy arrangements for those facilities.

E1.4.6 Maintainability

(a) (**Access**) In designing the Stadium, the Sports Precinct and the Off-Site Infrastructure, including all architectural features, landscape elements and Engineering Services, Project Co must consider ease of access for the purposes of undertaking safe and efficient maintenance and replacement.

(b) (**Roof access**) Access to roof mounted equipment must be provided in the form of gantries or similar safe method.

(c) (**Obsolescence**) Project Co must consider potential obsolescence in the selection of Project Co FF&E to avoid both partial or comprehensive replacement and operational down-time.

(d) (**Labelling**) Project Co must:

(i) provide a Site-wide, consistent labelling and naming methodology, regardless of the system or discipline;

(ii) ensure comprehensive labelling is provided to all components and equipment indicating their function;

(iii) ensure labelling documentation, which tracks all Engineering Services systems for fast fault finding and service tracking of all systems, including ductwork, pipework, power cabling and control cabling is provided;

(iv) ensure scheduled tracked permanent labelling is provided to both ends of every linear service installed; and

(v) interface with, and ensure unique identifying references within, the BIM, EMS, BMS, the Asset Register, Asset Security Plan and FM Help Desk.

E1.4.7 [*Not disclosed*]

E1.4.8 [*Not disclosed*]

E1.4.9 [*Not disclosed*]

E1.5 UNIVERSAL ACCESS

(a) The design of the Stadium, Sports Precinct and Off-Site Infrastructure must meet and should exceed the requirements of all relevant Quality Standards and Laws in respect of Universal Access and provisions for IRUA.

(b) (**Universal Access design features**) In addition to the IRUA provisions set out in Chapter C10 (Universal Access) of these Design Specifications, the following design features must be considered and demonstrably addressed in the design, including:

(i) (**general design features**)

A facility provisions that enable the IRUA to remain with their carers and friends throughout the Event Day experience, including for example when seated in the Seating Bowl, when accessing the toilet facilities and when moving throughout the Stadium and Sports Precinct;

B provision of ramps to provide an alternative to lifts where feasible, and with reduced grades where possible (a 1:20 gradient is preferred);

C strong visual cues to assist way-finding, with a reduced reliance on signage; and

D clear signage which uses simple, large fonts, good colour contrast and universally recognised symbols and supported by Braille information;

(ii) (**Sports Precinct design features**)

A priority drop-off for IRUA in private ACROD vehicles at the Patron entry to the Stadium with Ready Access to Patron lifts;

B priority drop-off for IRUA in private mobility vans and buses at the entry to the Stadium with suitable provision for turning of these vehicles;

C priority queuing for IRUA in wheelchairs at the Bus Passenger Assembly Area and the Rail Passenger Assembly Areas to facilitate easier use of public transport;

D minimise kerb heights and preferably eliminate kerbs, particularly at drop-off locations for IRUA;

E creation of a “walking journey” from key transport and arrival nodes to the Stadium to incentivise use of public transport to be included in the Event arrival experience and Game Day procession;

F provision of PTA approved kerbing at bus stops that enables passengers to alight from and board buses with ease;

G provision of rest points every 60m along pathways;

H provision of weather shelter within the Sports Precinct;

I provision of a landscaped Sports Precinct, including interfaces with the Pedestrian Underpass and State Transport Infrastructure, that is traversable, even in wet weather conditions, to allow IRUA to access all facilities, amenities and key destinations within the Sports Precinct and connection points to adjoining sites and PTA services; and

J provision of smooth, even, slip resistant surfaces on pathways that still allow for non-electric wheelchairs to traverse with a minimum of effort (i.e. no cobbled stones or large joints between paving materials);

(iii) (**Stadium design features**)

A accessible parking for up to 60 ACROD vehicles with Ready Access to the lifts to access other parts of the Stadium;

B entry into Universal Access lifts directly off the Controlled Area (i.e. from outside the Stadium building);

C lifts large enough to cater for manoeuvring of two IRUA in wheelchairs whilst also accommodating their carers;

D lifts that enable IRUA in wheelchairs to enter and exit in a straight line, without the need to manoeuvre or turn;

E lifts fitted with controls at a height that can be accessed by IRUA using wheelchairs, with raised buttons, Braille information and voice annunciation;

F lifts that do not require a control button to be continually pushed or held (as some IRUA having limitations with fine motor skills are unable to sustain this);

G provision of low height counter sections at all customer service areas, including Ticket Boxes, Patron Services Offices, concierge desks in Premium Product Areas, Outlets and retail outlets, which are suitable for use by IRUA in wheelchairs and which have a recess for feet to facilitate front on access right up to the counter;

H good access into restaurants, bars, Retail Facilities and other amenities within the Stadium;

I provision of accessible toilets at the same location as other toilets and within close proximity to IRUA Positions;

J good use of colour contrast, including for example at steps and leading edges, for handrails against the background colours in the Seating Bowl, between furniture and floor finishes and to demarcate the location of facilities and amenities such as toilets, bars and concessions;

K IRUA Positions distributed in the Seating Bowl to enable seating of IRUA within every block and product type, with design features as set out in Chapter D7 (Seating Bowl) of these Design Specifications;

L provision of IRUA Positions that allow IRUA to sit with their carers, friends and assistance animals as required;

M provision of IRUA Positions in locations and configurations that provide protection from draughts;

N provision of IRUA Positions that are of suitable depth to accommodate large motorised wheelchairs with a personal bag hanging off the back of the wheelchair such that there is no intrusion into the aisle behind;

O provision of IRUA Positions that allow for large motorised wheelchairs to manoeuvre without affecting the comfort and safety of Patrons seated adjacent or in front of the IRUA Position, including other IRUA;

P provision of continuous handrails to assist elderly and vision impaired Patrons;

Q good Stadium acoustics with a production quality PA System for enhanced speech intelligibility; and

R provision of Changing Places Toilets.

(c) (**Universal Access operational initiatives**) In addition to the design features listed in paragraph (b) above, the State aims to pursue some operational initiatives to support easier and more inclusive use of the Stadium and Sports Precinct by IRUA. These initiatives include:

(i) all Stadium Staff to receive disability awareness training so that they can respond proactively to the requirements of IRUA;

(ii) interactive Stadium website and other technology initiatives aimed at providing IRUA with easy access to information about the Stadium and Sports Precinct and offering a virtual orientation to the Stadium and Sports Precinct, including its features for IRUA;

(iii) Stadium tours aimed at providing IRUA with easy access to information about the Stadium and Sports Precinct and offering a virtual orientation to the Stadium and Sports Precinct, including its features for IRUA;

(iv) development of clear evacuation procedures which take into account all IRUA, including people with sensory impairments and mobility impairments;

(v) catering for special dietary requirements such as provision of blended foods; and

(vi) public transport travel training runs arranged in association with the PTA as an adjunct to the Stadium tours.

(d) Project Co must provide all design and construction information in respect of the Stadium and Sports Precinct required by the State and Stadium Operator to support implementation of the operational initiatives in paragraph (c) above.

E1.6 CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

[*Not disclosed*]

E1.7 ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD)

E1.7.1 General

(a) The entire design of the Stadium, Sports Precinct and Off-Site Infrastructure must address the performance requirements outlined in this Chapter.

(b) This Chapter must be read in conjunction with all other sustainability requirements set out in the Design Specifications, in particular the specific requirements of Chapters within this Part E (Technical Brief).

(c) Project Co must develop an ESD Management Plan in accordance with the requirements set out in Schedule 19 (Plans) which:

(i) drives the most sustainable outcomes for the DBFM Works;

(ii) benchmarks the Stadium and Sports Precinct against national and regional legislation and policy;

(iii) allows the State to suitably review progress against ESD outcomes; and

(iv) incorporates a consistent reporting framework.

(d) The Stadium, Sports Precinct and Off-Site Infrastructure must be considered as a holistic entity, with a Site-wide sustainability strategy governing all aspects of development.

(e) Project Co must establish a dedicated multi-discipline management team and forum for driving successful ESD Initiatives and outcomes throughout the design process.

E1.7.2 Policy and Guidance

(a) The following national and regional policies, as a minimum, must be considered when developing the ESD strategy:

(i) the National Strategy for Ecologically Sustainable Development (1992) prepared by the Ecologically Sustainable Development Steering Committee;

(ii) the National Sustainability Indicators (2012), Department of Sustainability, Environment, Water, Population and Communities, Australian Government; and

(iii) Hope for the Future: The Western Australian State Sustainability Strategy (2003), Government of Western Australia.

(b) The following guidance must also be considered when developing the ESD strategy:

(i) ESD Design Guide: Office and Public Buildings, Edition 3 (2007), former Department of Environment and Water Resources, Australian Government;

(ii) 2014 FIFA World Cup Sustainability Strategy – Concept, version 2 (May 2012), Federation of International Football Associations (FIFA);

(iii) Green Goal 2010: Green Goal Programme Objectives (2010), Federation of International Football Associations (FIFA);

(iv) Singing to a Greener Tune: Current Status of the Music Industry in Addressing Environmental Sustainability (March 2010), United Nations (UN) Music and Environment Initiative, Meegan Jones & Xenya Scanlon;

(v) Live Earth Green Event Guidelines (2009), Live Earth;

(vi) International Living Future Institute- Living Building Challenge Framework; Green Star Rating Tool Framework. Green Building Council Australia (GBCA); and

(vii) U.S. Green Building Council (USGBC) LEED Green Rating Framework.

E1.7.3 Quality Standards and Laws

In accordance with clause 14.1 of this Agreement, the design, construction, commissioning and completion of the Stadium, Sports Precinct and the Off-Site Infrastructure must comply with all relevant Quality Standards and Laws, including::

(a) The Greenhouse Gas Protocol standards, published by the World Business Council for Sustainable Development;

(b) Australian National Greenhouse Gas Accounts – Quarterly Update of Australia's National Greenhouse Gas Inventory- December 2012. Australian Government, DCCEE (2013);

(c) ISO 14040:2006 – Environmental Management - Lifecycle assessment – Principles and framework;

(d) ISO 14042:2000 – Environmental Management - Lifecycle assessment – Lifecycle impact assessment;

(e) ISO 14001:2004 - Environmental Management – Requirements with guidance for use;

(f) ISO/DIS 14046 - Environmental management - Water footprint - Principles, requirements and guidelines;

(g) ISO 20121:2012 - Sustainable events management systems;

(h) ISO/TR 14047:2003 - Environmental management -- Lifecycle impact assessment - Examples of application of ISO 14042; and

(i) National Greenhouse and Energy Reporting Technical Guidelines (2013).

E1.7.4 Embedded ESD Initiatives

As part of its ESD Management Plan, Project Co must adopt and incorporate the following ESD Initiatives, as a minimum, into the design and construction of the Stadium, Sports Precinct and Off-Site Infrastructure:

(a) the use of BIM to LOD 500;

(b) solar passive design and solar shading through orientation and form of the Stadium and balancing these objectives with the requirement to optimise the availability of natural light;

(c) materials minimisation through optimisation of civil, structural, architectural and Engineering Services design;

(d) material substitution where practicable for elements of the DBFM Works, particularly for highly repetitious elements or where a substantially more sustainable alternative exists;

(e) adoption of a Materials Red List and a Materials Amber List as set out in clause E1.7.12;

(f) strategies to achieve improved indoor environment quality;

(g) volatile organic compound (**VOC**) off-gassing limits for all internal finishes and furnishings in line with Good Industry Practice;

(h) high efficiency lighting, intelligent zoning and control strategies;

(i) light pollution abatement;

(j) high efficiency FF&E (including certification to demonstrate efficiency and sustainability ratings);

(k) water conservation measures including the selection of water saving hydraulic fixtures;

(l) water conservation and re-use through harvesting of roof rainwater for re-use within the Stadium and Sports Precinct;

(m) Water Sensitive Urban Design (**WSUD**) initiatives including Sustainable Urban Drainage Systems (**SUDS**) and xeriscaping;

(n) optimisation of the heating, ventilation and air-conditioning (**HVAC**) strategy to achieve a balance between natural and mechanically assisted HVAC;

(o) commissioning and tuning of all Engineering Services plant and equipment to minimise power and water consumption and LCC;

(p) promotion of Stadium and Sports Precinct sustainability initiatives using the Display Systems and other means;

(q) NCC Section J compliance by JV3 'alternative method' as described in clause E1.7.9;

(r) facilitate excellent pedestrian and cycle access to transport infrastructure nodes and existing pedestrian and cycle networks leading to the Sports Precinct to promote the use of more sustainable modes of transport;

(s) provision of End of Trip Facilities for use by all categories of Stadium Users;

(t) a minimum of 80% construction waste diverted from landfill; and

(u) provisions to support the objective to achieve 100% consumer waste diversion from landfill.

E1.7.5 Enhanced ESD Initiatives

The State has an expectation that the Stadium and Sports Precinct will incorporate some ESD Initiatives that go beyond the minimum requirement of the Embedded ESD Initiatives. Project Co is encouraged to investigate and evaluate the following Enhanced ESD Initiatives for potential inclusion in the DBFM Works:

(a) on-Site renewable energy generation;

(b) peak energy demand reduction strategies;

(c) certified green building rating for parts of or the entire Stadium;

(d) a 10 – 50% improvement on NCC Section J requirements for the building envelope;

(e) material substitution of core structure;

(f) a methodology for building re-tuning and energy audits every 5 years;

(g) Sports Precinct carbon abatement through sequestration; and

(h) superior indoor comfort measures for Stadium Users.

E1.7.6 Performance Requirements

(a) All aspects of the design, construction, commissioning and completion of the Stadium, Sports Precinct and Off-Site Infrastructure must seek opportunities to minimise impacts on the natural environment wherever possible.

(b) Project Co must develop an ESD strategy for the Stadium, Sports Precinct and Off-Site Infrastructure that must address Embedded ESD initiatives and consider Enhanced ESD initiatives to address the following sustainability indicators:

(i) greenhouse gas emissions;

(ii) energy use;

(iii) waste minimisation;

(iv) water use;

(v) materials use;

(vi) land use and ecology;

(vii) indoor environment quality;

(viii) integrated design;

(ix) social sustainability; and

(x) transport (ensuring integration with the Transport PDP).

E1.7.7 Whole of Life Carbon Footprint Assessment

(a) (**Baseline**) Project Co must prepare a baseline Whole of Life Carbon Footprint Assessment (WOL-CFA) based on the Annual Indicative Event Schedule, which must as a minimum:

(i) comply with the underlying principles of the Greenhouse Gas Protocol and other national and international standards;

(ii) account for all direct scope emissions and indirect scope emissions as far as reasonably practical, including the priority greenhouse gases and demonstrating results as t/kg CO2 equivalent;

(iii) identify impacts including any material proposed changes to the modal split as a result of additional carparking proposed by Project Co;

(iv) include a lifecycle assessment of key building parts as indicated in Figure 2 below;

(v) include a suitably demonstrated boundary scope that addresses all scopes as defined by the Greenhouse Gas Protocol;

(vi) account for the entire design construction process as well as lifetime operation and maintenance phases;

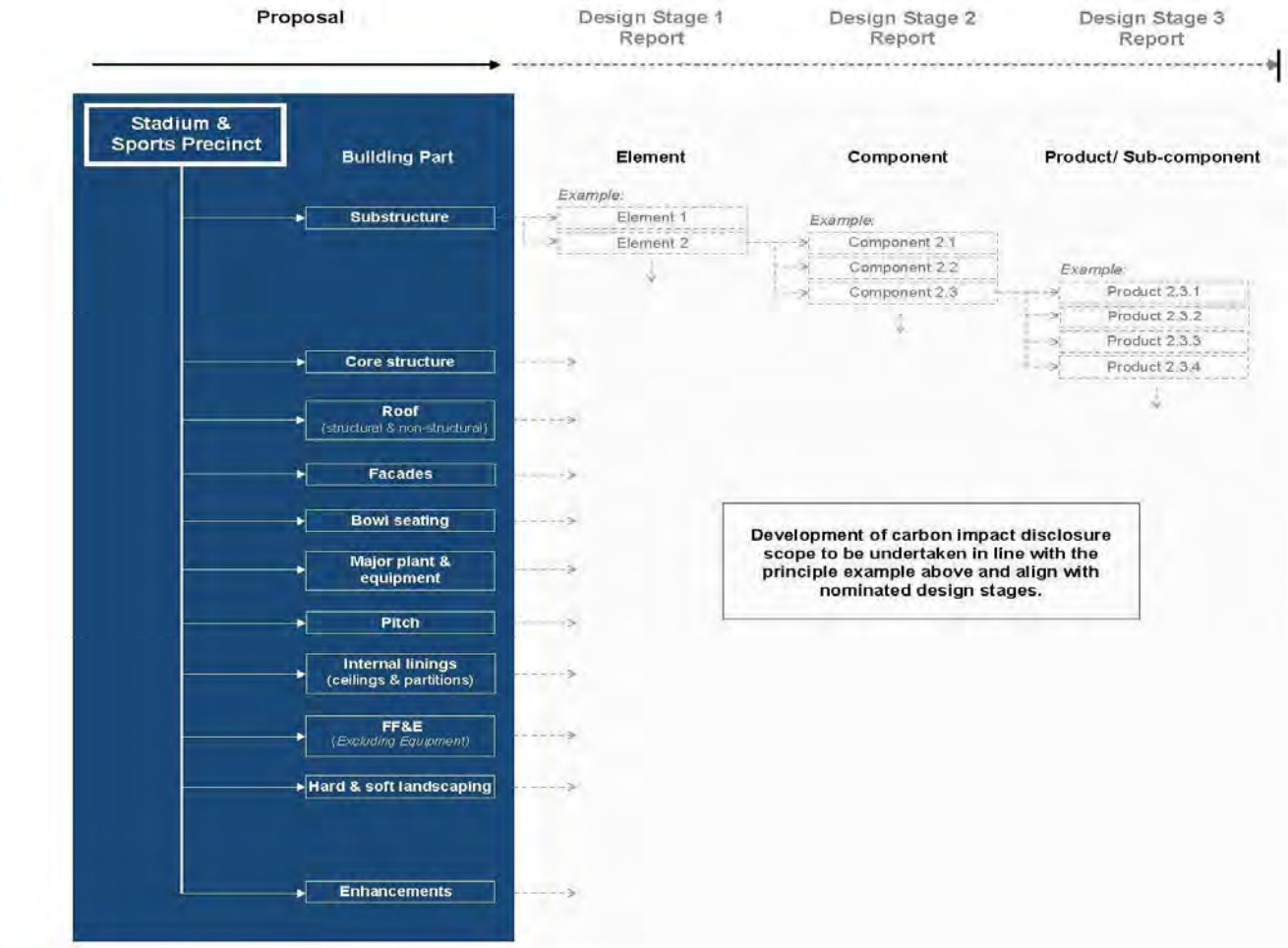
(vii) demonstrate an industry recognised methodology and accounting mechanism that is both credible and defensible;

(viii) contain consistent accounting datasets that reflect impacts in an Australian context;

(ix) adequately demonstrate prediction of accounting variables over the expected life of the project; and

(x) identify contentious accounting issues and demonstrate how these will be addressed throughout the design of the Sports Precinct and Stadium.

Figure 2:



(b) The objective of the WOL-CFA is to assess the ESD performance of Project Co's design, construction and maintenance proposal and therefore the assessment must not contemplate future carbon offset in the calculations to reduce the baseline WOL-CFA.

(c) Evidence based design principles, where WOL-CFAs have been undertaken for public buildings and stadia, may be used in developing the benchmark for the DBFM Works.

(d) Periodic outcomes of the assessment must be fully incorporated within all major stages of the design, construction, operation and maintenance of the Project.

(e) Reporting of the baseline WOL-CFA may be expressed as:

(i) tCO_2 (tonnes of carbon dioxide) equivalent per nominated Seating Position in the Seating Bowl excluding any Expansion or Reconfiguration Works; and

(ii) tCO2 equivalent per m2 gross floor area excluding any Expansion or Reconfiguration Works.

(f) Project Co must present outcomes of the assessment in a format that allows future benchmarking of the Stadium and Sports Precinct to be undertaken by the State.

E1.7.8 Reduction in Greenhouse Gas Emissions

Project Co must design the Stadium and Sports Precinct to achieve a reduction in greenhouse gas emissions for each major stage shown below:

(a) a net 7% reduction in emissions from D&C Phase (includes manufacture, supply, transportation and fabrication through interrogation of the baseline life cycle analysis. Reduction on the baseline must be expressed in line with that of the WOL-CFA baseline assessment;

(b) a net 20% reduction in emissions over the Operating Phase (measured against the baseline operating energy result set out in clause E1.7.9;

(c) a further net 5% reduction in emissions from maintenance of the Stadium over the Operating Phase.

(d) Reporting of the WOL-CFA reductions may be expressed as:

(i) tCO2 equivalent per nominated Seating Position in the Seating Bowl excluding any Expansion or Reconfiguration; and

(ii) tCO2 equivalent per m2 gross floor area excluding any Expansion or Reconfiguration Works.

E1.7.9 Operating Energy

(a) (**Baseline**) Project Co must develop the baseline energy consumption for all energy use components in the Stadium and Sports Precinct which includes compliance with NCC (Section J), utilising the Indicative Initial Annual Event Schedule as set out in clause B8(b) as a basis for the model. The baseline assessment must be concise and transparent to enable the State to utilise the baseline for comparison with Utilities consumption as reported by Project Co pursuant to clause 4(s) of Part F (Operating Phase Plans) of Schedule 13 (Services Specifications).

(b) Minimum compliance for energy use components under NCC (Section J) must be achieved through the method outlined below:

(i) a dynamic thermal simulation modelling for NCC (Section J) JV3 Verification Method compliance assessment must be undertaken to assess operational energy performance of the Stadium and Sports Precinct. This will include creation of building models for the proposed building and equivalent reference (DTS-compliant) building;

(ii) analysis of building models as follows:

A proposed building with proposed Engineering Services;

B proposed building with reference Engineering Servicess; and

C reference building with reference Engineering Services.

(iii) assessment of whole building energy consumption for E1.7.9(b)(ii)A, expressed in kWh and CO2eq; and

(iv) provision of a Section J compliance report in accordance with the requirements of the ABCB Protocol for Building Energy Analysis Software.

(c) A dynamic thermal simulation software package must be used that has been validated against ASHRAE Standard 140-2007 and is deemed to produce results within the acceptable limits of accuracy.

(d) (**Reduction**) The DBFM Works must demonstrate a 20% improvement on the baseline energy performance. This should be achieved by identifying design strategies within all discipline services.

E1.7.10 Waste

(a) (**Baseline**) The Waste Management Plan to be prepared by Project Co in accordance with the requirements set out in Schedule 19 (Plans) will form a baseline for measuring waste management performance during the D&C Phase and the Operating Phase.

(b) Project Co must identify, investigate, implement and quantify options for designing out waste to minimise generation of waste during the D&C Phase and the Operating Phase. The strategies for waste minimisation must be addressed in each Design Stage Report.

(c) In developing the waste minimisation strategies for the Stadium and Sports Precinct, Project Co must consult with the State in respect of all strategies that impact the Stadium Activities and Services or require implementation during the Operating Phase.

(d) (**Reduction**) Project Co must demonstrate a reduction in construction waste (excluding fill) sent to landfill by at least 80%. This outcome must be validated through suitably qualified third party verification.

(e) Dedicated recycling waste storage areas must be incorporated into the design of the Stadium and opportunities for reducing Event Day consumer waste to landfill should also be investigated.

E1.7.11 Water

(a) To ensure efficient water use during the Operating Phase, all hydraulic fixtures and equipment must comply with the minimum requirements set out in Chapter E9 (Hydraulics Services) of these Design Specifications.

(b) (**Baseline**) Project Co must develop the baseline water consumption requirement for the Stadium and Sports Precinct across the hydraulic services and other water-consuming Engineering Services, irrespective of the source of the water (i.e. scheme water or rainwater).

(c) (**Reduction**) Project Co must target a 20% reduction on the baseline water consumption outlined in paragraph (a) and identify its design strategies and the estimated reductions that will be achieved at the project outset.

E1.7.12 Materials

(**Materials Red List**) The following materials must be excluded from the construction and fit out of the Stadium, Sports Precinct and Off-Site Infrastructure:

(a) asbestos;

(b) cadmium;

(c) chlorinated polyethylene (**CPE**) and chlorosulfonated polyethlene (**CSPE**);

(d) chlorofluorocarbons (**CFCs**) and hydro chlorofluorocarbons (**HCFCs**);

(e) chloroprene;

(f) formaldehyde;

(g) halogenated flame retardants;

(h) lead;

(i) phthalates; and

(j) wood treatments containing creosote, arsenic or pentachlorophenol.

E1.7.13 (Materials Amber List)

(a) The use of the following materials should be avoided in the construction and fitout of the Stadium, Sports Precinct and Off-Site Infrastructure:

  (i) unpolarised polyvinyl chloride (UPVC);

  (ii) mercury; and

  (iii) non-certified wood or wood based products.

(b) (**Environmental assessment of proposed materials**) Project Co must assess building and fitout material components specified for the DBFM Works against the following criteria:

  (i) durability (years);

  (ii) product verification (to ISO 14042);

  (iii) manufacturer to be ISO 14001 compliant;

  (iv) recycled content (%);

  (v) recycling potential; and

(vi) compliance with GBCA Green Star VOC content limits and PVC requirements.

E1.7.14 Land Use and Ecology

(**Baseline**) The design and construction of the Stadium, Sports Precinct and Off-Site Infrastructure must enhance the ecological value of the Site. The following elements should be considered when meeting the requirement:

(a) incorporation of WSUD in stormwater drainage design for the Sports Precinct as set out in Chapter E5 (Stormwater) of these Design Specifications;

(b) protection and restoration of impacts on biodiversity as a result of the DBFM Works in accordance with the requirements of the CEMF; and

(c) selection of sustainable materials and indigenous plant species in accordance with the requirements of the CEMF and as set out in Chapter E3 (Landscape Architecture) of these Design Specifications.

E1.7.15 Indoor Environment Quality

Project Co must investigate all available opportunities for improved:

(a) pollutant reduction;

(b) natural ventilation;

(c) daylighting to all Functional Areas and Functional Units to suit functional requirements

(d) thermal comfort to all Functional Areas and Functional Units to suit functional requirements; and

(e) mechanical ventilation and air conditioning,

E1.7.16 Passive Integrated Design

The Stadium and Sports Precinct must exploit all available opportunities for minimising environmental impacts through passive design, while considering other sustainable project requirements. These include:

(a) orientation and placement of Functional Areas and Functional Units, internal doors and walls, and equipment;

(b) the use of thermal massing strategies to help marginalise energy demand peaks;

(c) improved daylight and glare conditions to functional and transient spaces to reduce the demand for artificial lighting;

(d) improved performance of the building envelope with respect to thermal transmission direct solar radiation; and

(e) natural ventilation strategies to reduce the need for mechanically assisted systems.

E1.7.17 Social Sustainability

Education of Stadium Users is important for realising sustainable project outcomes. Project Co must demonstrate implementation of ESD Initiatives that educate and inform Stadium Users on the sustainability features of the Stadium and Sports Precinct.

E1.7.18 Transport

The design of access and egress, to and within the Sports Precinct, should promote the use of more sustainable modes of transport. The following initiatives must be included in the design and align with the Perth Stadium Transport PDP:

(a) prioritised cycle and pedestrian routes to and from major transport interchanges and through the Sports Precinct;

(b) provision of bicycle parking facilities for Patrons;

(c) provision of End of Trip Facilities as set out in Chapter D13 (Stadium Operations and Event Day Facilities); and

(d) widely acceptable pedestrian travel distances to and from the Stadium and Sports Precinct from transport arrival nodes.

E2 ARCHITECTURE

E2.1 GENERAL

(a) In addition to the requirements outlined in this Chapter E2 (Architecture), the architectural works must be designed and executed by Project Co in accordance with the requirements described elsewhere in these Design Specifications, including:

(i) Chapter C3 (Master Planning);

(ii) Chapter C8 (Access and Movement);

(iii) Chapter C9 (Wayfinding and Signage);

(iv) Chapter C10 (Universal Access);

(v) Chapter C11 (Architectural Design);

(vi) Chapter C13 (Ecologically Sustainable Development);

(vii) Chapter C14 (Flexibility, Reconfiguration and Expansion);

(viii) Chapter C15 (Whole of Life Design);

(ix) Chapter C16 (Lifecycle Costing Analysis);

(x) Chapter C17 (Safety in Design);

(xi) Chapter C18 (Innovation);

(xii) Chapter C20 (Managing Design Quality);

(xiii) Chapter C21 (Managing Design and Construction Project Information and BIM); and

(xiv) Part D (Functional Brief).

(b) The requirements set out in this Chapter E2 (Architecture) apply to the Stadium, other buildings and structures within the Sports Precinct and the Pedestrian Underpass, to the extent that the requirements are applicable to Project Co's scope of work for the Pedestrian Underpass. All references to the Pedestrian Underpass in this Chapter E2 are intended to be a reference to those elements of the Pedestrian Underpass to be constructed by Project Co as part of the DBFM Transport Infrastructure Works, including as described in clause E2.2.

(c) The architectural works associated with the development of the Stadium, the Sports Precinct and the Pedestrian Underpass must be designed and executed to ensure that adjacent buildings, structures and landscape elements interface seamlessly with the design of the Stadium and the Sports Precinct and continue to perform together, as intended by the design, over the Service Life of the Stadium.

(d) The design and construction strategy for the architectural works must consider and mitigate differential settlements and lateral movements between the major design elements of the Stadium, Sports Precinct and Off-Site Infrastructure (as applicable) over its Service Life, taking into account the differing ground treatment methods used and potentially different foundation systems proposed for adjacent design elements. Key interfaces which must be addressed include the interfaces between:

(i) the Stadium and the Pitch;

(ii) the Stadium and the plaza/forecourt; and

(iii) all buildings and structures within the Sports Precinct and the surrounding hard and soft landscaped areas.

E2.2 SCOPE

The scope of the architectural works for the Stadium, the Sports Precinct and the Pedestrian Underpass includes the:

(a) Stadium, including exterior and interior finishes and FF&E;

(b) all new buildings and structures situated within the Sports Precinct; and

(c) waterproofing, floor slab and floor finishes, drainage and applied wall finishes to the Pedestrian Underpass.

E2.3 AUTHORISATIONS

Without limiting Chapter A11 (Authorisations) of these Design Specifications and subject to clause 41 of this Agreement, which sets out Project Co's obligations in respect of Authorisations, Project Co must obtain and comply with all required Authorisations and Authority requirements associated with the architectural works for the Stadium, the Sports Precinct and the Pedestrian Underpass, including any required Authorisation(s) from:

(a) the Permit Authority under the *Building Act 2011* (WA);

(b) any relevant local Government Authority;

(c) the Department of Health (DoH);

(d) the Department of Fire and Emergency Services (DFES);

(e) the Department of Racing, Gaming and Liquor (WA) (with the exception of Commercial Opportunities, Project Co is not required to obtain liquor licences for the Stadium and Sports Precinct);

(f) the Department of Mines and Petroleum (DMP); and

(g) the PTA.

E2.4 QUALITY STANDARDS AND LAWS

Without limiting Clause 14.1 of this Agreement and the Quality Standards and Laws stipulated in Chapter E1 (General Requirements), the design, construction, commissioning and completion of the Stadium, the Sports Precinct and the Pedestrian Underpass in respect of the architectural works must comply with all relevant Quality Standards and Laws including:

(a) all relevant Australian Standards, including:

  (i) AS 1428: (all parts) Design for access and mobility;

  (ii) AS 1470: Health and safety at work - Principles and practices;

  (iii) AS 1288-2006: (all parts) - Glass in Buildings-Selection & installation;

  (iv) AS/NZS 1680: (all parts) Interior lighting;

  (v) AS/NZS 2270-2006 (all parts) Plywood and blockboard for interior use;

  (vi) AS/NZS 2890: (all parts) Parking facilities;

  (vii) AS 3610-1995: (all parts) Formwork for Concrete;

  (viii) AS 3660: (all parts) Termite management;

  (ix) AS/NZ 4586-2004: (all parts) Slip resistance classification of new pedestrian surface materials;

  (x) AS 4685: (all parts) Playground equipment; and

  (xi) AS 4693: (all parts) Surfaces for sports areas;

(b) other relevant standards, codes and guidelines, including:

  (i) Australia Police Building Code 3.0 – Planning Guidelines;

(c) relevant State policies:

(i) Better Places and Spaces: A policy for the Built environment in WA, 2013 at http://www.finance.wa.gov.au/cms/uploadedFiles/Building_Management_and_Works/better_places_and_spaces_policy_revised.pdf?n=9793 ;

(ii) *End of Trip Facilities in Government Buildings* published by the Department of Transport and available at http://www.transport.wa.gov.au/mediaFiles/active-transport/AT_CYC_P_end_of_trip.pdf; and

(d) relevant Laws, including OHS Laws.

E2.5 POLICY AND GUIDANCE

The following standards, handbooks, manuals and guidelines must be considered in the design, construction, commissioning and completion of the architectural works for the Stadium, the Sports Precinct and the Pedestrian Underpass:

(a) SAA HB 49: Sporting facilities manual;

(b) SAA HB 155: Guide to the use of recycled concrete and masonry materials;

(c) ICANZ: Industry Code of Practice for the Safe use of Glass Wool and Rock Wool Insulation;

(d) NPCAA Precast concrete handbook; and

(e) SAA HB59 Handbook ergonomics – the human factor, a practical approach to work systems design.

E2.6 PERFORMANCE REQUIREMENTS

E2.6.1 Design Life

(a) Project Co must ensure that the Stadium and other buildings and structures within the Sports Precinct, including their materials and components, are capable of performing, over the Service Life, at the level of safety and serviceability required by these Design Specifications and relevant Quality Standards and Laws.

(b) Project Co must consider all of the following factors in order to determine whether a material, product, component or system will meet or exceed the required Design Life:

(i) quality of materials and workmanship in the product;

(ii) supplier or manufacturer longevity and regularity of product line;

(iii) design requirements and information provided for a component's or an assembly's installation;

(iv) installer's skill level;

(v) indoor and outdoor environmental conditions pertaining to the application; and

(vi) in-use conditions, wear and tear and maintenance impacts.

(c) The Design Life for architectural materials, products, components or systems within the Stadium, Sports Precinct and Off-Site Infrastructure buildings and structures must meet or exceed the following minimum requirements:

Element	Design Life
Insulation, barriers and waterproofing	50 years
Roofing	25 years
Cladding	50 years
Doors (standard, fire and acoustic), windows and glazing	50 years
Door hardware, window hardware and operable walls	25 years

Element	Design Life
Fire doors and frames	50 years
Framed partitions, linings and suspended ceilings	50 years
Suspended ceiling tiles	25 years
Toilet partitions	15 years
Plastering	50 years
Tiling and resilient finishes	20 years
Carpet	10 years
Carpet tiles	15 years
Mastics, sealants and gaskets (in-accessible / hidden)	50 years
Mastics, sealants and gaskets (accessible)	25 years
Painting	20 years
Metal fixtures and timber fixtures	50 years
FF&E	7 - 25 years
Seating within the Seating Bowl	7 years

E2.6.2 Land Conditions

(a) The design and construction of the Stadium, the Sports Precinct and the Pedestrian Underpass must:

(i) take into account all Land Conditions and must minimise the degree of excavation and removal of soil from the Site;

(ii) take into account the potential for differential settlement and lateral movements, the potential presence of Contaminated Material and Contaminated Water and the height of the water table at the Site; and

(iii) take into account the adequacy of the building materials and finishes within the context of a moderately salt exposed environment and otherwise within the relevant climatic and environmental conditions of the Site.

(b) The design and construction strategy for the Stadium, the Sports Precinct and the Pedestrian Underpass must consider and mitigate differential settlements and lateral movements between major design elements over their Design Life, taking into account the differing ground treatment methods used and potentially different foundation systems proposed for adjacent design elements. Key interfaces which must be addressed in the design and construction, include the interfaces between:

(i) the Stadium and the Pitch;

(ii) the design elements within the Stadium, including between the Stadium Curtilage and the Controlled Area;

(iii) the design elements founded on different foundation systems or differently treated ground (or both of these);

(iv) the Controlled Area and the Sports Precinct (including stairs, ramps, retaining structures and pathways);

(v) all adjacent design elements within the Sports Precinct including the Bus Hub and the Bus Passenger Assembly Area;

(vi) the elements of the Sports Precinct which abut structures on adjacent sites, including at all interfaces between elements of the Sports Precinct and the

State Transport Infrastructure Works, including the SRPB and Stadium Station; and

(vii) the floor slab of the Pedestrian Underpass, to be constructed as part of the Off-Site Infrastructure Works, and the floor surface of the adjoining Rail Passenger Assembly Areas.

E2.6.3 Ecologically Sustainable Development

(a) The design and construction of the Stadium and Sports Precinct must exploit all available opportunities for minimising environmental impacts through passive design, while considering the other sustainable project requirements set out in clause E1.4.

(b) The following Embedded ESD Initiatives must be incorporated into the design and construction of the architectural works for the Stadium and Sports Precinct:

(i) solar passive design and solar shading balanced with optimisation of the availability of natural light;

(ii) computational thermal modelling, including both day lighting and glare studies, to ensure good thermal performance over and above the minimum requirements of NCC Section J; and

(iii) improved indoor environment quality including pollutant reduction, natural ventilation, daylighting and thermal comfort.

E2.6.4 Expansion, Reconfiguration and flexibility

Project Co must accommodate the requirements set out in Chapter C14 (Flexibility, Reconfiguration and Expansion).

E2.6.5 Maintainability

(a) Project Co must ensure the Stadium, other buildings and structures in the Sports Precinct and the Pedestrian Underpass (as applicable) incorporate:

(i) safe and efficient internal and external access for cleaning and maintenance in accordance with Best Construction Practices;

(ii) cladding materials that have self-cleaning properties;

(iii) surfaces that are able to withstand regular and repeated cleaning by heavy duty cleaning products and disinfectants;

(iv) interior surfaces and junctions between surfaces and other internal components that are easy to clean and mitigate dust accumulation;

(v) finished surfaces which prevent finger print accumulation (where such surfaces are in constant use);

(vi) resilient floor finishes that are:

A hygienic;

B highly durable;

C Low-VOC and recyclable;

D low maintenance; and

E resistant to staining and utilises colour that does not highlight marks or wear;

(vii) carpet finishes that:

A facilitate ease of cleaning;

B are resistant to staining; and

C are selected appropriately for the design quality and wear expected; and

(viii) curtain track assemblies that incorporate removable systems to facilitate easy removal of curtains for cleaning.

(b) Appropriate safety systems must be provided by Project Co where access beyond the protective areas, including fall arrest systems, of the Stadium and other buildings and structures in the Sports Precinct is required.

E2.6.6 Robustness

Project Co must use materials and finishes in the Stadium, Sports Precinct and Off-Site Infrastructure that:

(a) are selected on the basis of WOL performance analysis, taking into consideration design quality, robustness, durability and resilience;

(b) address sustainability principles and incorporate measures for the improvement of energy conservation, reduction in waste, embodied energy and emissions and the conservation of water, using specified market-based benchmarks; and

(c) are appropriate for the climate to reduce reliance on active climate modification and the BMS.

E2.6.7 Product and material selections

(a) Project Co must carry out investigations, tests and research, as required, to ensure that the selection of materials and products for use as part of the Stadium, Sports Precinct and Off-Site Infrastructure are fit for purpose, such that the Stadium, Sports Precinct and Off-Site Infrastructure are Fit For Purpose, and suitable for the expected usage and Design Life of the intended application, such that their use and maintenance requirements minimise disruptions to Stadium Activities.

(b) Project Co must consider the long term maintenance requirements, including access for replacement, applicable to the materials or products selected in order for their implementation to meet the Service Life of the Stadium, Sports Precinct and Off-Site Infrastructure buildings and structures, in addition to their individual Design Life requirements.

(c) Project Co should consider undertaking testing to relevant Quality Standards, where combinations of products or materials are selected for applications subject to performance requirements including fire, acoustic and others and where the proposed combination of products or materials has not previously been tested together as a system by the manufacturers or suppliers.

(d) Preference should be given by Project Co to the selection of tested systems of materials or products from the same manufacturer or supplier, for applications that are required to meet such performance requirements as described in clause E2.6.7(c), where the use of these tested systems:

(i) does not compromise the functionality and compliance requirements of any individual element or part of the system; and

(ii) does not contradict any other requirements of the Design Specifications for the individual components or system as a whole.

(e) Product and material selections must also consider and mitigate deflections and lateral movements (including wind loads, vibration and thermal movements) in the Stadium, other buildings and structures in the Sports Precinct and the Pedestrian Underpass (as applicable), taking into account any differing material properties and structural supports for adjacent design elements. Key interfaces which must be addressed include the interfaces between:

(i) all structures and surrounding hard and soft landscaping elements;

(ii) façades, windows and glazing;

(iii) façades and doors;

(iv) façades and slabs;

(v) structural elements including slabs and Plats;

(vi) structural elements and the Pitch;

(vii) floors and walls;

(viii) walls and ceilings;

(ix) ceilings and façades;

(x) multi-storey walls and floors;

(xi) dissimilar materials; and

(xii) elements either side of construction, expansion and movement joints.

(f) Project Co must provide samples and prototypes of product and material selections and proposed configurations in accordance with the requirements of Chapter C20 (Managing Design Quality) and Schedule 5 (Design Development) of this Agreement.

E2.7 BUILDING ENVELOPE – GENERAL REQUIREMENTS

E2.7.1 Exterior walls and wall systems

(a) Exterior walls and wall systems must resist damage from:

(i) vertical loads superimposed onto the building structure and transmitted by the building structure;

(ii) horizontal and lateral wind loads;

(iii) seismic loads due to earthquake motion, as set out in Chapter E6 (Structural Engineering);

(iv) dimensional changes caused by temperature related reactions of building materials;

(v) forces generated by differential settlement or other foundation related movement; and

(vi) the penetration of water through or into the exterior walls and condensation within the wall composition or penetrations, by integrating elements including sills, thresholds, lintels, flashings and flashing systems, sealants, water proof membranes, vapour permeable membranes and other barriers into the construction, in conformance with Best Construction Practices appropriate to the Land Conditions.

(b) Exterior walls and wall systems must:

(i) minimise corrosion or deterioration of the building construction and finishing materials they encompass;

(ii) provide thermal resistance to heat transfer through the exterior walls to ensure interior environmental conditions suitable to the needs of Stadium Users and the Stadium Activities;

(iii) provide acoustic performance in accordance with the requirements set out in Chapter E7 (Acoustics); and

(iv) enable light transmission and visibility as required to provide natural light and views to the exterior, to create an open atmosphere and a safe and comfortable environment.

E2.7.2 External materials and finishes

External materials and finishes must:

(a) be appropriate in terms of design quality, performance and build quality, scale, weather-tightness, durability, colour and environmental requirements;

(b) satisfy the technical performance requirements as set out in this Part E (Technical Brief);

(c) support the “safety in design” approach for construction, cleaning, maintenance and replacement in all areas of the Stadium and other buildings or structures in the Sports Precinct, as described in Chapter C17 (Safety in Design);

(d) be appropriate for the Land Conditions, including consideration of durability, noise, vibration, dust, fumes and microclimatic conditions;

(e) resist vandalism, graffiti and general abuse; and

(f) be legible, non-slip and easy to traverse (for hard landscaping and other ground treatments in trafficable areas) and safe for all Stadium Users including, children and IRUA.

E2.7.3 Roofs and roof systems

(a) Roofs and roof systems must:

(i) make provision for the overflow of gutters which can alert building maintenance to blockages;

(ii) prevent air leakage and water vapour transmission through and into the roof systems by incorporating air barrier and vapour barrier systems to internal areas;

(iii) minimise corrosion or deterioration of the building construction and finishing materials underneath or within;

(iv) provide thermal resistance to heat transfer through the roof systems to create interior environmental conditions suitable to the needs of Stadium Users and the Stadium Activities;

(v) resist damage from dimensional changes caused by temperature related reactions of building materials;

(vi) provide for the transmission of natural light into interior areas not adjacent or accessible to exterior walls;

(vii) provide acoustic performance in accordance with the requirements set out in Chapter E7 (Acoustics);

(viii) maintain the integrity of any roof membranes at all roof penetrations;

(ix) incorporate appropriate protection of any roof membranes, particularly in garden beds, roof gardens and external terrace areas, including the Terraces and the outdoor section of the Sky View Lounge;

(x) ensure all downpipes must descend externally or adjacent to columns without offsets in-ceiling spaces and are accessible for maintenance;

(xi) resist the ingress of Pests to all areas; and

(xii) withstand imposed loads arising from and not be easily damaged by persons and equipment associated with cleaning and maintenance of the sunscreens, louvre vents, canopies and façade.

(b) Canopies or recessed openings must be provided at all entrance locations to the Stadium and Controlled Area, to provide weather protection for Stadium Users.

(c) Canopies must withstand imposed loads arising from and not be easily damaged by individuals, Stadium Staff and equipment associated with undertaking maintenance.

E2.8 BUILDING ENVELOPE – DETAIL REQUIREMENTS

E2.8.1 Moisture protection - General requirements

(a) Project Co must:

(i) ensure construction assemblies prevent the ingress of moisture or water vapour into the fully enclosed interior spaces within the building and building fabric from the exterior;

(ii) ensure construction assemblies prevent the passage of air through the building envelope from fully enclosed interior spaces to the exterior and vice versa;

(iii) provide insulation and protection to resist the transfer of heat through the exterior walls and roofs to create comfortable and liveable interior environments;

(iv) provide construction assemblies that resist the propagation and spread of fire through the exterior walls and through those interior walls designated as fire rated separations; and

(v) prevent moisture ingress through foundations and walls below ground.

(b) Waterproofing membranes must:

(i) be provided over suspended slabs and decks and associated walls over habitable spaces, where water collection is anticipated, to prevent water ingress and damage caused by such water ingress; and

(ii) be provided in exterior walls, as part of the building envelope, which are integral to the rain screen or cavity wall assemblies.

(c) The Stadium, other buildings and structures in the Sports Precinct and the Pedestrian Underpass must incorporate waterproofing which provides an effective and permanent waterproof barrier that does not permit the ingress of moisture and water. The waterproofing system must:

(i) be a complete proprietary waterproof system, suitable for the location and relevant intended function, and must be installed in accordance with the manufacturer's recommendation with the installation of the waterproof system warranted by the membrane manufacturer;

(ii) prevent water and moisture from entering the internal areas of the buildings and structures in all weather conditions;

(iii) provide a permanent barrier that is waterproof and resistant to hydrostatic pressure, vapour pressure, condensation and corrosion;

(iv) be compatible with any admixtures and primers used, the substrate, ground and groundwater conditions, such that the integrity of the waterproof system and the adhesion and durability of all subsequent applied work is not adversely affected; and

(v) be properly installed across all expansion and control joints so that the waterproofing system accommodates movement without damage.

(d) The Stadium, other buildings and structures in the Sports Precinct and the Pedestrian Underpass must be provided such that:

(i) pedestrian surfaces do not allow ponding, with any shed water being appropriately discharged; and

(ii) adequate run-off and waterproofing is provided to all roof structures to prevent water ingress.

E2.8.2 Moisture protection - Waterproofing materials

Waterproofing materials must:

(a) maintain their protection for the Service Life of the building or structure;

(b) not be adversely affected by exposure to ultra violet radiation;

(c) sustain traffic loads which may be reasonably expected;

(d) remain functional in the ambient conditions to which they may be exposed;

(e) convey trapped water and moisture to a drainage system to discharge it from the building or structure; and

(f) be unaffected by chemical or other discharges from Engineering Services installations which may be located above them.

E2.8.3 Moisture protection - Vapour barrier materials

Vapour barriers must provide a continuous barrier:

(a) to prevent water vapour transmission into the exterior wall assembly and the resultant condensation of moisture in the wall assembly;

(b) in the roofing assembly, to prevent water vapour transmission into the roof cavity and the resultant condensation of moisture within the roof cavity; and

(c) under concrete slabs on grade within the building perimeter to prevent water and water vapour transmission through the slab.

E2.8.4 Gas contamination protection

(a) Where required by Project Co's Ground Gas Management Plan (as prepared by Project Co in accordance with Clause 2.16 of Schedule 19 (Plans) of this Agreement) or any relevant Authority (or both), Project Co must provide a continuous sealed barrier:

(i) to prevent gas transmission into the exterior wall assembly; and

(ii) under concrete slabs on grade within the building perimeter to prevent gas transmission through the slab.

(b) The gas membrane must comply with the requirements of relevant Quality Standards and Laws.

E2.8.5 Thermal protection - Thermal insulation materials

Thermal insulation materials must:

(a) be provided as part of the building envelope to limit the transfer of heat, both from the internal enclosed spaces to the exterior and from the exterior to the internal enclosed spaces, dependent on seasonal conditions;

(b) be comprised of materials that are of a type and quality that will provide consistent environmental quality to the internal enclosed spaces;

(c) not absorb moisture or contain loose airborne material;

(d) provide thermal values and fire resistance characteristics in conformance with the requirements of the NCC, except where these Design Specifications require a higher standard of performance than the NCC requirements; and

(e) comply with the 'Fire Hazard Properties' criteria set out in the NCC, except where these Design Specifications require a higher standard of performance than the NCC requirements.

E2.8.6 Brickwork and blockwork - General requirements

(a) Brickwork and blockwork walls must:

(i) utilise grade 316 stainless steel or an engineered polymer that is immune to corrosion for built in products below the damp course;

(ii) be selected for resistance to salt attack or general spalling, due to atmospheric contaminants and other Land Conditions, which may be reasonably expected on the Site where units are used below the damp course and in external leaves;

(iii) incorporate flexible masonry ties where accommodation of movement is required at control joints and where masonry units abut structural elements such as column faces and slab soffits; and

(iv) include control joints that coincide with those in the floor structure, which must:

A where required in addition to those in the floor, be located inconspicuously to limit masonry panel sizes in order to prevent cracking;

B incorporate sealants and bond breaking backing materials that are non-staining to masonry and paintable if the masonry is to be painted; and

C incorporate fire stopping materials in the joint composition to ensure that the fire resistance requirements of the element in which it is located are maintained.

(b) Brickwork and blockwork walls should incorporate concealed bracing in-ceilings, to limit the wall height to comply with the slenderness ratio requirements prescribed in relation to fire load and where utilising steel wailers and diagonal bracing, must ensure that the steel is protected to maintain the required fire resistance levels of the wall.

E2.8.7 Brickwork and blockwork - Face work

Face brickwork and blockwork walls must:

(a) be cleaned on completion to remove mortar smears, stains and discolouration using cleaning agents that will not erode the masonry or damage adjacent materials;

(b) ensure visible face unit colours are evenly distributed to prevent colour concentrations and “banding”;

(c) ensure face units are selected of uniform width and face qualities and for use in single leaf masonry with face work to both sides and must be selected for double face qualities; and

(d) ensure sills and thresholds are solidly bedded and laid so that the top surfaces drain away from the building.

E2.8.8 Brickwork and blockwork - Cavities

Brickwork and blockwork cavities must:

(a) be kept clear at all times;

(b) be filled with mortar up to one course above adjacent finished (ground) level;

(c) utilise wall ties, connectors and accessories that are sufficient to withstand any lateral loads applied to the wall and to ensure monolithic action. Wall ties, connectors and accessories must be installed so as to prevent water passing across the cavity; and

(d) utilise damp proof courses to prevent rising damp.

E2.8.9 Brickwork and blockwork - Flashings

Brickwork and blockwork flashings must:

(a) be installed to prevent moisture from bridging cavities and to flash to adjacent structures to prevent the ingress of moisture to the building;

(b) discharge to the roofing gutter system or to the exterior of the building, in such a way that the discharge does not transfer to the building façade materials and cause staining or discolouration; and

(c) be compatible with the adjacent building materials.

E2.8.10 Concrete - General requirements

Concrete finishes must achieve the following minimum class ratings as defined by AS 3610:

(a) Class 1 for selected precast in highly visible areas accessed by Patrons and areas subject to glancing light;

(b) Class 2 for concrete generally, including Back of House and public areas, precast or insitu, exposed concrete or concrete with an applied high-build finish; and

(c) Class 3 for non-exposed concrete soffits or fully concealed columns and similar.

E2.8.11 Cladding systems - General requirements

Cladding systems must:

(a) provide a waterproof skin to the building façades except for ventilated open cladding systems;

(b) be self-draining, such that any moisture which does permeate the exterior face will be discharged externally;

(c) minimise the extent of the following cladding materials:

  (i) fibre cement sheeting;

  (ii) polycarbonate sheeting; and

  (iii) materials that have a site applied painted finish;

(d) have surfaces and profiles that are durable and self-cleaning or easily cleaned by high pressure spray; and

(e) have fixings concealed unless the expression thereof forms an integral feature of the design.

E2.8.12 Cladding systems - Sheet metal

Sheet metal cladding systems must:

(a) be proprietary systems with pre-formed sheets and purpose made accessories;

(b) be pre-painted or organic film products, or metal laminate products; and

(c) be of highly robust materials and finish and reinforced where necessary, if vulnerable to vandalism or required for trafficability.

E2.8.13 Cladding systems – Stone cladding

(a) Stone cladding must be:

  (i) of uniform quality within any grade;

  (ii) selected for the optimum matching of visual properties such as colour and pattern; and

  (iii) sound and free from defects liable to affect its strength, appearance and durability under the intended conditions of use.

(b) Stone samples must be independently tested prior to installation, in accordance with relevant Quality Standards.

(c) Stone cladding installation must ensure:

  (i) that masonry and components are protected from ground moisture and aggressive attack or staining arising from exposure to the Land Conditions;

  (ii) cutting, carving and moulding to achieve a sharp and clean finish;

  (iii) that variations in colour, texture, pattern or finish are distributed randomly throughout the work so that local concentrations do not occur;

  (iv) stone is layed on a full bed of mortar unless dry-stone walling techniques are being utilised;

  (v) that suitable fixings are sufficient to support and restrain each stone and effectively resist the loads from permanent, imposed, wind and earthquake actions to which it will be subjected;

  (vi) that all fixings are:

    A corrosion resistant metal, including non-ferrous metal or stainless steel; and

B compatible with the materials with which they will be in contact with or effectively insulated from electrochemical reaction with incompatible materials.

(d) All cladding sheets, tiles and other tileset out must:

(i) commence from the centre of the area;

(ii) ensure edges are matched and patterns aligned;

(iii) be arranged so that variation in appearance is minimised; and

(iv) ensure that cut cladding sheets and tiles are located at the margins only and where possible, are laid out so that they give a cut dimension of at least 100mm by full tile width.

E2.8.14 Cladding systems - Aluminium composite panel

Aluminium composite cladding systems must be:

(a) a proprietary pre-finished corrosion-resistant aluminium alloy sheet bonded to a fire resistant core material;

(b) of highly robust materials and finish, reinforced where necessary, if vulnerable to vandalism or required for trafficability;

(c) of sufficient thickness and rigidity to prevent deflections and deformation in the sheet from human impacts and hail (both metal sheet and total panel); and

(d) highly UV stable for fade resistance and gloss consistency throughout the Design Life of the material, with self-cleaning properties and no tonal variation between batches.

E2.8.15 Curtain wall systems - General requirements

Curtain wall system design and installations must:

(a) be fully integrated into the building and designed to meet the fire engineering performance requirements specified in the Fire Engineering Brief (FEB); and

(b) have surfaces and profiles that are self-cleaning or easily cleaned by high pressure sprays.

E2.8.16 Curtain wall systems - Performance requirements

Curtain wall system installations must:

(a) accommodate deflections, displacements and other movements within the curtain wall, or between the curtain wall and the building (including fire stop and smoke flashing connections), including movements caused by ambient temperature changes, structural design actions and shrinkage;

(b) accommodate movements silently and without permanent deformation, reduction of performance or other detrimental effects, such as:

(i) damage to or undue stress on structural elements, fixings, glass and spandrel panels;

(ii) failure of joint seals; and

(iii) loss of normal function in operable elements such as doors and windows;

(c) accommodate differential movement between the curtain wall and the building caused by building movements, including column or frame shortening (elastic, creep and shrinkage);

(d) exhibit vertical deflection of structural members under dead load which does not:

(i) reduce the glass bite below 75% of the design dimension;

(ii) reduce below 3mm, the clearance between the member and a non-structural member (such as glass or spandrel panel) immediately below; and

(iii) reduce below 3mm, the clearance between the member and operable elements such as windows and doors; and

(e) be capable of supporting loads in horizontal or near horizontal surfaces that form part of the curtain wall, including copings, beam encasements, ledges and those which may carry human live loads, including for maintenance access without permanent distortion, failure of seals or fastenings or other damage.

E2.8.17 Curtain wall systems - Containment devices

Project Co must:

(a) provide containment devices such as pressure equalised drained joints, gutters and troughs to contain water that enters the curtain wall system so that it is diverted to the exterior;

(b) incorporate mechanical baffles and drainage outlets such as weepholes and slots where non-pressure equalised containment devices are used; and

(c) ensure all installed inaccessible seals must remain effective for the Service Life of the curtain wall system.

E2.8.18 Curtain wall systems - Lightning protection

(a) Electrical continuity must be maintained throughout the curtain wall system and connections to the structure, reinforcing, cladding and grounding thereof.

(b) The entire installation must be integrated with the lightning protection system.

E2.8.19 Curtain wall components - Panels and facings

The design must facilitate panel demounting and replacement from the outside of the building.

E2.8.20 Curtain wall components - Vision glass

Curtain wall vision glass must:

(a) provide appropriate transmission of daylight to occupied areas;

(b) have a glazing coefficient, determined to correspond with the insulation value of the façade system as a whole;

(c) be laminated, or toughened and laminated, safety glass as required by the relevant Quality Standards and Laws;

(d) be laminated safety glass where there is a risk of a fall greater than 1m if the glass fails;

(e) satisfy human safety impact requirements and other security requirements; and

(f) be designed and certified to resist the designated wind pressure, structural and wind loading requirements.

E2.8.21 Curtain wall components - Spandrels

(a) All spandrels that occur in front of structures or ceiling voids must be appropriately sealed.

(b) Opacified glass spandrels backed by insulation must provide an air space of at least 25mm between the back of the spandrel glass and the insulation, and must:

(i) secure the insulation so that it cannot touch the glass or opacifier;

(ii) not retain moisture or cause condensation within the panel; and

(iii) ensure that the insulation achieves the specified thermal insulation for the curtain wall and prevents condensation from occurring within the shadow box.

E2.8.22 Curtain wall components - Installation

(a) The deviation of any member from its true alignment (plumb, level or line of slope) must be less than 1mm per metre of member length, up to a maximum of 9mm in a continuous run of members in one direction.

(b) The misalignment between adjoining members must be less than 1mm.

(c) The deviation of any part from its true position must be less than 9mm (not applicable to the positions of adjoining members relative to each other).

E2.8.23 Louvre vents, sunscreens and canopies

(a) Sunscreens and canopies must be incorporated to control glare and direct solar radiation on glazing, where applicable, with regard to the Site conditions and orientation.

(b) Sunscreens and canopies must:

(i) preserve the views to outside from within the Stadium and other buildings and structures in the Sports Precinct;

(ii) be effective in improving visual comfort for Stadium Users and the users of other buildings in the Sports Precinct through reduced glare and mitigation of harsh daylight penetration;

(iii) be effective in reducing solar heat gain; and

(iv) provide sufficient access between each screen to safely and properly undertake cleaning and maintenance.

(c) Louvre vents, sunscreens and canopies within the Stadium and other buildings and structures in the Sports Precinct, must be manufactured from materials and coatings with a suitable Design Life for the intended application.

(d) Louvres to roof plant rooms, including those which breach acoustic baffles, must be high performance acoustic type where breakout noise could impact Patron or Back of House occupied zones.

(e) Acoustic louvres must be selected to align with the performance requirements of the mechanical services plant and Chapter E10 (Mechanical Services).

(f) Air louvres must have bird proofing mesh fitted to the inside face of the air louvre.

(g) Louvre vents and screens must be designed to exclude the ingress of water to the building interior.

(h) The entire louvre assembly must be installed and flashed into the wall cladding systems such that any water entering the louvre assembly is discharged to the exterior of the building.

(i) Where louvres are larger than the ducts to which they connect, the unused portions of the louvre must be blanked off on the inside face in a manner which is undetectable from the outside using, materials which are electrolytically compatible with the louvre blades.

(j) Louvre vents, sunscreens and canopies must withstand imposed loads arising from and not be easily damaged by, persons and equipment associated with, cleaning and maintenance of the louvre vents, sunscreens, canopies and façades.

E2.8.24 Aluminium windows and doors - General requirements

(a) Aluminium windows and doors must be high quality commercial suites selected to suit the intended use.

(b) Aluminium windows and doors must maintain structural integrity and weather proofing when installed.

(c) Where incorporating glazing plastics, the glazing plastics must be free from surface abrasions and selected to prevent yellowing or other colour change, loss of strength and impact resistance and general deterioration.

(d) Aluminium windows and doors must:

(i) include laminated, or toughened and laminated, safety glass, as required by the relevant Quality Standards and Laws; and

(ii) include laminated safety glass where there is a risk of a fall greater than 1m if the glass fails.

(e) Where ceramic coated glass is used the coloured ceramic coating must be fused with the surface of the glass.

(f) Opacified glass must have the opacifier permanently bonded to the inner face of the glass ensuring that there are no obvious blemishes in heat treated flat glass (including tinted and coated glass).

(g) Aluminium windows and doors must utilise a premium polyester powder coat or anodised finish.

(h) Electronic locking systems, where required, must be low maintenance and suit the installation tolerances of the window or door system. The use of shear locks should be avoided.

E2.8.25 Aluminium windows and doors - External glazed doors

(a) External glazed doors must be fitted with proprietary draft seals to the full perimeter of hinged doors and the majority of the perimeter of pivot doors.

(b) Automatic sliding doors or automatic door operators must:

(i) be installed to access points requiring hands free automatic opening or closing, or requiring access credential activated operation at entry and exit locations, to ensure closure of the door after opening;

(ii) utilise heavy duty automatic sliding door assemblies selected to suit the location and use;

(iii) be a proprietary series, fully mounted in an extruded aluminium housing;

(iv) have passive sensors to prevent the door from closing when the path is obstructed;

(v) have adjustable dwell time;

(vi) have an electric motor lock, where applicable, so that doors are able to be locked at certain times, with the lock only being able to be overridden by push buttons (internally) and access credentials or when released on signal from the fire indicator panel; and

(vii) have a self-recharging battery backup or other supply system capable of operating the doors under power failure.

E2.8.26 Aluminium windows and doors - External operable walls / bi-fold doors

External operable walls and bi-fold doors must:

(a) be of commercial quality and conform to all relevant Quality Standards;

(b) be able to offer flexibility of operation with a single active leaf or fully deployed or retracted;

(c) consider a cavity or recess for the doors to be protected when retracted;

(d) comply with IRUA requirements with an appropriately designed sill detail that provides weather protection without creating a trip hazard;

(e) allow for structural deflections to ensure smooth operation; and

(f) comply with emergency egress requirements without compromising functionality and flexibility of use.

E2.8.27 External folding and overhead doors

External folding and overhead doors must:

(a) be a proprietary system comprising a door of linked horizontal panels hinged together, be weather lapped at the horizontal joint, be fitted with rollers running in side tracks fixed to the building structure which guide the door when opened to a position above and behind the opening and must be inclusive of the manufacturer's standard operating gear, hardware and accessories necessary for satisfactory performance;

(b) comply with acoustic, fire, wind loading and egress requirements;

(c) be motor driven and be of highly durable and non-corrosive components for reliable operation;

(d) use finishes that integrate the doors into the architecture of the surrounding walls and the design language of the Stadium generally, in particular, if open to public view;

(e) be rated for the greater of the anticipated local wind loads or at least 550Pa without impairment of functionality;

(f) be of sufficient size to accommodate access for all goods and vehicles required for the Stadium Activities and performance of the Services;

(g) include electrical motors incorporating limit switches, manual safety stop and reversing mechanism and overload cutout operated by battery powered remote controller, supplied as part of the system and also by push button or key switch; and

(h) incorporate manual override in the event of a power failure.

E2.8.28 Roller doors and shutters

Roller doors and shutters must:

(a) be a proprietary system comprising a flexible continuous curtain sliding between vertical guides, be raised or lowered by rolling or unrolling around a horizontal drum (barrel) mounted above the opening and must be inclusive of the manufacturer's standard operating gear, hardware and accessories necessary for satisfactory performance;

(b) comply with acoustic, fire, wind loading and egress requirements;

(c) be motor driven and be of highly durable and non-corrosive components for reliable operation;

(d) use finishes that integrate the doors into the architecture of the surrounding walls and the design language of the Stadium generally, in particular, if open to public view;

(e) be of sufficient size to accommodate access for all goods and vehicles required for the Stadium Activities and performance of the Services;

(f) include electrical motors incorporating limit switches, manual safety stop and reversing mechanism and overload cutout operated by battery powered remote controller, supplied as part of the system and also by push button or key switch; and

(g) incorporate manual override in event of a power failure requiring a force of no greater than 220N.

E2.8.29 Pest control

(a) Project Co must design and construct the Stadium, other buildings and structures in the Sport Precinct and the Pedestrian Underpass to mitigate ingress and nesting by Pests and Pest infestations during the Service Life and to ensure compliance with all relevant Quality Standards and Laws, including the *Health (Public Buildings) Regulations 1992* (WA).

(b) Project Co must:

(i) provide Pest management materials and systems for the whole of the works in accordance with relevant Quality Standards and as required to achieve the requirements set out in clause E2.8.29(a);

(ii) must ensure physical and chemical barriers for Pests are effective for the Service Life of the building structures; and

(iii) ensure the potential for bird nesting is considered in the design of the Stadium and other buildings and structures in the Sports Precinct to limit opportunities and environments where birds will nest.

E2.8.30 Roofing

(a) All roofing must:

(i) incorporate access to maintain roof areas, Engineering Services equipment, penetrations and gutters;

(ii) incorporate appropriate UV protection to the Seating Bowl and internal areas, notwithstanding the requirements for the Pitch;

(iii) resist dislodgement under uplift forces;

(iv) incorporate supporting structures including platforms balustrades and handrails to prevent denting by roof maintenance personnel for regularly accessed areas;

(v) where incorporating box gutters, ensure that they are a minimum of 600mm wide to facilitate cleaning out and must be constructed from continuous lengths of stainless steel;

(vi) incorporate bird proofing to sumps;

(vii) include profiled filler strips to the edges of roofing sheets to resist the ingress of water and Pests;

(viii) incorporate leaf guard protection to all gutters which are located in areas susceptible to falling or wind-blown leaf litter;

(ix) incorporate acoustic treatment of concealed and internal downpipes; and

(x) include access via permanent ladders or stairs.

(b) The Stadium roof must be designed and constructed to:

(i) have the capability to accommodate a public roof top walk or roof climb that does not impact on the Engineering Services and other infrastructure; and

(ii) enable access to all parts of the roof necessary to accommodate TV broadcast requirements, Special Event requirements and sports lighting.

E2.8.31 Fall arrest systems

(a) Fall arrest systems must be provided to all areas where Stadium Staff will be required to operate or carry out activities beyond the protection afforded by balustrades or parapets.

(b) Fall arrest anchorage must:

(i) include permanent waterproof labelling adjacent to the anchors; and

(ii) be inspected on completion of the installation and certified for compliance of the anchorage, including an engineer‘s certification of the design and installation.

(c) The fall arrest system must be installed to operate without conflict with the roof top walk or roof climb.

E2.9 BUILDING PRODUCTS AND COMPONENTS

E2.9.1 Sealants - General requirements

(a) Sealants must be used to create effective seals to the building envelope systems and around openings in the building envelope to prevent water ingress.

(b) Sealants must be used to seal around and over cavities and in or behind surface elements to meet relevant public health requirements.

(c) Sealants must seal joints between dissimilar or similar materials to allow a smooth or even transition.

E2.9.2 Adhesives and sealants - Products

(a) Adhesives and sealants must:

(i) be capable of transmitting imposed loads, be sufficient to ensure the rigidity of the assembly or integrity of the joint and without causing discolouration of finished surfaces;

(ii) be composed of materials that are compatible with each other and the contact surfaces and that are non-staining to finished surfaces;

(iii) be waterproof in all wet areas or areas prone to moisture ingress;

(iv) completely and continuously fill joints and have an integral colour and where used internally (at frames), must be paintable;

(v) where used for caulking to washroom plumbing fixtures, be silicone type, impervious to water and mildew resistant; and

(vi) where used for exterior vertical expansion and control joints in masonry or wall cladding, be non-sag sealants.

(b) Sealing compounds (polyurethane, polysulphide and acrylic) must be:

(i) single components; and

(ii) sealing compound (i.e. silicone).

(c) Backing rods for sealants must:

(i) be closed cell or impregnated foam;

(ii) not absorb water or adhere to the sealant; and

(iii) be of sufficient diameter such that the face and rear cross sectional surface area of the sealant are equal.

E2.9.3 Fasteners

All fasteners must:

(a) be rated for the particular use, be capable of transmitting imposed loads and maintaining the rigidity of the assembly;

(b) be non-corrosive;

(c) allow for thermal movement of the substrate; and

(d) not cause staining of the fixed material.

E2.9.4 Metals and pre-finishes

(a) All metals in building elements exposed to the weather and internally, where not prone to physical damage, must be prefinished or have an integral finish, excluding:

(i) structural steel; and

(ii) steel framed assemblies.

(b) Pre-finished or integrally finished metals must be selected for durability for their intended application, including cleaning, impact resistance and weathering properties.

(c) All damaged pre-finished elements must be replaced and touching up will not be accepted.

(d) Self-finished metals must be free from surface colour variations after jointing.

(e) Rust on unprotected steel must be removed and treated.

E2.9.5 Timber

(a) Timber used in the Stadium or other buildings and structures in the Sports Precinct, wherever possible, must be in accordance with internationally recognised forest certification schemes such as AFS (Australian Forestry Standard), AFC (Forest Steward Council) or PEFC (Program for the Endorsement of Forest Certification), including provision of evidence of origin of the timber used.

(b) Timber must comply with the requirements of the relevant Quality standards including AS/NZS 2270.

(c) Timber must have natural durability appropriate to the conditions of use or must be preservative treated timber of equivalent durability.

(d) Timber containing lyctus susceptible sapwood must not be used.

(e) Timber used for framing must be straight, without twists, winds or bowing and made from seasoned, milled and dressed timber products:

(i) within 3% of the equilibrium moisture content appropriate to the timber and its intended conditions of use;

(ii) with a 10 – 15% moisture content; and

(iii) with no more than a 3% difference between any 2 pieces in any one group.

(f) Where un-seasoned timber is used, or if variations in moisture are likely, allowance must be made for shrinkage, swelling and differential movement;

E2.9.6 Timber veneers

Project Co must:

(a) use select grade timber veneers, veneer quality A as defined by the AS/NZS 2270, for visible surfaces to have a clear finish, stained finish or have no coated finish; and

(b) use general purpose grade timber veneers, veneer quality B as defined by AS/NZS 2270, for other visible surfaces.

E2.9.7 Painting - General requirements

(a) All exterior paints and painting must be of a quality and performance appropriate to protect the substrate materials from the conditions of the weather and climate existing at the Site and the environs.

(b) Exterior masonry materials such as brick, concrete block and concrete, must be treated with anti-graffiti coatings where access can be reasonably attained. The anti-grafitti coatings must not be clear coating systems vulnerable to yellowing or with unnatural gloss levels.

(c) For staff and public interior areas, the indoor air quality must be a priority and Low-VOC paint materials must be used.

(d) Interior paint materials must be of a quality to withstand regular and repeated cleaning, as and when the function of the Functional Area or Functional Unit dictates.

(e) Exterior and interior materials subject to corrosion from exposure to moisture or other corrosive agents and where painting is deemed to be insufficient protection, must receive a special protective coating.

(f) Coating systems to substrates must be:

(i) consistent in colour, gloss level, texture and dry film thickness;

(ii) free of runs, sags, blisters and other discontinuities;

(iii) fully opaque (excluding timber stains), or at a level of transparency consistent with the product for clear finishes;

(iv) fully adhered; and

(v) resistant to environmental degradation, including as a result of exposure to the Land Conditions.

E2.9.8 Painting - Execution

(a) Priming before fixing:

(i) bottoms of doors must be primed prior to hanging of the door.

(b) Repair of galvanizing must:

(i) only be done where not exposed to view in the final design; and

(ii) where galvanizing has been damaged and will be exposed to view in the final design, repair must not be utilised. Instead, replacement or re-coating of the whole element is required.

(c) Project Co must ensure that all painting systems and selections are installed with at least 3 coats, unless specified by the manufacturer as a 1 coat or 2 coat system.

E2.10 BUILDING INTERIOR – GENERAL REQUIREMENTS

E2.10.1 Walls and ceilings

Project Co must ensure that all walls and ceilings:

(a) are selected to suit the performance requirements applicable to the application, including providing:

(i) fire and smoke separation and fire resistance ratings in conformity with the NCC;

(ii) acoustic performance in accordance with the requirements set out in Chapter E7 (Acoustics) of these Design Specifications;

(b) provide the required strength to support the applied linings, fixed Engineering Services and FF&E;

(c) use moisture-resistant materials in wet areas; and

(d) comply with relevant Quality Standards and Laws, including the *Health (Public Buildings) Regulations 1992* (WA), including in food preparation areas and kitchens in the Catering Facilities.

E2.11 BUILDING INTERIOR – DETAIL REQUIREMENTS

E2.11.1 Walls and partitions

Project Co must ensure that walls and partitions:

(a) provide the required strength to support the installation of doors and windows;

(b) withstand impact from wheeled trolley traffic where required; and

(c) are resistant to impacts for the expected use so that they are fit for purpose, such that the Stadium is Fit For Purpose, including ball impacts in the Home Teams' Player's Warm-up Rooms and Away Team Players' Warm-up Room and impacts from service trolleys and other wheeled equipment in internal Functional Areas.

E2.11.2 Wall finishes

Wall finishes must:

(a) be scuff and abrasion resistant and selected to facilitate the removal of scuff marks;

(b) be complementary and integral to the functions and interior environment quality requirements of the space; and

(c) be appropriate for the Functional Area or Functional Unit, including with respect to suitability for exposure to humidity in aquatic recovery facilities and for ease of cleaning to facilitate infection control in Medical Rooms.

E2.11.3 Floor finishes

Floor finishes must:

(a) be selected to suit the anticipated types and concentration of pedestrian, vehicular and trolley traffic;

(b) be selected to minimise cleaning and maintenance requirements including:

(i) frequency and durability of joints;

(ii) ease of replacement when required; and

(iii) to facilitate mechanised cleaning procedures;

(c) be impervious to concentrations of moisture that the floor will experience for the duration of that moisture;

(d) achieve interior environment quality and design consistency and assist wayfinding for the benefit of Stadium Users;

(e) have patterns and textures, where applicable, that are compatible with the requirements for pedestrian safety; and

(f) be appropriate for the Functional Area or Functional Unit, including with respect to suitability for exposure to humidity in aquatic recovery facilities and for ease of cleaning to facilitate infection control in Medical Rooms.

E2.11.4 Partitions - General requirements

All partitions must:

(a) have control joints spaced and installed as required by the Quality Standards and located with consideration for partitions that are subject to direct sunlight, including through high level windows;

(b) withstand the service conditions expected for dry wall partitions in the environments where they are used;

(c) provide sound fixing and support for door frames and openings to prevent sagging, vibration and rattles;

(d) support structural design actions, including designated eccentric loads, for example, loads on attached shelves or brackets, so that deflections will not exceed H/180 in door frames and H/500 for eccentric loads on partitions;

(e) be resistant to moisture encountered under expected environmental conditions, including in all wet areas and aquatic recovery facilities;

(f) be free from significant irregularities;

(g) provide a suitable substrate for the nominated final finish;

(h) avoid the use of back to back service plates and back to back access panels, where possible;

(i) be arranged to minimise forming door openings in fire walls and smoke walls. Where this is unavoidable, these doors must incorporate automated hold open devices and door closers, that respectively disengage and enable the door to close in the event that a fire alarm is triggered;

(j) be fitted with smoke activated door closers, which provide a “free” swinging (non spring weighted) action, where fire or smoke doors give access to IRUA, except when smoke is detected adjacent to the door;

(k) exclude the use of control joints in wet areas; and

(l) have tolerances that are within flatness, twist, winding and bow of a maximum of 1.5mm deviation from a 1.5m straight edge placed in any position.

E2.11.5 Partition - Linings

(a) Lining systems in the Stadium or other buildings and structures in the Sports Precinct, must have a surface which:

  (i) is resistant to impacts and abrasion for the expected use;

  (ii) is resistant to moisture encountered under the expected environmental conditions; and

  (iii) provides a suitable substrate for the nominated final finish.

(b) Fire wall linings must be installed in accordance with fire tested assemblies and maintain the nominated fire resistance ratings for all penetrations.

(c) Acoustic wall linings must comply with the NCC and Chapter E7 (Acoustics) of these Design Specifications and linings must be installed in accordance with the fire tested assemblies.

(d) Smoke wall linings must have seals that are maintained around all services penetrations, in a manner which will not impact on performance.

(e) Sealants used must be non-hardening fire rated sealants that are compatible with the materials to be sealed and having a fire rating equal to that of the partition it is installed in.

(f) Plasterboard linings must be installed in accordance with tested prototypes as required for the service condition, including fire resistance ratings, smoke or acoustic performance.

(g) Plasterboard joint finishes must be in accordance with relevant Quality Standards, including AS2589.1:

(i) Level 1 - for use in plenum areas above ceilings, where work will be concealed, or in building service corridors and other areas not normally open to public view;

(ii) Level 3 - for use in areas which are to receive heavy or medium spray, or hand applied finishes, before final painting or where heavy grade wall coverings are to be applied as a final finish;

(iii) Level 4 - generally unless otherwise stipulated; and

(iv) Level 5 - for use where gloss or semi-gloss paints are to be used and where critical conditions occur with painted surfaces, such as large flat wall and ceiling areas, where severe glancing light will occur from large windows or skylights or where artificial silhouette or spot lighting must be used. (Note: Level 5 finish requires that a skim coat be applied over the total area to be finished).

(h) Trims such as beads, mouldings and stops must be installed to make neat junctions between lining components, finishes and adjacent surfaces.

E2.11.6 Suspended ceilings - General requirements

(a) Selection of ceiling type must be appropriate with respect to level of quality, fire resistance, acoustic performance requirements, security requirements and accessibility requirements to suit the function of each Functional Unit.

(b) Suspended ceilings systems must include threaded droppers and accommodate provision for cable trays or other service runs through suspended ceilings.

(c) Fibrous plaster ceiling tiles must include a hard-cast plaster face.

(d) All ceiling installations must resist sag and resist the effects of mould and humidity.

(e) Suspended ceilings systems must address the potential for failure or damage due to air pressure differential during high wind conditions.

E2.11.7 Suspended ceilings - Access panels

(a) Removable panels must be provided to gain safe and effective access to all in-ceiling Engineering Services requiring maintenance and must provide access to each separate ceiling space.

(b) Panels must be located to align with other ceiling elements and located to minimise their number.

(c) Panel installations must:

(i) match the ceiling in appearance and performance;

(ii) be provided with an identification mark; and

(iii) have a reinforced back to prevent warping and facilitate handling.

E2.11.8 Suspended ceilings - Trims

(a) Trims such as beads, mouldings and stops must be used to make neat junctions between lining components, finishes and adjacent surfaces.

(b) At ceiling edge terminations (except where ceiling cornices are required) and pre-finished aluminium angles must be provided.

(c) Perforated stopping beads must be installed to all edge terminations against abutments.

(d) Perforated casing beads must be installed to all edge terminations where the sheet edge is exposed.

E2.11.9 Suspended ceilings - Sealants

(a) Non-hardening fire-rated sealants must be used, which are compatible with the materials to be sealed and with a fire rating equal to that of the partition it seals.

(b) Non-hardening acoustic sealants must be used, which are compatible with the materials to be sealed and rated consistent to the requirements of the space.

E2.11.10 Suspended ceilings - Ceiling grid systems

(a) Ceiling grid systems must be set out so that tile or panel joints and centrelines of visible suspension members coincide with planning grid lines.

(b) Suspension systems must be coordinated with the in-ceiling Engineering Services.

(c) Bulkheads and other similar ceiling formations must be an integral part of the ceiling structure, and must:

(i) be braced to prevent lateral movement; and

(ii) accommodate requirements for the Engineering Services, including motors and cabling associated with roller shutters and grilles.

(d) Ceiling tiles must fit accurately and neatly and be free from air leakage and staining.

(e) Patterned or heavily textured materials must be set out to give consistency in direction of pattern or texture.

(f) Acoustic treatment must be provided over acoustic partitions that terminate at ceiling level as required to comply with the acoustic performance requirements set out in Chapter E7 (Acoustics) of these Design Specifications.

E2.11.11 Blockwork - General requirements

(a) Walls subject to impact by vehicular and heavy trolley movement must be constructed from non-load bearing blockwork.

(b) Blockwork walls must be sealed with an applied surface application ranging from plastering to painting, with or without further applied finishes.

(c) Wall protection systems must be incorporated as necessary to prevent damage to the blockwork through incidental impact.

(d) Perpends must align within 10mm over 3 metres vertical height.

E2.11.12 Cement render and hard wall plaster

(a) Cement render must be used over internal masonry surfaces, to produce surfaces for the application of finishing trades.

(b) Cement render and hard wall plaster must:

(i) be substantially free of irregularities;

(ii) be consistent in texture and finish;

(iii) be firmly bonded to substrates for the expected life of the application;

(iv) provide a suitable substrate for the nominated final finish; and

(v) not crack due to movement in the substrate materials, thermal movement or shrinkage.

(c) Glass face cement render and hardwall plaster must be used over internal masonry surfaces in areas where a smooth cleanable surface is required and no other finishing material has been selected.

(d) Hardwall plaster must be installed without the texture of the cement render showing through.

E2.11.13 Aluminium screen - Screens

(a) Counter screens, where required, must be provided with fixed glass screens incorporating robust framing to counters, with holes or electrical equipment for oral communication, in secure external facing or secure internal areas where Stadium Staff have a reception, information or financial transaction role interfacing with Patrons.

(b) Lockable sliding glass counter screens must be provided where only a small individual opening (i.e. up to 1200mm) is required to be secured to prevent unauthorised access.

(c) Lockable fold away glass counters, full height screens or roller shutters must be provided where larger openings are required to be secured to prevent unauthorised access.

E2.11.14 Bathroom and changeroom cubicle partition systems

(a) Cubicle partition systems must provide a high consistency and robustness of finish and must be able to withstand vandalism and abuse.

(b) Products and finishes including hardware must be selected so that they:

(i) are resistant to impacts and scratching from their expected use;

(ii) are resistant to moisture encountered under expected environmental conditions;

(iii) provide surfaces that will allow graffiti removal by specialist cleaning agents without sustaining damage;

(iv) are designed specifically for vandal resistance; and

(v) are easy to clean and provide a hygienic surface.

(c) Cubicle assemblies must not include screw fixing into compact laminate finishes.

(d) Hinges must default to the open position and allow doors to swing outwards or lift off in an emergency situation.

(e) Catches must be of an indicating type with an external emergency release mechanism.

(f) Clothes hooks must have a buffer for impact.

E2.11.15 Room dividers - Operable walls

All operable walls must:

(a) have a consistent finish treatment;

(b) incorporate panels of balanced construction;

(c) be resistant to impacts expected from their use;

(d) operate smoothly for their Design Life under normal conditions of use;

(e) include retractable top and bottom seals;

(f) have a sound attenuation rating consistent with the applicable acoustic requirements;

(g) incorporate a hinged pass door where required;

(h) be suspended from an overhead track set flush with the ceiling;

(i) be an offset stackable type that retracts into a purpose built cupboard; and

(j) operate freely and easily, without racking or binding.

E2.11.16 Doors - General requirements

(a) Doors, frames, standard door sets, fire and smoke door sets must be of a type required to suit the intended use.

(b) Doors must be sized and installed to suit the intended function and access requirements of these Design Specifications and relevant Quality Standards, including the Green

Guide and NCC. A clear hierarchy should be evident in the selection of doors which supports the overall architectural design philosophy and the wayfinding strategy.

(c) All hardware must be provided as required to complete the installation of doors and frames.

(d) All internal doors must be of a robust, heavy duty solid core construction that resists impact damage including damage from wheeled traffic.

(e) Door grilles must not be used in any Premium Product Areas, public area doors, security zone boundaries or areas subject to stretcher, wheeled traffic or large mobile equipment movement.

(f) Except where otherwise required by any relevant Quality Standards, doors must not open out into corridors, Concourses or Vomitories. Where doors are required to open outwards to these areas, door swing must not impede circulation.

(g) Manual sliding doors must not be used.

(h) Doors and hardware must be set out to maintain latch side, door swing and approach clearances.

(i) Door hardware installation must comply with all requirements with respect to security design, fire engineering and acoustic requirements as further set out in these Design Specifications.

(j) Without limiting the remainder of these Design Specifications, access to public toilets must:

(i) include concealed retractable barriers to enable toilet areas to be locked down when not required;

(ii) be planned to ensure privacy of Stadium Users; and

(iii) be sized to accommodate large volumes of Patrons.

E2.11.17 Doors - Protection

(a) Doors and door frames in the path of wheeled traffic areas and in the Back of House zones, must be protected on both faces and stiles against trolley impact, with materials which will not be defaced by the impact.

(b) Kick plates must be installed on all doors where staff or maintenance personnel may use a foot to push a door open or closed.

E2.11.18 Doors - Opening devices

(a) All doors which trolleys, wheeled traffic, or equipment are to be moved through must be capable of being held open. Where this requirement coincides with the requirement for self-closing operation, electromagnetic hold open devices or other technology to hold the door open, but allow automatic closure when deactivated, must be provided.

(b) Doors interconnecting or providing high-use access between staff or Back of House areas where cart, trolley, stretcher or wheeled traffic movement is required to occur on a regular basis, must be automatically activated by electronic device or by manual push button and located to allow access without the necessity to stop movement.

E2.11.19 Doors - Integrity of walls

(a) Doors must maintain the acoustic, smoke and fire integrity of the walls in which they occur.

(b) Doors must include the application of proprietary integrated seals within the frame, that have been tested as part of the door assembly, as required to maintain acoustic, smoke or fire integrity.

(c) The door hardware must be selected to allow the operation of the door so as not to compromise the acoustic, smoke or fire integrity of the walls in which they occur.

E2.11.20 Doors - Fire and smoke doors

Fire door assemblies must be tagged with a label indicating the fire resistance level of the door and the name of the testing authority which tested the door.

E2.11.21 Doors - Door frames

Metal door frames and glazed screen frames in areas where pressed metal doors frames are required and must be pressed steel of a similar profile to the other pressed metal door frames in the area.

E2.11.22 Doors - Glazing

(a) Glazed panels must be provided to allow vision through high traffic doors to see persons approaching on the other side.

(b) Vision panels in doors to rooms requiring privacy are not to be provided, unless the privacy is provided by other means within the room.

(c) Glazed panels incorporated into doors with fire or acoustic performance requirements must not compromise the required performance of the door and must be supplied and installed in the door as part of a tested and compliant system from the manufacturer.

(d) The heights of glazing must be coordinated with adjacent wall protection, handrails and other required accessories to achieve functional and design coordination.

E2.11.23 Doors - Size requirements

(a) Door opening sizes must be in accordance with the requirements of all relevant Quality Standards including the Green Guide for egress widths.

(b) Door sizes must be of sufficient width and height to allow the unhindered passage of intended traffic and fully assembled equipment, as required for the Stadium Activities.

(c) Doors used by Patrons, Players and Performers must be a minimum of 2400mm high.

(d) Door sizes must be applied consistently to all rooms of similar use, location and configuration.

(e) Single leaf doors through which wheeled equipment or large mobile equipment will pass must be sized to suit the equipment and must, as a minimum, be 1200mm wide.

(f) Door openings must be sized to accommodate easy transfer of injured Players from the Field Of Play to the Medical Room using a Medicart.

E2.11.24 Door hardware

(a) Push pull handles must be installed on doors which are generally unlocked during the routine operation of the Stadium or other buildings and structures in the Sports Precinct.

(b) Door hardware must be of commercial quality and made from plated brass or stainless steel.

(c) Knuckle clearance must be provided to the door frame.

(d) Door hardware fixings must only be accessible from within the locked room or when the door is in an open position.

(e) Door hardware must be suitable for use by IRUA and comply with all relevant Quality Standards with respect to accessibility.

(f) All door hardware (ironmongery) must be selected for heavy duty applications.

E2.11.25 Door hardware - Master keying

(a) The master keying systems and associated mechanical locks must be provided in accordance with Chapter E15 (Securtiy Systems) of these Design Specifications.

(b) The key cylinders must be selected prior to any decorative door ironmongery as precedence must be given to security performance.

E2.11.26 Central electronic locking system

An electronic access system, where provided, must comply with the security requirements set out in Chapter E15 (Security Systems).

E2.11.27 Cementitious toppings

(a) Granolithic screeds must be provided as a base for applied finishes including to:

(i) wet area set downs, to provide falls to waste points and to avoid ponding;

(ii) set downs generally; and

(iii) take up level differences between adjacent dissimilar floor finishes, to provide a level surface.

(b) Screeds must be:

(i) free from irregularities;

(ii) consistent in texture and finish;

(iii) reinforced where there is a potential for cracking; and

(iv) installed with tolerances that when tested in accordance with ASTM E1155 - 96, conform to the following table:

Table 11: Screed tolerances

Property	Length of straight edge laid in any direction	Maximum deviation under the straight edge
Flatness Class A	3000mm	3mm
Smoothness	150m	1mm
Projections	50mm	0.5mm

(c) Floor finish dividers used to finish cementitious toppings at junctions with differing floor finishes must be a corrosion resistant metal dividing strip suitably fixed to the backing substrate, with the top edge flush to the finished floor.

(d) If changes in floor finish occur at doorways, the junction must be made directly below the closed door.

(e) Control joints must be provided in toppings to coincide with control joints in the backing substrate.

(f) Weather bars must be of a corrosion resistant metal type and be installed under hinged external doors. These must be located under the centres of closed doors.

E2.11.28 Wet area waterproofing - General requirements

(a) Waterproofing must be applied to all floors and walls of wet areas, including:

(i) toilet facilities;

(ii) shower facilities;

(iii) changerooms;

(iv) Players' Wet Areas;

(v) kitchens;

(vi) pantries;

(vii) tea preparation areas;

(viii) hydration preparation areas;

(ix) rehydration stations in the Home Teams' Players' Warm-up Rooms and the Away Team Players' Warm-up Room;

(x) Waste Enclosures;

(xi) Utility rooms;

(xii) plant rooms;

(xiii) aquatic recovery facilities;

(xiv) retaining walls;

(xv) cleaning and wash down areas;

(xvi) unenclosed balconies exposed to weather, including the Terraces and the outdoor areas of the Sky View Lounge; and

(xvii) walls areas immediately adjacent and behind a pool, sink, basin or similar fixture.

(b) Waterproofing must incorporate carrying of the membrane:

(i) under fixtures, baths, shower bases, toilets, vanities and the like and extend into the full area of shower recess;

(ii) to a minimum height of 2100mm to walls of shower recesses extending 300mm beyond the horizontal extent of the designated imperviously lined wall area; and

(iii) to a height above and a width beyond of not less than 450mm of a bath, sink, basin or similar fixture for wall areas immediately adjacent and behind these fixtures.

(c) The selection of the waterproofing systems must be suitable for the application and operational temperatures for the Functional Units and Functional Areas in which they will be installed.

E2.11.29 Hard floor and wall finishes (including tiles and stone)

(a) Hard floor and wall finishes must not be used in food preparation areas.

(b) Hard floor and wall finishes must:

(i) be consistent in colour and finish, including any associated coving or edge treatments;

(ii) have rounded glazed edges to all edge tiles or be fitted with proprietary edge trims to suit the application;

(iii) be firmly bonded to substrates for their Design Life;

(iv) be fixed with adhesives in a manner that will not generate cavities behind the surface which may harbour Pests, bacteria or mould;

(v) be resistant to the impacts expected in use;

(vi) be set out with joints accurately aligned in both directions and wall tiling joints level, plum and of consistent width (i.e.+/- 0.5mm);

(vii) be grouted so that joints are impervious and exclude mould; and

(viii) be installed to direct all water flowing from supply points to drainage outlets without leakage to the substrate or adjacent areas.

(c) For all aquatic recovery facilities, hard floor and wall finishing must:

(i) be selected for this specific application;

(ii) be installed with appropriate grouting specific to the application; and

(iii) for the floor finishes, have a non-slip finish.

(d) Hard floor and wall finishes must conform with the standards and tolerances set out in the following table:

Table 12: Hard wall and wall finishes tolerances

Property	Tolerance Criteria
Alignment: deviation of the finished tiles from a 3000mm straight edge laid against any joints	< 3mm
Flatness: deviation of any plane surface under a 3000mm straight edge laid in any direction on an area of uniform grade	< 3mm
Lippage: unpolished tiles polished tiles 300x300mm or less polished tiles over 300x300mm	 < 2mm < 1mm, with 5% not exceeding 1.5mm < 1.5mm, with 5% not exceeding 2mm

(e) The finished level of hard floors must:

(i) be graded to even and correct falls to floor wastes or elsewhere as required, whilst maintaining level junctions with walls;

(ii) be of a minimum 1:60 grade for showers and other areas that must prevent standing water;

(iii) be of a minimum 1:100 grade for other locations requiring falls; and

(iv) be laid level where falls are not required.

(f) Movement joints must accommodate building movements without damage to tiling, breaks in waterproofing seals or breaks in membranes.

(g) Floor finish dividers used to finish tiled floors at junctions with differing floor finishes must be a corrosion resistant metal dividing strip suitably fixed to the backing substrate, with the top edge flush to the finished floor.

(h) If changes in floor finish occur at doorways, the junction must be made directly below the closed door.

E2.11.30 Timber floor finishes - General requirements

Timber floor finishes must:

(a) include timber with appropriate durability for the conditions of use and must be compatible with sustainability principles, including with regard to timber sources and glues used;

(b) be able to be sanded and refinished several times over the Design Life of the floor;

(c) be installed to ensure thermal movement and moisture from the substrate will not deform the flooring; and

(d) where engineered wood flooring is used, include a minimum of 4mm top wear layer.

E2.11.31 Applied wall finishes

(a) Applied wall finishes must be:

(i) easy to clean;

(ii) tear resistant;

(iii) impact resistant, unless otherwise protected;

(iv) stain resistant to commonly used cleaning agents;

(v) suitable for the hygiene requirements of the relevant Quality Standards and Laws including in kitchen areas, Medical Rooms and first aid facilities; and

(vi) of suitable fire resistance levels in accordance with relevant Quality Standards, including the NCC Section C;

(b) In-situ coating systems must be:

(i) consistent in colour, gloss level, texture and dry film thickness;

(ii) free of runs, sags, blisters and other discontinuities;

(iii) fully opaque; and

(iv) fully adhered to the substrate.

(c) Wall panels must be fabricated and installed to the backing material and framework, plumb and level and straight and free of distortion.

E2.11.32 Resilient finishes - General requirements

(a) Resilient finishes must:

(i) be suitable for the intended application;

(ii) remain secured to substrates;

(iii) be a low maintenance material, relying on wet mopping and high speed buffing only to create a self sealing surface and the material does not require the use of sealers and polishes for proper maintenance and scuff resistance;

(iv) have a maintenance regime that is consistent for all selected floor finishes;

(v) have been tested for resistance to staining;

(vi) have a minimum slip resistance rating of R9 as defined in the AS/NZ 4586 rating definitions; and

(vii) be available in a wide variety of colours and designs.

(b) Where performance criteria are equal, including ESD considerations with respect to Low-VOC and environmental impact of manufacture, selection must be made on the basis of WOL-CFA analysis over 50 years, rather than capital cost alone.

(c) Resilient finishes should incorporate a significant proportion of recycled material.

(d) Where cushioned finishes are used they must have the following properties:

(i) resistance to static indentation = 0.03mm (max);

(ii) resistance to permanent indentation point loads = nil;

(iii) resistance to indentation by castor chair = nil;

(iv) sound reduction factor + 15db;

(v) cushioned backing thickness 2mm; and

(vi) wear layer 2mm.

(e) Cushioned finishes are not to be used in any area subject to large and heavy floor standing equipment.

(f) Floor sheets must be purchased of each colour and pattern type at the same time and from the same batch number and must be reverse laid to ensure that colours and patterns are consistent and similar throughout.

E2.11.33 Resilient finishes - Floors and skirtings

(a) Floors and skirtings must be provided in a minimum 2mm thick homogeneous surface, with fully welded joints.

(b) Skirtings must be formed integral to floor finish and coved up walls to a minimum height of 150mm, where required by relevant Quality Standards, including the *Health (Public Buildings) Regulations 1992* (WA).

(c) Coving of floor finishes at internal and external skirting corners must be formed with butterfly joints.

(d) Wet area floor finishes must be installed as part of a complete proprietary wet area system, incorporating the floor, skirting and wall finish and must be installed in accordance with the manufacturer's instructions.

(e) Wet area floor and skirtings must be provided in minimum 2mm thick "non-slip" homogeneous material and be capable of being coved with the use of coving fillets to facilitate wet area mopping.

(f) Wet area skirtings must extend up the wall at least 170mm to facilitate a minimum 20mm overlap with the wall finishes.

E2.11.34 Resilient finishes - wall coverings

(a) General wall coverings must be of a flooring grade and not less than 1.3mm thick.

(b) Wet area wall coverings must be part of a complete wet area system incorporating the floor, skirting and wall finish.

(c) Where wall coverings and other wall finishes are installed to protect the wall surface they must extend:

(i) to a minimum height of 1350mm in corridors, utility rooms and areas subject to trolley and wheeled traffic movement;

(ii) full height in wet areas; and

(iii) to a minimum height of 1350mm and width of 1200mm, where used as isolated splashbacks to hand wash basins.

E2.11.35 Resilient finishes - substrates

Concrete substrates, prior to commencement of the installation of resilient finishes, must:

(a) have projections removed and voids and hollows filled with a levelling compound compatible with the flooring adhesive;

(b) where raised areas are corrected by grinding, have the freshly exposed concrete surfaces tested for pH and obtain verification of compatibility of the pH with the proposed adhesive; and

(c) when tested in accordance with ASTM E1155 - 96, conforms to the following table:

Table 13: Floor Sheet Installation Substrates Tolerances

Property	Length of straight edge laid in any direction	Maximum deviation under the straight edge
Flatness Class A	3000mm	3mm
Smoothness	150m	1mm
Projections	50mm	0.5mm

E2.11.36 Resilient finishes - Set out

(a) Sheets must be set out:

(i) to produce the minimum number of joints;

(ii) to run sheet joints parallel with the long sides of floor areas and vertically on walls; and

(iii) so that margins abutting walls are laid in the same direction as the body of the floor.

(b) All joints in the sheet must be butt and weld type joints, including the joints between vinyl floor sheets and vinyl wall sheets.

E2.11.37 Resilient finishes - Junctions

(a) Resilient finishes junctions must:

(i) be scribed neatly up to returns, edges, fixtures, fittings and joinery;

(ii) incorporate butterfly joints at external and internal corners of integrally coved skirtings. Vertical butt joints in corners are not acceptable;

(iii) be neatly scribed and sealed to door frames;

(iv) incorporate the dressing of the floor vinyl down into the floor waste flange (installed specifically for the purpose) and secured with a clamping ring forming part of the floor waste fitting;

(v) ensure that no “puckering” of the flooring around floor wastes occurs; and

(vi) be set out to ensure that where changes of floor finish occur at doorways, the junction is located on the centreline of the closed door leaf.

(b) The finished floor surface must remain level at junctions with other floor finishes including carpet and floor tiles.

E2.11.38 Resilient finishes - Wall sheet fixing

(a) All vinyl sheets of each colour and pattern must be consistent and similar throughout.

(b) Sheet set out must be determined to produce the minimum number of joints.

(c) Sheet joints must:

(i) run vertically on walls; and

(ii) be butt and weld type joints, including joints between vinyl floor sheets and vinyl wall sheets.

(d) Junctions must be accurately scribed, cut and fitted against all walls, ceiling, floors, skirtings, pipes and other permanent projections and holes in sheets for Engineering Services outlets must be neat.

E2.11.39 Carpets - General requirements

(a) Carpets must only be used in areas not subject to liquid spills, except where the system can demonstrate the liquids will not penetrate to the concrete substrate.

(b) Carpets must be selected to:

(i) accommodate the “rolling load resistance” of wheeled traffic;

(ii) comply with all relevant Quality Standards and Laws, including NCC Section C for fire resistant properties and OHS Laws; and

(iii) facilitate ease of cleaning, without the removal of inherent stain resistant properties in the cleaning processes.

E2.11.40 Carpets – Substrate

Carpet substrates must be clean and free of any deposit or finish which may impair adhesion or location and functioning of movement joint and, when tested in accordance with ASTM E1155 - 96, conforms to the following table:

Table 14: Execution substrate tolerances

Property	Length of straight edge laid in any direction	Maximum deviation under the straight edge
Flatness Class A	3000mm	6mm
Smoothness	150m	1mm
Projections	50mm	0.5mm

E2.11.41 Carpets - Installation

(a) Carpet installation must comply with all relevant Quality Standards including AS/NZS 2455 (all parts).

(b) Carpet junctions must incorporate heavy duty, tack-less or adhesive fixed, protective edge strips.

(c) Carpet junctions must be able to accommodate different levels of adjacent floor finishes at exposed edges of the carpet with differing thickness.

(d) When occurring at doorways, the junction between dissimilar materials must be located directly below the closed door.

(e) Broadloom carpet must be installed by “permanent stick method” in accordance with manufacturer’s requirements and laid in continuous lengths without cross-joins in the body of the area.

E2.11.42 Carpets - Carpet tiles

(a) Carpet tiles must be loose laid to aid replacement, but have sufficient adherence to be held in place and prevent lifting.

(b) Carpet tile installation must ensure:

(i) cut tiles are not be less than half a tile in width;

(ii) where laid across doorway openings, full size tiles are used;

(iii) joints lines are straight; and

(iv) edges are inconspicuous in the final installation.

E2.11.43 Carpets - Products

(a) Carpet laid in a single area and of a single specified type, quality, colour and design, must come from one (1) manufacturing batch and dye lot.

(b) Carpets, including broadloom carpet and carpet tiles, must conform to the following general characteristics:

(i) provide maximum resistance to wear and tear appropriate to their proposed environment;

(ii) resist staining and retain appearance and colourfastness for the life of the product;

(iii) comply with all relevant Quality Standards including NCC flammability indices requirements;

(iv) incorporate a system to prevent fluids coming in direct contact with the concrete floor substrate; and

(v) have pile characteristics that facilitate the ease of wheeled traffic movement and assist with cleaning regimes.

(c) Carpets and underlays must be selected or treated to resist Pest attack and the treatment must be suitable for the area in which the carpet is installed.

(d) Carpets must provide a maximum electrostatic propensity value of 2500V at a relative humidity of 25%: test method: AATCC TM 134.

E2.11.44 Carpet tiles - Products

Carpet tiles must:

(a) have an integral impervious backing;

(b) be a non-curling type;

(c) be capable of being taken up without damage and then re-laid in different positions;

(d) have maximum squareness difference of 2mm between lengths of diagonals;

(e) be at least 600mm x 600mm; and

(f) be dimensionally stable.

E2.11.45 Expansion joints

Expansion and control joints must:

(a) not be located in wet areas or in Catering Facilities subject to high health standards or heavy foot or heavy trolley traffic;

(b) not be located within kitchens, to the extent that this is avoidable;

(c) be designed and constructed to maintain the required integrity of the floor or wall, including acoustic performance and fire rating of the area; and

(d) be installed with joint covers that are neatly finished, continuous (where possible) or have minimal joins (especially along primary circulation routes) and are entirely flush with adjacent floor finishes so as to provide a level transition.

E2.12 BUILDING INTERIOR FIXTURES

E2.12.1 Joinery - General requirements

(a) Joinery must be:

(i) fit for purpose, such that the Stadium is Fit For Purpose, for the location in which it is installed;

(ii) of durable construction;

(iii) capable of supporting the weight of equipment intended; and

(iv) of suitable thickness and span to ensure no deflection.

(b) Where Low-VOC products, including substrates are available, they should be specified over an equivalent non Low-VOC product.

E2.12.2 Joinery - Materials

(a) Joinery materials must:

(i) be highly moisture resistant;

(ii) have easily cleaned surfaces; and

(iii) be designed to resist impact and damage.

(b) Benchtops and countertops to reception and workstations must be made of solid impervious materials.

E2.12.3 Joinery - Installation

(a) Junctions and joints must be sealed to the full perimeter against walls to prevent entry by Pests.

(b) Joinery must:

(i) be installed after the installation of finished floor or wall coverings, including the installation of skirtings;

(ii) be sealed to the walls all around;

(iii) incorporate appropriate sealant types for hygiene and waterproofing situations; and

(iv) have no visible fixings except inside cupboards and drawer units.

E2.12.4 Joinery - Ergonomic design

(a) Good ergonomic principles and ergonomic standards must be incorporated for all joinery to suit the intended use and purpose.

(b) The design of joinery must meet the requirements of:

(i) SAA HB59 Handbook ergonomics – the human factor, a practical approach to work systems design; and

(ii) Appendix A, A5 and A6 of AS/NZS 2982, for guidance on work surface heights and storage design.

E2.12.5 Joinery - Hardware

(a) Appropriate hardware type and finish must be incorporated for the functioning of the joinery or furniture.

(b) Locks must be provided to all drawers and cupboards, where required to accommodate the function.

(c) All locks must incorporate a general master keyed system, where nominated.

(d) Locks to all staff accessed areas must be keyed alike except for cupboards in Premium Product Areas and in financial management areas, including the Cash Counting Room, Ticket Boxes and safe rooms.

(e) Locks must be provided to drawers in banks using a proprietary central locking mechanism.

(f) Where locks are incorporated, the locks must be of similar and compatible type and manufacture.

E2.12.6 Metalwork - General requirements

(a) Metalwork must be:

(i) undamaged and straight;

(ii) defect free and distortion free;

(iii) fit for purpose, such that the Stadium is Fit For Purpose, for the location in which it is installed;

(iv) of adequate rigidity and stiffness to prevent structural borne vibration to mounted equipment; and

(v) fabricated using suitable material and thickness.

(b) Metalwork fasteners must be:

(i) non-galvanic corrosion type; and

(ii) of mechanical strength and corrosion resistance at least equal to that of the lowest resistant metal joined.

(c) Welding and brazing must:

(i) be free of cracks and imperfections; and

(ii) have a sufficient lap in joints to provide a mechanically sound joint.

(d) Stainless steel welding must be undertaken by certified welders.

E2.12.7 Metalwork - Handrails and balustrades

(a) Handrails and balustrades must comply with all relevant Quality Standards and Laws and take into consideration safety aspects, including in relation to installation location, crowd pressure and anti-scaling.

(b) When located in front of windows or terraces used for seating, handrails and balustrades must be of a type which does not obscure the view from the window or from a seated sight line.

(c) Handrails and balustrades must be selected having regard for the safety of children.

E2.12.8 Metalwork - Steel stairs

Prefabricated modular stairs must only be used:

(a) for access to areas not generally seen by the public including plant rooms, roof areas, storage and Back of House; and

(b) for fire escape stairs, which are contained within a fire rated enclosure and only used for emergency egress.

E2.12.9 Metalwork - Wall and ceiling supports

Wall and ceiling equipment supports must be purpose designed and structurally sound for the installation of the specific equipment.

E2.12.10 Metalwork - Stainless steel benching

(a) Stainless steel benching should be provided to all utility wet benches, kitchen workbenches and Ticket Box counters, as required to suit the intended use.

(b) Sinks must be integrated flat, rimless or lip-less type.

(c) Stainless steel grade must be selected based on suitability for the intended application.

(d) Stainless steel sheet surface finish must be a non-marking linished finish.

(e) Stainless steel benching must be detailed and installed so that the underside of benches is not lower than joinery benches and so that the spaces under can accommodate all required FF&E. The minimum under bench clearance must be 860mm and incorporate an anti-drumming compound to the bottoms of sinks and the underside of drainers.

(f) Stainless steel benching must be manufactured so that the soffits of the fabricated stainless steel benches with or without integrated sinks are finished smooth, free of crevices or sharp edges, readily cleanable and fabricated of non-porous materials.

E2.12.11 Metalwork - stainless steel integrated sinks

Stainless steel integrated sinks must have raised “lipped” edges to contain fluids and drainers each side of the sink that drain to the sink, without any obstruction which may trap and hold dirt or contaminated materials.

E2.12.12 Metalwork - Corner guards

(a) Custom made heavy duty stainless steel angle guards must be installed in service areas, to vulnerable corners and in areas prone to vehicular movement, to prevent impact damage to the substrate.

(b) All corner guards must be mechanically fixed to the substrate.

E2.13 PROPRIETARY FIXTURES

E2.13.1 Fixtures - General requirements

Supplementary framing and fitments must be incorporated into wall framing to support heavy equipment or fixtures fixed to walls and ensure the equipment weight does not exceed the loading capacity of the wall frame.

E2.13.2 Mirrors

Frameless wall mounted mirrors must not be less than 6.0mm thick and must have edges that are arrised, ground and polished.

E2.13.3 Tracks and rails

IRUA lifting device track systems in Changing Places Toilets must:

(a) be ceiling mounted lifting systems which have a supporting capacity of 200kg live load;

(b) be coordinated with other nearby and adjacent ceiling mounted services;

(c) be positioned and configured to facilitate the transfer of IRUA from wheelchair to toilet, change table and shower; and

(d) include all ancillary fittings including, but not limited to, lifting slings, hooks for slings and motorised hoists where required.

E2.13.4 Racks and brackets

Coat racks must:

(a) be heavy duty stainless steel;

(b) be suitably supported by structural frames; and

(c) have multiple hanging rails, where required, to suit the applicable purpose.

E2.13.5 Sanitary accessories

Project Co must provide the following sanitary accessories:

(a) recessed or wall mounted soap holders;

(b) grab rails of 32mm diameter stainless steel tube with concealed fixings;

(c) hat and coat hooks which must:

  (i) be stainless steel finish;

  (ii) be securely fixed to walls or doors; and

  (iii) incorporate a door stop buffer when installed behind doors;

(d) stainless steel towel rails, incorporating 1 or 2 rails, depending on intended use and of a length to suit the intended use;

(e) baby change tables, which must be fold-up wall mounted type and thermoplastic moulded;

(f) fold down shower and change cubicle seats, which must be wall mounted type and of waterproof construction; and

(g) glazed shower screens, which must be glazed with laminated clear safety glass.

E2.13.6 Sanitary Accessories – State Supplied Group 3 FF&E

As set out in **Table 1**: FF&E Categorisation and Demarcation of Responsibility the State will supply certain sanitary accessories to Project Co as part of the State FF&E for design integration and installation to be undertaken by Project Co.

E2.13.7 Handrails and wall protection

(a) Hand rails and crash rails must be provided in areas as required by relevant Quality Standards and Laws and in all areas subject to trolley or large mobile equipment movement.

(b) Corner guards must be vinyl acrylic, bio-based linoleum, sacrificial plywood or stainless steel and must:

  (i) be installed in all salient internal corners in areas subject to trolley or large mobile equipment movement; and

  (ii) be constructed of 1 piece and extend from the top of the skirting to the height of any dado protection, or handrail / crash rail.

E2.13.8 Mat recesses

(a) Framed and recessed corrosion resistant mats must be provided to all externally accessible pedestrian entrances.

(b) Frames and mats must be finished level with adjoining finishes floor surfaces.

E2.14 SIGNAGE

E2.14.1 General

(a) A visible, readable, flexible and effective signage system must be provided to complement the integrated wayfinding strategy to support all Stadium Users in their use of the Stadium and the Sports Precinct.

(b) In addition to the requirements outlined in this Clause E2.14, the signage works must comply with other parts of these Design Specifications, including as described in Chapter C9 (Wayfinding and Signage), clauses C11.6.2 and D7.4.6 and Chapter E14 (Audio Visual (AV) Systems).

(c) Signage works associated with the development of the Stadium, Sports Precinct and Off-Site Infrastructure must integrate seamlessly with the signage for the State Transport Infrastructure Works and signage on adjacent sites.

(d) All operational and commercial signage, including team branding and sponsor signage, must be simple and cost effective to change over.

E2.14.2 Scope

The scope of the signage works for the Stadium, Sports Precinct and Off-Site Infrastructure includes:

(a) all statutory signage, including in relation to Universal Access, emergency egress and management, hazard regulation and warnings and the location of Engineering Services, which must be provided in accordance with relevant Quality Standards, including the NCC, and in accordance with the requirements of relevant Authorities;

(b) all wayfinding signage (including directional, identification and reinforcement) to:

  (i) the Sports Precinct, including general facilities, the Bus Hub, car parking and drop-off areas; and

  (ii) the Stadium, including the Controlled Area, Stadium Entry Points and other entrances, Concourses, Vomitories, stairs, lifts, escalators, major destinations, the Seating Bowl, amenities and services;

(c) operational signage (to support the display of Event information and to support Event Overlay); and

(d) commercial signage (including for advertising of Events, retail products, food and beverages).

E2.14.3 Authorisations

Project Co must obtain and comply with all required Authorisations and Authority requirements associated with the signage works for the Stadium, the Sports Precinct and the Pedestrian Underpass, including any required Authorisation(s) from:

(a) the Permit Authority under the *Building Act 2011* (WA);

(b) any relevant local Government Authority;

(c) DFES;

(d) Department of Racing, Gaming and Liquor (WA);

(e) MRWA; and

(f) the PTA.

E2.14.4 State Transport Infrastructure Works

(a) The design of the State Transport Infrastructure Works as outlined in **Table 2** will be provided to Project Co on a progressive basis.

(b) Project Co's signage for the Stadium, Sports Precinct and Off-Site Infrastructure must consider and be co-ordinated with and integrate with all signage delivered as part of the State Transport Infrastructure Works, including MRWA and local Authority signage and information systems.

E2.14.5 Quality Standards

Signage works must comply with all relevant Quality Standards including:

(a) AS 2342 Signs generally - design and use;

(b) AS 2899 Public information signs;

(c) AS 1319 Safety signs for the occupational environment;

(d) AS1428 (All Parts) Design for access and mobility;

(e) AS 1742.5 Street name and community facility name signs; and

(f) AS/NZS 2890 Parking Facilities.

E2.14.6 Guidance standards

The following guideline must be considered in the design, construction, commissioning and completion of the signage works for the Stadium and Sports Precinct:

(a) You are Here: a guide to developing pedestrian wayfinding (2011, Transport Victoria) http://www.thinkingtransport.org.au/sites/www.thinkingtransport.org.au/files/PedestrianWayfindingGuide.pdf;

E2.14.7 Design Life

The Design Life for the signage works within the Sports Precinct must meet or exceed the following minimum requirements:

Element	Design Life
Static signage supports	50 years
Static signage	20 years

E2.14.8 General requirements

(a) Project Co must ensure that the signage system design and installation:

(i) is effective, comprehensive and integrated;

(ii) addresses the need for all Stadium Users and Sports Precinct visitors to know where they are, what their destination is and how to get there and return;

(iii) complements the functional requirements of the Stadium and Sport Precinct;

(iv) integrates with the built form, landscape, urban design and public art;

(v) includes maps, graphics and tactile indicators to assist wayfinding;

(vi) considers and does not impact on sight lines, including

A within the Seating Bowl, including from any Seating Position; and

B the Circulation Areas within the Stadium, including on Concourses;

(vii) is integrated with the ICT Systems, AV Systems and the BMS, as appropriate;

(viii) includes appropriate power supply and mechanical ventilation and cooling to ensure reliable operation of electronic signage;

(ix) considers access for installation and adequate proximal storage area within each stand for non-electronic interchangeable signage; and

(b) The location and format of all signage must be considered and not impede the Sightline Criteria and the Key Viewing Elements, including as described in clause D7.4.1.

E2.14.9 Signage strategy

(a) Project Co must develop a signage strategy for the Stadium, Sports Precinct and Off-Site Infrastructure that addresses the following signage requirements:

(i) statutory signage (including exit signs), fire protection systems signage, hazard marking signage, Universal Access signage (including vision impaired signage, such as braille and tactile signs and hearing impaired signage, including audible signs), regulatory carpark signs, Engineering Services signs and warning signs;

(ii) directional signage for wayfinding (pedestrian, cycle and vehicles);

(iii) operational signage;

(iv) commercial signage; and

(v) digital signage.

(b) (**Statutory signage**) Project Co must ensure that all statutory signage complies with all relevant Quality Standards and is to the satisfaction of DFES and relevant Authorities.

(c) Project Co must ensure that the location and format of statutory signage is coordinated with other signage.

(d) (**Pedestrian wayfinding**) Project Co must provide directional and identification signage for pedestrian access to and around the Stadium and Sports Precinct, including:

(i) Sports Precinct major destinations and maps located at each of the pedestrian arrival locations and Stadium entries;

(ii) all transportation nodes;

(iii) all cycle paths;

(iv) carparks, including location identification and payment facilities;

(v) Stadium Entry Points and other entrances to the Stadium, including Ticket Boxes and Ticket Control Points;

(vi) Concourses and Vomitories;

(vii) Vertical Transportation, including:

A signs at each stair landing on every floor that clearly denote the floor level when viewed from the stairs;

B signs at each lift lobby on every floor that clearly denote the floor level when viewed from within the lift car; and

C signs at each escalator landing on every floor that clearly denote the floor level when viewed from the escalator;

(viii) major destinations including both Front of House and Back of House within the Stadium;

(ix) the Seating Bowl, including block, row and seat numbers in accordance with clause C20.7 (Naming and Numbering Protocols) of these Design Specifications to be integrated with the ticketing systems;

(x) amenities, including toilets, bars and Fixed Outlets;

(xi) all doors identifying the functions of every Functional Unit, including plant rooms;

(xii) Engineering Services, including plant rooms and services cupboards); and

(xiii) live streaming of any in-house IPTV or digital signage feeds to portable personal media devices including as described in and Chapter E14 (Audio Visual (AV) Systems) of these Design Specifications.

(e) (**Vehicular way-finding**) Project Co must provide directional and identification signage for vehicular access and circulation within the Stadium and Sports Precinct, including for;

(i) the Stadium Carpark;

(ii) the Temporary Carpark and other permanent vehicle parking facilities within the Sports Precinct;

(iii) the Bus Hub carpark (for Non-Event Day parking);

(iv) Event Day drop-off facilities;

(v) operational vehicle parking, maintenance access and service deliveries; and

(vi) Emergency Services vehicles.

(f) (**Operational signage**) Project Co must coordinate with the State and provide operational signage that communicates the following information:

(i) (**transport**) services information, including locations, destinations, availability and times of the various services on Event Days, which must provide information to Patrons in all public areas even when they are queuing for food, toilets or in lifts;

(ii) (**Event Day services**) including location and availability of toilets, Catering Facilities and Retail Facilities;

(iii) (**licensing**) signage design and installation for bars, which must comply with all relevant Laws and Authority requirements; and

(iv) (**Event Overlay**) signage must be able to be integrated with permanent signage and ticketing systems. Consideration must also be made for the ease of installation and storage of this component.

(g) (**Commercial signage**) An effective advertising signage system will maximise the opportunity for revenue generation and support Stadium Users to achieve financial viability. Project Co must ensure that advertising signage responds to Project Stakeholder requirements and complies with advertising guidelines for (venue, Stadium Operator, Hirer, Home Teams, sponsors and other) brand activation content. The range of advertising signage to be provided includes:

(i) provision for temporary banners and flags to the Rail Passenger Assembly Areas and Bus Passenger Assembly Area;

(ii) external lighting to enhance electronic branding;

(iii) hydration station advertising signage in the Players' Warm-up Rooms in view of cameras to AFL approved layout; and

(iv) signs to communicate the name of the Stadium on the roof and façades.

(h) (**Services and merchandise**) Signage must be provided for:

(i) all Catering Facilities interfacing with Patrons, including Fixed Outlets, bars and restaurants;

(ii) all Premium Product Areas; and

(iii) all Retail Facilities.

(i) (**Services and merchandise**) Signage must address the requirements for each Functional Area and Functional Unit as described in Part D (Functional Brief), and must:

(i) be integrated into the design of the Outlets and complement the character of the space;

(ii) provide both product and branding information; and

(iii) assist Patrons making a purchasing decision prior to being inside the Outlets.

(j) (**Stadium branding**) LED signage must be provided to the Stadium exterior for branding and advertising of Events and general commercial and sponsor opportunities. Project Co should consider orientating this signage towards the rail and traffic to the north of the Site. The Stadium branding signage must interface with the LED Signage as described in Chapter E14 (Audio Visual (AV) Systems) of these Design Specifications.

(k) (**Team Facilities**) Signage must be provided at the entrance to and inside the Team Facilities as described in Chapter D6 (Team Facilities) of these Design Specifications. The following signs must be provided:

(i) branding signage to enable branding by Sporting Teams to the Home Teams' Change Rooms and the Home Teams' Players' Warm-up Rooms. This signage must incorporate club colours, logos and messages to reflect the Players' shared vision and values and must consider the use of floor and wall surfaces;

(ii) interchangeable static advertising signage in the Teams' Players' Warm-up Rooms to include display of club brands and major partners in view of cameras. Signs must be static and allow for efficient change-over; and

(iii) interchangeable branding signage to enable branding by Sporting Teams to the Coaches' Briefing Rooms, with the signage to include club colours, logos and messages to reflect Players' shared vision and values and must consider the use of lighting and LED signage to entire side walls.

E2.14.10 Flexibility

(a) Project Co must consider the Expansion and Reconfiguration of the overall signage system, including as described in Chapter C14 (Flexibility, Reconfiguration and Expansion) of these Design Specifications.

(b) The signage system for the Stadium and Sports Precinct must be sufficiently flexible to incorporate temporary signage systems to facilitate adaptability of Functional Units (or Functional Areas, as applicable) for multiple uses.

(c) Flexibility of all LED signage (including the LED Signage described in clause E14.5.8) in both its design and programming, including the ability to remove and change all content for the purposes of an Event, is critical to maximise operational flexibility and commercial value from the system.

(d) Project Co must ensure that the signage design is able to be upgraded and amended to accommodate Reconfigurations and alterations undertaken as part of the Lifecycle Services during the Operating Phase.

(e) Project Co must ensure that the design of signage systems is such that it allows for ease of upgrade with evolving technology in the future.

E3 LANDSCAPE ARCHITECTURE

E3.1 GENERAL

(a) Project Co must design, construct, commission and complete all landscape works required to deliver the Stadium, Sports Precinct and Off-Site Infrastructure.

(b) The landscape works must be designed and executed to interface seamlessly with all landscape works on adjacent sites, including the adjoining State Transport Infrastructure Works.

(c) Landscape works associated with the development of the Stadium, Sports Precinct and Off-Site Infrastructure must be designed and executed to ensure that the works establish an integrated sports and recreation precinct in a parkland setting, supporting both Event Day and Non-Event Day activities of the Stadium, including:

(i) a safe transit and a vibrant experience for Stadium Users;

(ii) passive and active recreational uses; and

(iii) mediating between the sensitive riparian environment and the scale and form of the Stadium.

(d) In addition to the requirements outlined in this Chapter E3, the landscaping works must be designed and executed in accordance with the requirements described elsewhere in these Design Specifications, including:

(i) Part B (Project Vision Aspirations and Objectives), including Chapter B6 (Environmental Management Objectives);

(ii) Part C (Design Brief), including Chapters C3 (Master Planning), C4 (Sports Precinct Structural Elements), C5 (Sports Precinct Urban Design Principles), C6 (Landscape), C7 (Public Art), C8 (Access and Movement), Chapter C9 (Wayfinding and Signage), C10 Universal Access, C13 (Ecologically Sustainable Development), C15 (Whole of Life Design) and C20 (Managing Design Quality); and

(iii) Part D (Functional Brief), including Chapters D4 (Sports Precinct) and D5 (Circulation Areas).

E3.2 SCOPE

The scope of the landscape works for the Stadium, the Sports Precinct and the Pedestrian Underpass includes the design, construction, commissioning and completion of:

(a) all hard landscaping elements, including in association with the civil works described in Chapter E4 (Civil Works), including the:

(i) hard landscaped areas within the Stadium including the Controlled Area, the Outside Broadcast (OB) Compound, the outdoor areas of the Sky View Lounge and the Terraces;

(ii) hard landscaped areas within the Sports Precinct including the precinct path network, the Bus Passenger Assembly Area, the Rail Passenger Assembly Areas, the pedestrian assembly areas for the Goongoongup Rail Bridge and Windan Bridge and other hardstand areas;

(iii) interfaces between the Controlled Area and the Sports Precinct;

(iv) interfaces between the SRPB and the Sports Precinct;

(v) Sports Precinct amenities including playscapes and playgrounds, toilets, barbeque and picnic areas and other elements as included in Project Co's Development Concept Plan, including any boardwalks, an amphitheatre and river terraces;

(vi) alterations to the Shared Use Path on the western foreshore of the Swan River to manage areas prone to flooding, including during king tides, as further described in Chapter E4 (Civil Works);

(vii) Precinct Service Roads, drop-off areas and permanent carparking within the Sports Precinct; retaining walls, fences and freestanding shade structures throughout the Sports Precinct; and

(viii) the integration of landscape works with existing conditions and works to adjacent sites and property and the Commercial Facilities within the Sports Precinct.

(b) soft landscaping elements, including:

(i) locating and identifying existing trees and vegetation that will not be impacted by the PCS Works and can potentially be retained;

(ii) soft landscaping within the Sports Precinct and within the Stadium, including any soft landscaping elements within the Sky View Lounge and Terraces;

(iii) revegetation of the River-Fed Lake and the Swan River foreshore;

(iv) the Community Recreation Oval;

(v) general open space areas, such as the land east of the Community Recreation Oval;

(vi) the Outdoor Practice Cricket Wickets Area and Nursery;

(vii) trees and vegetation along roads and paths within the Sports Precinct including shade trees and other planting in and around the hard landscaping areas;

(viii) permanent irrigation systems, as required to sustain the soft landscaping within the Sports Precinct, including for the Community Recreation Oval;

(ix) temporary irrigation systems, as required and only for the establishment of soft landscaping;

(x) integration of the landscape works with existing conditions and works to adjacent sites and property and the Commercial Facilities within the Sports Precinct; and

(xi) trees and vegetation in the north west corner of the Site.

E3.3 AUTHORISATIONS

Without limiting Chapter A11 (Authorisations) of these Design Specifications and subject to clause 41 of this Agreement, which sets out Project Co's obligations in respect of Authorisations, Project Co must obtain and comply with all required Authorisations and Authority requirements associated with the landscape works for the Stadium, Sports Precinct and Off-Site Infrastructure, including any required Authorisation(s) from:

(a) the Permit Authority;

(b) EPA;

(c) DER;

(d) the Swan River Trust;

(e) the Water Corporation;

(f) MRWA; and

(g) the PTA.

E3.4 DESIGN INFORMATION

E3.4.1 Background Site information reports

Geotechnical and environmental reports, including flora and fauna studies, are included in the Project Information.

E3.5 QUALITY STANDARDS AND LAWS

Without limiting clause 14.1 of this Agreement and the Quality Standards and Laws stipulated in Chapter E1 (General Requirements) of these Design Specifications, the design, construction, commissioning and completion of the Stadium, Sports Precinct and Off-Site Infrastructure in respect of the landscape works must comply with all relevant Quality Standards and Laws including:

(a) all relevant Australian Standards, including:

(i) AS 1428: (all parts) Design for access and mobility;

(ii) AS 3660: (all parts) Termite management;

(iii) AS 4685: (all parts) Playground equipment;

(iv) AS 4693: (all parts) Surfaces for sports areas;

(v) AS 2890 (all parts) Off Street Parking;

(vi) AS3996:2006 Access covers and grates;

(vii) AS / NZS 4586 Slip Resistance of Pedestrian Surface Materials, Appendix A;

(viii) AS / NZS 4663 Slip Resistance Measurement of Existing Pedestrian Surfaces;

(ix) AS 4419 Soil for Landscaping and garden use;

(x) AS 4454 Composts, soil conditioners and mulches;

(xi) AS 1477 PVC pipes and fittings for pressure applications;

(xii) AS 2032 Code of practice for installation of UPVC pipe systems;

(xiii) AS 2033 Installation of polyethylene pipe systems;

(xiv) AS 2698.2 Plastics pipes and fittings for irrigation and rural applications – Mechanical joint fittings for use with polyethylene micro-irrigation pipe;

(xv) AS 2845.1 Water supply - Backflow prevention devices - Materials, design, performance requirements; and

(xvi) AS 4129 Fittings for polyethylene (PE) pipes for pressure applications; and AS 4130 Polyethylene (PE) pipes for pressure applications;

(b) all other relevant standards, codes and guidelines, including:

(i) the National Construction Code of Australia (NCC) 2013;

(ii) the Green Guide;

(iii) the Disability (Access to Premises - Buildings) Standards under the *Disability Discrimination Act 1992* (Cth);

(iv) Accessible Sports Facilities formerly known as Access for Disabled People Design Guidance Note, Updated 2010 guidance, Sport England (2010);

(v) Guidelines on Access to Premises 1996 – Human Rights and Equal Opportunities Commission;

(vi) the OGA General Design Standard, Office of the Government Architect included at Appendix H2 (OGA General Design Standard);

(vii) Designing Out Crime Planning Guidelines, WA Planning Commission, June 2006;

(viii) all relevant Austroads Standards;

(ix) all relevant MRWA standards and specifications; and

(x) all relevant PTA standards and specifications;

(c) all relevant State policies including:

(i) Better Places and Spaces: A policy for the Built environment in WA, 2013 at http://www.finance.wa.gov.au/cms/uploadedFiles/Building_Management_and_Works/better_places_and_spaces_policy_revised.pdf?n=9793 ;

(ii) *End of Trip Facilities in Government Buildings* published by the Department of Transport and available at http://www.transport.wa.gov.au/mediaFiles/active-transport/AT_CYC_P_end_of_trip.pdf; and

(iii) Creating Places for People: an urban design protocol for Australian Cities www.urbandesign.gov.au; and

(d) all relevant Laws, including:

(i) OHS Laws; and

(ii) the *Health (Public Buildings) Regulations 1992* (WA).

E3.6 POLICY AND GUIDANCE

The following standards, handbooks, manuals and guidelines must be considered in the design, construction, commissioning and completion of the landscape works for the Stadium, Sports Precinct and Off-Site Infrastructure:

(a) Australian runoff quality - a guide to water sensitive urban design, 2006, Engineers Australia;

(b) Better urban water management, 2008, Western Australian Planning Commission;

(c) Interim guidelines for the preparation of local water management strategies, 2008, Department of Water (WA);

(d) Planning and designing for pedestrians: Guidelines (2012 Transport WA) at http://www.beactive.wa.gov.au/index.php?id=1608 **Error! Hyperlink reference not valid.**;

(e) You are Here: a guide to developing pedestrian wayfinding (2011, Transport Victoria) http://www.thinkingtransport.org.au/sites/www.thinkingtransport.org.au/files/PedestrianWayfindingGuide.pdf;

(f) Interpreting Culture and Country (2006. Interpretation Australia) http://www.interpretationaustralia.asn.au/resources/guidelines; and

(g) Interpreting Heritage Places and Items, Guidelines (2005, NSW Heritage Office) http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/NSWHeritageOfficeGuidelinesinfointerpreting.pdf.

E3.7 PERFORMANCE REQUIREMENTS

E3.7.1 Design Life

The Design Life for pavements and civil structures within the Sports Precinct must meet or exceed the following minimum requirements:

Element	Design Life
Roads and access ways	20 years
Pedestrian footpaths and cycle paths	20 years
Trafficable rigid/concrete pavement or hardstand areas	50 years
Retaining walls	50 years
Asphalt finished areas	20 years
Community Recreation Oval sub-grade	25 years
Community Recreation Oval growing medium and profile	10 years
Irrigation system: - pipe work - sprinkler heads - valves and control boxes	10 years

E3.7.2 ESD

(a) (**Embedded ESD Initiatives**) Embedded ESD Initiatives must be incorporated into the design and construction of the landscaping works for the Stadium, Sports Precinct and Off-Site Infrastructure, including:

(i) the initiatives described in clause E4.6.6;

(ii) WSUD as described in paragraph (c); and

(iii) light pollution abatement.

(b) (**Enhanced ESD Initiatives**) Enhanced ESD Initiatives must be considered by Project Co for incorporation into the design and construction of the landscaping works for the Stadium, Sports Precinct and Off-Site Infrastructure, including:

(i) use of predominantly indigenous and endemic landscape planting that are sufficiently salt tolerant, have low demand for water and additional nutrients;

(ii) planting species diversity and co-location of species of similar horticultural requirements;

(iii) the use of recycled materials; and

(iv) chipping and reusing cleared vegetation within the Sports Precinct.

(c) (**Water Sensitive Urban Design**) WSUD water quality measures must be incorporated into the design of the landscape for all areas within the Stadium, Sports Precinct and Off-Site Infrastructure where water reuse is not being implemented. Project Co must take into consideration the relevant policy and guidance in clause E3.6

E3.7.3 Land Conditions

(a) The landscaping works must take into account all Land Conditions, including as described in clause E4.6.2.

(b) The design and construction methodology for the landscape works must consider and accommodate differential settlements and lateral movements between the major design elements of the Stadium, Sports Precinct and Off-Site Infrastructure over its Service Life. Key interfaces which must be addressed in the design and construction and detailing of materials and finishes, include the interfaces between:

(i) the Stadium and the Pitch;

(ii) design elements within the Stadium, including between the Stadium Curtilage and the Controlled Area;

(iii) design elements founded on different foundation systems or differently treated ground (or both of these);

(iv) the Controlled Area and the Sports Precinct (including stairs, ramps, retaining structures and pathways);

(v) all adjacent design elements within the Sports Precinct including the Bus Hub and the Bus Passenger Assembly Area;

(vi) elements of the Sports Precinct which abut structures on adjacent sites including all interfaces between elements of the Sports Precinct and the State Transport Infrastructure Works, including the SRPB and Stadium Station; and

(vii) the floor surface of the Pedestrian Underpass, to be constructed as part of the Off-Site Infrastructure Works, and the floor surface of the adjoining Rail Passenger Assembly Areas.

(c) Project Co must provide detailed drawings and prototypes that demonstrate the performance of the key interfaces described in paragraph (c) in accordance with the requirements of Chapter C20 (Managing Design Quality) of these Design Specifications and Schedule 5 (Design Development) of this Agreement.

(d) The landscape must be designed to make the most of the existing Land Conditions including the Swan River and the River-Fed Lake by:

(i) incorporating these into public space; and

(ii) retaining and restoring riparian vegetation to improve water quality through bio-infiltration.

E3.7.4 Hard landscaping

(a) (**General Requirements**) The pavements and stormwater drainage for all roads, paths and hardstand areas must be in accordance with all relevant Quality Standards and the requirements set out in Chapters E4 (Civil Engineering) and E5 (Stormwater) of these Design Specifications.

(b) (**Universal Access**) Surface finishes to pavements and other relevant hard landscaping elements should be selected to minimise resistance for IRUA using a wheelchair.

(c) (**Stormwater**) Project Co must ensure that the landscape facilitates the shedding of water away from buildings and to prevent ponding on hard landscaped areas.

E3.7.5 Paved areas

(a) Paved areas must use varied materials, colours and arrangements to provide contrast and interest at nodal points, entries and edges. Treatments must be selected based upon their slip resistance, durability and appearance relative to the overall aesthetic.

(b) Paved area detailing, materials and arrangements must:

(i) consider the impact of long term, differential ground settlement and lateral movements on their long-term functionality and appearance;

(ii) consider the impact on user comfort and microclimate, in particular, levels of reflectance and radiant heat; and

(iii) minimise the volume and velocity of stormwater runoff.

E3.7.6 Roads and vehicle parking areas

(a) The pavement make-up for the roads and vehicle parking areas must be in accordance with the requirements described in E4 (Civil Works) of these Design Specifications.

(b) Non-paved parking areas must have adequate drainage so as to accommodate regular parking without damage to the grassed surface or ponding of water and soft spots that would render the area unsuitable for parking during an Event.

(c) Flush kerbs, with no upstand between abutting surfaces, must be provided at all transition points, with channel blocks and increased drainage provision used, if necessary. Flush kerbs at crossings must be wide enough to allow cyclists to turn on or off the carriageway without the need to pull out into the path of vehicles going in the same direction.

(d) Flush kerbs must be provided to:

(i) all paved and sealed Precinct Service Roads;

(ii) IRUA carparking and drop off areas; and

(iii) all other Patron drop-off areas.

E3.7.7 Walls and treatment of level changes

Project Co must ensure:

(a) that all walls are considered as part of the overall built form and are integrated within the overall design of the Stadium or Sports Precinct;

(b) that the form, materials and finish of all walls, including the Engineering Services plant screening, are complementary to and coordinated with the built form and character of the Stadium;

(c) that all retaining walls greater than 1.5m height are stepped, clad or otherwise articulated to moderate vertical scale; and

(d) screen walls are ideally not greater than 2.5m in height and demonstrate a consistent material finish for the entire height, with jointing and anti-graffiti measures implemented as part of an overall wall design strategy.

E3.7.8 Fencing, balustrades and handrails

Project Co must ensure:

(a) that fencing, handrails and balustrades are designed within the context of an overall design strategy for the Stadium, Sports Precinct and Off-Site Infrastructure and, particularly, are in a complementary to and coordinated with the built form and character of the Stadium and associated building structures including walls, stairs and ramps;

(b) that fencing is restricted in use to key secure areas only and where possible is located within planting areas and setback from paths of travel;

(c) that fencing is integrated within building or wall designs;

(d) that fencing features have an integral surface coating or durable pre-finished coating;

(e) that handrails return to walls in preference to downturn radii where possible;

(f) balustrades are designed to protect Patrons from vertical fall, with a focus on child safety. Balustrades must be non-climbable and must not include any horizontal balusters or infill or in any way facilitate climbing;

(g) that where balustrades permit the resting of objects, including drink bottles, handbags or other loose items, such balustrades must have protection to stop items from falling on pedestrians below; and

(h) that balustrades and handrails have a robust, non-corroding, integral finish that does not require recoating.

E3.7.9 Stairs, ramps and walkways

All stairs, ramps and walkways must:

(a) complement the Stadium and Sports Precinct design;

(b) consider alternate and innovative construction methods;

(c) include stainless steel individual elements integrated within the ground surface material or precast concrete tactile ground surface indicators (TGSIs) in preference to thermoplastic TGSIs; and

(d) demonstrate a tolerance of at least 1 horizontal metre on the maximum allowable AS 1428 gradient. For example, the maximum ramp angle is to be 1v15h or 6.66% at maximum length of 6m between landings.

E3.7.10 Timber

(a) Timber used in landscaping elements, including buildings, structures and FF&E in the Sports Precinct, wherever possible, must be in accordance with internationally recognised forest certification schemes such as AFS (Australian Forestry Standard) or AFC (Forest Steward Council) or PEFC (Program for the Endorsement of Forest Certification) including provision of evidence of origin.

(b) Timber must have the natural durability appropriate to the conditions of use, or must be preservative treated timber of equivalent durability.

(c) The natural durability class of heartwood must conform with relevant Quality Standard including AS 5604-2003.

  (i) Class 1 for timbers that are in contact with ground;

  (ii) Class 2 for timbers that are above ground, not in continuous contact with moisture, well ventilated, protected from moisture but exposed to the weather; and

  (iii) Class 3 for timbers that are above ground, not in continuous contact with moisture, well ventilated, protected with a finish and well maintained.

(d) Timber containing lyctus susceptible sapwood must not be used.

(e) Timber used for framing must be straight, without twists, winds or bowing and made from seasoned, milled and dressed timber products:

E3.7.11 Signage and wayfinding

(a) A visible, readable, flexible and effective signage system must be provided to complement the integrated wayfinding strategy to support all Stadium Users in their use of the Stadium and the Sports Precinct.

(b) Signage works must comply with the signage and wayfinding requirements outlined in clause E2.15 of Chapter E2 (Architecture) and other requirements of these Design Specifications, including as described in Chapter C9 (Wayfinding and Signage) and clause C11.6.2.

(c) Project Co must also refer to the signage and wayfinding reference standards listed in clause E3.6 above.

(d) Signage works associated with the development of the Stadium and Sports Precinct must integrate seamlessly with the signage for the State Transport Infrastructure Works and all signage works to adjacent and nearby sites.

(e) All operational and commercial signage, including team branding and sponsor signage, must be simple and cost effective to change over or remove.

E3.7.12 Interpretive elements

The design of the Stadium and Sports Precinct must recognise and integrate the Aboriginal heritage and cultural significance of the Site and the Swan River in accordance with the State's Aboriginal Heritage Management Plan and Aboriginal Engagement Strategy. Project Co must also address the requirements described in Chapter C2 (Cultural Context and Significance) and refer to the interpretation reference standards listed in clause E3.6 above.

E3.7.13 Sports Precinct FF&E

Project Co must ensure that all Project Co FF&E for the Sports Precinct:

(a) is complementary to and coordinated with the built form and character of the Stadium;

(b) integrates with planting, paving, wall design and public art;

(c) is located in groups at nodes, paths and within the Controlled Area, with ample waste disposal, seating areas and drinking fountains;

(d) is located to achieve maximum shade and orientation towards views and does not obstruct pedestrian flows;

(e) is free from surface fixing where possible and where surface fixing is required, anti-tamper decorative dome or acorn nuts are provided in a matching finish to the base-plate; and

(f) incorporates integral, low-maintenance, robust finishes which are vandal, graffiti and corrosion resistant.

E3.7.14 Lighting

Project Co must comply with the requirements described in Chapters E12 (Lighting Systems) and E15 (Security Systems) of these Design Specifications and must ensure that:

(a) pedestrian and decorative lighting is used within the Sports Precinct in a coordinated manner;

(b) lighting provides a consistent rhythm and is located off path within landscape planting areas to conceal rag-bolts and fixings and minimise path obstructions;

(c) pedestrian lighting may be varied to suit the location of lamps and fixtures integrated into canopies, walls and railings and the design allows for increase in lighting intensities at nodes and crossing points;

(d) decorative up-lighting is located within planting beds where possible in preference to hard paving and paths of travel;

(e) multi-purpose supports are utilised that incorporate banner supports for promoting Events and to support traffic lights, CCTV cameras, speakers and other fixtures, thereby minimising clutter and a variety of different supports;

(f) finishes are integral, low-maintenance, robust and vandal, graffiti and corrosion resistant; and

(g) luminaires are of high quality with good colour rendering properties and very long Design Life requiring minimal maintenance.

E3.7.15 Drainage

Project Co must comply with the requirements described in Chapter E5 (Stormwater) of these Design Specifications and must ensure that:

(a) all surface water is managed in accordance with Project Co's Stormwater Management Plan and relevant Authority requirements;

(b) drainage is consistent with WSUD principles;

(c) drainage of hard surfaces is ideally toward planting surfaces for natural recharge and passive irrigation;

(d) where grates are required within pathways and hard surfacing, they are slip resistant and include heel-guards;

(e) drainage grates in soft landscape areas are located within garden beds in preference to turfed areas;

(f) full drainage and waterproofing is provided to planters on structure in accordance with architectural building detailing; and

(g) all planters within the Stadium and Sports Precinct feature a minimum of two (2) drainage outlets per planter.

E3.7.16 Peripheral and service areas

Project Co must ensure that:

(a) the landscape accommodates ease of access for maintenance and operational services, including for maintenance vehicles, rubbish collection, cleaning and Emergency Services;

(b) the function and design of peripheral and service areas does not dominate the character of the Sports Precinct or the landscape design; and

(c) vehicle lay-by areas are integrated with Controlled Area pavements and pathways to optimise dual functionality of hard surfacing and minimise hardstand for singular and infrequent use.

E3.7.17 Soft landscaping

In addition to the requirements set out in Chapter C6 (Landscape) of these Design Specifications, Project Co must:

(a) ensure that the soft landscaping design minimises the need for longer term use of irrigation (beyond initial establishment), particularly for trees and vegetation in the north west corner of the Site;

(b) ensure shrub, groundcover and native grass planting in highly visible public areas is optimised in terms of installation size and planting density to ensure complete coverage of all mulch and media;

(c) consider tree planting along key movement paths without constructed sun and rain shelters, of appropriate size and spacing to achieve canopy to canopy coverage without compromising lighting and the CPTED principles stated in clause C1.3 and Chapter E1 (General Requirements).

(d) ensure planting depths, soil, mulch, cultivation and additives accord with or exceed accepted horticultural practice to offer the greatest scope for rapid establishment and longevity;

(e) ensure all specified plant species are hardy and resistant to common Pest infestation;

(f) ensure all planting is hardened off from the nursery in accordance with best practice horticultural standards and adaptability to proposed maintenance regimes; and

(g) ensure planted and grassed batters to slopes consider OHS requirements for maintenance personnel.

E3.7.18 Site context integration

Project Co must establish a soft landscaped transition from the Sports Precinct to the adjoining sites that avoids the use of fences, buildings or retaining walls.

E3.7.19 Irrigation

(a) Project Co must ensure that:

(i) permanent irrigation is provided to all areas requiring water to sustain soft landscaping, including the Community Recreation Oval and grassed open space;

(ii) soft landscaping is designed so that only temporary irrigation is required for the establishment of planting areas utilising endemic plant species, planting strategy, good quality mulches and appropriate densities;

(iii) irrigation incorporates hydro-zoning and other management systems to minimise the use of water;

(iv) irrigation design considers and reports on opportunities for re-use of site runoff and storage ponds for capture tanking and re-distribution;

(v) irrigation systems do not cause rust staining on paths, vegetation or structures and water quality must be managed and treated, if required, to avoid rust staining;

(vi) irrigation considers use of water from stormwater detention;

(vii) irrigation requirements are minimised through plant selection;

(viii) low maintenance, robust irrigation pipe and delivery systems are utilised; and

(ix) the irrigation system addresses the requirements of the irrigation quality standards referred to in Chapter E18 (Pitch and Playing Surface) of these Design Specifications.

(b) The irrigation system(s) must include:

(i) a layout to maximise coverage and minimise overwatering;

(ii) individual operation and time control over every sprinkler;

(iii) a computer controlled system which can apply multiple irrigation schedules, created to suit any use scenario;

(iv) remote output soil moisture sensors and a weather monitoring system;

(v) flow sensors;

(vi) isolation valves at each take off for the automatic control valves and at strategic points on the mainline;

(vii) a fertigation system that provides flexible applications; and

(viii) a system that minimises overspray onto hard landscaping;

(ix) separate metering for monitoring irrigation water usage to discrete areas, including the Community Recreation Oval; and

(x) interface with the BMS for all areas covered by the system(s).

E3.7.20 Flexibility

The design and construction of the roads, paths (pedestrian and cyclist), access ways and pedestrian gathering or assembly areas, must take into consideration the requirements for Rectangular

Reconfiguration and Event Overlay as set out in these Design Specifications and in Project Co's Rectangular Reconfiguration Works Plan and Event Overlay Plan.

E3.7.21 Maintainability

(a) In designing the landscape works Project Co must consider the maintenance implications arising from:

(i) the increased potential for differential settlement due to the Land Conditions at the Site;

(ii) the selection of materials and FF&E to minimise maintenance, cleaning and replacement;

(iii) the potential for damage caused by tree roots or additional grounds keeping to prevent weed ingress;

(iv) the extent and type of drainage provided;

(v) social considerations and potential for accidental and intentional damage;

(vi) the nature and effects of all traffic likely to be experienced over the Design Life of the landscape works;

(vii) the impact of salt intrusion into the area west of the River-Fed Lake and the high ground water level which may impact the sub-base and vegetation; and

(viii) the selection of trees and other plants.

(b) Paved areas must be designed and constructed for ease of repair without visible evidence of the repair.

E4 CIVIL ENGINEERING

E4.1 GENERAL

(a) Project Co must design, construct, commission and complete all civil works required to deliver the Stadium, the Sports Precinct and the Pedestrian Underpass to be constructed as part of the Off-Site Infrastructure as part of the DBFM Works.

(b) The civil works must be designed and executed to interface seamlessly with all civil works, landscape works and structures on adjacent sites, including the adjoining State Transport Infrastructure Works.

E4.2 SCOPE

The scope of the civil works for the Stadium, the Sports Precinct and the Off-Site Infrastructure includes the design, construction, commissioning and completion of:

(a) site surveying as necessary to support performance of the DBFM Works;

(b) ground improvement works (beyond that already undertaken as part of the PCS Works) where such works are required to support the proposed design for the Stadium, the Sports Precinct and the Off-Site Infrastructure;

(c) earthworks;

(d) roads, pavements, paths and kerbs within the Sports Precinct, including the Precinct Service Roads, the precinct path networks (pedestrian, cycle and Shared Use Paths), pedestrian assembly areas (including for Goongoongup Rail Bridge and Windan Bridge), the Rail Passenger Assembly Areas, the Bus Passenger Assembly Area, the Bus Hub and the Pedestrian Underpass;

(e) treatment of the Shared Use Path on the western foreshore of the Swan River to manage areas prone to flooding, including during king tides. This may include re-alignment or elevation, or both, of portions of the Shared Use Path. The area in the vicinity of the Goongoongup Rail Bridge is of high importance to ensure access to the Stadium and Sports Precinct;

(f) integration of civil works with existing conditions and works to adjacent sites and property;

(g) external paving to the Stadium and within the Sports Precinct (refer also to Chapter E3 (Landscape Architecture) of these Design Specifications);

(h) culverts;

(i) treatment of elements of the Site which abut structures, including at all interfaces between and approaches to, elements of the Sports Precinct and the State Transport Infrastructure Works, including the SRPB, bridges from Stadium Station onto the northern and southern Rail Passenger Assembly Areas, and the pedestrian bridge from the Belmont Park Racecourse;

(j) treatment storage or disposal (or all of them) as applicable of all Contaminated Material that is excavated during the performance of the DBFM Works; and

(k) installation of appropriate monitoring systems on finished structures, Engineering Services and infrastructure to monitor long term movements.

E4.3 AUTHORISATIONS

Without limiting Chapter A11 (Authorisations) of these Design Specifications and subject to clause 41 of this Agreement which sets out Project Co's obligations in respect of Authorisations, Project Co must obtain and comply with all required Authorisations and Authority requirements associated with the civil works for the Stadium and Sports Precinct including any required Authorisation(s) from:

(a) any relevant local government Authority;

(b) MRWA; and

(c) the PTA.

E4.4 DESIGN INFORMATION

E4.4.1 PCS Works

The design and monitoring documentation for the PCS Works will be provided to Project Co on a progressive basis during the design and construction phase of the PCS Works, including at PCS Works Practical Completion. Project Co's design for the Stadium and Sports Precinct must consider the resultant ground surface levels, residual ground movements and Land Conditions following completion of the PCS Works.

E4.4.2 Hydrology and flood study

A flood study report No. 222 455-00 "Perth Stadium – Site Conditions Working Group – Services Infrastructure Requirements Draft 4 dated 10th July 2012" was prepared by Arup for the master plan. This report is included in the Project Information.

E4.4.3 Survey data

An existing topographical survey of the Site undertaken by JBA Surveys is available in the Project Information. An as built level and feature survey will be provided to Project Co following PCS Works Practical Completion covering those areas subject to the PCS Works and associated monitoring instruments. Project Co must verify the accuracy of the survey data and locate and identify existing underground services.

E4.4.4 Background Site information reports

Background geotechnical, environmental and other reports relating to the Land Conditions are included in the Project Information.

E4.4.5 Further studies

Any further studies, investigations and surveys required by Project Co, including for the purposes of complying with clause 41.2 of the Agreement, must be undertaken by Project Co.

E4.5 QUALITY STANDARDS AND LAWS

Without limiting clause 14.1 of this Agreement and the Quality Standards and Laws stipulated in Chapter E1 (General Requirements), the design, construction, commissioning and completion of the

Stadium and Sports Precinct in respect of the civil works must comply with all relevant Quality Standards and Laws including:

(a) all relevant Australian Standards including:

(i) AS 2890.1 Off- Street Car Parking;

(ii) AS 2890.2 Off -Street Commercial Vehicle Facilities;

(iii) AS2890.3 Bicycle Parking Facilities;

(iv) AS3996:2006 Access covers and grates;

(v) AS1597.1 Precast concrete box culverts – small culverts

(vi) AS1597.2 Precast concrete box culverts – large culverts

(b) all relevant Austroads Standards including:

(i) Austroads Guide to Road Design Part 1 to 8;

(ii) Austroads Guide to Pavement Technology Part 1 to 10;

(iii) Austroads Guide to Road Tunnels Part 1 to 3;

(iv) AP-G88-11 - Cycling Aspects of Austroads Guides;

(v) Austroads Design Vehicles and Turning Path Templates;

(c) all relevant Main Roads Western Australia standards and specifications, including:

(i) MRWA Supplement to Austroads Guide to Road Design – Parts 1 to 8;

(ii) Engineering Road Note 9: Procedure for the Design of Road Pavements;

(iii) Main Roads Policy for Cycling Infrastructure;

(iv) Main Roads Disability Access and Inclusion Plan 2012 – 2016;

(v) Main Roads Pedestrian Level of Service Guidelines;

(vi) Main Roads Cycling Level of Service Guidelines;

(d) all relevant PTA standards and guidelines, including:

(i) A Practitioner's Guide to Bus Movement and Priority;

(ii) Public Transport Bus Stop Site Layout Guidelines;

(iii) Traffic Management and Control Devices;

(iv) Maintenance and Constructability Guideline;

(v) Guidelines for Working In and Around the PTA Rail Reserve;

(vi) PTA's Accessibility Policy;

(vii) Disability Access and Inclusion Plan; and

(e) all relevant Department of Transport guidelines, including Planning and Designing for Pedestrians: Guidelines.

E4.6 PERFORMANCE REQUIREMENTS

E4.6.1 Design Life

The Design Life for pavements and civil structures within the Sports Precinct must meet or exceed the following minimum requirements:

Element	Design Life
Precinct Service Roads and access ways	20 years
Pedestrian footpaths, cycle paths and pedestrian shared paths	20 years

Element	Design Life
Stadium Service Road, trafficable rigid or concrete pavements and hardstand areas	50 years
Permanent vehicle parking areas (asphalt finished)	20 years
Tunnels, culverts, retaining walls in the public domain	50 years
All other civil structures and facilities	50 years

E4.6.2 Land Conditions

(a) As a result of the Site's location and its historical uses the Land Conditions vary significantly across the Site.

(b) Land Conditions likely to be encountered during the Term of the DBFM Project which must be considered and addressed by Project Co in the design and construction of the Stadium, the Sports Precinct and the Off-Site Infrastructure include:

(i) the presence of uncontrolled industrial landfill causing:

A differential ground settlement, lateral movement or collapse;

B obstruction to piling and excavation;

C changes in groundwater level, quality and flow; and

D Contamination;

(ii) the presence of Contaminated Material and Contaminated Water;

(iii) the presence of at least two paleochannels running through the Site infilled with weak and compressible Swan River Alluvium that gives rise to the following risks:

A the Site is currently experiencing vertical and horizontal ground movements and any new loading of the Site could trigger significant additional vertical and horizontal ground movements;

B excessive rapid loading of the Site could lead to foundation failure through the weak Swan River Alluvium layer; and

C the potential for variable founding conditions for footings and piles.

(c) Without limiting clause 42.2(c) of the Agreement, Project Co must familiarise itself with the Land Conditions:

(i) at the Site, including the proposed condition of the Site following execution of the PCS Works; and

(ii) in all areas where Off-Site Infrastructure Works will be undertaken.

(d) In designing the civil works Project Co must consider the effects of any ground improvements and earthworks in connection with the Stadium, the Sports Precinct and the Off-Site Infrastructure on structures, services and infrastructure on adjacent sites, including on the State Transport Infrastructure Works.

(e) Project Co must design and execute the civil works taking into account the Land Conditions at the Site and in all areas where Off-Site Infrastructure Works will be undertaken, including as described in paragraph (b), and also including:

(i) the Site and the resultant conditions arising from the ground treatment completed as part of the PCS Works;

(ii) variations in groundwater level; and

(iii) water quality, including nutrient levels and salinity of the water.

(f) To ensure that the Stadium, the Sports Precinct and the Off-Site Infrastructure remains serviceable and safe at all times throughout the required Service Life whilst minimising the requirement for ongoing maintenance, Project Co must address the issue of vertical and lateral soil movements in the design and construction of the DBFM Works. Project Co must consider:

(i) minimising placement of fill to raise surface levels;

(ii) the use of light-weight fill such as shredded car tyres or expanded polystyrene foam where levels must be raised, subject to environmental considerations;

(iii) undertaking further ground improvement to limit future soil movements;

(iv) providing a suspended structure with piles founded in a stronger stratum;

(v) providing hinged slabs between piled and non-piled areas;

(vi) designing piles for down-drag and horizontal loading induced by soil movements;

(vii) providing articulated joints for below ground Engineering Services to accommodate soil movements;

(viii) allowing for differential settlement when setting grades for below ground drainage systems;

(ix) avoiding placement of fill adjacent to piled structures;

(x) managing groundwater levels to reduce the settlement effect on the Swan River Alluvium;

(xi) design construction dewatering to minimise the effect of down-drag outside the immediate area of construction and to limit the effect on constructed nearby structures;

(xii) protection of existing (and future) monitoring and sampling installations installed by the State and the PCS Works Contractor; and

(xiii) ongoing monitoring of the PCS Works Contractor's monitoring devices after PCS Works Practical Completion for as long as feasible.

(g) Bulk earthworks may be required to raise and lower existing Site levels dependent on Project Co's design. In undertaking the design and construction for earthworks Project Co must:

(i) clear vegetation, paving, irrigation piping and any other obstructions prior undertaking bulk earthworks;

(ii) minimise disturbance of existing landfill material and Contaminated Material where possible;

(iii) consider the impact of unsuitable fill likely to be encountered including car bodies, timber and concrete. Where unsuitable fill is encountered that could be detrimental to future ground performance and the performance of the Stadium and Sports Precinct, it must be managed through further ground treatment or removal as appropriate;

(iv) where unsuitable or Contaminated Material is disturbed the excavated material must be managed in accordance with the Construction Environmental Management Plan;

(v) re-use Clean Fill available on Site before importing additional fill;

(vi) compact fill and the existing ground in accordance with relevant Quality Standards and Laws and to achieve the pavement Design Life specified in clause E4.6.1;

(vii) design earthwork levels and fill placement to maintain stability of the temporary and completed earthworks and adjacent structures;

(viii) consider incorporating geotextile reinforcement within earthworks design to improve stability;

(ix) design a working platform for heavy plant such as cranes, piling and ground improvement rigs to avoid excessive settlement and toppling of the plant; and

(x) undertake monitoring of ground displacements, adjacent structures and groundwater levels to assess the response to the DBFM Works in accordance with the Instrumentation and Monitoring Plan.

(h) Project Co must consider the Land Conditions and any proposed ground improvements or earthworks, and the effect of these on the design and construction of the Stadium, the Sports Precinct, the Off-Site Infrastructure and on structures, Engineering Services and infrastructure on adjoining sites including the State Transport Infrastructure Works.

(i) The civil works for the Stadium and Sports Precinct must include installation of appropriate monitoring systems on finished structures, Engineering Services and infrastructure to monitor long term differential and lateral movements.

E4.6.3 Minimum habitable floor levels and flood level

(a) The Site is located within the "flood fringe" on the Department of Water map included in the Project Information (Site Conditions Working Group – Services Infrastructure Requirements). Consequently, the minimum habitable floor levels of the Stadium and any buildings within the Sports Precinct which accommodate Engineering Services for the Stadium such as a central plant must be at no less than RL 3.5m AHD which includes allowances for 0.9m (sea level rise) + 0.5m (freeboard).

(b) Project Co should take into consideration the minimum requirement of freeboard and climate change above the flood level when designing all roads, pavements, paths and hardstand areas including the Stadium Service Road, Precinct Service Roads, access ways, paths (pedestrian, cyclist and Shared Use Paths), permanent vehicle parking areas, pedestrian assembly areas (including for Goongoongup Rail Bridge and Windan Bridge), the Bus Hub, the Bus Passenger Assembly Area, the Rail Passenger Assembly Areas, the floor to the Pedestrian Underpass and hardstand areas (including for Outside Broadcast vehicles and for pedestrian holding and gathering). In setting the minimum requirement of freeboard and climate change above the flood level, Project Co must consult with all relevant Authorities and comply with the requirements of all relevant Quality Standards and any Authorisations.

E4.6.4 Pavements

(a) The pavements for all roads, pavements, paths and hardstand areas including the Stadium Service Road, Precinct Service Roads, access ways, paths (pedestrian, cyclist and Shared Use Paths), permanent vehicle parking areas, pedestrian assembly areas (including for Goongoongup Rail Bridge and Windan Bridge), the Bus Hub, the Bus Passenger Assembly Area, the Rail Passenger Assembly Areas, the floor to the Pedestrian Underpass and hardstand areas (including for outside broadcast vehicles and for pedestrian holding and gathering) must be in accordance with all relevant Quality Standards and Laws.

(b) (**Precinct Service Roads, Stadium Service Road, Vehicular Vomitories and permanent vehicle parking areas**) The layout, gradient and engineering design of the Precinct Service Roads, the Stadium Service Road, Stadium Service Road Vehicular Vomitories and permanent vehicle parking areas (including the hardstand areas in the Outside Broadcast Compound for outside broadcast vehicles) must:

(i) withstand all applied loadings and be suitable for all vehicle movements associated with construction traffic;

(ii) withstand all applied loadings and be suitable for all vehicle movements associated with all traffic likely to be experienced by the road network and

vehicle parking areas over their Design Life having regard to their purpose as supporting infrastructure to the Stadium, including private vehicles, emergency services vehicles, maintenance service vehicles, operational vehicles and specialist vehicles relating to Event uses, including the Drop-In Cricket Wicket Transporter, pantech trucks, semi-trailers and outside broadcast vehicles;

(iii) facilitate road access around the full perimeter of the Stadium for fire emergency services vehicles for fire fighting purposes; and

(iv) facilitate ambulance access around the full perimeter of the Stadium and onto the Pitch.

(c) (**Rail Passenger Assembly Areas**)

The Rail Passenger Assembly Areas must be able to accommodate all dead loads and live loads associated with its intended use by the PTA, including as a minimum complying with the loads set out in **Table 15**: Rail Passenger Assembly Areas Design Loads.

Table 15: Rail Passenger Assembly Areas Design Loads (Applied at Finished Design Level)

Load Type	Load (kPa)
Live Loads	20 (highway loading) everywhere

(d) (**Bus Hub**)

(i) The Bus Hub must be designed and constructed as a street-based facility which accommodates PTA buses on Event Days and facilitates private vehicle parking on Non-Event Days in accordance with the requirements set out in Part C (Design Brief) and Part D (Functional Brief) of these Design Specifications.

(ii) The Bus Hub must:

A withstand all applied loadings and be suitable for all vehicle movements associated with construction traffic;

B withstand all applied loadings and be suitable for all vehicle movements associated with all traffic likely to be experienced by the Bus Hub area over its Design Life having regard to its purpose as supporting infrastructure to the Stadium, including PTA buses, private vehicles, Emergency Services vehicles, maintenance service vehicles and operational vehicles relating to Event Day uses and Non-Event Day uses;

C incorporate 20 active bus stands and 20 layover bays and both must be a minimum of 20 metres in length. Bus shelters providing shade, shelter and seating for bus patrons must be provided for each active bus stand and both must be designed in accordance with the PTA's Public Transport Bus-Stop Site Layout Guidelines as included in the Project Information;

D incorporate a bus turning area with a minimum 16 metres outside radius; and

E be configured to prevent pedestrian cross traffic over the street-based portion of the facility and to otherwise mitigate conflicts between buses and pedestrians on Event Days whilst facilitating convenient pedestrian access on Non-Event Days when the facility will be utilised for vehicle parking.

(iii) The cross-section requirements for a dual-access Bus Hub design, as contemplated in the Development Concept Plan (2013) where active stands

are located on the northern and southern sides of the Bus Hub, must as a minimum include:

A 4.2 m wide active bus stand (access side 1);

B 3.5 m wide circulatory bus lane;

C 4.2 m wide layover bay;

D 3.0 m wide fenced median;

E 4.2 m wide layover bay;

F 3.5 m wide bus circulatory;

G 4.2 m wide active bus stand (access side 2);

(iv) The cross-section requirements for a single-access bus-hub design must as a minimum include:

A 4.2 m wide active bus stand;

B 3.5 m wide circulatory bus lane; and

C 4.2 m wide layover bay.

(v) The Bus Hub pavement must be designed with suitable fall to facilitate shedding of water and prevent ponding.

(vi) The Bus Hub must be able to accommodate all dead loads and live loads associated with its intended use by the PTA, including as a minimum complying with the loads set out in **Table 16**: Bus Hub Design Loads.

Table 16: Bus Hub Design Loads (Applied at Finished Design Level)

Load Type	Load (kPa)
Live Loads	20 (highway loading) everywhere

(vii) The Bus Hub pavement must be suitable for all vehicles and vehicle movements associated with the Bus Hub over its Design Life. Project Co. should consider the pavement design concept included in the *Burswood Stadium – Associated Infrastructure Report, Rev 2, May 2013, BG&E* included in the Project Information.

(viii) Drainage of the Bus Hub must be designed and constructed in accordance with the requirements set out in Chapter E5 (Stormwater) of these Design Specifications as an integral part of the Sports Precinct stormwater drainage system.

(e) (**Design vehicles**) The minimum Heavy Vehicle classifications which must be accommodated as part of the design of the Stadium and Sports Precinct are as set out in **Table 18** Vehicles for the Stadium and Sports Precinct. Project Co must ensure that the use and movement of Services Equipment is accommodated in the DBFM Project.

[*Not disclosed*]

(f) (**Pedestrian surfaces**) Design of all pedestrian surfaces including paths (pedestrian and Shared Use Paths), pedestrian assembly areas (including for Goongoongup Rail Bridge and Windan Bridge), the Bus Passenger Assembly Area, the Rail Passenger Assembly Areas and boardwalks, including those providing access to picnic areas, recreation areas and other amenities and facilities situated in the Sports Precinct, must be accessible for IRUA in accordance with the requirements of all relevant Quality Standards and Laws and the requirements of all relevant Authorities. Surface finishes to pavements should be selected to minimise resistance for IRUA using a wheelchair.

(g) Pavements must be designed with suitable falls to facilitate shedding of water and prevent ponding.

(h) (**Community Recreation Oval**)

(i) The Community Recreation Oval must be provided with adequate drainage so as to accommodate its use as the Temporary Carpark without damage to the grassed surface, ponding of water and soft spots that would render the area unsuitable for parking of vehicles during an Event.

(ii) The Community Recreation Oval must be able to accommodate all dead loads and live loads associated with its intended uses as a recreation oval, a Temporary Carpark and as a boneyard for Events, including as a minimum complying with the loads set out in **Table 19**: Community Recreation Oval Design Loads.

[*Not disclosed*]

E4.6.5 Bridge interfaces

(a) Project Co must provide all ground treatment works to all bridge landing areas within the Site. Such ground treatment works must provide suitable conditions for any structural works that will be undertaken in relation to the State Transport Infrastructure Works for each bridge landing.

(b) Project Co must ensure that all interfaces with bridges within the Site, including access, services, drainage and landscaping, together with any other items necessary for the function of each bridge, account for long term vertical and lateral ground movements with consideration of:

(i) existing land conditions at each bridge landing location; and

(ii) any structural works undertaken in relation to the State Transport Infrastructure Works for each bridge landing,

to ensure that any differential movements do no adversely affect any State Transport Infrastructure Works, interfaces with the State Transport Infrastructure Works or any elements of the DBFM Works.

E4.6.6 ESD

Embedded ESD Initiatives must be incorporated into the civil works for the Stadium and Sports Precinct, including:

(a) re-use of existing Clean Fill on Site and minimisation of imported Clean Fill; and

(b) diversion from landfill by utilisation of recycled materials in the design and construction of the civil works for the Stadium and Sports Precinct including the use of recycled concrete instead of crushed rock and use of recycle bricks or pavers, and use of shredded tyres for light weight fill subject to environmental considerations.

E4.6.7 Maintainability

In designing and constructing the civil works Project Co must consider and minimise the maintenance implications including arising from:

(a) the increased potential for differential settlement, ground collapse and lateral movements due to the Land Conditions at the Site;

(b) the selection of materials including bases, sub bases and surface finishes;

(c) the potential for damage caused by tree roots or additional grounds keeping to prevent weed ingress;

(d) the extent and type of drainage provided;

(e) the type of construction used (e.g. full-width construction versus boxed in for roads);

(f) social considerations including the potential for accidental and intentional damage;

(g) the nature and effects of all traffic (vehicular and pedestrian) likely to be experienced over the Design Life of each component; and

(h) the variable high ground water level which may impact the sub-base for pavements, Engineering Services and underground structures and facilities.

E5 STORMWATER

E5.1 GENERAL

(a) Project Co must design, construct, commission and complete all stormwater drainage systems required to deliver the Stadium, the Sports Precinct and the Pedestrian Underpass to be constructed as part of the Off-Site Infrastructure as part of the DBFM Works.

(b) The stormwater drainage systems must be designed, constructed, commissioned and completed to interface seamlessly with all civil works, landscape works and structures on adjacent sites, including the adjoining State Transport Infrastructure Works.

(c) Stormwater drainage systems associated with the development of the Stadium and Sports Precinct must be designed, constructed and commissioned to:

(i) ensure that stormwater is collected, managed and, where feasible, reused within the Site (and in the case of the Pedestrian Underpass to be constructed as part of the Off-Site Infrastructure, within that site);

(ii) ensure no adverse environmental impacts on the Swan River system, including via the River-Fed Lake;

(iii) ensure all drainage is controlled within the environment of the Stadium and Sport Precinct without flooding or detrimentally affecting the general environment, surface and sub-surface water quality, adjoining properties and other properties within the overall catchment area;

(iv) as far as possible maintain the total water cycle balance within the Site relative to the pre-development conditions; and

(v) improve the surface and ground water quality within the development areas.

(d) Project Co must design, construct, commission and complete the stormwater drainage systems taking into account the Land Conditions at the Site, including arising from the nature and extent of ground treatment completed as part of the PCS Works.

E5.2 SCOPE

The scope of the stormwater drainage systems works for the Stadium, the Sports Precinct and the Off-Site Infrastructure includes the design, construction, commissioning and completion of:

(a) the management, collection and disposal of stormwater within the Stadium and Sports Precinct, including for the DBFM Transport Infrastructure Works;

(b) the underground stormwater and sub-surface stormwater system within the Stadium and Sports Precinct;

(c) the control of stormwater runoff within the Sports Precinct via overland flow paths and flood plains;

(d) water harvesting and re-use infrastructure;

(e) the management, collection and disposal of stormwater within the Pedestrian Underpass;

(f) the underground stormwater and sub-surface stormwater system within the Pedestrian Underpass;

(g) integration of the stormwater drainage systems with all civil and landscape works within the Site and adjoining the Pedestrian Underpass;

(h) capturing run-off from adjacent properties were overland flow paths lead to the Site or to the site of the Pedestrian Underpass; and

(i) integration of the stormwater drainage system with any existing drainage assets on the Site.

E5.3 AUTHORISATIONS

Without limiting Chapter A11 (Authorisations) of these Design Specifications and subject to clause 41 of this Agreement which sets out Project Co's obligations in respect of Authorisations, Project Co must obtain and comply with all required Authorisations and Authority requirements associated with the stormwater works for the Stadium and Sports Precinct including any required Authorisation(s) from:

(a) the Environmental Protection Authority;

(b) Western Australian Planning Commission;

(c) Department of Environment Regulation;

(d) Department of Water;

(e) Department of Health;

(f) Swan River Trust;

(g) Water Corporation;

(h) Main Roads Western Australia;

(i) any relevant local government Authority; and

(j) PTA.

E5.4 DESIGN INFORMATION

Project Co must carry out investigations of the Site and liaise with relevant Authorities to obtain all required hydrological data and existing stormwater drainage information for the purposes of undertaking the design of the stormwater drainage systems, at its expense.

E5.5 QUALITY STANDARDS AND LAWS

(a) Without limiting clause 14.1 of this Agreement and the Quality Standards and Laws stipulated in Chapter E1 (General Requirements), the design, construction, commissioning and completion of the Stadium and Sports Precinct in respect of the stormwater drainage systems must comply with all relevant Quality Standards and Laws including:

(i) all relevant Australian Standards including:

A AS3500 Plumbing and drainage;

B AS3500.0 Part 0: Glossary of terms;

C AS3500.1 Part 1: Water Services;

D AS3500.2 Part 3 Stormwater Drainage;

(ii) Australian Rainfall and Runoff (ARR) Volumes 1 and 2 published by Engineers Australia - National Committee for Water Engineering;

(iii) all relevant Main Roads Western Australia standards and specifications, including:

A Guide to the Design of Piped Systems;

B Guide to the Design of Open Drains for Roads;

C Guide to the Design of Culverts;

D Guide to the Design of Sub-soil Drainage;

E Guide to the Design of Drainage Basins;

F MRWA Floodway Design Guide;

(iv) Stormwater Management Manual for Western Australia (DoW, 2004-07);

(v) State Planning Policy 2.9, Water Resources (WAPC, 2006);

(vi) State Planning Policy 2.10, Swan-Canning River System (WAPC, 2006); and

(vii) Better Urban Water Management (WAPC, 2008).

(b) The design of the stormwater drainage systems for the Stadium and Sports Precinct must satisfy the principles of Water Sensitive Urban Design (WSUD) and take into consideration the water quality management initiatives presented in:

(i) Australian runoff quality - a guide to water sensitive urban design, 2006, Engineers Australia;

(ii) Better urban water management, 2008, Western Australian Planning Commission; and

(iii) Interim guidelines for the preparation of local water management strategies, 2008, Department of Water (WA).

E5.6 PERFORMANCE REQUIREMENTS

E5.6.1 Design Life

(a) Pipes must be rubber ring jointed reinforced concrete, Fibre Reinforced Concrete (FRC) or plastic and must have a minimum Design Life of 50 years.

(b) Pits, pit covers and trench grates must have a minimum Design Life of 50 years.

E5.6.2 Land Conditions

(a) The in-ground services components of the stormwater drainage system, including all pipes, joins and connections, must be capable of withstanding the effects differential settlement and lateral movement forces and pressures at the Site.

(b) The stormwater drainage system must be designed to make the most of the existing Land Conditions by:

(i) retaining natural channels, the River-Fed Lake and watercourses and incorporating these into public space;

(ii) retaining and restoring riparian vegetation to improve water quality through bio-infiltration;

(iii) protecting the existing natural ecosystem; and

(iv) minimising the use of artificial drainage.

E5.6.3 Stormwater Management Plan

In accordance with the requirements of the Construction Environmental Management Plan, prior to commencement of any works on the Site, Project Co must prepare and implement a Stormwater Management Plan for the Stadium and Sports Precinct which complies with the requirements of all relevant Authorities and is consistent with the Quality Standards.

E5.6.4 Design rainfall

(a) The design rainfall frequency for in-ground stormwater systems must:

(i) be a minimum of 100 years ARI for internal courtyards. A minimum of two separate outlets must be provided;

(ii) be a minimum of 20 year ARI for external areas where overland flow capacity is achievable

(iii) be a minimum of 100 year ARI where an overland flow path is not achievable;

(iv) be a minimum of 1 in 100 years ARI for the Pitch; and

(v) comply with all relevant Quality Standards and the requirements of relevant Authorities.

(b) Stormwater runoff from a minimum 1 in 100 year rainfall event must be safely stored and conveyed by utilising a combination of the following measures:

(i) providing safe passage for excess runoff towards watercourses and wetlands;

(ii) storing and detaining excess runoff in parks and designated detention and infiltration basins;

(iii) storing in detention tanks;

(c) All stormwater runoff from a 1 in 100 year event must not be allowed to pond except for designated detention and infiltration basins, swales and other forms of stormwater conveyance.

(d) In determining Intensity Frequency Duration (IFD) design rainfall information Project Co must assess the effect of the Bureau of Meteorology's release of the new 2013 IFD design rainfalls and the existing IFD design rainfalls.

(e) The Stadium and other structures within the Sports Precinct must be designed with the adjacent surface levels and building levels in such a way that overland flows do not affect safe access and amenity.

(f) The development of the Stadium and Sports Precinct must not result in the overland flow path causing flooding and damage to adjacent sites.

(g) In designing an overland flow path Project Co must consider the safety of pedestrians including the maximum depth and velocity of the flow.

(h) Where the overland flow path is not achievable the underground drainage system must be provided to cater for 1 in 100 years ARI.

(i) For all overland flow paths:

(i) erosion control measures must be implemented including at outlets, cuttings, embankments and surface drains; and

(ii) sediment control measures must be in place both during the D&C Phase and upon Completion.

E5.6.5 Detention and infiltration

The stormwater drainage system must be designed to slow the migration of rainwater across the site, reduce peak flows and minimise changes to the natural water balance. Stormwater must be retained and infiltrated on Site, where possible by:

(a) harvesting and reusing rainfall on Site;

(b) maximising the amount of permeable surfaces;

(c) using non-kerbed roads and carparks;

(d) planting trees with large canopies over sealed surfaces such as roads and carparks;

(e) using vegetated swales;

(f) using soakwells and minimising piped drainage systems;

(g) retaining seasonal wetlands and vegetation; and

(h) draining hard surfaces towards planting surfaces for natural recharge and passive irrigation.

E5.6.6 Drainage of undercroft and basement areas

(a) The design of the stormwater drainage system must provide for drainage of undercroft and basement areas as may be required depending on the hydrological conditions present on Site.

(b) Project Co must take into consideration subsurface ground water and changes to levels when designing the drainage of all buildings and structures.

E5.6.7 Drainage of the Pedestrian Underpass

All stormwater runoff from a 1 in 100 year event must not be allowed to pond in the Pedestrian Underpass. Project Co must ensure:

(a) surface levels at the entries and exits to the Pedestrian Underpass are set above flood level to avoid flooding of the underpass;

(b) drainage outlets are provided to the underpass to collect and discharge all stormwater. Where the stormwater cannot be gravity fed into the civil infrastructure a pumping system must be provided. The pumping system must consist of suitable dual pumps (duty and standby), control panel, pump well and associated accessories. The pumping system must be connected to the emergency back-up generator

E5.6.8 Stormwater pits and grates

(a) Stormwater pits must be located at the low point on the pavement and landscaping areas to avoid water ponding.

(b) Pits must not be located in front of the entry and exit to the buildings.

(c) Pit covers and their specification including class and load rating must comply with all relevant Quality Standards.

(d) Where grates are required within pathways and hard surfacing, they are slip resistant and have heel-guards.

(e) Drainage grates in soft landscape should be located within garden beds in preference to location within turfed areas.

(f) Pits and covers must be located so as to provide full access for servicing and maintenance.

(g) Where grated pits or trench grates are required, the design must be suitable for traversing by IRUA, flush with adjacent landscape treatments and comply with the requirements of all relevant Quality Standards and relevant Authorities.

E5.6.9 Stormwater discharge

(a) Where stormwater cannot be retained and infiltrated on Site the stormwater must be discharged to waterways or wetlands adjacent to the Site or to a stormwater drained system. Approval from the relevant Authorities must be obtained.

(b) Discharge to the Swan River (directly or via the River-Fed Lake) may be permitted subject to approval of Authorities and subject to the following:

(i) stormwater discharge methods and water quality measures being developed by Project Co that are consistent with the policies and guidelines referenced at E5.5 above and in compliance with the requirements of all relevant Authorities, and these methods and measures being included in the Stormwater Management Plan that is approved by the State; and

(ii) proper implementation of the stormwater discharge methods and water quality measures by Project Co in accordance with the Stormwater Management Plan.

(c) Where discharge into the Swan River is proposed:

(i) the design of the Sports Precinct must dedicate land for the retention, storage and treatment of stormwater prior to discharge to the Swan River;

(ii) stormwater to be discharged to the Swan River must not exceed the trigger values applying to typical slightly-moderately disturbed systems (for lowland rivers in south-west Australia) cited in Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC & ARMCANZ, 2000). Suitable discharge methods and water quality measures (including treatment, nutrient filtration and sedimentation measures) for the stormwater must be detailed in the Stormwater Management Plan; and

(iii) the Swan River Trust may be consulted by the State and be given the opportunity to comment on the Stormwater Management Plan.

(d) For discharge to the Swan River, the River-Fed Lake or to any other infiltration basin or swale:

(i) erosion control measures must be implemented including at outlets, cuttings, embankments and surface drains; and

(ii) sediment control measures must be in place both during the D&C Phase and upon Completion.

E5.6.10 Stadium stormwater drainage system

(a) Project Co must provide a roof drainage system comprising of a series of downpipes extending from the roof areas, gutters, seating tiers and balconies and connecting to the underground stormwater drainage and rain water harvesting system.

(b) The roof drainage system must be designed to accommodate a 1 in 100 year storm occurrence, including as described in Chapter E9 (Hydraulic Services) of these Design Specifications.

(c) Where the stormwater cannot be gravity fed into the civil infrastructure a pumping system must be provided. The pumping system must consist of suitable dual pumps (duty and standby), control panel, pump well and associated accessories. The pumping system must be connected to the emergency back-up generator.

(d) All pumps, control panels and level switches must be interfaced and monitored by the BMS.

(e) Acoustic performance requirements for the roof drainage system must comply with the requirements set out in Chapter E7 (Acoustics) of these Design Specifications.

E5.6.11 ESD Initiatives

(a) (**Water Sensitive Urban Design**) WSUD water quality measures must be incorporated into the design of the stormwater drainage systems for all areas within the Stadium and Sports Precinct where water reuse is not being implemented. In selecting WSUD initiatives for managing the quantity and quality of stormwater within the Stadium and Sports Precinct consideration should be given to the whole of life cost to provide and maintain the selected stormwater drainage systems.

(b) (**Water harvesting and re-use**) The design of the stormwater drainage system must provide for the harvesting, storage, treatment and reuse of stormwater drained from the Stadium. Adoption of bio-filtration should be considered.

E5.6.12 Flexibility, Reconfiguration and Expansion

(a) (**Flexibility for Expansion**) The design of the stormwater drainage system must take into account the Expansion as indicated by the Expansion Works Plan by:

(i) designing the stormwater system (gutters, piping network, water storage tanks or similar) for the increased flow that may result from the Expansion;

(ii) determining the effect of the Expansion on overland flow paths and storage; and

(iii) providing for future connection points to the stormwater system.

(b) (**Athletics Reconfiguration**) The design of the stormwater drainage system must take into account the Athletics Reconfiguration as indicated in Project Co's Athletics Reconfiguration Works Plan by

(i) locating stormwater infrastructure so as not to be affected by the construction works for the Athletics Reconfiguration;

(ii) determining the effect of the Athletics Reconfiguration on overland flow paths and storage; and

(iii) providing for future connection points to the stormwater system.

E5.6.13 Maintainability

(a) In designing stormwater systems Project Co must consider the maintenance implications including arising from:

(i) the increased potential for differential settlement and lateral movements due to the Land Conditions at the Site;

(ii) the selection of materials to withstand environmental exposure arising from the Land Conditions including acid sulphate soils;

(iii) the potential for damage caused by tree roots or additional grounds keeping to prevent weed ingress;

(iv) the extent and type of drainage provided;

(v) the type of construction used including the type of joints;

(vi) social considerations and potential for accidental and intentional damage; and

(vii) the nature and effects of all traffic likely to be experienced over the Design Life.

(b) Access pits and inspection openings must be provided at major junctions and at regular intervals to facilitate cleaning and maintenance.

(c) As far as possible the stormwater infrastructure should not be constructed below the Stadium or Site infrastructure where access for maintenance and replacement would be difficult.

E6 STRUCTURAL ENGINEERING

E6.1 GENERAL

(a) Structural works for the development of the Stadium, the Sports Precinct and the Pedestrian Underpass must be designed and executed to ensure that adjacent structures and structural elements interface seamlessly and continue to perform together as intended by the design over the Service Life of the Stadium. Relative levels and lateral positioning of adjacent structural elements must be maintained to ensure the ongoing functionality and performance of the structure such that the Stadium remains Fit For Purpose at all times during its Service Life and the aesthetic qualities of the design are maintained.

(b) (**Land Conditions**) The design and construction of the structural works for the Stadium, the Sports Precinct and the Pedestrian Underpass must take into account all Land Conditions, including as described in clause E4.6.2 and other parts of this Chapter.

(c) The design and construction strategy for the structural works must consider and mitigate differential settlements and lateral movements between major design elements over their Design Life, taking into account the differing ground treatment methods used and potentially different foundation systems proposed for adjacent design elements. Key interfaces which must be addressed in the design and construction include the interfaces between:

(i) the Stadium and the Pitch;

(ii) design elements within the Stadium, including between the Stadium Curtilage and the Controlled Area;

(iii) design elements founded on different foundation systems or differently treated ground (or both of these);

(iv) the Controlled Area and the Sports Precinct (including stairs, ramps, retaining structures and pathways);

(v) all adjacent design elements within the Sports Precinct including the Bus Hub and the Bus Passenger Assembly Area;

(vi) elements of the Sports Precinct which abut structures on adjacent sites including at all interfaces between elements of the Sports Precinct and the State Transport Infrastructure Works, including the SRPB and Stadium Station; and

(vii) the floor of the Pedestrian Underpass and the floor surface of the adjoining Rail Passenger Assembly Areas.

(d) (**Column placement**) The structural engineering solution must accommodate operational performance and the functional requirements set out in Part D (Functional Brief) of these Design Specifications. It is expected that columns are located within wall lines and that column free space is provided with nil or few exceptions. Columns must not compromise functional use of, and views from, Functional Units. Consideration should be given to ensuring that the structural grid across the main Stadium structure is uniform to maximise future flexibility.

(e) (**Floor systems**) Project Co must ensure that the structural design of floor systems facilitates future flexibility to alter the configuration without significant additional expense or structural works.

(i) The flooring solution adopted must consider the following:

A access for future servicing requirements for Engineering Services;

B serviceability requirements, including ensuring that deflection and vibration impacts comply with the relevant Quality Standards and Laws, so that Patron comfort and sensitive equipment, including equipment installed on a temporary basis such as media equipment, are not adversely affected.

(ii) The design of concrete slabs must include all set-downs necessary to accommodate wet areas and FF&E for Catering Facilities, including coolrooms and freezers.

E6.2 SCOPE

The scope of the structural works for the Stadium, the Sports Precinct and the Pedestrian Underpass includes the design, construction, commissioning and completion of:

(a) piles, pile caps and footings;

(b) columns and walls;

(c) slabs on ground;

(d) suspended slabs;

(e) lift cores and stair shafts;

(f) roof steelwork;

(g) retaining walls;

(h) precast seating units;

(i) block walls;

(j) platforms and plinths for Engineering Services plant and Utilities;

(k) access gantries;

(l) handrails and balustrades;

(m) structural support of the Pitch Perimeter; and

(n) monitoring for movement of structures at regular intervals during the D&C Phase, with monitors left in place for ongoing monitoring during the Operating Phase.

E6.3 AUTHORISATIONS

Without limiting Chapter A11 (Authorisations) of these Design Speficiations and subject to clause 41 of this Agreement which sets out Project Co's obligations in respect of Authorisations, Project Co must obtain and comply with all required Authorisations and Authority requirements associated with the structural works for the Stadium and Sports Precinct and for the Off-Site Infrastructure including any required Authorisation(s) from:

(a) MRWA; and

(b) Utility Companies.

E6.4 QUALITY STANDARDS AND LAWS

(a) Without limiting clause 14.1 of this Agreement and the Quality Standards and Laws stipulated in Chapter E1 (General Requirements) of these Design Specifications, the design, construction, commissioning and completion of the Stadium, the Sports Precinct and the Pedestrian Underpass in respect of the structural engineering must comply with all relevant Quality Standards and Laws including:

(i) all relevant Australian Standards, including:

A AS/NZS 1170.0: General Principles;

B AS/NZS 1170.1: Permanent, imposed and other actions;

C AS/NZS 1170.2: Wind Action;

D AS/NZS 1170.4: Earthquake actions in Australia;

E AS1657: Fixed Platforms, walkways, stairways and ladders;

F AS 1720: Timber Structures;

G AS 2159: Piling – Design and installation;

H AS 3600: Concrete Structures;

I AS3735: Concrete Structures Retaining Liquid;

J AS 4100: Steel Structures;

K AS 3700: Masonry Structures;

L AS 4678: Earth retaining structures; and

M AS/NZS4600: Cold-formed steel structures.

(ii) other relevant standards, codes and guidelines, including:

A National Construction Code (NCC) Series 2013;

B all relevant IStructE Documents, including Dynamic Performance Requirements for permanent grandstands subject to crowd action (2008) and Temporary demountable structures. Guidance on procurement, design and use (Third Edition) (2007);

C Concrete Centre CCIP-016: A Design Guide for Footfall Induced Vibration of Structures, Nov 2006:

D Steel Construction Institute SCI P345: *Design of Floors for Vibration: A New Approach*, 2009;

E all relevant MRWA standards and specifications;

F all relevant PTA guidelines and standards; and

G all relevant Austroads Standards.

(iii) relevant Laws, including:

A OHS Laws; and

B *Health (Public Buildings) Regulations 1992* (WA).

(b) Where Australian Standards do not cover particular circumstances, reference should be made to relevant American Concrete Institute Standards or British Standards.

E6.5 PERFORMANCE REQUIREMENTS

E6.5.1 Design Life

(a) All structural works must be designed for a Design Life of 50 years.

(b) Project Co must ensure that the structure of the Stadium, including its materials and components, are capable of performing over its Design Life at the prescribed level of safety and serviceability. The structure must be capable of resisting all actions which it may reasonably be subjected, with an adequate reserve of strength and without motion that would cause alarm to people on or in the structure, including:

(i) vertical and lateral movements arising from the Land Conditions (including arising from any differences in the Land Conditions for adjoining structural elements / works);

(ii) imposed loads (permanent and transient);

(iii) long term creep and shrinkage effects;

(iv) thermal effects;

(v) the effects of the aggressive soil and groundwater conditions; and

(vi) any combination of these effects.

(c) A Chartered Professional Engineer with the appropriate skills and experience must assess the adequacy of all load-bearing elements in the Stadium. The Stadium must be carefully designed and detailed to ensure long term durability. As a minimum, durability standards and guidelines for the various materials and components used in all permanent structures must be in accordance with the items listed below.

(i) The Stadium structure must have adequate durability to achieve a nominal Design Life of 50 years without requiring maintenance that would not be required in a facility built in accordance with Best Construction Practice.

(ii) The criteria set out in the relevant Quality Standards relating to durability should be regarded as minimum requirements, and Project Co should exercise appropriate judgement and experience in order to achieve the required Design Life.

(iii) Attention must be given to deterioration of elements which cannot be easily accessed for maintenance or repair. The design must ensure that the durability of any such element and the minimum Design Life applicable to the whole structure are attained without maintenance.

(d) (**Concrete**) Minimum exposure classifications for reinforced or prestressed concrete elements should be assessed in accordance with Table 4.3 of AS 3600, Table 4.1 of AS3735 and AS5100 (as applicable) having regard to the Land Conditions. In areas of severe exposure (Code classification B2 and above) secondary cementitious materials, such as blast furnace slag or silica fume or both, should be used if feasible and if it assists in achieving the required durability.

(e) Concrete mixes must be designed by specialists in concrete technology and safeguard against the effects of exposure to the Land Conditions including the possibility of alkali silicate reaction, aggressive soil and groundwater conditions. Project Co must minimise crack widths to reduce the risk of reinforcement corrosion, avoid leakage through cracks and avoid unsightly appearance. As a minimum, Project Co must comply with the durability and crack control requirements set out in the AS3600, AS5100 and AS3735, as appropriate, assuming a strong degree of crack control.

(f) As a minimum the concrete must have no cracks at any stage after construction measured at the concrete surface of width greater than the relevant value given in the table below for the corresponding exposure classification in the relevant Australian Standard. Where such cracks exist, they will be regarded as Defects.

Exposure Classification	Maximum Acceptable Crack Widths (mm)
A	0.30
B1	0.20
B2	0.15
C, U	0.10

(g) Slabs must be designed to prevent gas migration into habitable areas by limiting the size and occurrence of cracking.

(h) Penetrations through floor slabs where gas migration is possible must be kept to a minimum. Where penetrations are required they must be sealed and adequately reinforced to prevent gas migration.

(i) Concrete must be designed and detailed taking into consideration the Concrete Institute of Australia Recommended Practice: Durable Concrete Structures.

(j) (**Steelwork**) Corrosion protection of steel elements and proper construction techniques are important to ensure the structure meets its Design Life. A high performance corrosion protection system must be provided on exposed steelworks to minimise maintenance requirements during the Operating Phase. The corrosion protection system must comply with all relevant Quality Standards including:

(i) AS4312: 2008 – Atmospheric corrosivity zones in Australia;

(ii) AS2312:2002 - Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings;

(iii) AS/NZS 4680:2006 - Hot-dip galvanized (zinc) coatings on fabricated ferrous articles;

(iv) ISO 9224:2012 - Corrosion of metals and alloys - Corrosivity of atmospheres - Guiding values for the corrosivity categories;

(v) ISO 9223:2012 - Corrosion of metals and alloys – Corrosivity of atmospheres - Classification, determination and estimation; and

(vi) Galvanisers Association of Australia standards.

(k) Care must be taken in preventing contact between dissimilar metals to prevent galvanic corrosion.

(l) (**Micro-climates**) Special consideration must be given to assess any micro-climates that may exist within the Stadium and other structures within the Sports Precinct that alter the atmospheric environment, which may affect the durability and performance of surfaces that:

(i) are exposed to atmospheric contaminants but are protected from cleansing rain;

(ii) remain damp for an extended period, such as where surfaces are not freely drained or are shaded from sunlight;

(iii) are exposed to acidic or alkaline fallout, industrial chemicals and solvents, airborne fertilisers and chemicals;

(iv) are exposed to prevailing winds which transport Contamination;

(v) are exposed to abrasion and impact; and.

(vi) facilitate galvanic corrosion or deterioration through contact between dissimilar metals.

(m) Special consideration must be given to the bulk, form and materials of the Stadium structure and roof elements to create micro-climates within the Stadium which optimise sunlight and ventilation to support growth of the Turf on the Playing Surface with minimal or no requirement for assistance from grow lights.

(n) (**Piles**) The existing geotechnical investigations indicate that piles are likely to be installed in ground where the Land Conditions may include industrial landfill, acid sulphate soils, saline groundwater and sulphate reducing bacteria. Further investigation and testing must be undertaken to determine the exposure classification in accordance with AS2159-2009 and ensure appropriate protection measures are taken to meet the Design Life.

(o) Piles, where used, must be designed taking into account the Land Conditions. Special consideration must be given to the effect of long term vertical and horizontal soil movements and downdrag forces.

(p) Installed piles must be tested in accordance with AS2159. Pile testing must be undertaken to verify ultimate geotechnical strengths, pile serviceability and structural integrity. Test piles must be chosen to represent and capture the different loading and Land Conditions and establish the lower bound performance of the piles. Project Co must specify the number and type of load tests in accordance with the minimum requirements given in **Table 20**: Minimum Pile Testing Requirements. The number and type of tests must be indicated in Project Co's Design Documentation.

Table 17: Minimum Pile Testing Requirements

	Type of Deep Foundation Element				
Type of Test	**Bored piles**	**Load Bearing Barrettes**	**Load Bearing CFA Piled Walls**	**Load Bearing Diaphragm Walls**	**Driven Piles**
Production pile load test (including horizontal and tension)	1 number	1 number	1 number	1 number	1 number
High Strain Dynamic Pile Testing (DPT)	greater of 3 number or 5%	greater of 3 number or 5%	greater of 3 number or 5%	greater of 3 number or 5%	
Pile Dynamic Analysis (PDA) and CAse Pile Wave Analysis Program (CAPWAP)					greater of 5 number or 5%
Proof coring	greater of 2 number or 0.5%	greater of 2 number or 0.5%	greater of 2 number or 0.5%		
Sonic logging	greater of 2 number or 1%	greater of 2 number or 0.5%	greater of 2 number or 0.5%		
Low strain	greater of 2 number or 2%				greater of 3 number or 3%

(q) All pile installation, construction and testing records required to comply with AS2159-2009 must be collated and presented to the State in a comprehensive Piling As-Built Report within two (2) months of construction of the last pile or completion of the last pile load test, whichever is the later.

E6.5.2 ESD

The following ESD Initiatives should be considered by Project Co for incorporation in the structural works:

(a) use of colouring oxides and polished finishes for precast concrete elements to reduce the need for painting and ongoing maintenance;

(b) use of steel moulds for precast concrete manufacture to maximise re-use and thereby reduce waste;

(c) use of 'green' concrete mixes, such as those manufactured with:

  (i) reduced quantities of portland cement:

  (ii) supplementary cementitious materials (fly ash, slag and amorphous silica);

  (iii) mix water which uses a high proportion of captured or reclaimed water;

  (iv) at least 40% of coarse aggregate using crushed slag aggregate or alternative materials; and

  (v) at least 25% of fine aggregate (sand) using manufactured sand or other alternative materials;

(d) use of recycled or oversized aggregates in accordance with HB155-2002 Guide to the use of Recycled Concrete and Masonry Materials;

(e) use of steel with inherent high recycled content;

(f) optimal fabrication techniques including:

  (i) utilising precast concrete; and

  (ii) pre-fabrication of steel reinforcement off Site.

(g) use of post-tensioning to reduce total quantities of concrete and steel.

E6.5.3 Flexibility, Reconfiguration and Expansion

(a) The structural works must be designed to allow for:

  (i) Premium Product Areas Reconfiguration;

  (ii) Rectangular Reconfiguration;

  (iii) Athletics Reconfiguration; and

  (iv) Expansion;

  noting that these may occur independently of each other or, in the case of (i), (iii) and (iv), may occur together.

(b) The structural works must allow for the requirements stipulated in paragraph (a) by:

  (i) considering the construction methodology for each of the Reconfigurations and the Expansion in the design;

  (ii) ensuring structural works do not clash with the effective operation of Drop-In Seats for Rectangular Reconfiguration;

  (iii) allowing for loads associated with each of the Reconfigurations and the Expansion, including construction loads associated with implementation of Premium Product Areas Reconfiguration, Athletics Reconfiguration and Expansion;

  (iv) producing a design that minimises disruption to the Stadium Activities during execution of construction works associated with implementation of Premium Product Areas Reconfiguration, Athletics Reconfiguration and Expansion;

  (v) minimising demolition of the existing structure to accommodate the Expansion;

  (vi) providing for the future structural connections in the DBFM Works;

(vii) producing a design that minimises the construction costs associated with Expansion Works and the Athletics Reconfiguration Works;

(viii) setting design loads to allow for flexibility in floor use;

(ix) avoiding internally braced walls; and

(x) allowing for future penetrations through walls and floors.

(c) The design must also be flexible to cater for Premium Product Areas Reconfiguration, lifecycle refurbishment and replacement undertaken as part of the Lifecycle Services and technology upgrades. The structural works must allow for this by:

(i) designing for adequate super-imposed dead load and live loads to provide flexibility; and

(ii) allowing for future services penetrations through walls and floors.

E6.5.4 Maintainability

The Stadium and Sports Precinct must be designed to facilitate safe and efficient maintenance. In designing the structure Project Co must consider the maintenance implications arising from:

(a) differential settlement, lateral movements and environmental exposure due to the Land Conditions at the Site;

(b) social considerations and potential for accidental and intentional damage;

(c) the nature and effects of all traffic likely to be experienced over the Service Life (i.e. their Design Life); and

(d) access for maintenance of plant, Engineering Services and the structure of the Stadium and Sports Precinct.

E6.5.5 Minimum Design Loads

(a) (**Loads**) All loads defined in the Design Specifications are characteristic loads and must be combined, with load factors applied, for design and analysis. Further dynamic and secondary load effects must also be taken into account.

(b) (**Dead loads**) Project Co must determine self-weight dead loads based on actual material weights. Reference should be made to AS 1170.1, Appendix A for unit weights of materials.

(c) (**Super-imposed dead loads**) Project Co must determine dead loads based on actual material weights in the Design Documentation, including for architectural and Engineering Services disciplines. Project Co must ensure the materials used in construction comply with the load allowed for in the design. Minimum super-imposed design loads are set out in **Table 18**: Minimum Design Loads, included at the end of this clause.

(d) Project Co must consider the weight of the following, as a minimum, in determining the super-imposed dead loads of the floors:

(i) ceilings;

(ii) suspended Engineering Services;

(iii) Engineering Services plant;

(iv) seating Plats;

(v) floor finishes;

(vi) screeds and plinths;

(vii) internal lightweight partitions;

(viii) permanent partitions (block walls); and

(ix) curtain walling.

(e) Sufficient allowance at undercroft, basement and Concourse levels must be made when determining floor dead loads to allow for flexibility with the location of service runs and partitions.

(f) Project Co must determine the following loads, as a minimum, in relation to the roof:

(i) access gantries, catwalks and rooftop walkways;

(ii) Stadium lights;

(iii) speakers;

(iv) maximum weight for Entertainment Event infrastructure;

(v) video screens;

(vi) lighting towers and associated services;

(vii) other services and associated cable trays; and

(viii) for tensile and fabric structures the weight of typical connections should be evaluated and considered in the analysis.

(g) (**Live loads**) Project Co must allow for the following loads in the design:

(i) pedestrian loads of all Stadium Users, including loads induced by Patron excitation;

(ii) vehicular loads must be assessed based on the requirements to service the Stadium's maintenance and operational needs. Reference should be made to AS5100: Bridge Design series, Austroads Bridge Design Code and MRWA requirements;

(iii) the Drop-In Cricket Wicket transporter;

(iv) loads caused by pyrotechnics used for Events;

(v) loads associated with Event Overlay for Special Events including associated with a Commonwealth Games Opening or Closing Ceremony;

(vi) minimum horizontal imposed actions due to crowd movements. Loads must be in accordance with AS1170.1, clause 3.9 and the IStructE document "Dynamic Performance Requirements for permanent grandstands subject to crowd action (2008)";

(vii) all items of Engineering Services plant and equipment and FF&E required to fulfil the requirements of the Design Specifications and such that the Stadium is Fit For Purpose;

(viii) access and maintenance loads; and

(ix) construction loads associated with any future Expansion or Reconfiguration;

(h) Where appropriate, live load reductions may be utilised and must be determined in accordance with AS / NZS 1170.1, clause 3.4.2.

(i) Any bridges providing direct connection to or forming part of the Stadium Service Road must be designed for vehicle loads in accordance with requirements of AS5100, Austroads and Main Roads WA.

(j) Live loads must be determined by Project Co considering the architectural and Engineering Services provisions within each Functional Area and Functional Unit. Reference should be made to AS1170.1:2002 Table 3.1 for Reference Values of Imposed Floor Actions. Where loads are listed below, the stated values must be treated as minimum requirements:

Table 18: Minimum Design Loads

[*Not disclosed*]

(k) (**Barriers / handrails**)

(i) Pedestrian barriers

All walls, barriers, handrails, vomitories, balustrades and the like, which are subject to crowd loads, must be designed in accordance with AS1170.1, AS5100.2 or the Green Guide, whichever provides the higher standard.

(ii) Vehicular barriers

A Pedestrians must be protected from vehicular traffic in accordance with AS5100, MRWA requirements and Austroads Standards.

B The Stadium structure must be protected from collision from vehicular traffic in accordance with the requirements of AS1170.1 and AS5100.

(l) (**Wind loads**)

(i) Wind loadings must be determined from wind tunnel testing and, where appropriate, from the relevant sections of AS / NZS 1170.2. A specialist wind engineer with the appropriate skills and experience must assess the roof design loadings.

(ii) Wind loads in accordance with AS / NZS 1170.2 must as a minimum be determined based on the following parameters:

A Region - A1;

B Regional wind speeds – Ultimate V1000 = 46 m/sec;

C Serviceability V20 = 37 m/sec;

D Terrain category = 3 (to be determined in accordance with AS1170.2);

E Wind direction multiplier (Md) = determine in accordance with Table 3.2;

F Shielding multiplier (Ms) = 1.0;

G Topographic multiplier (Mt) = due to the raised podium Mt should be determined in accordance with Section 4.4; and

H Terrain / height multiplier (Mz,cat) = determined in accordance with Table 4.1(A). Consideration should be given to the effect of changes in Terrain Category. Refer Section 4.2.3 of AS/NZS 1110.2.

(iii) For the roof design, time spectral analysis techniques where time history pressure measurements are applied to the roof structure, must be utilised to determine the increase in wind loads due to dynamic behaviour.

(iv) When deriving overall wind forces on the Stadium the contribution of the frictional forces must be included in such derivation.

(m) (**Environmental wind assessment**)

(i) The design of the Stadium and other built environments within the Sports Precinct must take into account the environmental wind conditions at the Site.

(ii) Project Co must engage a professionally qualified wind engineer to undertake an environmental wind assessment for the Site. The environmental wind assessment must outline the proposed acceptability criteria for outdoor activities, including:

A transient activities, such as walking and cycling, to ensure these can be safely undertaken by Stadium Users without being blown over;

B stationary short exposure activities for waterfront locations within the Sports Precinct and for locations in the more urban

environment near the Stadium, including standing or sitting in the Controlled Area, outdoor Retail Facilities and Commercial Facilities and the Bus Passenger Assembly Area, Rail Passenger Assemby Areas and pedestrian assembly areas;

C stationary long exposure activities within the Sports Precinct and for external locations within the Stadium, including the Commercial Facilities and the outdoor area of the Sky View Lounge and the Terraces.

(iii) The design must achieve wind conditions which:

A are comfortable for transient activities such as walking and approaching the short term stationary criterion for the Controlled Area; and

B are within the criterion for stationary long term stationary activities for hospitality and retail facilities within the Sports Precinct (including the Commercial Facilities) and for the outdoor area of the Sky View Lounge and the Terraces).

(iv) Wind amelioration features should be considered in the built form including setbacks, podium heights, canopies, wind-break screening, and the ability to close off external areas.

(n) (**Earthquake loads**)

(i) [*Not disclosed*]

(ii) Project Co must:

A undertake further assessment of the Site subsoil classification as Class E may be more appropriate in some areas above the paleochannel;

B undertake dynamic analysis in accordance with Section 7 of AS/NZS 1170.4;

C undertake an assessment of the potential for liquefaction of soil during an earthquake;

D include for the effects of lateral spreading as a result of an earthquake; and

E assess the implications of the new Australian Seismic Hazard Maps (Geo-Sciences Australia) on the earthquake design.

(iii) The requirements for securing non-structural components as specified in Section 5 of AS/NZS 1170.4 must be adhered to.

(o) (**Accidental loads and disproportionate collapse**)

(i) Project Co must pay particular attention to minimising the risk of progressive and disproportionate collapse from unforeseen incidents. Project Co must:

A systematically assess conceivable hazards to structures and design the structures to be stable and robust in the light of a risk assessment;

B adopt structural forms which minimise the effects of the hazards identified; and

C provide grounds maintenance personnel with manuals that define the key elements and components of the structure requiring regular inspection and maintenance.

(ii) The identified hazards and accidental loads must be assessed and the Stadium structure designed to sustain local damage, with the structural system as a whole remaining stable and not being damaged to an extent disproportionate to the original local damage.

(iii) Redundancy and multiple load paths in the roof and Seating Bowl structure's major supporting elements must be considered due to a loss of any one structural member. A general robust approach to detailing is required to facilitate the transfer of forces through the structural system.

(iv) Where it is not practical to facilitate a transfer of forces through the structural system, key elements must be identified whose removal would result in a disproportionate collapse of the structure. Key elements should be designed to withstand a suitable load as determined by a risk assessment but not less than a 34kN/m2 blast load in accordance with British Standard BS8110.

(p) (**Temporary / construction loading**)

(i) Project Co must ensure that all structures remain stable during the performance of the DBFM Works and during the performance of any other works during the Term, including Expansion Works and Reconfiguration Works.

(ii) Project Co must make sufficient allowance for construction loads associated with the Stadium Works, the Expansion Works and Athletics Reconfiguration Works.

E6.5.6 Deflection

(a) Project Co must determine appropriate deflection limits taking into consideration:

(i) the suggested serviceability limits as outlined in Table C1 AS/NZS 1170.0:2002, AS3600:2009 - Table 2.3.2 and AS4100 - Appendix B;

(ii) visual sagging that may give the incorrect impression to members of the public that there is something wrong with the structure and that it is unsafe even though the structure is safe;

(iii) damage to non-structural members - excessive deflection can lead to unsightly cracking in partitions;

(iv) damage to glazing - deflecting members can impose loads on glazing;

(v) jamming of doors - deflecting members can distort door frames;

(vi) interference with deflection-sensitive machinery or apparatus - manufacturer's tolerances may be exceeded by excessive deflections;

(vii) ponding on floors;

(viii) incremental deflections and the requirements of brittle partitions, suspended services and finishes;

(ix) Good Industry Practice and Best Construction Practices;

(x) vibration requirements as defined below; and

(xi) the stadium lights must be roof mounted. An assessment of the vertical and lateral movement of the structure that supports the lights should be undertaken to ensure the light position on the Field of Play are within required limits.

(b) Deflection limits must, as a minimum, meet the requirements set out in the table below:

[*Not disclosed*]

E6.5.7 Dynamic performance

(a) The structural response to the imposed dynamic loadings from crowds, vehicles, plant and wind must be assessed for both strength and serviceability and addressed in the design.

(b) (**Seating Bowl (grandstand)**)

(i) As a result of dynamic loadings, Patrons may sense vibration and potential large deflections of the structure which they may find disturbing. Given the multi-purpose use of the Stadium, the design of the Seating Bowl must cater for Patrons viewing Sporting Events and Entertainment Events.

(ii) The design must comply with the Green Guide clause 4.5 “Structural dynamics for permanent structures” and clause 20.5 “The staging of pop concerts”. The structure must meet the requirements of the IStructE document “Dynamic Performance Requirements for permanent grandstands subject to crowd action (2008)”.

(iii) In accordance with the IstructE Guidance there are two options available to Project Co to verify the vertical dynamic performance of the grandstand, including:

A adopting a minimum natural frequency of the structure; or

B undertaking a rigorous dynamic analysis of the structure in accordance with the IStructE Guidance to estimate the performance of the grandstands for specified managed events. Event Scenarios 3 and 4 must be incoprorated for this approach.

(iv) Horizontal natural frequency of the grandstand must be designed to be greater than 1.5 Hz in accordance with the IStructE Guidance.

(v) Dynamic testing of the completed structure must be undertaken. Reference must be made to of the IStructE guidance for recommendations for testing.

(vi) Special consideration must be given to the design of the Drop-In Seats. The design of these elements must comply with the requirements of the IStructE document “Temporary demountable structures. Guidance on procurement, *design and use. (Third Edition) (2007)*.”

(c) (**Floors**)

(i) Project Co must ensure that the structure is assessed and designed to meet the following vibration requirements:

[*Not disclosed*]

(d) (**Roof**)

(i) Project Co must undertake modal analysis of the roof structure and assess its dynamic performance. Wind tunnel testing must be undertaken to assess any aerodynamic instabilities.

(ii) For cable supported structures the dynamic effect of individual cables must be assessed.

(iii) Dynamic excitation of the roof as a result of connection to the grandstand Plats must be factored into the design of the roof where such connection exists.

(e) (**Road and railway**)

(i) Project Co must make an assessment of potential vibration issues relating to the adjacent road and rail environment. Where necessary isolation or dampening devices must be provided to achieve an acceptable transmission of vibration to structures.

(ii) Project Co must design structures subjected to vehicular traffic in accordance with the dynamic requirements of AS5100.

E6.5.8 Movement

(a) (**Joints**)

(i) Movement joints must:

A be provided as required to control expansion and contraction from thermal changes and in areas of concrete construction to control shrinkage and creep. These movement joints must be continuous through facade elements, floor and wall finishes and must facilitate the articulation of the structure for expected differential settlements and lateral movements;

B have bearings to transfer vertical loads whilst allowing movement in the structure;

C be selected to minimise ongoing maintenance;

D be selected so as not to represent a slip and trip hazard to Stadium Users;

E be suitably robust to withstand vehicular and pedestrian traffic;

F be avoided within Catering Facilities, plantrooms and wet areas; and

G have a waterproof seal to mitigate water penetration. In areas which are sensitive to water ingress or damage, drained joints must also be provided.

(ii) Bearing must have a minimum Design Life of 50 years.

(iii) Fire rated movement joints must be provided where required as part of the fire engineering design.

(iv) Joints must be adequately sealed to prevent gas migration into habitable areas.

(b) (**Shrinkage and creep**)

Shrinkage and creep of concrete must be assessed in accordance with AS3600 and AS5100. Suitable concrete mix design, reinforcement detailing, joint spacing and construction sequencing must be adopted to minimise movements/cracking associated with these movements.

(c) (**Thermal effects**)

Thermal effects can cause both large movements and induce large stresses and must be considered in the design. Determination of thermal effects should be as a minimum in accordance with AS5100.

E6.5.9 Settlement

(a) The following settlement movements must be considered in the design:

(i) individual foundation settlements;

(ii) differential settlement between adjacent columns;

(iii) settlement of the soil, leading to downdrag forces on piles;

(iv) differential settlement between ground bearing slabs/pavements/Turf and piled foundations. Relieving slabs should be considered to minimise the effects of differential settlement. The ground slab beneath the Stadium must be designed as suspended to prevent maintenance issues with finishes as a result of on-going settlement of the ground;

(v) horizontal movement. Horizontal spreading of the soil has been identified as a potential problem at the Site as the soil settles and also during an earthquake event. These forces must be taken into account in the pile design; and

(vi) ground heave.

(b) Design of the superstructure must take into account the chosen total and differential pile settlement criteria.

(c) Total and differential pile settlement should typically be limited to:

(i) 15mm short term;

(ii) 25mm long term; and

(iii) 1/1000 differential.

(d) Existing geotechnical site investigations have indicated that long term settlements of the ground are likely to be significant. Project Co must refer to the PCS Works design for areas that will have ground improvement undertaken. Project Co must consider the effect of differential settlement and lateral movements between these areas and those not being improved by the PCS Works. Project Co must consider undertaking further ground improvement works or provide a structural solution that avoids long term maintenance issues, including at transitions where structures and Engineering Services extend across improved ground and unimproved ground.

E6.5.10 Fatigue

A structural assessment of fatigue failure must be undertaken for all structural elements subject to loadings of a large number of repetitions. Consideration must be given to fluctuating loads as a result of road and pedestrian traffic, vibrating machinery and resonance with wind loads.

E6.5.11 Roof

(a) Structural stability of the Stadium roof must be maintained throughout the Design Life of the Stadium including the construction. The construction sequence and associated stress distribution must be considered by Project Co. Where appropriate a form finding analysis must be undertaken to assess changes in geometry and forces due to the large deformations experienced by long span structures.

(b) Where tensile structures are proposed all cables must be pre-tensioned to ensure a well-defined elastic behaviour.

(c) (**Roof Cladding**) Where proposed, fabric roofs should be designed in accordance with the TensiNet – "European Design Guide for Tensile Surface Structures". In selecting a roof cladding Project Co must consider:

(i) life span, cleaning and maintenance requirements, such that the roof cladding should does not require replacement during the stadium Service Life.

(ii) light transmission and its effect on Patrons and the Turf;

(iii) acoustic performance; and

(iv) fire performance.

(d) Project Co must review expected deformations to ensure that positive drainage remains for all loading combinations.

(e) Where ETFE pillows are proposed, connection to the backup generator should be provided to safeguard in the event of a prolonged power failure.

(f) Fabric roof cladding should be capable of replacement in isolation without damage to adjacent elements and without removing adjacent panels.

(g) (**Operable roofs**) Should an operable roof be provided, Project Co must ensure that the roof structure allows for both the fixed and moving roof loads, including any dynamic effects. Sufficient tolerance must be included in the design to accommodate thermal expansion. Any restrictions on movement speed of the roof and wind speed during operation must be outlined in the facilities management procedures. An anemometer must be provided in a suitably exposed location to monitor wind speed and ensure that the roof will not be able to move when the wind exceeds the designed limits.

E6.5.12 Retaining Structures

(a) A geotechnical investigation must be undertaken to determine geotechnical design parameters.

(b) Surcharge loading must be applied where traffic can pass close to a retaining wall.

(c) Surcharge loading generated during construction from heavy vibratory compaction equipment must be considered in the design.

E6.5.13 Construction

(a) Construction issues such as sequence, erection procedure, temporary support and stability during construction must be considered.

(b) Design and construction activities must be planned and executed so as to ensure the structural safety and stability of buildings and structures on adjoining properties is not compromised in any way, and no damage occurs. Where required, temporary propping and shoring must be designed and inspected prior to loading by an appropriately experienced Chartered Professional Engineer, and must be capable of safely supporting the loads.

(c) Development of safe work method statements, construction sequence, lifting and logistic plans must be undertaken for all structural works.

E6.5.14 Monitoring of structures

The structure must be monitored to assess the response of the earthworks and underlying soil during construction, with ongoing monitoring during the Operating Phase. Monitoring data must be regularly reviewed to confirm structural movements remain within the design tolerances and performance assumptions.

During construction monitoring must consist of the following, where applicable:

(a) settlement plates to measure settlement of placed fill;

(b) survey the Stadium and all other buildings and structures within the Sports Precinct to measure vertical and horizontal displacements at the ground surface;

(c) vibrating wire piezometers to measure excess pore water pressure in the Swan River Alluvium;

(d) borehole inclinometers to measure subsurface horizontal displacements;

(e) borehole extensometers to measure soil compression over discrete vertical intervals;

(f) visual inspections of adjacent structures, services and infrastructure and where appropriate monitoring targets;

(g) vibration, noise and dust monitoring; and

(h) monitoring wells to measure groundwater fluctuations and enable sampling for quality testing.

E7 ACOUSTICS

E7.1 GENERAL

(a) Project Co must provide comprehensive acoustic design input and verification to ensure that the Stadium and Sports Precinct are designed and constructed to possess optimal sound qualities that will benefit both the Event atmosphere and the Patron experience of the venue, whilst also reducing acoustic impacts on surrounding areas including, in particular, premises for hotel and residential accommodation.

(b) This Chapter of the Design Specifications sets out specific acoustic design and technical requirements for the Stadium and Sports Precinct that address its location on the Burswood Peninsula. These important acoustic requirements must be satisfied in order to meet the State's minimum acoustic performance requirements.

(c) Design input and verification in regards to the requirements of this Chapter E7 (Acoustics) of these Design Specifications must be provided by an Acoustical Consultant.

(d) The minimum requirements for commissioning and testing which must be demonstrated prior to Commercial Acceptance are described in Appendix H7 (Minimum Completion Tests).

E7.2 QUALITY STANDARDS AND LAWS

Without limiting clause 14.1 of this Agreement and the Quality Standards and Laws stipulated in Chapter E1 (General Requirements) of these Design Specifications, the design, construction, commissioning and completion of the Stadium and Sports Precinct in respect of acoustics must comply with all relevant Quality Standards and Laws including:

(a) all relevant Australian Standards, including:

(i) AS/NZS 2107 (2000) Acoustics – Recommended design sound levels and reverberation times for building interiors;

(ii) AS ISO 140 (2006): Acoustics – Measurement of sound insulation in buildings and of building elements;

(iii) AS 2670.2 (1990): Evaluation of human exposure to whole-body vibration – Continuous and shock-induced vibration in buildings (1 to 80 Hz);

(iv) AS2822 (1985) Acoustics – Methods of assessing and predicting speech privacy and speech intelligibility;

(v) AS 60849 (2004): Voice announcements for emergency purposes;

(vi) AS 1670 (1986): Automatic fire detection and alarm systems - System design, installation, and commissioning;

(vii) AS 4428.4 (2004): Fire detection, warning, control and intercom systems - Control and indicating equipment - Intercommunication systems for emergency purposes;

(viii) AS 1428 (2010): Design for access and mobility;

(ix) AS 1191 (2002): Acoustics – Method for laboratory measurement of airborne sound transmission insulation of building elements;

(x) AS/NZS 2460 (2002): Acoustics – Measurement of the reverberation time in rooms; and

(xi) AS 1055 (1997): Acoustics – Description and Measurement of Environmental Noise.

(b) Other relevant standards, codes and guidelines including:

(i) ISO 717-2013: Acoustics – Rating of sound insulation in buildings and of building elements;

(ii) IEC60268-16 (2003): Sound System Equipment – Part 16: Objective rating of speech intelligibility by speech transmission index;

(iii) ISO 5805:(1997): Mechanical vibration and shock - Human Exposure – Vocabulary 3;

(iv) BS 6472:1 (2008) Guide to evaluation of human exposure to vibration on buildings (1Hz to 80Hz) Part 1: vibration sources other than blasting;

(v) ISO/IEC Guide 98 (2008) Uncertainty of measurement;

(vi) Disability (Access to Premises — Buildings) Standards 2010 made under sub-section 31 (1) of the Disability Discrimination Act 1992 (Cth);

(vii) ISO 3382-3(2012) Acoustics – Measurement of room acoustic parameters – Part 3: Open Plan Offices;

(viii) ISO2631-2 (2003) Mechanical vibration and shock – Evaluation of human exposure to whole-body vibration – Part 2: Vibration in buildings (1Hz to 80Hz); and

(ix) ISO2041 (2009) Mechanical vibration, shock and condition monitoring – Vocabulary; and

(c) relevant Law including:

(i) OHS Laws; and

(ii) Environmental *Protection (Noise) Regulations 1997* (WA).

E7.3 PERFORMANCE REQUIREMENTS

E7.3.1 Environment

(a) (**Noise sources and intrusions**) The design of the Stadium and Sports Precinct must minimise the intrusion into the Stadium of noise generated by activities in the Sports Precinct and must otherwise take into account the intrusion into sensitive areas of the Stadium of noise generated by major noise sources including:

(i) rail traffic;

(ii) road traffic;

(iii) emergency services vehicles;

(iv) bus idling;

(v) Engineering Services systems and plant;

(vi) Project Co's delivery of the Services;

(vii) material supply and logistical operations, including deliveries by refrigerated trucks; and

(viii) aircraft noise.

(b) (**Noise intrusion compliance**) The Stadium and Sports Precinct must be designed and constructed in accordance with State Planning Policy 5.4 (Road and Rail Transport Noise and Freight Considerations in Land Use Planning) as published from time to time and any new policy which is issued in replacement of this policy.

(c) (**Noise and vibration emissions**) The impact of noise and vibrations emitting from the Stadium and Sports Precinct on nearby areas must be minimised.

(d) (**Noise emissions**) All noise emission from the Stadium and Sports Precinct must be in full compliance with the requirements of the *Environmental Protection (Noise) Regulations 1997* (WA). Noise generated by some Events and activities within the Stadium and Sports Precinct, including Sporting Events, may fall within the definition of "Exempt Noise" under Schedule 2 of those Regulations.

(e) (**Transportation**) All road transportation facilities including the Bus Hub must be located and acoustically treated to ensure that:

(i) the combined noise levels at the Bus Passenger Assembly Area generated by stationary buses and Engineering Services does not exceed LAeq,10s 65dB at any time; and

(ii) noise levels from crowds or Patrons outside the Stadium, stationary buses and Engineering Services, when measured and adjusted in accordance with the *Environmental Protection (Noise) Regulations 1997* (WA), does not exceed the Assigned Noise Level at any nearby noise sensitive residential premises.

E7.3.2 External building fabric

(a) (**Rain noise**)

(i) Methods for minimising the noise associated with rainfall and stormwater drainage including box gutters and down pipes must be considered in the design and construction of the external building fabric for the Stadium. The use of lightweight materials such as steel or polymers [including ethylene

tetrafluoroethylene (ETFE) and similar materials] must be carefully considered to take into account radiated noise caused by high rainfall.

(ii) In Critical Spaces, all noise associated with rainfall at a rate equivalent to a 1 hour in one year storm weather event must be controlled to not exceed the Design Background Sound Levels scheduled in clause E7.3.3(a)(i) by more than LAeq 5dB.

(iii) In non-critical enclosed areas, all noise associated with instantaneous constant rainfall at a rate equivalent to a 1 hour in one year storm weather event must not exceed the Design Background Sound Levels scheduled in clause E7.3.3(a)(i) by more than LAeq 15dB.

(iv) At all Seating Positions within the Seating Bowl and at all locations within the Seating Bowl where the Field of Play is observable, all noise associated with instantaneous constant rainfall at a rate equivalent to a 1 hour in one year storm weather event must not exceed L_{Aeq} 80dB.

(b) (**Aero acoustic noise**)

Short duration noise generated by wind conditions for a one in one year weather event and radiating from the installed Stadium roof, facade, supporting structure, louvres, shading devices, fixings or associated components, must not exceed the Design Background Sound Levels for the Functional Areas or Functional Units described in **Table 19** . For the purposes of this clause, short duration noise includes loose items rattling or buffeting, howling wind and Aeolian tones.

E7.3.3 Internal sound levels and reverberation times

(a) (**Background sound levels**)

(i) The required internal steady state background sound levels for Functional Units, including those nominated as Critical Spaces, are specified in **Table 19**. Where a Functional Unit is not identified in **Table 19**, Project Co must provide that Functional Unit to the same criteria to those identified for a Functional Area or Functional Unit with similar function.

Table 19: Background Sound Levels

Functional Area / Functional Unit	Design Background Sound Level, L_{Aeq}	Engineering Services Maximum Sound Level	Critical Space
Primary Studio Box, Secondary Studio Box	25	RC20	Yes
Event Control Room	30	RC20	Yes
Radio Commentary Boxes, Primary Commentary Box, Secondary Commentary Box, Media Interview Room, Interview Booths, Production Suites	30	RC25	Yes
Coaches' Briefing Rooms, Coaches' Box, Official Statistics Box, Timekeepers' Box, Umpire Observers' Box, Chairman's Club, Coaches' Club	32	NR25	Yes
Traditional Suites, Club Lounges, Function Rooms, Outside Broadcast Producer's Room, Executive Offices, Conference Room, Written Press Box, Interview Zones (Flash Interview Zones and Mixed Zone)	35	NR30	Yes
Medical Rooms, Players' Prayer Room, Public Prayer Room, Parenting Rooms, Photographers' Work Room, Meeting Rooms	35	NR30	-
Social Suites, Field Suites, Field Social Suites	40	NR35	Yes

Functional Area / Functional Unit	Design Background Sound Level, L_{Aeq}	Engineering Services Maximum Sound Level	Critical Space
Away Team Players' Warm-up Room, Players' Dining Room, Players' Lounge, Players' Viewing Room, Doping Control Station, A La Carte Restaurant, Buffet Restaurant, First Aid Rooms, Media Lounge, Outside Broadcast Crew Room, Ticket Boxes, Patron Services Office, Main Security Office, General Administration Areas, Catering Office, Grounds Office, Maintenance Office, other offices (non-executive)	40	NR35	-
All locker rooms and change rooms, all toilet and shower facilities (except where otherwise noted), Public bars, casual dining In General Admission Areas (except where otherwise noted), Concourses within Premium Product Areas, Field Club, Sky View Lounge, Retail Facilities	50	NR45	-
Home Teams' Players' Warm-up Rooms, Shared Recovery Facility, Away Team Recovery Facility, General Admission Concourses, Primary Production Kitchen, Satellite Kitchens, Fixed Outlets, storerooms, Circulation Areas and other transient spaces (except where otherwise noted)	50	-	-
Plant rooms	75	-	-

(ii) Measured Continuous Background Sound Levels in Critical Spaces must not exceed the relevant Design Background Sound Level noted in the table above by more than L_{Aeq} 3dB.

(iii) Continuous Background Sound Levels in all other spaces must not exceed the relevant Design Background Sound Level noted above by more than L_{Aeq} 5dB.

(iv) With respect to paragraph (ii) above, Continuous Background Sound Levels do not include noise from Patrons located within the Seating Bowl and on the Terraces, program music or content played over:

A permanent AV Systems installed in the Functional Unit; or

B temporary portable equipment or items within the Functional Unit and associated with the intended usage of the Functional Unit.

(v) In Functional Units where speech privacy is required, including all offices and administration areas, the use of electronic or other sound masking systems should be considered where Continuous Background Sound Levels in Critical Spaces are more than 5dB below the Design Background Sound Level noted above.

(vi) The design must reasonably and practically remove tonality, impulsiveness and modulation. Where these characteristic remain present the Design Background Sound Level must be lowered by 5dB.

(b) (**Reverberation Times**) The reverberation times for particular Functional Units, including those nominated as Critical Spaces, are specified in **Table 20**. Where a Functional Unit is not identified in **Table 20,** Project Co must provide that Functional Unit to the same criteria to those identified for a Functional Unit with similar function. Unless otherwise

stated the Reverberation Time requirement relates to the 500Hz and 1000Hz octave bands.

Table 20: Reverberation Times

Functional Unit	Minimum Reverberation Time (RT_{60}), seconds	Maximum Reverberation Time (RT_{60}), seconds
Primary Studio Box, Secondary Studio Box, Radio Commentary Boxes, Primary Commentary Box, Secondary Commentary Box, Interview Booths, Production Suites	0.30 for octave bands 250Hz to 2KHz	0.40 for octave bands 250Hz to 2KHz
Coaches' Briefing Rooms, Coaches' Box, Official Statistics Box, Timekeepers' Box, Umpire Observers' Box, Chairman's Club, Coaches' Club, Traditional Suites, Social Suites, Field Suites, Field Social Suites, Sky View Lounge, Event Control Room, Executive Offices, Players' Prayer Room, Public Prayer Room, Parenting Rooms, Written Press Box, Outside Broadcast Producer's Room, General Administration Areas, Conference Rooms, Meeting Rooms	-	0.60
Interview Zones (Flash Interview Zones and Mixed Zone), Medical Rooms, Doping Control Station, Players' Dining Room, Players' Lounge, Players' Viewing Room, A La Carte Restaurant, Buffet Restaurant, Media Lounge, Photographers' Work Room, Outside Broadcast Crew Room, Ticket Boxes, Patron Services Offices, Main Security Office, Catering Office, Grounds Office, Maintenance Office, other offices (non-executive)	-	0.70
Club Lounges, Function Rooms, Casual dining in General Admission Areas (except where otherwise noted), Concourses within Premium Product Areas, Field Club, Retail Facilities	-	0.80
Media Interview Room	0.30	Curve 1, Figure A1 of AS/NZS2107:2000
Home Teams' Players' Warm-up Rooms, Away Team Players' Warm-up Room	clause E7.3.3(b)(v)	
Shared Recovery Facility, Away Team Recovery Facility	clause E7.3.3(b)(vi)	

(i) The spatial average reverberation times in each Functional Unit must exceed the above scheduled relevant Minimum Reverberation Time, and must not exceed the above scheduled relevant Maximum Reverberation Time.

(ii) The spatial average Reverberation Times in all enclosed spaces should comply with Table 1 of Australian Standard AS2107:2000 - Acoustics - Recommended Design Sound Levels and Reverberation Times for Building Interiors.

(iii) The design of all enclosed spaces where professional audio recording or production is undertaken:

A must not include hard walls and ceilings at parallel or perpendicular angles without suitable absorption or diffusion treatments to ensure acoustic performance criteria are met; and

B must employ high performance (α_w 0.75 or higher) sound absorptive panelling or other means to avoid perceptible echoes and adverse reverberation effects when the space is being used for its intended purpose(s).

(iv) The spatial average Reverberation Times in all areas of the Stadium which are accessible to Stadium Users must be compatible with the audio broadcast systems as defined in clauses E7.3.6(b), E7.3.6(c), E7.3.8(b)(i) and E7.3.8(f) and designed in accordance with speech intelligibility requirements for SSISEP.

(v) The spatial average Reverberation Times within the Home Teams' Players' Warm-up Rooms and the Away Team Players' Warm-up Room must be controlled to not exceed 1.10 seconds for any of the octave bands with centre frequencies from 500Hz to 2kHz inclusive.

(vi) The spatial average Reverberation Times within the Shared Recovery Facility and the Away Team Recovery Facility must be controlled to not exceed 1.60 seconds for any of the octave bands with centre frequencies from 500Hz to 2kHz inclusive.

(vii) The use of methods for controlling potentially adverse acoustic effects, including but not limited to room modes, flutter echoes, late reflections and spot focussing, must be considered.

E7.3.4 Occupational noise

The requirements of the *Occupational Safety and Health Regulations 1996* (WA) must be met in full so that the health and safety of Stadium Staff is not compromised. Regulations 3.45 to 3.47 inclusive address hearing conservation aspects of the work environment.

E7.3.5 Acoustic separation

(a) The minimum acoustic separation requirements for Functional Units within the Stadium with high acoustic isolation requirements are set out in **Table 21**. Where a Functional Unit is not identified in **Table 21**, Project Co must provide that Functional Unit to the same criteria to those identified for a Functional Unit with similar function.

Table 21: Acoustic Separation

Functional Unit	Minimum Airborne Weighted Level Difference D_w, dB			Maximum Impact Noise Rating $L_{n,w,}$ dB
	To adjacent enclosed spaces generally	To corridor, Seating Bowl or open plan areas within 7 metres where separating partition contains fixed glazed vision panels	To corridor, Seating Bowl or open plan areas within 7 metres where separating partition contains door or operable window(s)	
Primary Studio Box, Secondary Studio Box, Radio Commentary Boxes, Primary Commentary Box, Secondary Commentary Box, Media Interview Room, Interview Booths, Coaches' Box, Coaches' Briefing Rooms, Production Suites	53	40	35	50

Functional Unit	Minimum Airborne Weighted Level Difference D_w, dB			Maximum Impact Noise Rating $L_{n,w,}$ dB
	To adjacent enclosed spaces generally	To corridor, Seating Bowl or open plan areas within 7 metres where separating partition contains fixed glazed vision panels	To corridor, Seating Bowl or open plan areas within 7 metres where separating partition contains door or operable window(s)	
Chairman's Club, Coaches' Club, Field Club, Club Lounges, Function Rooms	50	40	30	55
Away Team Players' Warm-up Room, Official Statistics Box, Timekeepers' Box, Umpire Observers' Box, Traditional Suites, Social Suites, Field Suites, Field Social Suites, Event Control Room, Written Press Box	45	35	30	55
Executive Offices, Outside Broadcast Producer's Room, Conference Room, Medical Rooms, Doping Control Station	40	35	30	55
Public Prayer Room, Players' Prayer Room, Meeting Rooms, Photographers' Work Room	40	30	25	60
General Administration Areas	40	40	25	60
Media Lounge, Players' Dining Room, Players' Lounge, Players' Viewing Room, Main Security Office, Ticket Boxes, Outside Broadcast Crew Room	40	40	25	65
Sky View Lounge, A La Carte Restaurant, Buffet Restaurant, Concourses within Premium Product Areas	40	30	25	65
Home Teams' Players' Warm-up Room	40	30	25	65
Concourses within General Admission Areas, public bars	35	30	22	-
Toilets, showers, Main Locker Rooms, Locker Rooms, change rooms, transient / circulation areas	38	-	-	-
Other non-critical noise sensitive general enclosed areas within the Stadium Operations and	40	30	25	65

Functional Unit	Minimum Airborne Weighted Level Difference D_w, dB			Maximum Impact Noise Rating $L_{n,w,}$ dB
	To adjacent enclosed spaces generally	To corridor, Seating Bowl or open plan areas within 7 metres where separating partition contains fixed glazed vision panels	To corridor, Seating Bowl or open plan areas within 7 metres where separating partition contains door or operable window(s)	
Event Day Facilities which are restricted from Patron access				
Functional Units where separating partition has operable wall generally (except where the Functional Unit is otherwise listed in this table)	43	-	-	-
Plant rooms	As required to meet clauses E7.3.1(a)(v) and E7.3.1(d)			

(b) The Minimum Airborne Weighted Level Difference and Maximum Impact Noise Rating for each above listed space are the required site based rating and must be complied with.

(c) For the purposes of paragraph (b):

(i) compliance with the Minimum Airborne Weighted Level Difference and Maximum Impact Noise Rating is to be determined with all operable elements (e.g. awning windows) fully closed;

(ii) where two spaces described in the above table are vertically immediately adjacent to one another, the higher Minimum Airborne Weighted Level Difference with respect to the adjacent enclosed spaces must be applied (i.e. the most stringent ratings apply);

(iii) where two spaces described in the above table are horizontally immediately adjacent to one another, the higher Minimum Airborne Weighted Level Difference applicable to either of those spaces must be applied;

(iv) the Maximum Impact Noise Ratings are applicable between spaces vertically adjacent; and

(v) in addition to items E7.3.5(c)(i) to E7.3.5(c)(iv) for Critical Spaces that are adjacent spaces that have the potential for pedestrian traffic including the Circulation Areas, the Impact Noise Rating must be achieved horizontally through the floor.

(d) The walls and doors of Critical Spaces should be designed to minimise any potential for disturbance to be caused to Stadium Users within the Critical Spaces arising from impact noise.

(e) Storerooms or any spaces in which the manual handling of materials is likely to generate impact noise should not be located directly above or adjacent to Critical Spaces, and where this is necessary appropriate acoustic treatments must be provided to achieve the performance criteria in this Chapter E7 (Acoustics) of these Design Specifications, assessed over a 30 second time interval.

(f) The wall construction systems and detailing used in each space, including in relation to:

(i) floor, wall and ceiling junctions;

(ii) penetrations for Engineering Services plant and equipment;

(iii) full and part height partition systems;

(iv) corner detailing of walls and glazing systems; and

(v) window framing at partition junctions,

must adequately control all acoustic leakage and flanking transmission (as defined in Appendix C of AS1191:2002) in order to achieve the minimum acoustics separation requirements set out in paragraph (a).

(g) The locations and construction of doors (including but not limited to framing, seals and hardware) must be coordinated with each partition element to ensure that the minimum acoustic separation requirements specified in paragraph (a) are achieved.

E7.3.6 Architectural design

(a) (**General**) Detailed acoustic room design must be carried out for all Critical Spaces and any other spaces in which it is expected Stadium Users will create professional audio recordings and presentations.

(b) (**Seating Bowl areas**)

(i) At all listening positions on or above the Playing Surface, acoustic reflections from parallel or concave surfaces must be controlled to remove any potential for noticeable sound focussing and echoes.

(ii) The Seating Bowl should not have significant hard parallel surfaces, or any opposing hard surfaces with less than 5 degrees of included angle.

(iii) Vertical glazing and hard surfaces facing into the Seating Bowl should be varied in angle to avoid large continuous flat areas that could reflect sound effectively onto the Playing Surface or onto localised areas within the Seating Bowl.

(c) (**Internal building fabric**)

(i) The design of Critical Spaces must take into account the geometry, location and finishes of all internal surfaces for the purpose of avoiding reliance on PA Systems. Notwithstanding the requirements of clause E7.3.3(b)(i), the intelligibility of conversations using natural speech must be maximised.

(ii) In Critical Spaces, hard sound reflective parallel surfaces in close proximity to each other and to curved surfaces must be avoided or otherwise acoustically treated to remove audible echoes during use of those Critical Spaces.

(iii) The design of Critical Spaces and any other spaces expected to be used for audio recording must take into account acoustic requirements associated with the use of microphones and speakers.

(iv) Acoustical conditions within staffed counter areas including Patron Services Offices and Ticket Boxes, must promote clear speech intelligibility for Patron interaction with Stadium Personnel. Hard reflecting surfaces, such as glass, should be acoustically 'balanced' with softer sound-absorbing surfaces, such as acoustic ceilings, carpets and curtains.

(v) Notwithstanding the requirements of clause E7.3.5, appropriate sound isolation in conjunction with a suitable PA System solution must be provided to allow Patrons:

A within the Field Club viewing area to clearly hear all activities visually observable in the adjacent Home Teams' Players' Warm-up Rooms as provided for in clause D9.4.3(c)(i) and

B within the Coaches' Club to clearly hear all activities visually observable in the adjacent Coaches' Boxes as provided for in clause D9.4.2(k).

(vi) In respect to clauses E7.3.6(c)(v)A and E7.3.6(c)(v)B, the level of audio clarity and performance should give the perception to Patrons in the Field Club viewing area and Coaches' Club that there is no physical partition between the Field Club viewing area or Coaches' Club and the Home Teams' Players' Warm-up Room or Coaches' Box (as applicable).

(vii) Critical Spaces must be adequately distanced and physically separated from toilet amenities to ensure noise generated by use of those amenities (including jet fan hand dryers) must be 10dB below the requirements of clause E7.3.3(a) assessed over a 10 second time interval in the Critical Spaces and to ensure the Critical Spaces otherwise comply with the requirements set out in clause E7.3.8(d).

E7.3.7 Structure and vibration

(a) The structural response of the Stadium and any FF&E to noise and vibration sources across the Site must not result in perceptible and annoying conditions in Critical Spaces and other areas sensitive to vibration (including the Primary Camera Deck and Secondary Camera Deck) including transient rattling, tones or modulating noise, adverse impacts in the quality of broadcasts, or vibrations in excess of the recommended continuous floor vibration limits in the building structure as defined in AS2670.2.

(b) (**Compliance**) The following table sets out parameters with respect to selected areas of the Stadium which must be complied with:

Table 22: Vibration Criteria

Parameter	Functional Unit	Multiplying factor applied to Curves in Figure 5b (Table 2 of AS2670.2:1990)
Continuous, intermittent or quasi-stationary (repetitive shock according to ISO 2041) vibration	Primary Camera Deck, Secondary Camera Deck, other camera platforms, Timekeepers' Box	1.0
	First Aid Rooms, Medical Rooms	1.4
	Functional Units accessed by Stadium Users except as otherwise noted in this table	4.0
	Toilet facilities, stores	8.0
Transient vibration excitation with several occurrences per day	Primary Camera Deck, Secondary Camera Deck, other camera platforms, Timekeepers' Box	1.0
	First Aid Rooms, Medical Rooms	20
	Functional Units accessed by Stadium Users except as otherwise noted in this table	60
	Toilet facilities, stores	90

(c) For the purposes of paragraph (b), the Primary Camera Deck, Secondary Camera Deck and other camera platforms include any permanent mounting platforms, rails, hangers or fixtures used to support equipment in that area.

(d) The design of the Stadium must take into account the potential for adverse vibrations to be generated by Patron activities, wind and Engineering Services plant, including storm water drainage systems. During any Event, except a pop concert Event, vibration at any Seating Position should not exceed a Vibration Dose Value (VDV) of 0.40m/s$^{1.75}$ using a

time period not less than the scheduled duration of Event. For a pop concert Event the design must comply with clause E6.5.7(b)(ii).

(e) Noise generated by structural vibrations must be controlled to a sound level of 10dB below the design Background Sound Levels as specified in clause E7.3.3(a)(i).

(f) Notwithstanding the above paragraphs (a) to (e) inclusive, all sources of vibration must be controlled to ensure that the function and operation of sensitive equipment, including high speed or high powered zoom cameras and specialist camera equipment commonly used in the broadcast of Sporting Events and Special Events including flown wire rigs and equipment involved in telemetry, laser-based measurement, timekeeping or event recording, is not diminished.

(g) All vibration and acoustic isolation equipment must be selected and installed with appropriate seismic retrains to comply with the applicable earthquake zoning requirements in accordance with relevant Quality Standards.

E7.3.8 Engineering Services and plant

(a) (**General**)

(i) Noise levels at all Seating Positions within the Seating Bowl must be controlled to less than NR40.

(ii) All Engineering Services systems and plant must be designed, installed and maintained to ensure compliance with the Engineering Services Maximum Sound Levels defined in clause E7.3.3(a) and with the vibration levels defined in clause E7.3.7.

(iii) Noise levels from mechanical plant must not exceed NR40 within any areas that are accessible to Patrons and within 15 metres of a Stadium Entry Point.

(iv) Noise from all services and equipment must be free of annoyance characteristics including tonality, impulsiveness and modulation when assessed under regulation 9 of the *Environmental (Noise) Regulations 1997* (WA).

(v) Subject to paragraph (vi) below, the location and treatment of all Engineering Services penetrating into acoustically rated building elements (including walls, ceilings and doors) must be coordinated with ceiling and partition elements to ensure that the minimum acoustic separation requirements specified in clause E7.3.5 are achieved.

(vi) Wherever practicable, services must be reticulated to minimise or avoid penetrations into acoustically rated walls. Pipes and cabling should not be cast or chased into acoustically rated masonry walls. Any penetrations into acoustically rated walls must use non-hardening mastic compound and insulation to form an airtight seal.

(b) (**Mechanical services and fire protection systems**)

(i) The design of the mechanical services and fire protection services must comply with maximum noise levels and speech intelligibility requirements in accordance with AS1668 and AS1670.

(ii) Unless it is proven that such treatments are not required, flexible connections must be provided on all air handling plant and equipment at locations as near as possible to each unit of plant or equipment. Vibration isolation elements must be used to support any ductwork or piping connecting the flexible connection to the plant or equipment.

(iii) Ductwork should not be located directly over, and parallel in direction to, acoustically rated partitions.

(iv) Ductwork must be located and treated as required to ensure that the level of airborne sound isolation between spaces is not reduced below that required in clause E7.3.5

(v) Fire alarm repeater panels must be located to ensure fire alarms are not suddenly audible during the alarm verification period within any Critical Spaces used for audio recording or broadcast.

(c) (**Electrical services**)

(i) Noise from electrical services and plant, including transformers and switchboards, must be 10dB below the requirements of clause E7.3.8(a) assessed over a 10 second time interval in any Seating Position, Premium Product Area, or other areas of the Stadium which are accessible to Patrons, or in enclosed rooms occupied by Stadium Staffat any time (except for the purposes of maintenance).

(ii) Transformer electrical cables and switchgear should be vibration isolated from the building structure, including by using flexible fire rated caulking where the transformer electrical cables and switchgear penetrate from the wall and floor.

(iii) Electrical services penetrations such as light fittings and general power outlets must be coordinated with ceiling and partition elements to ensure that the minimum acoustic separation requirements specified in clause E7.3.5 are achieved.

(iv) The design, location and routing of skirting ducts and other cable conduits must be coordinated with ceiling and partition elements to ensure that the minimum acoustic separation requirements specified in clause E7.3.5 are achieved.

(d) (**Hydraulic services**)

(i) Careful planning of the spatial layout and use of material in connection with hydraulic services is critical in achieving the acoustic objectives. As such, with the exception of the beer reticulation system:

A areas or risers with hydraulic supply or waste pipes should not be located adjacent to or above Critical Spaces;

B in acoustically rated partitions, the seal around any penetrating pipes must be airtight; and

C pipe runs must be minimised over Critical Spaces.

(ii) All hydraulic systems must be designed to be free of audible water hammer and to otherwise minimise noise under all circumstances.

(iii) Notwithstanding the requirements of clause E7.3.2(a), the Continuous Background Sound Levels for hydraulic services systems must not exceed a level which is equal to the design Background Sound Level specified in clause E7.3.5 minus 5dB L_{Aeq}, assessed over a 10 second time interval (or where a design Background Sound Level is not specified, the actual ambient sound level using an assessment period of not more than 10 seconds).

(iv) In Critical Spaces and rooms where audio recording is undertaken, noise from hydraulic services must be 10dB below the requirements of Clause E7.3.3(a) assessed over a 10 second time interval at any time.

(v) All vertical piping in risers must be firmly supported and clamped so as to eliminate excessive movement and pipe hammer with pressure surges. Vertical riser pipes should employ pipe clamps which rest on neoprene pads or mounts.

(vi) Pipe penetrations through all vertical and horizontal building elements near Critical Spaces should employ resilient acoustic isolation treatments to prevent rigid contact yet allow some movement between the pipe and the structure and to provide vibration isolation. More effective sealing is

obtained in practice where the pipe axis throughout the penetration is perpendicular to the building element.

(vii) The internal cross sectional area throughout each bend should be maintained either through a suitable pipe bending technique (e.g. mandrel bending instead of ram bending) or inserted junction.

(viii) Waste pipes located within ceiling plenums above noise sensitive areas should be externally lagged with loaded vinyl wrap unless it is otherwise proven to the State that the requirements of clause E7.3.8(d)(iii) can be achieved by an alternate means. A clearance of 75mm should be employed at such locations to prevent contact with the suspended ceiling tiles or hangers.

(e) (**Vertical Transportation**)

(i) The following principles should be adopted to minimise the requirement for noise and vibration control in relation to Vertical Transportation systems:

A spaces that are not noise sensitive (e.g. toilets, bathrooms, storerooms, and stairs) should be used as buffers between lift cores and Critical Spaces;

B allowance should be made for nominal 300mm width walls for lift cores near Critical Spaces to accommodate double discontinuous walls (including masonry inner core walls). Depending on the lift actuation method and support framing used, the wall width and material costs can then be minimised as the design progresses provided the parameters set out in paragaph (ii) are still achieved; and

C guide rails should be fixed to slabs and concrete shaft walls only, (not to steel framework or drywalls) and guide rails should be ground to give smooth joint transition.

(ii) Vertical Transportation systems must comply with the following parameters:

Table 23: Vertical Transportation

Parameter	Value
Maximum door noise perceived by a Patron when in the lobby of the Vertical Transportation system	L_{AmaxS} less than 60 dB
Average noise level within the car of the Vertical Transportation system (measured with the fan off)	$L_{Aeq,10s}$ 50 dB
Maximum noise level within the car of the Vertical Transportation system	L_{AmaxS} 55 dB
Average noise level of escalators (measured at any position 1.5 metres above local floor or moving tread level)	$L_{Aeq,10s}$ 50 dB
Noise levels during all operations of Vertical Transportation systems (measured inside: • adjoining spaces; • the shaft of a machine room less (MRL) lift; and • all Critical Spaces.	 • 'Satisfactory' (lower) level of AS/NZS 2107 • LAeqF,10s 65 dB • Must be 10dB below the requirements of clause E7.3.3(a) assessed over a 10 second time interval

(iii) Consideration should be given to minimising or deleting audible alarms from the indicating panels.

(f) (**AV Systems integration**)

(i) (**Systems description**)

A The SSISEP and general PA System should be physically separate systems. The SSISEP alert tone must not be capable of automatically overriding general PA System outputs during the alarm verification period. A silent paging system should be employed for the alarm verification period until any evacuation orders are given.

B All occupiable internal spaces and the Seating Bowl must have SSISEP system coverage which complies with AS 1670.4 and includes STI requirements for emergency announcements as a life safety system.

C The PA System must provide high quality speech intelligibility and high quality music transmission (frequency response range for third octaves 63Hz to 12,500Hz inclusive). The PA System must cover all Seating Positions or areas of the Stadium which are accessible to Patrons.

(ii) (**PA System requirements**)

A The general PA System must be designed, installed and maintained to be capable of achieving a minimum 0.60 STI in all Stadium configurations (including as a result of Event Overlay) and conditions at all locations where it is intended for Stadium Users to hear that system.

B Speakers must be grouped into a minimum of 10 zones.

C Speakers should be removable and reconfigurable to provide flexibility for the range of Events that will be hosted at the Stadium.

D Each zone should have a time delay capability.

E The PA System must have capacity for multiple source inputs.

F In the Seating Bowl, sound levels from the PA System must be capable of achieving: 102dB for pink noise input 200Hz to 15kHz (band limited to nominated frequency range), and 102dB pink noise input in 63Hz and 125Hz octave bands (band limited to nominated octaves).

G Sound levels from fixed AV Systems at all areas of the Stadium which are accessible to Stadium Users must not exceed the limits set in the Quality Standards and Laws.

H Subject to paragraph G, automatic electronic control of the PA System and house music system volume levels must be available so that, if desired, the volume level of voice announcements and other program material can be adjusted to follow (but be at least 11dB louder than) the overall background crowd noise levels, and take into account sudden rises in crowd noise levels.

I All sound arrivals of amplitudes within 16dB of the signal via the shortest length sound path should be within 30 milliseconds of the direct sound. All presented surfaces within the Seating Bowl should be acoustically treated or angled to remove any audible reflections arriving later than 30 milliseconds (approximately 10 metres path difference) of the direct sound.

J Direct sound levels should be equal within ±3dB across any tier block within the Seating Bowl.

K Frequency response at each Seating Position should be ±3dB for 63Hz to 200Hz (from first 250ms sound arrivals), ±4dB for 200Hz to 8kHz (from first 50ms of sound arrival over 90% of nominated coverage) and ±6dB for 8kHz to 16kHz (from first 50ms of sound arrival over 90% of nominated coverage).

L In the case of point source systems, a high frequency tolerance limit greater than about 5kHz may be impractical. Where a reverberant field exists, or where there are multiple arrivals at low frequencies, a longer integration time for low frequencies may be appropriate.

M Fixed system control settings must be capable of being locked to prevent tampering once set.

N Loudspeaker locations must be chosen to minimise reflections in all Seating Positions within the Seating Bowl, especially excessive concentrations of sound which arrive from an arrangement of curved surfaces with a common focus point. For covered Seating Positions within the Seating Bowl, loudspeakers should be located near the front edge of the roof structure.

O A spaced pair of microphones must be located near the Seating Positions in the Seating Bowl to provide a signal feed of Patron generated noise to fully enclosed Functional Units within the Stadium through a stereo playback system. This stereo playback system should also carry a signal feed from the PA System with delays to match any direct sound the crowd microphones pick up from the PA System and, and be capable of being switched to carry audio from radio or television broadcast.

P All PA System notifications should employ an attention signal (e.g. bell tone) to ensure the volume level of the immediately following announcement is not excessive.

Q Loudspeakers and outdoor equipment must be weatherproof, Pest proof and outside the reach of Patrons.

R The output from and interface with any temporary sound system must be capable of being interrupted for the purposes of broadcasting safety announcements from a central control point.

(iii) (**Hearing augmentation systems**) The design must comply with all relevant Quality Standards and Laws to ensure suitability for IRUA.

(iv) (**Video display systems**) Noise from video screens and associated equipment such as cooling systems and transformers, must be 10dB below the requirements of clause E7.3.8(a) assessed over a 10 second time interval in any Seating Position or areas of the Stadium which are accessible to Patrons, or in enclosed rooms occupied by Stadium Staffat any time

E7.3.9 Construction noise

(a) Noise emission from the Construction Site must comply with regulation 13 of the *Environmental Protection (Noise) Regulations 1997* (WA).

(b) Practical precautions must be taken to minimise noise generated by the DBFM Works.

(c) The guidelines as set out in AS2436 must be complied with. This includes ensuring that construction equipment is fitted with noise suppressors wherever practicable, and used so that noise is minimised.

(d) The State may require Project Co to produce a certificate of acoustic performance by an approved acoustic consultant for any appliance before permitting its use or continued use on Site.

(e) Project Co must comply with and implement a Noise Management Plan in accordance with the requirements for the Construction Environment Management Plan as set out in Schedule 19 of this Agreement.

E8 FIRE ENGINEERING AND FIRE PROTECTION SYSTEMS

E8.1 GENERAL

(a) Project Co must undertake all required fire engineering analysis for the Stadium and Sports Precinct and design, construct, commission and complete all fire protection systems for the Stadium as part of the DBFM Works.

(b) The fire protection systems must be designed and executed to interface seamlessly with other Engineering Services including hydraulic services systems (for system water), mechanical services, Security Systems, PA System and AV Systems via the BMS.

E8.2 SCOPE

(a) The scope of the fire engineering and fire protection systems works for the Stadium and Sports Precinct includes the design, construction, commissioning and completion of:

(i) fire engineering analysis for the Stadium and Sports Precinct;

(ii) all fire protection systems including:

A on Site water supply for fire protection systems;

B an automatic fire sprinkler system;

C alternative fire suppression systems such as pre-action sprinklers, misting and gaseous suppression systems to limited areas;

D a fire hydrant system;

E a fire hose reel system;

F fire brigade tank suction and boosting facilities;

G portable fire extinguishers and fire blankets;

H fire detection and alarm systems;

I SSISEP;

J fire indicator panel (FIP) containing control and indicating equipment (CIE) in the Fire Control Room and associated networked panels; and

K smoke controls and interfaces with mechanical services plant;

L fire fan control panel;

M smoke management system with automatic and manual controls; and

N direct brigade alarm connection to the local Fire and Rescue Service station; and

(iii) development of emergency management procedures in conjunction with DFES and the State.

(b) All Commercial Facilities must be designed, constructed, commissioned and completed to comply with all relevant Quality Standards in respect of fire engineering and fire protection systems.

E8.3 AUTHORISATIONS

(a) Without limiting Chapter A11 (Authorisations) and subject to clause 41 of this Agreement which sets out Project Co's obligations in respect of Authorisations, Project Co must obtain and comply with all required Authorisations and Authority requirements associated with the fire engineering and fire protection systems for the Stadium and Sports Precinct including any required Authorisation(s) from:

(i) the Permit Authority; and

(ii) Swan River Trust (as applicable).

(b) Project Co must liaise with and obtain comment from the DFES in respect of the Fire And Rescue Service operations for the Stadium and Sports Precinct.

E8.4 QUALITY STANDARDS AND LAWS

(a) Without limiting clause 14.1 of this Agreement and the Quality Standards and Laws stipulated in Chapter E1 (General Requirements), the design, construction, commissioning and completion of the Stadium and Sports Precinct in respect of the fire engineering and fire protection systems must comply with all relevant Quality Standards and Laws including:

(i) all relevant Australian Standards, including:

A AS1288 – Glass in buildings – Selection and installation;

B AS1530 – Methods for fire tests on building materials components and structures;

C AS1668 – The use of ventilation and air conditioning in buildings;

D AS1670 – Fire detection, warning, control and intercom systems – System design installation and commissioning;

E AS1905 – Components for the protection of opening in fire resistant walls;

F AS2118 – Automatic fire sprinkler systems;

G AS2419 – Fire hydrant installations;

H AS2441 – Installation of fire hose reels; and

I AS2444 – Portable fire extinguishers and fire blankets – Selection and location.

(ii) other relevant standards, codes and guidelines, including:

A Australian Building Codes Board's (ABCB) International Fire Engineering Guidelines (2005);

B Engineers Australia's (Society of Fire Safety) Code of Practice for Fire Safety Design, Certification and Peer Review (2nd Edition: Draft);

C DFES Guidelines; and

D the Green Guide.

(b) The year of Australian Standards referred to must be the current version unless otherwise referenced by the NCC or unless otherwise approved by the State and relevant Authorities.

E8.5 PERFORMANCE REQUIREMENTS

E8.5.1 Design Life

The Design Life for the fire protection systems must meet or exceed the minimum requirements set out in the table below. The fire protection systems must be designed and equipment selected to achieve the required Design Life without requiring maintenance that would not be expected for fire protection systems built and installed in accordance with Best Construction Practices.

Table 24: Design Life for Fire Protection Systems

Element	Design Life
On Site water supply for all fire safety systems	30 years
Automatic fire sprinkler system	30 years
Fire hydrant system	30 years
Fire hose reel system	20 years
Fire brigade tank suction and boosting facilities	30 years
Portable fire extinguishers and fire blankets	5 years
Gaseous suppression system	15 years
Fire detection system	20 years
Occupant warning system, including intercommunication facilities	20 years
Smoke controls and interfaces with mechanical plant	20 years

E8.5.2 ESD

Fire protection systems must minimise water usage by methods such as recycling test water back into the on-site water storage tanks.

E8.5.3 Flexibility, Reconfiguration and Expansion

(a) Fire protection systems must be designed to allow for the Expansion and for logical add on to support Athletics Reconfiguration and Rectangular Reconfiguration.

(b) The design of the fire protection systems must also cater for the following:

(i) minimum 20% spare capacity, per loop, for fire detection and

(ii) minimum 20% spare capacity, per line, for the SSISEP.

E8.5.4 Maintainability

The design of the fire protection systems must consider maintenance during the Service Life of the Stadium and Sports Precinct with the aim of minimising ongoing costs. Furthermore, consideration must be given to plant replacement and minimising the impact on the operation of the Stadium and Sports Precinct, and on operation of fire protection systems.

E8.5.5 Water supply

(a) On Site water supplies must be provided for the fire protection systems. The on Site water supply must be designed and constructed to comply with the requirements of all relevant Quality Standards, including:

(i) fire hydrant water supply in accordance with the requirements of AS2419.1, including an on Site water storage tank and duty/standby booster pumps; and

(ii) fire sprinkler system water supply in accordance with the requirements of AS2118.1, including an on-site water storage tank and duty and standby booster pumps.

(b) Fire brigade suction and boosting facilities must be provided in accordance with the requirements of all relevant Quality Standards and Laws. The fire brigade booster must be located within sight of the Fire Control Room.

E8.5.6 Automatic fire sprinkler system

(a) An automatic fire sprinkler system must be provided to service all areas of the Stadium in accordance with the requirements of the NCC and AS2118.1.

(b) The automatic fire sprinkler system must be designed and constructed to include the following:

(i) sprinkler control valves complete with monitored flow switch and remote point solenoid test valve and drain; and

(ii) fast/quick response sprinkler heads throughout, unless specifically not required for areas including above or within range and kitchen exhaust hoods, kitchen exhaust ductwork, skylights, atriums and similar fittings and design features.

(c) The automatic fire sprinkler system must comprise multiple zones to allow parts of the Stadium to be isolated.

(d) Alternative fire suppression systems such as pre-action sprinklers or misting (as appropriate) must be provided for areas with water sensitive, technological fitout or data sensitivity including Production Suites, Coaches' Boxes, the Event Control Room and the Main Security Office.

(e) Alternative fire suppression systems must be submitted for approval by the State In accordance with Schedule 3 (Review Procedures) of this Agreement.

E8.5.7 Gaseous suppression systems

[*Not disclosed*]

E8.5.8 Fire hydrant system

A fire hydrant system must be designed, constructed, commissioned and completed to ensure complete fire hydrant coverage to all areas of the Stadium in accordance with the requirements of all relevant Quality Standards.

E8.5.9 Fire hose reel system

A fire hose reel system must be designed, constructed, commissioned and completed to ensure complete fire hose reel coverage to all areas of the Stadium in accordance with the requirements of all relevant Quality Standards.

E8.5.10 Fire detection and alarm system

(a) A fire detection and alarm system must be designed, constructed, commissioned and completed to ensure complete fire detection to all areas of the Stadium in accordance with the requirements of all relevant Quality Standards.

(b) The fire detection and alarm system must be of the analogue addressable type and be a network capable system.

(c) The main fire indicator panel must be located in the Fire Control Room. A mimic panel must be provided in the Main Security Office and the Event Control Room (as set out in clause D13.4.10(g)).

(d) The fire detection and alarm system must be zoned to allow for multiple evacuation zones to suit the fire and smoke compartment design, and the fire safety strategies and evacuation procedures set out in the FEB, FER and Crisis or Major Incident Plan.

(e) The fire detection and alarm system must be interfaced with the BMS, AV Systems (including the PA System), Security Systems, the smoke hazard management system, SSISEP, and the fire protection systems.

(f) All alarms from the fire detection and alarm system must be clearly audible in the Event Control Room and the Main Security Office and must comply with the requirements of Chapter E7 (Acoustics).

E8.5.11 Fire and smoke compartmentalisation

(a) Careful consideration must be given when defining fire and smoke compartments to ensure that the compartment boundaries and the number of compartments are not restrictive to the Stadium Activities. Compartment zoning must be aligned with operational requirements, anticipated occupancy levels and Event Day and Non-Event Day use.

(b) The fire and smoke compartment design must align with the fire safety strategies and evacuation procedures (including the evacuation zones) set out in the Crisis or Major Incident Plan.

E8.5.12 Cause and effect matrix

A full detailed cause and effect matrix must be developed by Project Co during Design Stage 1 for review by the State. The matrix must show the actions that are automatically initiated by the occurrence of a fire event including the operation of all Engineering Services systems and interfaces including fire brigade call out, smoke hazard management and SSISEP.

E8.5.13 Sound system and intercom system for emergency purposes (SSISEP)

(a) A SSISEP (or occupant warning system) must be provided to service all internal areas of the Stadium in accordance with the requirements of all relevant Quality Standards. An intercommunication facility (i.e. WIP phones) must also be provided for Stadium Staff and Emergency Services personnel.

(b) The SSISEP must be a standalone system capable of being zoned to allow for multiple evacuation zones to suit any applicable fire safety strategies and evacuation procedures.

(c) Project Co may consider utilising the PA Systems and LED Superscreens for emergency announcements and directions however where this approach is adopted compliance with all relevant Quality Standards and the requirements set out in Chapter E7 (Acoustics) must be achieved.

E8.5.14 Smoke hazard management

Smoke hazard management must be provided to complement the fire escape strategy that is developed through Design Stage 1. Interfaces must be provided to other Engineering Services plant, including to mechanical services to ensure smoke hazard management can take place in an automatic manner with manual overrides. Chapter E10 (Mechanical Services) sets out the relevant system design requirements.

E8.5.15 Fire system monitoring

System monitoring (i.e. direct brigade alarm connection) in accordance with the requirements of all relevant Quality Standards and Laws must be provided to the Stadium prior to Commercial Acceptance.

E8.5.16 Portable fire extinguishers

(a) Portable fire extinguishers must be provided throughout the Stadium in accordance with the requirements of all relevant Quality Standards.

(b) Alternative methods of first aid fire protection may be considered where occupant activity may result in the misuse of portable fire extinguishers or fire hose reels, however proposed methods must be submitted for approval by the State and relevant Authorities during Design Stage 1 and relevant approvals obtained prior to implementation.

(c) Portable fire extinguishers must be recessed in a wall mounted enclosure and not exposed to mitigate misuse.

E8.5.17 Fire Control Room

[*Not disclosed*]

E8.5.18 Fire and rescue service access

(a) Project Co must liaise with DFES to determine the extent of access to and within the Stadium and Sports Precinct that is required to accommodate fire fighting operations by DFES and make allowance for such access.

(b) Access for DFES should be designed to minimise conflict with pedestrians and other vehicles to ensure clear access to the Stadium at all times.

(c) Access for fire fighting must be provided to and within the Stadium and Sports Precinct in accordance with all relevant Quality Standards.

E8.5.19 Fire engineered performance based designs

(a) The structural, architectural and fire engineering design of the Stadium and Sports Precinct should comply with all relevant Quality Standards and Laws. Fire engineered performance based design should be avoided but may be considered where it can be demonstrated that a fire engineered performance based design will enhance the Stadium Activities.

(b) Where departure from the Quality Standards and Laws is proposed, a fire engineered performance based design analysis must be prepared by Project Co to demonstrate compliance with the NCC performance requirements and the functional and technical requirements for the Stadium and Sports Precinct as set out in these Design Specifications.

(c) The fire engineering design process must follow the recommendations within the International Fire Engineering Guidelines (2005).

(d) Where a fire engineered performance based design is proposed:

(i) a detailed FEB must be prepared by Project Co early during Design Stage 1 which must include the following as a minimum:

A the rationale for performance based design;

B the cost impact;

C the design assumptions made in the assessment of the fire engineered performance based design; and

D all potential constraints and impacts on the Stadium Activities;

(ii) a detailed FER must be prepared and updated during each Design Stage addressing all of the requirements at paragraph (i). A final FER must be submitted to the State Representative for approval, in accordance with Schedule 3 (Review Procedures) of this Agreement, prior to Commercial Acceptance; and

(iii) the FEB and FER must be submitted for approval by the State and relevant Authorities.

E8.5.20 Stadium emergency management procedures

(a) Project Co must prepare an initial draft, and work with the State to further develop and implement the Crisis or Major Incident Plan as set out in Schedule 19 (Plans) of this Agreement.

(b) (**Evacuation of IRUA**) Project Co must provide suitable facilities to enable IRUA to safely evacuate the Stadium from all occupied areas of the Stadium (including IRUA Positions) to a place of safety.

E9 HYDRAULIC SERVICES

E9.1 GENERAL

(a) Project Co must design, construct, commission and complete all hydraulic services works required to deliver the Stadium and the Sports Precinct as part of the DBFM Works and the Pedestrian Underpass to be constructed as part of the Off-Site Infrastructure Works.

(b) The hydraulic services works must be designed and executed to interface seamlessly with all incoming Utility Infrastructure, including the new and upgraded infrastructure provided to the Site as part of the Stadium Support Works.

E9.2 SCOPE

(a) The scope of the hydraulic services works for the Stadium, the Sports Precinct and the Pedestrian Underpass (as applicable) includes the design, construction, commissioning and completion of:

(i) drainage for the Pedestrian Underpass;

(ii) domestic cold water systems;

(iii) domestic heated water systems;

(iv) sewer drainage and sanitary systems, including connection to the Private Wastewater Main;

(v) industrial waste systems;

(vi) above ground stormwater systems;

(vii) roof drainage

(viii) natural gas services;

(ix) all gas supply, water supply and drainage provisions for other Engineering Services systems, including gas connection, water supply and drainage to mechanical services plant and water supply to fire protection systems;

(x) all lagging, enclosures and other acoustic treatments to comply with the acoustic requirements set out in Chapter E7 (Acoustics) of these Design Specifications;

(xi) sanitary fixtures, fittings and tapware;

(xii) a rainwater harvesting system and associated distribution systems;

(xiii) a beer reticulation system within the Stadium;

(xiv) metering and monitoring of water and gas usage; and

(xv) BMS connections.

(b) (**Irrigation**) The hydraulic services works must include water supply connections for the irrigation systems, which are to be provided as part of the landscape works (as set out in Chapter E3 (Landscape Architecture)) and the Pitch and Playing Surface works (as set out in Chapter E18 (Pitch and Playing Surface)).

(c) (**Concealment to prevent vandalism**) All serviceable items and equipment must be located to prevent visibility by the public, unless utilised as an architectural feature, and to prevent the occurrence of vandalism. This may be achieved by locating such items in enclosures, walls, columns or ceilings. Where services are designed to be exposed they shall be appropriately selected or treated to prevent vandalism and installed in line with the Green Guide.

(d) (**Metering and sub-metering**) Provision of Authority compliant metering must be provided for all incoming water and gas services and for outgoing wastewater and sewage services. Sub-metering must be provided to measure gas and water consumption for discrete areas of the Stadium and Sports Precinct as set out in clause E1.4.5.

(e) (**Co-ordination**)

(i) Hydraulic services systems and pipework must be coordinated with all architectural, landscape and structural design elements and with other Engineering Services systems to achieve integration without detriment to the overall aesthetic of the Stadium and Sports Precinct.

(ii) Exposed stormwater pipework must be treated to complement the architecture via concealment or otherwise be constructed of durable materials to minimise WOL costs. Stainless steel should be considered.

(f) (**BMS**) All pumps, control panels, meters and active devices associated with the hydraulic services systems must be interfaced and monitored by the BMS.

(g) (**Testing and Commissioning**) Testing of the hydraulic services installation must simulate typical Event Day scenarios as described in Appendix H7 (Minimum Completion Tests).

(h) (**Private Wastewater Main**) Project Co must maintain the Private Wastewater Main (in a manner consistent with the Operating Phase requirements set out in the Services Specifications) from its date of practical completion through to the Date of Commercial Acceptance and manage all interfaces to secure connections with sewer drainage and sanitary systems.

E9.3 AUTHORISATIONS

(a) Without limiting Chapter A11 (Authorisations) and subject to clause 41 of this Agreement which sets out Project Co's obligations in respect of Authorisations, Project Co must obtain and comply with all required Authorisations and Authority requirements associated with the hydraulic services works for the Stadium, the Sports Precinct and the Pedestrian Underpass including any required Authorisation(s) from:

(i) the Water Corporation;

(ii) any relevant local government Authority;

(iii) the Plumbing Licensing Board;

(iv) the Department of Health;

(v) the Department of Racing, Gaming and Liquor; and

(vi) ATCO Gas Australia and the relevant gas service provider.

(b) Project Co must obtain, arrange and pay all hydraulic services Utility/infrastructure connections for the Stadium, the Sports Precinct and the Pedestrian Underpass with the exception of the connections provided by the State.

(c) Project Co must obtain, arrange and pay all charges to supply and install industrial waste systems for the Stadium and Sports Precinct and arrange all licensing agreements for on-going servicing of industrial waste systems.

E9.4 DESIGN INFORMATION

(a) [*Not disclosed*]

(b) [*Not disclosed*]

(c) [*Not disclosed*]

(d) Notwithstanding the preliminary design information in paragraphs (a) to (c) above, Project Co must liaise with the State and all relevant Authorities and Utility Companies to confirm capacities of incoming Utilities to the Sports Precinct and the Pedestrian Underpass during the D&C Phase.

E9.5 QUALITY STANDARDS AND LAWS

(a) Without limiting clause 14.1 of this Agreement and the Quality Standards and Laws stipulated in Chapter E1 (General Requirements), the design, construction, commissioning and completion of the Stadium, the Sports Precinct and the Off-Site

Infrastructure in respect of the hydraulic services must comply with all relevant Quality Standards and Laws including:

(i) all relevant Australian Standards, including:

A AS5601 Gas Installations;

B AS1432 Copper tubes for plumbing, gas fitting and drainage installation;

C AS/NZS 3500 Plumbing and drainage;

D AS/NZS 3500.0 Part 0: Glossary of terms;

E AS/NZS 3500.1 Part 1: Water services;

F AS/NZS 3500.3 Part 3: Stormwater drainage;

G AS/NZS 3500.4 Part 4: Heated water services;

H AS 1170.4—2007 Structural design actions. Part 4: Earthquake actions in Australia;

I AS 5034-2005 Installation and use of inert gases for beverage dispensing; and

J AS 4267-1995 Pressure regulators for use with industrial compressed gas cylinders; and

(ii) other relevant standards, codes and guidelines, including:

A Toilet Facilities at Stadia – Planning, Design and Type Installations" published by the Football Stadia Development Committee (FSADC) (1993);

B British Standard 8300:2009 and the design standards available at http://www.changing-places.org (for Changing Places Toilets);

C Institute of Plumbing Australia "Selection and Sizing of Copper Tubes for Water Piping Systems; and

D Draught Beer Dispense Systems Installation Guidelines (2019) of the Brewers Association of Australia and New Zealand Inc.

E9.6 PERFORMANCE REQUIREMENTS

E9.6.1 Design Life

(a) Hydraulic services for the Stadium, the Sports Precinct and the Pedestrian Underpass must be designed, constructed, commissioned and completed to meet or exceed the following minimum requirements:

Element	Design Life
Plumbing, including sanitary, sewer, gas, stormwater and water pipework	50 years
Equipment under mechanical loads such as pumps, motors and control panels	15 years
Hot water systems and boiling water units	10 years
Sewer pits or wells	50 years
Sewer pump stations	15 years

(b) Project Co must ensure that all hydraulic services equipment, components and materials (including pipes and fittings) are suitably treated to minimise corrosion as required for installation within a coastal environment.

(c) Project Co must ensure that materials subject to exposure to the elements are suitable for long term, 50 year minimum exposure without any degradation of performance.

(d) All hydraulic services systems and equipment must be new.

(e) All pipework, valves, fittings and accessories used must be WaterMark and applicable fixtures must be WELS approved unless related to an “alternative solution”.

E9.6.2 ESD

(a) Hydraulic services systems must be designed on a WOL basis to achieve the lowest LCC, with an emphasis on:

(i) minimising energy usage; and

(ii) minimising water usage by selecting fixtures, tapware and appliances with the highest practicable water efficiency rating.

(b) Embedded ESD Initiatives must be incorporated into the hydraulic services design including:

(i) potable water reduction through the use of harvested rainwater for toilet flushing, wash down and irrigation to soft landscaped areas, excluding the Pitch;

(ii) water metering systems incorporating leak detection capability connected to the BMS; and

(iii) use of ‘Best Practice PVC’ or HDPE materials for gravity fed drainage systems.

E9.6.3 Flexibility

(a) Plant areas for hydraulic services plant must be suitably sized or located to accommodate the following spare capacity increases over time:

(i) minimum required for Expansion and Reconfiguration Works;

(ii) minimum 20% capacity increase for on-site water storage tank capacities;

(iii) minimum 20% capacity increase for on-site sewerage storage tank capacities;

(iv) minimum 20% capacity increase for on-site pump duties;

(v) minimum 20% capacity increase for industrial waste arrestors; and

(vi) minimum 20% capacity increase for central plant and equipment.

(b) All pipework for hydraulic services must be sized to accommodate the Expansion with capped off pipework being easily accessible for future connection and extension. A minimum 20% capacity increase for the following services must be allowed:

(i) cold water supply;

(ii) hot water supply;

(iii) sewer drainage system;

(iv) industrial waste system; and

(v) natural gas services.

E9.6.4 Maintainability

The design of the hydraulic services must accommodate ongoing maintenance during the Service Life of the Stadium and Sports Precinct with the aim of minimising ongoing costs. Consideration must be given to plant replacement and minimising the impact on the operation of the Stadium and Sports Precinct and on the operation of hydraulic systems.

E9.6.5 Acoustics

Hydraulic services must be designed, constructed, commissioned and completed to comply with the acoustic performance requirements set out in Chapter E7 (Acoustics), including:

(a) by minimising pipework runs over acoustically sensitive areas; and

(b) ensuring that the installation is free of water hammer under all circumstances.

E9.6.6 General Design Requirements

(a) Backflow prevention devices must be provided to control and mitigate the risks of cross contamination of water services.

(b) Thermostatic mixing valves must be located within an enclosure behind a lockable access panel.

(c) Water pressure must be provided at between 350–500kPa at each item of plant or equipment, fixture outlet and point of demand.

(d) Tundishes must be provided to all mechanical services plant and hydraulic services plants.

E9.6.7 Connection to incoming Utilities

[*Not disclsosed*]

E9.6.8 Domestic cold water reticulation system

(a) (**Cold water reticulation**) Project Co must size the cold water reticulation system to meet the maximum flow demand at each Functional Unit for an Event Day where the Stadium operates at full capacity (including in accordance with clauses D8.3(g) and D9.3(f)) plus the required spare capacity for the Expansion.

(b) Cold water mains must be arranged as ring mains.

(c) Partial loop isolation must be such that no more than 25% of the Stadium and each building in the Sports Precinct may be shutdown without affecting other areas.

(d) Piping systems must be designed to provide a maximum velocity of 1.8m per second during peak demand periods. Cold water supply must be provided to the Stadium and each building located within the Sports Precinct.

(e) Cold water supply must be provided to all points of demand, including to:

  (i) all hydraulic services systems, fixtures and tapware;

  (ii) all Engineering Services systems, plant and equipment which require cold water including fire protection systems, mechanical services and other specialist plant, irrigation systems and rainwater systems;

  (iii) all Concourses and the Controlled Area, including for Temporary Event Day Stalls and Sponsor Merchandise Pods;

  (iv) all Catering Facilities;

  (v) all wash down facilities including for Waste Enclosures, cleaner's rooms, plaza/forecourt, Seating Bowl and roof level;

(f) External grade hose taps must be provided for wash down in external areas (including for the plaza/forecourt, Plats and roof level) must be located at regular intervals not exceeding 60m assuming the hose length is approximately 30m.

(g) Hose taps used for wash down purposes that drain to sewer in normal operation must be diverted to the stormwater drainage system. The diversion system must remain directed to stormwater during periods of rainfall.

(h) Provide a minimum of twenty (20) remote water supply connections within separate in-ground pits distributed throughout the Controlled Area and Sports Precinct.

(i) (**Sub-meter and valves**) Project Co must provide sub-meters and valves to enable parts to be removed and maintained separately whilst continuing supply to the Site.

Water meters and isolation valves must be provided to all high water usage areas, all areas where water usage costs require metering for the purpose of on-charging to third parties as set out in clause E1.1.5 and to Engineering Services using water, including the:

(i) hot water system(s);

(ii) major mechanical services plant;

(iii) fire hydrant and fire sprinkler systems;

(iv) landscape irrigation systems;

(v) Pitch irrigation systems;

(vi) aquatic recovery facilities;

(vii) other high water usage areas including wash down facilities;

(viii) shower facilities;

(ix) toilet facilities;

(x) rainwater top-up supply; and

(xi) rainwater harvesting system.

(j) Isolation valves must be provided at the incoming cold water supply before entering each building within the Sports Precinct and the Pedestrian Underpass.

(k) Isolation valves must be provided at each point of demand.

(l) Isolation valves must be provided to each metered zone and sub zone of a Functional Area.

(m) Isolation valves must be easily accessible.

(n) Containment backflow prevention devices for the domestic water supply must have a hazard rating in accordance with Water Corporation requirements.

(o) (**Cold water booster pump-set and break tank**) Project Co must provide a cold water variable speed drive booster pump-set complete with valves, control panels and all associated accessories and break tank where required to comply with the pressure requirements set out in clause E9.6.6(c).

(p) Pump-sets must be sized to accommodate the maximum flow demand for an Event Day where the Stadium operates at full capacity (including in accordance with clauses D8.3(g) and D9.3(f)) plus the required spare capacity for the Expansion.

(q) The pump-sets must be housed within a secure, lockable and weatherproof enclosure.

(r) Pump-sets must be located on a plinth or as per the manufacturer's recommendations with spacing that complies with OHS requirements for servicing and maintenance.

E9.6.9 Water supply to fire services system

[*Not disclosed*]

E9.6.10 Domestic heated water system

(a) Project Co must provide reticulation of domestic heated water piping throughout the Stadium to all points of demand.

(b) Domestic heated water system pipework and equipment must be sized to accommodate the maximum flow demand for an Event Day where the Stadium operates at full capacity (including in accordance with clauses D8.3(g) and D9.3(f)) plus the required spare capacity for the Expansion.

(c) Hot water will be generated by hot water plants with adequate storageand recovery capacity serving general amenities. Standalone systems will be dedicated to the kitchens and food prep areas

(d) Hot water storage must be set at between 65°C and 75°C for all points within Catering Facilities.

(e) Public toilet amenities within General Admission Areas and within the Sports Precinct must only be provided with cold water at fixtures.

(f) The heated water system must be designed to maximise efficiency of the system and achieve the lowest LLC. This may include:

(i) gas boost with solar hot water system;

(ii) gas; or

(iii) a heat pump hot water system.

(g) Heated water plant must accommodate the maximum flow demand for an Event Day where the Stadium operates at full capacity, in accordance with clauses D8.3(g) and D9.3(f), plus the required space allowance for the Expansion and Reconfiguration Works. Project Co must submit to the State an analysis to demonstrate the efficiency of the heated water system options based on WOL analysis.

(h) Heated water supply must be provided to all points of demand including to:

(i) all hydraulic services systems, fixtures and tapware which require hot water;

(ii) all Engineering Services systems, plant and equipment which require hot water including mechanical services and other specialist plant;

(iii) all Concourses and the Controlled Area, including for Temporary Event Day Stalls and Sponsor Merchandise Pods;

(iv) all change rooms, including those set out in the Stadium Operations and Event Day Facilities;

(v) all toilet facilities within Premium Product Areas;

(vi) all Team Facilities;

(vii) all Catering Facilities;

(viii) selected wash down facilities, including Waste Enclosures and cleaner's closets.

(i) The heated water branch from a recirculating main must not exceed 10m in length to the fixture outlet.

(j) The maximum distance from tempering devices to fixture outlets must not exceed 6m.

(k) Thermostatic mixing valves must be provided to sanitary fixtures and tapware where used primarily for personal hygiene purposes. The design of the heated water system must take into account legionella risk. Project Co must undertake a risk assessment for legionella risks as part of the safety in design requirements as set out in clause C17(f) and must clearly document the proposed design treatments and management procedures to minimise legionella risks.

(l) The heated water distribution piping must be provided with the means for thermal expansion and contraction. Thermal pipe lagging must be provided to all hot water piping up to the fixture outlets.

(m) (**Circulating pumps**)

(i) The heated water system must have the capacity to measure and record circulating pump water flows and temperature on each return loop to ensure there is adequate circulation.

(ii) Circulating pumps and equipment must be sized to accommodate the maximum flows and consequential pressure loss variances for an Event Day where the Stadium operates at full capacity (including in accordance with clauses D8.3(g) and D9.3(f)) plus the required spare capacity for the Expansion.

(iii) To maintain loop water temperature, circulating pumps must be constructed from materials which are suitable for the water quality and operating temperature.

(iv) Circulating pumps must have speed control to allow for efficient pump operation and must be tuned to meet the field heat losses as they may vary from time to time.

(n) (**Heated water valves, pumps and sub-meter systems**) Project Co must

(i) provide sub-meters and valves to enable parts to be removed and maintained separately whilst continuing supply to the Site. Water meters and isolation valves must be provided to all high heated water usage areas, all areas where water usage costs require metering for the purpose of on-charging to third parties as set out in clause E1.1.5 and to Engineering Services using heated water, including to the:

A hot water system(s);

B mechanical services plant;

C shower facilities;

D toilet facilities; and

E selected wash down facilities, including Waste Enclosures and cleaner's rooms.

(o) Sub-meters must be suitable for use in heated water systems.

(p) Isolation must be provided to enable each Stadium level and Functional Area to be isolated.

(q) Isolation valves must be provided to each metered zone.

(r) Balancing valves must be provided on the hot water return loop and sub-loops.

(s) Isolation valves must be provided at each point of heated water demand.

E9.6.11 Boiling and chilled water systems

Project Co must:

(a) provide boiling and chilled water systems to all Premium Products Areas, Catering Facilities and to all kitchenette and tea preparation facilities;

(b) provide capacity for each facility for Event days;

(c) interface boiling and chilled water units to a central monitoring system with remote monitoring; and

(d) select boiling and chilled water units to accommodate the requirements of Stadium Staff, Athletes and Performers.

E9.6.12 Sewer drainage and sanitary system

(a) (**Sewer system**)

(i) Project Co must provide sewer drainage connections with all waste pipe and fixture outlets.

(ii) The sewer drainage system must be constructed of 'Best Practice PVC', HDPE or suitable stainless steel materials.

(iii) Sewer drain pipework must be sized to accommodate the maximum flow demand for an Event Day where the Stadium operates at full capacity (including in accordance with clauses D8.3(g) and D9.3(f) plus the required spare capacity for the Expansion.

(iv) Sewerage pump systems may be installed in lieu of gravity drainage to convey sewage to Project Co's sewerage pumping station where gravity flows cannot be achieved.

(v) a minimum of twenty (20) remote sewer waste connections within separate in-ground pits must be provided and distributed throughout the Controlled Area and Sports Precinct.

(b) (**Property sewer drainage pits and fittings**) Project Co must provide:

(i) inspection chambers and manholes:

A at the end of all drainage lines;

B at all changes of direction; and

C at intervals of 90 metres maximum on main straight pipe runs;

(ii) inspection openings to the surface for clear out and maintenance purposes on all branch lines, complete with sealed removable caps that are flush with surface level and located in secure positions;

(iii) an overflow relief gully to each building;

(iv) reflux valves in access pits to prevent back charging of sewer;

(v) drainage pits with due consideration for maintenance risks associated with peak volumes on Event Days associated with rapid changes in wastewater volumes;

(vi) inspection chambers, manholes, and inspection openings which are located such that the impact of maintenance activities on Event Days is minimised, for example not in access corridors; and

(vii) drains designed to minimise the incidence of blockages. Reduced grade drains must not be utilised.

(c) (**Sewer pump, on-site storage tank and accessories**)

(i) Project Co must provide a remote sewer pump and storage tank sized to accommodate the maximum flow demand for an Event Day where the Stadium operates at full capacity, including in accordance with clauses D8.3(g) and D9.3(f), plus the required spare capacity for the Expansion.

(ii) Project Co must provide inline macerator systems prior to pumping systems, complete with overflow bypass. The macerator system must operate on demand, with associated buffer storage upstream.

(iii) The sewer pump pit and chamber must be located within accessible locations for maintenance purposes.

(iv) Pumps must be provided with redundancy such that any failure of a single pump does not compromise the ability of the facility to operate in a game day event. There must be a minimum of three (3) pumps in the main sewer pumping system. Satellite locations may have dual pump systems.

(v) Pumps must be arranged to allow isolation or removal without disruption to the operation of the hydraulic services system.

(vi) Project Co must provide pumps of adequate capacity and material to meet the demands and volumes discharged.

(vii) Project Co must provide pump control panels in secure locations with all control devices, lockable doors, audible, visual and remote alarms and all service connections.

(viii) Project Co must arrange the controls such that wastewater is regularly purged from the system and is not held for excessive periods.

(ix) All pumps, control panels, meters and level switches must be interfaced and monitored by the BMS.

E9.6.13 Industrial waste system

(a) (**Industrial waste system**)

(i) Industrial waste drainage systems must be provided as set out within any trade waste agreement with the local trade waste Authority.

(ii) Industrial waste systems (pipes and associated accessories) must be sized to accommodate the maximum flow demand for an Event Day where the Stadium operates at full capacity plus the required spare capacity for Expansion.

(iii) Inspection openings to surface must be provided similarly to those specified for the sewer drainage system in clause E9.6.12(b)(i).

(iv) Project Co must ensure accessibility to allow clearing of blockages with minimum disruption to the operation of the hydraulic services and the Stadium Activities.

(v) Project Co must provide a minimum of twenty (20) remote industrial waste outlets within separate in-ground pits distributed throughout the Controlled Area and Sports Precinct.

(b) (**Industrial waste apparatus**)

(i) Project Co must provide industrial waste arrestors and treatment systems in accordance with the requirements of relevant Authorities, including the Water Corporation, and relevant Quality Standards and Laws.

(ii) The industrial arrestors must be sized to accommodate the maximum flow demand for an Event Day where the Stadium operates at full capacity plus the required spare capacity for the Expansion.

E9.6.14 Rainwater harvesting system

(a) (**Rain water systems**)

(i) Project Co must provide a rainwater system for toilet flushing and for irrigation of soft landscaping areas (excluding the Pitch).

(ii) The rainwater harvesting system must be capable of accepting inflows for a 1 in 100 year discharge flow.

(iii) Rainwater harvesting tanks must be sized to hold a minimum of 100% of the available catchment. Project Co must provide calculations to support the proposed sizing of the system.

(iv) Prior to capture, rainwater must be treated for solid contaminants.

(v) Project Co must arrange the system to allow maintenance of the rainwater tank without affecting ongoing operations.

(b) (**Rain water pumps, accessories and fittings**)

(i) Project Co must provide a rainwater harvesting system incorporating storage tanks, treatment system, pump-sets with auto-change over/top up and associated valves and accessories.

(ii) A minimum of two (2) pumps on a duty standby arrangement must be utilised for the rainwater harvesting distribution system to mirror the cold water pumping system configuration.

(iii) Treated rainwater must be used for toilet flushing, wash down and soft landscaping, allowing for peak demands, including mains pressure flush valves during high frequency of use.

(iv) The rainwater distribution system must be backed up by the cold water distribution system and pumps.

(v) All pumps, control panels, meters and level switches must be interfaced and monitored by the BMS.

E9.6.15 Above ground stormwater

(a) (**Controlled Area, Seating Bowl and downpipes system**)

(i) Project Co must provide a stormwater system comprising of downpipes extending from the roof areas, gutters, external hardstand areas and balconies.

(ii) Discharge from the roof drainage system which is not connected to the rainwater harvesting system must connect to the civil infrastructure as required to meet the requirements of relevant Authorities, including the local government Authority, and relevant Quality Standards and Laws.

(iii) The stormwater systems must be provided as applicable, complete with 100% overflow designed to accommodate a 1 in 100 year storm, or 210mm per hour for five minutes duration.

(iv) The gutters and Controlled Area must be provided with 100% overflow capability which will discharge to atmosphere in accordance with the requirements of relevant Authorities and relevant Quality Standards.

(v) Downpipes must collect, convey and discharge rainwater to the rainwater harvesting and civil drainage systems.

(b) (**Stormwater pumps and accessories**) Project Co must:

(i) provide duty pumps and standby pumps, complete with control panel and associated accessories to service the Site if the Site stormwater cannot be gravity fed into the civil infrastructure; and

(ii) ensure all interface all pumps, control panels and level switches are interfaced with and monitored by the BMS

E9.6.16 Gas services

(a) (**Gas supply**) Project Co must:

(i) provide a reticulated gas supply, together with all required maintenance isolation valves, to all gas demand points including:

A all hydraulic services systems, mechanical and specialised plants requiring gas (including hot water systems, gas heaters and boilers);

B gas appliances (including boiling water units);

C kitchenettes;

D barbeque facilities (within the Stadium and Sports Precinct);

E Catering Facilities; and

(ii) provide a minimum of twenty (20) remote gas connections within separate in-ground pits distributed throughout the Controlled Area and Sports Precinct.

(b) (**Gas metering, valves, and regulators**)

(i) Valves must be provided within an in-ground pit to enable separate isolation of the Sports Precinct.

(ii) Project Co must provide individual gas sub-metering to all major gas demand points including each of the Catering Facilities and each of the Commercial Facilities, mechanical services plant requiring gas supplies and heated water generation systems.

(iii) Emergency shut off valves must be provided throughout the Stadium to allow isolation of each Functional Area including:

A Primary Production Kitchen;

B Satellite Production Kitchens;

C other Catering Facilities with gas appliances;

D mechanical plant, for example boiler; and

E hot water plant.

(iv) Authority approved vented regulators must be used at points where high gas pressures are reduced to serve appliances of low pressures.

(v) The system must incorporate all valves, tees, bends, regulators, tail pipes and sundry items in accordance with the requirements of all relevant Authorities, ATCO, the gas provider and relevant Quality Standards.

E9.6.17 Sanitary fixtures, fittings and tapware

(a) Project Co must provide highest grade quality water efficient appliances for all shower and toilet facilities within the Stadium and Sports Precinct including dual flush toilets, for example 6/4 litres, timed flow sensor taps, timed flow sensor or waterless urinals and low flow shower roses.

(b) All sanitary fixtures and tapware must be:

(i) of suitable WELS rating and incorporate water flow restrictors or design to control usage and reduce water consumption within Team Facilities areas;

(ii) be fixed at a height which is suitable to accommodate the height of the Athletes and Players; and

(iii) as set out in Chapters D8 (General Admission Areas) and D9 (Premium Product Areas) of these Design Specifications.

(iv) Waterless urinals must be considered for the Stadium and Sports Precinct. Where waterless urinals are proposed, Project Co must provide a LCC analysis and performance comparison between waterless urinals and low flow urinals for review by the State.

(c) Inspection openings must be provided on all wastewater, sewage and industrial waste pipe systems.

(d) Water closets in areas with high frequency use, for example public toilets and general access areas, must be mains pressure flush valves.

(e) Floor wastes to all toilet facilities and wet areas must be provided complete with priming device as required.

(f) All shower wastes must be of minimum 100mm in diameter.

(g) Industrial floor wastes and bucket traps must be provided to all industrial waste areas, including Waste Enclosures, Loading Docks, Catering Facilities and wash down facilities.

E9.6.18 Beer reticulation

Project Co must engage a specialist consultant and specialist Subcontractor for the design, construction, commissioning and completion of a multi-fill beer reticulation system, which must be installed in accordance with all relevant Quality Standards and Laws, with CO_2 gas detection devices and control board.

E9.6.19 BMS connections

[*Not disclosed*]

E10 MECHANICAL SERVICES

E10.1 GENERAL

(a) Project Co must design, construct, commission and complete all mechanical services required to deliver the Stadium and Sports Precinct as part of the DBFM Works.

(b) The mechanical services are central to the overall performance of the Stadium to ensure the delivery of an energy efficient, comfortable facility with fully commissioned and maintained mechanical services.

(c) The mechanical services are central to the comfort of Stadium Users and must provide an environment that will provide an acceptable level of amenity in all Functional Areas, including:

(i) superior indoor air quality that utilises both mechanical and passive ventilation systems as appropriate;

(ii) thermal comfort through correctly sized mechanical services to control the internal conditions as detailed within the tables below; and

(iii) acoustic performance that meets the requirements set out in Chapter E7 (Acoustics) of these Design Specifications.

(d) Mechanical services associated with the development of the Stadium and Sports Precinct must be designed and executed in accordance with the general provisions and requirements set out in Chapter E1 (General Requirements) of these Design Specifications, and to ensure seamless integration with all other Engineering Services, architecture, and interior and structural designs and with the functional requirements of the Stadium and Sports Precinct.

E10.2 SCOPE

(a) The scope of the Mechanical services works for the Stadium and Sports Precinct includes management of ground gases in accordance with relevant Quality Standards and Laws and the design, construction, commissioning and completion of:

(i) cooling thermal plant and distribution systems;

(ii) heating water thermal plant and distribution systems;

(iii) air-conditioning systems;

(iv) evaporative cooling systems;

(v) air diffusion devices;

(vi) thermal zones;

(vii) air distribution systems;

(viii) smoke control systems;

(ix) smoke hazard management and stairwell pressurisation systems;

(x) toilet exhaust systems;

(xi) general ventilation;

(xii) car park ventilation systems;

(xiii) natural ventilation (to Concourse areas);

(xiv) fume extraction;

(xv) cold rooms and freezers;

(xvi) electrical services for mechanical services plant;

(xvii) wind studies;

(xviii) computational fluid dynamics (CFD) modelling and analysis; and

(xix) accommodation of temporary mechanical services for Event Overlay.

(b) (**Metering**) Project Co must provide sub-metering to mechanical services plant in all high energy use areas, high water use areas and all areas where energy or water usage costs (or both of these) require metering for the purpose of on-charging to third parties, including to all Functional Areas, Functional Units and mechanical services plant as set out in Chapter E1 (General Requirements).

(c) (**Co-ordination**) Mechanical services must be coordinated with the architecture and structural design of the Stadium and with other Engineering Services and FF&E. Major

plant in particular must complement the architectural design of the Stadium via concealment or otherwise.

(d) [*Not disclosed*]

(e) (**Testing and commissioning**) Testing of the mechanical services must simulate typical Event Day scenarios, including as described in Appendix H7 (Minimum Completion Tests).

E10.3 DESIGN INFORMATION

(a) Project Co must calculate population densities and heat loads for the Stadium based on the functional and technical requirements for the Stadium set out in Part D (Functional Brief) and Part E (Technical Brief) of these Design Specifications to inform the mechanical services design.

(b) The design of the mechanical services must take into account the microclimate, wind effects, built form, space orientation, thermal performance, building usage, building characteristics, occupancy profiles and pollutant emissions.

E10.4 QUALITY STANDARDS AND LAWS

(a) Without limiting clause 14.1 of this Agreement and the Quality Standards and Laws stipulated in Chapter E1 (General Requirements) of these Design Specifications, the design, construction, commissioning and completion of the Stadium and Sports Precinct in respect of the mechanical services must comply with all relevant Quality Standards and Laws including:

(i) all relevant Australian Standards, including:

A AS1940-2004 The storage and handling of flammable and combustible liquids;

B AS / NZS 3000-2007 Electrical installations;

C AS 1170.4-2007 Structural design actions - Earthquake actions in Australia;

D AS 2670.1-2001 Evaluation of human exposure to whole-body vibration – General Requirements;

E AS1324.1 Air filters for use in general ventilation and air-conditioning - Application, performance and construction;

F AS 1324.2 Air filters for use in general ventilation and air-conditioning - Methods of test;

G AS / NZS 1668.1 The use of ventilation and air-conditioning in buildings - Fire and smoke control in multi-compartment buildings;

H AS / NZS 1668.2 The use of ventilation and air-conditioning in buildings - Mechanical ventilation in buildings;

I AS 1668.3 The use of ventilation and air-conditioning in buildings - Smoke control systems for large single compartments or smoke reservoirs;

J AS 1668.4-2012 The use of ventilation and air-conditioning in buildings - Natural ventilation of buildings;

K AS 1940-2004 The storage and handling of flammable and combustible liquids;

L AS / NZS 3666.1-2011 Air-handling and water systems of buildings - Microbial control - Design, installation and commissioning;

M AS/NZS ISO 31000-2009 Risk Management;

N AS 5059-2006 Power station cooling tower water systems - Management of legionnaires' disease health risk;

O AS / NZS 1677.1-1998 Refrigerating systems - Refrigerant classification;

P AS / NZS 3666.3-2011 Air-handling and water systems of buildings - Microbial control - Performance-based maintenance of cooling water systems;

Q AS 4254.1-2012 Ductwork for air-handling systems in buildings – flexible duct;

R AS 4254.2-2012 Ductwork for air-handling systems in buildings – rigid duct; and

S AS 4508-1999 Thermal resistance of insulation for ductwork used in building air-conditioning;

(ii) other relevant standards, codes and guidelines including:

A Australian Government - Minimum Efficiency Performance Standards (MEPS);

B Environmental Protection Agency Western Australia - Policies and guidelines;

C Property Council of Australia - 'A grade' building requirements (zoning of AC);

D National Association of Testing Authorities (NATA);

E Australian Institute of Air-conditioning, Refrigeration and Heating (AIRAH) guidelines;

F American Society of Heating Refrigeration and Air-Conditioning Engineers (ASHRAE) design guidelines, including ASHRAE Standard 52–76, (filtration);

G Chartered Institution of Building Services Engineers (CIBSE) – Commissioning Code A;

H World Health Organisation (WHO) - recommendations for air quality; and

I Montreal Protocol; and

(iii) all relevant Laws, including OHS Laws.

(b) Where Australian Standards do not sufficiently prescribe the relevant requirements, the mechanical services must be designed to comply with relevant design guidelines. Where guidelines are utilised, the mechanical services should be designed in accordance with AIRAH guidelines. Where these are not sufficient for design guidance the mechanical services should be designed in accordance with the ASHRAE or the CIBSE design guidelines. The above guidelines should be complied with for mechanical services design unless other requirements set out in the Output Specifications control the design methodology.

(c) Alternative solutions may be considered where equivalent performance is demonstrated without compromise to the Stadium Activities, and where benefits of lower capital cost, operating cost or reduced environmental impact are demonstrated to the State.

E10.5 PERFORMANCE REQUIREMENTS

E10.5.1 Design Life

The Design Life for the mechanical services works must meet or exceed the minimum requirements set out in the table below. The mechanical services must be designed and equipment selected to achieve the required Design Life without requiring maintenance that would not be expected for mechanical services built and installed in accordance with Best Construction Practices.

Element	Design Life	Comments
Pipework	40 years	Based on erosion to manufacturer's recommended minimum at a pipework velocity of 2.5m/s
Ductwork	30 years	Based on change in leakage of < 5%
Packaged air-conditioning plant	15 years	Based on reliable operation and no visible corrosion
Chillers	25 years	Based on reliable operation without major failure
Cooling towers	20 years	Based on reliable operation without major failure or visible corrosion
Heating water units	20 years	Based on reliable operation without major failure
Dampers	20 years	Based on free movement without binding and sealing rate changes < 5%
Centrifugal fans	25 years	Based on reliable operation without bearing and motor failure or discernible erosion
Axial fans	25 years	Based on reliable operation without bearing and motor failure or discernible erosion
Pumps	25 years	Based on reliable operation without bearing and motor failure or measurable leakage change
Valves	30 years	Based on no measurable erosion and leakage
Valve actuators	20 years	Based on reliable operation with drift < 10%
Control equipment	15 years	Based on reliable operation without upgrade required or failure of components

E10.5.2 Corrosion resistance

The mechanical services will be installed within a riverine environment and must be provided with treatment to ensure minimisation of corrosion arising from the Land Conditions including:

(a) third party treatment of coils exposed to ambient air (which may contain airborne salt) such as condensing coils which must have a life span of 15 years without visible corrosion. Dipping of fully assembled coil methodologies is required;

(b) painting and treatment of all metalwork, ductwork and pipework exposed to ambient air (which may contain airborne salt) which must have a life span of 25 years without visible corrosion; and

(c) treatment to the inside of ducting in high humidity rooms, including shower rooms and all aquatic recovery facilities.

E10.5.3 Low lifecycle cost

Mechanical services must be designed on a WOL basis to achieve the lowest LCC, with an emphasis on energy efficiency, performance reliability and cost effective maintenance and replacement. LCC analysis should be used to inform selection of systems and equipment.

E10.5.4 [*Not disclosed*]

E10.5.5 [*Not disclosed*]

E10.5.6 Quality

Construction quality must be consistent with Best Construction Practices. Equipment and components selected must be of a type with proven performance and a schedule of the proposed manufacturer for mechanical plant and equipment must be submitted to the State for comment prior to commencement of Design Stage 2.

E10.5.7 Aesthetics

(a) All serviceable items and mechanical equipment, including heating, cooling, hydronic pumping and air handling plant, must be located so that they are not visible to the public unless utilised as an architectural feature.

(b) Mechanical services must be integrated within the concealed ceiling spaces wherever possible to minimise impact on the aesthetic quality of the interior spaces and the external envelope.

(c) Air diffusion and other visible equipment must be selected to provide the required performance levels and to meet acceptable appearance criteria. Utilisation of linear slot type diffusers must be considered for Premium Product Areas and swirl type diffusers for general air conditioned spaces.

E10.5.8 ESD

(a) The mechanical services works must comply with the ESD requirements set out in Chapter E1 (General Requirements). Project Co 's ESD strategy set out in the ESD Management Plan must influence as a minimum the design and selection of:

(i) main mechanical plant and equipment;

(ii) distribution and pumping systems;

(iii) thermal insulation;

(iv) heat recovery;

(v) free cooling and economy cycle settings;

(vi) use of centralised plant and local plant for energy minimisation in relation to anticipated usage scenarios; and

(vii) systems controls.

(b) All mechanical services must be fully re-commissioned six (6) months following Technical Completion.

(c) Refrigerant gases must be selected with regard to their ozone depletion potential and global warming potential to ensure minimum environmental impact. The refrigerant selected must have the following qualities:

(i) ozone depletion potential < 0.0; and

(ii) global warming potential, 100 years < 1300.

(d) Air quality sensors must be installed in the return air systems for all air handling systems to spaces with occupancy over 25 persons in order to monitor carbon dioxide levels and enable a reduction in the supply of outside air in accordance with the ESD Initiatives.

(e) Air-conditioning systems serving comfort cooling purposes must be integrated with room movement sensors where provided to shut down systems when not in use. For systems with multiple zone control on the one air handling system then each zone must shut down to relaxed mode states with local zone initiation provided to re-engage operation.

(f) Utilisation of economy cycle systems must be based on the NCC Section J requirements and on LCC (over 25 years), taking into account capital costs, energy costs and maintenance costs. Project Co must provide the lowest WOL cost solution if this analysis exceeds the NCC Section J requirements.

E10.5.9 Flexibility, Reconfiguration and Expansion

(a) The design of the mechanical services must meet the flexibility and expansion requirements set out in Chapter E1 (General Requirements).

(b) Subject to clauses E10.5.16 and E10.5.36(b)(iii), and without limiting the remainder of these Design Specifications, a minimum of 10% spare capacity must be provided in major items of mechanical plant, including boilers, primary air handling units, riser shafts and distribution infrastructure to support Expansion and Reconfiguration.

(c) Spatial allowance for future plant infrastructure must as a minimum be equivalent to 15% of the plant space required for the initial installation, and must be provided in a manner and in locations that facilitate logical Expansion and Reconfiguration.

(d) The mechanical services must achieve flexibility and provide the ability to alter or change the mechanical services to accommodate:

(i) changes to occupancy levels and internal thermal loads by ±10% of the initial planned capacity; and

(ii) changes to floor layouts and functionality over time, including as a result of Reconfiguration.

(e) Project Co must provide the ability to reliably and efficiently operate the main cooling and heating systems for the full range of operating conditions from no load to full design load. Project Co must consider the use of light load chillers and heating water units as well as thermal storage systems.

E10.5.10 Maintainability

(a) The mechanical services must be designed and installed to accommodate manufacturers' recommended maintenance activity without removal of structure or other services and with clear access zones in accordance with all relevant Quality Standards and Laws, manufacturer's recommendations.

(b) Minimum maintainability access requirements are as follows:

(i) Maintenance of equipment and mechanical services must not be performed from within publicly occupied areas with the exclusion of in-ceiling fans, fan coil units and variable air volume (VAV) boxes.

(ii) Fan coil units above 1000Ls in airflow capacity must not be installed within ceiling spaces.

(iii) In-ceiling fan coil units must be installed to allow access to all sides and must not be installed above flush set ceilings.

(iv) Maintenance must not be performed directly from high occupancy public spaces. Serviceable items within the occupied space should be selected for ease of component maintenance and replacement of consumables.

(v) Plant and building services must be located so that routine preventive maintenance is achievable without compromising the use of the Functional Area or Functional Unit served, and without disruption to the Stadium Activities.

(vi) Maintainable equipment must not be installed more than 300mm above ceilings, in locations requiring ladder access more than 1.8m in height and above flush set ceilings.

(c) Centralised plant and equipment must be configured and installed for ease of service access and to permit the removal and replacement of major items of plant with minimum disruption and in the least possible time.

(d) Chillers must be provided with lifting rails to assist compressor removal and pulling points to allow complete machine removal.

(e) Large items of equipment, including pumps, chillers and heating water units, must be provided with clearances to allow lifting equipment to be utilised for removal and

consideration should be given to mounting these items at grade with access for Heavy Vehicles.

(f) Access openings, doors and lifting provisions must be provided for replacement of all equipment installed without removal of fixed building components or other services.

E10.5.11 [*Not disclosed*]

E10.5.12 [*Not disclosed*]

E10.5.13 Ambient thermal conditions

Ambient Thermal Condition	Requirements
Extreme ambient conditions within which plant must be required to operate	Summer - 45°C dry bulb (DB)/24°C wet bulb (WB) and full solar load Winter 0.0°C DB
Outside ambient conditions in which air conditioning must be required to achieve continuous maximum ratings of performance	Summer 37°C DB, 23°C WB and full solar load Winter 7°C DB
Outside ambient conditions for selection of direct expansion equipment	Summer 40°C DB Reliable operation must be provided for temperature of 45°C
Wind pressure effect	Design mechanical services to accommodate local wind conditions to ensure design airflows do not vary greater than 15% for periods of more than 30 minutes for local wind speeds as per Bureau of Meteorology average maximums.
Internal conditions below must be achieved at the above mentioned ambient conditions for air-conditioned areas:	
Air-conditioned Areas	**Summer:** / **Winter:**
Office areas	24° / 21°C
Premium Product Areas	24°C / 21°C
Circulation Areas	24°C / 21°C
Control limits	Nominal set point 22.5°C, with control band ±1.5 °C around set points.
Relative humidity	Generally between 40% to 60% by virtue of cooling coil performance for sensible cooling during summer or cooling operation. No automatic or active control of humidity is to be provided.
Minimum space pressurisation	0.5 air changes per hour
Air velocity	0.1 – 0.25 m/s measured 1.0 – 1.5 m above floor level
Air quality	The air quality must meet OHS requirements. This is expected to require evaluation of external pollutant characteristics, indoor sources of pollutants and determination of internal objectives. The building will be designated non-smoking. Dedicated

	enclosed smoking areas where provided must be provided with local ventilation and filtration.
Comfort rating - predicted mean vote (PMV) for office areas	-0.5 to +0.5 for 98% of the year
PMV for air-conditioned areas other than office areas	-0.6 to +0.6 for 98% of the year
Minimum airflow rates	4.5 L/s/sqm (3L/s/sqm for low temperature supply air at 8-12°C)
Maximum temperature gradient between ankles and head for air-conditioned spaces	2°C
Ventilated Areas	**Requirements**
Internal conditions required to be achieved by comfort mechanically ventilation systems	To ASHRAE comfort guideline, table 1-100A and to achieve ASHRAE minimum PMV of +2 to -2. Design must comply with Australian Standard AS1668.2 and ASHRAE standard 62.4
Air velocity and comfort design conditions required to be achieved in comfort mechanically ventilated spaces	1.0 to 1.5 m/s measured 1.5 m above floor level
Internal conditions required to be achieved at the design ambient conditions for naturally ventilated areas	Air movement induced to minimise odours and achieve tenable conditions in accordance with Australian Standard AS1668.4, ASHRAE standard 62.1 and ASHRAE standard 55 and minimum freely accessible openable area in accordance with the NCC. Operable natural ventilation devices should be selected for reliability of operation and must have permanent maintenance access for operable and serviceable parts.
Plant area ventilation	To achieve manufacturers' requirements of equipment within plant rooms or, if not specified, not more than 6°C above ambient local air temperature to ensure that maintenance and repairs can safely be performed in extreme weather,

E10.5.14 Internal loads

Internal Loads	Requirements
Lighting loads, equipment loads and people loads	Diversity may be applied to kitchen equipment usage. People load - heat output to AIRAH design guide for space use activity level. Minimum projected occupancies – to AS1668.2. Bar areas - 1 person/0.8sqm Dining areas – briefed capacity or 1 person per 1.5sqm, whichever is the greater (for function use) Minimum lighting loads - as per electrical design. Minimum 20w/sqm for specialist lighting in each function room.

E10.5.15 Miscellaneous items

Miscellaneous Items	Requirements
Outside air	To comply with AS 1668 Part 2 (2013). A performance approach may be adopted to determine appropriate ventilation rates, varied as required to meet occupancy needs using indicators such as carbon dioxide monitoring. Consideration must be given to locate outside air and intakes to maximise air cleanliness and quality.
After hours operation	On a Functional Area and Functional Unit basis with local control
[*Not disclosed*]	[*Not disclosed*]
Filtration	In accordance with ASHRAE Standard 52–76, minimum efficiency 80%, arrestance 98% and AS1668 Part 2. Provide panel type filtration on all outside air intakes. All filtration for air-conditioning systems must be via panel pre-filters with deep bed filters provided for systems above 1000L/s in airflow capacity.

Design Pressure Losses	All ductwork and hydronic systems should be designed to achieve low pressure losses including:
	• chiller vessels maximum 50kPa
	• low pressure duct design maximum pressure loss 1.0Pa/m at the following maximum velocities:
	  ○ 8m/s within risers;
	  ○ 6m/s within main branches;
	  ○ 3m/s within secondary branches; and
	  ○ 10m/s for kitchen extraction
	• low pressure pipework design, maximum fluid velocity 2.4m/s at maximum 1kPa/m.
	• pipework over 150mm – up to 3m/s @ 250 Pa/m

Acoustic performance	Mechanical services must meet the acoustic requirements set out in Chapter E7 (Acoustics).
Sensors	Sensors must be fully protected from tampering or damage in public areas.
Flood mitigation	All equipment and switchboards must be located above the local 1:100 flood level.

E10.5.16 [*Not disclosed*]

E10.5.17 [*Not disclosed*]

E10.5.18 [*Not disclosed*]

E10.5.19 [*Not disclosed*]

E10.5.20 [*Not disclosed*]

E10.5.21 [*Not disclosed*]

E10.5.22 [*Not disclosed*]

E10.5.23 Functional zones and operability of systems

(a) Functional zones must be determined by space usage patterns and occupancy levels during Event Days and Non-Event Days, noting that some functional zones may impose a heavier demand load on Non-Event Days than on Event Days. Typical functional zones are expected to align with the Functional Areas as indicated on the SOA and include:

(i) General Admission Areas;

(ii) Media Facilities;

(iii) Team Facilities;

(iv) Premium Product Areas;

(v) Catering Facilities; and

(vi) Administration Facilities.

(b) Functional zones should be served by separate AHUs and be designed in such a way that:

(i) comfort conditions are achieved irrespective of the variance of the cooling and heating loads; and

(ii) positive pressurisation of air-conditioned areas is achieved in relation to non-air conditioned areas in all modes.

(c) Zone control must be provided to achieve ambient conditions in multiple operating modes, including after hours.

(d) mechanical services must be integrated with and monitored by the BMS which must be able to override the functions described above and achieve all zone and system shut down requirements for minimisation of energy use and energy loss.

(e) Return air must be drawn from the space via ducted ceiling or wall mounted grilles. The use of plenum ceilings may be considered if the systems do not cross thermal or control zones. The air must be either returned to the air handling unit or relieved to outside through a relief air system. Return air to the AHUs must only be drawn from thermal and functional zones which are in operation.

(f) A pre-function warm up and cool down cycle must be provided in each air-conditioning system.

(g) Independent AHUs must serve Catering Facilities and Waste Management Facilities spaces to minimise odour and contamination to other parts of the Stadium.

(h) Temperature and humidity control must be provided to Functional Units accommodating ICT Systems and AV Systems as set out in clauses E10.5.33 and E10.5.34 below.

E10.5.24 Thermal operational zones

(a) Thermal zones should be divided between perimeter (north, south, east and west) and interior zones. Thermal zones must be designed in such a way that comfort conditions are achieved economically irrespective of the variance of the cooling and heating loads throughout the Stadium. Separate air handling plant must be supplied (to prevent reheat of cooling air) where the zone floor areas exceed 300sqm of air-conditioned space.

(b) The mechanical services must include individual thermal treatment of all occupied spaces, allow unoccupied spaces to be turned off and areas with lower than design thermal load to be turned down to minimise energy use.

(c) Isolation of chilled and heating water systems must be provided to serve only areas under use with other areas shut down with no flows when not in use. At a minimum, shut down zones must have the ability to enable 25% or less of the air-conditioned spaces to operate with all other areas isolated. On Non-Event Days it must be possible to shut down all areas which are not in use.

(d) Pressure zoning of hydronic systems must be provided to ensure remote areas of the Stadium are controlled independently and stable flow control is achieved for flow rates through equipment under normal operation. This must include dedicated variable speed pumps for each zone. Zones must be shut down when not in use. A minimum of 2 pressure zones utilising separate pumps must be provided for chilled water systems within the Stadium.

(e) Stand-by pumps must be provided to all served hydronic zones for heating and cooling systems.

E10.5.25 Air distribution system

(a) The air distribution system must provide a uniform climate via rapid mixing of the incoming conditioned supply air with the room air.

(b) The use of individual air-conditioning systems should be considered for isolated spaces with differing use patterns so these areas can be shut down when not in use. This must include all Premium Product Areas provided with separate air handling plant.

E10.5.26 Smoke hazard management and stairwell pressurisation systems

(a) Smoke hazard management and stairwell pressurisation must be provided in accordance with all relevant Quality Standards and Laws and the requirements set out in the FEB and the FER, pursuant to Chapter E8 (Fire Engineering and Fire Protection Systems) of these Design Specifications.

(b) For fire engineered solutions, smoke hazard management must comply with the FEB requirements in all forms for design and performance. Project Co must provide CFD modelling for systems which are not deemed to comply and submit reporting to the State for approval.

(c) Project Co must provide the State with a comprehensive fire systems analysis report to complement the FER. Performance documentation must be provided in the form of thermal/smoke modelling and compliance reporting. This must include compliance with alternate smoke and fire control solutions.

(d) Project Co must provide the State with a wind study to demonstrate that the smoke hazard management system will not discharge exhausted smoke into the Seating Bowl or re-enter the Stadium.

E10.5.27 Toilet exhaust systems

Toilet exhaust ventilation systems must be provided in accordance with AS 1668 Part 2. For public toilets Project Co must provide a solution to ensure system airflows are sized to a minimum of 200% of the deemed to comply rates in AS 1668 Part 2.

E10.5.28 General ventilation systems

(a) General ventilation systems must be interlocked to operate in conjunction with the operation of each zone being utilised within the Stadium. When not in use systems must be capable of being shut down or partially shut down to operate to suit the requirements of an Event, Function or other Stadium Activities.

(b) General natural or exhaust ventilation must accommodate specific Events or Functions, including fireworks and smoke effects within enclosed spaces.

(c) Variable speed control of all systems that have varying loads, including hydronic systems and air delivery and exhaust systems, must be automatically varied in accordance with the load requirements.

(d) Mechanical ventilation must be provided to all areas where humidity levels will increase above ambient levels, including:

(i) storage rooms adjacent to areas that are regularly irrigated or washed down;

(ii) storage rooms that contain equipment that may be moist or wet; and

(iii) under cover areas adjacent to the Pitch, to which moisture may have been brought in from the Pitch.

(e) Where high concentrations of occupants are present within naturally ventilated areas then ventilation or supplementary cooling must be considered such as mechanical boost systems or evaporative cooling systems; high concentrations may be considered as occupancy greater than or equal to one person per 1.0sqm of floor area.

(f) General exhaust to Stadium Operations and Event Day Facilities, as set out in Chapter D13 (Stadium Operations and Event Day Facilities) of these Design Specifications, including tea preparation areas, print and photocopying rooms and plant and equipment areas, must not allow odour or contaminated air to be distributed beyond isolated ventilated areas.

E10.5.29 Kitchen and dining exhaust systems

(a) Kitchen and dining areas must be ventilated separately in order to minimise perceptible odour and contamination to adjacent areas. Kitchen exhaust discharges must not allow odours to enter the Stadium under normal operation and must be discharged in accordance with AS1668.2. Separate exhaust systems for remote and stand-alone kitchen areas must be provided.

(b) Kitchen exhaust systems must have separate dishwasher exhaust systems designed to accommodate periodic high levels of moisture within the airstream without corrosion or damage to adjoining FF&E. Design of ventilation systems where moisture may enter the system must be provided with drains and tundishes in accordance with all relevant Quality Standards and Laws. Dedicated kitchen exhaust systems to food preparation areas including fans, discharges, ductwork and kitchen exhaust hoods must be provided to prevent odour nuisance to Patrons. Kitchen exhaust systems must be integrated with the Stadium facade design to minimise visual impact.

(c) Where exhaust hoods are installed in air-conditioned spaces or kitchens are open to air-conditioned spaces Project Co must provide a suitable kitchen exhaust system, and make up air system to ensure air-conditioned spaces remain pressurised relative to adjoining un-condtioned spaces to a minimum of 0.25 air changes per hour when exhaust hoods are operating.

(d) Project Co must consider the location of fire engineering services to avoid conflict with kitchen exhaust systems within Catering Facilities to minimise the risk of false alarms.

E10.5.30 Special ventilation requirements

(a) (**Stadium Carpark ventilation**) The Stadium Carpark ventilation system must control the concentration of atmospheric contaminants to safe levels in accordance with the minimum requirements of AS 1668 Part 2 and the NCC.

(b) A system of carbon monoxide detectors and analysers must be used to enable the ventilation system to run at reduced volume and reduce energy consumption levels in non-peak times. Engineered alternative solutions may be utilised.

(c) Methane detectors should be placed in car parks or confined areas at or below ground level. The detection system should be connected to a ventilation system, which is automatically activated when methane levels reach a specified value. In any case, the ventilation system should be operated at least twice a day.

(d) (**Dust extraction**) Localised dust extraction must be provided to the General Trades Workshop.

(e) (**Fume extraction**) Specialist workshops such as dedicated paint and welding booths, if provided, must be provided with fume extraction.

(f) (**Hazardous Substance Stores**) Hazardous substance stores for hazardous cleaning agents, pool chemicals, horticultural and other products as set out in Chapter D13 (Stadium Operations and Event Day Facilities) of these Design Specifications must comply with relevant Quality Standards and Laws. Storage and exhaust systems must be provided to accommodate the specific function and contents of relevant store rooms.

(g) (**Cold rooms and freezers**) Cold rooms and freezers to serve food preparation areas and beverage stores must be in accordance with the design requirements for Catering Facilities. Project Co must co-ordinate the design and installation of all cold room and catering refrigeration heat rejection equipment by the specialist catering contractors together with other mechanical services to ensure suitable co-ordination, operation and acoustic control.

E10.5.31 Electric motors

Fan and pump motors must be provided as high efficiency with variable speed drive and rated in accordance with the MEPS.

E10.5.32 Electrical systems for mechanical services

(a) Electrical services must include essential and non-essential power supplies to mechanical services. Electrical services must include switchboards, switches, cabling, electrical starters, relays and switchboard equipment as required. A consistent manufacturer of all electrical services for mechanical services must be provided across the Stadium and Sports Precinct.

(b) Surge protection must be supplied to all mechanical services equipment and plant.

(c) Mechanical services must seamlessly cascade faults in line with electrical services and must be modelled for performance.

(d) Electrical services to mechanical services must be provided with 20% spare connection capacity based on connected load capacity.

E10.5.33 Thermal control of equipment

(a) The mechanical services must achieve thermal control for equipment within the Stadium to ensure operation in accordance with manufacturer's recommendations including standby thermal control for critical areas such as the Fire Control Room, the Production Suites, Main Security Office, Event Control Room and other life safety management areas.

(b) (**LED Superscreens, Digital Signage and Displays cooling**) Project Co must provide cooling requirements to accommodate high heat output from specialist items such as LED Superscreens, Digital Signage and Displays. This may include dedicated cooling systems.

E10.5.34 Thermal control of ICT Systems

[*Not disclosed*]

E10.5.35 Modelling requirements

(a) Project Co must submit thermal, wind and CFD modelling results for review by the State to demonstrate compliance with relevant Quality Standards.

(b) Energy modelling simulations must be provided to the State to enable review of the final design solution, and comparison with annual performance and comprehensive energy use reporting.

E10.5.36 BMS and controls

E10.5.37 [*Not disclosed*]

E11 ELECTRICAL SERVICES

E11.1 GENERAL

(a) Electrical services associated with the development of the Stadium and Sports Precinct, and the Pedestrian Underpass to the extent that such services are required by Project Co's design, must integrate seamlessly with associated incoming Utilities.

(b) Project Co must ensure that the electrical services associated with life safety support systems are designed and provided in a manner that takes full account of Project Co risk assessments and minimises adverse impacts including from:

(i) flooding;

(ii) fire;

(iii) equipment failure affecting other adjacent items of equipment, plant and service runs;

(iv) single points of failure affecting safety and essential services; and

(v) credible risks, including those arising from:

A the design of the Stadium, the Sports Precinct and the Pedestrian Underpass;

B performance of the Services by Project Co; and

C the Stadium Activities.

(c) The electrical services are important in ensuring the convenient use of the Stadium and Sports Precinct by Stadium Users and must provide an acceptable level of amenity in all Functional Areas, including through the adequacy of provision for electrical services with respect to quantity and distribution to accommodate all functionality described in these Design Specifications and as required to accommodate the Stadium Activities.

(d) The electrical services must comply with the acoustic performance requirements set out in Chapter E7 (Acoustics).

(e) Below ground electrical services or other facilities which may give rise to a spark should be excluded where gas risks have been identified.

E11.2 SCOPE

The scope of the electrical services works for the Stadium and Sports Precinct, and the Pedestrian Underpass to the extent that such services are required by Project Co's design, includes the design, construction, commissioning and completion of:

(a) HV switchboards;

(b) HV reticulation;

(c) distributed substations;

(d) transformers;

(e) HV cabling;

(f) HV switchgear local to substations;

(g) LV main switchboards;

(h) earthing and bonding;

(i) metering;

(j) LV distribution;

(k) emergency (backup) electrical supply, through a combination of generators and uninterruptable power supply units;

(l) automatic control of the electrical network;

(m) surge protection;

(n) lightning protection;

(o) provision of electrical services systems and fittings with inherent energy efficiency (including dimmers, off peak heating, load cycling, sensor light switching);

(p) safety services;

(q) all electrical services required to support other Engineering Services systems; and

(r) electrical power as required to support stormwater systems, wash-down, lighting, CCTV systems, AV Systems and other Engineering Services installed in the Pedestrian Underpass as required.

E11.3 AUTHORISATIONS

Without limiting Chapter A11 (Authorisations) and subject to clause 41 of this Agreement which sets out Project Co's obligations in respect of Authorisations, Project Co must obtain and comply with all required Authorisations and Authority requirements associated with the electrical services works for the Stadium and Sports Precinct including any required Authorisation(s) from any relevant Utility Company.

E11.4 QUALITY STANDARDS AND LAWS

Without limiting clause 14.1 of this Agreement and the Quality Standards and Laws stipulated in Chapter E1 (General Requirements), the design, construction, commissioning and completion of the Stadium and Sports Precinct in respect of the electrical services must comply with all relevant Quality Standards and Laws including:

(a) all relevant Australian Standards, including:

- (i) AS 1940 The storage and handling of flammable and combustible liquids;
- (ii) AS 2293 Emergency escape lighting and exit signs for buildings;
- (iii) AS 3010 Electrical installations - Generating sets;
- (iv) AS 3013 Electrical installations - Classification of the fire and mechanical performance of wiring system elements;
- (v) AS 3019 Electrical installations - Periodic verification;
- (vi) AS 3439 Low Voltage Switchgear and Controlgear Assemblies;
- (vii) AS 1158 Lighting for roads and public spaces;
- (viii) AS 1680 Interior lighting - Safe movement;
- (ix) AS 1768 Lightning protection;
- (x) AS 2067 Substations and high voltage installations exceed 1kV a.c.;
- (xi) AS 2374 (all parts) Power transformers;
- (xii) AS 2467 Maintenance of electrical switchgear;
- (xiii) AS 3000 Electrical installations;
- (xiv) AS 3008 Electrical Installations - installation of cables;
- (xv) AS 60044 (all parts) Instrument transformers;
- (xvi) AS 60076 (all parts) Power transformers – Dry-type transformers; and
- (xvii) AS 62271 (all parts) High voltage switchgear and controlgear;

(b) other relevant standards, codes and guidelines, including:

- (i) WA Electrical Requirements;

(ii) Western Australian Distribution Connections Manual;

(iii) Western Power Technical Rules and other Regulations;

(iv) Lighting Design Guideline for Roadway and Public Spaces, Revision 4L (December 2012) published by Main Roads Western Australia; and

(v) standards, specifications and requirements of the PTA, including earthing requirements on and adjacent to areas interfacing with the State Transport Infrastructure Works and for the DBFM Transport Infrastructure Works and including:

A PTA Lighting Design and Maintenance Guideline,

B PTA Safety Instructions for the Electrified Area;

C PTA Guidelines for Earthing and Bonding in the 25kV AC Electrified Areas – 228E:Parts 1, 3 and 4; and

(c) Laws, including:

(i) OHS Laws; and

(ii) Health *(Public Buildings) Regulations 1992* (WA).

E11.5 PERFORMANCE REQUIREMENTS

E11.5.1 Design Life

(a) In accordance with Chapter A6 (General Requirements) of these Design Specifications, the Design Life which must be specified for key components of the electrical services must meet or exceed the following minimum requirements:

Element	Design Life
HV switchboards	30 years
Transformers	30 years
LV switchboards	30 years
Batteries	5 years
Cables	30 years
Generators	20 years

E11.5.2 ESD

(a) Project Co must ensure that the electrical services minimise energy consumption and enable the efficient use of the Stadium and Sports Precinct in its different modes.

(b) Project Co must provide energy control zoning to enable flexibility of usage modes to minimise energy consumption in Functional Areas.

(c) Project Co must ensure the electrical services incorporates monitoring and metering of energy consumption of components of the electrical services in line with the requirements of the NCC and in order to produce trending reports as per the following CIBSE documents:

(i) TM 39 Building Energy Metering; and

(ii) TM 46 Energy Benchmarks.

(d) Project Co must ensure that the electrical services generally comply with the ESD requirements set out in Chapter E1 (General Requirements).

E11.5.3 Flexibility, Reconfiguration and Expansion

(a) Project Co must ensure that the electrical services are designed, constructed, commissioned and completed to accommodate future flexibility, including for Expansion and Reconfiguration. Project Co must detail strategies for extending and modifying the electrical services for each version of Reconfiguration and Expansion as described in the Flexibility, Reconfiguration and Expansion Report.

(b) The design of the generator plant must consider both spatial and system capacity for future upgrades, including for Reconfiguration and Expansion.

(c) Project Co must provide separate electrical circuits to each Functional Area to enable maintenance works in isolated spaces without affecting other adjacent areas.

E11.5.4 Maintainability

(a) The Stadium and Sports Precinct must allow easy access to electrical components and equipment for the purposes of maintenance and replacement, including crane and heavy goods vehicle access.

(b) The design of the electrical services must consider the public nature of the Stadium and Sports Precinct by minimising the potential for unauthorised access to and tampering with the electrical services installation. All components of the electrical services installation must be contained in securely enclosed rooms or lockable cupboards and enclosures, or otherwise protected in accordance with relevant Quality Standards, including the Green Guide.

E11.5.5 HV incoming service

[*Not disclosed*]

E11.5.6 HV switchboards

[*Not disclosed*]

E11.5.7 HV reticulation

[*Not disclosed*]

E11.5.8 Distributed substations

[*Not disclosed*]

E11.5.9 Transformers

[*Not disclosed*]

E11.5.10 LV main switchboards

[*Not disclosed*]

E11.5.11 Arc protection

[*Not disclosed*]

E11.5.12 Submains

[*Not disclosed*]

E11.5.13 Cable containment

[*Not disclosed*]

E11.5.14 LV reticulation

[*Not disclosed*]

E11.5.15 LV energy distribution centres

[*Not disclosed*]

E11.5.16 LV distribution boards

[*Not disclosed*]

E11.5.17 LV switchgear

[Not disclosed]

E11.5.18 Power supplies to safety services

[Not disclosed]

E11.5.19 Emergency Generators

[Not disclosed]

E11.5.20 UPS and associated reticulation

[Not disclosed]

E11.5.21 Energy Management System (EMS)

[Not disclosed]

E11.5.22 Status monitoring and reporting via the BMS

[Not disclosed]

E11.5.23 Lightning protection

[Not disclosed]

E11.5.24 Small power distribution

[Not disclosed]

E11.5.25 Labelling

Labelling must be provided to each individual component of the electrical services. Labelling must identify the source of supply and the intended function of the system or component.

E11.5.26 Metering

Project Co must provide metering to electrical services as set out in Chapter E1 (General Requirements).

E12 LIGHTING SYSTEMS

E12.1 GENERAL

(a) Project Co must design, construct, commission and complete all lighting systems required within the Stadium and Sports Precinct.

(b) The lighting systems must be designed and completed to interface with lighting installed as part of the adjoining State Transport Infrastructure Works, and to complement the architectural, structural and landscape design of the Stadium and Sports Precinct.

E12.2 SCOPE

(a) The scope of the lighting systems works for the Stadium and Sports Precinct includes the design, construction, commissioning and completion of:

(i) Pitch and sports lighting;

(ii) general lighting to all areas of the Stadium, including the Controlled Area, the Stadium Service Road, the Stadium Carpark and the Outside Broadcast Compound;

(iii) external facade lighting;

(iv) external lighting within the Sports Precinct, including up to the interface with the State Transport Infrastructure Works which adjoin the Site;

(v) emergency and evacuation lighting; and

(vi) lighting controls and connections to the BMS.

(b) (**Co-ordination**) Lighting systems works must be coordinated with other Engineering Services, including AV Systems, ICT Systems, fire engineering systems, Security Systems and electrical systems.

(c) [*Not disclosed*]

(d) (**Testing & Commissioning**) Testing and commissioning of all lighting systems, including lighting control systems (LCS), must be completed in accordance with the requirements set out in Appendix H7 (Minimum Completion Tests).

E12.3 AUTHORISATIONS

Without limiting Chapter A11 (Authorisations) and subject to clause 41 of this Agreement which sets out Project Co's obligations in respect of Authorisations, Project Co must obtain and comply with all required Authorisations and Authority requirements associated with the lighting systems for the Stadium and Sports Precinct including any required Authorisation(s) from:

(a) Western Power;

(b) any relevant local Government Authority;

(c) Swan River Trust;

(d) DER;

(e) EPA;

(f) MRWA;

(g) PTA; and

(h) CASA.

E12.4 DESIGN INFORMATION

Project Co must liaise with the State to finalise the technical requirements for the Bus Hub (PTA) and the interface requirements for the adjoining State Transport Infrastructure Works (MRWA).

E12.5 QUALITY STANDARDS AND LAWS

(a) Without limiting clause 14.1 of this Agreement and the Quality Standards and Laws stipulated in Chapter E1 (General Requirements), the design, construction, commissioning and completion of the Stadium and Sports Precinct in respect of the lighting systems works must comply with all relevant Quality Standards and Laws including:

(i) the AFL Lighting Requirements, as defined in clause E1.3(b)(ii);

(ii) the Cricket Lighting Requirements, as defined in clause E1.3(b)(ii);

(iii) the Soccer Lighting Requirements, as defined in clause E1.3(b)(ii);

(iv) the Athletics Lighting Requirements, as defined in clause E1.3(b)(ii);

(v) all relevant Australian Standards, including:

A AS 2560 - Sports Lighting;

B AS 2053 - Conduits and fittings for electrical installations;

C AS 2560.1 Sports Lighting - general principles;

D AS 2560.2.6 Guide to Sports Lighting – Specific Recommendations –Baseball and Softball;

E AS/NZS 1680 - Interior Lighting;

F AS 2293 - Emergency Escape Lighting;

G AS 1158 - Lighting for roads and public spaces;

H AS 1768 - Lightning protection;

I AS 3080 - Australian installation conditions;

J AS 3137 - Approval and test specifications – Luminaires (lighting fittings);

K AS 3439.1 - Low Voltage Switchgear and Control Gear Assemblies;

L AS/NZS 3439.2 - Low voltage switchgear and control gear assemblies – particular requirements for busbar trunking systems;

M AS/NZS 3947.2 - Low Voltage Switchgear and control gear – Circuit Breakers;

N AS 4282-1997 - Control of the obtrusive effects of outdoor lighting;

O AS/NZS 60598.1 2003 - Luminaires - General requirements and tests; and

P AS/NZS 61000.3.2-2005 - Electromagnetic compatibility (EMC) - Limits - Limits for harmonic current emissions (equipment input current (16 A per phase) (IEC 61000-3-2, Ed. 3.0 (2005) MOD);

(vi) other relevant standards, codes and guidelines, including:

A CASA - Manual of standards part 139 – Aerodromes; and

B IEC 61547 Equipment for general lighting purposes - EMC immunity.

(b) Where the requirements and current regulations listed above conflict, the more onerous requirements must be met.

E12.6 PERFORMANCE REQUIREMENTS

E12.6.1 Design Life

The Design Life for the lighting systems must meet or exceed the minimum requirements set out in the table below. The lighting systems must be designed and equipment selected to achieve the required Design Life without requiring maintenance that would not be expected for lighting systems built and installed in accordance with Best Construction Practice.

Element	Design Life
Pitch lighting lamps	minimum 8,000 hours to 20% failures minimum 12,000 hours to 50% failures
Pitch lighting luminaires	minimum 10 years
fluorescent luminaires	minimum 10 years
fluorescent lamps	minimum 24,000 hours
HID luminaires	minimum 10 years
HID lamps	minimum 24,000 hours
Solid State Lighting (SSL) luminaires	minimum 10 years or 70,000 hours

E12.6.2 General

(a) Sports lighting design must be undertaken by an accredited sports lighting professional. All other lighting design must be undertaken by an Illumination Engineering Society of Australia registered lighting professional (i.e. MIES or RLP).

(b) Lighting designs must be based on computer calculations, which must factor in the following design parameters and conditions:

(i) maintenance factor (light loss factor) in accordance with the conditions prevalent and not above 0.7;

(ii) photometric data used for the calculation in accordance with the IES or similar standardised format;

(iii) luminous intensity from the relevant photometric data for the luminaires and lamps proposed;

(iv) average luminance horizontal or vertical as required over the relevant areas. If necessary, masking facilities must be used to achieve a realistic average;

(v) for AFL Events, Cricket Events, Soccer Events, and Rugby Events the minimum illuminance levels within the Field Of Play, horizontal levels must be at Playing Surface level; vertical levels must be 1.5m above Playing Surface level;

(vi) for Athletic Events the minimum illuminance within the Track and Field, horizontal levels at Track and Field competition area, vertical levels at 1.5m above Track and Field competition area, however the heights could differ depending on the events (Refer to Chapter 5 of IAAF Track and Field facilities manual 2008);

(vii) predicted illuminances must be presented as maintained illuminances rather than initial illuminances; and

(viii) glare rating calculations in accordance with CIE 112 and AS2560.

E12.6.3 Lighting Systems Design Report

Project Co must prepare a Lighting Systems Design Report in accordance with the requirements set out in Schedule 5 (Design Development) of this Agreement.

E12.6.4 Sports lighting requirements

(a) Sport lighting must comply with all requirements set out in Appendix H8 (Lighting Criteria) and the requirements of all relevant Quality Standards. Where these requirements conflict, the higher standards must be met.

(b) (**Lighting Modes**) The sports lighting must provide illumination for all planned Events and other modes of usage, including:

(i) local and international television broadcast for AFL Events;

(ii) local and international television broadcast for Cricket Events;

(iii) local and international television broadcast for Soccer Events;

(iv) local and international television broadcast for Rugby Events;

(v) local and international television broadcast for Athletics Events;

(vi) all non-broadcast Sporting Events;

(vii) Permitted Training for AFL;

(viii) Permitted Training for soccer, NRL and ARU (match practice);

(ix) AFL, football (soccer), ARL and ARU non-body-contact training;

(x) Permitted Training for cricket;

(xi) Entertainment Events;

(xii) Stadium User entry and egress for all Events; and

(xiii) Bump-In and Bump-Out for all Events.

(c) (**Exit lighting**) Following the end of an Event, the sports lighting must provide minimal lighting to facilitate safe pedestrian egress from the Pitch and the Seating Bowl.

(d) (**Mounting Height**) The floodlights must be mounted at a height relative to the Playing Surface as set out in AS 2560.2.3, the AFL Lighting Requirements, the Cricket Lighting Requirements, the Soccer Lighting Requirements and the Athletics Lighting Requirements (as set out in clause E12.5(a)(i) to (iv) above) for televised professional level Sporting Events.

(e) (**Light Spill**)

(i) The sports lighting solution (for non-televised Events) must comply with the relevant light spill standard AS 4282-1997 - Control of the obtrusive effects of outdoor lighting.

(ii) The sports lighting floodlights must exhibit a high degree of glare and waste light control. Louvres, shields, snoots and similar glare control devices must be used to minimise glare for the Sporting Teams, Performers, Media Personnel and Patrons within the Stadium and in the Sports Precinct and surrounding sites.

(iii) The spill light assessment must not factor in the existing lighting around the Site. The assessment must include all light received directly from the Stadium and Sports Precinct installation and not its reflections off any surfaces. Any obstruction between the roof mounted lighting and the receptors must be considered in this assessment.

(f) (**Maintained luminance**) The maintained illuminance levels set out in Appendix H8 (Lighting Criteria) (all tables) must be achieved throughout the Design Life for individual elements such as lamps.

(g) (**Uniformity gradient**) The uniformity gradient, as defined in AS2560.1 indicates the rate of change of illuminance between adjacent measuring points. Project Co's design and installation must ensure that variations are minimised and comply with AS2560.1 such that a Player or Athlete passing from a light space to a dark space will not be affected by variations that affect perception.

(h) (**Illuminance uniformity**) Illuminance uniformity must not exceed 30% every 10 metres.

(i) (**Colour rendering**) The sports lighting must provide a minimum colour rendering Ra of 90.

(j) (**Lighting glare**) Glare must be calculated according to the glare rating in AS2560.2.3 and the maximum glare rating for the sports lighting must be less than 50.

(k) (**Flickering avoidance**) Project Co must minimise light flicker to ensure suitable conditions within the Stadium for super slow motion cameras.

(l) (**Light flicker**)

(i) Project Co must minimise light flicker by distributing lighting systems to the three phases of the mains so that when filming with TV cameras whose field frequency differs from the mains frequency, interference will be as low as possible.

(ii) When choosing and aligning the luminaires Project Co must ensure that each point on the Field Of Play is supplied with approximately equal partial horizontal illuminances produced over the three phases.

(iii) Where lamp control gear is not of the high frequency electronic type then:

A mains supply must be 3□phase; and

B luminaires must be mixed and spread equally over three phases.

(iv) Light reaching any point of the Field Of Play from any single luminaire location must be supplied from all three phases.

(m) (**Instant re-start capability**)

(i) Sports lighting lamps (HID or SSL) must be capable of instant re-start to maximum output following interruption of power supply. Instant re-start with HID will reduce the lamp life by approximately 33% under normal cold start conditions.

(ii) The following areas must be provided with instant re-start controls:

Area	Proportion of hot re-strike
Sports lighting for non-televised Events	Lighting must achieve the values for non-body contact training for each sport, as set out in Appendix H8 (Lighting Criteria).
Sports lighting for televised Events	Lighting must achieve a total of 10% of the specified lighting level for each sport, as set out in Appendix H8 (Lighting Criteria).

(iii) The provision of cold start and instant re-start must be balanced with the delay in power restoration. The electrical installation must be designed so that the levels above are achieved considering the time delays to obtain power at the luminaires.

E12.6.5 Supplementary lighting

(a) Where the roof casts shadows onto seating within the Seating Bowl, resulting in a failure to achieve the required lighting standards within the stands, allowance must be made for supplementary sports lighting mounted to the leading edge of these roofs.

(b) Supplementary lighting must be provided for Vomitories and external stairs to achieve the minimum illumination levels set out in clause E12.6.13 below and in all relevant Quality Standards. These must be based on instant re-strike fittings to support public safety in the event of sports lighting failure.

E12.6.6 Aircraft warning lighting

Aircraft warning lighting must be installed as required by CASA and in accordance with CASA's Manual of Standards Par 139 – Aerodromes available at http://www.casa.gov.au/scripts/nc.dll?WCMS:STANDARD:1001:pc=PC_91019 **Error! Hyperlink reference not valid.**.

E12.6.7 Theatre blue lighting

Dimmable blue lighting must be provided in addition to normal lighting to all Vomitories into the Seating Bowl for use during Entertainment Events and must include all parts of the Vomitories that will be visible from those areas of the Pitch that will be used by Patrons during Entertainment Events. The blue lighting must be controlled by separate switching to the normal white lighting and clearly identifiable.

E12.6.8 Stadium facade lighting

(a) Facade lighting must support the requirement for the Stadium to be a recognisable gateway landmark for Perth including as described in Chapters B1 (Project Vision) and B2 (New Perth Stadium Project Aspirations). The location provides a unique setting for a visible landmark and the facade lighting must be used to augment the landmark design and visibility of the Stadium.

(b) Facade lighting must be suitable for creating distinctive night time identities for different Events, including reflecting Home Team colours, team branding and sponsor branding, and offer dynamic night-time character, animation and performance, including as described in clause C11.4.4.

E12.6.9 Lighting control systems

LCSs must satisfy the following minimum requirements:

(a) lighting controls must operate on a computer based platform;

(b) the LCS must support the use of portable wireless devices including notepads, smart phones and similar devices to facilitate remote monitoring and control;

(c) lighting control panels must be positioned in agreement with the State, and must be located with a view of the areas controlled, including for sports lighting and Premium Product Areas;

(d) lighting controls must be addressable to provide flexibility as described in clause E12.6.21;

(e) centrally controlled lighting scenes must be provided for Stadium and Sports Precinct wide settings for specific Events, as set out in clause E12.6.4 above;

(f) scene settings for the sports lighting must be agreed with the State (including the Stadium Operator), and must include as a minimum those set out in Appendix H8 (Lighting Criteria);

(g) Project Co must propose scene setting for the balance of the Stadium and Sports Precinct which must be agreed with the State;

(h) the connections between controllers must have redundant paths to ensure continued operation in the event of a partial failure;

(i) dedicated control stations must be provided at each location, commensurate with the complexity of the requirements of each Functional Area or Functional Unit;

(j) push buttons or switches, where provided in addition to presence detectors, must be provided in adequate locations for the safe use of each Functional Area or Functional Unit e.g. multiple control locations for Functional Areas or Functional Units with multiple entrances;

(k) the LCS must re-set automatically in the event of a temporary power failure and restore to the previous state;

(l) software controls must be password protected and provide multiple levels of access for monitoring, control and program updates;

(m) the lighting control software must relate to the As Built BIM Modelfor ease of use;

(n) the lighting controls must be interfaced through the BMS with other Engineering Services including AV systems, ICT systems, Security Systems, fire protection systems and Vertical Transportation systems;

(o) lighting overrides must be provided in compliance with relevant Quality Standards and Laws including the *Health (Public Buildings) Regulations Act 1992* (WA); and

(p) labelling for the LCS must be provided for clarity of use and particular attention must be given to complex areas with multiple lighting systems for diverse functionality.

E12.6.10 Sports Precinct lighting

(a) Project Co must provide lighting to ensure safe pedestrian and vehicular traffic within the Sports Precinct, including to the:

(i) Community Recreation Oval;

(ii) public barbeques, children's playscapes or playgrounds, picnic areas and toilet facilities;

(iii) precinct path network (including pedestrian and cycle paths and the Shared Use Path)

(iv) pedestrian assembly areas;

(v) Bus Hub;

(vi) Bus Passenger Assembly Area;

(vii) Rail Passenger Assembly Areas;

(viii) Precinct Service Roads; and

(ix) Commercial Facilities.

(b) The external lighting design must be based on the use of SSL, metal halide and fluorescent lamp technology.

(c) The exterior lighting must seamlessly connect the Stadium with the precinct path network and all amenities within the Sports Precinct including as described at clause E12.6.10(a) and link the Sports Precinct with adjoining infrastructure including the Pedestrian Underpass, the modified MRWA footbridge No. 9211 leading to the Belmond Park Racecourse, the SRPB, the pedestrian components of the Goongoongup Rail Bridge and the Windan Bridge and public roads.

(d) The lighting design for the Precinct Service Roads and Bus Hub must meet the requirements of the relevant local government Authority, MRWA and the PTA.

(e) Lighting of the Bus Hub must be provided to ensure the operational efficiency of the Bus Hub and to facilitate the comfort and safety of Stadium Users. The design of the Bus Hub lighting must complement the Sports Precinct lighting. Consideration should be given to the lighting standards included in the *Perth Transport Authority Lighting Design and Maintenance Guidelines* and the *Main Roads WA Lighting Design Guidelines for Roads and Public Spaces* contained in the Project Information.

E12.6.11 Security lighting requirements

[*Not disclosed*]

E12.6.12 Emergency lighting

[*Not disclosed*]

E12.6.13 Emergency lighting controls

[*Not disclosed*]

E12.6.14 Lux levels

[*Not disclosed*]

E12.6.15 Minimum luminaire requirements

(a) All luminaires must comply with AS/NZS 60598.1.

(b) All external luminaires must be IP66 certified to prevent ingress of fine dust and water from high pressure wash down water.

(c) All luminaires must be certified for operation in ambient temperatures ranging from -5°C to 50°C.

(d) All external luminaires should have guards provided over all lamps, where mounted less than 2.5 metres above ground level or tested to minimum of IK08 as per IEC 62262:2002.

E12.6.16 Fluorescent luminaires

(a) All fluorescent lighting fittings must be of the high power factor type corrected to 0.8 (minimum) power factor lagging and must have low loss ballasts, with one per tube.

(b) The control gear must be double locked and be capable of suspension from the body for maintenance.

(c) The control gear must have a plug connection for complete removal of the control gear in order to ensure efficient maintenance.

(d) Lamp holders should be of a screw-lock type, incorporating rubber compression tube retention.

(e) Mountings must be via external feet with no body penetrations required.

(f) Outer surfaces of light fittings should be generally smooth to ensure efficient maintenance.

(g) The lighting fixtures must have a tool-less entry and a lanyard supported lens.

E12.6.17 HID luminaires

(a) All fittings must be high power factor type corrected to 0.85 (minimum) power factor and be connected to a choke tapping suitable for operation on a supply of 240V.

(b) The chokes must be separately mounted and provided in fully weatherproofed housing. The choke must be fitted with terminal blocks and have provision for gland or conduit entry.

(c) Where conduit service is run, the final connection must be carried out with V90 (minimum) PVC insulated conductors enclosed in a flexible conduit sheathed with plastic and attached with weatherproof metal couplings of the type recommended by the manufacturer of the conduit.

(d) All accessories and control gear should be housed in a control box. Control box enclosure classifications should be the same as for the controlled luminaires.

(e) Gaskets should be selected that do not dry-out or break-down under constant “severe” condition exposure.

(f) All external luminaires should be tool-less entry with lanyard supported lenses.

(g) Lighting in general internal areas must not be of the discharge (HID) type due to time delays caused by initial warming and re-strike.

E12.6.18 SSL luminaires

(a) SSL luminaires, if provided, must be Zhaga approved and comply with relevant Australian Standards.

(b) All SSL luminaires must have thermal management implemented to keep the junction point temperature at or below the SSL manufacturer’s specifications. The manufacturer must clearly specify and be able to demonstrate that SSLs operate within a safety envelope.

(c) All materials must be UV stable. All aluminium finishes must be anodized to a marine grade of 25 microns.

(d) There must be no bare or exposed wiring of any kind.

(e) All fixed application luminaires must not have any surface that would accumulate dirt, dust, water or similar. Notwithstanding this, accumulation of all elements must be assumed and performance must be tested under those conditions.

(f) In all long life SSL fittings, priority must be given to preventing permanent damage. Therefore all effects of excessive dirt and debris on performance of the luminaire must be tested and demonstrated.

(g) Junction temperature at 70% of its initial light output (L70) must be below 80ºC.

(h) SSL manufacturers must certify that their SSL luminaires will provide light output at or above 70% of the initial level for at least 70,000 hours.

(i) SSL retrofit luminaires must not be considered.

E12.6.19 Sports lighting luminaires

(a) The requirements for construction of sports luminaires are as follows:

  (i) sports lighting luminaires must be of the highly controlled, beam Type A distribution (as defined in AS2560.1);

  (ii) the housing should be made of non-corrosive high-pressure die-cast aluminium alloy, with toughened front glass. The front glass must be provided with mechanism to prevent damage and to prevent pieces of glass from falling down in case of breakage;

  (iii) sports lighting luminaires, including the seal between the housing and the front glass must have a minimum IP66 rating;

(iv) a stainless steel protractor scale and pointer must form part of the luminaire to indicate the angle of tilt;

(v) sports lighting luminaires must be able to be re-lamped from the rear. The re-lamping process must be such so as not to not disturb the aiming setting of the luminaire;

(vi) cable entry should be via the igniter in the junction box fixed to the mounting bracket with a circular double-insulated, UV stabilised cable, glanded to the fitting and igniter using hose-proof glands; and

(vii) a built-in safety switch or disconnecting contacts must be provided to ensure that mains current is cut off as soon as the floodlight is opened.

(b) Reflector:

(i) A baffle must be provided to control excess spill light. This baffle must also be used to reflect some of the light onto the target so that the efficiency of the fitting is maximised.

(ii) Minimum light output ratio must be 87%.

(c) Control and starting:

(i) Constant wattage auto-transformer control gear must be provided where the lamp manufacturer requires this equipment for lamp voltage or lamp warranty purposes or where specified in the schedule of luminaires. In all other circumstances, reactor/igniter control equipment must be provided.

(ii) Where instantaneous start up is specified to be by the use of auxiliary lamps, a start-up switch and circuit must be provided, which energises the auxiliary lamp on start-up, either from cold or following a power interruption, and de-energises the auxiliary lamp when the discharge lamp reaches approximately 60% of its rated luminous flux.

(d) Ballasts:

Ballasts must comply with AS 1468, be of compact size and vacuum impregnated complete with high strength steel base Class "H" winding insulation maximum permissible winding temperature tw 130°C.

(e) Lamps:

(i) The use of a 2kw metal halide lamp must be considered alongside a suitable SSL option.

(ii) Life rating for lamps must be based on a 3 hour on, 1 hour off cycle, until 50% of lamps fail and life data curves must be included.

(iii) The colour temperature must be 5600K.

(iv) Within the installation, the colour temperature must not deviate from the average value by more than 500K over the life of the lamp.

(v) The colour rendering index must be ≥ 90.

(f) Control gear:

(i) Power supply to ballast must nominally be two-phase 400V(415V), 50Hz. All equipment offered must suit this voltage and frequency.

(ii) Each floodlight luminaire must be individually controlled by a conventional (or otherwise) control gear with discrete components (including ballast and capacitor).

(iii) A pre-wired weatherproof control gear assembly, complete with ballast and capacitor must be provided for each lamp, suitable for mounting either adjacent or remote from the fitting. The igniter must be mounted within the assembly or close to the fitting and must be supplied mounted in a separate gasketted die-cast weatherproof enclosure.

(iv) Each gear assembly must include a fuse in each active conductor.

(v) Ballast must be the highest-grade minimum watt loss. Ballast must be designed to operate satisfactorily in the environment nominated.

E12.6.20 ESD

(a) Special attention must be given to the efficiency of the lighting installation. Efficiency must be at least as required by the NCC, Part J.

(b) Luminaires, lamps, control gear, and associated equipment must be selected with regard to energy consumption.

(c) Project Co must provide effective disposal and re-use of lighting components.

E12.6.21 Flexibility

(a) Luminaire mountings for Pitch lighting and sports lighting must be of an easily removable type for luminaire replacement, with consideration for removable gear trays and local isolation to enable replacements during maintenance activities.

(b) Lighting controls must be addressable to enable programming for multiple Events and provide maximum flexibility to accommodate future controls requirements, and to accommodate changes to the general lighting and sports lighting Quality Standards.

E12.6.22 Maintainability

(a) Access to roof level luminaires via gantries or similar safe access must be considered.

(b) Generally luminaires should be located in accessible locations, either wall mounted or suspended. Where luminaires are above multi storey open spaces, access must be considered from above for ease of maintenance. Should access equipment be required, Project Co must carry out an assessment, considering safety and practical implications of using access equipment.

(c) Lighting poles within the Sports Precinct should be of the rebating type to minimise the need for high level access and enhance safety.

(d) Projectors and reflectors must be considered to reduce the need for equipment at high levels, particularly in areas where access would be difficult.

(e) Luminaires within the Team Facilities (including the Shared Recovery Facility and the Away Team Recovery Facility), Catering Facilities, Stadium Operations and Event Day Facilities and within Back of House areas, must be provided to withstand the conditions that they will be under, considering humidity and physical impact.

(f) Highly specialised lamps and fittings should not be used.

E13 INFORMATION COMMUNICATIONS TECHNOLOGY (ICT) SYSTEMS

E13.1 GENERAL

(a) The ICT Systems associated with the development of the Stadium and Sports Precinct must be designed and executed to ensure that the ICT Systems integrate seamlessly with all other Stadium and Sports Precinct elements.

(b) Project Co must ensure that the ICT infrastructure requirements of all systems, including those provided by the State and Stadium Operator, meet the requirements of these Design Specifications. Project Co must ensure that the ICT infrastructure systems, including those of the Stadium Operator, are provided to meet the requirements of these Design Specifcations. Where applicable, Project Co must cooperate with the State and Stadium Operator to ensure the interoperability of all systems, using formats and protocols agreed with the State.

(c) Design and procurement of ICT Systems must be delayed by Project Co to take advantage of technologies which are evolving and emerging during the D&C Phase, including in particular for large value items of equipment and equipment which is subject to rapid change or a step change during the D&C Phase, in accordance with Chapter C19 (Delayed Design and Procurement).

(d) [*Not disclosed*]

E13.2 OBJECTIVES

(a) The ICT Systems for the Stadium and Sports Precinct are central to enabling future trends in technology to be deployed in the future.

(b) The State desires a highly integrated digital Stadium, facilitating the fans-first aspiration and featuring state of the art technology for Patrons, as well as operational advantages for all Stadium Users.

(c) The objectives for the ICT Systems include:

(i) streamlining of the operational management of the Stadium and Sports Precinct using technology to improve the efficiency and effectiveness of the Stadium Activities, including venue operations and management in areas of communication, security, sales and stock management;

(ii) responsiveness to service requests and operational requirements, including new systems or technology;

(iii) enhancement of safety and security through the integration of systems;

(iv) efficient tenant and Hirer services management;

(v) a quality Stadium User experience; and

(vi) facilitating and enhancing the marketability and revenue generation potential of the Stadium and Sports Precinct.

E13.3 QUALITY STANDARDS AND LAWS

(a) Without limiting clause 14.1 of this Agreement and the Quality Standards and Laws stipulated in Chapter E1 (General Requirements), the design, construction, commissioning and completion of the Stadium and Sports Precinct in respect of the ICT Systems must comply with all relevant Quality Standards and Laws including:

(i) all relevant Australian Standards, including:

A AS 2834 Computer Accommodation;

B AS/ACIF S009 Installation Requirements for Customer Cabling (Wiring Rules);

C AS/NZS 3080 Telecommunications Installations – Generic cabling for commercial premises;

D AS/NZS 3084 Telecommunications Installation – Telecommunications Pathways and Spaces for Commercial Buildings; and

E AS/NZS 3085 Telecommunications installations - Administration of communication cabling systems;

(ii) all relevant Sporting Standards, including the AFL ICT Guidelines;

(iii) other relevant standards, codes and guidelines including:

A ETSI 05.05 GSM transmission equipment standards;

B IEC 60728 Cable distribution systems for sound and television signals;

C IEEE 802.3 Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications;

D IEEE 802.3at Power over Ethernet standard;

E IEEE 802.7 Broadband and Local Area Network recommended practices;

F IEEE 802.11 Wireless Local Area Network standards;

G	ISO/IEC 11801 Ed 2 (Amendment 1) Information Technology – Generic Cabling for Custom Premises – Class EA to FA;
H	ISO/IEC 27000 series Information Security Management System and standards;
I	MCF DAS Spec (i.e. Mobile Carriers Forum DAS Design Specification http://www.mcf.amta.org.au/files/DAS.Specifications.doc);
J	The Open Group, TOGAF Enterprise Architecture (TOGAF);
K	TIA-862 Building Automation System Cabling;
L	TIA 942 Telecommunications Infrastructure Standard for Data Centres;
M	TIA IS-41 Cellular radio telecommunication intersystem operations;
N	TIA IS-54 Cellular Systems; and
O	TS001, TS008 & TS009 ACMA Technical Specifications;
P	Free TV Australia Operational Practice OP – 33 TV Coverage Plan for AFL Matches, Issue 3, June 2007, Free TV Australia Engineering Committee;
Q	Free TV Australia Operational Practice OP - 35 TV Coverage Plan for International First Class and One Day Cricket, Issue 3, June 2007, Free TV Australia Engineering Committee;;
R	Free TV Australia Operational Practice OP - 32 TV Coverage Plan for Rugby League, Rugby Union and Soccer Matches Issue 3, June 2007, Free TV Australia Engineering Committee; and
S	all other relevant Free TV Australia Operational Practice - Engineering Guides as published by Free TV Australia Engineering Committee including Operational Practice OP - 31 Lighting Requirements for Colour Television issue 2, 2005 and Operational Practice OP - 54 Free TV Coverage Plan for Major Event Long Distance TVOB Operations, Issue 1, May 2006.

E13.4 PERFORMANCE REQUIREMENTS

E13.4.1 Design Life

(a) The Design Life for the ICT Systems must meet or exceed the minimum requirements set out in the table below. The ICT systems must be designed and equipment selected to achieve the required Design Life without requiring undue maintenance:

Table 25: Design Life for ICT Systems elements

Element	Design Life
Structured cabling system	25 years
Wired and wireless networking	7 years
Unified communications system	5 years

(b) The ICT Systems must minimise requirements for rewiring to suit emerging technologies, additions, moves and changes. Minimum Design Life of 25 years should be provided for backbone and horizontal cabling systems. All cabling must be provided with a minimum 25 year manufacturer and application warranty.

(c) All equipment must suit the environment, including access for service and maintenance, room or area environmental conditions and protection from intentional or accidental damage. Where applicable, systems such as conditioned power and air-conditioning must be used to provide an installed environment suitable for equipment and longevity of operation.

(d) All networking equipment must have mean time between failure (MTBF) rates in excess of 100,000 hours.

E13.4.2 ESD

(a) The ICT Systems are considered as key enablers to the measurement and management of sustainability of the Stadium and Sports Precinct, including energy use.

(b) Project Co should consider the provision of IP energy management systems, integrated with network management and the BMS and the EMS.

(c) Particular attention should be given to control of power over ethernet (PoE) ports and energy management of IP connected devices, including Displays, unified communication system (UCS) handsets, computing equipment and other equipment.

(d) Power utilisation effectiveness (PUE) should be considered for central and distributed computing rooms.

(e) During the Design Development Process, Project Co must consider the total energy cost of the system during the Operating Phase, including WOL costs. A number of emerging technologies are using PoE or power injection over twisted pair to power Displays, thin clients, LED lighting and other equipment. Such installations may provide enhanced flexibility and manageability, but for fixed installations, they may also incur increased energy use.

E13.4.3 Flexibility

(a) The ICT Systems must allow flexibility and provide scalability for future expansion, refurbishment and emerging technologies. The cabling and networking systems must support a range of systems, protocols and services to provide a universal communications platform for the Stadium and Sports Precinct.

(b) Particular attention should be given to the servicing of areas used by Hirers and Media Personnel in relation to Events, to allow fast reprovisioning of service.

(c) Open standards based protocols must be utilised to increase flexibility of system selection and integration over the life of the Term and beyond. Where closed standards based protocols are proposed as a departure, approval must be sought from the State.

(d) Project Co should consider the application of software orientated architecture (SoA) principles in the interface of systems and exchange of information. This includes the approach of loosely coupled systems joined together by a middleware platform to allow for services and systems to be interchanged or upgraded with relative ease and for the interfaces to be centrally managed.

E13.4.4 Maintainability

(a) Project Co must install all equipment in accordance with manufacturer's recommendations, relevant Quality Standards and guidelines to ensure that maintenance can be performed. Project Co should consider systems which are concurrently maintainable to allow normal operations to continue whilst maintenance occurs.

(b) The ICT Systems must be highly resilient to maintain the operation of all systems required for the Stadium Activities and the Services.

E13.4.5 Accreditation

(a) Cabling installers must be ACMA certified. Cabling designs must be verified by the cabling system manufacturer.

(b) The network architect should be TOGAF certified as an "Enterprise Architect", or equivalent. The network designer must be certified by the manufacturer of the relevant level of proficiency.

E13.4.6 **[*Not disclosed*]**

E13.4.7 **[*Not disclosed*]**

E13.4.8 **[*Not disclosed*]**

E13.4.9 **[*Not disclosed*]**

E13.4.10 **[*Not disclosed*]**

E13.4.11 **[*Not disclosed*]**

E13.4.12 **[*Not disclosed*]**

E13.4.13 **[*Not disclosed*]**

E13.4.14 **[*Not disclosed*]**

E13.4.15 **[*Not disclosed*]**

E13.4.16 **[*Not disclosed*]**

E13.4.17 **[*Not disclosed*]**

E13.4.18 **[*Not disclosed*]**

E13.4.19 **[*Not disclosed*]**

E13.4.20 **[*Not disclosed*]**

E14 AUDIO VISUAL (AV) SYSTEMS

E14.1 GENERAL

(a) Project Co must ensure that the Stadium provides a high level of interactivity and engagement for Patrons beyond the Event that is occurring at the time. This should be via clear visual and intelligible audio communications systems which allow for multi-channel communication pathways between parties including the Stadium Operator, the Hirer, Stadium Users and others as appropriate.

(b) The AV Systems for the Stadium and Sports Precinct are central to delivering the new Perth Stadium Project Aspirations described in Chapter B2 (New Perth Stadium Project Aspirations) including delivery of a fans-first experience and enabling future trends in technology to be deployed.

(c) The AV Systems must deliver the following outcomes:

(i) promote and align with the fans-first aspiration and provide for a Patron experience which cannot be rivalled by watching the Event from home;

(ii) promote the Stadium and its facilities and, by extension, maximise revenues, in particular secondary spends from Patrons;

(iii) promote and allow for efficiencies in the Stadium's operation by providing for better systems and work practices for the Stadium Operator;

(iv) provide additional benefits including:

A an increase in safety; and

B reduced energy consumption;

(v) allow for the development of innovative or non-traditional marketing, activation and engagement concepts and campaigns within the Site, including promoting community awareness of:

A sustainability issues and the ESD Initiatives associated with the Stadium and Sports Precinct; and

B Community Benefits delivered by Project Co as described in D16.5 of these Design Specifications.

(d) Project Co must undertake all required acoustic and sightline analysis for the Stadium and Sports Precinct and provide all AV Systems for the Stadium and Sports Precinct as part of the DBFM Works.

(e) Design and procurement of AV Systems must be delayed by Project Co to take advantage of technologies which are evolving and emerging during the D&C Phase, including in particular for large value items of equipment and equipment which is subject to rapid change or a step change during the D&C Phase, in accordance with Chapter C19 (Delayed Design and Procurement).

E14.2 OBJECTIVES

The objectives for the AV Systems include facilitation of:

(a) a quality Stadium User experience, in particular enhancing fan engagement through the provision of LED Superscreens within the Seating Bowl and the IPTV System;

(b) team branding of the Stadium;

(c) commercial opportunities for the Stadium Operator and Hirer (as applicable), through advertising and hospitality;

(d) Event Day efficiency, in particular efficiency of crowd management and the Catering Service; and

(e) flexibility for other uses of the Stadium, including use for Entertainment Events, half time entertainment and for Functions.

E14.3 SCOPE

The AV Systems must include:

(a) two (2) LED Superscreens, each with a minimum viewing area of 232m2, located in the Seating Bowl;

(b) required Engineering Services and structural support provisions for one (1) LED Superscreen of minimum viewing area of 144m2 to accommodate future installation in the Controlled Area (unless otherwise installed as part of the DBFM Works by a Technology Partner);

(c) provision of a Serviced Zone(s) with required Engineering Services provisions, suitably located within the Sports Precinct for installation of one (1) LED Superscreen of minimum viewing area of 144m2 to provide flexibility for future installation on a permanent or temporary basis, including as part of Event Overlay;

(d) provision of two (2) Serviced Zones with required Engineering Services provisions, suitably located within the Pitch Perimeter to provide flexibility for future use of electronic (LED) Cricket Sightscreens provided by others;

(e) LED Signage within the camera arc of the Seating Bowl;

(f) high quality AV Systems, including video within the Seating Bowl, visible to all (100%) of Seating Positions in the Seating Bowl;

(g) branding and engagement opportunities to enhance revenue and the Patron experience;

(h) high quality sound reinforcement for all Patrons, including the provision of hearing augmentation systems for those hard of hearing;

(i) flexible systems to suit multiple operational modes, including zoning of PA system for Front of House and Back of House as well as sections of the Seating Bowl to allow for areas to be not-in-use for Events with smaller attendances;

(j) high quality in-house audio and video capture and broadcast systems for in-house use that are available to Stadium Users and broadcasters as required;

(k) flexible systems to suit a variety of Stadium Activities, including Events, Functions and Permitted Training;

(l) an IPTV system with Displays at strategic locations;

(m) Supplementary Displays where required to supplement viewing of the LED Superscreens for Seating Positions, as described in clause E14.5.7(a)(ii);

(n) infrastructure for in-house and outside broadcasting, including fixed cabling and patching, as well as facilitation for temporary Bump-In or Event Overlay cabling;

(o) audio and video streaming capabilities to mobile devices, including location dependent content, user selectable content and interactive content;

(p) the complete infrastructure to facilitate future high definition displays and content such as 4K resolution, including a future upgrade path for 8K resolution;

(q) flexible and high quality AV cabling and infrastructure to enable Event Day, temporary, Bump-In or Event Overlay systems to support the installed AV Systems;

(r) provision of fixed and limited portable general audio visual systems for Event Day and Non-Event Day uses within the Stadium, including as described in Part D (Functional Brief) of these Design Specifications; and

(s) AV Systems that are resilient, scalable and modular in nature, that are readily swappable and will minimise downtime in the event of a fault.

E14.4 QUALITY STANDARDS AND LAWS

Without limiting clause 14.1 of this Agreement and the Quality Standards and Laws stipulated in Chapter E1 (General Requirements), the design, construction, commissioning and completion of the Stadium and Sports Precinct in respect of the AV Systems must comply with all relevant Quality Standards and Laws including:

(a) relevant Australian Standards including:

- (i) AS 1417 Receiving antennas for radio and television in the frequency range 30 MHz to 1 GHz;
- (ii) AS 1428.5 Hearing Assistance;
- (iii) AS 1768 Lightning protection;
- (iv) AS 2211.3 Safety of laser products Part 3: Guidance for laser displays and shows;
- (v) AS 3815 A guide to co-axial cabling in single and multiple premises;
- (vi) AS 4933.1 Digital Television - Requirements for Receivers Part 1: VHF/UHF DVB-T television broadcasts;
- (vii) AS/NZS 1052 Specification for radio disturbance and immunity measuring apparatus and methods;
- (viii) AS/NZS 1053 Limits and methods of measurement of radio interference characteristics of sound and television broadcast receivers and associated equipment; and
- (ix) AS/NZS 2772.1 Radio frequency fields - Maximum exposure levels - 3 kHz to 300 GHz;

(b) other standards, codes and guidelines including:

- (i) the Sporting Standards, including the AFL ICT Guidelines;
- (ii) InfoComm International Audiovisual Standards;
- (iii) AES 14 AES Standard for professional audio equipment;
- (iv) AES 45 AES Standard for Single Programme; connectors – Connectors for loudspeaker level patch panels;
- (v) CCIR/ITU-R Recommendation 500-1 (Kyoto, 1978, Vol. XI);
- (vi) Digital Broadcasting Australia (DBA) Installing Digital Terrestrial Television;
- (vii) DIN 45596 Phantom Power for Microphones;

(viii) Foxtel™ Foxtel Satellite Installation Manual (including Foxtel approved part list);

(ix) IEC 268-12 Sound System Equipment Part 12: Application of Connectors for Broadcast and Similar Use;

(x) IEC 60096 Radio-frequency cables;

(xi) IEC 60728 Cable distribution systems for sound and television;

(xii) IEEE 802.3atf Power over Ethernet standard. Carrier sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications;

(xiii) IEEE 802.7 Broadband and Local Area Network recommended practices;

(xiv) ITU-T H.323 Narrow-band videoconferencing over non-guaranteed quality of service packet networks (LAN, Internet or similar); and

(xv) TS 004 Voice Frequency Performance Requirements for Customer Equipment; and

(c) all relevant Quality Standards described in Chapter E13 (ICT Systems).

E14.5 PERFORMANCE REQUIREMENTS

E14.5.1 Design Life

(a) The Design Life for key components of the AV Systems within the Stadium and Sports Precinct must meet or exceed the following minimum requirements:

Table 26: Design Life for AV Systems elements

Element	Design Life
LED Superscreen	10 years
LED Signage	10 years
Displays	7 years
IPTV system	7 years
PA system	10 years
AV backbone and horizontal cabling	25 years
Projection equipment and displays	5 years
Control equipment	10 years
Outside broadcast cabling	25 years

(b) The AV Systems must be designed to minimise requirements for rewiring to suit emerging and evolving technologies, additions, moves and changes.

(c) All equipment that forms part of the AV Systems must suit the environment in which it will be installed, including environmental conditions (which may include including high wind gusts, airborne salt and humidity), access for service and maintenance and protection from intentional or accidental damage. Where applicable, systems such as conditioned power and air conditioning must be used to provide an installed environment suitable for the installed equipment in order to ensure equipment protection and longevity of operation.

E14.5.2 ESD

(a) The AV Systems are considered as major energy users, but also systems where energy and power use can be managed in different operational modes.

(b) The AV Systems must include energy efficient equipment (with low standby mode power). Project Co should consider the provision of energy monitoring and management in relation to AV Systems, integrated with AV control, the BMS and the EMS.

E14.5.3 Flexibility, Reconfiguration and Expansion

(a) The AV Systems must be provided to allow flexibility for future system expansion and incorporation of emerging technologies, including as part of any scope for Expansion, lifecycle refurbishment (as part of the Lifecycle Services), Premium Product Areas Reconfiguration and Athletics Reconfiguration.

(b) The AV Systems must be located to facilitate implementation of Rectangular Reconfiguration and Premium Product Areas Reconfiguration without impact to the installed systems, and with the Key Viewing Elements for the LED Superscreens able to be satisfied from all Seating Positions following the Reconfiguration without necessitating relocation or adjustment.

(c) The cabling and AV Systems must support a range of applications, formats, protocols and services to provide a flexible platform for the Stadium and Sports Precinct.

(d) The AV Systems must be sufficiently flexible to enable them to be used for a variety of Event Day and Non-Event Day uses and for varying operational modes for the Stadium and Sports Precinct. This includes a variety of Events with varying attendances within the Seating Bowl.

(e) Flexibility in cable routing for Event Overlay must be provided. Event Overlay cable routing must allow for flexibility but also consider OHS and potential trip hazards.

(f) Open, standards based protocols must be utilised to increase flexibility of system selection and integration over the Term and beyond.

E14.5.4 Maintainability

(a) The design of the AV Systems must consider maintenance during the Service Life of the Stadium and Sports Precinct with the aim of minimising recurrent costs. Furthermore, consideration must be given to frequency and extent of equipment replacement and minimising the impact of such replacement on the operation of the Stadium and Sports Precinct.

(b) Project Co must install all equipment in accordance with Best Construction Practices, including ensuring that the installation is in accordance with the manufacturer's recommendations, standards and guidelines to ensure that maintenance can be performed.

(c) Particular attention should be made to access requirements for maintenance for LED Superscreens and PA system speakers within the Seating Bowl.

E14.5.5 Operational efficiency

The AV Systems must be efficient for Stadium Personnel to use and operate during the Operating Phase in order to support the Stadium Activities, particularly Events. Project Co must provide operator workstations and systems so that the AV Systems can be operated to their full functionality by a single operator. The AV Systems must be provided with intuitive user interfaces and control devices.

E14.5.6 General requirements

(a) This clause E14.5.6 describes the general requirements that are applicable for:

(i) the LED Superscreens;

(ii) the LED Signage; and

(iii) the IPTV system, which includes the Displays,

together the (Display Systems**).**

(b) Further requirements for each of these systems are set out in clauses E14.5.7 to E14.5.9.

(c) (**Control location**) The control devices and supporting infrastructure for the Display Systems should be via dedicated workstations located in the Production Suites to allow easy access to and full use and functionality of the Display Systems by Stadium Personnel during Events. In addition, Project Co must ensure that the monitoring and reporting functionality of the Display Systems can be achieved from Stadium Personnel workstations in the Administration Facilities.

(d) (**Content management systems**)

(i) Project Co must provide each Display System with a content management system to control and manage a variety of content on the LED Superscreens, LED Signage and Displays (as applicable), as well as to allow multiple channels and multiple signage zones to be configured on each device.

(ii) (**Integrated CMS**) An integrated content management system which can manage content (including that provided by the digital signage system) across the LED Superscreens, the LED Signage and the IPTV system will be considered by the State provided that the system is flexible to accommodate future expansion and otherwise complies with the performance requirements set out in this Chapter E14 (AV Systems).

(iii) (**User interface**) The content management system must be provided with an intuitive, easy to use user interface which must be able to be operated to its full functionality by a single operator during an Event.

(iv) (**Source material**) Source material for presentation on the LED Superscreens, LED Signage and Displays (as applicable), must be able to be derived through any of the following and in any combination:

A over IP;

B internal network;

C local and remote hard drives;

D USB (including third party video devices such as cameras, smart phones and scanners);

E flash cards; and

F any other form of data storage devices that may be brought into the Stadium from time to time.

(v) (**Signal quality**) Signal quality must be maintained from the source through to the input stage of each content management system. The content displayed on the LED Superscreens, LED Signage and Displays (as applicable) must maintain operational quality and integrity at all times.

(vi) (**Templates**) Project Co must provide a number of set user templates for the operation of the Display Systems. Each template must be fully dynamic with window re-sizing and multiple input sources being able to be displayed at once. The number, position, size and content of the windows on the screen must not be limited by each content management system. The Display Systems operator must also be able to readily develop new templates. Each user developed template must be able to be saved by the user.

(vii) (**Scheduling**) A playlist or Event script must be able to be created that can be run manually or automatically. A running Event script on the content management system must be able to be immediately and instantaneously interrupted when prompted by either manual or automatic intervention. This interruption could be for:

A specific Event information;

B specific fan engagement content;

C specific advertising content; or

D emergency information.

(viii) Upon any trigger, or a combination of triggers, a playlist must commence on the specified channel(s). When the playlist is complete, the previous Event script must either:

A continue on from the point at which it was interrupted (for scheduled content); or

B continue on with current content such as live video.

(ix) (**Error messages**) Project Co must ensure that any failure of content or systems on or within the Display Systems must not display as an error message on any Display.

(x) (**Event log**) The content management system must provide an event log screen and reporting ability.

(xi) (**Reporting**) The content management system must provide extensive reporting abilities, including the ability for user customisable reports and export data to 3rd party applications for the purposes of ensuring an audit trail that is acceptable to promoters and advertisers.

(xii) (**Integration**) To maximise operational efficiency and operator useability, Project Co should consider providing the content management system for each Display System as one holistic integrated content management system. In such circumstances the full control and functionality of the content management system described in paragraph (ii) must also be applicable to the integrated content management system.

(e) (**Scoreboard functionality**) Project Co must provide the Display Systems with functionality and templates to enable each Display System to independently display scoring and timing functionality in accordance with the Sporting Standards for each type of Sporting Event.

(f) (**Brightness**) Each of the Display Systems must be provided with appropriate brightness and brightness control as each of the LED Superscreens, LED Signage and Displays (as applicable) will be used in a variety of ambient light conditions. Each Display System must also have dimming capabilities to ensure correct operation during night time or low ambient light use.

(g) (**Latency**) The vision (and associated audio) on the LED Superscreens, LED Signage and Displays (as applicable), is a key feature of the fan experience during Events. Project Co must ensure that the images displayed on each LED Superscreen, LED Signage and Display (as applicable), are not perceptibly delayed from the activities on the Pitch, particularly where such Displays are visible from a Seating Position. The time taken for the signal to be generated from the specific camera to be visible on each LED Superscreens, LED Signage or Display (as applicable), not from the point of entry to the integrated content management system (**end-to-end latency**) is of paramount importance. Project Co must provide the Display Systems, including all cabling and control devices so that the end-to-end latency does not exceed 500ms for any of the Display Systems.

(h) (**Cabling**) Project Co must provide all necessary communications tie lines between all control areas and each LED Signage section to support video and control, and enable synchronous audio through the PA Systems in the relevant locations.

E14.5.7 LED Superscreens

(a) (**Seating Bowl LED Superscreens**) The LED Superscreens will play a vital role in the Patrons' experience during Stadium Events. Project Co must provide a minimum of two (2) LED Superscreens within the Seating Bowl to meet the Sightline Criteria and Key Viewing Elements which apply to all Seating Positions, as set out in Chapter D7 (Seating

Bowl) of these Design Specifications. Key features which must be provided with the LED Superscreens include:

(i) (**independent images**) the ability for each of the LED Superscreens to display separate, independent images; and

(ii) (**supplementary Displays**) in instances where a Seating Position within the Seating Bowl does not satisfy the Sightline Criteria and Key Viewing Elements, Project Co must provide, Supplementary Displays to supplement the LED Superscreens to ensure these requirements are met. The Supplementary Displays must be able to display content that is synchronous to the LED Superscreens and LED Signage.

(b) (**Scoreboard functionality**) In addition to the general requirements set out in E14.5.6, Project Co must provide the LED Superscreens with functionality and templates to enable each of the LED Superscreens to independently display scoreboard functionality in accordance with the Sporting Standards for each type of Sporting Event. For those Seating Positions that do not satisfy the Key Viewing Elements, this includes the ensuring that all scoreboard functionality can be simultaneously presented on the Supplementary Displays

(c) (**Provision for Controlled Area LED Superscreen**) If not previously provided during the D&C Phase through a Technology Partner, the State or Stadium Operator may wish to provide an LED Superscreen within the Controlled Area during the Operating Phase. The location of that LED Superscreen should be in a high pedestrian traffic area that also allows for pedestrian dwell locations. The State anticipates that such a screen, of minimum size 144m2, would be located on the façade of the Stadium, however freestanding structures within the Controlled Area may also be considered. Project Co must provide the Stadium, including all Engineering Services, structure and other provisions, so that this functionality can be efficiently achieved with no material changes to structure or requirements for new cabling. Project Co must provide cabling that:

(i) allows the provided integrated content management system to control and display images, including live Event and scoreboard images (and synchronous audio transmitted through Event Overlay speakers) on the Controlled Area LED Superscreen; and

(ii) enables the end-to-end latency of the Seating Bowl LED Superscreens to be satisfied.

(d) (**Provision for Sports Precinct LED Superscreen**) The State or Stadium Operator may wish to install an LED Superscreen on a permanent or temporary basis within the Sports Precinct during the Operating Phase. The State anticipates that such a screen, of minimum size 144m2, would be located in a high pedestrian dwell location that allows Patrons to sit or stand to watch the screen without impeding on circulation routes for pedestrians and vehicles. Project Co must provide a Serviced Zone including all required Engineering Services provisions so that this functionality can be efficiently achieved with no requirements for new cabling. Project Co must provide cabling that:

(i) allows the provided integrated content management system to control and display images, including live Event and scoreboard images, (and synchronous audio transmitted through Event Overlay speakers) on the Sports Precinct LED Superscreen; and

(ii) enables the end-to-end latency of the Seating Bowl LED Superscreens to be satisfied.

(e) (**Technical requirements**) Each LED Superscreen must meet the following minimum requirements:

Criteria	Requirement
Size	232m^2 >, for Seating Bowl LED Superscreens
Aspect ratio	21:9 for Seating Bowl LED Superscreens,

Criteria	Requirement
	16:9 for Controlled Area provision
Technology	LED, or other technologies that meet or exceed the requirements of these Design Specifications.
Display life	75,000 hours > at full brightness or ten (10) years, whichever is the greater
Scalable display	Yes
Display panel edges	Seamless
IP rated	IP65, all components to be weather sealed including power supplies and modules
Control system	Content management system, remotely controlled, support multiple content formats, intuitive graphic user interface (GUI)
Horizontal viewing angle of screens	Minimum of 160 degrees
Vertical viewing angle of screens	Minimum of +- 25 degrees
Brightness	9000 > nits
Brightness adjustability	Minimum of 4 presets.
LED pixel pitch (physical)	16mm<
All display modules	Readily swappable
All power supplies	Redundant and hot swappable

E14.5.8 LED Signage

(a) Project Co must provide ribbon LED Signage to nominated locations within the Seating Bowl to support and complement the LED Superscreens in order to provide standalone dynamic advertising and to enhance Patron engagement and activation.

(b) Although the State only requires nominated locations to be provided with LED Signage, Project Co must ensure that ribbon LED signage can be installed and serviced at all fascias facing into the Seating Bowl. At a minimum this must include easily accessible cable paths and conduits for both the expected power and signal cables. Structural and other Engineering Services provisions including power and data must be provided in order to accommodate additional LED Signage on other parapets for future system expansion. Project Co must ensure that spatial allowance is provided for any mechanical services which may be required for additional LED signage installed at a later date.

(c) The LED Signage must:

(i) (**location**) be located within the Seating Bowl in accordance with clause D7.4.6 and within the television arc for AFL Events on the inner circumference of the Seating Bowl and at Pitch level;

(ii) without limiting (i), allow for Pitch access gate operation;

(iii) be configurable to enable use for and during Rectangular Events and other Stadium Events;

(iv) (**independent images**) enable each of the separate LED Signage sections to display separate, scalable and independent images; and

(v) (**continuous images**) be capable of displaying one continuous image, or many discrete images across the length of each LED Signage section.

(d) Additional LED Signage on other levels of the Seating Bowl within the extents described in paragraph (c)(i) is desirable.

(e) (**Lighting interface**) The LED Signage control system or content management system should be provided with an interface to the house lighting systems, as set out in Chapter E12 (Lighting), as well as an interface to a touring lighting system (or equivalent control system) to enable integrated lighting shows to occur during Events, particularly during Entertainment Events.

(f) (**Technical requirements**) The LED Signage must meet the following minimum requirements:

Criteria	Requirement
Height, minimum	To suit the parapet of the relevant area of the Seating Bowl, however a minimum display height of 900mm applies for all LED Signage.
Technology	LED, or other technologies that meet or exceed the requirements of these Design Specifications.
Display life	75,000 hours > at full brightness or ten (10) years whichever is the greater
Scalable display	Yes
Display panel edges	Seamless
IP rated	IP65, all components to be weather sealed including power supplies, ribbons and modules
Control system	Content management system, remotely controlled, support multiple content formats.
Horizontal viewing angle of screens	Minimum of 160 degrees
Vertical viewing angle of screens	Minimum of +/- 25 degrees
Brightness	9000 > nits
Brightness adjustability	Minimum of four (4) presets.
LED pixel pitch	16mm<
All ribbons and display modules	Readily swappable
All power supplies	Redundant and hot swappable

E14.5.9 IPTV system

(a) The IPTV system must be the overarching system that controls, manages, and displays IPTV, digital signage, other digital content and associated audio throughout the Stadium and includes the following subsystems:

(i) the IPTV management system;

(ii) the digital signage system;

(iii) the integrated content management system, which may be used to provide content to the LED Superscreens, LED Signage, Displays and other media including websites; and

(iv) Displays.

(b) (**Control location**) In addition to the general requirements set out in E14.5.6, Project Co must ensure that control of the IPTV system can be achieved from Stadium Personnel workstations in the Administration Facilities, including for use on Non-Event Days. The IPTV system must also permit a number of layers of access via a web browser to allow various authorised users limited access through smart phones and tablets using the in-house wireless networking.

(c) (**IPTV management system**) The IPTV management system must:

(i) be integrated with the digital signage system to be distributed over the Stadium and Sports Precinct IP Network;

(ii) provide free to air and subscription TV gateways, including main sports channels for viewing within Media Facilities and Premium Product Areas;

(iii) provide nominated free-to-air radio channels;

(iv) provide distribution of in-house channels;

(v) provide certified content encryption and licensing of copyrighted content; and

(vi) in conjunction with the network management system as set out in clause E13.4.8(f)(viii) facilitate the efficient end-to-end management and administration of the IPTV system.

(d) (**Digital signage system**) The digital signage system must:

(i) provide distribution of all content to allow any Display to be used for signage, IPTV, wayfinding and content display purposes;

(ii) enable picture-in-picture, template split screen and scrolling text over displays images functionality;

(iii) provide certified content encryption and licensing of copyrighted content;

(iv) enable static and dynamic signage, IPTV, free-to-air, Foxtel and house channels to be provided via the Ethernet network. The head-end equipment must be located on the IP Network;

(v) be able to display room booking, wayfinding and other specific location information;

(vi) incorporate infrastructure and encoders that support the Stadium Operator's nominated video sources;

(vii) incorporate decoders which convert encoded data into a format that can readily be played back by Displays. Each decoder must allow bidirectional third party control;

(viii) provide dashboard functionality for the EMS, BMS and other relevant Engineering Services monitoring devices;

(ix) incorporate live streaming or Event network broadcast, in-house broadcast channels, in-house IPTV and digital signage feeds;

(x) communicate match statistics from Sporting Events in accordance with the requirements of the Sporting Standards, outside broadcast feeds, local (on site) exclusive content feeds and social media;

(xi) enable Event and public transport information to be captured and displayed on the Displays;

(xii) integrate with and be able to provide content to portable personal media devices via a web application or via a media application;

(xiii) include directional signage that is able to incorporate the Home Teams' colours on Game Day; and

(xiv) enable information regarding the ESD Initiatives to be captured and displayed on the Displays.

(e) (**Content management system**) In addition to the general requirements set out in E14.5.6(d), the content management system must:

(i) be integrated with IPTV and digital signage system to enable content to be distributed to all Displays;

(ii) be the central control for all content that is to be displayed on all Displays. The content management system must route video in native resolution from any source whether it be live, recorded or off-air (DVB-T and DBV-S), or any combination of those sources to the system for presentation on the Displays;

(iii) be able to display multiple channels of video throughout the Stadium such that individual Displays can show different video material. All video channels must be made available in their native display format in respect of resolution and aspect ratio. All video channels that are available must be capable of being simultaneously relayed at a minimum of 1080p HD;

(iv) act as both an IPTV distribution solution as well as a digital signage solution, thus video material must be able to be displayed full screen, or as part of a signage template;

(v) be able to accommodate basic record and edit functionality from live Event video feeds;

(vi) handle content publishing, scheduling, editing and distribution for the IPTV system;

(vii) be capable of retrieving and pushing raw data from a number of different sources to the Display Systems in a number of user defined formats;

(viii) enable real time editing and updating of content via user controls or automated systems such as timed updates;

(ix) be scalable and flexible to allow future expansion and updates; and

(x) allow content to be distributed over the digital signage system.

(f) (**Other devices**) Project Co must ensure that the functionality, control (as applicable) and content provided to the Displays from the content management system can also be provided to any projectors or other display devices throughout the Stadium and located on the IP Network.

(g) (**Displays**)

(i) Displays must be provided in appropriate dimensions and locations throughout the Stadium, with specific consideration of:

A achieving the fans-first aspiration;

B maximising Stadium User, particularly Patron, awareness of the activities occurring at the Stadium and Sports Precinct

C maximising operational efficiencies;

D maximising spends at Outlets for catering and retail;

E maximising the commercial value of the Display inventory to potential partners, including Technology Partners;

F enabling ease of viewing for all Stadium Users in all areas regardless of ambient light levels; and

G promotion of the Stadium and Sports Precinct, including promotion of any ESD Initiatives.

(ii) In assessing locations for Displays, Project Co should consider grouping or clustering Displays in multi-screen formats to maximise the impact and effect of the Displays.

(iii) The Displays must operate and display images without any form of delay, artefacts or interruptions.

(iv) (Audio) Project Co must ensure that where Displays require audio to be presented to Stadium Users, the audio is provided synchronous with the image on the Display and in accordance with the performance requirements set out in Chapter E7 (Acoustics).

(v) To enhance the fan experience, Project Co must consider providing interactive touch Displays at strategic locations to facilitate enhanced wayfinding, catering, ticketing and other entertainment or fans-first functions.

(vi) At a minimum, Project Co must provide Displays for each Functional Unit or Functional Area as set out in **Table 27**: Displays Allocation.

Table 27: Displays Allocation

Functional Unit / Functional Area	Minimum Displays
Concourses	300
Home Teams' Change Rooms (total)	30
Away Teams' Change Rooms	10
Generic Change Rooms	20
Players' Lounge	4
Officials Change Rooms	4
Coaches' Boxes and Officials' Boxes	As per Chapter D6 (Team Facilities)
Premium Product Areas, including: • Field Club; • Chairman's Club; • Coaches' Club; • Club Lounges; • Function Rooms; • Terraces; and • Sky View Lounge.	210
Suites, including: • Traditional Suites; • Field Suites; • Social Suites; and • Field Social Suites.	A minimum of one (1) per suite
Open Corporate Reserves (OCR)	One (1) per OCR

Functional Unit / Functional Area	Minimum Displays
Public Bar	15
Fixed Catering Outlets	Two (2) per Outlet
Media Facilities	As per Chapter D14 (Media Facilities)

E14.5.10 **[*Not disclosed*]**

E14.5.11 **[*Not disclosed*]**

E14.5.12 **[*Not disclosed*]**

E14.5.13 **[*Not disclosed*]**

E14.5.14 **Wayfinding**

Project Co must include the AV Systems in the wayfinding strategy in accordance with Chapter C9 (Wayfinding and Signage). Wayfinding technology may include:

(a) interactive kiosks;

(b) digital signage;

(c) room booking signage, including for the Premium Product Areas such as Suites and Function Rooms;

(d) website pre-planning wayfinding applications;

(e) web and mobile applications; and

(f) links to transport information and planning tools, including Transperth and Google Maps.

E14.5.15 **General AV Systems**

(a) Project Co must provide general AV Systems within the Stadium to satisfy the requirements of these Design Specifications, including systems for:

(i) Premium Product Areas;

(ii) General Admission Areas;

(iii) Media Facilities;

(iv) Team Facilities;

(v) Catering Facilities; and

(vi) Meeting Rooms, Conference Rooms and staff briefing rooms.

(b) General AV Systems must provide:

(i) flexibility in use of systems, to maximise the Stadium User experience, potential use and revenue;

(ii) ease of use of systems for all users, with a particular focus on time critical areas, such as the Coaches Briefing Room;

(iii) efficient use of all systems, which must include integration with lighting, air conditioning and other systems for ease of use;

(iv) control functionality, including control of the systems identified in paragraph (iii) above, from the presenter's location in the case of Premium Product Areas and briefing rooms;

(v) opportunities for branding and personalisation, including room, suite, box or seat signage with corporate or team identification or personal details in lieu of static signage and wayfinding;

(vi) opportunities for increased revenue, which may include catering orders placed through AV Systems;

(vii) a high quality experience for all Stadium Users; and

(viii) Displays for Players at the interchange benches may be considered, including live viewing and access to other content.

(c) Project Co should consider the use of large format Displays, multi-Display arrays or projection equipment in large rooms and spaces, and where Stadium User view-ability is critical to the function of that room or space.

E14.5.16 Operational AV

(a) AV Systems must be provided to support all operational requirements, including:

(i) AV Systems to support the Stadium Activities and the Services, including all functionality required within the Main Security Office, Event Control Room and Production Suites, including as described in Part D (Functional Brief) of these Design Specifications;

(ii) LED Superscreen and LED Signage control;

(iii) Event Day management and monitoring; and

(iv) venue management.

(b) Operational AV facilities must provide:

(i) flexibility in use of systems, to maximise the Stadium User experience, potential use and revenue;

(ii) flexibility in use of systems, to enhance the safety and security of all Stadium Users;

(iii) ease of use of systems for Stadium Personnel; and

(iv) efficient use of all systems, which must include integration with lighting, air conditioning and other Engineering Services systems for ease of use.

(c) Project Co must provide audio to the Controlled Area and to areas of the Sports Precinct to assist in crowd management on Event Days. Within the Sports Precinct, particular focus must be paid to areas where high crowd density is likely to occur, including the Bus Hub, the Bus Passenger Assembly Area and the Rail Passenger Assembly Areas.

E14.5.17 Outside broadcast

(a) Outside broadcast systems must be provided in accordance with the relevant Sporting Standards, including:

(i) an Outside Broadcast Patch Room to connect to:

A outside broadcast vehicles;

B the Primary Television Studio;

C the Secondary Television Studio;

D the Production Suites;

E the Event Control Room;

F the Main Security Office;

G the Team Facilities;

H the Media Facilities;

I camera positions; and

J interconnection of the abovementioned facilities;

(ii) high quality, high bandwidth cabling to support long cable runs;

(iii) support, hardware and cabling for on-field rail mounted cameras;

(iv) support, hardware and cabling for specialist cameras used in the adjudication of Sporting Events; and

(v) support, hardware and cabling for fixed and flown wire rig overhead style cameras.

(b) (**Broadcast patch panels**) Project Co must consider the use of sacrificial panels for broadcast patch panels, particularly with respect to fibre. All broadcast patch panels must be weather and dust proof based on their locations and must be located to facilitate ready and efficient Bump-In and Bump-Out activities, whilst minimising any adverse effect on other Stadium Activities, including pedestrian movement.

E14.5.18 AV cabling

(a) Project Co must provide cabling to support all AV Systems. The cabling must support and include:

(i) high quality and high bandwidth cabling to support future AV System upgrades;

(ii) category and fibre cabling for signal extension where cables exceed manufacturer recommended maximum lengths;

(iii) microphone cabling;

(iv) speaker cabling;

(v) analogue and digital video cabling;

(vi) control and interface cabling;

(vii) AV patch panels and bays;

(viii) all patch cabling required to facilitate a complete system;

(ix) high quality terminations for cable longevity; and

(x) cabling for outside broadcast, team video, including AFL playvision cameras.

(b) (**AV patch panels**) All AV patch panels must be weather and dust proof depending on their location, and must be located to facilitate ready and efficient Bump-In and Bump-Out activities, whilst minimising any adverse effect on other Stadium Activities, including pedestrian movement. AV patch panels in Premium Product Areas must be integrated into the finishes, joinery and fabric of the room so as to not detract from the overall aesthetic.

E15 SECURITY SYSTEMS

[*NOT DISCLOSED*]

E16 VERTICAL TRANSPORTATION

E16.1 GENERAL

(a) Vertical Transportation works associated with the development of the Stadium and Sports Precinct must be designed and executed to ensure that the works integrate seamlessly with the architectural and structural designs.

(b) Project Co must provide a safe and reliable Vertical Transportation system suitable for the Stadium and Sports Precinct that:

(i) provides a seamless transition for all IRUA and which provides them with a Stadium experience that is no different to that of any other Patron;

(ii) is fully developed and designed to provide a functional and operational system for passengers, goods and maintenance equipment needing to move between levels;

(iii) services all levels in all Event modes;

(iv) can efficiently service Premium Product Areas for Events and Functions;

(v) has lift and escalator controls that are capable of automatically recognising and responding to peak traffic conditions;

(vi) support the evacuation strategies identified in the FEB and the FER;

(vii) can accommodate high volume operation and frequent use, and low volume or no usage for extended periods;

(viii) has finishes that are of vandal resistant quality; and

(ix) has a monitoring and control system that is interfaced with other Engineering Services systems, including the BMS, mechanical services, fire protection systems, Security Systems (including the CCTV system and EACS), AV Systems and electrical services systems.

(c) Noise and vibration levels for the Vertical Transportation system must comply with the requirements set out in Chapter E7 (Acoustics) and specific reference is made to the requirements set out in clause E7.3.8(e).

E16.2 SCOPE

The scope of the Vertical Transportation works includes the design, construction, commissioning and completion of:

(a) passenger lifts;

(b) Service Lifts;

(c) dedicated lifts; and

(d) escalators.

E16.3 AUTHORISATIONS

Without limiting Chapter A11 (Authorisations) and subject to clause 41.1 of this Agreement which sets out Project Co's obligations in respect of Authorisations, Project Co must obtain and comply with all required Authorisations and Authority requirements associated with the Vertical Transportation works for the Sports Precinct and Stadium including any required Authorisation(s) from WorkSafe WA - design registration and plant registration for lifts and escalators.

E16.4 QUALITY STANDARDS AND LAWS

Without limiting clause 14.1 of this Agreement and the Quality Standards and Laws stipulated in Chapter E1 (General Requirements), the design, construction, commissioning and completion of the Stadium and Sports Precinct in respect of the Vertical Transportation must comply with all relevant Quality Standards and Laws including:

(a) all relevant Australian Standards, including:

(i) AS 1735.1:2003 - Lifts;

(ii) AS 1735.5:2003 - Lifts, escalators and moving walks;

(iii) AS 1428.2:2010 – Design for access and mobility; and

(iv) AS 3000:2007 - Electrical installations; and

(b) other relevant standards, codes and guidelines, including CIBSE - Guide D:2010 - Transportation Systems in Buildings.

E16.5 PERFORMANCE REQUIREMENTS

E16.5.1 Design Life

(a) The Design Life for the Vertical Transportation system must meet or exceed the minimum requirements set out in table below. The Vertical Transportation system must be designed and equipment selected to achieve the required Design Life without requiring maintenance that would not be expected for Vertical Transportation built and installed in accordance with Best Construction Practices.

Element	Design Life
Escalators	20 years
Lifts	20 years
Lift cars interior fixtures and finishes	10 years

(b) The Vertical Transportation system must be of Best Construction Practice and satisfy the FFP Warranty, with provision of a reliable back up and maintenance service that includes local (WA based) support.

E16.5.2 Land Conditions

The structural design of lift shaft and pits and the design of the Vertical Transportation system and the must take into account:

(a) all Land Conditions, to minimise the degree of excavation and removal of soil from the Site;

(b) the potential for differential settlement;

(c) the potential presence of Contaminated Material and Contaminated Water; and

(d) the water quality and height of the water table at the Site.

E16.5.3 ESD

The Vertical Transportation system must be provided with efficient energy saving options for the management of all lifts and escalators. Project Co must consider utilisation of permanent magnet synchronous hoisting motors, regenerative power systems, variable speed drives, car light and power saving options and low smoke halogen free cables.

E16.5.4 Flexibility

Project Co must ensure that the Vertical Transportation upgrade strategy accommodates flexibility, Expansion and Reconfiguration Works in accordance with Chapter C14 (Flexibility, Expansion and Reconfiguration Works).

E16.5.5 Facilities for IRUA

The Vertical Transportation system must include facilities for IRUA in accordance with all relevant Quality Standards and additional requirements as set out in clause E1.5. In addition, Project Co must provide a main and auxiliary control panel within each passenger lift.

E16.5.6 Emergency and Fire

(a) (**Stretcher carrying capacity**) All lifts must be of a size that can accommodate a stretcher or ambulance gurney and three (3) personnel.

(b) (**Fire service control**) All lifts must meet the requirements of AS 1735 in regard to fire service recall and operation.

(c) (**Emergency lifts**) Lifts must be designated as emergency lifts in accordance with the NCC and any fire engineering solution as set out in Project Co's FER. A minimum of one lift of each bank of passenger lifts and all Service Lifts must be capable of being used as emergency lifts.

(d) (**Essential power**) All lifts must be capable of operation on essential services power.

E16.5.7 Traffic Study

(a) Project Co must complete a traffic study as per CIBSE Guide D, complete with flow diagrams, that addresses the functional planning of the Stadium and determines the number, size and speed of passenger lifts and escalators required to service:

(i) Premium Product Patrons and VIP Patrons;

(ii) General Admissions Patrons;

(iii) Stadium Personnel; and

(iv) Media Personnel.

(b) As part of the traffic study, Project Co must assess traffic flows associated with vertical movements of Stadium Staff, including for delivery of the Catering Services and Waste Management Services, and determine the required number of Service Lifts, lift sizes and performance ratings to ensure efficient delivery of these services. The study must address the functional planning of the Stadium.

(c) The traffic study, including all assumptions, analysis, outcomes, flow diagrams and proposed lift solution, must be submitted to the State for review prior to the end of Design Stage 1. The traffic study must be based on a proprietary traffic analysis and simulation software package such as Elevate Version 8.

E16.5.8 Lift performance parameters

[*Not disclosed*]

E17 BUILDING MANAGEMENT SYSTEMS (BMS)

[*Not disclosed*]

E18 PITCH, PLAYING SURFACE AND ASSOCIATED FACILITIES

E18.1 GENERAL

(a) Project Co must design, construct, commission and complete all works for the development of the Pitch and associated facilities to ensure it can maintain the Pitch, including the Playing Surface, in accordance with the requirements set out in Part C, Section 2 (Playing Surface Services) of Schedule 13 (Services Specifications).

(b) The Pitch and associated facilities must be designed, constructed, commissioned and completed to ensure that the Stadium can be used year round for all Events, including national and international level Sporting Events which are to be held at the Stadium.

(c) The Pitch and associated facilities must be designed to integrate seamlessly with the Seating Bowl to ensure achievement of the Viewing Quality for each Seating Position.

(d) The design of the Pitch is intrinsically linked to the design of the Stadium and in particular its roof and Seating Bowl.

E18.2 SCOPE

The scope of the Pitch and associated facilities works includes the design, construction, commissioning and completion of:

(a) the Pitch, including the Playing Surface, Pitch Perimeter and Service Duct;

(b) the Drop-In Cricket Wicket footings;

(c) the Drop-In Cricket Wicket trays;

(d) Sporting Equipment, including associated hydraulic or electrical erection systems;

(e) a system for the installation of goal netting for AFL Events;

(f) a system for the installation of Cricket Sightscreens;

(g) a Nursery for the Drop-In Cricket Wickets;

(h) a Turf Farm, or provision of access to a suitable existing facility that is able to supply the Turf in accordance with the requirements of the Output Specifications;

(i) provision for an Outdoor Practice Cricket Wicket Area; and

(j) all infrastructure and Engineering Services required to support and maintain the quality of the Pitch and associated facilities at the Stadium and Sports Precinct.

E18.3 DESIGN INFORMATION

The following information is provided as Project Information:

(a) Natural grass v synthetic turf: Study report, Department of Sport and Recreation, December 2011;

(b) Patersons Stadium Technical Specification for the Supply and Installation of Turf at Patersons Stadium;

(c) WACA summary document of the WACA turf and other elements;

(d) Development of Standards for the Use of Artificial Turf for Australian Football and Cricket;

(e) Background Document (untitled);

(f) Turf Farm Specifications; and

(g) Outdoor Practice Cricket Wicket Area.

E18.4 QUALITY STANDARDS AND LAWS

(a) Without limiting clause 14.1 of this Agreement and the Quality Standards and Laws stipulated in Chapter E1 (General Requirements), the design, construction, commissioning and completion of the Pitch and associated facilities must comply with all relevant Quality Standards and Laws including:

(i) the Sporting Standards;

(ii) all relevant Australian Standards including:

A AS 1254-2002: PVC pipes and fittings for storm and surface water applications;

B AS 1646-2007: Elastomeric seals for waterworks purposes;

C AS 2032-2007: Installation of PVC pipe systems;

D AS 2439.1-2007: Perforated plastics drainage and effluent pipe and fittings - Perforated drainage pipe and associated fittings;

E AS 3500.3-2003: Plumbing and Drainage – Stormwater Drainage;

F AS 4058-2007: Precast concrete pipes (pressure and non-pressure);

G AS 4139-2003: Fibre reinforced concrete pipes and fittings;

H AS 5065-2005: Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications;

I AS 1141: Methods of Sampling and Testing Aggregates;

J AS 1289: Methods of Testing Soils for Engineering Purposes;

K AS 2728: Aggregate and Rock for Engineering Purposes;

L AS 1477: UPVC pipes and fittings manufactured for pressure application;

M AS 2033 and interim AS 4130: Installation of polyethylene pipes;

N AS 2032: Codes of practice for installation of UPVC;

O AS 14778: UPVC pipes and fittings manufactured for pressure application;

P AS 35001: Electrical rules and regulations;

Q AS 2053: UPVC wire conduits, Non Metallic Conduits and Fittings;

R AS 1023: Low voltage switchgear and control gear;

S AS 1029: Low Voltage Contactors;

T	AS 1159: Polyethylene (Polythene) Pipe for Pressure Applications;
U	AS 1214: Hot Dipped Galvanised Coatings on Threaded Fasteners (ISO Metric Coarse Thread Series);
V	AS 1345: Identification of the Contents of piping, conduit and ducts;
W	AS 1431.1: Low Voltage switchgear and control gear;
X	AS 1432: Copper Tubes for Plumbing, Gas Fitting and Drainage application;
Y	AS 1460.1: Fittings for Use with Polyethylene Pipes: Mechanical Jointing Fittings;
Z	AS 1460.2: Fittings for Use with Polyethylene Pipes: Electrofusion Fittings;
AA	AS 1585: Capillary and Brazing Fittings of Copper and Copper Alloy;
BB	AS 1628: Water Supply – Copper Alloy Gate, Globe and Non-Return Valves;
CC	AS 1645: Copper and Copper Alloy Compression Fittings for Use in Water Supply and Hot Water Services;
DD	AS 1939: Degree of Protection Provided by Enclosures for Electrical Equipment (IP Code);
EE	AS 2184: Low voltage Switchgear and control gear;
FF	AS 2845.1: Water Supply – Mechanical Backflow Prevention Devices;
GG	AS 3000: Electrical Installation – Buildings, Structures and Premises (SAA Wiring Rules) and amendments;
HH	AS 3439: Low voltage switchgear and control gear assemblies;
II	AS 3500: National Plumbing and Drainage Code;
JJ	AS 3500.1: National Plumbing and Drainage Code, Part 1 – Water Supply;
KK	AS 3688: Water Supply – Copper and Copper Alloy Body Compression and Capillary Fittings and Threaded End Connectors;
LL	AS 4130: Polyethylene pipes, pressure applications (interim standard); and
MM	AS 4131: Polyethylene Pipe Compounds (Interim Standard).

(b) (**Testing laboratory**) A NATA registered laboratory, licensed for appropriate test procedures and accredited or approved by the AFL and Cricket Australia, must perform all required testing for the materials used in the delivery of DBFM Works related to the Pitch and Playing Surface.

E18.5 PERFORMANCE REQUIREMENTS

E18.5.1 Design Life

The Design Life which must be specified for key components of the Pitch and Playing Surface must meet or exceed the following minimum requirements.

Table 28: Design Life for Pitch and Playing Surface elements

Element	Design Life

Element	Design Life
Pitch sub-grade	25 years
Pitch growing medium and profile	10 years
Turf layer	5 years
Drop-In Cricket Wicket footings	25 years
Drop-In Cricket Wicket trays	25 years
Pitch drainage system	25 years
Pitch irrigation system - pipe work - sprinkler heads - valves and control boxes	10 years
Pitch Perimeter (structure)	50 years
Pitch Perimeter (surface)	7 years
Service Duct	25 years

E18.5.2 Land Conditions

The design, construction, commissioning, completion and maintenance of the Pitch and associated facilities must accommodate the Land Conditions and satisfy the Damage Thresholds (as applicable), including as described in Chapter A12 (Site Information), Chapter A13 (Design Consideration and Constraints), Chapter A14 (Environmental Management), Chapter E1 (General Requirements) and Chapter E4 (Civil Engineering) of these Design Specifications.

E18.5.3 Sun Modelling

During Design Stage 1, Project Co must develop sun access modelling using stereographic images. This modelling must be undertaken to measure the sunlight hours across the Playing Surface to inform design, turf species choice and maintenance regimes. The modelling and images must be provided in the Pitch Report, which must be updated during subsequent Design Stages in accordance with Schedule 5 (Design Development) of this Agreement.

E18.5.4 ESD

The Pitch and associated facilities must be designed to optimise the requirement for the use of water and energy to maintain the Pitch and Playing Surface and otherwise accommodate the ESD Requirements set out in Chapter C13 (Ecologically Sustainable Development (ESD)).

E18.5.5 Tolerances

(a) The finished surface of each layer of the Pitch profile must be provided within the following tolerances:

(i) design level - within a tolerance of –0/+10 mm;

(ii) thickness - within a tolerance of –5 mm/+10 mm; and

(iii) 10 mm maximum departure from a 3m straight edge in all directions.

(b) In accordance with Schedule 3 (Review Procedures), Project Co must provide as-constructed Design Documentation for review at the following times to demonstrate design compliance on a 5metre x 5metre grid:

(i) at completion of sub-grade and subsoil drainage works;

(ii) at completion of drainage gravel layer; and

(iii) at completion of root zone sand layer.

(c) Project Co must not commence work on succeeding layers of the Pitch until the information for the sub-grade is provided and design compliance is demonstrated.

E18.5.6 Maintainability

In designing and constructing the Pitch and associated facilities, Project Co must consider the maintenance implications, including those arising from:

(a) the increased potential for differential settlement and lateral movements due to the Land Conditions at the Site, and the effect of such movements on the level of the Pitch relative to the Seating Bowl (including the effects on compliance with the Viewing Quality requirements);

(b) the selection of materials including bases, sub-bases and surface finishes;

(c) the extent and type of drainage provided;

(d) the Stadium micro-climate; and

(e) social considerations including the potential for accidental and intentional damage.

E18.5.7 Performance Testing

(a) Project Co must develop a Pitch Report (as set out in Schedule 5) which includes:

(i) identification of the following characteristics:

A traction;

B hardness; and

C ball interaction including ball roll, vertical ball rebound and angled ball rebound;

(ii) specification of an appropriate testing methodology; and

(iii) benchmarking of the expected Pitch performance against other Australian stadia (which must include a minimum of one Western Australian stadium or pitch) for all Sporting Events reasonably anticipated to occur at the Stadium.

(b) In undertaking the benchmarking process described in paragraph (iii), Project Co must consider the effects of:

(i) the nominated turf species; and

(ii) the local climatic conditions and soil profile.

E18.5.8 Sub-grade Earthworks

(a) (**Limestone base**) Project Co should consider the use of a limestone base (or similar) to ensure stability of the Pitch.

(b) (**Tolerances**) The earthworks must be finished to reasonably smooth and uniform surfaces conforming to a maximum tolerance of 20 mm.

E18.5.9 Drop-In Cricket Wicket footings

(a) The Drop-In Cricket Wicket footings should include:

(i) subsoil drainage under the Drop-In Cricket Wicket soil profile which connects to the Pitch drainage solution;

(ii) a minimum 150 mm of compacted base on top of sub-grade prior to footings being installed;

(iii) concrete structural footings, with a minimum of 600 mm surface top, which run the length of the Drop-In Cricket Wickets;

(iv) 50 mm of growing medium over the concrete footings;

(v) a minimum of 200 mm growing medium and 150 mm drainage layer as the profile under the portable wickets; and

(vi) a Drop-In Cricket Wicket tray divider for each footing, to aid wicket placement.

(b) The final Drop-In Cricket Wicket finished floor level (when installed) must be 50 mm higher than the surrounding Playing Surface.

(c) (**Profile construction**) Project Co should develop a Pitch profile that contains:

(i) drainage gravel layer;

(ii) root zone and amendments;

(iii) the Drop-In Cricket Wicket footings; and

(iv) goalpost footings.

(d) (**Turf growing medium**) Project Co must develop a turf growing medium and benchmark the expected characteristics of this medium against other Australian stadia, which must include a minimum of one Western Australian stadium pitch. These characteristics include:

(i) particle size distribution;

(ii) hydraulic conductivity;

(iii) aeration porosity;

(iv) volumetric water;

(v) bulk density requirements;

(vi) pH;

(vii) electrical conductivity; and

(viii) rebound.

(e) In undertaking the benchmarking process described in paragraph (c), Project Co must consider the effects of:

(i) the nominated turf species; and

(ii) the local climatic conditions and soil profile.

(f) (**Turf species**) The Turf species must be a base of couch grass, which is oversewn with the ryegrass species in autumn, remaining in this configuration until mid to late spring where it must be transitioned back to couch grass only for the summer months. Project Co must select and provide the couch grass species so that it can readily accommodate the transition into ryegrass and then back into couch grass only.

(g) (**Turf**) The Turf must:

(i) have a uniform deep green colour and must not be discoloured or have any bare patches;

(ii) have sufficient density that no soil is visible through the leaf canopy;

(iii) be provided so that the depth of thatch must not exceed 10mm, with thatch:

A being defined as the layer of dead and decomposing leaf and stem material that develops above the soil surface and below the green leaf layer; and

B being assessed by measuring Turf thatch height from the soil level to below green leaf level at a minimum of 40 sites;

(iv) be provided with all edges trimmed; and

(v) be provided free from Pest, disease and weed infestation.

(h) (**Source**) The total source of Turf must come from the Turf Farm.

(i) (**Turf reinforcement**) The use of synthetic or artificial reinforcement systems within the top layer of the Pitch's growing medium and profile will be considered by the State if there is a demonstrable WOL LCC saving. Should such a system be adopted, Project Co must ensure that:

(i) it has been used successfully in other like stadia applications;

(ii) it has an application and incorporation rate and methodology that does not disrupt or adversely affect the Stadium Activities; and

(iii) appropriate quality control procedures for the application and incorporation of the reinforcement system into the profile are adopted.

(j) (**Tolerances**) The finished surface of each layer of the profile must be in accordance with the following tolerances:

(i) design level - within a tolerance of –0/+10 mm;

(ii) thickness - within a tolerance of –5 mm/+5 mm; and

(iii) 5 mm maximum departure from a 3 m straight edge in all directions.

(k) The finished surface must be have no holes, undulations or localised depressions.

E18.5.10 Irrigation

(a) (**Scope**) The irrigation system must incorporate irrigation systems for the Pitch and the Nursery for the Drop-In Cricket Wickets.

(b) (**General**) The irrigation system must include:

(i) the highest application uniformity practicable, including complying with the following uniformity criteria:

A minimum distribution uniformity of 85%;

B minimum precipitation rate of 13 mm per hour; and

C scheduling coefficient of less than 1.25;

(ii) a layout to maximise coverage and minimise overwatering;

(iii) individual operation and time control over every sprinkler;

(iv) a computer controlled system which can apply multiple irrigation schedules, created to suit any Pitch use scenario;

(v) remote output soil moisture sensors and a weather monitoring system;

(vi) flow sensors;

(vii) isolation valves at each take off for the automatic control valves and at strategic points on the mainline;

(viii) a fertigation system that provides flexible applications to enhance the Stadium Event schedule;

(ix) a minimum of 7 evenly distributed ground water outlets for washouts and hand watering on the Pitch;

(x) watering of the Drop-In Cricket Wickets in the centre of the Pitch;

(xi) a separate scheme water take off valve for hand watering of portable wickets when installed in the Stadium;

(xii) an ability to operate with the Drop-In Seats and Event Overlay in place;

(xiii) no overspray into the Seating Bowl or onto LED Signage.

E18.5.11 Pitch Perimeter

(a) (**Scope**) Project Co must provide:

(i) the synthetic surface;

(ii) a behind goals netting erection system; and

(iii) a system for the erection of Cricket Sightscreens which are to be provided by others.

(b) (**Services**) The Pitch Perimeter should incorporate junction and in-ground services pits.

(c) (**Synthetic surface**) The Pitch Perimeter must have a synthetic surface that:

(i) complies with international standards;

(ii) complies with relevant Sporting Standards and is approved for use by the Sporting Codes;

(iii) incorporates a shock pad as part of the design;

(iv) accommodates the goal netting erection system and Cricket Sightscreen systems;

(v) is of a similar colour to the Turf;

(vi) accommodates large vehicle loads and the Drop-In Cricket Wicket Transporter, including as set out in Chapter E4 (Civil Engineering) of these Design Specifications;

(vii) accommodates the Stadium Activities, including the use of Drop-In Seats for Rectangular Events, Entertainment Events and Athletics Events without surface damage; and

(viii) accommodates the Land Conditions, including the extremes of Perth's climate and environment.

(d) (**Sand or rubber fill**) Project Co must consider providing the synthetic surface with a loose sand or rubber infill to assist the pile to remain vertical and contribute to the playing and cushioning qualities of the surface (ball rebound, shock absorption and vertical deformation).

(e) (**Surface tolerances**) Project Co must ensure the following surface tolerances:

(i) design level – within +/- 5 mm from the design;

(ii) flatness - within +/- 5 mm from a 2 m straight edge; and

(iii) interface with Playing Surface level - within +/- 5 mm at an interface point.

(f) (**installation**) Project Co must install the synthetic surface in accordance with Best Construction Practices and must ensure that:

(i) the synthetic surface has a minimum number of joints; and

(ii) joints are not provided in high traffic areas, including adjoining the Players Races and Team Interchange Benches.

(g) (**Goal netting system**)

(i) Project Co must provide a goal netting system by which netting can be erected and removed behind the goals for AFL Events. The system must:

A comply with relevant the Quality Standards;

B be either hydraulically or electronically operated;

C be installed according to the manufacturer's specification; and

D ensure the finished level has no impact on the final Pitch Perimeter surface.

(ii) Project Co must provide the pits and services required to operate the goal netting system in a suitable location in proximity to the AFL goals.

(h) (**Cricket Sightscreen system**)

(i) Project Co must provide a sightscreen system, including pits, rails and services required to erect, operate and remove the Cricket Sightscreens, for Cricket Events.

(ii) The sightscreens system must:

A comply with the relevant Sporting Standards and Quality Standards;

B be either hydraulically or electronically operated;

C allow the Cricket Sightscreens to be installed according to the manufacturer's specification; and

D ensure the finished level has no impact on the final Pitch Perimeter surface.

(iii) The Cricket Sightscreens will be provided by the Stadium Operator.

E18.5.12 Turf Farm requirements

(a) Project Co must provide access to an off-Site Turf Farm to provide Turf for initial establishment and replacement of areas of the Playing Surface.

(b) (**Performance**) The turf grown on the Turf Farm must meet the performance requirements described for the Pitch and Turf elsewhere in this Chapter, including in respect of:

(i) profile;

(ii) growing medium;

(iii) turf; and

(iv) turf reinforcement.

(c) The growing medium for the Turf Farm must satisfy the same performance requirements for the growing medium for the Stadium Pitch.

(d) (**Area**) An overall area of 20,000 m^2 of turf system must be produced (this area is greater than the expected Turf area of the Playing Surface to allow for wastage, cutting in and compliance with the minimum roll dimensions).

(e) A minimum of 1000 m^2 of turf is required to meet the design requirements to allow for turf replacement of portable wickets when they are installed in the Pitch and when they are removed from the Pitch.

(f) (**Surface tolerances**) The finished turf surface while at the Turf Farm must be within 0/+10 mm tolerance with no obvious holes or localised depressions.

(g) (**Establishment**) Before use within the Stadium, the turf must be established and maintained as a playing surface for a minimum of 6 months on the Turf Farm. During this time the turf must be managed with the same intensive program as to be undertaken in the Stadium, incorporating fertiliser, cutting height and frequency, renovation and Pest management. The management program must ensure a uniform density within the turf sward.

(h) (**Harvesting**) When harvested the turf must be in a ready for play condition. Four weeks prior to harvesting, the nutrition program should focus on hardening the turf to prepare it for the laying and establishment stage. This period should also place an emphasis on the grooming and cutting of the turf to maximise turf density and uniformity.

(i) (**Inspections**) Upon reasonable notification from the State, Project Co must ensure the Turf Farm is available for inspection during the D&C Phase.

E18.5.13 Drop-In Cricket Wickets

(a) (**Drop-In Cricket Wicket trays**) Project Co must provide nine (9) Drop-In Cricket Wicket trays of the following dimensions:

(i) length - 25 metres;

(ii) depth **-** 180mm; and

(iii) width - 3.05 metres.

(b) (**Design**) The trays must meet the following specifications to ensure the WACA wicket soil characteristics can be developed in a portable wicket environment:

(i) each tray must be one piece;

(ii) tray strength must be gained from the base and side structure, with no added strengthening beams restricting or affecting the wicket soil cross section along any axis;

(iii) lifting points must minimise impact on the clay wicket soil profile during transportation; and

(iv) lifting points must be compatible with the Drop-In Cricket Wicket Transporter.

(c) (**Wicket construction**)

(i) The Stadium Operator will be responsible for the construction of a wicket within each Drop-In Cricket Wicket tray, including the supply of all wicket soil.

(ii) Project Co must provide the trays to enable the Stadium Operator to construct, maintain, and curate a cricket wicket within each tray and must ensure that the following processes can be undertaken by the Stadium Operator:

A the wicket soil will be screened to <10mm;

B the wicket soil will be placed in the empty trays and levelled in 60mm increments;

C once each 60mm has been levelled the dry profile will be thoroughly compacted using a plate or drum compactor;

D once the top layer has been compacted and re-levelled, the profile will be watered to saturation point and then left to dry out until the top 20mm reaches 35-40% moisture;

E upon drying, the profile will be compacted again and screed level;

F wicket soil will be laid along the top of the portable tray to complete levelling prior to turfing; and

G the turf will be double washed to ensure that all soil, organic matter and thatch is removed.

(iii) Project Co must provide rolls of turf from the Turf Farm for the cricket wickets, which must be at least 1000mm wide and a continuous length of 12 metres, with the roll thickness no more than 10mm.

E18.5.14 Nursery requirements

(a) (**General**) Project Co must provide a Nursery (or access to an off-site Nursery) for the storage, maintenance and curation of the Drop-In Cricket Wickets. The Nursery must:

(i) be located such that the Drop-In Cricket Wicket Transporter has Ready Access to the Pitch, with minimal changes of elevation and direction into the Stadium;

(ii) be secured to limit access to authorised or accredited Stadium Users during both Event and Non-Event Days;

(iii) incorporate structural footings to accommodate the temporary installation, use and removal of the Drop-In Cricket Wickets; and

(iv) be provided with scheme water take off valve(s) for hand watering of Drop-In Cricket Wickets when installed in the Nursery.

(b) (**Drop-In Cricket Wicket footings**) The Drop-In Cricket Wicket footings in the Nursery must be of the same design, specification and construction as the Drop-In Cricket Wicket footings provided in the Pitch.

E18.5.15 Outdoor Practice Cricket Wickets Area

(**General**)

(a) Project Co must make provision for the space for this facility in the Sports Precinct in accordance with the functional requirements described in clause D6.4.21 of these Design Specifications.

(b) Without limiting the requirements set out in Part D (Functional Brief) of these Design Specifications, in determining the location for future establishment of the Outdoor Practice Cricket Wickets Area Project Co must take into account the requirement for the turf, growing medium, profiles and tolerances provided in the Outdoor Practice Cricket Wickets Area to meet the same performance requirements for relevant elements described elsewhere in this Chapter.

(c) Project Co must provide Engineering Services to the Outdoor Practice Cricket Wicket Area for the future provision of:

(i) sports lighting to enable cricket practice to occur at night; and

(ii) an irrigation system that complies with the performance requirements of the irrigation within the Pitch.

E18.5.16 Engineering Services

Project Co must provide Engineering Services to the Pitch and associated facilities, including:

(a) irrigation of the Pitch and Playing Surface to meet the growing requirements of the Turf, which may also be provided with sub-aeration systems;

(b) irrigation of the Nursery;

(c) suitably located Serviced Zones, including power and data within the Pitch Perimeter for:

(i) installation of LED Signage; and

(ii) installation of Cricket Sightscreens (provided by others) as described in clause E18.5.12(h);

(d) a hydraulic or electrical system for erection of goal netting systems, including as described in clause E18.5.11(h);

(e) all required power and data cabling and connectivity to the Pitch and Playing Surface to meet the broadcast requirements for Sporting Events in accordance with relevant Quality Standards; and

(f) Service Duct as described in clause D15.4.4.

PART F: [NOT DISCLOSED]

PART G: GLOSSARY

G1 GLOSSARY

Capitalised terms used in Volume 3: Design Specifications have the following meanings unless the context otherwise requires:

A La Carte Restaurant means the restaurant facility of that name that is part of the General Admission Areas of the Stadium, including as described in clause D8.4.5.

'A' Weighted means frequency filter applied to a noise spectrum that adjusts ('weights') each frequency differently. The 'A' weighting very roughly corresponds with human sensitivity of noise under 55dB in level.

Aboriginal Heritage Sites means the sites identified in **Table 4** of these Design Specifications.

Accredited Event Personnel means all persons provided with accreditation for an Event.

Accredited Professional (or Practitioner) means both designers and installers certified by the relevant body for that discipline

Acoustic Design Report means the report in respect of the acoustic design of the Stadium and Sports Precinct to be prepared by Project Co as part of the Design Documentation under this Agreement in accordance with Schedule 5 (Design Development) of this Agreement.

Acoustical Consultant means an acoustics consultant who can clearly demonstrate that they meet the dual requirements of being professionally qualified and experienced in the area of acoustics that is relevant to their scope of work. In addition to meeting the above, a person holding membership of the Australian Acoustical Society (AAS) in the grade of Fellow or Member (designated by the letters F.A.A.S. or M.A.A.S. respectively), or signatory of a company holding corporate membership of the Australian Association of Acoustical Consultants (AAAC), is accepted as being suitably qualified. Both the AAS and AAAC require their members to meet and maintain standards of technical competency.

Administration Break Room means the facility of that name associated with the Administration Facilities and is part of the Stadium Operations and Event Day Facilities, including as described in clause D13.4.1(n)

Administration Change Rooms means the facility of that name that is part of the Administration Facilities and is part of the Stadium Operations and Event Day Facilities, including as described in clause D13.4.1(s).

Administration Facilities means the Functional Area of that name that is part of the Stadium Operations and Event Day Facilities provided for the purpose of accommodating the administration functions for the Stadium and Sports Precinct, including as described in clause D13.4.1.

Administration Entrance Lobby means the facility of that name that provides a pedestrian entrance to the Administration Facilities and is part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.1(f).

AFL Derby Event means an AFL Event at the Stadium where AFL Home Teams compete against each other.

AFL Event means any event, match, game, performance, assembly, competition or production related to an AFL premiership season or pre-season fixture, or other Australian Rules football match, held within the Stadium, with the Pitch used generally for the purpose of Australian Rules football.

AFL Finals Event means any AFL Event after the completion of the home and away season or in the instance of a pre-season competition at the completion of the preliminary games.

AFL Home Teams means the West Coast Eagles Football Club and the Fremantle Football Club.

AFL ICT Guidelines means the AFL Information and Communications Technology – Venue Guidelines as published by the AFL (2013).

AFL Lighting Guidelines means the Australian Rules Football - Televised and Non-Televised Professional Level Guidelines as published by the AFL (2013).

AFL Triple Header Event means an AFL Event at the Stadium where three teams compete against each other in three (3) games in a row.

AFL Venue Guidelines means the AFL Venue Guidelines, as published by the AFL (May 2013).

Agreement Act means the Casino (Burswood Island) Agreement Act 1985 (WA).

Aisles and Gangways means the lateral and radial access ways used by Patrons within the Seating Bowl.

Airborne Weighted Level Difference means a single-number rating determined by the field measurements used to describe the ability of building element to impede the transmission of sound from one space to another. Higher value represents better performance.

Ambient Sound Level means the overall noise level associated with an environment or space. It is usually a composite of sounds from many sources, both near and far and usually assessed in terms of the L_{Aeq} value.

Art Coordinator means the consultant Subcontractor engaged by Project Co to manage the procurement and delivery of public artworks, including as described in clause C7(e).

Artwork Selection Committee means the committee established by Project Co to advise on the procurement, evaluation and selection of public artworks to be incorporated into the DBFM Works.

Asset Register has the meaning given to it in Annexure E (Glossary) of Schedule 13 (Services Specifications) of this Agreement.

Asset Replacement Plan has the meaning given to it in Annexure E (Glossary) of Schedule 13 (Services Specifications) of this Agreement.

Asset Security Services has the meaning given to it in Annexure E (Glossary) of Schedule 13 (Services Specifications) to this Agreement.

Assigned Level means the levels of noise allowed to be received at a premises at a particular time of the day or night. The assigned levels form “prescribed standards” under the *Environmental Protection Act 1986* (WA).

Assigned Noise Level means the level of noise allowed to be received at a premises at a particular time of day or night, calculated in accordance with the methods prescribed in the *Environmental Protection (Noise) Regulations 1997* (WA).

Athlete means a person involved in athletic activity.

Athletics Event means any Category 2 or 3 IAAF Competition or other competition that requires an IAAF Certified Construction Category 1 Track and Field Facility as defined in the IAAF Track and Field Manual (2008).

Athletics Reconfiguration means all alterations required to the Stadium and Sports Precinct to host an Athletics Event as described under clauses C14.6 and D7.4.12.

Athletics Sightline Criteria means the criteria for sightlines from each Seating Position to an Athletics Event as described in clause D7.4.12(e).

Athletics Track means the 400m standard track facility which is used as the competition area for track events associated with an Athletics Event, which comply with relevant Sporting Standards including the ‘IAAF Athletics Track and Field Facilities Manual (2008) guideline.

ATM (automatic teller machine) means a cash dispensing machine to be supplied by third parties for including in the Stadium including as described in clause D8.4.11.

AUDP means Australian Urban Design Protocols, being the principles of the Council of Australian Governments’ endorsed Australian Urban Design Protocol.

Auskick means the national program in Australia to develop and promote participation in Australian Rules football by children.

Australian Football League means the AFL or a game of Australian Rules football played in accordance with the Laws of Australian Football 2013 as the context requires.

Australian Rugby League (ARL) Commission means the peak body that oversees the management of the game of rugby league in Australia.

Australian Urban Design Protocols (AUDP) means the urban design quality protocols of that name endorsed by the Council of Australian Governments (COAG).

AV Systems means the audiovisual systems as described in Part E (Technical Brief) of these Design Specifications.

Average Recurrence Level (ARI) means the average recurrence interval, being the likelihood of occurrence, expressed in terms of the long-term average number of years, between flood events as large as or larger than the design flood event.

Away Team means any Sporting Team which is listed as the away team on any fixture for a Sporting Event at the Stadium.

Away Team Change Room means the change room facility for use by Away Teams that is part of the Team Facilities as described in clause D6.4.4.

Away Team Recovery Facility means the Player facility of that name that is part of the Team Facilities and is for use primarily by Away Teams to undertake aquatic recovery, including as described in clause D6.4.4(g).

α_w means Weighted Sound Absorption Coefficient, the sound level measured in a space, in the absence of sound from activities undertaken in that space.

Background Sound Level means the sound level measured in a space, in the absence of sound from activities undertaken in that space. Usually taken to mean the LA90 value.

Back of House means the areas of the Stadium that are not accessible by Patrons.

Benchmarking means documentation of images of exemplar projects that demonstrate particular elements consistent with the design quality aspirations.

Boundary means the term as applied in the relevant Sporting Standards.

Boundary Rider Position means the notional zone for Media Personnel, which is part of the Media Facilities including as described in clause D14.4.21.

Breakout Room means the facility of that name that is part of the Stadium Operations and Event Day Facilities as described in clause D13.4.10(j).

Buffet Restaurant means the restaurant facility of that name that is part of the General Admission Areas of the Stadium including as described in clause D8.4.4.

Building Information Modelling (BIM) means the digital representations of physical and functional characteristics of a facility providing a shared knowledge resource for information about a facility forming a basis for decisions during its lifecycle.

Building Management System (**BMS)** means a monitoring and control system for operation of Engineering Services plant and equipment at the Stadium and Sports Precinct.

Building Permit has the meaning given under the *Building Act 2011* (WA).

Bump-In means the preparation works required at the Stadium and Sports Precinct to stage an Event or Function including any alterations to the Playing Surface, Reconfiguration Works and all Event Overlay specifically required for an Event.

Bump-Out means the works necessary at the conclusion of an Event or Function to leave the Stadium and Sports Precinct ready for another Event or Function including dismantling and removal of all Reconfiguration Works and Event Overlay specifically required for an Event, reinstatement of the Playing Surface and the Event Clean to reinstate the Stadium in readiness for the next Event.

Burswood Park Golf Course Clubhouse (**Clubhouse**) means the lands and property comprised in Lot 12057 on Deposited Plan 218634 formerly known as Burswood Park Public Golf Course Clubhouse, located on the Burswood Peninsula.

Burswood Park Golf Course means the lands and property comprising the golf course and associated facilities on the Burswood Peninsula including the land comprised in Lot 300 on Deposited Plan 42394 CT 3139-328.

Bus Hub means the facility that is situated within the Sports Precinct for use by PTA buses that is to be constructed as part of the DBFM Transport Infrastructure Works including as described in clauses C4.11 and D4.3(j), also to be referred to as the Stadium Special Event Bus Stands.

Bus Layover Area means the bus waiting area to be constructed to the south of the State Tennis Centre as part of the State Transport Infrastructure Works.

Bus Passenger Assembly Area means the facility situated within the Sports Precinct for use by passengers that is to be constructed as part of the DBFM Transport Infrastructure Works including as described in clauses C4.11 and D4.3(g).

C60 means a sightline value including as defined in the Green Guide.

Camera Deck means the location for the primary broadcast cameras or the secondary broadcast cameras as the context requires.

Cash Counting Room means the facility that is provided for monetary collection that part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.17.

Catering Change Rooms means the change room facility of that name provided for Catering Personnel that are part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.3(c).

Catering Facilities means the facilities for the use of the Catering Operator to provide the Catering Service, including as described in Chapter D10 (Catering Facilities) of these Design Specifications.

Catering FF&E means all FF&E as described in Chapter D10 (Catering Facilities), including as shown on the FF&E List.

Catering Loading Dock means the Loading Dock that is provided for deliveries for the Catering Operator, including as described in clause D13.4.7(j).

Catering Office means the facility of that name for use by the Catering Service that is part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.3(b).

Catering Operator means the company or companies, that will provide the Catering Service at the Stadium which may be the Stadium Operator or a Subcontractor to the Stadium Operator.

Catering Personnel means those Stadium Personnel that are employed by the Catering Operator for the purposes of providing the Catering Service.

Catering Product means food and beverage that is served to Stadium Users by the Catering Operator.

Catering Service means the service provided by the Catering Operator that provides Catering Product within the Stadium including the Controlled Area to support the Stadium Activities.

Catering Strategy means the document to be submitted by Project Co as set out in Schedule 5 (Design Development) of this Agreement.

CEO Office means the facility of that name within the Administration Facilities that is part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.1(j).

Chairman's Club means the Premium Product of that name or the facility of that name that is part of the Premium Product Areas as the context requires, including as described in clause D9.4.1.

Changing Places Toilet means the toilet facility for use by IRUA who cannot use standard accessible toilets that is part of the General Admission Areas including as described in clause D8.4.2.

Chartered Professional Engineer means a professional engineer with 'Chartered Membership' of Engineers Australia.

Circulation Areas means the network of primary and secondary circulation routes for Stadium Users and vehicles including as described in Chapter D5 (Circulation Areas) of these Design Specifications..

Cleaning Facilities means the facilities for the use of the Stadium Operator to provide the Cleaning Services, including as described in clause D13.4.5.

Cleaning Manager's Office means the facility of that name provided for the purpose of the Cleaning Services, that are part of the Cleaning Facilities, including as described in clause D13.4.5(e).

Cleaner's Closets means the Stadium Operations and Event Day Facility of that name that is part of the Cleaning Facilities as described in clause D13.4.5(h).

Cleaning Services means the cleaning activities to be performed by the Stadium Operator to:

(a) ensure that the Stadium is clean and tidy including all internal glass and external glass cleaned periodically, floors vacuumed swept or washed, walls cleaned, toilets, grease, compactor and other traps cleaned and any other cleaning services that would be reasonably expected;

(b) ensure that all garbage, litter and other waste in the Stadium is removed regularly and promptly after each Event and (if appropriate) during the course of an Event;

(c) maintain hygiene and adequate supplies of soap, toilet paper, paper towels, disinfectant and all other requisites in all toilets and ensuites in the Stadium;

(d) ensure the maintenance of all kitchens and food storage areas and the refrigerators in the Stadium are free from grease, food spillages, and to the highest practicable standard of cleanliness and hygiene;

(e) effect all measures practicable to prevent as far as possible the spread of infectious diseases within the Stadium; and

(f) remove all garbage and litter which occur anywhere in the Sports Precinct in connection with an Event,

(g) that are not otherwise an obligation of Project Co under this Agreement.

Cleaning Services Supply Store means the facility of that name provided for the purpose of the Cleaning Services, that is part of the Cleaning Facilities, including as described in clauses D13.4.5(f) and D13.4.5(g).

Club Lounge means the Premium Product of that name or the facility that is part of the Premium Product Areas as the context requires, including as described in clause D9.4.7.

Clubhouse means the lands and property comprised in Lot 12057 on Deposited Plan 218634, formerly known as Burswood Park Public Golf Course Clubhouse, located on the Burswood Peninsula.

Coach means the person who generally directs and leads the participating Sporting Teams, and their technical support staff, in a sporting context.

Coaches' Boxes means the facility of that name that is part of the Team Facilities including as described in clause D6.4.14.

Coaches' Briefing Room means the facility that is part of the Team Facilities including as described in clause D6.4.

Coaches' Club means the Premium Product of that name or the facility that is part of the Premium Product Areas as the context requires, including as described in clause D9.4.2.

COBie Information Drops means the incremental provision of Digital Data incorporated in the BIM Models to the State in COBie format, including as described in clause C20.3 and Appendix H6 (BIM Implementation Requirements) of these Design Specifications.

Commercial Facilities means the facilities to be designed, constructed, commissioned, completed and financed by Project Co for the purpose of the Commercial Opportunities including as described in Chapter D16 (Commercial Facilities) of these Design Specifications.

Common Data Environment has the meaning given to it in Schedule 5 (Design Development) of this Agreement.

Community Benefit means the initiatives to benefit the community to be developed, implemented and funded by Project Co including as described in clause D16.5(b).

Community Recreation Oval means the recreation facility within the Sports Precinct which is also the Temporary Carpark, including as described in clause D4.4.7.

Concourse means the primary circulation route at each level of the Stadium facilitating access to the Seating Bowl, exit routes and support facilities.

Conference means any event, performance or assembly held within the Stadium or Sports Precinct, with the exception of an Event, and of more than 50 persons if Catering Product is dispensed or of more than 300 persons otherwise.

Conference Room means the conference facility within the Administration Facilities that is part of the Stadium Operations and Event Day Facilities, including as described in clause D13.4.1(l).

Construction Operations Building Information Exchange (COBie) means a data format, as included in the Natspec National BIM Guide, for the publication of a subset of building model information focused on delivering building information that is essential to support operations, maintenance and asset management once the built asset is in service.

Construction Traffic Management Plan means the sub-plan of the Project Management Plan to be developed and implemented by Project Co the requirements for which are set out in Schedule 19 (Plans) of this Agreement.

Continuous Background Sound Levels has the same meaning as Background Sound Level

Controlled Area means the variably sized area which extends from the Stadium Curtilage to the Ticket Control Points that is part of the Circulation Areas for the Stadium, including as described in clause D5.3.3.

Cricket Event means any event, match, game, performance, assembly, competition or production held within the Stadium, with the Pitch used for the purpose of cricket, which may be conducted over consecutive days as part of the single Cricket Event, including an ICC fixture.

Cricket Sightscreens means those barriers defined as part of the ICC Laws of the Game.

Cricket Wicket means the area at the centre of the Field of Play in which the Drop-In Cricket Wicket footings are located, and where four (4) Drop-In Cricket Wickets are located during Cricket Events.

Crime Prevention Through Environmental Design (CPTED) means the urban design principles established to ensure safety in urban design and as captured in Chapter C1 (Policy Framework) of these Design Specifications, clause E1.6 and the Designing out Crime Planning Guidelines published by the WA Planning Commission and the Australian Institute of Criminology.

Crisis or Major Incident Plan means the plan of that name as described in Schedule 19 (Plans) of this Agreement.

Critical Spaces means those Functional Units identified as such in **Table 19** (Background Sound Levels) in clause E7.3.3(a)(i).

Continuous Background Sound Level means the steady state equivalent A-weighted sound pressure level which over a given period of time, has the same total energy as the actual fluctuating noise, denoted LAeq,T measured in the absence of sound from activities undertaken in that space.

Crown Perth means the facility incorporating the Crown Casino and associated facilities located on the Burswood Peninsula.

Curtain Raiser means a pre-match game and entertainment on the Field Of Play prior to a Sporting Event.

C_{tr} means a frequency adaptation term applied in accordance with the procedures described in ISO 717. It is usually a negative number and therefore reduces the value of the overall Weighted Standardized Level Difference term, $D_{nT,w}+C_{tr}$. It disproportionally penalises low frequency sound insulation performance.

Damage Thresholds means the performance requirements for the DBFM Works set out in clause E1.4.9.

Data Centre means the main ICT facility for the Stadium and Sports Precinct which accommodates ICT Systems, including as described in clause E13.4.11(h).

dB(A) means he overall ‘A’ Weighted sound pressure level.

DBFM Asset Information means all graphical data, non-graphical data and other Design Documentation generated by Project Co during the D&C Phase, including as included in the As Built Bim Model, including as amended or supplemented during the Operating Phase as a result of the performance of the Services and any Modifications to the Stadium and Sports Precinct.

DBFM Project Objectives means the State's key objectives for the DBFM Project as set out in Chapter B3 (DBFM Project Objectives) of these Design Specifications.

DBFM Transport Infrastructure Works means those parts of the the Transport infrastructure Works to be undertaken by Project Co, including as described in clause A7.3.1.

Decibel (dB) means a unit of acoustic measurement. Measurements of power, pressure and intensity may be expressed in dB relative to standard reference levels. All sound pressure levels are referenced to 20 microPascals (dB re 20μPa).

Design Background Sound Level means the sound levels stipulated for the relevant Functional Area or Functional Unit in **Table 19** (Background Sound Levels) in clause E7.3.3(a)(i).

Design Departure means a deviation from the requirements set out in these Design Specifications which has been agreed to by the State.

Design Departures Schedule means the schedule describing the nature and extent of all Design Departures, including as described in Appendix H9 (Design Departures Schedule) of these Design Specifications.

Design Life means the life expectancy of a building, landscape or Engineering Services system, element or component of the Stadium, Sports Precinct and Off-Site Infrastructure with regular and proper maintenance, refurbishment and repair (including replacement of wear-out parts) in accordance with Best Operating Practice, being the period of time during which the system, element or component is expected by Project Co to function in a manner which is fit for purpose, such that the Stadium, Sports Precinct and Off-Site Infrastructure are Fit For Purpose, measured from the Date of Technical Completion.

Design Peer Review Report means the report to be prepared by Project Co in accordance with clause C20.3(d)(vi) and Schedule 5 (Design Development) of this Agreement.

Design Stage 1 has the meaning given to it in Schedule 5 (Design Development) of this Agreement.

Design Stage 1 Report has the meaning given to it in Schedule 5 (Design Development) of this Agreement.

Design Stage 2 has the meaning given to it in Schedule 5 (Design Development) of this Agreement.

Design Stage 2 Report has the meaning given to it in Schedule 5 (Design Development) of this Agreement.

Design Stage 3 has the meaning given to it in Schedule 5 (Design Development) of this Agreement.

Design Stage 3 Report has the meaning given to it in Schedule 5 (Design Development) of this Agreement.

Design Stage Report has the meaning given to it in Schedule 5 (Design Development) of this Agreement.

Detailed Site Investigations means the environmental investigations commissioned and previously undertaken by the State for the Project Area including as described in clause A13.2.2(f).

Detainee Toilet means the facility of that name, provided within the Police Facilities that are part of the Stadium Operations and Event Day Facilities, including as described in clause D13.4.19(l)(iv).

Development Concept Plan means the plan developed by the State in April 2013 that demonstrates how the principles of the Master Plan (2012) could be implemented (as described in clause C3.2of the Design Specifications) or the plan to be developed by Project Co for that purpose, as the context requires, including as described in Chapter C4 (Sports Precinct Structural Elements) of these Design Specifications.

Digital Data has the meaning given to it in Schedule 5 (Design Development) of this Agreement.

Direct Access means co-located with rapid access.

Display means a large format, professional quality, flat panel screen or device with no external branding visible to Patrons, provided, for the presentation of IPTV, mast antenna television, digital signage and other forms of supplied and user generated content, including video and synchronous audio (as applicable).

Display Systems means those systems described in clause E14.5.6(a).

Distributed Antenna System means the system described in Chapter E13 (Information Communications Technology (ICT) Systems) of these Design Specifications.

District Structure Plan means the strategic planning document developed by the Department of Planning to provide a strategic framework for planning assessment, coordination and implementation of major development initiatives across the Burswood Peninsula.

Doping Control Station means the facility to be used for the purpose of undertaking doping control in connection with Sporting Events that is part of the Team Facilities including as described in clause D6.4.20.

Drop-In Cricket Wicket means the pitch tray structure and its contents that will be transported into the middle of the Field of Play and installed so that the Stadium can be used for Cricket Events.

Drop-In Cricket Wicket Transporter means the dedicated equipment for transporting, installing and removing the Drop-In Cricket Wickets as described in clause D15.5(e).

Drop-In Cricket Wicket Transporter Depository means the storage facility provided for the storage of the Drop-In Cricket Wicket Transporter including as described in clause D13.4.8(c).

Drop-In Seats means the temporary seats constructed by Project Co to be installed on the Pitch primarily for the purpose of Rectangular Events including and as described in clause D7.4.11.

Drop-In Seats Store means the storage facility provided for the storage of Drop-In Seats as described in clause D13.4.8(e).

D_w means the weighted level difference between two spaces, calculated by subtracting the receiver room noise level from the source room noise level in octave bands in the frequency range 315 Hz to 4 kHz, then applying a reference curve to determine a single number rating.

$D_{nT,w}$ means same as D_W, but standardised to a reference reverberation time of 0.5 seconds.

$D_{nT,w}+C_{tr}$ means the weighted standardised level difference with spectrum adaptation term. Used to set airborne sound insulation requirements between spaces.

Easy Access means convenient and timely access, which may be achieved through the use of Vertical Transportation, stairs or a ramp.

Embedded ESD Initiatives means the ESD initiatives which Project Co must incorporate into the design, construction, commissioning and completion of the DBFM Works, including as described in Chapter E1 (General Requirements) and throughout Part E (Technical Brief) of these Design Specifications.

Emergency Services means fire, police, ambulance and other services that respond to emergencies.

EMS means the energy management system for the Stadium and Sports Precinct including as described in Chapter E10 (Mechanical Services), as the context requires.

End of Trip Facilities means the Stadium Operations and Event Day Facility of that name that is part of the Administration Facilities, including as described in clause D13.4.1(r) and the TravelSmart Workplace fact sheet "*Workplace cycle facilities.*"

Engineering Services means the integrated building services and systems incorporating environmental control and safety provisions for the safety, comfort, wellbeing and enjoyment of Stadium Users, which includes all irrigation systems, stormwater systems (including rainwater harvesting systems), ground and structure monitoring systems, motorised or operable structural elements, acoustic treatments, fire engineering and life safety systems, fire protection systems, hydraulic services (including gas reticulation systems and beer reticulation systems), mechanical services (including refrigeration equipment for cold rooms and freezers), electrical services (including the Energy Management Systems (EMS) and backup power supply units and generators), lighting systems (including general lighting and sports lighting), ICT Systems, AV Systems, Security Systems (including the Security Management Systems (SMS)), Vertical Transportation, Building Management System (BMS), any integrated extra low voltage systems, Pitch technology systems or other similar systems.

Enhanced Amentity Seat means an IRUA Position within the Seating Bowl which has Universal Access features to accommodate the varying needs of ambulant disabled IRUA and is reserved for their priority use, including as described in clause D7.4.3 (Seating for IRUA).

Enhanced ESD Initiatives means the ESD initiatives incorporated into the design, construction, commissioning and completion of the DBFM Works by Project Co that go beyond the minimum requirement of the Embedded ESD Initiatives to deliver an enhanced outcome from an ESD perspective, as described in clause E1.7.5 of these Design Specifications.

Entertainment Event means any event, performance, assembly, competition or production held within the Stadium, with the Pitch used generally for the purpose of Patron access and which may be used for event staging and production equipment.

Entertainment Production Equipment Store means the storage facility provided for the storage of the equipment associated with the production of entertainment at Events including as described in clause D13.4.8(d).

Environmental Compliance Completion Report means the report to be prepared by Project Co for the purpose of demonstrating compliance with the Environmental Management Documents during the D&C Phase, which addresses the matters set out in Section 16 of the new Perth Stadium Environmental Management Plan included in the Environmental Management Strategy Documents..

Environmental Management Objectives has the meaning as described in Chapter B6 (Environmental Management Objectives) of these Design Specifications.

Environmental Management Strategy means the environmental objectives and plans for the Site which are applicable for the D&C Phase and Operating Phase, as set out in Chapter A14 (Environmental Management) and Chapter B6 (Environmental Management Objectives) of these Design Specifications.

Environmental Protection Authority (EPA) has the meaning given under the *Environmental Protection Act 1986* (WA).

Environmental Sub-Management Plans means the Dewatering Management Plan and Contaminated Site Management Plan including as described in clause A14.1.1(b).

EPBC Act means the Environmental Protection and Biodiversity Conservation Act 1999 (Cth).

Equipment Store means the storage facility of that name provided for the storage of equipment associated with the Administration Facilities, which is part of the Stadium Operations and Event Day Facilities, including as described in clause D13.4.1(q).

ESD Initiatives means the Embedded ESD Initiatives and the Enhanced ESD Initiatives for the Stadium and Sports Precinct, including as described in Chapter E1 (General Requirements) and throughout Part E (Technical Brief) of these Design Specifications.

ESD Requirements means those requirements for the Stadium and Sports Precinct, including as described in Chapter C13 (Ecologically Sustainable Development) and throughout Part E (Technical Brief) of these Design Specifications.

Event means any Sporting Event, Entertainment Event, Precinct Event or Special Event.

Event Break Rooms means the Event Day Facility of that name that is part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.9(f).

Event Change Rooms means the amenity facility of that name provided in association with the Administration Facilities and as part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.9(f).

Event Control Room means the operational facility of that name from which Stadium operations will be controlled on an Event Day and that is part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.10.

Event Day means a twenty four (24) hour period commencing at 12:00am and finishing 11:59pm, on the day of an Event. If an Event occurs over multiple days, this time period applies to each and every day of the Event.

Event Day Facilities means the facilities of that name that will be used on Event Days and that are part of the Stadium Operations and Event Day Facilities as described in Chapter D13 (Stadium Operations and Event Day Facilities) of these Design Specifications.

Event Level means the level of the Stadium corresponding to the Field of Play.

Event Operations Facilities means the accommodation as described in clause D13.4.9 for the Stadium Operator to ensure they are able to carry out Stadium Activities on Event Days and Non-Event Days when Functions are taking place.

Event Operations Briefing Rooms means the facility of that name associated with the Administration Facilities that is part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.9(h).

Event Overlay means the setting up, testing and commissioning of all temporary elements to supplement the existing Stadium and Sports Precinct infrastructure, including supplementary lighting, supplementary sound systems, Drop-In Seats, props, stage equipment, Sporting Equipment, supplementary toilet amenities and other temporary facilities as specifically required for an Event.

Event Overlay Plans means the Event plans to be developed by Project Co as described in Chapter D17.

Executive Assistant Office means the facility of that name within the Administration Facilities that is part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.1(k).

Executive Office means the Stadium Operations and Event Day Facility of that name that is part of the Administration Facilities as described in clause D13.4.1(i).

Expansion means the expansion of the Stadium to increase the permanent capacity of the Seating Bowl to 70,000 seats or more (for an AFL Event) through permanent infrastructure additions constructed as part of the Expansion Works.

Expansion Seats means the additional Seating Positions provided in the Seating Bowl as part of any Expansion.

Expansion Works means the expansion works for the Stadium, substantially as set out in the Expansion Works Design Documentation.

Expansion Works Plan means the plan to be prepared by Project Co as part of the Design Documentation under this Agreement in accordance with Schedule 5 (Design Development) of this Agreement.

FFA means the Football Federation of Australia being the peak body responsible for the management of the game of football (soccer) in Australia.

FF&E List means the document to be developed by Project Co including as described in Chapter A8.

Field means the infield facilities bounded by the Athletics Track that are used as the competition area for throwing events associated with an Athletics Event, which comply with relevant Sporting Standards including the 'IAAF Athletics Track and Field Facilities Manual (2008) guideline.

Field Club means the Premium Product of that name that is part of the Premium Product Areas as the context requires, including as described in clause D9.4.3

Field Of Play means

(a) in the case of an AFL Event, the sports playing area as demarcated by the marked boundary line and referred to as the "Playing Surface" in the AFL Laws of the Game 2013;

(b) in the case of Cricket Events and Rectangular Events, the sports playing area as demarcated by the marked boundary line for the relevant sport; and

(c) in the case of an Athletics Event, the Standard Competition Area (as described in the IAAF Track and Field Facilities Manual 2008) for a Class 1 International Association of Athletics Federations (IAAF) event.

Field Social Suite means the Suite of that type that is part of the Premium Product Areas as the context requires, including as described in clause D9.4.4

Field Suite means the Suite of that type that is part of the Premium Product Areas, including as described in clause D9.4.4

FIFA means the Fédération Internationale de Football Association, the peak world body responsible for the management of the game of football (soccer) internationally.

File Transfer Protocol has the meaning given to it in Schedule 5 (Design Development) of this Agreement.

Final Fitout means the fitout works beyond the Integrated Fitout which are required to complete the fitout of an area comprising the supply, installation (or location) and commissioning of State FF&E.

Fire and Rescue Service means the service of that name that is part of the DFES.

Fire Control Room has the meaning given to it in the Building Code of Australia - Specification E1.8 (9)(a)(vi) Fire control centres.

Fire Engineering Brief has the meaning given to it by the Australian Building Codes Board's (ABCB) International Fire Engineering Guidelines (2005).

Fire Engineering Report has the meaning given to it by the Australian Building Codes Board's (ABCB) International Fire Engineering Guidelines (2005).

First Aid Room means each of the facilities of that name that is part of the General Admission Areas including as described in clause D8.4.8.

Fixed Elements means those elements which are existing features of the Site or will be delivered by others, and must be treated as fixed in their location and function, as set out in Chapter C4, and including the:

(a) River-Fed Lake;

(b) State Tennis Centre;

(c) southern nine portion of the former Burswood Park Golf Course;

(d) Bus Layover Area;

(e) Belmont Park Footbridge;

(f) VPD alignment;

(g) Pedestrian Underpass;

(h) Stadium Station; and

(i) bridge landings described in clause A10.2 of the Design Specifications.

Fixed Outlet means a fixed facility within the Stadium for the use of the Catering Operator to sell Catering Product and that is part of the Catering Facilities, including as described in clause D10.4.6.

Fixed Seat means any seat that is permanently installed on the Plats within the Seating Bowl.

Flash Interview Zone means each of the facilities used to conduct brief and informal media interviews and that are part of the Media Facilities on the Event Level including as described in clause D14.4.19.

Flexibility, Reconfiguration and Expansion Report means the report of that name to be prepared by Project Co in accordance with Schedule 5 (Design Development) of this Agreement.

For Fabrication Deliverables has the meaning given to it in Schedule 5 (Design Development) of this Agreement.

Franchised Fixed Outlet means a Fixed Outlet that is to be provided or operated as a franchise of an established company.

Front of House means the areas of the Stadium that are accessible by Patrons.

Function means a Conference or a Meeting as the context requires.

Function Room means the facility of that name that is part of the Premium Product Areas including as described in clause D9.4.6.

Functional Area means a grouping of related Functional Units including as described in the Schedule of Accommodation.

Functional Relationship Diagram means each of the diagrams provided in Part F (Functional Relationship Diagrams) of these Design Specifications.

Functional Unit means any room or area of the Stadium or Sports Precinct designed, constructed, completed and commissioned to accommodate a specific function or activity, including as described in Appendix H4 (Schedule of Accommodation) and Part D (Functional Brief) of these Design Specifications.

Furniture Stores means the storage facility provided for the storage of furniture that is part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.8(f).

Game Day means any day on which a Sporting Event is held at the Stadium.

General Admission Area means the areas of the Stadium that are accessible to all Patrons and accommodate General Admission Patrons on Event Days, including as described in Chapter D8 (General Admission Areas) of these Design Specifications.

General Admission means any Seating Position available for purchase by a member of the public either directly or via a membership with the Hirer, but excludes Seating Positions associated with a Premium Products.

General Admission Patron means a Patron who has purchased a General Admission seat in the Seating Bowl for an Event.

General Maintenance Storage Room means the storage facility of that name that is associated with the Maintenance Facilities that is part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.2(k).

General Trades Workshop means the workshop facility of that name that is associated with the Maintenance Facilities that are part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.2(j).

General Operations Loading Dock means the Loading Dock that is provided for the loading of general deliveries to the Stadium that is part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.7(j).

General Store means the storage facility provided for the storage of general equipment required to carry out Stadium Activities that is part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.8(i).

Generic Change Rooms means change room the facility of that name that is part of the Team Facilities including as described in clauses D6.2(f) and D6.4.5.

Golden Group means the developer of elements of the State Transport Infrastructure Works and of the Belmont Park Race Course mixed-use development at the Belmont Racecourse.

Good Design Principles means the principles as defined in clause A15.1.1(b).

Governance Agency means the State Government Agency appointed by the State to manage Project Co, the Project Agreement, the Stadium Operator and the interface between Project Co and the Stadium Operator.

Green Building Council of Australia means the national organisation that oversees the development of the Green Star rating tools and certifies building performance using Green Star.

Green Guide means the Guide to Safety at Sports Grounds published by the Department for Culture Media and Sport U.K (ISBN 978-0-11-702074-0) as updated from time to time.

Green Room means the amenity facility of that name that is part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.13.

Green Star means the ESD rating tool for buildings developed by the Green Building Council of Australia.

Grounds Office means the facility of that name that is associated with Project Co's Maintenance Facilities as part of the Stadium Operations and Event Day Facilities, including as described in clause D13.4.2(g).

Grounds Storage means the facility of that name that is associated with Project Co's Maintenance Facilities, including as described in clause D13.4.2(l).

Ground Operations staff means the Services Personnel delivering the Playing Surface Services.

Hazardous Substances Loading Dock means the Loading Dock that is provided for the loading of hazardous substances, as part of the Stadium Operations and Event Day Facilities, including as described in clause D13.4.7(i).

Hazardous Substances Stores means the storage facility provided for the storage of the hazardous substances as described in clause D13.4.8(h).

Head Lease Area has the meaing given to it in clause 1.1 of this Agreement.

Heavy Vehicle means any vehicle classified as a heavy vehicle under the AustRoads vehicle classification system, and including buses, coaches, pantech trucks, 40-foot articulated trucks, waste collection vehicles and Emergency Services vehicles.

Highball means the measurement as defined by the Sightline Criteria 3 in clause D7.4.1(b)(iv).

Hirer Agreements means the contracts that will be developed between the State and the Hirer for the use of the Stadium and Sports Precinct.

Hirer's Office means the accommodation of that name that is provided for the Hirers to manage their operations during, and in the days leading up to and the days after an Event and is part of the Stadium Operations and Event Day Facilities including as described at clause D13.4.12.

Home Team means:

(a) for AFL Events, the Fremantle Football Club, the West Coast Eagles and any other team designated as a home team on the fixture for the AFL Event; and

(b) for other Sporting Events, any Sporting Team which is listed as the home team on the fixture for the Sporting Event.

Home Teams' Change Room means each of the facilities of that name that are part of the Team Facilities including as described in clause D6.4.1.

Home Teams Players' Warm Up Room means each of the facilities of that name that are part of the Team Facilities including as described in clause D6.4.1.

HV Switch Rooms means the two separate but conjoined high voltage switch rooms located within the Stadium USCZ including the State provided Schneider RM 6 circuit breaker installed into switch room number 1 and, for the avoidance of doubt, not including the Western Power installed isolators, metering unit, interconnectors and the two independent 12 MVA feeder cables that connect the HV Switch Rooms to the Rivervale substation.

ICT Systems means the information and communications technology systems as described in Chapter E13 (Information Communications Technology (ICT) Systems) of these Design Specifications..

Impact Noise Rating means a single-number rating determined by the field measurements used to describe the ability of building element to impede the transmission of impact sound from one space to another. Lower value represents better performance.

In-House Video Production Area means the area that name within the Production Suites that is part of the Stadium Operations and Event Day Facilities including as described at clause D13.4.11(c).

Independent Medical Room means the facility of that name that is part of the Team Facilities including as described in clause D6.4.18, and is part of the Event Overlay for Rugby Events, as described in these Design Specifications.

Indicative Initial Annual Event Schedule means the Events listed in **Table 5** in Chapter B8 (Operational Principles) of these Design Specifications.

Individuals Requiring Universal Access means any Stadium User that requires or is reliant on:

(a) the use of Universal Access features within the Stadium and Sports Precinct;

(b) the use of an IRUA Position;

(c) a level of intervention by a carer or Stadium Staff, which may include provision of information in different formats; or

(d) location of Patron Seating Position relative to amenity and other customer service strategies.

to enable their use of the facilities within the Stadium and Sports Precinct in a manner which achieves a sense of inclusivity and maximises their experience at the Stadium and Sports Precinct.

Indoor Cricket Practice Facility means each of the facilities of that name which comprise indoor cricket training wickets and nets facilities established within each of the Home Teams' Players' Warm-up Rooms as part of the Event Overlay for Cricket Events, as described in clause D6.4.1(j).

Information means all information necessary for the validation, certification, facility management and operation of the Stadium and Sports Precinct to be provided to the State in graphical, non-graphical and documents, in different formats including COBie spreadsheets and in an "As Built" BIM Model.

Inspection and Test Plan (ITP) means the Plan that Project Co must provide in accordance with the requirements of Appendix H7 (Minimum Completion Tests) of these Design Specifications.

Integrated Fitout means the completion of all base fitout works including installation of all partition walls, ceilings, floor coverings, finishes, directional, statutory and naming signage (excluding branding), lighting systems, mechanical services, electrical services, hydraulic services, fire protection services, security services, AV Systems, ICT Systems (excluding the point of sale system) and acoustic treatments.

Interchange Area means the surface of the Pitch and the surface of the Pitch Perimeter directly between the boundary of the Field of Play and each of the Interchange Benches and the Officials' Bench, and as defined by the requirements of each Sporting Code.

Interchange Bench means a bench to accommodate Players on the Pitch Perimeter, with unobstructed views of the Field of Play, including as described in clause D6.4.2.

Interfaith Prayer Room means the multi-faith public prayer facility that is part of the General Admission Areas including as described in clause D8.4.12.

Interview Booth means the facility of that name that is part of the Media Facilities including as described in clause D14.4.20.

IP Network has the meaning given to it in clause E13.4.8.

Irrigation Lake (also called Lake 1 in external reference documents) refers to the southernmost man-made irrigation fed lake that will be removed as part of the PCS Works.

IRUA Position means a Seating Position within the Seating Bowl which has Universal Access features to accommodate the varying needs of IRUA and is reserved for the priority use of IRUA, including as described in Chapter D7 (Seating Bowl) of these Design Specifications.

IStructE refers to the Institution of Structural Engineers, and their Guidance Documents as referred to in these Design Specifications

Joint Football Working Group means the working group formed by representatives of the AFL, West Australian Football Commission, West Coast Eagles and Fremantle Football Club to liaise with the State on the new Perth Stadium Project.

Jumping Facilities means the facilities located on and outside of the Athletics Track that are used as the competition area for jumping events associated with an Athletics Event, which comply with relevant Sporting Standards including the 'IAAF Athletics Track and Field Facilities Manual (2008) guideline.

Key Viewing Elements means the the essential elements of the Playing Surface and Display Systems which must be able to be viewed from each Seating Position for each type of Sporting Event, including as described in clause D7.4.1(c).

Kids' Zone means the facility for families with children that is part of the General Admission Areas including as described in clause D8.4.7.

LED Signage means the electronic signage including as described in clause D7.4.6 and Part E (Technical Brief) of these Design Specifications.

LED Superscreen means one of the main viewing screens located in the Seating Bowl.

Lifecycle Services has the meaning given to it in Annexure E (Glossary) of Schedule 13 (Services Specifications) of this Agreement.

Light Vehicle means any vehicle classified as a light vehicle under the AustRoads vehicle classification system.

Loading Docks means the facilities within the Stadium where vehicles are unloaded and loaded for goods entering and departing the Stadium respectively as described in clause D13.4.6.

Locker Room means the Player change facility within the Away Team Change Room and that is part of the Team Facilities including as described in clause D6.4.

LOD means Level of Development as described in Schedule 5 (Design Development) to this Agreement.

Low-VOC (volatile organic compounds) means any organic compound having an initial boiling point less than or equal to 250 °C (482 °F) measured at a standard atmospheric pressure of 101.3 kPa and can do damage to visual or audible senses.

L_{90}, L_{10}, etc means a statistical measurement giving the sound pressure level which is exceeded for the given percentile over a measurement period, i.e. L_{90} is the level which is exceeded for 90% of the measurement period. Likewise, the L_{10} level is the noise level exceeded for 10% of the measurement time. The L_{A90}, L_{A10} (etc) levels are the A-weighted noise levels exceeded for the respective percentile.

$L_{Aeq, T}$ means equivalent continuous A-weighted sound pressure level. The equivalent continuous A-weighted sound that, within a measurement time interval T, has the same A-weighted sound energy as a time-varying sound.

L_{Cpeak} means peak sound level with 'C' weighting, defined in AS/NZS 1269.1:2005 to assess risks from sudden noise impacts.

$L_{n,w}$ means normalised weighted impact sound level assessed to AS ISO 717.2 with a standardised tapping machine located in a room above. Lower $L_{n,w}$ values indicate higher sound reduction performance.

Main First Aid Room means the facility that is part of the General Admission Areas including as described in clause D8.4.9.

Main Security Office means the facility of that name that is part of the Stadium Operations and Event Day Facilities including as described in clause D13.2(g).

Maintenance Office means the Stadium Operations Facility of that name provided for Services Personnel that is part of the Project Co Maintenance Facilities including as described in clause D13.4.2(f).

Major Stadia Taskforce (the Taskforce) means the taskforce formed by the Western Australian Government to review major stadium requirements for Perth with the report of their finding published in 2008.

Master Plan Area means the area defined in the Master Plan.

Master Plan means the Master Plan document developed by Chappell Lambert Everett and provided as part of the new Perth Stadium Project Definition Plan (September 2012).

Master Plan Principles means the principles including and as described in clause C3.4.

Master Plan Vision means the overarching vision that guided the development of the Development Concept Plan as described in clause C3.3.

Match Officials means Primary Officials and Secondary Officials.

Materials Red List means those materials listed at clause E1.7.12 which must be excluded from the construction and fitout of the Stadium and Sports Precinct.

Materials Amber List means those materials listed at clause E1.7.13 which must be avoided in the construction and fitout of the Stadium and Sports Precinct.

Media Entry Point means the entry point designated for Media Personnel to enter the Stadium.

Media Facilities means the facilities provided for use by Media Personnel for the purposes of carrying out all on-site functions associated with media coverage of an Event, including as described in Chapter D14 (Media Facilities) of these Design Specifications.

Media Interview Room means the facility of that name that is part of the Media Facilities including as described in clause D6.4.2(j).

Media Lounge means the amenity facility for use by Media Personnel that is part of the Media Facilities including as described in clause D14.4.17.

Media Personnel means members of the media and press associated with broadcast and narrowcast mediums (including radio, television, newspapers, magazines, journals and the internet) attending the Stadium and Sports Precinct for the purposes of covering an Event, including all associated activities undertaken before, during and after that Event.

Medical Room means each of the medical facilities provided primarily for the purpose of Player care, which are part of the Team Facilities including as described in clause D6.4.1(i).

Medicart means the emergency motorised unit used for the transport of injured Stadium Users off the Playing Surface.

Meeting means any meeting or assembly held within the Stadium or Sports Precinct, with the exception of an Event, which if Catering Product is dispensed has a maximum capacity of 50 persons, otherwise a maximum capacity of 300 persons.

Meeting Room means the facility to conduct meetings within the Administration Facilities that is part of the Stadium Operations and Event Day Facilities, including as described in clause D13.4.1(m).

Merchandise Shop means the facility that is part of the Retail facilities including as described in clause D11.2(h).

Metropolitan Regional Scheme (MRS) means the legal land plan covering urban planning throughout the Perth Metropolitan Region which classifies land into broad zones and reservations and is administered by the Western Australian Planning Commission.

Micro-brewery means a Public Bar that will operate as a Franchised Fixed Outlet for the purposes of providing alternate beer and other alcohol based product options in the Stadium and as described in clause D10.4.9.

Minimum Athletics Capacity has the meaning given to it in clause D7.4.12(a)(ii).

Minimum Completion Tests means the tests that Project Co must conduct to achieve Technical Completion and Commercial Acceptance as set out out in Appendix H7 (Minimum Completion Tests) to these Design Specifications.

Mixed Zone means the functionality as described in clause D14.4.19 which is provided as Event Overlay for Soccer Events.

Mobile Bar means the Catering Facility of that name that is part of the Catering Facilities, including as described in clause D10.4.11

Mobile Outlet means the Catering Facility of that name that is part of the Catering Facilities, including as described in clause D10.4.8

Monitoring Management Plan means the plan required by DAA in accordance with Section 18 approval under the *Aboriginal Heritage Act 1972* (WA), as including as described in clause A13.6(e).

MRS Parks and Recreation means a land zoning of Parks and Recreation in accordance with Western Australia's Department of Planning's Metropolitan Regional Scheme.

NATA means the National Association of Testing Authorities, Australia.

National Construction Code (NCC) means the National Construction Code Series published by the Australian Building Codes Board, as updated from time to time.

Nett Area means functional floor area exclusive of any allowance for circulation and non-habitable building space.

new Perth Stadium Project comprises the:

(a) DBFM Project;

(b) PCS Works Project; and

(c) Stadium Support Projects.

new Perth Stadium Project Aspirations means the State's aspiration for the Project as described in Chapter B2 (New Perth Stadium Project Aspirations) of these Design Specifications.

Noise Reduction means the difference in sound pressure level between any two areas. The term 'noise reduction' does not specify any fixed performance quality unless accompanied by a specification of the units and conditions under which the units apply.

Non-Event Day means any day which is not an Event Day and, for the avoidance of doubt, includes a day on which Permitted Training occurs.

Noise Reduction Coefficient (NRC) means a single number value from 0.00 to 1.00 in 0.05 increments describing the sound absorptive properties of various surfaces – higher being more sound absorptive – determined through various measurement standards including ASTM C423. Superseded by α_w value.

NRL means the National Rugby League, the main professional competition for Rugby league football clubs in Australasia run by the ARL Commission.

Nursery means the facility that is part of the Pitch and associated facilities as described in clause D15.5.2

Obstruction means the measurement as defined in Sightline Criteria 1 in clause D7.4.1(b)(ii).

Occupancy Permit has the meaning given under the *Building Act 2011* (WA).

Office of the Government Architect (OGA) means the Office of the Government Architect in Western Australia.

Official Statistics Box means the facility of that name that is part of the Team Facilities including as described in clause D6.4.15.

Official means any individual accredited to officiate at an Event.

Officials' Bench means the facility of that name that is part of the Team Facilities including as described in clause D6.4.13.

OHS Plan means the Occupational Safety and Health Plan, the requirements for which are set out in Schedule 19 (Plans) to this Agreement.

Open Corporate Reserve (OCR) Seating means the Premium Product of that name or the facility that is part of the Premium Product Areas as the context requires, including as described in clause D9.4.5.

Operating Phase Objectives means the State's key objectives for the Operating Phase as set out in Chapter B4 (Operating Phase Objectives) of these Design Specifications..

Outdoor Practice Cricket Wickets Area means the area within the Sports Precinct for future installation of outdoor cricket wickets, including as described clause D6.4.21.

Outlet means a Fixed Outlet or a Mobile Outlet that is part of the Catering Facilities including as described in Chapter D10 (Catering Facilities) of these Design Specifications.

Outside Broadcast (OB) Compound means the facility of that name that is part of the Media Facilities including as described in clause D14.4.9.

Outside Broadcast (OB) Crew Room means the Media Personnel facility of that name that is part of the Media Facilities including as described in clause D14.4.12.

Outside Broadcast (OB) Patch Room means the Media Personnel facility of that name that is part of the Media Facilities including as described in clause D14.4.10.

Outside Broadcast (OB) Producer's Room means the Media Personnel facility of that name that is part of the Media Facilities including as described in clause D14.4.11.

PA System means the public address system for the Stadium and Sports Precinct, including as described in clauses E7.3.8(f) and E14.5.10.

PA System Control Area means the area of that name that is contained within the Production Suites including as described at clause D13.4.11(d).

Pantries means the Catering Facility of that name that is part of the Catering Facilities, including as described in clause D10.4.5

Parenting Rooms means the amenity facility of that name that is part of the General Admission Areas including as described in clause D8.4.3.

Pass Through Costs has the meaning given to it in Schedule 14 (Payment Schedule) of this Agreement.

Patron Services Offices means the facility of that name provided for the Stadium Operator and the Hirer to manage enquiries, distribute tickets and accreditation for the Event as well as cloak items for Patrons, that is part of the Stadium Operations and Event Day Facilities including as described atclause D13.4.16.

Pedestrian Underpass means the pedestrian underpass under Victoria Park Drive comprising MRWA Bridge 9401 constructed as part of the State Transport Infrastructure Works, and which is to be completed by Project Co as part of the Off-Site Infrastructure Works, including as described in clause A7.4(c)(i) of these Design Specifications.

Percent for Art Scheme means the Western Australian State Government Percent for Art Scheme or its future equivalent.

Permit Authority means a permit authority for a building as defined in the *Building Act 2011* (WA).

Permitted Training means any approved use of the Stadium by a Sporting Team for a single training session prior to a Sporting Event.

Pest has the meaning given to it in the Annexure E (Glossary) of Schedule 13 (Services Specifications) to this Agreement.

Photographers' Work Room means the Media Personnel facility of that name that is part of the Media Facilities including as described in clause D14.4.16.

Physio / Massage and Strapping Area means the facilities of that name that are part of the Team Facilities including as described in clauses D6.4.1(h), D6.4.4(h) and D6.4.5(h).

Pitch means the physical surface, structure and substructure of the Field Of Play and the Run Off Area (each as applicable for Sporting Events) or of all areas contained by the Pitch Wall for Entertainment Events, including:

(a) the Turf surface and the synthetic surface of the Pitch Perimeter;

(b) all irrigation and drainage (including aeration systems and control systems where installed);

(c) all structural layers including the rootzone layer, the gravel layer and the sub-grade;

(d) the sub-structure being the ground on which it sits, and

(e) the Service Duct for temporary cabling,

as described in Chapter D15 (Pitch and Associated Facilities) and Chapter E18 (Pitch, Playing Surface and Associated Facilities) of these Design Specifications and as indicated in Chapter F10 (Pitch and Associated Facilities) of these Design Specifications.

Pitch Access Vomitory means a Vomitory at Event Level which provides access to the Pitch.

Pitch Design Loads means the Pitch performance criteria to enable the Pitch to accommodate all dead loads and live loads associated with the Stadium Activities as set out in clause D15.4.2.

Pitch Perimeter means that part of the Run Off Area which is comprised of synthetic surface and all physical structure and substructure as described in Chapter D15 (Pitch and Associated Facilities) of these Design Specifications.

Pitch Wall means the low height wall located at the bottom of the lower tier of the Seating Bowl and which is adjacent to the Pitch Perimeter.

Plats means any structural element forming the seating tiers within the Seating Bowl or the Drop-In Seats as the context requires.

Player means a member of a Sporting Team or any athlete that participates in a match, competition or Sporting Event.

Players and Match Officials' Area means the restricted access zone for Cricket Events for the purposes of preventing any unauthorised physical, verbal or electronic contact and interaction with Players and Match Officials by other Stadium Users.

Players' Lounge and Family Room means the facility of that name that is part of the Team Facilities including as described in clause D6.4.2(h).

Players' Prayer Room means the facility of that name that is part of the Team Facilities including as described in clause D6.4.7.

Players' Race means an access route between Team Facilities and the Field of Play including as described in clause D6.3(e).

Players' Viewing Room means the facility of that name that is part of the Team Facilities including as described in clause D6.4.19.

Players' Warm-up Room means the facility of that name that is part of the Team Facilities including as described in clause D6.4.

Players' Wet Area means the facility of that name that is part of the Team Facilities including as described in clauses D6.4.1(g) and D6.4.1(f).

Playing Surface means the surface of the area comprising the Field of Play and the Run Off Area, being the extents of the surface of the Pitch, as described in Chapters D15 (Pitch and Associated Facilities) and E18 (Pitch, Playing Surface and Associated Facilities) of these Design Specifications and as indicated in Chapter F10 (Pitch and Associated Facilities) of these Design Specifications.

Playing Surface Services has the meaning given to it in Annexure E (Glossary) of Schedule 13 (Services Specifications) to this Agreement.

Pod Storerooms means the storage facility of that name that is part of the Retail Facilities including as described in clause D11.4.5.

Point Of Sale means the physical space where a financial transaction occurs for the purchase of an item in the Stadium. This may be collocated with a Point Of Service. This must make provision for, but does not include the physical point of sale hardware or software which forms part of State FF&E.

Point Of Service means the physical space where a Stadium User 'picks up' the Catering Product that they have purchased. This may be collocated with a Point Of Sale.

Police Facilities means the facilities of that name provided for WA Police to conduct operations at the Stadium and Sports Precinct on Event Days that are part of the Stadium Operations and Event Day Facilities including as described at clause D13.4.18, and includes the Police Office, Police Interview Room, Police Reception, Police Charge Room and Detainee Toilet.

Precinct Event means any event, match, game, performance, assembly, competition or production held within the Sports Precinct and includes the period the Sports Precinct is used or made available for Bump-In, testing rehearsal, performance, pre-event training, Bump-Out or otherwise in connection with that use.

Precinct Service Roads means the external trafficable roads which comprise the vehicle circulation network within the Sports Precinct including as described in clause D4.3(k).

Preliminary Site Investigation means the environmental investigations commissioned by the State for the Project Area including as described in clause A13.2.2(b).

Premium Concourses means the Concourses located in Premium Product Areas including as described D5.4.4.

Premium Entry Point means each entry point designated for Premium Product Patrons to enter the Stadium.

Premium Product Areas means the areas of the Stadium that are not accessible to General Admission Patrons and accommodate Premium Product Patrons and VIP Patrons on Event Days including as described Chapter D9 (Premium Product Areas) of these Design Specifications.

Premium Product Areas Reconfiguration means the reconfiguration of Premium Product Areas including as described in clause C14.3.

Premium Product Patron means a Patron who has purchased a Seating Position within the Premium Product Areas for an Event.

Premium Product means any of the products described in Chapter D9 (Premium Product Areas) of these Design Specifications.

Primary Camera Deck means the facility of that name that is part of the Primary Television Studio and is part of the Media Facilities, including as described in clause D14.4.2.

Primary Commentary Box means the facility of that name that is part of the Primary Television Studio including as described in clause D14.4.3.

Primary Officials means the Match Officials for the main Sporting Event.

Primary Production Kitchen means the Catering Facility of that name that is part of the Catering Facilities, including as described in clause D10.4.2.

Primary Studio Box means the facility of that name which is part of the Primary Television Studio and is part of the Media Facilities including as described in clause D14.4.4.

Primary Television Studio means the facility of that name that is part of the Media Facilities including as described in clause D14.4.1.

Priority Start Building Policy means the State Government policy of that name or its future equivalent.

Private Wastewater Main means the wastewater pressure main system servicing the Site, extending from the Stadium USCZ to the existing sewer access pit and manhole located at the northern end of Bolton Avenue, including the pressure main and all pipework.

Production Suites means the facility of that name provided to accommodate Stadium Personnel performing activities regarding the production, scheduling, broadcasting and presentation of content across the AV Systems and ICT Systems from which Stadium Operations will be controlled on an Event Day and that are part of the Stadium Operations and Event Day Facilities, including as described at clause D13.4.11 including:

(a) In-House Video Production Area;

(b) PA System Control Room; and

(c) Video Screen Control Area.

Project Area means the area the subject of preparatory site investigation.

Project Benefits has the meaning as described in Chapter B7 (Project Benefits) of these Design Specifications.

Project Co Maintenance Facilities means the accommodation provided for Project Co Associates to ensure they are able to carry out Services in accordance with the Project Agreement as described in clause D13.4.2.

Project Definition Plan (PDP) means the State's new Perth Stadium Project Definition Plan released in September 2012.

Project EMP means the new Perth Stadium Environmental Management Plan prepared by the State and as described in Chapter A14 (Environmental Management).

Property Room means the facility of that name that is part of the Team Facilities including as described in clause D6.4.4(l).

Public Art Objectives means objectives of the Percent for Art Scheme as set out in Chapter C7 (Public Art) of these Design Specifications.

Public Art Strategy means the strategy to be prepared by Project Co for artworks for the Stadium, the Sports Precinct and the Off-Site Infrastructure, including as described in clause C7(f).

Public Bar means the facility of that name that is part of the General Admission Areas including as described in clause D8.4.6.

Public Transport Strategy has the meaning given to it in clause C8.1.

Quality Standards has the meaning given to it in clause 1.1 of this Agreement, being all standards, codes, specifications, guidelines, policies and requirements to be complied with in accordance with, and subject to, the terms of this Agreement including:

(a) all requirements of any State Obtained Authorisations (but excluding Environmental Authorisations) relevant to, and any requirements of the Authorities in respect of those State Obtained Authorisations having jurisdiction over, the DBFM Works, the Services, the Stadium, the Sports Precinct and the Off-Site Infrastructure (or any of them);

(b) the National Construction Code;

(c) the Disability (Access to Premises - Buildings) Standards (2010) under the *Disability Discrimination Act 1992* (Cth);

(d) all relevant standards, codes and guides of Standards Australia and Standards New Zealand (with the year of the standards, codes and guides to be as referenced by the National Construction Code, unless noted otherwise in the Output Specifications or otherwise approved by the State) and, where an Australian Standard or a New Zealand Standard does not exist, the relevant British standard or International standard;

(e) all Sporting Standards;

(f) all standards, codes and guides published by the WorkCover Corporation of Western Australia and WorkSafe WA;

(g) to the extent they do not conflict with the standards, codes or guides published by WorkSafe WA, the standards, codes and guides published by the National Occupational Health and Safety Commission and SafeWork Australia;

(h) National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013, issued by the National Environment Protection Council;

(i) all Environment Protection Authority (WA) publications and bulletins;

(j) relevant national and State policies;

(k) all requirements of Utility Companies and Governmental Agencies relevant to the DBFM Works, the Services, the Stadium, the Sports Precinct and the Off-Site Infrastructure (or any of them); and

(l) all other standards, codes, specifications, guidelines, policies and requirements relevant to the DBFM Works, the Services, the Stadium, the Sports Precinct and the Off-Site Infrastructure (or any of them),

as amended, updated or replaced from time to time.

Radio Commentary Box means the facility of that name that is part of the Media Facilities including as described in clause D14.4.14.

Rail Passenger Assembly Area means each of the facilities that are part of the Sports Precinct to be constructed as part of the DBFM Transport infrastructure Works including as described in **Table 2** of these Design Specifications and clause and D4.3.

Ready Access means within close proximity but not co-located.

Reception Desk means the facility of that within the Administration Facilities which is part of the Stadium Operations and Event Day Facilities, including as described in clause D13.4.1(g).

Reconfiguration Works means the reconfiguration works for the Stadium required to host a Athletics Event, Rectangular Event or Special Event, substantially as set out in the Reconfiguration Works Plan.

Rectangular Event means any event, match, game, performance, assembly, competition or production held within the Stadium using the rectangular configuration of the Seating Bowl with Drop-In Seats, with the Pitch used for the purpose of:

(a) sports with a rectangular Field Of Play, including Rugby Events and Soccer Events; or

(b) an Entertainment Event.

Reconfiguration Works means the reconfiguration works for the Stadium required to host an Athletics Event, Rectangular Event or Special Event, substantially as set out in the Reconfiguration Works Plan.

Reconfiguration Works Plan means the plan in accordance with Schedule 19 (Plans) of this Agreement.

Regeneration Kitchens means one of the Catering Facilities of that name that are part of the Catering Facilities, including as described in clause D10.4.4

Restricted Access has the meaning given to it in Schedule 14 (Payment Schedule) to this Agreement.

Restricted View means any Seating Position that does not meet the viewing criteria.

Retail Facilities means the facilities including as described in Chapter D11 (Retail Facilities) of these Design Specifications.

Reverberation Time means the time required, in seconds, for the average sound in a room to decrease by 60 decibels.

River-Fed Lake (also called Lake 2 in the Project Information) refers to the existing northern lake located on the western boundary alongside the Swan River that is hydraulically connected to the Swan River system.

Room Criterion means single number evaluation of a Background or Ambient Sound Level in a building over the frequency range 16 Hz to 4000 Hz, as defined in the 1987 ASHRAE Handbook Systems and Applications.

Room Data Sheets means the system for defining the requirements, finishes and fittings of each and every room or allocated area within a facility, and in the context used, the Stadium and Sports Precinct.

Rugby Event means any event, match, game, performance, assembly, competition or production held within the Stadium, with the Pitch used for the purpose of rugby, including an ARU or an NRL fixture.

Run Off Area means:

(a) in the case of AFL Events and Cricket Events, that portion of the Playing Surface between the boundary of the Field of Play and the outer extents of the Pitch Perimeter, as described in Chapter D15 (Pitch and Associated Facilities) and Chapter E18 (Pitch, Playing Surface and Associated Facilities) of these Design Specifications and as indicated in Chapter F10 (Pitch and Associated Facilities) of these Design Specifications; and

(b) in the case of Rectangular Events and Athletics Events, that portion of the Playing Surface between the boundary of the Field of Play and the outer extents of the Pitch Perimeter or any temporary perimeter fence or barrier installed for the Rectangular Event as part of the Event Overlay.

R_W means Weighted Sound Reduction Index. A single number value of the acoustic performance of a partition or building element. Calculation procedures for RW are defined in ISO 140-2:1991 "Measurement of Sound Insulation in Buildings and of Building Elements Part 2". The R_W is function of the level difference between two spaces separated by the building partition or element, surface area of the building partition or element, room volume and area of absorption in the receiver room (generally measured by the reverberation time). Apparent values as measured in the field (in situ) are designated with an apostrophe (e.g. R'_W).

Safety in Design means the design process to be implemented by Project Co which focuses on minimising or eliminating hazards identified during the design phase that may pose a risk of injury or death throughout the Service Life of the Stadium and Sports Precinct, as set out in Chapter C17 of these Design Specifications.

Safety in Design Review Report means the Design Deliverable to be prepared by Project Co and submitted to the State in accordance with Schedule 3 (Review Procedures) at the completion of the safety in design process, including in accordance with clause C17(f) (Safety in Design) of these Design Specifications and Schedule 5 (Design Development) of this Agreement.

Satellite Production Kitchen means the Catering Facility of that name that is part of the Catering Facilities, including as described in clause D10.4.3.

Schedule of Accommodation (SOA) means the schedule of accommodation as provided in Appendix H4 to these Design Specifications.

Scheduled Maintenance has the meaning given to it in Annexure E (Glossary) of Schedule 13 (Services Specifications).

Seating Bowl means the facility of that name described in Chapter D7 (Seating Bowl) of these Design Specifications.

Seating Bowl Plan means the Plan that Project Co must provide in accordance with the requirements of clause D7.4.2 and Schedule 5 (Design Development) of this Agreement.

Seating Position means:

(a) each seat within the Seating Bowl, including any IRUA Position;

(b) each seat within the Drop-In Seats; and

(c) each Seating Position that overlooks the Field of Play, including as described in the Team Facilities, Media Facilities and the Stadium Operations and Event Day Facilities, which is used for carrying out specific functions in relation to an Event.;

as the context requires.

Secondary Camera Deck means the facility of that name which is part of the Secondary Television Studio and is part of the Media Facilities, including as described in clause D14.4.8.

Secondary Commentary Box means the facility of that name which is part of the Secondary Television Studio and is part of the Media Facilities including as described in Clause D14.4.6.

Secondary Officials means those Match Officials for any Sporting Event that is not the main Sporting Event.

Secondary Studio Box means the facility of that name that is part of the Secondary Television Studio and is part of the Media Facilities including as described in clause D14.4.7.

Secondary Television Studio means the facility of that name that is part of the Media Facilities including as described in clause D14.4.5.

Security Management System has the meaning given to it in Annexure E (Glossary) of Schedule 13 (Services Specifications) to this Agreement.

Security Systems means those systems that are described in Chapter E15 (Security Systems) of these Design Specifications.

Separable Portion 1 has the meaning as described in clause A9.1.1.

Service Duct means the Pitch facility of that name that is part of the Pitch and associated facilities, including as described in clause D15.4.4

Service Life means the estimated lifecycle or expected period of use of an asset for its intended purpose according to Good Industry Practice and Law.

Service Lift means the lifts utilised primarily by Services Personnel and Stadium Personnel for the purposes of carrying out the Services and the Stadium Activities respectively.

Serviced Zones means the surface mounted points or in-ground pits with all Engineering Services connections and outlets required for the location, including power, water, data and other Utilities, including:

(a) Mobile Outlets, to be distributed thorough the Controlled Area and the Sports Precinct as described in Chapter D10 (Catering Facilities) and D13 (Stadium Operations and Event Day Facilities;

(a) Temporary Event Day Stalls, to be distributed thorough the Controlled Area and the Sports Precinct including as described in Chapter D11 (Retail Facilities); and Chapter D10 (Stadium Operations and Event Day Facilities;

(b) Sporting Equipment and media equipment, to be provided in the Pitch as described in Chapters E18 (Pitch, Playing Surface and Associated Facilities) and D14 Media Facilities).

Services Break Room means the amenity facility of that name provided for Services Personnel that are associated with the Maintenance Facilities as part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.2(h).

Services Change Rooms means the change room facility of that name provided for Services Personnel that are associated with the Maintenance Facilities as part of the Stadium Operations and Event Day Facilities, including as described in clause D13.4.2(i).

Services Equipment has the meaning given to it in clause 1.1 of this Agreement.

Services Personnel means all persons employed or contracted by Project Co or Project Co Associates to work at the Stadium and Sports Precinct, whether on a full-time, part-time or casual basis.

Services Specifications means the specification for the Services to be performed by Project Co as described in Schedule 13 (Services Specifications) to this Agreement.

SGSA Publications has the meaning given to it in clause E1.3(b)(iv)A.

Shared Recovery Facility means the Player facility of that name that is part of the Team Facilities and is for use primarily by Home Teams to undertake aquatic recovery, including as described in clause D6.4.2(e).

Sightline Criteria means the criteria for sightlines from each Seating Position for an Event other than an Athletics Event, as described in clause D7.4.1(b)

Signage means including and as described in Chapter C9 (Wayfinding and Signage) of these Design Specifications.

Sky View Lounge means the Premium Product of that name or the facility of that name that is part of the Premium Product Areas as the context requires, including as described in clause D9.4.8.

Soccer Event means any event, match, game, performance, assembly, competition or production held within the Stadium, with the Pitch used for the purpose of football (soccer), including an FFA or a FIFA fixture.

Social Suite means a large Suite (approximately 24 person capacity) of that is located at an elevated location in the Stadium within the Premium Product Areas, including as described in clause D9.4.4.

Sound Absorption Average (SAA) (Refer NRC) means a single number value from 0.00 to 1.00 describing the sound absorptive properties of various surfaces, assessed to ASTM-C423-09a. Superseded by α_w value.

Sound Isolation means the degree of acoustical separation between any two areas. Sound isolation may refer to sound transmission loss of a partition or to noise reduction from any unwanted noise source. The term ‘sound isolation’ does not specify any grade or performance quality and requires the units and measurement conditions to be specified.

Special Event means any event, match, game, performance, assembly, competition or production held within the Stadium and Sports Precinct which, in the reasonable opinion of the State is of state, national or international significance and booked by the State and includes the period the Stadium and Sports Precinct is used or made available for Bump-In, testing, rehearsal, performance, pre-event training, Bump-Out or otherwise in connection with that use.

Sponsor Merchandise Pods means each facility of that name that is part of the Retail Facilities including as described in clause D11.4.3.

Speech Transmissibility Index Public Address means a relatively fast (10 to 15 second) measure of the STI value defined in IEC 60268-16.

Sporting Codes means the international and national sporting bodies having jurisdiction over the rules of play and the conduct of the Sporting Events to be held in the Stadium including:

(c) AFL;

(d) Cricket Australia;

(e) ICC;

(f) NRL;

(g) ARU;

(h) IRB;

(i) FFA;

(j) FIFA; and

(k) IAFF.

Sporting Equipment means any equipment to be located on the Playing Surface for a Sporting Event in accordance with the relevant Sporting Standards, including as set out in clause D13.4.8(b)(iii) of these Design Specifications. For the avoidance of doubt, the Sporting Equipment does not include the Drop-In Cricket Wickets and the other equipment which is to be provided, installed and removed by others as set out in clause D13.4.8(b)(iv).

Sporting Equipment Store means the storage facility provided for the storage of Sporting Equipment that is part of the Stadium Operations and Event Day Facilities, including as described in clause D13.4.8(b).

Sporting Event means any event, match, game, performance, assembly, competition or production held within the Stadium, with the Pitch used for the purpose of sports, and includes an AFL Event, a Cricket Event, a Rugby Event, a Soccer Event and an Athletics Event.

Sporting Team means Players, Coaches and Team Support Personnel that make up a team scheduled to compete in a Sporting Event at the Stadium.

Sports Retail Store means the facility that is part of the Retail Facilities, including as described in clause D11.4.1.

Stadium Carpark means the vehicle parking facility within the Stadium, including as described in clause D4.2(h)(i).

Stadium Curtilage means the interface point between the external facade of the Stadium structure and the adjoining horizontal surface.

Stadium Entry Point means a designated Patron entrance into the main Stadium building for access into and out of the Stadium, including all Premium Entry Points.

Stadium Event means Event, match, game, performance, assembly, competition or production held within the Stadium, with the Pitch used for the purpose of sports or entertainment and includes a Sporting Event, Entertainment Event and a Special Event.

Stadium Management Stores means each of the general purpose storage facilities of that name provided for the storage of surplus or spare loose FF&E, promotional material or other venue stock, consumables or supplies, which are part of the Stadium Operations and Event Day Facilities, including as described in clause D13.4.8(g).

Stadium Operations and Event Day Facilities means the facilities that will generally accommodate Stadium Staff on Non-Event Days and Performers on Event Days, including as described in Chapter D13 (Stadium Operations and Event Day Facilities) of these Design Specifications.

Stadium Personnel has the meaning given to it in clause 1.1 of this Agreement.

Stadium Service Road means the internal trafficable circulation road within the Stadium, including as described in clause D5.3.9.

Stadium Station means the new train station to be constructed as part of the State Transport Infrastructure Works, including as described in **Table 2: State Transport Infrastructure Works** of these Design Specifications.

Stadium Staff means all persons employed or contracted to work at the Stadium and Sports Precinct, whether on a full-time, part-time or casual basis, and which includes Services Personnel and Stadium Personnel.

Stadium Support Works means the works to support the development of the Stadium and Sports Precinct which are not transport related and form part of the State Works, including as described in clause A7.1(f) of these Design Specifications.

Stadium USCZ means the Stadium Utilities services connection zone as depicted on Plan 11 (Stadium USCZ) in Schedule 11 (Site Plans) of this Agreement.

Staff Entry means an entry point into the Stadium for Stadium Staff which is part of the Stadium Operations and Event Day Facilities, including as described in clause D13.4.9(e).

Stage 1 Design Deliverables has the meaning given to it in Schedule 5 (Design Development) of this Agreement

Stage 2 Design Deliverables has the meaning given to it in Schedule 5 (Design Development) of this Agreement

Stage 3 Design Deliverables has the meaning given to it in Schedule 5 (Design Development) of this Agreement

Stage 4 Design Deliverables has the meaning given to it in Schedule 5 (Design Development) of this Agreement

Stakeholder Engagement Objectives means the State's key objectives for stakeholder and community engagement for the new Perth Stadium Project set out in in Chapter B5 (Stakeholder Engagement Objectives) of these Design Specifications.

Standing Area means a designated area within the Seating Bowl provided for Patrons that have an allocated Seating Position to optionally stand to watch the Event, including as described in clause D7.4.4.

State Archive Records means the keeping of records in accordance with the State Records Act (2000) WA.

State Associates has the meaning given to it in clause 1.1 of this Agreement.

State Partners has the meaning as described in clause D16.4.

State Tennis Centre means the State Tennis Centre of Western Australia situated at Victoria Park Drive Burswood.

State Transport Infrastructure Works means the works including as defined in **Table 2** of these Design Specifications.

STI means Speech Transmissibility Index, a measure from 0 to 1 describing clarity of speech communication defined in AS2822. Spaces are designed, measured and rated in terms of STI performance according to IEC 60268-16.

STIPA means Speech Transmissibility Index Public Address, a relatively fast (10 to 15 second) measure of the STI value defined in IEC 60268-16.

Suite means the Premium Product of that name or each of the facilities of that name that are part of the Premium Product Areas as the context requires, including as described in clause D9.4.4.

Supplementary Display means a Display to supplement viewing of the score,replay and live views, which is provided where a Seating Position is unable to view 100% of one (1) LED Superscreen.

Surrounding Works means those works to be undertaken by third parties on adjacent and nearby sites, concurrent with the DBFM Works , including as described in Chapter A10 (Interface Management) of these Design Specifications.

Swan River Pedestrian Bridge (**SRPB)** means the pedestrian bridge to be constructed by Main Roads Western Australia over the Swan River including as described in **Table 2** of these Design Specifications.

Team Facilities means the facilities of that nameTelevision that accommodate Sporting Teams and Match Officials including as described in Chapter D6 (Team Facilities) of these Design Specifications.

Team Support Personnel means team medical physicians, physiotherapists, massage therapists, strappers, trainers, sport science specialists, team runners, team statisticians, property stewards,

team manager and operations any other support staff notified to the Stadium that are required to attend a match to ensure the team is supported as reasonably required to compete in the Event.

Technology Partner has the meaning as described in clause D16.3.1.

Temporary Carpark means the temporary, informal carparking facility to be established on the Community Recreation Oval on Event Days.

Temporary Event Day Stall means a temporary structure which Hierers can Bump-In and Bump-Out for an Event facility of that name that is part of the Retail Facilities including as described in clause D11.4.4.

Terrace means the Premium Product of that name or the facility that is part of the Premium Product Areas as the context requires, including as described in Clause D9.4.9

Testing Authority means either a NATA approved measuring laboratory, a Member of the Australian Acoustical Society or a Member Firm of the Association of Australian Acoustical Consultants. The Testing Authority representative will have no less than 10 years professional experience related to the field of architectural and environmental acoustics.

Ticket Boxes means the accommodation provided for the Stadium Operator appointed ticketing agenct to sell tickets to Events, facilitate the collection of tickets pre-purchased for Events and answer queries in relation to ticketing for Events, which are part of the Stadium Operations and Event Day Facilities, including as described in clause D13.4.15.

Ticket Control Point means the facility of that name that is part of the Stadium Operations and Event Day Facilities including as described in clause D13.4.14.

Timekeepers Box means the facility which accommodates the timekeeper for AFL Events that is part of the Team Facilities including and as described in clause D6.4.16.

Traffic and Access Plan means the plan to be prepared by Project Co detailing the transport solution for fans on Stadium Event days in accordance with the requirements set out in Schedule 5 (Design Requirements) of this Agreement.

Transport Agencies means Public Transport Authority and Main Roads Western Australia.

Transport PDP means the State's new Perth Stadium Transport Project Definition Plan released in December 2012.

Turf means the top section of the Pitch profile, covering an area comprising the Field of Play and that portion of the Run Off Area which is not the Pitch Perimeter.

Turf Farm means the off-site turf farm facility used by Project Co to provide turf for initial establishment and replacement of the Turf for the Playing Surface, that is part of the Pitch and Associated Facilities including as and clause E18.5.15 of these Design Specifications.

Umpire Observers' Box means the facility of that name which that is part of the Team Facilities that accommodates the umpire observer for AFL Events and other Match Officials for other Sporting Events, including described in clause D6.4.17.

Universal Access means access to buildings, products and environments that is inherently accessible to older people, people without disabilities and people with disability, including as a consequence of impairment that may be physical, cognitive, mental, sensory, emotional, developmental, or some combination of these.

Universal Access Principles means the principle described in clause C10(f).

Utilities Room means the storage workspace facility within the Administration Facilities that is part of the Stadium Operations and Event Day Facilities, including as described in Clause D13.4.1(p).

Utility has the meaning given to it in clause 1.1 of this Agreement.

Utility Company has the meaning given to it in clause 1.1 of this Agreement.

Utility Infrastructure has the meaning given to it in clause 1.1 of this Agreement.

Utility Infrastructure Works means the works which are part of the State Works, including as described in Clause A10.

Vehicular Vomitory means a Vomitory suitable to accommodate all vehicles that require access to and egress from the Pitch, including as set out in **[Not** *disclosed*]: Design Vehicles for the Stadium and Sports Precinct.

Vertical Transportation means all vertical transportation systems for the Stadium and Sports Precinct including passenger lifts, Service Lifts, dedicated lifts and escalators, including as described in Chapter E16 (Vertical Transportation) of these Design Specifications.

Vibration Dose Value (VDV) means a measure of human comfort to intermittent vibration and is defined in BS 6472–1992.

Video Screen Control Area means the area that is contained within the Production Suites that is part of the Stadium Operations and Event Day Facilities, including as described at clause D13.4.11(e).

Viewing Quality means the numerical value derived by Project Co to quantitatively describe the quality of the view from each Seating Position for each Event type, which is a measure of compliance with the requirements set out in Clause D7.4.1 the Sightline Criteria, extent of the view of the Field Of Play and the extent of Key Viewing Elements attributed to that Seating Position.

VIP Entrance means the area connected to the VIP Patron drop-off area where VIP Patrons upon arrival enter the Stadium to proceed to their allocated Seating Position via Vertical Transportation.

VIP Patron means a Patron who is a notable individual and is accorded special privileges due to his or her status or importance including heads of state, heads of government, politicians, celebrities, major employers, high-level corporate officers and high net worth individuals.

Vomitories means an access route which forms part of the Circulation Areas of the Stadium that directly links Patron areas within the Seating Bowl (including the Playing Surface) to Concourses or routes for ingress, egress and emergency evacuation (or both), including as described in clause D5.3.5.

Waste Chutes means the chutes provided to facilitate the transfer of waste from each level of the Stadium to the Waste Enclosure, which are part of the Waste Management Facilities, includings as described at clause D12.4.2.

Waste Enclosures means the waste storage facilities that are part of the Waste Management Facilities which are for use by Stadium Personnel to collect, store, recycle and remove general waste as described at clause D12.4.1.

Waste Management Facilities means the facilities for the use of the Stadium Operator to provide the Waste Management Services including as described in Chapter D12 (Waste Management) of these Design Specifications.

Waste Management Services means the service by the Stadium Operator which provides for all garbage, litter and other waste in the Stadium is removed regularly and promptly after each Event and (if appropriate) during the course of an Event.

Waste Stores means the waste storage facilities that are part of the Waste Management Facilities which are for use by Stadium Personnel to store waste prior to transferring it to Waste Enclosures, including as described at Clause D12.4.3.

Water Sensitive Urban Design means the planning and design of urban environments to ensure that urban water management is sensitive to natural hydrological and ecological cycles and integrates urban planning with the management, protection and conservation of the urban water cycle.

Weighted sound absorption coefficient (α_w) means the weighted sound absorption coefficient in accordance with ISO 11654, calculated by the average of 1/3 octave absorption coefficients per full octave band frequency, then applying a reference curve to determine a single number rating. Refer to NRC.

Western Australian Turf Club means the organisation responsible for horse racing in Western Australia and the management of the Belmont Park Racecourse, Perth Racing including as described in clause A13.7(d).

Whadjuk Working Party means the group formed by South West Aboriginal Land and Sea Council that represents the local Aboriginal community as described in Clause A13.6(e).

Written Press Box means the facility that is part of the Media Facilities which accommodates Media Personnel who are members of newspapers, sporting magazines, and online publications when carrying out their activities on Event Days, including as described in clause D14.4.15.

G2 LIST OF ACRONYMS

Acronyms used in Volume 3: Design Specifications have the following meanings unless the context otherwise requires:

AA means Athletics Australia

ACI means the American Concrete Institute

ACMC means Aboriginal Cultural Material Committee

ACROD means Australian Council for Rehabilitation of Disabled

AFL means Australian Football League

ARI means the average recurrence interval.

ARL means Australian Rugby League

ARU means Australian Rugby Union

ASADA means Australian Sports Anti-Doping Agency

ASHRAE means American Society of Heating, Refrigerating and Air-conditioning Engineers

ASS means Acid Sulphate Soil

AV means audiovisual.

BIM means Building Information Modelling or building information model as the context requires.

BMS means Building Management System

BMW means Building Management and Works

CA means Cricket Australia

CADD means computer aided design and drafting

CASA means the Civil Aviation Safety Authority of the Australian Government

CCTV means closed circuit television

CEMF means Construction Environmental Management Framework

CIBSE means Chartered Institution of Building Services Engineers

CFD (modelling) means computational fluid dynamics (modelling)

CO2 means carbon dioxide

COBie means Construction Operations Building Information Exchange

CoS means class of service in relation to computer networking

CPTED means Crime Prevention Through Environmental Design

DAA means Department of Aboriginal Affairs (formerly Department of Indigenous Affairs)

DAS means distributed antenna system

DCIM means Data Centre Infrastructure Management

DEC means the former Department of Environment and Conservation

DER means the Department of Environment Regulation

DFES means Western Australia's Department of Fire and Emergency Services

DoW means Department of Water

DSCP means differentiated services code point

DSI means Detailed Site Investigation

DSP means District Structure Plan

DSR means the Department of Sport and Recreation

DX means direct expansion

EACS means electronic access control system**ELV** means extra low voltage

EMF means electromagnetic field

EMI means electromagnetic interference

EMS means energy management system

EPA means Environmental Protection Authority

ESD means Ecologically Sustainable Development

ETFE means ethylene tetrafluroethylene

FAR means false alarm rate

FEB means Fire Engineering Brief

FER means Fire Engineering Report

FFA means Football Federation Australia

FIFA means Federation International de Football Association

FIP means fire indicator panel

FSADC means Football Stadium Advisory Design Council

GPO means general power outlet

GUI means graphical user interface

HACCP means Hazard Analysis and Critical Control Point(s)

HV means high voltage

HVAC means heating, ventilation and air conditioning

IAAF means International Association of Athletics Foundation

ICT means information and communication technology

IES means the Illuminating Engineering Society of North America

IELVS means Integrated Extra Low Voltage system(s)

IFD means intensity frequency duration.

IP means internet protocol

IPTV means internet protocol television

IRB means International Rugby Board

IRUA means Individuals Requiring Universal Access

JFWG means Joint Football Working Group

KPI means key performance indicator

LAN means local area network

LCC means lifecycle cost

LCS means lighting control system(s)

LED means light emitting diode

LOD means Level of Development

LR means Land Record

LV means low voltage

MCF means Mobile Carriers Forum, a division of the Australian Mobile Telecommunications Association (AMTA)

MRS means Metropolitan Region Scheme

MRWA means Main Roads Western Australia

MTBF means mean time between failure

NATA means the National Association of Testing Authorities (Australia)

NCC means the National Construction Code

OB means outside broadcast

OCR means Open Corporate Reserve

ODTR (ICT Systems) means optical time-domain reflectometer

OEMF means Operational Environmental Management Framework

OEMP means Operational Environmental Management Plan

OGA means Office of the Government Architect

OHS means Occupational Health and Safety

PA means public address.

PC means personal computer

PDP means Project Definition Plan

PIR means passive infrared

PLC means programmable logic controller

PMOA means Players and Match Officials Area

PON means passive optical network

PSI means Preliminary Site Investigation

PTZ means pan tilt zoom (camera)

PUE means power utilisation effectiveness

QoS means quality of service (in relation to ICT Systems)

RCD means residual current device

RDS means Room Data Sheet

RF means radio frequency

SAP means Sampling and Analysis Plan

SLS means serviceability limit state

SOA means software orientated architecture or the Schedule of Accommodation, as the context requires

SOP means standard operating procedure

SPL means sound pressure level

SRPB means Swan River Pedestrian Bridge

SSISEP means sound system and intercom system for emergency purposes

SWMS means safe work method statement

TBD means to be determined by Project Co

ULS means ultimate limit state

UPS means uninterruptable power supply

VIP means very important person

VLAN means virtual local area network

VoIP means voice over internet protocol

VPD means Victoria Park Drive

WADA means World Anti-Doping Agency

WAN means wide area network

WAPC means Western Australian Planning Commission

WATC means Western Australian Turf Club

WOL means whole of life

WOL-CFA means whole of life carbon footprint assessment

WLAN means wireless local area network

WSUD means Water Sensitive Urban Design

PART H: APPENDICES

H1 SITE PLANS

Plan 1 Site Context Plan

Plan 2 State Obtained Authorisations Plan – *Environmental Protection Act 1986* (WA) (Section 38)

Plan 3 State Obtained Authorisations Plan – *Contaminated Sites Act 2003* (WA)

Plan 4 State Obtained Authorisations Plan – *Aboriginal Heritage Act 1972* (WA) (Section 18)

Plan 5 State Obtained Authorisations Plan – *Environmental Protection, Biodiversity and Conservation Act 1999* (Cth)

Plan 6 Indicative State Transport Infrastructure Works Location Plan

Plan 7 Indicative Off-Site Infrastructure Works Location Plan

Plan 8 MRS Reservations and Agreement Act Area

Plan 9 Aboriginal Cultural Heritage Sites

Plan 10 Rail Reserve

[*Not disclosed*]


BELMONT RACE COURSE
WINDAN BRIDGE
GOONGOONGUP RAIL BRIDGE
GRAHAM FARMER FREEWAY
LOT 304
BELMONT PARK RAIL STATION
LOT 300
NEW PERTH STADIUM
LOT 307
TENNIS CENTRE
VICTORIA PARK DRIVE
LOT 12057
THE SPRINGS
NELSON AVENUE
"THE SOUTHERN NINE"
RESIDENTIAL TOWERS
BURSWOOD
CROWN PERTH COMPLEX
BURSWOOD TRAIN STATION
0 20m 40m 60m
Scale 1:1000
LEGEND
CADASTRE
SITE BOUNDARY
DRAWING NUMBER
=04-C-170-0027_G
Date=07/08/2014
THE NEW PERTH STADIUM PROJECT
PLAN 1 - SITE CONTEXT PLAN


PART 1
PART 2
PART 3
0
10
20
30m
1:500
LEGEND
SECTION 38 REFERRAL BOUNDARIES
DRAWING NUMBER
=04-C-170-0028_C
Date=07/08/2014
THE NEW PERTH STADIUM PROJECT
PLAN 2 - STATE OBTAINED AUTHORISATIONS PLAN
- ENVIRONMENTAL PROTECTION ACT 1986 (WA)(SECTIONS 38)

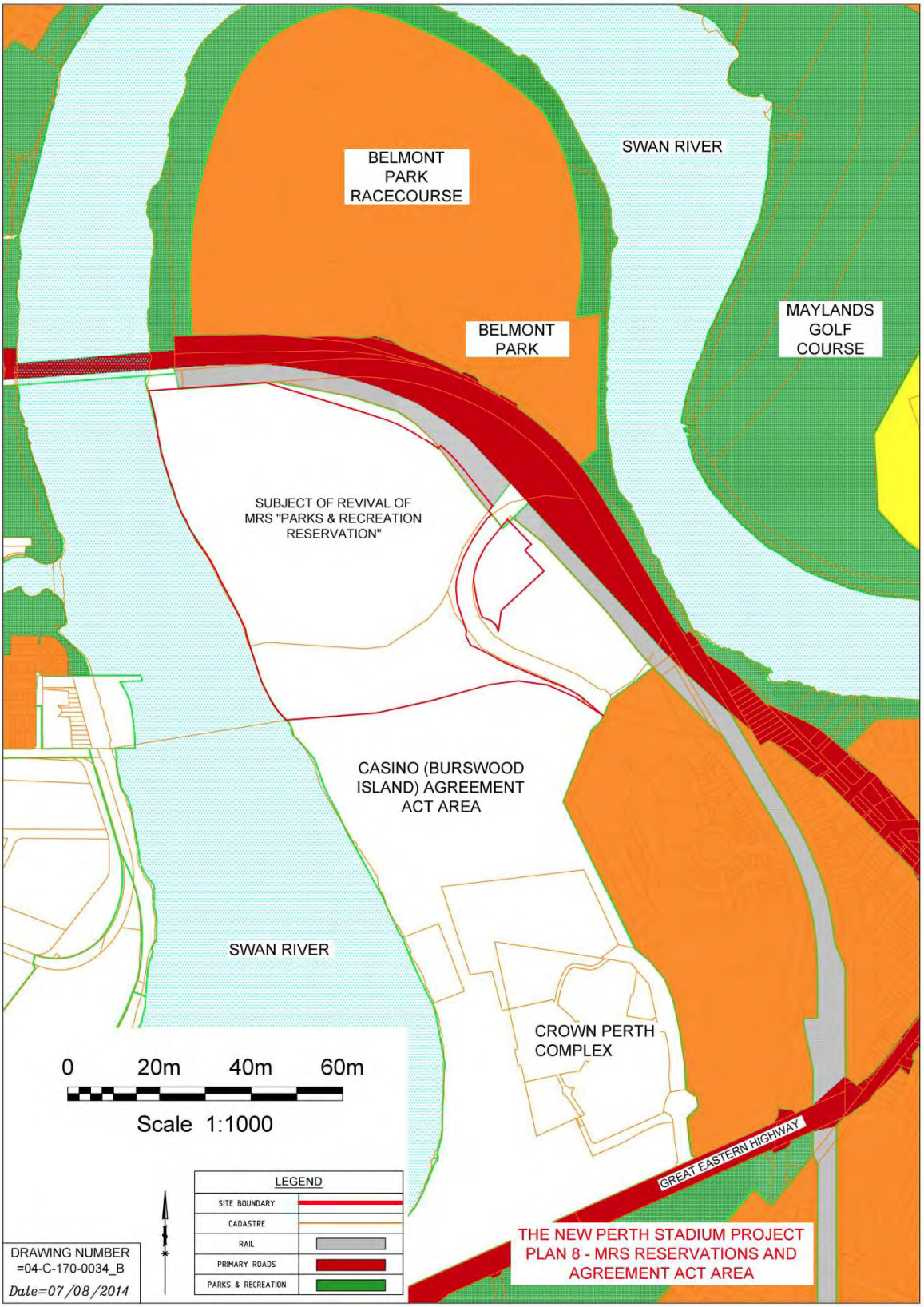

WINDAN BRIDGE
GOONGOONGUP RAIL BRIDGE
GRAHAM FARMER FREEWAY
STAGE 1
STAGE 2
STAGE 3
STAGE 4
VICTORIA PARK DRIVE
NELSON AVENUE
GREAT EASTERN HIGHWAY
0 10 20 30m
1:500
LEGEND
AUDIT BOUNDARY
DRAWING NUMBER
=04-C-170-0029_C
Date=07/08/2014
THE NEW PERTH STADIUM PROJECT
PLAN 3 - STATE OBTAINED AUTHORISATIONS PLAN
- CONTAMINATED SITES ACT 2003 (WA)


WINDAN BRIDGE
GOONGOONGUP RAIL BRIDGE
GRAHAM FARMER FREEWAY
VICTORIA PARK DRIVE
NELSON AVENUE
GREAT EASTERN HIGHWAY
0 10 20 30m
1:500
LEGEND
SECTION 18
CADASTRE
DRAWING NUMBER
=04-C-170-0030_C
Date=07/08/2014
THE NEW PERTH STADIUM PROJECT
PLAN 4 - STATE OBTAINED AUTHORISATIONS PLAN
- ABORIGINAL HERITAGE ACT 1972 (WA)(SECTION 18)


WINDAN BRIDGE
GOONGOONGUP RAIL BRIDGE
GRAHAM FARMER FREEWAY
VICTORIA PARK DRIVE
NELSON AVENUE
GREAT EASTERN HIGHWAY
0 10 20 30m
1:500
LEGEND
EPBC REFERRAL BOUNDARY
DRAWING NUMBER =04-C-170-0031_C
Date=07/08/2014
THE NEW PERTH STADIUM PROJECT
PLAN 5 - STATE OBTAINED AUTHORISATIONS PLAN
- ENVIRONMENTAL PROTECTION, BIODIVERSITY AND CONSERVATION ACT 1999 (CTH)


WINDAN BRIDGE
GOONGOONGUP RAIL BRIDGE
GRAHAM FARMER FREEWAY
BELMONT FOOTBRIDGE LANDING
RAIL STATION CONCOURSES
VEHICLE UNDERPASS
PEDESTRIAN UNDERPASS
LAYDOWN AND WORK AREA
VICTORIA PARK DRIVE
SWAN RIVER PEDESTRIAN BRIDGE LANDING
NELSON AVENUE
GREAT EASTERN HIGHWAY
0 20m 40m 60m
Scale 1:1000
LEGEND
TRANSPORT ACCESS AREA
SITE BOUNDARY
DRAWING NUMBER =04-C-170-0032_B
Date=07/08/2014
THE NEW PERTH STADIUM PROJECT
PLAN 6 - INDICATIVE STATE TRANSPORT INFRASTRUCTURE WORKS LOCATION PLAN


WINDAN BRIDGE
GOONGOONGUP RAIL BRIDGE
GRAHAM FARMER FREEWAY
PEDESTRIAN UNDERPASS
VERGE LANDSCAPING
VICTORIA PARK DRIVE
SWAN RIVER FORESHORE
NELSON AVENUE
PRIVATE WASTEWATER MAIN
GREAT EASTERN HIGHWAY
0
20m
40m
60m
Scale 1:1000
LEGEND
SITE BOUNDARY
SWAN RIVER FORESHORE
UNDERPASS
VERGE LANDSCAPING
PRIVATE WASTE WATER MAIN
DRAWING NUMBER =04-C-170-0033_B
Date=07/08/2014
THE NEW PERTH STADIUM PROJECT
PLAN 7 - INDICATIVE OFF-SITE INFRASTRUCTURE WORKS LOCATION PLAN


BELMONT PARK RACECOURSE
SWAN RIVER
BELMONT PARK
MAYLANDS GOLF COURSE
SUBJECT OF REVIVAL OF MRS "PARKS & RECREATION RESERVATION"
CASINO (BURSWOOD ISLAND) AGREEMENT ACT AREA
SWAN RIVER
CROWN PERTH COMPLEX
GREAT EASTERN HIGHWAY
0 20m 40m 60m
Scale 1:1000
LEGEND
SITE BOUNDARY
CADASTRE
RAIL
PRIMARY ROADS
PARKS & RECREATION
DRAWING NUMBER =04-C-170-0034_B
Date=07/08/2014
THE NEW PERTH STADIUM PROJECT
PLAN 8 - MRS RESERVATIONS AND AGREEMENT ACT AREA


WINDAN BRIDGE
GOONGOONGUP RAIL BRIDGE
15915
15914
GRAHAM FARMER FREEWAY
3701
VICTORIA PARK DRIVE
15916
16718
3694
NELSON AVENUE
3536
GREAT EASTERN HIGHWAY
0 10 20 30m
1:500
LEGEND
REGISTERED SITES
DRAWING NUMBER
=04-C-170-0035_C
Date=07/08/2014
THE NEW PERTH STADIUM PROJECT
PLAN 9 - ABORIGINAL CULTURAL HERITAGE SITES


WINDAN BRIDGE
GOONGOONGUP RAIL BRIDGE
GRAHAM FARMER FREEWAY
VICTORIA PARK DRIVE
NELSON AVENUE
GREAT EASTERN HIGHWAY
0
20m
40m
60m
Scale 1:1000
LEGEND
RAIL RESERVE
SITE BOUNDARY
DRAWING NUMBER
=04-C-170-0036_B
Date=07/08/2014
THE NEW PERTH STADIUM PROJECT
PLAN 10 - RAIL RESERVE

H2 OGA GENERAL DESIGN STANDARDS

general

design standard 01

for all public buildings

vision The State Government is committed to excellence in the design of its public buildings and has charged the Office of the Government Architect with the task of working with the Department of Finance's Building Management and Works unit and other key agencies, to develop a program for managing design quality. This initiative will establish provisions for supporting better quality built outcomes and will contribute to the delivery of well-built, fit-for-purpose facilities.

Government of Western Australia
Department of Finance
Office of the Government Architect
Building Management and Works

general

design standard 01
for all public buildings

The Architecture of Public Buildings:

vision The State Government is committed to excellence in the design of its public buildings and has charged the Office of the Government Architect with the task of working with the Department of Finance's Building Management and Works unit and other key agencies, to develop a program for managing design quality. This initiative will establish provisions for supporting better quality built outcomes and will contribute to the delivery of well-built, fit-for-purpose facilities.

It is well recognised that good design delivers better value for money as well as better buildings, particularly when attention is paid to the full costs of a building over its lifetime. In public buildings, good design will contribute to meeting user requirements, improving operational efficiency and service delivery, enhancing productivity and supporting agencies to achieve the best outcomes for government and the public.

Good design will also deliver a building that is cost effective to operate and maintain throughout its useful life and is a lasting architectural legacy that will serve the Western Australian community well for many decades.

Federation Square- Melbourne, Vic: LAB Architecture + Bates Smart

Well designed public buildings should:

- ➔Respect and enhance the location, the environment and the community;
- ➔Be culturally relevant;
- ➔Add value and reduce whole-of -life costs;
- ➔Create flexible, durable, sustainable and ecologically sound development for the community;
- ➔Minimise waste of materials, energy and water in construction and in use;
- ➔Provide functional, efficient, adaptable spaces for work and recreation;
- ➔Be attractive and healthy for both users and the public;
- ➔Take advantage of commercial opportunities where appropriate;
- ➔Contribute to construction which is quick, sound, safe and efficient; and,
- ➔Use space, materials and resources with imagination and efficiency'.

general

design standard 01
for all public buildings

Key Principles of Good Design

Sustainability and Energy Performance:

Government is committed to incorporating principles of sustainable design and energy efficiency into all of its building projects. Sustainable approaches seek to design, construct and operate buildings to reduce negative impacts on the environment and the consumption of natural resources. Sustainable design improves building performance and productivity as well as addressing the health and comfort of building occupants. It is an integrated, synergistic approach, in which all phases of the facility's life cycle are considered. The result is an optimal balance of cost, environmental, community and individual benefits while meeting the function of the intended facility or infrastructure. Government's minimum expectation for sustainability performance in public buildings is to target a 4-Star Green Star rating, which is 'best practice'.

Flexibility and Adaptability:

Public buildings undergo many changes during their lifetime. As government missions and priorities change, different agencies are created, expanded, and abolished. As a consequence, requirements for space and services change frequently, and space must be reconfigured often. The flexibility to accommodate continual change needs to be "built in" to the building design from the outset and respected in subsequent alterations. The flexibility of building systems (electrical, communications, mechanical etc) and interior spaces in particular is essential in government buildings to allow for growth.

Response to Context:

Well designed public buildings should demonstrate a considered relationship with their context and be appropriate to their site, purpose and status. The design and spatial organisation of public buildings should be informed by, and integrated with their cultural context, site conditions and climate. Seeking a sensitive engagement with existing built fabric is important in heritage settings.

A holistic design approach is necessary to exploit the immediate opportunities offered by a site before resorting to technological solutions. Through a more integrated response to context, buildings have the potential to offer long term cost savings, genuine innovation and a stronger sense of local identity.

Functionality and Build Quality:

Public buildings demand high quality fit-for-purpose architecture that responds intelligently to briefing requirements to provide both economic and social value. Design strategies should optimise functional activity and provide for staff and user efficiency while contributing positively to the public realm. Buildings should be designed and constructed on 'whole-of-life' cost principles using good quality materials in a durable manner to minimise maintenance.

Regatta Foreshore- Toronto, NSW: Day Bukh Architects

general

design standard 01
for all public buildings

Appropriate Sites:

Site constraints can impact on the design outcome for Government building projects. While a design solution for most sites is possible, this may not be cost effective due to topographic or service difficulties. Where land has already been designated for a project, a due diligence review is required prior to any business case to ensure that it is suitable for the scope of the proposed project (which can change over time) and that any possible constraints are clearly understood.

Land acquisition should be based on a clear understanding of the scope of a project and associated criteria to ensure that it is suitable and can accommodate the proposed facility. Opportunities to add value to the project and the broader community can be enabled by carefully considering the uses and character of the surrounding environment.

Life Cycle Costing:

It is imperative that public facilities be designed with the objective of achieving low life cycle costs for the taxpayer. To this end, a project must comprehensively define reasonable scope and performance requirements, and match those needs to an appropriate overall budget. Consistent with programming and budgetary constraints, building systems and features that influence operating costs must then be analysed over the full building life cycle[2] and selected to achieve low overall life cycle costs.

Life cycle costing will always require the application of professional judgment. These assessments should be based on comprehensive analysis of the suite of systems or features within a proposal to establish synergistic effects and cost trade-offs. There will also be instances where complex life cycle cost elements are not well defined within the industry (for example, staff productivity benefits), defying credible inclusion with known cost impacts. In such cases, life cycle cost comparisons must be weighed with qualitative issues when making design decisions.

Collaboration and Consultation:

Improved design outcomes demand a more integrated team approach to the design process and a greater awareness of user needs. Sub-consultant and (where appropriate) contractor involvement from the outset of a project, increases cross-disciplinary creativity and encourages problem-solving and innovation. Engaging the whole of the project team in developing the project's performance objectives is vital to achieving good design.

One Shelley Street- Sydney, NSW: Clive Wilkinson Architects

Operations and Building Maintenance:

Systems and materials should be selected with a view to balancing long-term operational and maintenance costs against the initial capital cost. Building design should ensure ease and efficiency of operation and allow for easy and cost effective maintenance and replacement during the facility's useful life. Additionally, the design life of major items of plant and equipment should be scheduled for timely replacement.

The project brief should outline the need for the design team to engage with facilities management and maintenance personnel, where possible. This collaboration will allow the facility to be designed with adequate understanding by both the designer and the building manager as to what is required for optimal life cycle performance[3].

general

design standard 01
for all public buildings

build quality: Performance of the Built Fabric over the Full Life Cycle

Performance:

- Select building materials, finishes, elements and systems on the basis of life-cycle cost analysis.
- Incorporate initiatives for the improvement of energy conservation; reduction in waste, embodied energy and emissions; and conservation of water, using specified market-based benchmarks.
- Design appropriately for climate to reduce reliance on active climate modification and building management systems.
- Incorporate passive environmental design measures, including appropriate orientation, responsive siting, natural lighting and ventilation where ever possible.
- Ensure the appropriate level of acoustic comfort relative to the function and use of spaces.
- Optimise day lighting where appropriate while also mitigating glare and solar gain.
- Commission the facility to ensure that it operates and is maintained in a manner consistent with design intent.
- Provide operation and maintenance manuals to enable users to optimise the building's environmental performance.

Engineering:

- Utilise innovative design, technologies and analytical tools to optimise energy performance and minimise resource consumption where life cycle analysis shows proven benefits.
- Ensure engineering systems are flexible, efficient and economical to use.
- Integrate engineering systems within an energy efficient building to maximise natural ventilation and lighting while minimising mechanical heating and cooling and artificial lighting.
- Provide thermal comfort through correctly sized air-handling systems to control humidity and temperature
- Provide superior indoor air quality utilising both mechanical and passive ventilation systems where appropriate.
- Ensure engineering systems operate without compromising acoustic comfort.
- Consider the use of standardised and prefabricated elements generally in the design of engineering systems.
- Select systems on the basis of well understood service and local maintenance requirements.
- Ensure users and facility staff can easily operate thermal controls without compromising overall system performance.

Construction:

- Integrate structural and engineering systems within the built fabric so that they are clearly and logically organised for ease of use, maintenance and future expansion.
- Utilise construction systems that easily enable future horizontal and vertical expansion.
- Utilise construction systems that allow for internal modification, service upgrades and replacement.
- Consider adaptive re-use strategies and re-using existing building fabric to avoid unnecessary demolition (where appropriate).
- Consider the energy costs of construction and the embodied energy in the selection of building materials and elements.
- Utilise construction strategies that minimise waste and adverse impacts on the environment.
- Minimise the impact of construction on service provision in the case of staged planning and construction.
- Ensure appropriate allowance is made for future service requirements.
- Utilise good quality, robust materials that are durable and cost effective to maintain.
- Replace and maintain materials in a manner consistent with the original design intent.
- Specify materials and products that avoid adverse impacts on health and the environment.

general

design standard 01
for all public buildings

functionality: Meeting the Needs of Staff and Users

Roma Mitchell Commonwealth Law Courts, Adelaide, SA: Hassell Architects

Blaxland Riverside Playground, Sydney Olympic Park, NSW: JMD Design

Use:

- Enable efficient use of space by locating support zones so that they may be shared by adjacent functional areas and by making prudent use of multi-purpose spaces.
- Promote staff efficiency by minimising distances of travel between frequently used spaces.
- Provide optimal functional adjacencies to support the facility's intended operations from the point of view of its respective users.
- Ensure spaces have built-in flexibility to accommodate future changes to functional and operational requirements where possible.

Access:

- Create clear hierarchies of movement and legible circulation networks especially from entry points and internal public areas.
- Ensure well designed universal access is provided without compromising legibility, connectivity and quality of experience.
- Ensure clearly legible points of entry.

Space:

- Ensure functional and operational needs are supported and enhanced by spaces that are the right size, shape, proportion and orientation.
- Ensure that key functional relationships are clearly legible within floor layouts.
- Ensure flexibility and adaptability of use through generic room sizes and plans, to the extent appropriate.
- Consider future expansion and adaptation of the facility in the planning of all spaces.
- Provide adequate and discrete storage.
- Ensure the planning of spaces enables amenity while ensuring security and appropriate levels of surveillance.

general

design standard 01
for all public buildings

impact: Creating a Sense of Place and Positive Impact on the Community

Character + Innovation:

- Respond to the topography, climate, heritage and ecology of the site where possible as a way of creating a sensitive and distinctive, place-specific facility.
- Respond to site character and cultural context as a way of embodying in the facility, the culture and aspirations of the neighbourhood or community where possible.
- Convey the civic role of the building and its setting through an appropriate architectural language.
- Provide support for the efficient delivery of government services by interpreting and reflecting best practice innovations where possible.
- Utilise public art - and the percent-for-art scheme where possible - to contribute positvely to the experience of the facility and the public realm.

Form + Materials:

- Exploit built form and massing to establish a positive relationship to the site and surrounding buildings.
- Project a clear and coherent built form that confidently communicates the facilities function and aspirations through its physical elements.
- Ensure that the built form provides entrances that are well scaled, welcoming, clearly distinguished and with a clear sense of arrival.
- Utilise good quality low maintenance materials within the building fabric suitable to the role and setting of the facility.
- Integrate service elements into the built form where possible.
- Communicate the significance and relationships of spaces through scale, proportion, colour and materials.

Internal Environment:

- Create bright, open, generously-scaled communal spaces with clear views to important reference points such as entries and exits, administration and circulation areas.
- Provide meaningful views and access to outdoor and landscaped areas from key internal locations where appropriate.
- Utilise materials, finishes and furniture to create comfortable, high-quality internal spaces.
- Ensure a clearly legible internal environment that assists way-finding and enables clear understanding of the functions of the facility.
- Provide quality natural lighting wherever appropriate.

External Environment:

- Provide a high quality landscape setting which responds to the design intent of the building architecture.
- Seek to minimise landscape maintenance by utilising robust materials and climatically appropriate soft landscaping.
- Utilise external landscaped environments to assist way-finding.

Australian Red Cross Research Facility- Sydney, NSW.
BVN Architecture

general

design standard 01
for all public buildings

Urban Integration + Social Factors:

- Where appropriate, involve key user groups and the local community in the project planning process to ensure a fit-for-purpose, responsive outcome.
- Where appropriate, respond specifically to the demographic, cultural and socio-economic profile of the catchment area within the facility's design and planning.
- Provide opportunities for safe walking, cycling and public transport access to and from the facility.
- Provide clear and well considered means of access into and around the facility with good visual links to natural points of arrival, local landmarks and other strategic locations.
- Consider additional uses and commercial opportunities where appropriate.
- Minimise the impact of parking and vehicular access on the entry to the facility and the interface with the surrounding context.
- Enable integration into the surrounding urban form through careful consideration of building form and scale; location of access routes and surrounding infrastructure; and the co-location of other uses and activities.
- Ensure that built form, urban integration and landscaping contribute to a safe and secure environment.

Victoria University, Melbourne: John Wardle

1. CABE, Better Public Buildings, UK, 2000
2. Up to 100 years in the case of state high schools.
3. U.S General Services Administration, Facilities Standards (P100), Washington D.C, 2003

H3 DESIGN QUALITY BENCHMARKS

Refer to Volume 3, Part A, Appendix H3 (Design Benchmarking)

H4 SCHEDULE OF ACCOMMODATION

[*Not disclosed*]

H5 ROOM DATA SHEETS TEMPLATE

Government of Western Australia
Department of Treasury
Strategic Projects

ROOM DATA SHEET TEMPLATE

PROJECT:	ROOM NAME:	JOB NO:	
	ROOM NO:	SHEET NO:	
	FLOOR/LEVEL:	DATE:	
		REV:	DATE:

ACTIVITY DESCRIPTION			
Functional Area		**Relevant Stadium Users**	
Functional Unit		**Capacity**	
Nett Area (sqm)		**Hours of Use**	e.g. 24/7 or 9-5 or intermittent
Primary Use		**Secondary Uses**	

VISUAL CONDITIONS			
Visual privacy	*low (normal)*	*medium*	*high*
Views	*external*	*Pitch/Field of Play*	*other*
Blinds	*Block-out*	*filter*	*Motor operated*

ACCOUSTIC AMENITY			
Background Sound Level L_{Aeq}		**Airborne Weighted Level Difference, D_w to adjacent enclosed space, dB**	
Building services noise level (NR/RC)		**Impact Noise Rating ($L_{n,w}$)**	
Critical Space (Yes / No)			

FUNCTIONAL ADJACENCIES			
Seating Bowl	*Direct*	*Ready*	*Easy*
Toilets	*Direct*	*Ready*	*Easy*
Catering	*Direct*	*Ready*	*Easy*
Vertical Transport	*Direct*	*Ready*	*Easy*
Cleaning	*Direct*	*Ready*	*Easy*
Other	*Direct*	*Ready*	*Easy*

TYPE	ITEM	DESCRIPTION (circle option)	No./ SIZE
Room Envelope	General	*Character & Daylight*	
		View	
		Benchmark ref.	
	Doors	*Standard/Wheelchair/ /Other*	
		Solid, View, Observation, Glass	
		Closer, Hold-Open, Power	
		Lock, Latch, Snib	
		Other	
	Walls	*Wet/Dry*	
		Fire/Smoke/Acoustic	
		Retractable	
		Other	

TYPE	ITEM	DESCRIPTION (circle option)	No./ SIZE
	Windows	*Size*	
		Operable	
	Floor	*e.g. Carpet/Vinyl/Non-Slip*	
	Ceiling	*Height*	
		Acoustic	
		Other	
	Partition/Glazed Screen	*Full-Height/Desk/Bench*	
		Other	
	IRUA	*Provisions*	
Project Co FF&E	FF&E	*Tables*	
		Chairs	
		Storage	
		Other	
	Signage	*informational/statutory/directional*	
		Other	
	Other	*e.g. fridge, freezer, dishwasher*	
		e.g. pinboard, whiteboard, e-screen,	
		e.g. Whiteboard standard/electric	
State FF&E	FF&E	*Tables*	
		Chairs	
		Storage	
		Other	
Sanitary	Showers	*Standard, IRUA*	
		Other	
	Toilets	*Standard/ IRUA*	
		Urinal/B.P.Flusher/Racks	
	Basins	*Standard/ IRUA*	
		S.S. Sink/Drainer	
	Sinks	*Flushing/Pot*	
		Trough	
		Slop Hopper, Disp. Unit	
		Floor Waste	
		Mirror, Shelf, Hook	
		Other	
	Taps	*Standard, Wrist, Elbow, Handsfree*	
		Other	
	Dispensers	*Soap, Disinfectant*	
		Paper Towels	
		Toilet Roll	
		Ice, Iced/Boiling Water	
		Other	
	Dryers	*Jet hand dryers*	
Hydraulics	Water	*Hot/Cold*	
		Boiling	
		Chilled	
	Gas	*Natural-Gas*	
		Other	
Mechanical	Air	*A/C,localised controls*	
		Exhaust/Fume C'pbd	
		Room Heating	
		Other	
Electrical	Light	*General, Dimmer, localised controls,*	

TYPE	ITEM	DESCRIPTION (circle option)	No./ SIZE
		Emergency	
		Low level low glare to allow view out	
		Other	
	Power	*Standard, 0/15amp. 3phase*	
		Emergency, Low Voltage	
		Suspended Outlets	
		Floor Box	
		Trunking	
		Other	
	Equipment	*Telephony*	
		Digital Clocks	
		Photocopier/Printer	
		Computer	
		Other	
Fire	Detection	*Alarms*	
		Signage	
		Sprinklers(Gas/Water/VESDA)	
	Protection	*Hydrants /Blankets /Extinguishers*	
		Other	
ICT	General	*Data - cabling*	
		Data – live ports	
		Wireless networking (Y/N)	
		Mobile Phone Coverage (Y/N)	
		Telecoms	
		Intercom	
		ICT Cabinet	
		Other	
Security	Doors	*Electronic*	
		Key	
		Key Pad	
		Latch	
		Proximity Card	
		Other	
	Room	*Intruder Alarm*	
		Duress Alarm	
		Monitor/Workstation, Other	
	Cameras	*Fixed*	
		PTZ	
		Other	
AV	PA System	*Wall/Front-of-House*	
		Ceiling	
	General	*Flat Panel Display – Wall/Ceiling/Table mount*	
		Projector – Ceiling/Wall Mount, Fixed/Motorised	
		Projection Screen – Fixed/Motorised	
		Microphone – Wireless/lectern/table/ ceiling	
		MATV	
		IPTV	
		Room booking panel	
		Patch Panel	
		Document Camera	
		Table Box/Portable Device Connection – wired/wireless	

TYPE	ITEM	DESCRIPTION (circle option)	No./ SIZE
		AV control panel – wall/ table mount	
		Rack	
		In-room PC	
		Video Conference Camera	
Sundry	General	*e.g. Flexibility provisions*	
TO BE READ IN CONJUNCTION WITH RELATED ROOM LAYOUT. **NOTES:** **HOURS IN USE:**			

ROOM LAYOUT SHEET

PROJECT:	**ROOM NAME:**	**JOB NO:**	
	ROOM NO:	**SHEET NO:**	
	FLOOR/LEVEL:	**DATE:**	
		REV:	**DATE:**

TO BE READ IN CONJUNCTION WITH RELATED ROOM LAYOUT.	**BRIEFED BY:**

NOTES:

H6 BIM IMPLEMENTATION REQUIREMENTS

The Parties acknowledge that this Appendix H6 (BIM Implementation Requirements) of this Schedule 12 (Design Specifications) was prepared for the purposes of describing the BIM requirements for the RFP and has only partially been updated. In the event of any inconsistency, ambiguity or discrepancy between this Appendix H6 of this Schedule 12 (Design Specifications) and Clauses 1 – 55 and Schedule 5 (Design Development) of the Project Agreement, Clauses 1 – 55 and Schedule 5 (Design Development) of the Project Agreement will apply.

H6.1 OVERVIEW

H6.1.1 Introduction

(a) Project Co must use a recognised BIM process in the delivery of the DBFM Project.

(b) The BIM Management Plan will outline how Project Co proposes to progress through each Level of Development (**LOD**) from LOD100 to LOD500 as defined Schedule 5 (Design Development). Sufficient detail would be provided in the final BIM Management Plan (to be provided to the State at least 4 weeks prior to Financial Close) to fulfil the processes and uses as generally described in NATSPEC National BIM Guide, Chapter C21 (, this Appendix and Schedule 5 (Design Development) and Schedule 7 (Completion Criteria) of this Agreement.

(c) The State's preferred guidance for the delivery of BIM is NATSPEC National BIM Guide and BIM Forum (2013).

(d) Alternative guides or standards may be proposed by Project Co and may be used subject to Project Co obtaining the prior approval of the State.

H6.1.2 Reference Documents

Without limiting Project Co's right to propose other guides or standards, the following reference documents should be utilised by Project Co:

Purpose	Applicable reference document
BIM Guide	*NATSPEC National BIM Guide* including: • BIM Project Brief template; • BIM Reference Schedule; • BIM Object/Element Matrix; and • NATSPEC BIM Management Plan Template. *BIM Forum*, including: • Level of Development Specification Where options are indicated within the reference documents, those most appropriate for Australian projects will apply.

H6.2 INFORMATION

H6.2.1 General

(a) All DBFM Asset Information collected during the D&C Phase must be available for operations and facilities management purposes both prior to and after Commercial Acceptance.

(b) All DBFM Asset Information collected during the D&C Phase must be provided to the State prior to Commercial Acceptance.

H6.2.2 Construction Operations Building Information Exchange (COBie)

(a) Project Co must store and maintain DBFM Asset Information in graphical and non-graphical Digital Data formats for reuse as required during the D&C Phase and

Operating Phase. This information must be gathered using a Construction Operations Building Information Exchange (**COBie**) compliant output file for reuse.

(b) The particular format version of COBie to be used, with the suitable local and project specific related adjustments, must be agreed in advance with the State.

(c) The DBFM Asset Information must be maintained by Project Co in accordance with Part D Section 16 of Schedule 13 (Services Specifications).

(d) (**COBie data drops**) At stages in the Design Development Process to be agreed with the State, data drops consisting of COBie formatted information must be issued by Project Co to the State. BIM Task Group (UK), COBie UK 2012 can provide further guidance.

(i) **Data Drop 1**: Model represents Requirements and Constraints

(ii) **Data Drop 2**: Model represents Outline Solution

(iii) **Data Drop 3**: Model represents Construction Information

(iv) **Data Drop 4**: Model represents Operations and Maintenance Information

(v) **Data Drop 5 (and subsequent drops)**: Model represents post occupancy validation and ongoing FM.

H6.3 BIM REQUIREMENTS AND USES

H6.3.1 General

(a) (**AsBuilt BIM Model**) DBFM Asset Information must be provided and remain in useful formats and be available to the State for reuse. Project Co must provide the State with the As Built BIM Model before Technical Completion. It is expected that this model will provide an open source of information for operational and facilities management purposes, including:

(i) space management and tracking: space utilisation, allocation of space to building occupants;

(ii) asset management: allocation and tracking of FF&E;

(iii) maintenance scheduling; and

(iv) Engineering Services performance analysis.

(b) (**Facilities Management**) Notwithstanding clause H6.3.1(a) Project Co must define the specific information required for facility management purposes and the strategy for capturing and providing this information in the correct format to be utilised by CMMS, BMS and the other systems used for the Stadium Activities. As a minimum, the development process for the proposed facilities management system must address the following issues:

(i) identification of facility management information required by end users;

(ii) the organisation and indexing of information to facilitate its retrieval by required search criteria;

(iii) file formats to be incorporated;

(iv) software applications required to access and/or manage the information;

(v) system features and functionalities required (e.g. ability to update information, create reports in the desired format, ability to integrate with the building's systems (e.g. BMS)); and

(vi) strategy for collecting all the required information throughout the project and making the Information Drops to the State.

(c) It is anticipated that Project Co will utilise BIM on the DBFM Project as follows:

Areas to be modelled		The new Perth Stadium and its surrounding Sports Precinct, including all the DBFM Transport Infrastructure.
Required (Yes/No)	**NATSPEC Clause No.**	**Use of BIM**
Yes	7.1.1	Modelling existing conditions, including topographical data, ground conditions, underground services that are identified by surveys in areas needed to support construction works.
Yes	7.1.2	Site analysis
Yes	7.1.3	Space and equipment validation
Yes	7.2.1	Architecture – spatial and material design models
Yes	7.2.2	Design visualization for communication and functional analysis
Yes	7.2.3	Code checking
Yes	7.2.4	Sustainability evaluation
Yes	7.3	Structural Modelling and Analysis
Yes	7.4.1	Energy analysis
Yes	7.4.2	Virtual testing and balancing
Yes	7.4.3	Lighting analysis
Yes	7.4.4	Other engineering analysis: Air Movement across the Sports Precinct, Stadium and Stadium Bowl. Requirement for other analysis to be determined by Project Co and State.
Yes	7.5	Quantity Take-off and Cost Planning
Yes	7.6.1	Clash detection/coordination
Yes	7.6.2	Construction system design
Yes	7.6.3	Digital fabrication where applied by fabricators
Yes	7.6.4	Planning construction scheduling and sequencing – 4D
Yes	7.6.5	Communication of construction scheduling and sequencing - 4D
Yes	7.6.6	Site utilisation planning
Yes	7.6.7	Vertical Transport planning
Yes	7.7.1	COBie/commissioning

Yes	7.7.2	Other FM information handover/commissioning systems
No	7.7.3	Security assessment and disaster planning

H6.3.2 Use of the NATSPEC BIM Object/Element Matrix

Project Co should utilise the NATSPEC BIM Object/Element Matrix in accordance with the following:

Required (Yes/No)	Uses
Yes	As a reference for naming model object parameters.
Yes	For recording information to be handed over for FM purposes.
Yes	For documenting information content of BIM models and responsibilities for planning and guidance purposes only.
Yes	For documenting information content of BIM models and responsibilities for contractual purposes.
Yes	Other - to be determined by the State in conjunction with Project Co.

H6.3.3 BIM Software

(a) Project Co must prepare BIM models utilising computer software systems (and all revisions and updates) by using recognised specialist proprietary software systems with the capability to deliver the BIM requirements. Such software systems must be approved by the State prior to use by Project Co.

(b) For the purposes of clause H6.3.3, the State pre-approves the use of the following proprietary computer software systems:

BIM use	Proprietary software	Version
Planning/Preliminary Cost Estimates	Autodesk Revit	2014
Authoring – Design (Architecture)	Autodesk Revit	2014
Authoring – Design (Structural)	Autodesk Revit	2014
Authoring – MEPF (Engineering & Construction)	Autodesk Revit	2014
Authoring – Civil	Autodesk Revit	2014
Coordination (clash detection)	Autodesk Navisworks and Solibri	2014 / SMC v8.1
4D Scheduling	Primavera	P6
5D Cost Estimating	CostX and DimX	
Specifications and schedules	dRofus	

BIM use	Proprietary software	Version
Model Checking Validation, IFC File Optimisation	Autodesk Navisworks and Solibri	2014 / SMC v8.1

H7 MINIMUM COMPLETION TESTS

H7.1 SCOPE

This Appendix describes the minimum tests Project Co must successfully complete to achieve:

(a) Technical Completion; and

(b) Commercial Acceptance

(the **Minimum Completion Tests**).

H7.2 GENERAL REQUIREMENTS

(a) Without limiting this Appendix H7, Project Co must conduct all necessary testing, commissioning and other practices to demonstrate that the DBFM Works:

(i) are constructed in accordance with the requirements of this Agreement;

(ii) meet the Design Requirements; and

(iii) are Fit For Purpose.

(b) All testing and commissioning must be undertaken in accordance with this Agreement. Project Co must undertake all Completion Tests in accordance with:

(i) Best Construction Practices;

(ii) manufacturer requirements;

(iii) relevant Quality Standards and Laws; and

(iv) the requirements of all relevant Authorities, including the:

A NCC (including DFES consultation);

B Utility Companies; and

C other relevant Authorities, including as required by these Design Specifications.

(c) (**Testing Personnel**) Project Co must ensure that all testing is undertaken by experienced commissioning personnel of the Subcontractor that installed the relevant Engineering Service, system, item of plant or Project Co FF&E and that such personnel:

(i) are correctly certified for the particular test applicable; and

(ii) have valid experience in the particular field applicable. Without limiting paragraph (a), where required, Project Co must ensure that testing is conducted under the supervision of an accredited person of the manufacturer or supplier of the particular Engineering Service, system, item of plant or Project Co FF&E.

(d) Where required by Part E (Technical Brief) of the Design Specifications Project Co must engage a Chartered Professional Engineer or other Accredited Professional (or Practitioner) to complete testing or authorise test results.

(e) (**Subcontractors**) Project Co must ensure that all relevant Subcontractors:

(i) are available for each inspection and test; and

(ii) provide the staff and resources required to:

A carry out each inspection and test; and

B rectify any Defects including programming faults found during inspections and testing.

(f) (**Testing instruments**) Project Co must:

(i) supply or otherwise provide all instruments and appliances necessary to conduct any Completion Tests;

(ii) ensure all test instruments have been checked and calibrated for accuracy by the manufacturer;

(iii) only use test instruments if they have been designed for the specific task for which they are used; and

(iv) provide a copy of calibration showing the degree of accuracy of each of the testing instruments to the Independent Certifier if requested by the State or the Independent Certifier.

(g) (**Programming of works**) Project Co must incorporate all Completion Tests in the DBFM Works Program, including duration, interdependencies, sequence and notice for witnessing attendance.

H7.3 ITP REQUIREMENTS

(a) Project Co must prepare an Inspection and Test Plan (**ITP**) for each project element, Engineering Services system or trade included in clauses H7.4.1 to H7.4.20 inclusive of these Minimum Completion Tests.

(b) Project Co must prepare an ITP, checklist and test sheet in accordance with the general requirements set out in clause H7.2.

(c) Each ITP must set out Project Co's methodology for inspecting and testing the relevant project element, Engineering Services system or trade, including:

(i) the relevant Quality Standards and Laws;

(ii) the relevant Authority and Authorisation (and relevant Government Agencies consulted, including DFES);

(iii) a schedule of the project elements, Engineering Services or trades that will be inspected or tested under the ITP;

(iv) details of any construction hold points for inspection or testing to occur;

(v) required inspection(s);

(vi) planned inspection date(s);

(vii) the inspection entity;

(viii) required tests, addressing the following:

A static tests, including for example pipe tests (pressure, welding integrity), cable tests (continuity, resistance, earthing integrity) and ductwork tests (leak tests);

B dynamic tests, including for example for water and air balancing, motors, switching and capacity testing;

C system tests for testing operation of whole systems, including for example testing of mechanical services systems, lighting systems, fire protection systems; and

D integration tests for testing the operation of integrated services, including for example fire mode testing, power fail mode testing and event and incident scenarios;

(ix) methodology for testing (including details of testing equipment);

(x) testing criteria;

(xi) planned test date(s);

(xii) planned test location, for off-site or factory based tests;

(xiii) the testing entity;

(xiv) methodology for operational readiness simulations (where relevant);

(xv) safety implications regarding the test (including preparation of a safe work method statement (**SWMS**) as required);

(xvi) details of any required involvement of the State, the Stadium Operator, relevant Authorities and relevant third parties (or any of them); and

(xvii) details of any required independent witness or certification (including the design engineer(s) or consultant(s) (where relevant)).

(d) Project Co must prepare each ITP to reflect that witnessing by the Independent Certifier and the State should typically take place only once a predetermined level of testing or preparation has been demonstrated by submission of successful pre-test results.

(e) ITPs must be prepared, as required, to support demonstration of rectification of Defects. These tests may replicate existing ITPs or new plans may be required. All ITPs must be provided in a consistent format and layout.

(f) Each ITP must also be provided with a suite of reference documentation, including as appropriate:

(i) validation master plan;

(ii) user requirements specification(s);

(iii) control drawings;

(iv) equipment installation instructions; and

(v) site specific standard operating procedures (**SOPs**).

H7.4 TECHNICAL COMPLETION

H7.4.1 External works

[*Not disclosed*]

H7.4.2 Building and architectural

(a) Project Co must inspect and test the building and architectural elements of the Stadium, the Sports Precinct and the Off-Site Infrastructure (as applicable) in accordance with clause H7.2 and any relevant ITPs, including inspection and testing of:

(i) waterproofing membranes (including tanking and roof membranes);

(ii) structure;

(iii) building envelope (including facade and roof);

(iv) internal partitions;

(v) ceilings;

(vi) door hardware (including closers, hinges, locks and similar);

(vii) flooring;

(viii) drainage of wet areas in accordance with Quality Standards and Laws, including the aquatic recovery facilities and Catering Facilities;

(ix) paint and other surface finishes;

(x) joinery (including permeability, seals, hardware and similar);

(xi) fire, smoke and acoustic stopping;

(xii) insulation and barriers;

(xiii) signage; and

(xiv) public art (including where mechanically, electrically or hydraulically operated).

(b) Project Co must carry out testing to certify that all areas of the Stadium where day lighting requirements are specified are in accordance with the Design Specifications.

H7.4.3 Civil Works and stormwater systems

(a) Project Co must inspect and test each element of the civil works and stormwater systems of the Stadium, the Sports Precinct and the Off-Site Infrastructure in accordance with clause H7.2 and any relevant ITPs, including inspection and testing of:

(i) downpipes of buildings to demonstrate all downpipes are free of leaks and meet the acoustic isolation requirements;

(ii) Site stormwater drains, drains within and under buildings and main internal drains must be free of leaks when subjected to the tests specified in the AS3500.3;

(iii) rising mains must be free of leaks when subjected to the tests specified in the AS3500.3;

(iv) stormwater pumps, pump wells and control panels;

(v) storm water pit location, size, type of cover and class of cover;

(vi) inspection openings;

(vii) steps within pits;

(viii) surface levels including grades of pedestrian areas, road pavement, drop-off areas and carpark areas;

(ix) grades of the pedestrian areas;

(x) grades of carpark areas, drop-off areas and roads;

(xi) sub-grade of pavement prior to placing fill material; and

(xii) fill material and compaction for all layers of filling for pavement.

(b) Project Co must:

(i) (**ponding**) demonstrate that no water ponds on any hard or soft surfaces;

(ii) (**stormwater**)

A test all stormwater management systems in accordance with applicable discharge requirements; and

B prior to Technical Completion undertake camera test inspections of all storm water drainage lines; and

(iii) provide evidence of inspections of the civil works by a Chartered Professional Engineer to confirm compliance with the Damage Thresholds

H7.4.4 Acoustics

(a) Project Co must acoustically inspect and test elements of the Stadium and Sports Precinct in accordance with clause H7.2 and any relevant ITPs, including as set out in clauses (b) to (h) below.

(b) (**Airborne sound isolation**)

(i) Physical testing of airborne sound isolation must be conducted in accordance with AS ISO 140 Acoustics – measurement of sound insulation in buildings and of building elements, or an approved equivalent standard.

(ii) The results of testing of airborne sound isolation should be recorded in terms of third octave band results including the range of full octaves with centre frequencies 63 to 4,000Hz, and as appropriate single value ratings using the methodology outlined in AS ISO 717.

(iii) The arrangement of physical testing of airborne sound isolation must be representative of final installation to the satisfaction of the State.

(iv) All test results should be presented with a statement of the uncertainty of each measurement for a 95% confidence level as defined in the ISO Guide to Measurement Uncertainty (ISO Guide 98).

(c) (**Impact sound isolation**)

(i) Physical testing of impact sound isolation must be conducted in accordance with AS ISO 140 Acoustics – measurement of sound insulation in buildings and of building elements, or an approved equivalent standard.

(ii) The results of testing of impact sound isolation should be recorded in terms of third octave band results including the range of full octaves with centre frequencies 63 to 4,000Hz, and as appropriate single value ratings using the methodology outlined in AS ISO 717.

(iii) The arrangement of physical testing of impact sound isolation must be representative of final installation to the satisfaction of the State.

(iv) All test results should be presented with a statement of the uncertainty of each measurement for a 95% confidence level as defined in the ISO Guide to Measurement Uncertainty (ISO Guide 98).

(d) (**Sound levels**)

(i) The measurement of sound levels must be undertaken in accordance with AS/NZS2107:2000 and AS1055, or an approved equivalent standard which provides an accurate and objective comparison using a time period representative of the noise under assessment.

(ii) Sound level meters must comply with all relevant specification standards for Type 1 integrating sound measurement equipment and be within a valid laboratory-calibration period at the time of survey. The meter must also satisfy all relevant and applicable Australian Standards for acoustic measurement devices, including schedule 4 of the *Environmental Protection (Noise) Regulations 1997* (WA).

(iii) All measurements of sound levels must be taken in accordance with the relevant guidance in AS1055.1-1997 Acoustics – Description and Measurement of Environmental Noise, Part 1: General Procedures.

(iv) All results of tests of sound levels must be presented with a statement of the uncertainty of each measurement for a 95% confidence level as defined in the ISO Guide to Measurement Uncertainty (ISO Guide 98).

(e) (**Reverberation times**)

(i) The measurement of reverberation times must be in accordance with the methodologies prescribed in ISO 3382, AS/NZS 2460:2002 or ISO 140: Parts 4 and 7.

(ii) Reverberation times must be assessed on the basis of the arithmetic average of spectral analysis results including at least the full octave bands with centre frequencies 500Hz and 1kHz but excluding the full octave bands with centre frequencies less than 125Hz or greater than 5kHz.

(iii) Reverberation times must be assessed on the basis of furnishings and equipment typically located within the Functional Unit.

(iv) Spaces that have less than 6 seats or are less than 48m^3 in volume must be assessed with no more than 2 occupants present during testing.

(v) Spaces that have greater than 6 seats and larger than 48m^3 in volume should be assessed with no more than 2 occupants present during testing and adjusted to represent two thirds occupancy.

(f) (**Speech Intelligibility and Speech Transmissibility Index**)

(i) Compliance with AS1670.4 must be demonstrated for SSISEP System in areas all areas of the Stadium accessible to Stadium Users. Project Co must submit speech intelligibility modelling results (colour contour maps) and speaker locations for approval by the State prior to installation.

(ii) Use IEC60268-16 standardised procedures, STI 1988 (uni-gender) or 2011 (male and female) or equivalent approved.

(iii) Verification of installed performance using the STIPA measure is acceptable.

(iv) All test results should be presented with a statement of the uncertainty of each measurement for a 95% confidence level as defined in the ISO Guide to Measurement Uncertainty (ISO Guide 98).

(g) (**Vibration**)

(i) Vibration levels in terms of acceleration or velocity must be measured in accordance with AS2670 or ISO2631 series.

(ii) Vibration dose values must be assessed in accordance with ISO2631 series or BS6472.1:2008.

(iii) All test results should be presented with a statement of the uncertainty of each measurement for a 95% confidence level as defined in the ISO Guide to Measurement Uncertainty (ISO Guide 98).

(h) (**Schedule of Testing and Commissioning Requirements**)

(i) The following table summarises the Functional Units for which physical testing must be carried out in accordance with Clause E7.2 to demonstrate compliance with the requirements set out in Chapter E7 (Acoustics).

Table 1: Schedule of testing requirements

Room reference / usage	E7 Clause	Extent	Comments
Primary Television Studio, Secondary Television Studio, Radio Commentary Boxes, Written Press Box, Media Interview Room, Production Suites, Coaches' Briefing Rooms, Coaches' Box, Official Statistics Box, Timekeepers' Box, Umpire Observers' Box, Chairman's Club, Coaches' Club, Club Lounges, Function Rooms, Traditional Suites, Social Suites, Field Suites, Field Social Suites, Event Control Room, Main Security Office	Clause E7.3.3(a) Background Sound Levels	100% of rooms	-
	Clause E7.3.3(b) Reverberation Times	For each room usage, at least one representative space / example of each construction arrangement	Refer Clause E7.3.10(d)
	Clause E7.3.5(a) Acoustic separation - Airborne		Assess with all adjacent occupiable spaces
	Clause E7.3.5(a) Acoustic separation – Impact Noise		Assess with tapping machine in all adjacent occupiable spaces
Field Club, Executive Offices, Meeting Rooms	Clause E7.3.3(a) Background Sound Levels	50% of rooms and all operable walls	-
	Clause E7.3.5(a) Acoustic separation - Airborne	For each room usage, at least one representative	Assess with all adjacent occupiable spaces

	Clause E7.3.5(a) Acoustic separation – Impact Noise	space / example of each construction arrangement	Assess with tapping machine in all adjacent occupiable spaces
Seating Bowl including Seating Positions and Terraces	Clause E7.3.8(f)(ii) speech intelligibility, Clause E7.3.8(f)(i) SSISEP coverage	100% of Seating blocks. At least 9 seat locations per block in a 3x3m grid extending to the full height and width of each seating block. 100% of Terraces on a 10x10m grid.	Refer clause E7.3.10(e) Undertake testing with empty seating and correct for two-third crowd occupancy.
	Clause E7.3.8(f)(ii)H automatic level adjustment	Each speaker cluster	Demonstrate capability for function
Interview Zones (Flash Interview Zones and Mixed Zone)	Clause E7.3.3(a) Background Sound Levels	100% of rooms	-
	Clause E7.3.5(a) Acoustic separation – Airborne	For each room usage, at least one representative space / example of each construction arrangement	Assess with all adjacent occupiable spaces
	Clause E7.3.5(a) Acoustic Separation – Impact Noise		Assess with tapping machine in all adjacent occupiable spaces
Conference Rooms, Coaches' Briefing Rooms	Clause E7.3.3(a) Background Sound Levels	100% of rooms including all operable walls	-
	Clause E7.3.3(b) Reverberation Times	100% of rooms	Refer Clause E7.3.10(d)
	Clause E7.3.5(a) Acoustic Separation	100% of rooms	Airborne only. Assess with all adjacent occupiable spaces
Medical Rooms	Clause E7.3.3(a) Background Sound Levels	100% of rooms	Assess with all nearby plant and equipment running only
	Clause E7.3.8(a)(iii) and (iv) - mechanical plant free of annoyance characteristics	100% of rooms	

	Clause E7.3.7(b) Vibration Criteria	100% of rooms	
	Clause E7.3.5(a) Acoustic separation - Airborne	For each room usage, at least one representative space / example of each construction arrangement	Assess with all adjacent occupiable spaces
	Clause E7.3.5(a) Acoustic separation – Impact Noise		Assess with tapping machine in all adjacent occupiable spaces
Doping Control Station	Clause E7.3.3(a) Background Sound Levels	100% of rooms	-
	Clause E7.3.5(a) Acoustic separation - Airborne	For each room usage, at least one representative space / example of each construction arrangement	Airborne only. Assess with all adjacent occupiable spaces
Home Teams' Players' Warm-up Rooms, Away Team Players' Warm-up Room	Clause E7.3.3(a) Background Sound Levels	100% of rooms	-
	Clause E7.3.3(b) Reverberation Times	At least one representative space / example of each construction arrangement	-
	Clause E7.3.5(a) Acoustic separation		Airborne only. Assess with all adjacent occupiable spaces

H7.4.5 Electrical Services

[*Not disclosed*]

H7.4.6 Emergency Power Supply

[*Not disclosed*]

H7.4.7 Lighting Systems

(a) Project Co must inspect and test all lighting and associated equipment in the Stadium and Sports Precinct in accordance with clause H7.2 and any relevant ITPs, including inspection and testing of:

(i) the sports lighting, including all lighting modes and instant restart;

(ii) luminaires and light fittings;

(iii) lighting controls (including scheduled and occupancy sensors and Event modes);

(iv) façade lighting;

(v) restrike facilities;

(vi) emergency and evacuation lighting;

(vii) Seating Bowl lighting;

(viii) daylight dimming controls; and

(ix) IP Network and BMS communication.

(b) Project Co must:

(i) ensure lighting levels are measured by a lighting Accredited Professional (or Practitioner) with a professional calibrated illumination meter. Evidence of calibrations, (current to within 6 months of commissioning) must be provided. The instrument sensitivity must be such that the values being read constitute a significant proportion of the full scale reading.

(ii) provide calculations to demonstrate that the specified illuminance levels will be achieved at the end of 500 hours running of the lamps.

(iii) conduct pre-energisation testing including, as a minimum:

A tightness of screwed and bolted electrical services connections;

B security of termination of conductors within terminals;

C completion of correct compression of crimped connectors and terminal lugs;

D integrity of conductors and insulation adjacent to terminals;

E correct phase connection including phase rotation;

F correct connection of active, neutral and earth conductors to all outlets and permanent connections;

G insulation resistance;

H proper installation of shielding where required;

I compliance with earthing requirements for extraneous metal;

J continuity of earthing;

K proper termination of main neutral, numbering of neutral link ports;

L verification of circuit breaker and fuse ratings. Verification of all adjustable protection settings on circuit breakers and other overload protection devices;

M verification of mechanical services and electrical services interlocks;

N correct operation of all control circuits;

O correct labelling of all outlets; and

P presence of required construction and other warning notices regarding treating the installation as live;

(iv) conduct post-energising testing of, as a minimum:

A correct operation of all switching;

B correct operation of all lighting; and

C correct operation of all controls, indicators and instrumentation.

(c) Project Co must conduct commissioning and testing including:

(i) allowance for this work to be carried out at night and all associated equipment required for this work, including set out of grids and fields;

(ii) luminaires for Pitch and sports lighting, which must be aimed by a telescope or sighting device, clamped to each floodlight in turn and the luminaire aimed directly at a marker on the ground. After aiming, the floodlight's alignment must be checked visually during the day and night by viewing the

degree of flashing of the reflectors and must then be securely locked in position;

(iii) the Pitch and Sports Lighting levels (horizontal and vertical where applicable) must be measured for all planned Events and modes of usage, including:

A local and international television broadcast for AFL Events;

B local and international television broadcast for Cricket Events;

C local and international television broadcast for Soccer Events;

D local and international television broadcast for Rugby Events;

E local and international television broadcast for Athletics Events;

F all non-broadcast Sporting Events;

G Permitted Training for AFL, soccer, NRL and ARU match practice and AFL, football (soccer), ARL and ARU non-body-contact training; cricket training;

H Entertainment Events;

I instant restart mode;

J Precinct Events; and

K Bump-In and Bump-Out for all Events.

(iv) horizontal and vertical lighting levels must be measured and recorded in accordance with AS1680 or AS1158 as applicable, within the all areas of the Stadium and Sports Precinct;

(v) record of measurements must include the following:

A a general description of the lighting installation, including the location;

B the date and time of measurement;

C the type and number of lamps, control gear and luminaires;

D the number of hours the lamps have operated;

E the climatic conditions at the time of measurement;

F the type of measuring instrument, make, serial number, and class;

G the height of measurement points;

H measurement prints and values obtained;

I a record of supply voltage at regular intervals throughout the test period; and

J calculations to determine obtain the average value of the measurement points.

(d) (**Independent commissioning review**) Project Co must engage an independent lighting Accredited Professional (or Practitioner) to review and sign off all commissioning results and measurement records. Commissioning checks may not be independently signed off by the installation contractor.

H7.4.8 Fire Protection Systems

[*Not disclosed*]

H7.4.9 Hydraulic Services

[*Not disclosed*]

H7.4.10 Mechanical Services

[*Not disclosed*]

H7.4.11 Structural Elements

[*Not disclosed*]

H7.4.12 Vertical Transportation

[*Not disclosed*]

H7.4.13 ICT Systems

[*Not disclosed*]

H7.4.14 Building Management System

[*Not disclosed*]

H7.4.15 AV Systems

(a) Project Co must inspect and test each element of the AV Systems for the Stadium and Sports Precinct in accordance with clause H7.2, any manufacturer's recommendations and any relevant ITPs, including inspection and testing of:

(i) sound pressure level testing;

(ii) audio coverage testing;

(iii) PA Systems, including:

A functionality and control;

B hum, cross-talk and noise testing;

C PA System zoning;

D PA System time alignment; and

E operational testing, including sound reinforcement during occupation or event;

(iv) hearing augmentation coverage and clarity testing;

(v) radio microphone frequency interference;

(vi) full bandwidth video distribution cabling;

(vii) full bandwidth audio distribution cabling;

(viii) AV cabling including broadcast cabling;

(ix) sporting siren test;

(x) patch panel connectivity and functionality;

(xi) resolution, format and display capabilities, including brightness and viewing angles on the LED Superscreens;

(xii) resolution, format and display capabilities, including brightness and viewing angles on the LED Signage;

(xiii) resolution, format and display capabilities, including brightness and viewing angles on all Displays (including Supplementary Displays);

(xiv) resolution and format display capabilities on all remaining display screens;

(xv) IPTV and digital signage systems;

(xvi) all content management systems including:

A provision of user templates;

B functionality;

C latency; and

D integration with other systems;

(xvii) head-end and centralised equipment functionality;

(xviii) factory acceptance testing of central AV Systems equipment, including servers, storage (failover of redundant components and links) links, power supplies, servers, load testing and soak testing, coordinated with ICT Systems testing;

(xix) cabinet cooling;

(xx) cabinet equipment layout;

(xxi) general AV systems;

(xxii) video conferencing systems;

(xxiii) operational AV systems;

(xxiv) outside broadcast patching and signal distribution;

(xxv) power isolation and ground loop testing;

(xxvi) power cycle tests; and

(xxvii) all AV control systems and interfaces to other systems such as lighting systems and mechanical services.

(b) Project Co must ensure that all testing of the audio visual system is undertaken by an experienced commissioning representative of the installation company and, where required, under the supervision of an accredited representative of the manufacturer or supplier of the particular item of FF&E.

H7.4.16 Security Systems

[*Not disclosed*]

H7.4.17 Catering Equipment

(a) Project Co must inspect and test the Catering Facilities, including all catering FF&E in accordance with clause H7.2 and any relevant ITPs, including inspection and testing of:

(i) individual items and Project Co FF&E within the Catering Facilities;

(ii) the full capability of the each of the Catering Facilities to meet the specified functionality;

(iii) all beverage systems, including beer reticulation systems;

(iv) all cool rooms and freezers and their interface with the BMS;

(v) accessibility of storage facilities related to the Catering Facilities; and

(vi) Mobile Outlets to demonstrate full functionality in their proposed locations, including connectivity with Engineering Services and other relevant systems.

(b) Project Co must demonstrate that:

(i) service delivery and queuing timeframes are complied with for all Catering Facilities;

(ii) the appropriate temperature for food is maintained at all times within the Stadium, including in accordance with the Quality Standards; and

(iii) Catering Product can be delivered to Patrons and other Stadium Users at the relevant Point of Service at the appropriate temperature and to public health requirements, including relevant Quality Standards and Laws.

H7.4.18 Project Co FF&E

Project Co must inspect and test all Project Co FF&E within the Stadium and Sports Precinct in accordance with clause H7.2 and any relevant ITPs. In carrying out such inspections, Project Co must ensure that each item of Project Co FF&E, including loose Project Co FF&E, is:

(a) correctly located;

(b) unpackaged and clean;

(c) new;

(d) not damaged and not showing any signs of wear and tear;

(e) functioning as intended; and

(f) otherwise in accordance with the Design Requirements and satisfies the FFP Warranty.

H7.4.19 Specialty

(a) Project Co must inspect and test any specialty items within the Stadium and Sports Precinct in accordance with clause H7.2 and any relevant ITPs, including inspection and testing of:

(i) all facilities used by Sporting Teams, Players, Coaches, Match Officials and for compliance with the Sporting Standards;

(ii) the Doping Control Station, for compliance with relevant Quality Standards including the WADA Doping Control Guidelines;

(iii) the suitability of flooring surfaces for AFL and cricket warm-up in the Home Teams' Players' Warm-up Rooms, including compliance with relevant Quality Standards;

(iv) all facilities used by Media Personnel for compliance with relevant Sporting Standards and relevant Quality Standards, including the relevant Free TV Australia Operational Practice - Engineering Guides as published by Free TV Australia Engineering Committee;

(v) all pool, spas and other aquatic systems within recovery facilities, including interfaces with the BMS and compliance with relevant Quality Standards and Laws, including the *Health (Public Buildings) Regulations 1992* (WA);

(vi) Waste Management Facilities, including chutes and accessibility to areas for the Cleaning Services and for waste collection;

(vii) all areas designated for storage of hazardous substances for compliance with relevant Laws, including the *Dangerous Goods Safety Act 2004* (WA) and the associated *Dangerous Goods Safety Regulations 2007* (WA);

(viii) turnstiles and entry systems;

(ix) oil / water separators; and

(x) the Seating Bowl, including the requirements set out in paragraph (b);

(xi) the Pitch, including the requirements set out in paragraph (c);

(b) (**Seating Bowl**)

(i) Project Co must inspect and test the Seating Bowl, including all relevant Project Co FF&E in accordance with clause H7.2 and any relevant ITPs, including inspection and testing of Seating Positions to demonstrate that the Viewing Criteria have been satisfied.

(ii) For the Drop-In Seats, Project Co must demonstrate:

A that both installation and removal of the Drop-In Seats is achievable within the times specified in the Design Specifications and described in clause D7.4.11(f);

B compliance with all Quality Standards and Laws within the times described in clause D7.4.11(f); and

C that the Viewing Criteria for the Seating Positions within the Drop-In Seats have been satisfied.

(c) (**Pitch**)

(i) Project Co must inspect and test the Pitch and associated facilities of the Stadium and Sports Precinct in accordance with clause H7.2 and any relevant ITPs, including inspection and testing of:

A the Pitch irrigation system to demonstrate all elements are free of leaks and that the system otherwise complies with the Design Requirements;

B drainage and infiltration;

C sub-aeration systems where provided;

D the sub-grade, each layer of the profile and the growing medium, as each element is constructed;

E the Turf;

F the Pitch Perimeter and associated facilities;

G the Turf Farm;

H the Nursery;

I the Outdoor Practice Cricket Wickets Area;

J the Drop-In Cricket Wickets;

K the Drop-In Cricket Wicket Transporter;

L the Service Duct and all Serviced Zones including metering and monitoring systems which are installed in the Pitch and associated facilities; and

M all Sporting Equipment, including associated hydraulic or electrical erection systems.

(d) At a minimum, Project Co must provide the Drop-In Cricket Wicket trays at a time during the D&C Phase to allow the Stadium Operator to construct and curate a cricket wicket in each tray before Technical Completion. Prior to Technical Completion, Project Co must demonstrate that the Drop-In Cricket Wicket Transporter can function as intended, including lifting and moving a Drop-In Cricket Wicket.

(e) Project Co must:

(i) ensure that all metal remaining as a result of the construction works is removed from the Pitch prior to Technical Completion;

(ii) carry out metal scanning of the Pitch and provide written confirmation to the State that all metal has been removed; and

(iii) ensure that any product or material that could become a safety risk in respect of the Stadium Activities is removed from the Pitch prior to Technical Completion.

H7.4.20 Integrated Systems Testing

(a) Project Co must carry out integrated systems testing, spanning across all Engineering Services, architecture, acoustics and other disciplines, as required to obtain satisfactory operation of an overall system in accordance with clause H7.2 and any relevant ITPs, including inspection and testing of:

(i) power fail testing demonstrating the correct fail over operation, functionality and interfaces functionality of all systems;

(ii) emergency and fire mode testing demonstrating:

A the correct operation, functionality and interfaces of all systems in each emergency and fire mode; and

B compliance with all emergency egress requirements;

(iii) Event mode testing, demonstrating the correct operation of all systems and building elements for each anticipated Event type; and

(iv) integrated monitoring and control systems, including automated scenarios and controls.

(b) (**Integrated Testing**) Without limiting paragraph (a), Project Co must carry out integrated systems testing, at a minimum, in respect of:

(i) critical operational tests of installations including computer rooms, control rooms, emergency generators, back-up system operation and alarming, essential services systems; and

(ii) Main Security Office and Event Control Room to demonstrate that the rooms are fully functional and fit for purpose, such that the Stadium will be Fit For Purpose.

(c) performance testing of systems or situations that cover more than a single discipline, including energy testing, load tests on mechanical services and boiler systems, failure simulation tests, running of services systems over the unoccupied testing period and integrated AV Systems testing with lighting systems, mechanical services and other systems.

(d) (**Systems are operational**) Integrated systems testing must demonstrate that all systems and interfaces between systems are operating correctly, ensuring the operation of the system as a whole is successful.

(e) (**Phases**) Project Co must carry out integrated systems testing in phases to be agreed with the State.

(f) (**Satisfaction of Independent Certifier**) Each phase must be completed to the satisfaction of the Independent Certifier prior to commencement of the next phase.

(g) (**Artificial loads**) Project Co must provide any artificial loads (including heat and electrical) required for a full load testing.

(h) (**Completed systems**) Integrated systems testing must only be carried out on completed systems.

(i) (**Engineering systems**) During integrated systems testing, the running of engineering systems must be logged and controlled at the building management system

H7.5 COMMERCIAL ACCEPTANCE

(a) Without limiting this Appendix, and in addition to the minimum Technical Completion Tests set out in clause H7.4, Project Co must successfully complete the Commercial Acceptance Tests in accordance with clause H7.2 and any relevant ITPs.

(b) The minimum Commercial Acceptance Tests Project Co must undertake include:

(i) testing of interfaces between Engineering Services and the building fabric with State FF&E;

(ii) air quality tests;

(iii) each of the other tests set out in the approved Commercial Acceptance Plan in respect of Commercial Acceptance; and

(iv) such other tests requested by the State Representative pursuant to the terms of the Agreement.

(c) (**Re-inspection**) Any plant rooms commissioned for construction must undergo a second inspection prior to Technical Completion. Any lifts commissioned as construction lifts during the Commissioning Period must undergo a subsequent lift inspection prior to Commercial Acceptance.

(d) (**Software and firmware**) Unless otherwise approved by the State Representative, Project Co must demonstrate that all software and firmware used on all systems is the latest version available, with all manufacturer's updates fully installed.

(e) (**Alarms**) During the Commissioning Period, Project Co must undertake a review of alarm logs for all systems to check for and then rectify any re-occurring alarms or high false alarms.

(f) (**Scenario Testing**) In accordance with clause 19.2(j) of this Agreement, Project Co must assist the State and the Stadium Operator in undertaking Scenario Testing, including simulation testing of the Stadium and Sports Precinct in all Event and Function modes, including Rectangular Events.

H8 LIGHTING CRITERIA

H8.1 AFL

Table 1: Lighting Criteria for Professional level - Permitted Training (AFL)					
Level of Play	Average Horizontal Illuminace (maintained) Lux	Uniformities		Minimum colour Rendering (Ra)	Maximum glare rating (GR)
		Emin/Emax, U_1	Emin/Eave, U_2		
Non body contact training	100	0.3	0.5	90	50
Match Practice	200	0.4	0.6	90	50

Table 2: Lighting Criteria for Professional level - Non-Televised AFL Events					
Average Horizontal Illuminace (maintained) Lux	Uniformities		Minimum colour Rendering (Ra)	Maximum Uniformity Gradient (UG)	Maximum glare rating (GR)
	Emin/Emax, U_1	Emin/Eave, U_2			
500	0.5	0.7	90	20% per 5 m	50

Table 3: Lighting Criteria for Professional level - International Televised Events										
Calculation and measurements towards:	Vertical illuminance			Horizontal illuminance			Lamp		UG Max	Maximum glare rating (GR)
	Average to camera, Ev LUX	Uniformities		Average at playing field level, Eh LUX	Uniformities		Tk	Minimum colour Rendering (Ra)	Per 5m	
		Emin/Emax, U_1	Emin/Eave, U_2		Emin/Emax, U_1	Emin/Eave, U_2				
Slow motion (fixed) cameras	1800	0.5	0.7	1500-3000	0.8	0.6	5600	90	20%	50
Fixed cameras	1400	0.5	0.7							
Mobile cameras (field Level)	1000	0.3	0.5							

H8.2 SOCCER

Table 4: Lighting Criteria for Professional level - Permitted Training (Soccer)					
Level of Play	Average Horizontal Illuminace (maintained)	Uniformities		Minimum colour Rendering(Ra)	Maximum glare rating (GR)
		Emin/Emax, U_1	Emin/Eave, U_2		
Non body contact training	100	0.3	0.5	90	50
Match Practice	200	0.4	0.6	90	50

Table 5: Lighting Criteria for Professional level Non-Televised Soccer Events					
Average Horizontal Illuminace (maintained) Lux	Uniformities		Minimum colour Rendering(Ra)	Maximum Uniformity Gradient (UG)	Maximum glare rating (GR)
	Emin/Emax, U_1	Emin/Eave, U_2			
750	0.5	0.7	90	20% per 5 m	50

Table 6: Lighting Criteria for Professional level - International Televised Soccer Events										
Calculation and measurements towards:	Vertical illuminance			Horizontal illuminance			Lamp		UG Max	Maximum glare rating (GR)
	Average to camera, Ev LUX	Uniformities		Average at playing field level, Eh LUX	Uniformities		Tk	Minimum colour Rendering (Ra)	Per 5m	
		Emin/Emax, U_1	Emin/Eave, U_2		Emin/Emax, U_1	Emin/Eave, U_2				
Slow motion (fixed) cameras	>2000	0.6	0.7	3500	0.6	0.9	5600	90	20%	50
Fixed cameras	1800	0.4	0.65							
Mobile cameras (field Level)	1400	0.35	0.6							

H8.3 RUGBY

Table 10: Lighting Criteria for Professional level - Permitted Training (Rugby)					
Level of Play	Average Horizontal Illuminace (maintained)	Uniformities		Minimum colour Rendering(Ra)	Maximum glare rating (GR)
		Emin/Emax, U_1	Emin/Eave, U_2		
Non body contact training	100	0.3	0.5	90	50
Match Practice	200	0.4	0.6	90	50

Table 11: Lighting Criteria for Professional level Non-Televised Rugby Events					
Average Horizontal Illuminace (maintained) Lux	Uniformities		Minimum colour Rendering(Ra)	Maximum Uniformity Gradient (UG)	Maximum glare rating (GR)
	Emin/Emax, U_1	Emin/Eave, U_2			
500	0.5	0.7	90	20% per 5 m	50

Table 12: Lighting Criteria for Professional level - International Televised Rugby Events										
Calculation and measurements towards:	Vertical illuminance			Horizontal illuminance			Lamp		UG Max	Maximum glare rating (GR)
	Average to camera, Ev LUX	Uniformities		Average at playing field level, Eh LUX	Uniformities		Tk	Minimum colour Rendering (Ra)	Per 5m	
		Emin/Emax, U_1	Emin/Eave, U_2		Emin/Emax, U_1	Emin/Eave, U_2				
Slow motion (fixed) cameras	1800	0.5	0.7	1500-3000	0.8	0.6	5600	90	20%	50
Fixed cameras	1400	0.5	0.7							
Mobile cameras (field Level)	1000	0.3	0.5							

H8.4 CRICKET

Table 7: Lighting Criteria for Professional level - Permitted Training (Cricket)					
Level of Play	Average Horizontal Illuminace (maintained)	Uniformities		Minimum colour Rendering(Ra)	Maximum glare rating (GR)
		Emin/Emax, U_1	Emin/Eave, U_2		
Non body contact training	100	0.3	0.5	90	50
Match Practice	200	0.4	0.6	90	50

Table 8: Lighting Criteria for Non-Televised Cricket Events										
Class	Square			Outfield			Lamp		UG Max	Maximum glare rating (GR)
	Average to camera, Ev LUX	Uniformities		Average at playing field level, Eh LUX	Uniformities		Tk	Minimum colour Rendering(Ra)	Per 5m	
		Emin/Emax, U_1	Emin/Eave, U_2		Emin/Emax, U_1	Emin/Eave, U_2				
i	750	0.5	0.7	500	0.5	0.4	5600	90	20%	50
ii	500	0.5	0.7	300	0.5	0.4				
iii	300	0.5	0.5	200	1.3	0.3				

Table 9: Lighting Criteria for Professional level - International Televised Cricket Events										
Calculation and measurements towards:	Vertical illuminance			Horizontal illuminance			Lamp		UG Max	Maximum glare rating (GR)
	Average to camera, Ev LUX	Uniformities		Average at playing field level, Eh LUX	Uniformities		Tk	Minimum colour Rendering(Ra)	Per 5m	
		Emin/Emax, U_1	Emin/Eave, U_2		Emin/Emax, U_1	Emin/Eave, U_2				
Crease	2500	0.7	0.8	1500-3000	0.8	0.6	5600	90	20%	40
Inner Circle	1800	0.5	0.7							
Outfield	1200	0.5	0.7							
Mobile cameras (field Level)	1000	0.3	0.5							

H8.5 ATHLETICS

Table 13 : Lighting Criteria for Professional level Non-Televised Athletics Events

Activity Level	Average Horizontal Illuminace (maintained) Lux	Uniformities		Minimum colour Rendering(Ra)	Maximum Uniformity Gradient (UG)	Maximum glare rating (GR)
		Emin/Emax, U_1	Emin/Eave, U_2			
Recreational and Training	75	0.3	0.5	90	20% per 5 m	50
Club Competitions	20	0.4	0.6	90	20% per 5 m	50
Match Practice	500	0.5	0.7	90	20% per 5 m	50

Table 14: Lighting Criteria for Professional level - National and International Televised Athletics Events

Activity Level	Activity Level	Vertical illuminance			Horizontal illuminance			Lamp		UG Max	Maximum glare rating (GR)
		Average to camera, Ev LUX	Uniformities		Average at playing field level, Eh LUX	Uniformities		Tk	Minimum colour Rendering(Ra)	Per 5m	
			Emin/Emax, U_1	Emin/Eave, U_2		Emin/Emax, U_1	Emin/Eave, U_2				
National and International	Fixed cameras	1000	0.4	0.6	1500-3000	0.8	0.6	5600	90	20%	50
Fixed cameras	Slow motion Camera	1800	0.5	0.7							
	Fixed cameras	1400	0.5	0.7							
	Mobile cameras	1000	0.3	0.5							
	Photo Finish camara	1400	0.9	0.9							

H9 DESIGN DEPARTURES SCHEDULE

[*NOT DISCLOSED*]