



# MADORA BAY NORTH Local Structure Plan

Part One - Implementation Report

MAY 2023

CLE Town Planning + Design

SeASide



Title: Madora Bay North Local Structure Plan  
Part One | Implementation Report

Prepared for: Satterley Property Group

CLE Reference: 962Rep227B

Date: 31 May 2023

Status: Final

Review date: 31 May 2023

Prepared by: CLE Town Planning + Design

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**Endorsement Page**

This structure plan is prepared under the provisions of the City of Mandurah Town Planning Scheme No. 3 (incorporating the Schedule 2 'Deemed Provisions for Local Planning Schemes' of the *Planning and Development (Local Planning Schemes) Regulations 2015*).

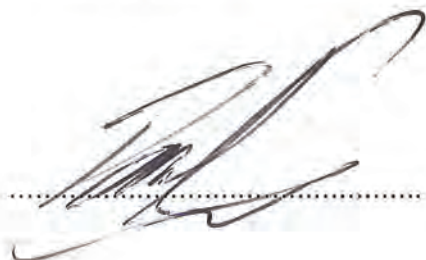
IT IS CERTIFIED THAT THE MADORA BAY NORTH LOCAL STRUCTURE PLAN WAS ADOPTED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

.....22 MARCH 2016.....

Signed for and on behalf of the Western Australian Planning Commission

..........

an officer of the Commission duly authorised by the Commission pursuant to section 16 of the Planning and Development Act 2005 for that purpose, in the presence of:

..........

Witness

..........

Date

.....22 MARCH 2026..... Date of Expiry

Table of Amendments

AMENDMENT NO.	DESCRIPTION OF AMENDMENT	DATE APPROVED BY WAPC
1	Reconfigure the Local Centre zone and central public open space in response to design concepts progressed for the Coastal Node.  Introduce reference to City of Mandurah Local Planning Policy No. 1.  Make changes in Part 1 to reflect the adoption of City of Mandurah Local Planning Scheme No.12 (2022) and the Structure Plan Framework (2015).	05 September 2023

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## EXECUTIVE SUMMARY

This structure plan provides a comprehensive planning framework for the subdivision and development of the 'Seaside' residential estate being developed by the Satterley Property Group. It is prepared pursuant to the Deemed Provisions in the *Planning and Development (Local Planning Schemes) Regulations 2015* (as amended) and City of Mandurah Local Planning Scheme No. 12.

The proposed structure plan facilitates residential development of the site as anticipated by sub-regional structure plans for the area. The plan has been formulated with reference to an extensive body of research into its attributes, opportunities and constraints, and so effectively manages considerations such as visual impact, environmental impact, responsible water management and civil engineering. The plan provides for a high-quality development with exceptional access to the beach, in close proximity to Mandurah, and the opportunities it and the surrounding region offers. It also gives careful consideration to the effective integration of the proposed residential development with the existing residential communities of Madora Bay and Singleton.

Extensive consultation with representatives from the City of Mandurah and the Department of Planning, as well as other government departments such as Main Roads WA, the Department of Education, and the Water Corporation has greatly assisted in the formation of the structure plan.

Part 2 of the structure plan demonstrates how it responds to the strategic and statutory planning framework, and site attributes and context, to facilitate site-responsive development of a fully integrated urban community. The plan is informed by detailed technical analysis of environmental attributes, civil engineering considerations, traffic planning, landscape and visual impact issues, coastal management and integrated water management to achieve high quality urban design.

Basic data for the structure plan area is provided in Table 1 below.

Table 1: Summary Table

ITEM	DATE	STRUCTURE PLAN REF.
Structure Plan area (ha)	142.64ha	Part 1, s. 1 Structure Plan Map
Area of each land use proposed (ha)	Residential: 68.6ha Local Centre: 1.4ha	Part 2, s.5 Structure Plan Map
Estimated lot yield	1600 - 1700	Part 2, s.5
Estimated dwelling yield	1650 - 1750	Part 2, s.5
Estimated dwelling density	24 dwellings per site hectare	Part 2, s.5
Estimated population	Approximately 4300	Part 2, s.5
Number of secondary schools	Nil	Part 2, s.5
Number of primary schools	One	Part 2, s.5
Estimated commercial floorspace (Net Lettable Area)	Up to 2500sqm	Part 2, s.5
Open space (ha)	13.3ha	Part 2, s.5

# Table of contents

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<b>1.0</b>	<b>STRUCTURE PLAN AREA</b>
<b>2.0</b>	<b>STRUCTURE PLAN CONTENT</b>
<b>3.0</b>	<b>STRUCTURE PLAN OPERATION</b>
<b>4.0</b>	<b>STAGING</b>
<b>5.0</b>	<b>SUBDIVISION AND DEVELOPMENT REQUIREMENTS</b>
5.1	Zones and Reserves
5.2	Residential Zone
5.3	Local Centre Zone
5.4	Public Open Space
<b>6.0</b>	<b>LOCAL DEVELOPMENT PLANS</b>
<b>7.0</b>	<b>ADDITIONAL INFORMATION</b>

## Plans

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Plan A      Madora Bay North Local Structure Plan Map

## 1.0 STRUCTURE PLAN AREA

This structure plan applies to Lot 101 Mandurah Road, Madora Bay, being the land within the line identified as the 'Structure Plan Boundary' on Plan A: Madora Bay North Local Structure Plan ('the structure plan map').

## 2.0 STRUCTURE PLAN CONTENT

This structure plan consists of:

- Part One – Implementation (as amended) (this section);
- Part Two – Explanatory Section; and
- Appendices – Technical reports supporting the structure plan, and planning reports supporting the amendments to the structure plan.

Part One of the structure plan comprises the structure plan map and planning provisions. Part Two and all Appendices are references provided to guide the interpretation and implementation of Part One.

## 3.0 STRUCTURE PLAN OPERATION

This structure plan is prepared in accordance with Part 4 of Schedule 2 (Deemed Provisions) in the *Planning and Development (Local Planning Schemes) Regulations 2015* ('the Regulations'). It is a Local Structure Plan fulfilling the requirements of City of Mandurah Local Planning Scheme No. 12 ('LPS 12') for the applicable 'Urban Development' zone.

The Regulations require decision-makers to have due regard for the provisions of this structure plan, which takes effect on the date on which it is approved by the Western Australian Planning Commission ('WAPC').

Unless otherwise specified by this Part, all words and expressions used in this structure plan have the same meaning as the same words and expressions in the Regulations and LPS 12.

## 4.0 STAGING

Subdivision and development of land within the structure plan area has commenced from the south-eastern part of the site and will proceed generally in a westward direction. Future staging will be influenced by, *inter alia*:

- Provision of a Wastewater Pump Station ('WWPS') near the Coastal Node to service the portion of the structure plan area that does not connect into the established Lakelands WWPS.
- Provision of a new intersection on Mandurah Road at the location shown on the structure plan map, connecting into the under-construction Everest Parkway intersection.

Specific timing for these and other aspects will be confirmed at the subdivision stage.

## 5.0 SUBDIVISION AND DEVELOPMENT REQUIREMENTS

### 5.1 Zones and Reserves

Subdivision and development of land within the structure plan area should be generally in accordance with the structure plan and the corresponding zone or reserve under LPS 12.

### 5.2 Residential Zone

- a. Residential subdivision and development should accord with the requirements for the Residential Density Code specified by the structure plan map.
- b. The City of Mandurah Local Planning Policy No. 1: Residential Design Codes Policy ('LPP 1') sets out acceptable variations to the deemed-to-comply provisions of the R-Codes for lots coded R25-R60. Except to the extent of any inconsistency with an approved Local Development Plan ('LDP'), LPP 1 applies within the structure plan area.

### 5.3 Local Centre Zone

- a. Land use permissibility for the Local Centre zone is as per Table 3 of LPS 12.
- b. The Net Lettable Area of retail floorspace within the zone shall be in accordance with the City of Mandurah Activity Centres Strategy.
- c. A residential density code of R60 applies within the zone.
- d. The development of the zone should be in accordance with approved Local Development Plans. These should be based on 'main street' design principles promoting development to be built up to or close to the street, providing good surveillance of the primary street/s with coordinated parking areas located at the rear.

### 5.4 Public Open Space

A minimum of 10 percent public open space is to be provided in accordance with *Liveable Neighbourhoods*. Public open space is to be provided generally in accordance with the structure plan map. An updated public open space schedule should be provided at the subdivision stage for assessment by the City and the WAPC.



## 6.0 LOCAL DEVELOPMENT PLANS

At the subdivision stage, the City of Mandurah may request that the WAPC impose a condition/s of approval requiring LDPs to be prepared, submission and approval, in accordance with Part 6 of the Regulations, for lots that:

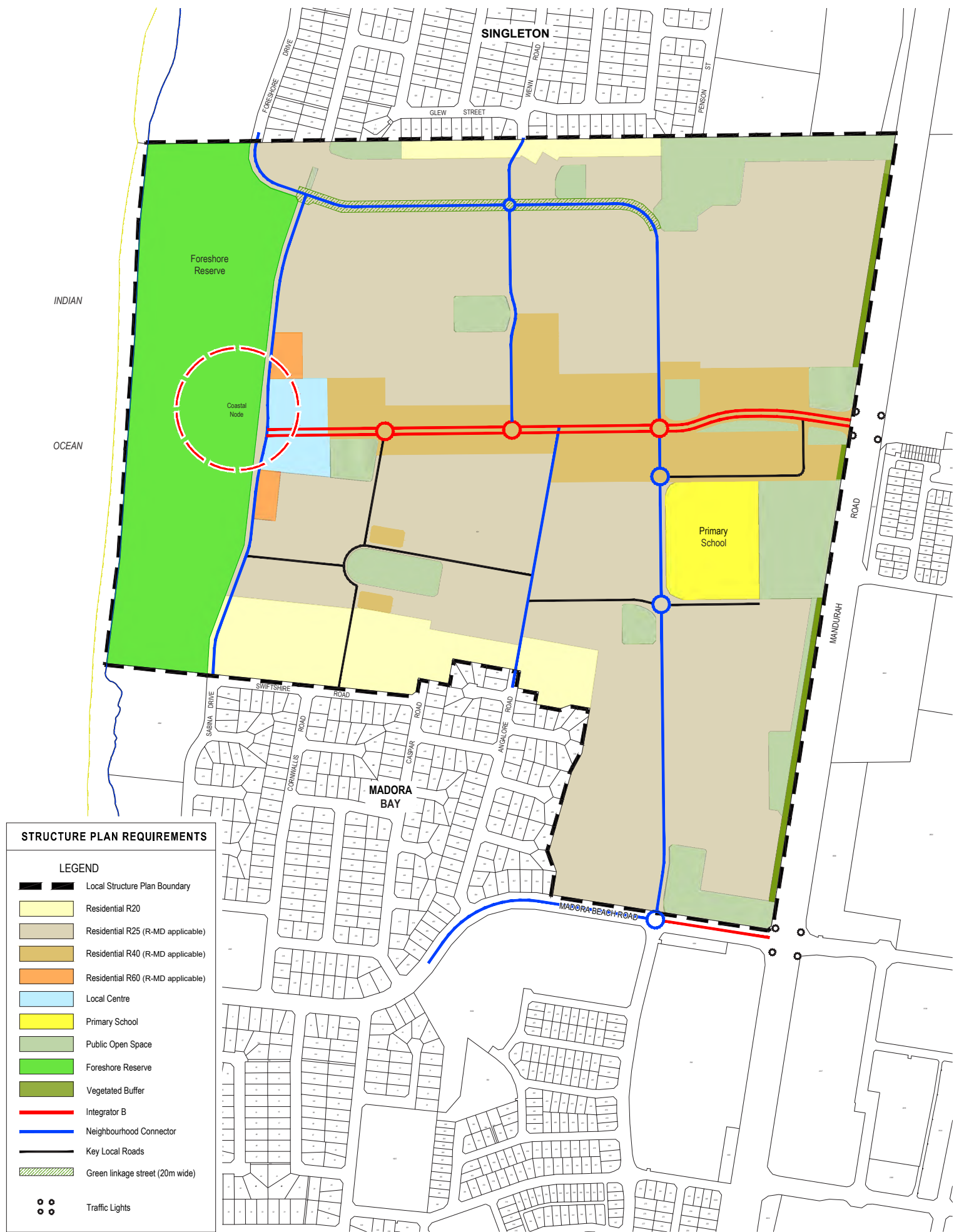
- a. Are rear-loaded (take vehicle access from a laneway);
- b. Abut POS;
- c. Require site-specific R-Code variations;
- d. Require a designated crossover location due to an access constraint, where the crossover location cannot be managed through an engineering approval;
- e. Are zoned Local Centre. Provisions addressing built form, access and parking will be required;
- f. Require application of 'Quiet House' design features as recommended by a Transport Noise Assessment;
- g. Are immediately adjacent to existing residential lots in Singleton: to address site levels and boundary fencing to existing abutting lots; or
- h. Are immediately adjacent to existing residential lots in Madora, east of Angalore Road: to address site levels and boundary fencing to existing abutting lots.

Local Development Plans required for lots abutting an existing residential lot outside of the structure plan area will be advertised to the relevant landowner/s through direct written correspondence in accordance with the Regulations.

## 7.0 ADDITIONAL INFORMATION

At the subdivision stage, the WAPC may require and/or impose a condition/s of approval requiring the preparation, submission and approval of the following technical reports:

- a. Foreshore Management Plan;
- b. Environmental Management Plan;
- c. Urban Water Management Plan;
- d. Public Open Space Schedule;
- e. Landscape plan for the planting and treatment of the 'green linkage street';
- f. Local Traffic Management Plan providing details of any safety improvements and traffic calming to existing roads that provide direct through connection into the structure plan area that may be required to accommodate the additional traffic generated by the structure plan, with reference to an approved Transport Impact Assessment;
- g. Design and construction of the intersection of the 'Integrator B' road with Mandurah Road to the satisfaction of the WAPC, in consultation with Main Roads WA and the City of Mandurah;
- h. Design and construction of the upgrade to the intersection of Madora Beach Road and Mandurah Road to the satisfaction of the WAPC, in consultation with Main Roads WA and the City of Mandurah; and
- i. Uniform fencing and/or a noise attenuation wall, with reference to an approved Transportation Noise Assessment.



**STRUCTURE PLAN REQUIREMENTS**

**LEGEND**

- Local Structure Plan Boundary
- Residential R20
- Residential R25 (R-MD applicable)
- Residential R40 (R-MD applicable)
- Residential R60 (R-MD applicable)
- Local Centre
- Primary School
- Public Open Space
- Foreshore Reserve
- Vegetated Buffer
- Integrator B
- Neighbourhood Connector
- Key Local Roads
- Green linkage street (20m wide)
- Traffic Lights





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# MADORA BAY NORTH Local Structure Plan

APPENDIX 10  
Explanatory Report for Amendment 1,  
with Attachments

JUNE 2023

CLE Town Planning + Design

SeASide



Title: Madora Bay North Local Structure Plan  
Part Two | Explanatory Report for Amendment 1, with Attachments

Prepared for: Satterley Property Group

CLE Reference: 962Rep228A

Date: 8 June 2023

Status: Final

Review date: 8 June 2023

Prepared by: CLE Town Planning + Design

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# Table of contents

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1.0	PURPOSE OF AMENDMENT
2.0	BACKGROUND
3.0	PROPOSED POS REDISTRIBUTION
4.0	FORESHORE MANAGEMENT PLAN
5.0	LOCAL WATER MANAGEMENT STRATEGY
6.0	BUSHFIRE HAZARD MANAGEMENT
7.0	CONCLUSION

# Attachments

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Attachment 1	Development Concept Plan
Attachment 2	Public Open Space Plan and Schedule
Attachment 3	Landscape Master Plan (Plan E)
Attachment 4	Coastal Node Concept Plan from Foreshore Management Plan (Plan E)
Attachment 5	Local Water Management Strategy - Technical Note (Hyd2o)
Attachment 6	Bushfire Management Plan (Strategen-JBS&G)

## 1.0 PURPOSE OF AMENDMENT

The primary purpose of Amendment 1 is to redistribute some of the public open space ('POS') in the western and north-western parts of the structure plan area, to improve the accessibility of various POS types for future residents. Amendment 1 is being progressed concurrently with a Foreshore Management Plan, and the two are related in terms of outcomes.

The opportunity is also being taken to:

- Introduce a reference to the City of Mandurah Local Planning Policy No. 1: Residential Design Codes Policy ('LPP 1') to enable implementation of the R-MD Codes; and
- Refresh the format and content of the structure plan to accord with contemporary planning policies and practices, and recent subdivision approvals issued for the structure plan area.

Approval of the amendment will facilitate the progression of design and development for the proposed Coastal Node and urban development within the north-western quarter of the structure plan area.

## 2.0 BACKGROUND

The structure plan was approved by the WAPC in March 2016 and covers one parent lot (Lot 101 Madora Beach Road, Madora Bay) in its entirety. The approval was obtained by CLE for the previous owner of Lot 101, H&N Perry, and one subdivision approval (WAPC Ref. 155645) was subsequently issued to that owner.

In March 2020, Lot 101 transferred in ownership to the Satterley Property Group, which is developing the 'Seaside' estate on the site. Four subdivision approvals (WAPC Refs. 159127, 159342, 160214 and 160476) have been issued to Satterley since then and a fifth, for the north-eastern quarter of the structure plan area, is in preparation (as at October 2021). The applications lodged to date cover land generally outside of the north-western quarter of Lot 101.

Within the north-western quarter of Lot 101, the key proposals of the structure plan are:

- A coastal node within the foreshore reserve (reserved under the Peel Region Scheme for 'Parks and Recreation');
- A land parcel zoned 'Commercial' and intended to accommodate a Local Centre; and
- An array of small- to medium-sized POSs and a 'green linkage' street, the collective purpose of which is to provide local residents with convenient access to local parks that complement, in function, the larger, district-scale recreational spaces provided within the foreshore reserve.

A Foreshore Management Plan for the foreshore reserve was recently lodged with the City of Mandurah by Strategen-JBS&G (refer to Attachment 4 for an extract). Among other things, a substantial open green space for informal active recreation and public events is proposed. This justifies reconsideration of the 5ha rectangular POS located on the landward side of the foreshore road, which is the primary purpose of this amendment.

### 3.0 PROPOSED POS REDISTRIBUTION

If retained, the above-mentioned rectangular POS, combined with the open space within the coastal node, would result in a significant proportion of the POS provided for Seaside being concentrated in the central-western part of the site. The existing structure plan has been deemed to be generally compliant with *Liveable Neighbourhoods* by virtue of its approval by the WAPC, and there is an acceptable degree of POS accessibility for all residents across the future estate. However, Satterley considers that this can be improved, and preliminary discussions with the City of Mandurah indicate that there is some scope to amend the structure plan with this outcome in mind.

The existing and proposed POS networks are shown at Attachment 2, including a breakdown of POS sizes and the creditable POS calculation. The following comments apply in this respect:

- The Local Centre has been reconfigured to maximise its frontage and opportunities for interaction with the Coastal Node. Its status and floorspace are not proposed to change relative to the existing structure plan.
- To enable the Local Centre to be reconfigured and to reflect the provision of open space within the Coastal Node, POS 'B' is proposed to be reduced in size and relocated in a north-easterly direction, improving POS accessibility for local residents.
- POS 'A' has been reduced in size. Provision of POS against side boundaries (as is the case for POS 'A' where it abuts lots in Singleton) is unusual, however, POS 'A' is not recommended for deletion because it assists to manage, visually, the interface between Seaside and Singleton.
- POSs G and H have been amalgamated into one consolidated, more useable POS labelled 'G', consistent with the subdivision plan lodged under WAPC Ref. 160476. The POS 'H' designation has been repurposed for the POS approved under WAPC Ref. 160214.
- The primary school has been relocated northward into the location approved under WAPC Ref. 160214, with associated changes made to POSs 'I' and 'K'.
- New POSs, 'M' and 'N' have been created to facilitate, respectively, an entry statement and a local park providing a green outlook for a future row of townhouses and accommodate the wastewater pump station required to service most of the Seaside estate outside of the area covered by WAPC Ref. 159127.

The above-mentioned POS changes result are mostly approved already through existing subdivision approvals. Collectively, the changes deliver a creditable POS total of 12.45 hectares, or 10.8% of the gross subdivisible area of the structure plan area. This is compliant with the 10% required under *Liveable Neighbourhoods*. A copy of the POS Schedule appears at Attachment 2 of this report.



### 4.0 FORESHORE MANAGEMENT PLAN

As stated above, this structure plan amendment has been prepared in parallel with that of a Foreshore Management Plan ('FMP') for the 'Parks and Recreation' reserve along the coast. Key parameters for the FMP were investigated comprehensively through the original structure plan and remain valid. The most noteworthy site factor is the presence of quandong trees, which are culturally significant for the local Aboriginal people. The Coastal Node location shown on the existing structure plan avoids these, and no change to the location is proposed.

Preparatory work for the Foreshore Management Plan, which has the Coastal Node as its centrepiece, has involved extensive engagement with the City of Mandurah and background research. This included consideration of the characteristics of good coastal node development in Florida, South Australia and elsewhere in Western Australia, and a site tour of the Amberton Beach, Shorehaven and Eden Beach coastal nodes was conducted in February 2021. These case study exercises revealed the following common characteristics, regardless of the scale of the place:

- The node is located at the termination of a major access street;
- A foreshore access road provides a hard edge to the foreshore. This serves a number of purposes including:
  - Providing access to carparking within the foreshore;
  - Providing a road interface for development overlooking the foreshore and the ocean;
  - Bushfire hazard separation.
- The adjacent street block network has streets that run perpendicular to the foreshore in order to provide terminating view lines to the ocean;
- There are visual cues to the beachfront through signage / landscaping / structures;
- Commercial and retail uses are at the core of the node;
- Higher-density residential is located within a short walk of the beach access and the commercial / retail node;
- Car parking is located on the periphery of the node, and traffic calming is implemented through piazzas and other paving techniques. This fosters a pedestrian-friendly environment;
- There is space to accommodate events, markets, food vans and the like.

The Coastal Node concept shown at Attachment 4 is guided by these learnings, and features:

- Two open spaces, providing options for large and small events;
- Peripheral car-parking areas, drawing vehicles away from the heart of the Coastal Node and supporting a pedestrian-friendly environment;
- Hardscaped areas terracing down from the foreshore road, creating a transition from the urban-feeling Local Centre to the natural greenery of the foreshore;
- Provision for a surf lifesaving club close to the ocean, responding to a recommendation of the Mandurah North District Structure Plan;

- A mix of formal (sealed) and less formal (limestone) tracks to and through the foreshore reserve, similar to the examples at Eden Beach.
- A tight cluster of commercial buildings at the heart of the Coastal Node, maximising opportunities for synergies with users of the foreshore (and other patrons);
- Active, permeable frontages to all commercial buildings east of the foreshore road, fostering a human-scaled, pedestrian-oriented Local Centre;
- Opportunities for medium-density residential development (up to the R60 density), which is likely to comprise rear-loaded townhouses and potentially small mainsonettes, along with traditional freehold product further afield.
- Provision for the above-mentioned wastewater pump station in POS 'N'.

The foreshore components of the Coastal Node concept are detailed fully in the Foreshore Management Plan lodged recently by Strategen-JBS&G. Detail on built form within the Local Centre will be provided in Local Development Plan/s prepared pursuant to conditions of subdivision approval, as provided in Section 6 of Part 1 of this structure plan.

## 5.0 LOCAL WATER MANAGEMENT STRATEGY

The POS network proposed in this structure plan amendment has been designed to offer a range of local recreational opportunities to residents and also accommodate stormwater detention basins. This aspect of the design has been informed by an Addendum (Hyd2o, October 2021; 'the Addendum', refer to Attachment 5) to the approval Local Water Management Strategy. The purpose of the Addendum is to, by its own description, "*review and refine the overall stormwater management strategy and stormwater modelling across the LSP area*" and "*guide subdivision planning and the development of Urban Water Management Plans (UWMPs)*". It should be read in conjunction with the approved LWMS that forms part of the original structure plan, which remains valid for all matters not covered by the Addendum.

The Addendum confirms that stormwater management will be undertaken consistent with the Water Sensitive Urban Design principles advocated by the Department of Water and Environmental Regulation. The drainage network will comprise lot soakwells, underground storages within road reserves, and ephemeral bioretention swales within POS for water quality treatment and infiltration. One-year Average Recurrence Interval ('ARI') events are proposed to be infiltrated close to source, with no specific basin allowance for such events. The drainage basins shown in the Addendum are for five-year ARI events and above, with is reflected in the POS Schedule included at Attachment 2. These constitute Restricted POS as required by *Liveable Neighbourhoods*.

### 6.0 BUSHFIRE HAZARD MANAGEMENT

The majority of the structure plan area is identified in the bushfire hazard mapping maintained by the Department of Fire and Emergency Services as being bushfire-prone. As such, State Planning Policy 3.7: Planning for Bushfire-Prone Areas ('SPP 3.7') applies. In accordance with SPP 3.7, recent subdivision applications lodged over land within the structure plan area (listed in Section 2.0) have included Bushfire Management Plans incorporating BAL Contour Plans. In addition, this structure plan amendment is accompanied by a Bushfire Management Plan (Strategen-JBS&G, October 2021; 'the BMP', refer to Attachment 6) covering the areas that have not yet been covered by a subdivision approval.

The BMP has been informed by, among other things, the Public Open Space Master Plan that appears at Attachment 3, and assesses off-site hazards as required by SPP 3.7. It concludes that there are no bushfire hazards applicable to the site that cannot be managed in accordance with SPP 3.7 at the subdivision stage. Most of the structure plan amendment area is concluded to have a bushfire hazard level ('BHL') of 'Low', whilst a BHL of 'Moderate' applies to land adjacent to the foreshore reserve, Mandurah Road and the north-eastern POS. The hazard posed by the north-eastern POS is acceptable in the context of SPP 3.7, however, the project team intends to investigate opportunities to reduce the hazard it poses through the final landscape design. Development planned to the east of Mandurah Road will, in time, remove the 'Moderate' BHL that applies to land in that area, and the Coastal Node component of the foreshore reserve may reduce the BHL applicable to adjacent land. These matters will be investigated further at the subdivision stage in the context that there have been no insurmountable issues identified at the structure plan stage. BAL ratings for individual lots will be confirmed at the subdivision stage ahead of final certification prior to the issue of titles. These steps will be taken in accordance with SPP 3.7 in the normal manner.

### 7.0 CONCLUSION

Progression of this amendment to the Madora Bay North Local Structure Plan will facilitate subdivision and development of the north-western portion of the 'Seaside' estate and the Coastal Node. The latter will provide a centrepiece for the estate and cater for district-level demand for beach facilities and access, complementing other coastal nodes in the Rockingham to Mandurah coastal corridor. The associated POS refinements are logical actions that support the equitable distribution of public space for all future residents.

# Attachments

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- Attachment 1 Development Concept Plan
- Attachment 2 Public Open Space Plan and Schedule
- Attachment 3 Landscape Master Plan (Plan E)
- Attachment 4 Coastal Node Concept Plan from Foreshore Management Plan (Plan E)
- Attachment 5 Local Water Management Strategy - Technical Note (Hyd2o)
- Attachment 6 Bushfire Management Plan (Strategen-JBS&G)

# Attachment 1

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Development Concept Plan

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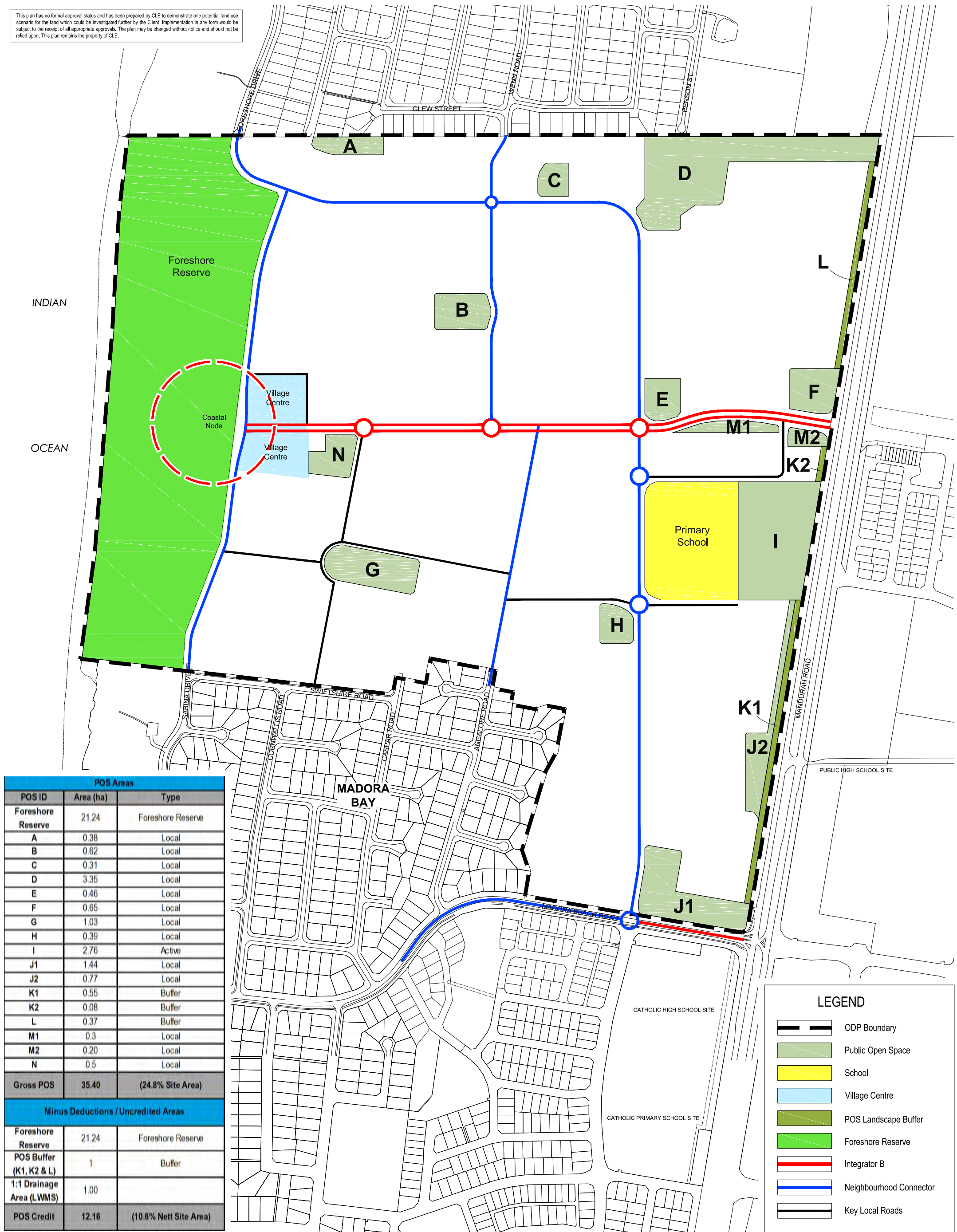
All proposals and designs outside Phase 1 are subject to review and approval.

# Attachment 2

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Public Open Space Plan and Schedule

This plan has no formal approval status and has been prepared by CLE to demonstrate one potential land use scenario for the land which could be investigated further by the Client. Implementation in any form would be subject to the receipt of all appropriate approvals. The plan may be changed without notice and should not be relied upon. This plan remains the property of CLE.





Public Open Space (POS) Schedule  
**Lot 101 Mandurah Road, Madora Bay**

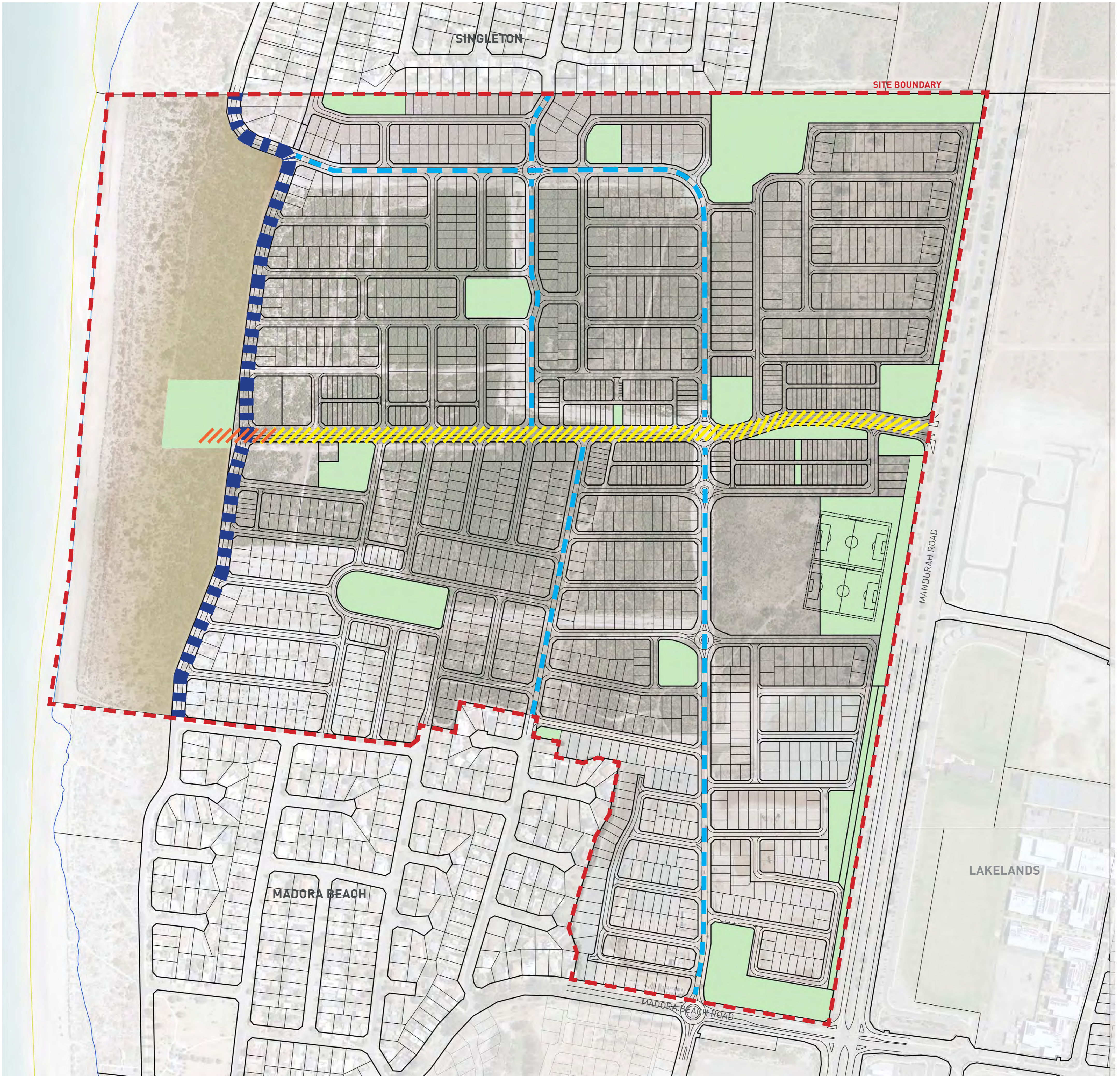
Public Open Space Schedule (all areas are in hectares)		
<b>Site Area</b>		<b>142.7</b>
<b>Existing Deductions</b>		
PRS Parks and Recreation (foreshore) reserve	21.20	
Total existing deductions	21.20	
Net Site Area		121.5
<b>Structure Plan and Subdivision Deductions</b>		
Village Centre	1.00	
Primary School	3.50	
POS Buffer (POS K1, K2 & L)	1.00	
1:1 Drainage within POS	0.72	
Restricted Open Space Surplus	0.00	
Total Structure Plan Deductions	6.22	
<b>Gross Subdivisible Area</b>		<b>115.28</b>
POS @ 10%		11.53
<b>Public Open Space Requirement</b>		
May Comprise:		
Min 8% unrestricted POS	9.22	
Max 2% restricted POS	2.31	
<b>TOTAL POS REQUIRED</b>		<b>11.53</b>
<b>Public Open Space Provided</b>	<b>Unrestricted POS Area</b>	<b>Restricted POS Area</b>
POS A (drainage P)	0.34	0.04
POS B (drainage M)	0.28	0.34
POS C (drainage R)	0.29	0.02
POS D (drainage Q)	3.33	0.02
POS E (no drainage)	0.41	0.05
POS F (drainage G)	0.47	0.18
POS G (drainage J and H)	0.81	0.22
POS H (no drainage)	0.39	0.00
POS I (drainage D)	2.55	0.04
POS J1 (drainage B and C)	0.84	0.26
POS J2 (drainage A)	0.43	0.14
POS M1 (drainage E)	0.24	0.06
POS M2 (no drainage)	0.20	0.00
POS N (drainage L)	0.31	0.19
<b>TOTAL (ha)</b>	<b>10.90</b>	<b>1.55</b>
<b>Additional Deductions</b>		
Restricted Open Space Surplus		0.00
<b>Revised Public Open Space Contribution</b>		
Min 8% unrestricted POS provided	10.90	9.5%
Max 2% restricted POS provided	1.55	1.3%
<b>Total Creditable POS Provided</b>	<b>12.45</b>	<b>10.8%</b>

- In accordance with Liveable Neighbourhoods: the area subject to inundation more frequently than a one year average recurrence interval rainfall event is not included as restricted or unrestricted open space and is a deduction from the net site area (LN R33); areas for the detention of stormwater for a greater than one year average recurrence interval up to the five year recurrence interval is restricted open space up to 20%, the area greater than 20% is a deduction (not applicable in this case) (LN R26 & Table 11); areas for the detention of stormwater for a greater than five year average recurrence interval is within unrestricted open space (LN R25).
- This Schedule is for plan CLE Refs. 962-213F-01. It is informed by the LWMS by Hyd2o approved as part of the LSP and for Phase 1-3 drainage and the technical note dated 12 October 2021 for Phase 4 onward.

# Attachment 3

---

Landscape Master Plan (Plan E)



LEGEND

- COASTAL DRIVE**
- NORTH - SOUTH COASTAL CONNECTION
  - DUAL USE PATH TO ONE VERGE WITH FOOTPATH ON THE OPPOSITE VERGE
  - LOW COASTAL PLANTED VERGE TREATMENT
  - STREET TREES TO BOTH SIDES
  - VERGES IRRIGATED WITH WATER CART/TRUCK & RESIDENTIAL LOT MAINS WATER SUPPLY
  - FULLY IRRIGATED VERGE ADJACENT FORESHORE PARK

- ENTRY BOULEVARD**
- EAST - WEST CENTRAL CONNECTION & MAIN SEASIDE ENTRY ROAD
  - DUAL USE PATH TO ONE VERGE WITH FOOTPATH ON OPPOSITE VERGE
  - VERGE & TREE IRRIGATED WITH WATER CART/TRUCK & RESIDENTIAL LOT MAINS WATER SUPPLY
  - PLANTED MEDIAN TREATMENT
  - STREET TREES TO VERGE & MEDIAN
  - MEDIAN PLANTING FULLY IRRIGATED WITH BORE WATER SUPPLY

- LOCAL STREETS**
- TURF & MULCH VERGE TREATMENT
  - 1 STREET TREE PER LOT
  - TURF VERGE & TREE PLANTING IRRIGATED WITH WATER CART/TRUCK & RESIDENTIAL LOT MAINS WATER SUPPLY

- NEIGHBOURHOOD CONNECTORS**
- MAIN NEIGHBOURHOOD CONNECTORS
  - FOOTPATH TO BOTH SIDES
  - STREET TREE PLANTING TO BOTH VERGES WITH 1 STREET TREE PER LOT & TREE PLANTING TO MEDIAN WHERE APPLICABLE
  - TURF VERGE TREATMENT AT POS BOUNDARIES
  - TREE MULCH RINGS TO FRONTYARD/RESIDENTIAL LOTS
  - PLANTED MEDIAN TREATMENT
  - VERGE & TREE IRRIGATED WITH WATER CART/TRUCK & RESIDENTIAL LOT MAINS WATER SUPPLY
  - MEDIAN PLANTING FULLY IRRIGATED WITH BORE WATER SUPPLY

- PEDESTRIAN PRIORITY AREA**
- PEDESTRIAN PRIORITY AREA CONNECTING THE LOCAL CENTRE TO THE COASTAL NODE

SEASIDE MADORA BAY

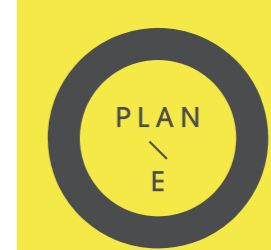
PREPARED FOR SATTERLEY

LANDSCAPE BOULEVARD & CONNECTOR MASTERPLAN  
JUNE 2023

JOB NO. 1910901  
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**LEGEND**

- 01** LOCAL VILLAGE PARK - 1.70 Ha - 85% IRRIGATED

  - SMALL FORMAL PARK
  - PATH CONNECTIONS INTO SURROUNDING STREETS
  - SHELTER WITH SEATING
  - INFORMAL PLAY ELEMENTS
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB, GROUND COVER PLANTING & TURF
  - DRAINAGE BASIN(S)
- 02** LOCAL VILLAGE BASIN - 0.38 Ha - 0% IRRIGATED

  - SMALL INFORMAL PARK
  - PRIMARY PURPOSE AS DRAINAGE BASIN
  - PATH CONNECTIONS INTO SURROUNDING STREETS
  - INFORMAL SEATING NODES
  - ADVANCED TREE PLANTING WITH AREAS OF LOW SHRUB & GROUNDCOVERS PLANTING
- 03** LOCAL VILLAGE PARK - 0.39 Ha - 50% IRRIGATED

  - SMALL INFORMAL PARK
  - PATH CONNECTIONS INTO SURROUNDING STREETS
  - SMALL SHELTER WITH SEATING
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB, GROUND COVER PLANTING & TURF
- 04** SHARED COMMUNITY & PRIMARY SCHOOL OVAL - 2.33 Ha - 80% IRRIGATED

  - TURF SPORTS FIELD, ACCOMMODATING A VARIETY OF SPORTING CODES
  - SHARED USE WITH THE COMMUNITY & ADJACENT PRIMARY SCHOOL
  - MATURE TREE PLANTING TO EDGES
  - LARGE SHELTER WITH SEATING, BBQ, WATER FOUNTAIN
  - LARGE PLAYGROUND
  - FUTURE COMMUNITY FACILITY / SPORTING CLUB ROOMS (BY CITY OF MANDURAH)
  - DRAINAGE BASIN(S)
- 05** COMMUNITY CONNECTOR PARKS - 0.62 Ha - 60% IRRIGATED

  - SMALL INFORMAL PARKS
  - PATH CONNECTIONS INTO SURROUNDING STREETS WITH SEATING AND SMALL SHELTERS
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB & GROUND COVER PLANTING
  - SMALL ARTWORK PEICES, LIT DURING NIGHT TIME.
  - DRAINAGE BASIN(S)
- 06** ENTRY PARK - 0.65 Ha - 40% IRRIGATED

  - INFORMAL ENTRY PARK
  - SEASIDE ENTRY WALLS WITH ESTATE & MARKETING SIGNS
  - PATH CONNECTIONS INTO SURROUNDING STREETS
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB & GROUND COVER PLANTING
  - DRAINAGE BASIN(S)
- 07** LOCAL VILLAGE PARK - 0.46 Ha - 50% IRRIGATED

  - SMALL INFORMAL PARK
  - PATH CONNECTIONS INTO SURROUNDING STREETS
  - SMALL SHELTER WITH SEATING
  - INFORMAL PLAY ELEMENTS
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB, GROUND COVER PLANTING & TURF
- 08** NEIGHBOURHOOD PARK - 0.58 Ha - 50% IRRIGATED

  - LARGE INFORMAL PARK
  - SMALL SHELTERS WITH SEATING, BBQ'S & PICNIC FACILITIES
  - PLAY AREA & OUTDOOR EXERCISE EQUIPMENT
  - PUBLIC ARTWORK
  - OPEN INFORMAL RECREATION SPACE
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB, GROUND COVER PLANTING & TURF
  - DRAINAGE BASIN(S)
- 09** DUNE PARK - 2.33 Ha - 7.5% IRRIGATED

  - COASTAL DUNE PARK
  - RETENTION OF DUNE LANDFORM & VEGETATION WHERE PRACTICABLE
  - CONNECTIONS TO SINGLETON TO THE NORTH & MANDURAH ROAD
  - SMALL NODES AT KEY LANDFORMS & VANTAGE POINTS WITH SHELTER, SEATING, INTERPRETATION SIGNS & SMALL ARTWORKS
  - DRYLAND DUNAL REVEGETATION PLANTING
  - DRAINAGE BASIN(S)
- 10** LOCAL VILLAGE PARK - 0.35 Ha - 50% IRRIGATED

  - SMALL INFORMAL PARK
  - PATH CONNECTIONS INTO SURROUNDING STREETS
  - SMALL SHELTER WITH SEATING
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB, GROUND COVER PLANTING & TURF
  - DRAINAGE BASIN(S)
- 11** LOCAL VILLAGE BASIN - 0.38 Ha - 0% IRRIGATED

  - SMALL INFORMAL PARK
  - PATH CONNECTIONS INTO SURROUNDING STREETS
  - INFORMAL SEATING NODES
  - ADVANCED TREE PLANTING WITH AREAS OF LOW SHRUB & GROUNDCOVERS PLANTING
  - DRAINAGE BASIN(S)
- 12** NEIGHBOURHOOD PARK - 1.03 Ha - 60% IRRIGATED

  - LARGE INFORMAL PARK
  - LARGE & SMALL SHELTERS WITH SEATING, BBQ'S & PICNIC FACILITIES
  - PLAY AREA & OUTDOOR EXERCISE EQUIPMENT
  - PUBLIC ARTWORK
  - OPEN INFORMAL RECREATION SPACE
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB, GROUND COVER PLANTING & TURF
  - DRAINAGE BASIN(S)
- 13** TOWN CENTRE PARK - 0.5 Ha - 50% IRRIGATED

  - SMALL INFORMAL PARK
  - PATH CONNECTIONS INTO SURROUNDING STREETS
  - SMALL SHELTER WITH SEATING
  - INFORMAL PLAY ELEMENTS
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB, GROUND COVER PLANTING & TURF
  - DRAINAGE BASIN(S)
- 14** CENTRAL FORESHORE - 2.5 Ha - 55% IRRIGATED

  - LARGE REGIONAL PARK
  - LARGE & SMALL SHELTERS WITH SEATING, BBQ'S & PICNIC FACILITIES
  - DUAL USE INTERNAL PATH NETWORK WITH CONNECTIONS INTO SURROUNDING STREETS
  - LARGE PLAY AREA WITH HALF COURT & INFORMAL SPORT FACILITIES E.G. SKATE PARK
  - OFF STREET PARKING
  - PUBLIC ARTWORKS
  - OPEN INFORMAL RECREATION SPACE
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB, GROUND COVER PLANTING & TURF
  - BEACH ACCESS
- 15** MANDURAH ROAD BUFFER (NORTH & SOUTH)

  - RETAIN, PROTECT & TIDY UP EXISTING VEGETATION ALONG MANDURAH ROAD
  - PATH CONNECTIONS TO MANDURAH ROAD DUAL USE PATH
  - INFILL MATURE TREE PLANTING WITH TUBESTOCK
  - PLANTING OF LOW SHRUBS & GROUND COVERS
  - BUSH LAND FENCE ON BOUNDARY
  - DRAINAGE BASIN(S)

NORTH BUFFER: 0.39 Ha  
SOUTH BUFFER: 1.49 Ha
- 16** FORESHORE RESERVE

  - RETAIN & PROTECT EXISTING DUNAL LANDSCAPE & VEGETATION
  - ESTABLISH PERMANENT FENCED PATH CONNECTIONS TO BEACH WITH INTERPRETATION / WAYFINDING SIGNS
  - DRYLAND REVEGETATION PLANTING WORKS TO DEGRADED SITES
  - DRAINAGE BASIN(S)

**SEASIDE MADORA BAY**

PREPARED FOR SATTERLEY

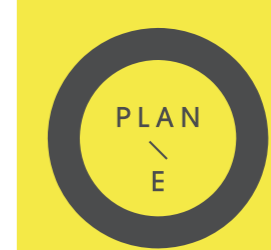
LANDSCAPE PUBLIC OPEN SPACE MASTER PLAN

JUNE 2023

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LEGEND

- |  |                           |  |                             |  |                                       |   |                     |
|--|---------------------------|--|-----------------------------|--|---------------------------------------|---|---------------------|
|  | LANDSCAPE BUFFER          |  | TABLES, BENCHES, SEATS      |  | DOG PARK                              |   | MAJOR ARTWORK PIECE |
|  | REVEGETATION CONSERVATION |  | WATER FOUNTAIN              |  | LARGE PLAYGROUND SUITED FOR ALL AGES  | <ul style="list-style-type: none"><li>• ONLY TO BE INSTALLED AT KEY PUBLIC OPEN SPACES</li><li>• UP TO 5 METRES IN HEIGHT</li><li>• VARIETY OF LIGHTING SCHEMES SUCH AS INTERACTIVE LIGHTING, UP LIGHTS AND DOWN LIGHTS</li></ul> |                     |
|  | STORMWATER STORAGE        |  | BIKE STANDS                 |  | SMALL PLAYGROUND SUITED FOR MOST AGES |   | MINOR ARTWORK PIECE |
|  | IRRIGATION TO POS         |  | BBQ / PICNIC FACILITIES     |  | SPORTS FIELDS                         | <ul style="list-style-type: none"><li>• INSTALLED AT PUBLIC OPEN SPACES</li><li>• UP TO 3.5 METRES IN HEIGHT</li><li>• UP LIGHTS AND LED STRIP LIGHTING IF APPLICABLE</li></ul>   |                     |
|  | VERGE PARKING             |  | LIGHTING                    |  | OPEN INFORMAL TURF RECREATION SPACE   |   |                     |
|  | MINOR ARTWORK PIECE       |  | LOOKOUT / POINT OF INTEREST |  | PUMP TRACK                            |   |                     |
|  | MAJOR ARTWORK PIECE       |  | COMMUNITY FACILITY OR CAFE  |  | YOUTH PRECINCT / SKATE PARK / PARKOUR |   |                     |
|  | SHELTER                   |  | SEASIDE ENTRY STATEMENT     |  |                                       |   |                     |

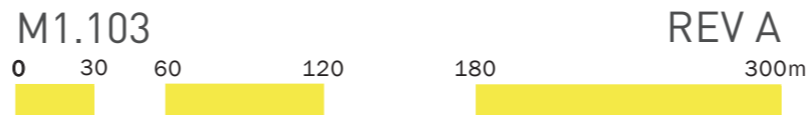
SEASIDE MADORA BAY

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PUBLIC OPEN SPACE FACILITIES MASTERPLAN

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LEGEND

- DRAINAGE BASIN
  - INCLUDES THE AREAS REQUIRED FOR A 1:5 AND 1:100 YEAR RAINFALL EVENT.
- FINAL LOCATION AND LAYOUT OF DRAINAGE BASINS  
O, N, K AND S TO BE COORDINATED WITH EXISTING  
QUANDONG AND FORESHORE VEGETATION.
- CATCHMENT BOUNDARY

SEASIDE MADORA BAY

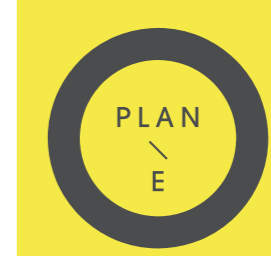
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LANDSCAPE PUBLIC OPEN SPACE DRAINAGE MASTERPLAN  
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LEGEND

- FULLY IRRIGATED POS
  - TURF
  - TREES
  - GARDEN BEDS
  - DRAINAGE BASIN PLANTING
  
- PARTIALLY IRRIGATED POS
 

2-3 YEARS FULLY IRRIGATED FOR ESTABLISHMENT. AFTER, DRAINAGE BASINS & GARDEN BEDS TO BE DISCONNECTED & NON IRRIGATED.

  - TREES
  - FEATURE GARDEN BEDS
  - SMALL TURF AREAS IF APPLICABLE

ALTERNATIVELY, HAND WATERING DURING MAINTENANCE TO THE ITEMS ABOVE, SUBSTITUTING OR REDUCING THE ALLOTMENT OF WATER TO THAT POS.
  
- NO IRRIGATION TO POS
 

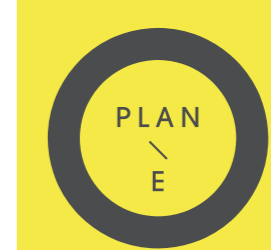
HAND WATERING TO TREES AND PLANTING FOR ESTABLISHMENT ONLY.

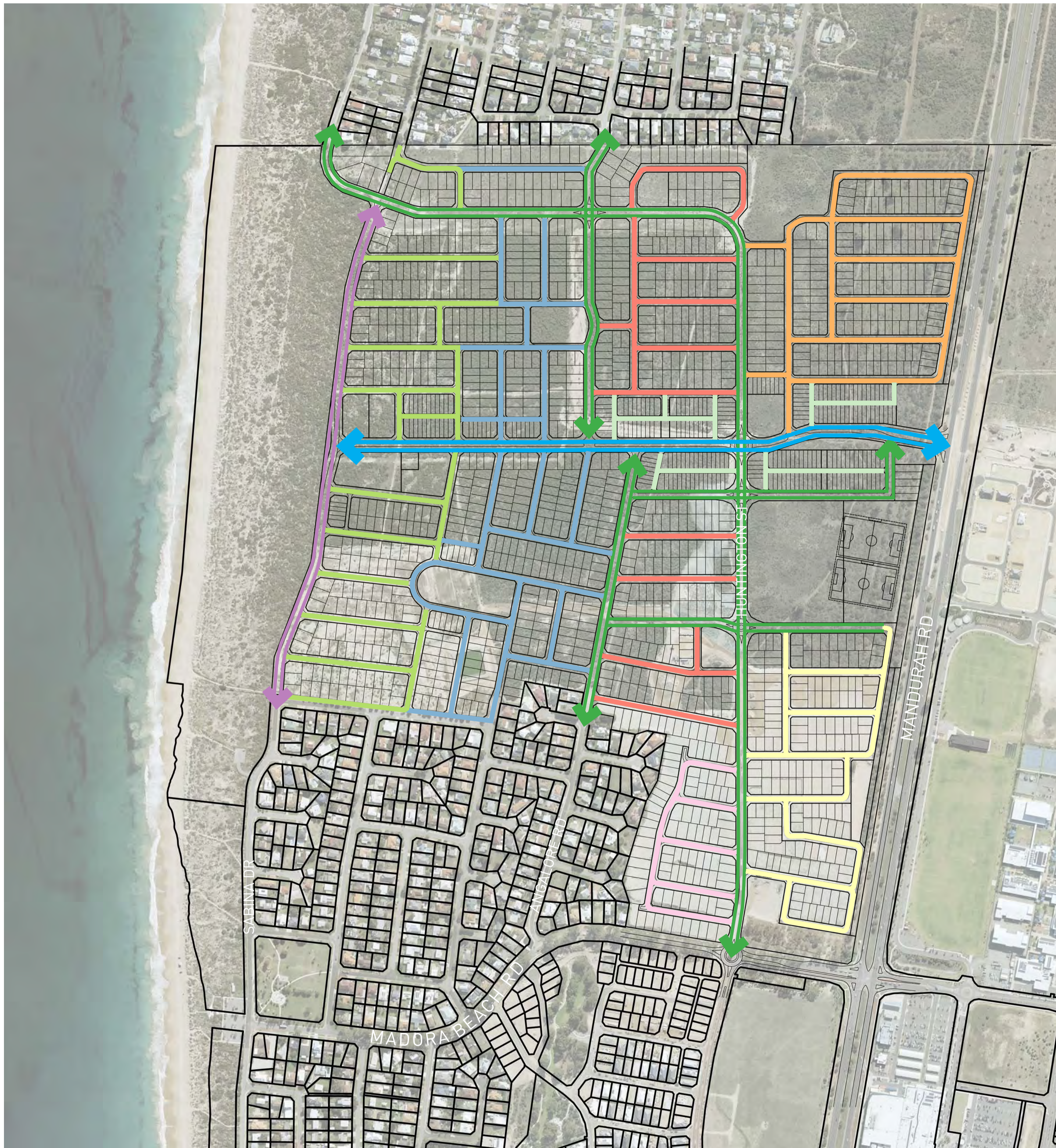
WATER USED FOR IRRIGATION:

<b>01</b> AREA: 85% @ 1.45 Ha	<b>03</b> AREA: 50% @ 0.20 Ha	<b>09</b> AREA: 7.5% @ 0.25 Ha	<b>02</b> AREA: 0 Ha	TOTAL GROUND WATER ALLOCATION ALLOWS FOR 7.5 Ha IRRIGATED PUBLIC OPEN SPACE.
<b>04</b> AREA: 80% @ 2.05 Ha	<b>05</b> AREA: 60% @ 0.39 Ha	<b>10</b> AREA: 50% 0.15 Ha	<b>11</b> AREA: 0 Ha	
<b>14</b> AREA: 80% @ 1.4 Ha	<b>06</b> AREA: 50% @ 0.19 Ha	<b>12</b> AREA: 60% @ 0.62 Ha	<b>15</b> AREA: 0 Ha	
	<b>07</b> AREA: 40% @ 0.23 Ha	<b>13</b> AREA: 50% 0.25 Ha	<b>16</b> AREA: 0 Ha	
	<b>08</b> AREA: 50% @ 0.29 Ha			
SUB TOTAL: 4.90 Ha	SUB TOTAL: 2.57 Ha	SUB TOTAL: 0.0 Ha	TOTAL: 7.47 Ha	







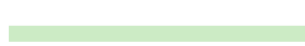



SEASIDE MADORA BAY

PREPARED FOR SATTERLEY





LEGEND

-  AGONIS FLEXUOSA - VERGE  
EUCALYPTUS GOMPHOCEPHALA - MEDIAN STRIP
-  AGONIS FLEXUOSA (PEPPERMINT TREE)
-  CASUARINA OBESA (SWAMP SHEOAK)
-  ANGOPHORA COSTATA (SMOOTH-BARKED APPLE)
-  EUCALYPTUS SPATHULATA (SWAMP MALLET)
-  EUCALYPTUS LEUCOXYLON SUBSP. ROSEA (YELLOW GUM)
-  EUCALYPTUS TODTIANA (COASTAL BLACKBUTT)
-  CORYMBIA FICIFOLIA 'SUMMER RED' (RED FLOWERING GUM)
-  EUCALYPTUS WANDOO (WANDOO)
-  MELALEUCA VIRIDIFLORA (PAPERBARK)

SEASIDE MADORA BAY

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STREET TREE MASTERPLAN

JUNE 2023

JOB NO. 1910901

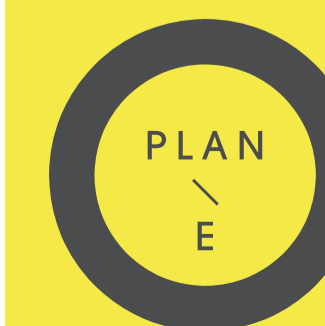
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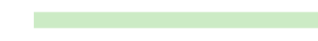
EUCALYPTUS GOMPHOCEPHALA (TUART)  
MEDIAN ONLY



ANGOPHORA COSTATA (SMOOTH-BARKED APPLE)



EUCALYPTUS TODTIANA (COASTAL BLACKBUTT)



MELALEUCA VIRIDIFLORA (PAPERBARK)



AGONIS FLEXUOSA (PEPPERMINT TREE)



CORYMBIA FICIFOLIA 'SUMMER RED' (RED FLOWERING GUM)



EUCALYPTUS SPATHULATA (SWAMP MALLET)



EUCALYPTUS VICTRIX (SMOOTH BARKED COOLIBAH)  
BACKUP SPECIES FOR E. TODTIANA



CASUARINA OBESA (SWAMP SHEOAK)



EUCALYPTUS LEUCOXYLON SUBSP. ROSEA (YELLOW GUM)



EUCALYPTUS WANDOO (WANDOO)



CUPANIOPSIS ANARCARDIOSIS (TUCKEROO)  
BACKUP SPECIES FOR E. SPATHULATA

**SEASIDE MADORA BAY**

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STREET TREE IMAGES  
JUNE 2023

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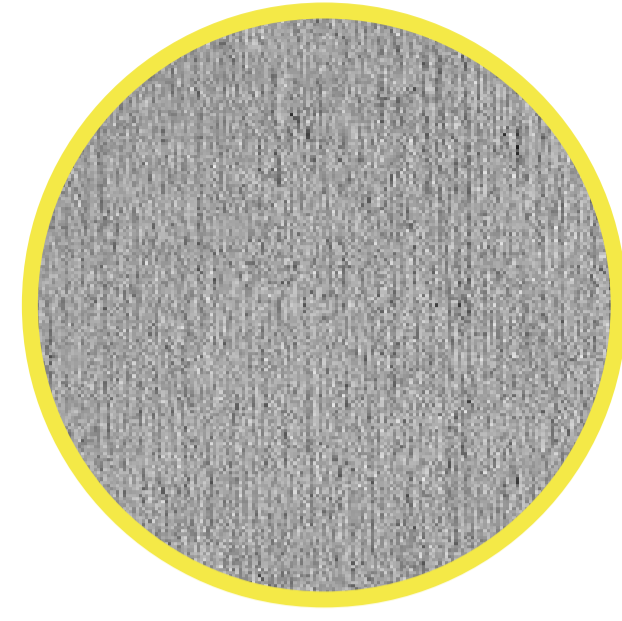
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PEDESTRIAN PAVING



CONCRETE  
GREY  
BROOM FINISH, NO PICTURE FRAMES



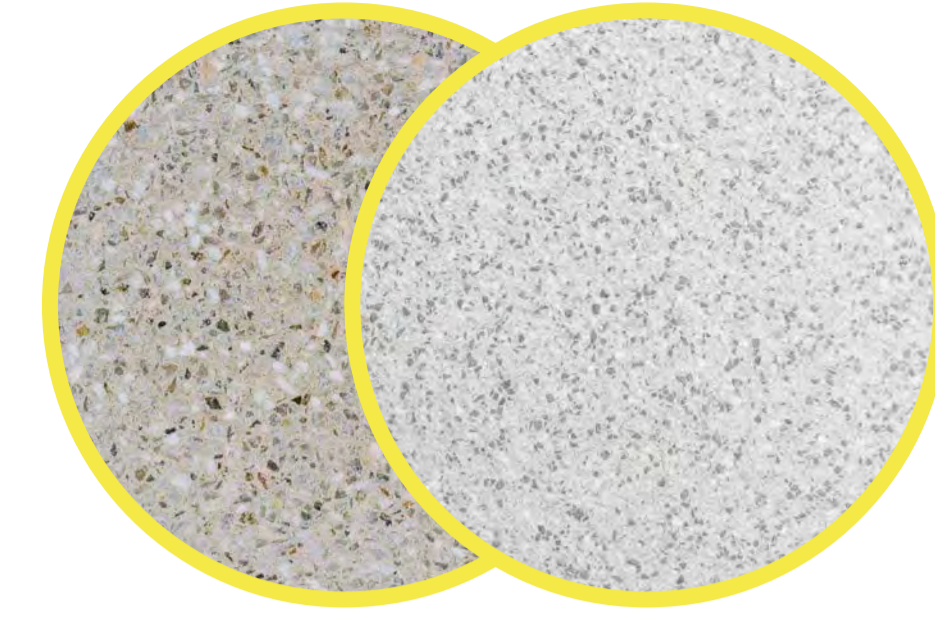
FEATURE CONCRETE  
HOLCIM - EUCALYPTUS  
EXPOSED AGGREGATE



FEATURE CONCRETE #2  
GREY SHELL GRIT FINISH



FEATURE UNIT PAVING #1  
ALTERNATING BANDED PAVING WITH  
FEATURE UNIT PAVING #2  
URBANSTONE - GOLDEN GUNMETAL  
RECTANGULAR, SHOTBLAST

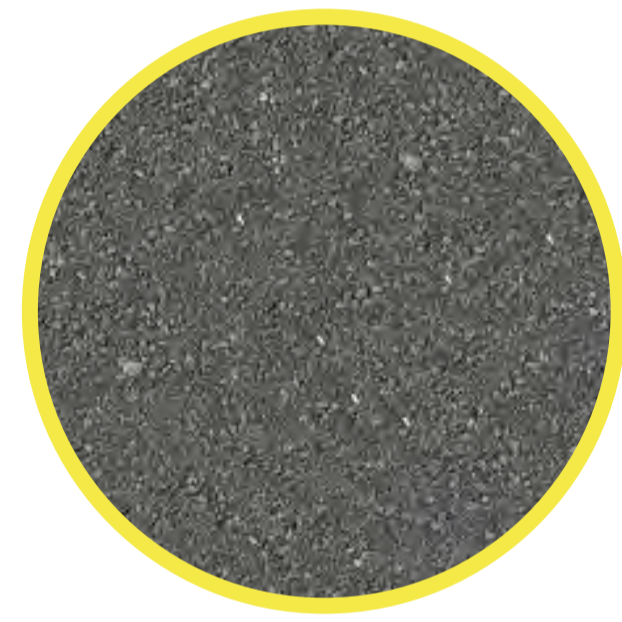


FEATURE UNIT PAVING #2  
ALTERNATING BANDED PAVING WITH  
FEATURE UNIT PAVING #1  
URBANSTONE - FLEECE & SILVER GREY  
RECTANGULAR, SHOTBLAST

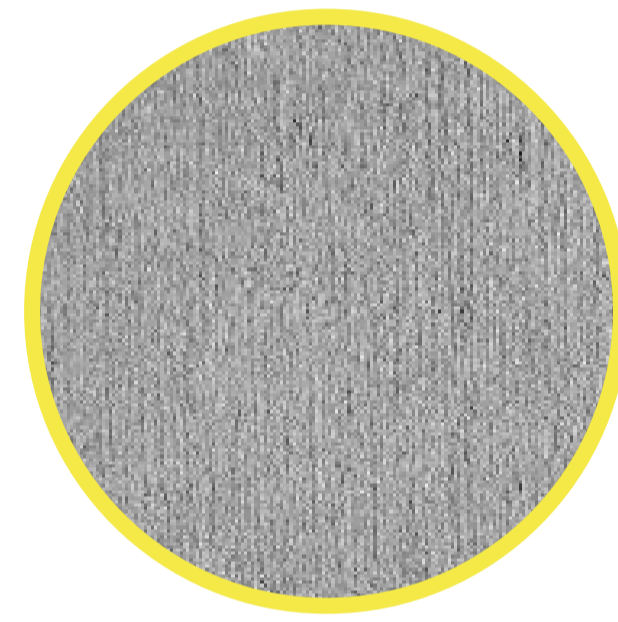


INFORMAL PATHWAY  
COMPACTED LIMESTONE  
5% CONCRETE MIX

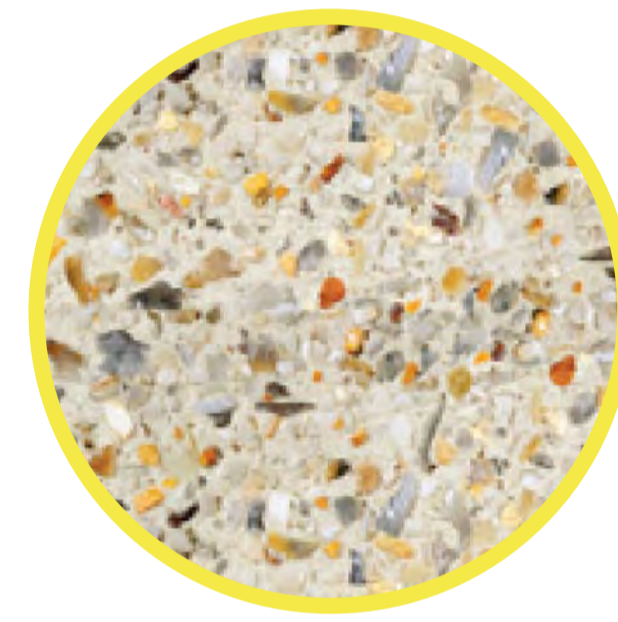
TRAFFICABLE PAVING & ROADS



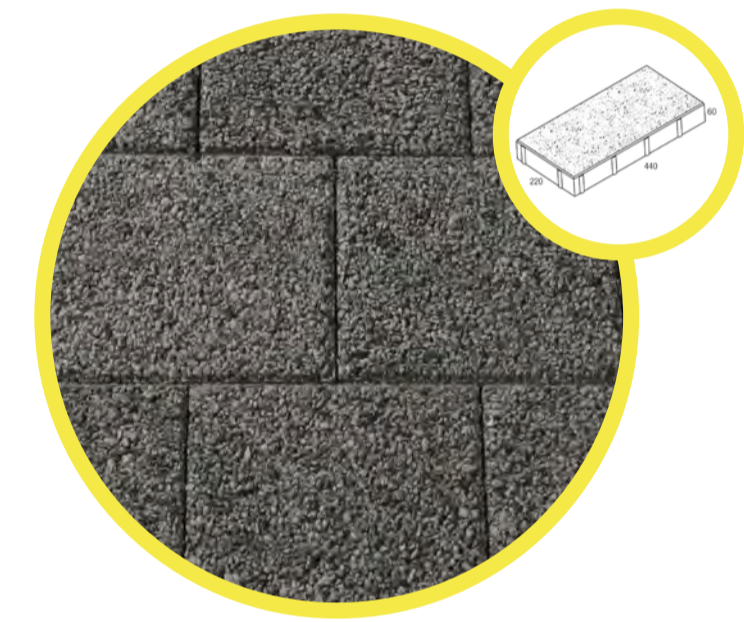
BLACK ASPHALT WITH  
PAVING BANDS TO DESIGNATE  
PEDESTRIAN THOROUGHFARES



TRAFFICABLE CONCRETE  
GREY  
BROOM FINISH, NO PICTURE FRAMES



TRAFFICABLE FEATURE CONCRETE  
HOLCIM - EUCALYPTUS  
EXPOSED AGGREGATE  
FOR POS ONLY



FEATURE TRAFFICABLE UNIT PAVING #1  
MIDLAND BRICK - STORMCLOUD EXPOSED  
GRANITE  
FLAGPAVE 80 GRANITE



FEATURE TRAFFICABLE UNIT PAVING #2  
MIDLAND BRICK - SEAMIST  
EXPOSED GRANITE  
FLAGPAVE 80 GRANITE



RED ASPHALT  
TRAFFICABLE DUAL USE PATH  
PRIMARYLY FOR PEDESTRIAN USE  
(ALLOWS FOR MAINTENANCE AC-  
CESS)

RETAINING WALLS & FEATURES WALLS & INBUILT SEATING



NATURAL LIMESTONE WALL  
NATURAL LIMESTONE CAPPING  
20MM RECESSED MORTAR



FEATURE LIMESTONE WALL/SEAT  
RANDOM LIMESTONE SLABS WITH  
CONCRETE CAPPING



RAMMED LIMESTONE WALL  
STAND ALONE WALL  
OR WITH CONCRETE CAPPING



CORETEN WALL  
FOR INFORMAL RAISED GARDEN BEDS  
WITH THE POTENTIAL  
FOR CUSTOM SEATING.  
MINOR IMPLEMENTATION FOR SELECT AREAS ONLY



INFORMAL RETAINING WALL  
NATURAL LIMESTONE BOULDERS

SEASIDE MADORA BAY

PREPARED FOR SATTERLEY PTY LTD

LANDSCAPE MATERIALS PALETTE  
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SHELTERS



SEASIDE SHELTERS ARE DESIGNED TO BE CONSISTENT AND BESPOKE. SHELTERS WILL BE DIVIDED INTO THREE VERSIONS, ALL WITH A COMMON ARCHITECTURAL THEME; EXPOSED BEAMS, USE OF TIMBER AND EITHER CONCRETE OR WHITE SUPPORTING COLUMNS TO MAXIMISE THE COASTAL THEMATIC.  
 VERSION 1: OPEN TIMBER SLATS TO PROVIDE DAPPLED SHADE (E.G ENTRY POS 1)  
 VERSION 2: TWO SECTIONS WILL HAVE SKILLION ROOFS PROVIDING FULL SHADE. THE CENTRAL SECTION WILL HAVE OPEN TIMBER SLATS - A HYBRID OF VERSION 1 & 3  
 VERSION 3: COMPLETELY SHELTERED WITH A SKILLION ROOF  
 STREET FURNITURE

DECKING



USE OF TIMBER OR COMPOSITE TIMBER TO CREATE MULTIFACETED GATHERING AREA. TO BE USED AROUND AREAS WITH A KEY FOCUS SUCH AS PLAY-GROUNDS, LOOKOUTS OR THE FORESHORE DEVELOPMENT.  
 TIMBER: DRESSED JARRAH  
 COMPOSITE TIMBER: RITEWOOD TEAK OR WALNUT



BENCH SEATS  
 BOTANICA SERIES  
 COX STREET FURNITURE



TABLE SETTING - DDA COMPLIANT  
 BOTANICA SERIES  
 COX STREET FURNITURE



BIKE RACKS  
 SLIM HOOP  
 STREET FURNITURE AUSTRALIA



240L BIN ENCLOSURE  
 ESCOLA SINGLE/DOUBLE, FLAT ROOF  
 STREET FURNITURE AUSTRALIA



DRINK FOUNTAIN WITH DOG BOWL  
 BENT LEAF DRINK FOUNTAIN  
 DRAFFIN



BARBECUE - TO BE DDA COMPLIANT  
 RANDOM LIMESTONE SLABS WITH CONCRETE  
 COOKTOP  
 DA CHRISTIE BBQ HOT PLATE

PLAYGROUND EQUIPMENT



'ARCHITECTURAL' PLAY TOWERS.  
 PRE-ORDERED BEFORE START OF CONSTRUCTION TO REDUCE LEAD TIMES.  
 COLOURS TO BE IN LINE WITH SEASIDE BRAND AND COASTAL THEME.



COASTAL THEMED ADVENTURE PLAYGROUND:  
 FLYING FOXES, SWING SETS INCLUDING DDA COMPLIANT SEATS, BASKETS  
 SWINGS, SLIDES AND SPINNERS.  
 COLOURS TO BE IN LINE WITH SEASIDE BRAND AND COASTAL THEME.



NATURE PLAY EQUIPMENT:  
 MIXTURE OF CLIMBING, SAND/WATER PLAY, SLIDING & JUMPING. USING NATURAL  
 MATERIALS E.G TIMBER, BOULDERS, SAND AND INCORPORATING FOUND/OLD  
 ELEMENTS.

SEASIDE MADORA BAY

PREPARED FOR SATTERLEY PTY LTD

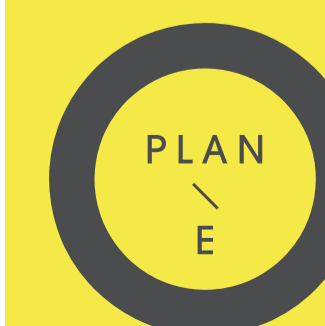
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PRIMARY TREES



AGONIS FLEXUOSA



ANGOPHORA COSTATA



ARAUCARIA COLUMNARIS



EUCALYPTUS GOMPHOCEPHALA



EUCALYPTUS LEUCOXYLON SUBSP.  
ROSEA



EUCALYPTUS TODTIANA

SECONDARY / FEATURE TREES



CORYMBIA FICIFOLIA 'SUMMER RED'



ERYTHRINA SKYSII



EUCALYPTUS ERYTHROCORYS



EUCALYPTUS MACRANDRA



EUCALYPTUS VICTRIX



MELALEUCA VIRIDIFLORA

TERTIARY / REVEGETATION TREES



CASUARINA OBESA



BANKSIA LITTORALIS  
BANKSIA MENZIESII  
BANKSIA PRINOTES



EUCALYPTUS FOECUNDA



EUCALYPTUS SPATHULATA



EUCALYPTUS UTILIS



MELALEUCA RHAPHIOPHYLLA

SEASIDE MADORA BAY

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LANDSCAPE PUBLIC OPEN SPACE PLANT PALETTE

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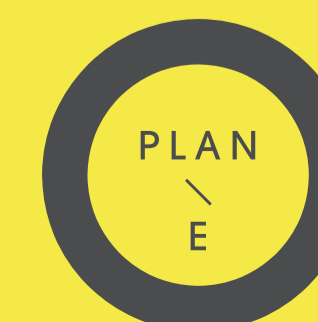
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LARGE SHRUBS - GROWS 1-1.5M H



ADENANTHOS SERICEUS 'PENCIL PERFECT



ATRIPLEX CINEREA



CALOTHAMNUS QUADRIFIDUS



GREVILLEA OLIVACEA



GUICHENOTIA LEDIFOLIA



HAKEA COSTATA



LEPIDOSPERMA GLADIATUM



OLEARIA AXILLARIS



PULTENAEA RETICULATA



SCAEVOLA CRASSIFOLIA



SCAEVOLA NITIDA



WESTRINGIA DAMPIERI

LARGE SHRUBS/SMALL TREES - GROWS >2M H



ACACIA TRUNCATA



ACACIA XANTHINA



HAKEA LAURINA



MELALEUCA HUEGELII



MYOPORUM INSULARE



SPYRIDIUM GLOBULOSUM

LISTED SPECIES ARE NOT FINAL AND RATHER HIGHLIGHT THE DESIGN INTENT TO REPOPULATE SEASIDE WITH INDIGENOUS SPECIES WHERE POSSIBLE.

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JUNE 2023

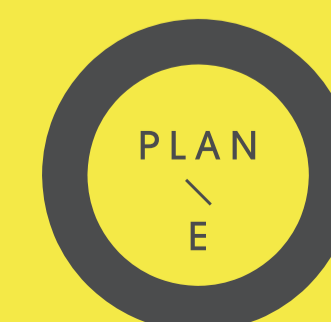
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MEDIUM SHRUBS - GROWS <1M H



ACACIA LASIOCARPA



ADENANTHOS CUNNINGHAMII SHRUB



ALYXIA BUXIFOLIA



BANKSIA SPINULOSA



BANKSIA NIVEA



GREVILLEA PREISSII



HYPOCALYMMMA ROBUSTUM



PIMELEA FERRUGINEA



PHILOTHECA SPICATA



LEUCOPHYTA BROWNII



RHAGODIA BACCATA



TEMPLETONIA RETUSA

SMALL SHRUBS - GROWS <0.5M H



BANKSIA DALLANNEYI



CONOSTYLIS ACULEATA



CONOSTYLIS CANDICANS



DIANELLA REVOLUTA



PATERSONIA OCCIDENTALIS



ORTHROSANTHUS LAXUS

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SEASIDE MADORA BAY

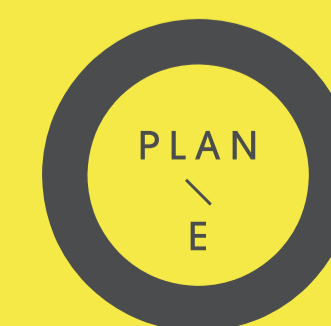
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GROUNDCOVERS (BUSHFIRE COMPLIANT)



ACACIA GREGORII 'PROSTRATE'



ATRIPLEX CINEREA 'PROSTRATE'



BANKSIA BLECHNIFOLIA



CARPOBROTUS VIRESCENS



EREMOPHILA GLABRA PROSTRATE



FRANKENIA PAUCIFLORA



GREVILLEA CRITHMIFOLIA 'PROSTRATE'



GREVILLEA PREISSII - "MINI MARVEL"



GREVILLEA OBTUSIFOLIA 'GIN GIN GEM'



HIBBERTIA SCANDENS



HEMIANDRA PUNGENS



MELALEUCA HUGELII PROSTRATE



MYOPORUM INSULARE 'PROSTRATE'



MYOPORUM PARVIFOLIUM



SCAEVOLA ANCHUSIFOLIA



SCAEVOLA CRASSIFOLIA PROSTRATE



THRYPTOMENE BAECKEACEA 'PROSTRATE'



WESTRINGIA 'LOW HORIZON'

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SEASIDE MADORA BAY

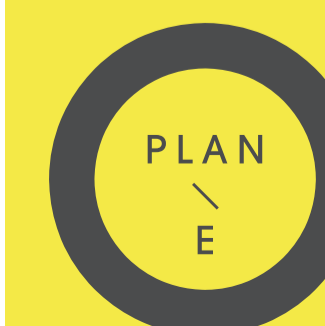
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# Attachment 4

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Coastal Node Concept Plan from Foreshore Management Plan (Plan E)



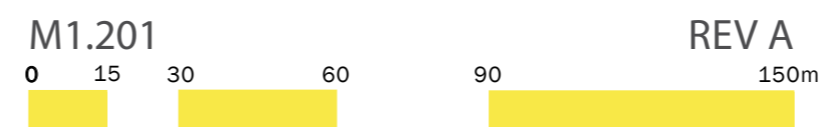


- 01 EXISTING BEACH ACCESS
- 02 RETAINED QUANDONG TREES & HABITAT
- 03 DUAL USE PATH TO ROAD EDGE WITH STREET TREE PLANTING.
- 04 EXISTING VEGETATION
- 05 ASPHALT CAR PARK
- 06 BIKE PUMP PARK
- 07 SKATE PARK SUITABLE FOR ALL AGES
- 08 TURF AMPHITHEATRE WITH LARGE SHELTERS & BOARDWALKS.
- 09 POTENTIAL CAFE/RESTAURANT/PUB/SURF CLUB.
- 10 FLUSH ROAD & PEDESTRIAN UNIT PAVING. DESIGNATED PAVING COLOURS TO DELINEATE ROADWAYS AROUND VILLAGE SQUARE.
- 11 VILLAGE TOWN SQUARE WITH LARGE SHELTER & ARTWORK PIECE.
- 12 LARGE ALL AGES PLAYGROUND
- 13 BEACH ACCESS WITH BOARDWALK TO PROTECT EXISTING VEGETATION FROM EROSION.

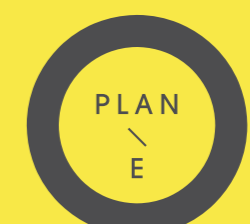
SEASIDE MADORA BAY  
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LANDSCAPE FORESHORE MASTERPLAN  
 OCTOBER 2021

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# Attachment 5

---

Local Water Management Strategy - Technical Note (Hyd2o)



15 October 2021

Your Ref:  
Our Ref: H21055Av2

Department of Water and Environmental Regulation  
107 Breakwater Pde  
Mandurah, WA 6210

ATTENTION: Brett Dunn

Dear Brett,

**RE: SEASIDE MADORA BAY LOCAL WATER MANAGEMENT STRATEGY ADDENDUM**

This Local Water Management Strategy (LWMS) addendum has been prepared by Hyd2o on behalf of Satterley Property Group in support of the revised Lot 101 Mandurah Rd, Madora Bay North Local Structure Plan (LSP).

The addendum report has been initiated through amendments made to the LSP and has been prepared to review and refine the overall stormwater management strategy and stormwater modelling across the LSP area. This modelling will later be used to guide subdivision planning and the development of Urban Water Management Plans (UWMPs) within the site. Subdivision development has already occurred within the LSP area and is with drainage outcomes provided in the Seaside Precinct 1 Urban Water Management Plan (Hyd2o, 2020)

This report is intended to be read in conjunction with the previously approved Lot 101 Mandurah Rd, Madora Bay North Local Water Management Strategy (Hyd2o, 2013). The modelling outcomes in this report supersede post development modelling outcomes detailed in the previous LWMS. The key principles and objectives of the approved LWMS remain current. The revision of stormwater modelling has also used the current 2016 design rainfalls consistent with Australian Rainfall & Runoff standards.

The LSP area (herein referred to as the site) is approximately 123 ha in size and located within the City of Mandurah. The site is bound by Mandurah Road to the east, Madora Beach Road to the south, the Indian Ocean to the west and urban development to the north (Figure 1).

This document provides a total water cycle management approach to development and has been prepared consistent with the approved LWMS (Hyd2o, 2013), DWMS (JDA, 2011) and Better Urban Water Management (Western Australian Planning Commission, 2008).

**1. Local Structure Plan**

The revised LSP for the site is included as Figure 2. Proposed land use within the site is generally consistent with that shown in the LWMS (Hyd2o, 2013), albeit with realignment of roads, lots and POS across the site. These changes have resulted in modification to post development drainage routes and local catchment boundaries.

**2. Site Characteristics**

The site is generally described as having the following predevelopment characteristics:

- The site is partially cleared in preparation for subdivision with some natural and planted vegetation.
- The topography of the site ranges from 6 mAHD to 10 mAHD in western and central lower areas, with the chaotic dunes rising to peaks of 20 mAHD to 23 mAHD along the eastern portion of the site.
- Golder undertook two geotechnical investigations during March 2018 and July 2020, installing 7 boreholes, 23 cone penetration tests, and 12 permeability test pits within the site area. The field investigation characterised the site as calcareous sands and Tamala Limestone. The soil profile was generally consistent with the Rockingham Sheets 2033 II and 2033 III of the Environmental Geology Series (Gozzard, 1983) (Figure 4). The sand, derived from Safety Bay Sands (Qhs) and Tamala Limestone (Qtl) is classified as having high permeability (Gozzard, 1986).
- Hyd2o (2013) undertook permeability testing at three locations (P1, P2, and P3) to depths of 0.4 m (Figure 5). Field recorded saturated hydraulic conductivity ranged from 1.57 m/day to 12.21 m/day. Field permeability was consistent with the geotechnical investigation undertaken by Golder (2018) which indicated permeability ranged from 15 m/day to 45 m/day across the site. Golder Geotechnical (2018) considered the site suitable for the disposal of stormwater by infiltration and concluded that soakwells can be adopted at lot level. For design and modelling purposes, an infiltration rate of 5 m/day has been recommended.
- A groundwater monitoring program was undertaken in 2011/2012 which determined that groundwater across the site varied from 1.7 mAHD to 2.07 mAHD.
- The site is located within the Peel-Harvey Estuary Catchment. The site does not contain any surface water features including waterways, drains, lakes or ponded water.
- DBCA's Geomorphic Wetlands of the Swan Coastal Plan dataset indicates there are no geomorphic wetlands or wetland buffers within the site.

### 3. Stormwater Management

Stormwater modelling for the site was performed using the PONDS infiltration model. PONDS is a numerical model specifically designed for modelling ground water/surface water interactions for the design of stormwater infiltration areas, based on the finite difference computer program MODFLOW, developed by the U.S. Geological Survey.

This modelling determines conceptual flood storage requirements and provides an assessment of the local structure plan area required for drainage purposes at a level of detail consistent with requirements for an LWMS.

Stormwater management is proposed to be undertaken consistent with DWER water sensitive design practices. The system will consist of a series of lot soakwells, underground storages within road reserves, and ephemeral bioretention swales within POS for water quality treatment and infiltration.

The first 15 mm event infiltrated close to source. Lot runoff will be managed through the use of soakwells and road drainage will be infiltrated through the use of Stormtech underground infiltration cells or discharge to adjacent POS. There is no piped drainage proposed in road reserves.

Storage areas were designed to contain and infiltrate runoff for up to the 1%AEP storm event. Eleven infiltration areas were designed within POS with respect to the contributing catchment areas.

Stormwater modelling parameters used to design the stormwater storages are as follows:

- The invert of the infiltration areas were established at existing natural surface assuming minimal earthworks required in public open space.
- Base of superficial aquifer at -15 mAHD from the Perth Groundwater Atlas (DoE, 2004).
- Side slope for the infiltration area of 1:6.
- A saturated horizontal hydraulic conductivity and vertical unsaturated hydraulic conductivity for modelling purposes of 5 m/day based on recommendations in Golder Geotechnical (2018).
- A runoff coefficient of 90% from road reserve areas, 75% for commercial and small lots, and 10% from lot area has been assumed.

Based on the revised structure plan, updated post-development drainage catchments are shown in Figure 2, with modelling results summarised in Table 1. Note that storage shapes shown in Figure 2 are indicative only for determination of area requirements and representation of the storage area required.

The final flood attenuation area configuration (side slopes and shape), locations and elevations will be documented in future UWMPs and will be dependent on final earthworks, drainage, landscaping and road design levels for the development. Minor refinements to catchment areas in this report are considered likely to occur as detailed design proceeds and stormwater modelling will be updated accordingly during the UWMP process.

#### Table 2: Stormwater Management

Catchment	G	H	I	J	K	L	M	N	O	P	Q	R	S
Lots (ha) @10%RO	7.15	9.98	0.98	2.97	1.32	2.37	15.84	1.30	0.85	1.99	0.82	1.18	1.69
Small Lots (ha) @75%RO	1.16	0.03	-	0.35	-	2.07	1.37	-	-	-	-	-	-
Commercial Lots (ha) @75%RO	-	-	-	-	0.14	0.99	-	0.19	0.00	-	-	-	-
Road & Road Reserve (ha) @90%RO	3.69	3.79	0.22	1.31	1.04	3.11	7.38	1.08	0.53	0.83	0.55	0.37	0.61
POS (ha) @0%RO	1.00	0.48	-	0.55	0.01	0.58	1.14	-	-	0.38	3.32	0.31	-
Total Area (ha)	13.00	14.28	1.20	5.19	2.51	9.12	25.73	2.57	1.38	3.20	4.69	1.85	2.31
Equivalent Impervious Area (EIA) (ha)	4.19	4.44	0.29	1.74	1.18	5.33	9.26	1.25	0.56	0.95	0.58	0.45	0.72
<b>Storage Design Parameters</b>													
Storage Invert (mAHD)	9.0	5.0	7.0	5.0	7.0	6.0	9.0	6.0	6.0	6.0	9.0	6.0	6.0
Base Area (m <sup>2</sup> )	1290	1210	3	323	180	1440	2750	192	42	120	40	21	72
Side Slopes (v:h)	1:6	1:6	1:6	1:6	1:6	1:6	1:6	1:6	1:6	1:6	1:6	1:6	1:6
<b>First 15 mm</b>													
Road & Road Reserve (ha) @60%RO	2.22	2.28	0.13	0.79	0.62	1.87	4.43	0.65	0.32	0.50	0.33	0.22	0.37
<b>Volume (m<sup>3</sup>)</b>	332	341	20	118	93	280	664	97	47	75	49	33	55
<b>20%AEP Event</b>													
Flood Rise (m)	0.46	0.54	0.71	0.61	0.63	0.51	0.48	0.64	0.68	0.65	0.69	0.69	0.67
Top Water Level (TWL) Area (m <sup>2</sup> )	1784	1603	105	634	449	1943	3416	445	222	360	228	176	285
Volume (m <sup>3</sup> )	796	731	30	282	192	859	1539	186	84	149	86	61	117
Critical Storm (hr)	6	6	6	6	6	6	6	6	6	6	6	6	6

**Table 2: Stormwater Management (continued)**

Catchment	G	H	I	J	K	L	M	N	O	P	Q	R	S
<b>1%AEP Event</b>													
Flood Rise (m)	0.99	1.01	0.99	1.01	0.99	0.99	0.99	1.01	0.99	1.00	1.00	0.99	1.00
TWL Area ( m²)	2310	2080	196	189	660	2496	4154	408	342	540	352	285	420
Volume (m³)	1776	1576	76	72	396	1944	3428	672	168	306	172	129	222
Critical Storm (hr)	6	6	6	6	6	6	6	6	6	6	6	6	6

**4. Conclusions/Recommendations**

This addendum provides revised stormwater modelling for the site to address proposed changes to the LSP since the approval of the Local Water Management Strategy (Hyd2o, 2013).

The updated stormwater management strategy and modelling takes into consideration the soil profiles and infiltration testing results documented in Golder Geotechnics (2018, 2020). It is recommended that modelling contained in this addendum be used as the basis for further subdivision development within the site and the development of future UWMPs.

Aside from the revised stormwater strategy and modelling detailed in this report, all principles and objectives of the approved LWMS (Hyd2o, 2013) remain valid for implementation. Detailed engineering design and landscaping of each POS including a revision of the stormwater modelling will be provided in future UWMPs.

**5. References**

Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, (Editors) (2016). Australian Rainfall and Runoff: A Guide to Flood Estimation, Commonwealth of Australia.

Golder Associates (2018). Geotechnical Investigation Madora Bay North – Stage 1. April 2018.

Gozzard, J. R. (1983) Rockingham Sheet 2033 II and 2033 II, Environmental Geology Series. Geological Survey of Western Australia, Department of Minerals and Energy, Perth.

Hyd2o (2012). Lot 100 Mandurah Rd, Madora Bay North Pre Development Hydrological Monitoring Programme.

Hyd2o (2012) Lot 101 Mandurah Rd, Madora Bay North LWMS.

JDA (2011). Lot 100 Mandurah Road Madora Bay North District Water Management Strategy.

Western Australian Planning Commission (2003). Planning Bulletin No. 64: Acid Sulphate Soils. Western Australian Planning Commission, November 2003.

Western Australian Planning Commission (2008). Better Urban Water Management, October 2008.

Should you have any queries regarding this report, please do not hesitate to contact Georgia Ross or Suzanne Smart of this office.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Suzanne Smart', written in a cursive style.

**Suzanne Smart**

**Principal Environmental Hydrologist**

Attachments

Figure 1: Location Plan

Figure 2: Stormwater Management Plan





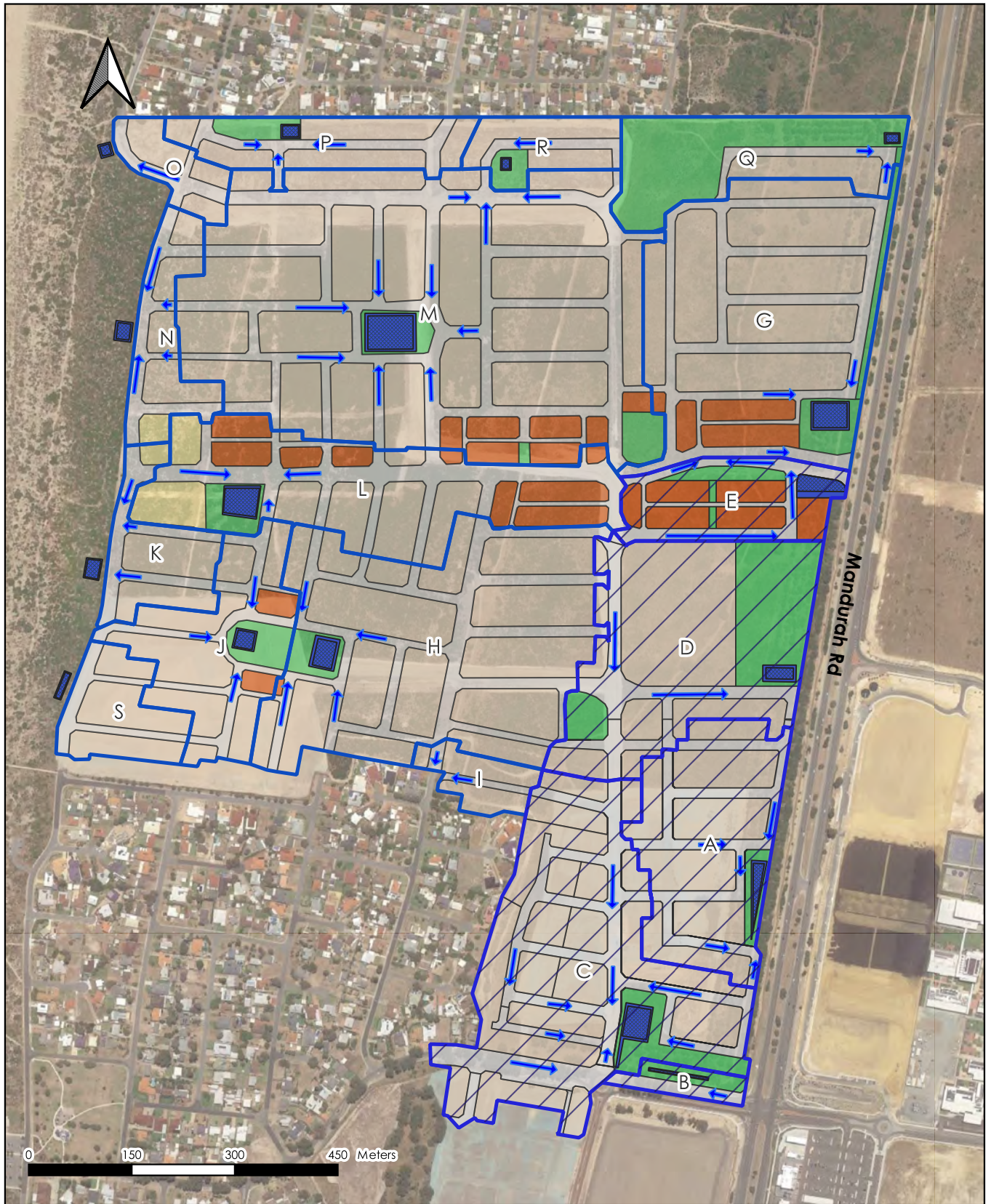
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-  Precinct 1
-  Balance Lot (LWMS Addendum Area)



- |                      |                               |
|----------------------|-------------------------------|
| Lots                 | Catchments                    |
| Small Lots           | Flow Direction                |
| Commercial Lots      | 1%AEP                         |
| Roads & Road Reserve | 20%AEP                        |
| POS                  | Existing Subdivision Approval |

Seaside Madora Bay   
 North LWMS Addendum   
**Stormwater Management Plan**   
**Figure 2**

# Attachment 6

---

Bushfire Management Plan (Strategen-JBS&G)

# Bushfire Management Plan Coversheet

This Coversheet and accompanying Bushfire Management Plan has been prepared and issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme.

## Bushfire Management Plan and Site Details

Site Address / Plan Reference: Lot 9101 Mandurah Road

Suburb: Madora Bay

State: WA

P/code: 6210

Local government area: City of Mandurah

Description of the planning proposal: Structure Plan amendment

BMP Plan / Reference Number: 60703/138,604

Version: R01 Rev 0

Date of Issue: 26/10/2021

Client / Business Name: Satterley Property Group

Reason for referral to DFES	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the BPC elements)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Is the proposal any of the following special development types (see SPP 3.7 for definitions)?</b>		
Unavoidable development (in BAL-40 or BAL-FZ)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Strategic planning proposal (including rezoning applications)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Minor development (in BAL-40 or BAL-FZ)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
High risk land-use	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vulnerable land-use	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If the development is a special development type as listed above, explain why the proposal is considered to be one of the above listed classifications (E.g. considered vulnerable land-use as the development is for accommodation of the elderly, etc.)? The proposed Structure Plan amendment is considered to be a strategic planning proposal.

**Note:** The decision maker (e.g. local government or the WAPC) should only refer the proposal to DFES for comment if one (or more) of the above answers are ticked "Yes".

## BPAD Accredited Practitioner Details and Declaration

Name	Accreditation Level	Accreditation No.	Accreditation Expiry
Zac Cockerill	Level 2	37803	31/08/2022
Company		Contact No.	
JBS&G Australia Pty Ltd T/A Strategen JBS&G		(08) 9792 4797	

I declare that the information provided within this bushfire management plan is to the best of my knowledge true and correct

Signature of Practitioner



Date 26/10/2021



Satterley Property Group  
Bushfire Management Plan (Structure Plan  
Amendment)

Lot 9101 Mandurah Road, Madora Bay

26 October 2021

60703/138,604 (Rev 0)

JBS&G Australia Pty Ltd T/A Strategen-JBS&G

## Table of Contents

1.	Proposal details .....	1
1.1	Background.....	1
1.2	Site description.....	1
1.3	Purpose.....	1
1.4	Other plans/reports.....	1
2.	Environmental considerations.....	6
2.1	Native vegetation - modification and clearing.....	6
2.2	Revegetation / Landscape Plans.....	7
3.	Bushfire assessment results .....	9
3.1	Assessment inputs.....	9
3.1.1	Vegetation classification .....	9
3.1.2	Effective slope.....	9
3.1.3	Pre-development inputs .....	9
3.1.4	Post-development inputs.....	10
3.2	Assessment outputs .....	13
3.2.1	Bushfire Hazard Level (BHL) assessment .....	13
4.	Identification of bushfire hazard issues.....	16
4.1	Bushfire context .....	16
4.2	Bushfire hazard issues.....	16
5.	Assessment against the bushfire protection criteria.....	17
5.1	Compliance table.....	17
6.	Responsibilities for implementation and management of the bushfire measures.....	19
7.	References .....	20
8.	Limitations .....	21

## List of Tables

Table 1:	Summary of environmental values .....	6
Table 2:	Pre-development vegetation classifications/exclusions and effective slope .....	10
Table 3:	Post-development vegetation classifications/exclusions and effective slope.....	10
Table 4:	Bushfire hazard levels and characteristics .....	13
Table 5:	Compliance with the bushfire protection criteria of the Guidelines .....	17

## List of Figures

Figure 1: Structure Plan Amendment .....	3
Figure 2: Concept Plan .....	4
Figure 3 Site Overview .....	5
Figure 4: Pre-development vegetation classification and effective slope .....	11
Figure 5: Post-development vegetation classification and effective slope .....	12
Figure 6: Pre-development Bushfire Hazard Levels .....	14
Figure 7: Post-development Bushfire Hazard Levels .....	15

## List of Plates

Plate 1: Map of Bush Fire Prone Areas (DFES 2019) .....	2
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## Appendices

Appendix A	Landscape Plan
Appendix B	Vegetation plot photos and description
Appendix C	APZ standards (Schedule 1 of the Guidelines)
Appendix D	Vehicular access technical standards of the Guidelines
Appendix E	Water technical standards of the Guidelines
Appendix F	City of Mandurah Firebreak Notice



## 1. Proposal details

### 1.1 Background

Satterley Property Group is seeking to lodge a Structure Plan amendment to facilitate future residential development within Lot 9101 Mandurah Road, Madora Bay (the project area), located in the City of Mandurah. The Structure Plan amendment map is provided in Figure 1, with the concept layout provided in Figure 2. The concept layout depicts Phase 1–5 subdivision areas, which already have WAPC subdivision approval and are not the subject of the Structure Plan amendment. On this basis, the approved Phase 1–5 subdivision areas are not within the scope of this report and will not be referenced further.

The balance of the site that is subject to the Structure Plan amendment is depicted in Figure 1 and Figure 2 as comprising the following land uses:

- residential
- commercial
- Public Open Space (POS)
- foreshore reserve
- public roads.

### 1.2 Site description

The project area is within Lot 9101 Mandurah Road, Madora Bay and is surrounded by (see Figure 3):

- costal foreshore reserve to the west
- existing urban residential development to the north
- approved Phase 1–5 subdivision areas, existing urban residential development and Madora Beach Road to the south
- Mandurah Road and existing/proposed urban residential development to the east.

The project area is designated as bushfire prone on the *Map of Bush Fire Prone Areas* (DFES 2019; see Plate 1).

### 1.3 Purpose

This Bushfire Management Plan (BMP) has been prepared to address requirements under *Policy Measure 6.3 of State Planning Policy 3.7 Planning in Bushfire-Prone Areas* (SPP 3.7; WAPC 2015) and *Guidelines for Planning in Bushfire-Prone Areas* (the Guidelines; WAPC 2017).

### 1.4 Other plans/reports

Other reports that have been prepared for the project area include:

- BMP for Phase 1 subdivision prepared by Strategen-JBS&G (2020a)
- BMP for Phases 2–3 subdivision prepared by Strategen-JBS&G (2020b)
- BMP for Phases 4–5 subdivision prepared by Strategen-JBS&G (2021a)
- Environmental Assessment for Part Lot 100 Mandurah Road prepared by Endplan Environmental (2013)
- Foreshore Management Plan for Structure Plan amendment prepared by Strategen-JBS&G (2021b).

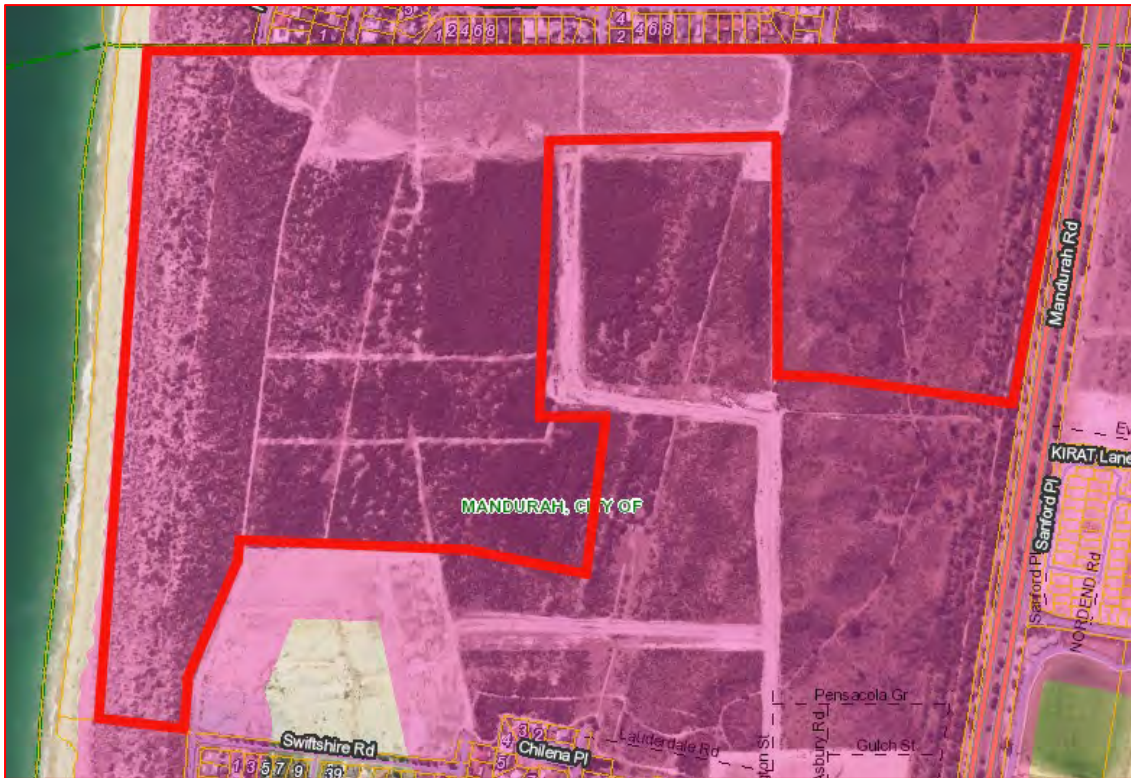
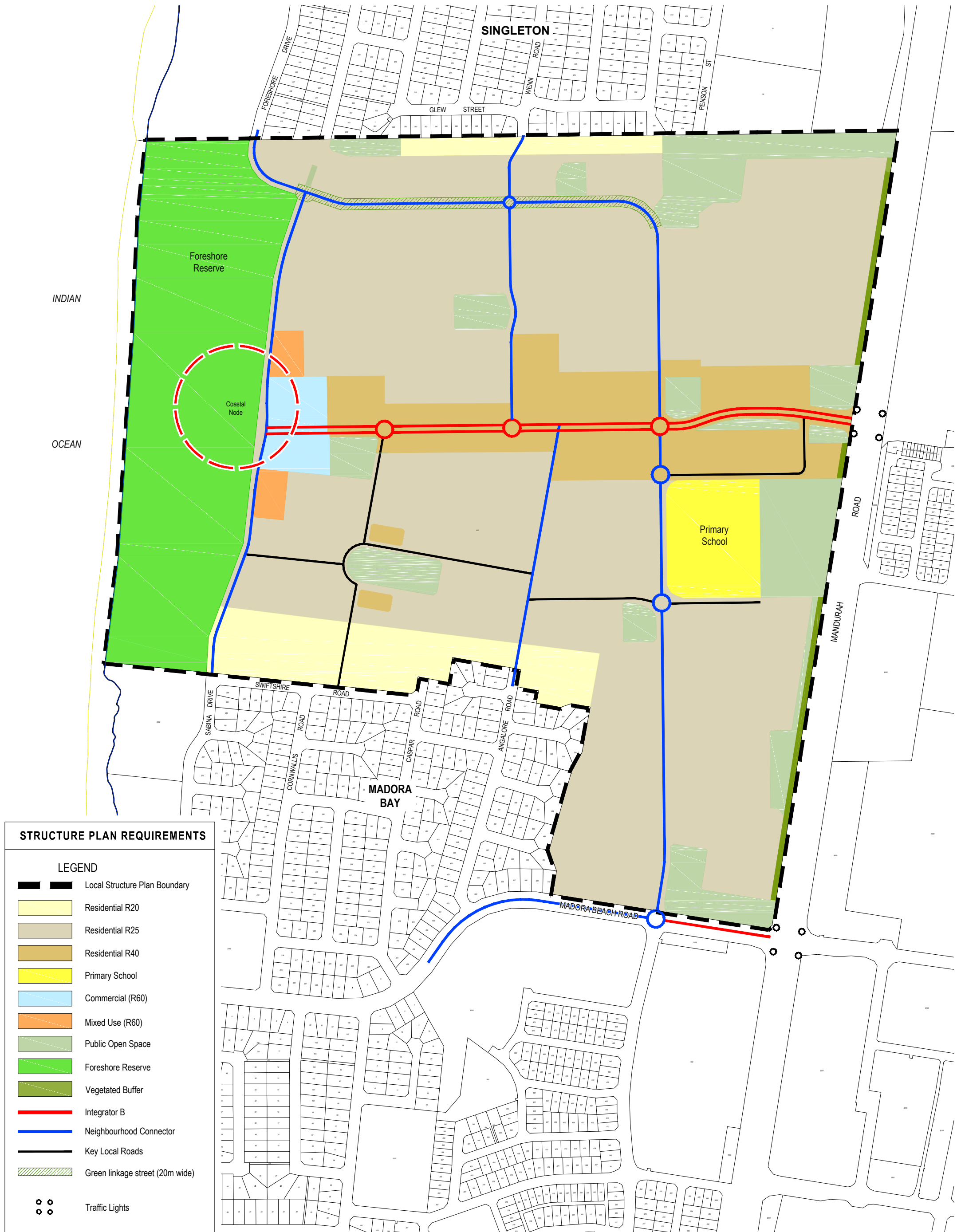
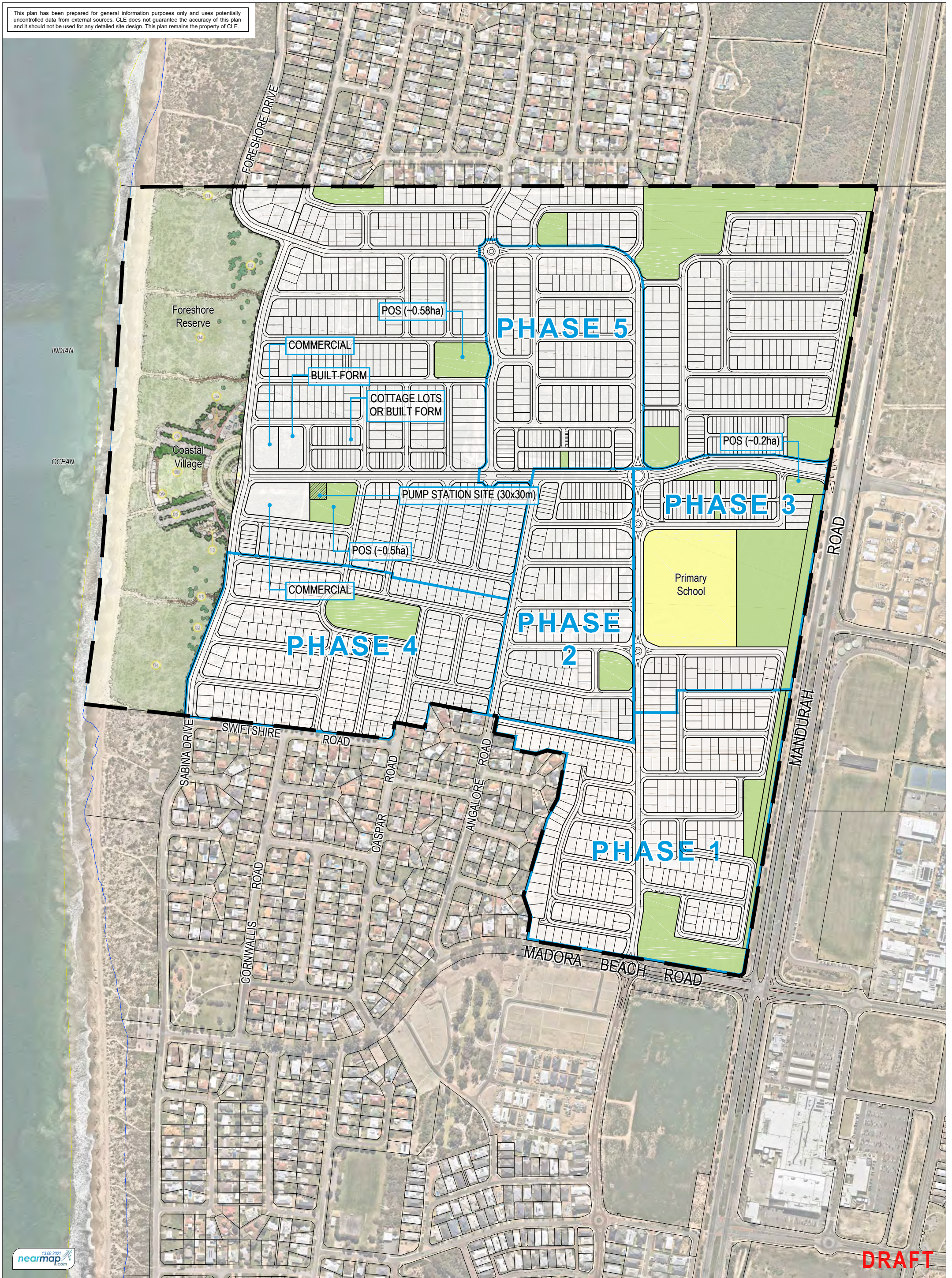


Plate 1: Map of Bush Fire Prone Areas (DFES 2019)

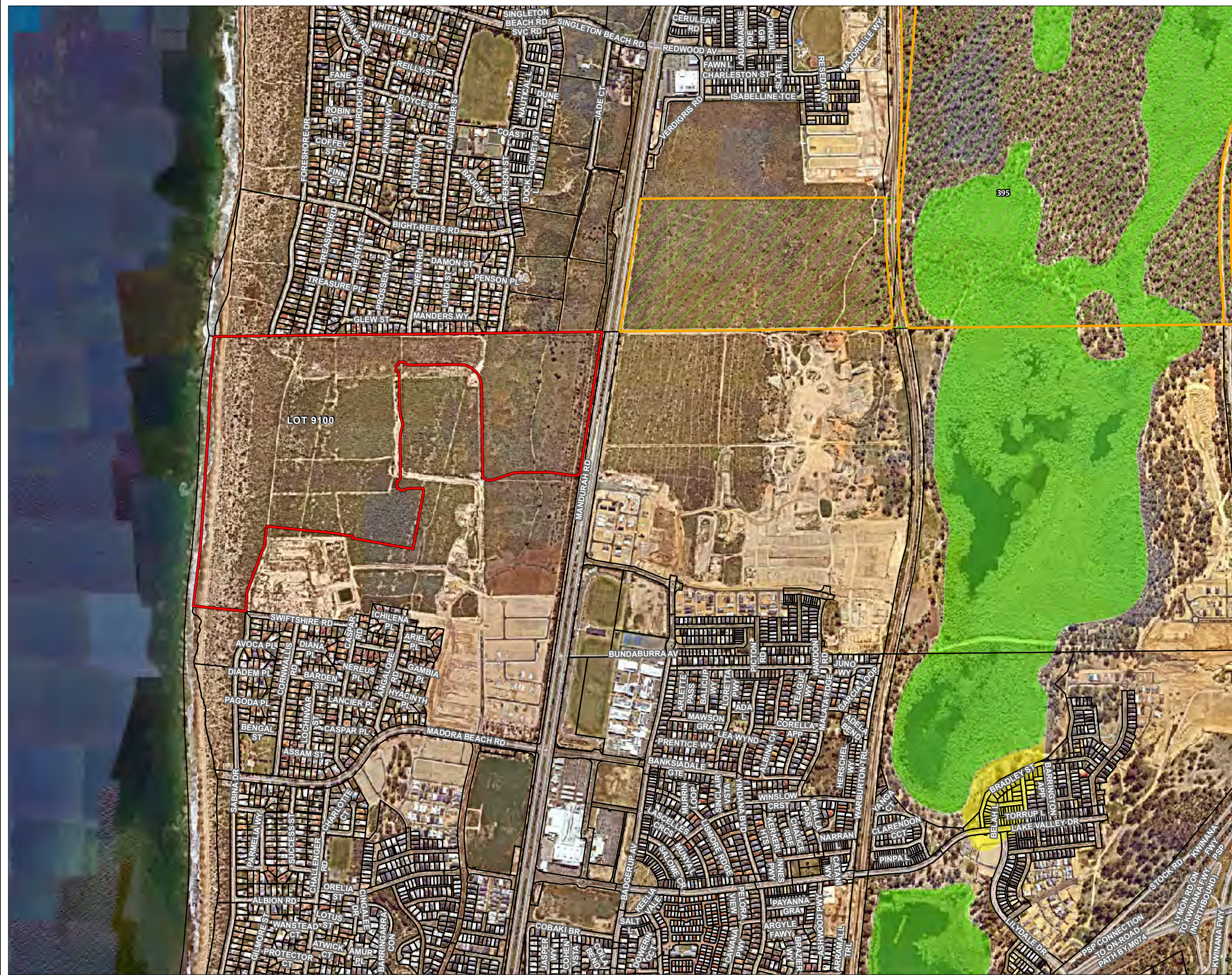


This plan has been prepared for general information purposes only and uses potentially uncontrolled data from external sources. CLE does not guarantee the accuracy of this plan and it should not be used for any detailed site design. This plan remains the property of CLE.



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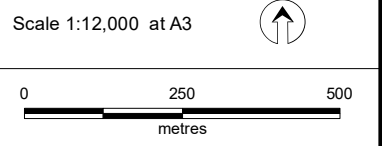




- Legend**
- Project area
  - Cadastral boundary
  - Legislated lands and waters (DBCA)
    - Crown Freehold - Dept Managed
    - Bush Forever site (DPLH)
  - Geomorphic wetlands (DBCA)
    - Conservation
    - Resource enhancement
    - Multiple use
    - Not applicable
    - Not assessed
  - Roads (MRWA)



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 Version: A      Date: 08-Oct-2021  
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**Seaside Estate,  
Madora Bay, WA**

**SITE OVERVIEW**

**FIGURE 3**

File Name: W:\Projects\1\Open\Satterley Property Group\Madora bay\60703 Madora Bay LSP amendment - BMP\GIS\Maps\R01\_Rev\_A\60703\_03\_A3\_SiteOverview.mxd  
 Image Reference: www.nearmap.com © Imagery Date: 13. August 2021.

## 2. Environmental considerations

### 2.1 Native vegetation - modification and clearing

Aside from the majority of vegetation within the foreshore reserve, as well as vegetation proposed to be retained within POS 9 in the northeast and the Mandurah Road buffer in the east, the project area will be cleared on a staged basis in preparation for proposed urban development throughout the site. Strategen-JBS&G understands that all relevant environmental approvals have or will be sought prior to any clearing associated with the proposal.

The key environmental features of the project area and future development areas to the north, south and east were identified in the Environmental Assessment Report (EAR) prepared by Endplan Environmental (2013), which include:

- approximately 97% of the vegetation is in a Degraded to Completely Degraded condition reflecting the past rural nature of the property
- no Threatened Flora, Threatened Ecological Communities or Priority Ecological Communities are present
- two Priority 4 flora species were identified during the flora and vegetation survey, which have no specific protection status; however, retention is proposed where possible within POS areas
- the site is identified as a Regional Significant Natural Area by the Swan Bioplan mapping. As such, detailed flora and fauna surveys have been undertaken to document the site-specific ecological features. These investigations have found that the vegetation on-site is generally degraded with limited fauna habitat values present
- no Black Cockatoos were sighted or located on site. Two species of Black Cockatoo may occasionally forage on-site, although this is highly unlikely given the very limited areas of the species' preferred food sources and absence of any roosting or nesting trees of an appropriate size
- no known Aboriginal or European heritage sites on either the State or Commonwealth Heritage Registers are listed as occurring on-site
- land use to the north, south and east comprises existing or proposed future urban development.

Based on the findings of the Endplan Environmental (2013) EAR, the project area does not contain any critical environmental values. An updated summary of environmental values is provided in Table 1, determined via desktop assessment of available environmental datasets.

**Table 1: Summary of environmental values**

Environmental value	Mapped as occurring within or adjacent to the project area		Description
	Within	Adjacent	
Environmentally Sensitive Area	✘	✔	An Environmentally Sensitive Area (ESA) is mapped as occurring approximately 100 m northeast of the project area associated with Paganoni Swamp Reserve.
Swan Bioplan Regionally Significant Natural Area	✔	✔	The project area and adjacent land to the south and east are mapped as a Swan Bioplan Regionally Significant Natural Area.

Environmental value	Mapped as occurring within or adjacent to the project area		Description
	Within	Adjacent	
Ecological linkages	✘	✓	A Perth Regional Ecological Linkage is located approximately 2 km east-northeast of the project area
Wetlands	✘	✓	A Conservation Wetland is mapped as occurring approximately 1.2 km to the east of the project area. No Ramsar sites are recorded as occurring.
Waterways	✘	✓	Paganoni Swamp occurs 1.2 km to the east of the project area.
Threatened Ecological Communities listed under the EPBC Act	✓	✓	Threatened Ecological Communities are mapped as occurring within and adjacent to the project area. Banksia Woodlands are mapped as possibly occurring throughout the project area and adjacent land. However, given site specific environmental assessment results, no TECs are present within the project area.
Fauna habitat listed under the EPBC Act	✓	✓	Possible Quenda habitat is mapped as occurring in the project area and adjacent land. With respect to Carnaby's Black Cockatoo, the project area and adjacent areas are mapped as containing: <ul style="list-style-type: none"> <li>possible breeding areas</li> <li>confirmed roosting areas.</li> </ul> Potential feeding areas (Swan Coastal Plain) occur in the east of the project area. However, given site specific environmental assessment results, the project area is unlikely to contain significant EPBC Act species habitat.
Threatened and priority fauna	✘	✘	Mapping layer not available at time of report preparation.
Bush Forever Site	✘	✓	Bush Forever Site 395 is mapped as occurring approximately 100 m northeast of the project area associated with Paganoni Swamp.
DBCA managed lands and waters (includes legislated lands and waters and lands of interest)	✘	✓	DBCA Legislated Lands and Waters are mapped as occurring approximately 1 km northeast of the project area. Paganoni Swamp Reserve is mapped as DBCA Managed Land.
Conservation covenants	✘	✘	N/A.
Heritage	✘	✘	No Aboriginal or European heritage sites on either the State or Commonwealth Heritage Registers are listed as occurring on site.

## 2.2 Revegetation / Landscape Plans

Vegetation retention, revegetation and/or rehabilitation that is likely to result in a classified vegetation extent and subsequent BAL response is proposed within the Foreshore Reserve to the west and POS 9 in the northeast (refer to Landscape POS Master Plan contained in Appendix A). Although the Mandurah Road buffer in the east is also proposed for vegetation retention, revegetation and/or rehabilitation, it is anticipated that this narrow (less than 20 m wide) strip of screening vegetation will achieve exclusion under Clause 2.2.3.2 (d) of AS3959, with future subdivision to be designed appropriately to deliver this exclusion.

The Foreshore Reserve is also proposed to have low threat POS treatments in accordance with the Landscape Foreshore Master Plan (also contained in Appendix A) and Foreshore Management Plan (Strategen-JBS&G 2021). Given the conceptual level of detail available, the extent of these low threat areas has not been captured as part of this BMP; however, future subdivision stage BMPs will need to incorporate accurate boundaries of any proposed low threat landscaping proposed within the Foreshore Reserve in accordance with more detailed landscape plans.

All other areas of POS and streetscaping will be landscaped to a non-vegetated/low threat state, excludable under Clauses 2.2.3.2 (e) and (f) of AS3959 and Schedule 1 of the Guidelines, as per the Landscape POS Master Plan contained in Appendix A. Detailed POS landscape plans will need to be prepared at the subdivision/clearance stage in accordance with the provisions of this BMP to demonstrate that the necessary low threat exclusions have been delivered.



### **3. Bushfire assessment results**

#### **3.1 Assessment inputs**

##### **3.1.1 Vegetation classification**

Strategen-JBS&G assessed classified vegetation and exclusions within 150 m of the project area through on-ground verification on 22 June 2021 in accordance with *AS 3959—2018 Construction of Buildings in Bushfire-Prone Areas* (AS 3959; SA 2018) and the *Visual Guide for Bushfire Risk Assessment in Western Australia* (DoP 2016). Georeferenced site photos and a description of the vegetation classifications and exclusions are contained in Appendix B and depicted in Figure 4 (for pre-development conditions) and Figure 5 (for anticipated post-development conditions). Vegetation classification/exclusion inputs are also summarised in Table 2 (for pre-development conditions) and Table 3 (for anticipated post-development conditions).

Predominant vegetation throughout the project area and adjacent 150 m was identified as:

- Class A forest abutting the western interface of Mandurah Road
- Class B woodland throughout a small pocket of retained canopy to the north
- Class D scrub throughout the central and eastern portions of the project area, as well as to the north
- Class C shrubland throughout western coastal/foreshore and northern portions of the project area
- Class G grassland opposite Mandurah Road to the east.

##### **3.1.2 Effective slope**

Strategen-JBS&G assessed effective slope under classified vegetation within the 150 m assessment area through on-ground verification on 22 June 2021 in accordance with AS 3959. Results were cross-referenced with DPIRD 2m contour data and are depicted in Figure 4 (for pre-development conditions) and Figure 5 (for anticipated post-development conditions). Effective slope under classified vegetation is also summarised in Table 2 (for pre-development conditions) and Table 3 (for anticipated post-development conditions).

Site observations indicate that slope throughout the project area and adjacent 150 m fluctuates from flat land in the east and west, to undulating throughout a central north/south ridgeline containing slopes of 5–10 degrees.

##### **3.1.3 Pre-development inputs**

A summary of the assessed pre-development classified vegetation, exclusions and effective slope within the project area and adjacent 150 m are listed in Table 2 and illustrated in Figure 4.

**Table 2: Pre-development vegetation classifications/exclusions and effective slope**

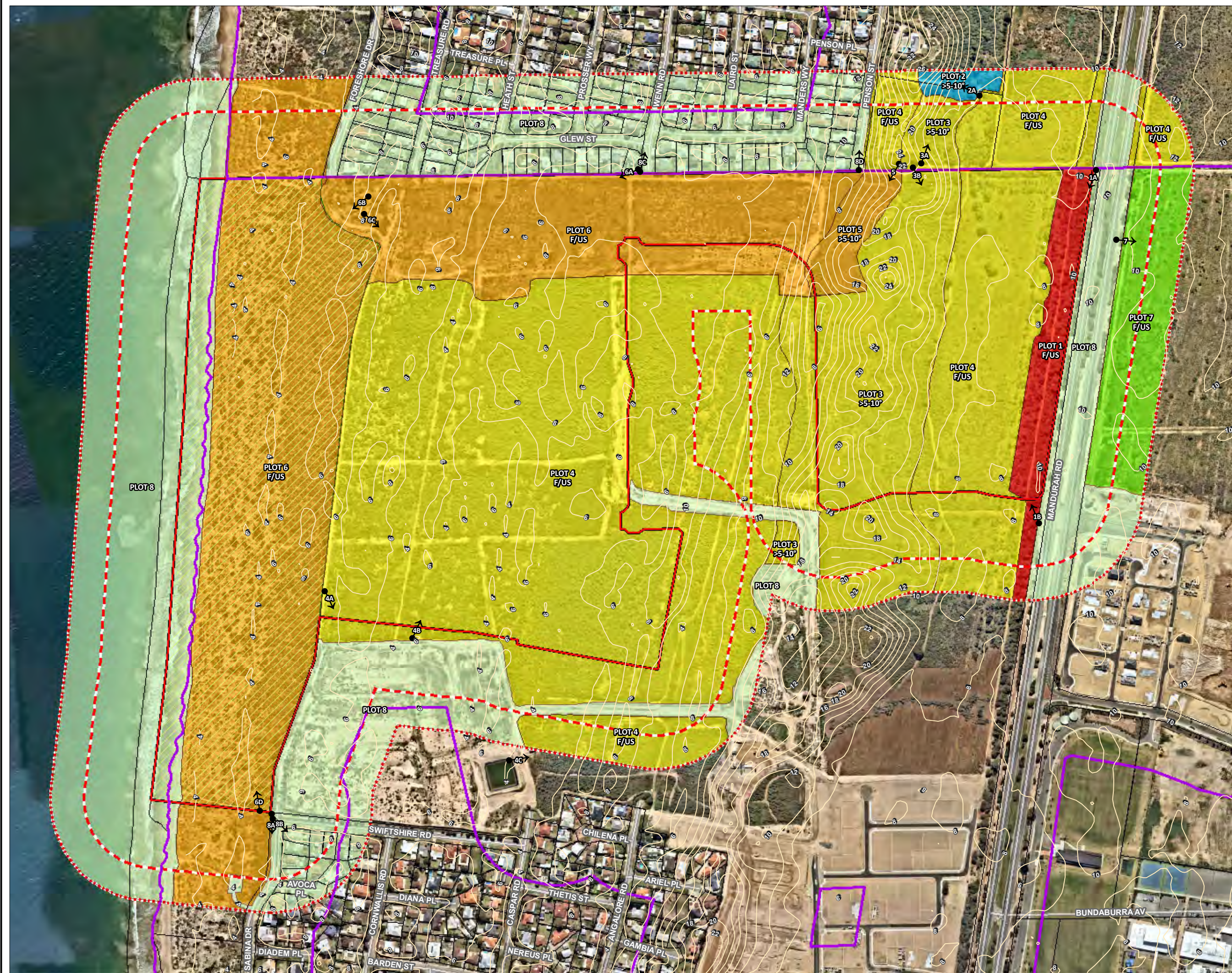
Vegetation plot	Vegetation classification	Effective slope	Comments
1	Class A Forest	Flat/upslope (0°)	Forest vegetation along the eastern boundary within the project area
2	Class B Woodland	Downslope >5–10°	A small pocket of sparse pine canopy over grass north of the project area
3	Class D Scrub	Downslope >5–10°	Shrubs between 2–6 m high; 10-30% foliage cover with a mixed species composition typical of coastal areas
4	Class D Scrub	Flat/upslope (0°)	Shrubs between 2–6 m high; 10-30% foliage cover with a mixed species composition typical of coastal areas
5	Class C Shrubland	Downslope >5–10°	Costal sand dune vegetation consisting of shrubland no more than 2 m high, typical of coastal areas
6	Class C Shrubland	Flat/upslope (0°)	Costal sand dune vegetation consisting of shrubland no more than 2 m high, typical of coastal areas
7	Class G Grassland	Flat/upslope (0°)	Grass and weeds >10 cm in height located on a current development lot east of the project area
8	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	A combination of existing non-vegetated areas and low threat managed vegetation within and adjacent to the project area

### 3.1.4 Post-development inputs

A summary of the anticipated post-development classified vegetation, exclusions and effective slope within the project area and adjacent 150 m are listed in Table 3 and illustrated in Figure 5.

**Table 3: Post-development vegetation classifications/exclusions and effective slope**

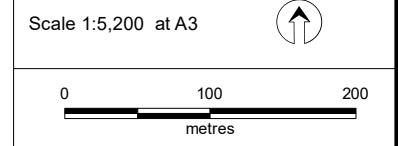
Vegetation plot	Vegetation classification	Effective slope	Comments
1	Class A Forest	Flat/upslope (0°)	Forest vegetation retained within POS 9 in the northeast
2	Class B Woodland	Downslope >5–10°	A small pocket of sparse pine canopy over grass north of the project area
3	Class D Scrub	Downslope >5–10°	Shrubs between 2–6 m high; 10-30% foliage cover with a mixed species composition typical of coastal areas (some retained within POS 9)
4	Class D Scrub	Flat/upslope (0°)	Shrubs between 2–6 m high; 10-30% foliage cover with a mixed species composition typical of coastal areas (some retained within POS 9)
5	Class C Shrubland	Downslope >5–10°	Costal sand dune vegetation consisting of shrubland no more than 2 m high, typical of coastal areas (retained within POS 9)
6	Class C Shrubland	Flat/upslope (0°)	Costal sand dune vegetation consisting of shrubland no more than 2 m high, typical of coastal areas (some retained within POS 9 and the Foreshore Reserve)
7	Class G Grassland	Flat/upslope (0°)	Costal sand dune vegetation consisting of shrubland no more than 2 m high, typical of coastal areas
8	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	A combination of existing non-vegetated areas and low threat managed vegetation within and adjacent to the project area
9	Excluded – Low threat (Clause 2.2.3.2 [f])	N/A	Area to be modified to low threat as part of proposed development



- Legend**
- Project area
  - 100m assessment area
  - 150m assessment area
  - Cadastral boundary
  - Bushfire prone areas
  - POS Foreshore
- Vegetation classification
- Class A Forest
  - Class B Woodland
  - Class C Shrubland
  - Class D Scrub
  - Class G Grassland
  - Clause 2.2.3.2 (e) & (f)
- Photo point directions
  - Topographic contours (mAHD)
  - Roads (MRWA)



Job No: 60703  
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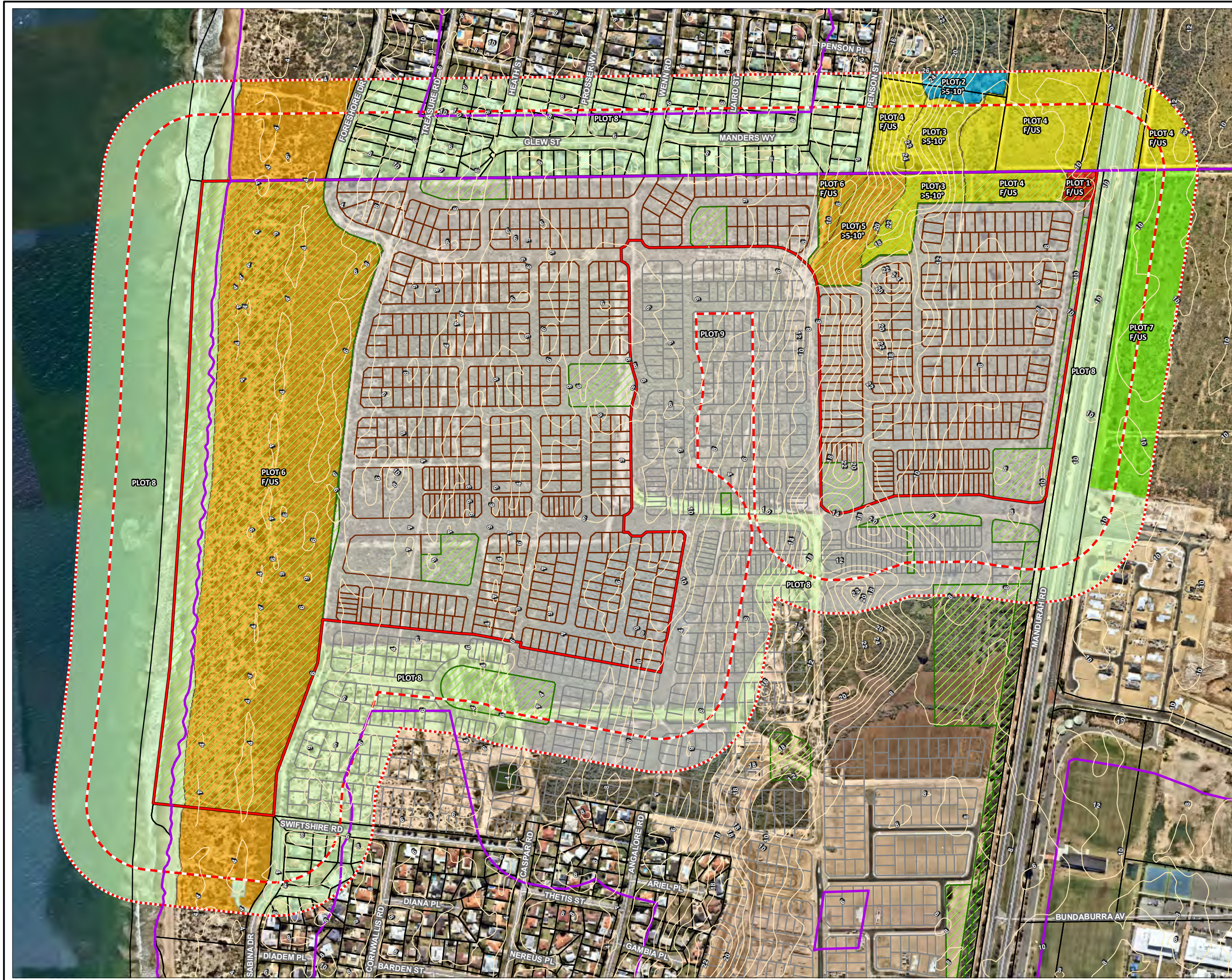
Coord. Sys. GDA 1994 MGA Zone 50

**Seaside Estate,  
Madora Bay, WA**

**PRE-DEVELOPMENT  
VEGETATION CLASSIFICATION  
AND EFFECTIVE SLOPE**

**FIGURE 4**

File Name: W:\Projects\1\Open\Satterley Property Group\Madora bay\60703 Madora Bay LSP amendment - BMP\GIS\Maps\R01\_Rev\_A\60703\_04\_A3\_PreDevVeg.mxd  
 Image Reference: www.nearmap.com - Imagery Date: 13. August 2021.



- Legend**
- Project area
  - 100m assessment area
  - 150m assessment area
  - Cadastral boundary
  - Bushfire prone areas
  - POS
- Vegetation classification**
- Class A Forest
  - Class B Woodland
  - Class C Shrubland
  - Class D Scrub
  - Class G Grassland
  - Clause 2.2.3.2 (e) & (f)
  - Area to be modified to non-vegetated and low threat state
- Proposed lots
  - Indicative future subdivisions
  - Topographic contours (mAH)
  - Roads (MRWA)



Job No: 60703  
 Client: Satterley Property Group  
 Version: A Date: 19-Oct-2021  
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Scale 1:5,200 at A3

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**Seaside Estate,  
Madora Bay, WA**

**POST-DEVELOPMENT  
VEGETATION CLASSIFICATION  
AND EFFECTIVE SLOPE**

**FIGURE 5**

File Name: W:\Projects\1\Open\Satterley Property Group\Madora bay\60703 Madora Bay LSP amendment - BMP\GIS\Maps\R01\_Rev\_A\60703\_05\_A3\_PostDevVeg.mxd  
 Image Reference: www.nearmap.com - Imagery Date: 13. August 2021.

## 3.2 Assessment outputs

### 3.2.1 Bushfire Hazard Level (BHL) assessment

Pre and post-development vegetation extents have been assigned a bushfire hazard level in accordance with the methodology detailed in Appendix Two of the Guidelines as outlined in Table 4.

**Table 4: Bushfire hazard levels and characteristics**

Bushfire hazard level	Characteristics*
Extreme	<ul style="list-style-type: none"> <li>• Class A Forest</li> <li>• Class B Woodland (05)</li> <li>• Class D Scrub</li> <li>• Any classified vegetation with a greater than 10° slope.</li> </ul>
Moderate	<ul style="list-style-type: none"> <li>• Class B Low woodland (07)</li> <li>• Class C Shrubland</li> <li>• Class E Mallee/Mulga</li> <li>• Class G Grassland, including sown pasture and crops</li> <li>• Class G Grassland: Open woodland (06), Low open woodland (08), Open shrubland (09)</li> <li>• Vegetation that has a low hazard level but is within 100 metres of vegetation classified as a moderate or extreme hazard, is to adopt a moderate hazard level.</li> </ul>
Low	<ul style="list-style-type: none"> <li>• Low threat vegetation may include areas of maintained lawns, golf courses, public recreation reserves and parklands, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and windbreaks</li> <li>• Managed grassland in a minimal fuel condition (insufficient fuel is available to significantly increase the severity of the bushfire attack). For example, short-cropped grass to a nominal height of 100 millimetre</li> <li>• Non-vegetated areas including waterways, roads, footpaths, buildings and rock outcrops.</li> </ul>
*Vegetation classifications from AS 3959-2018 Table 2.3.	

#### 3.2.1.1 Pre-development BHL

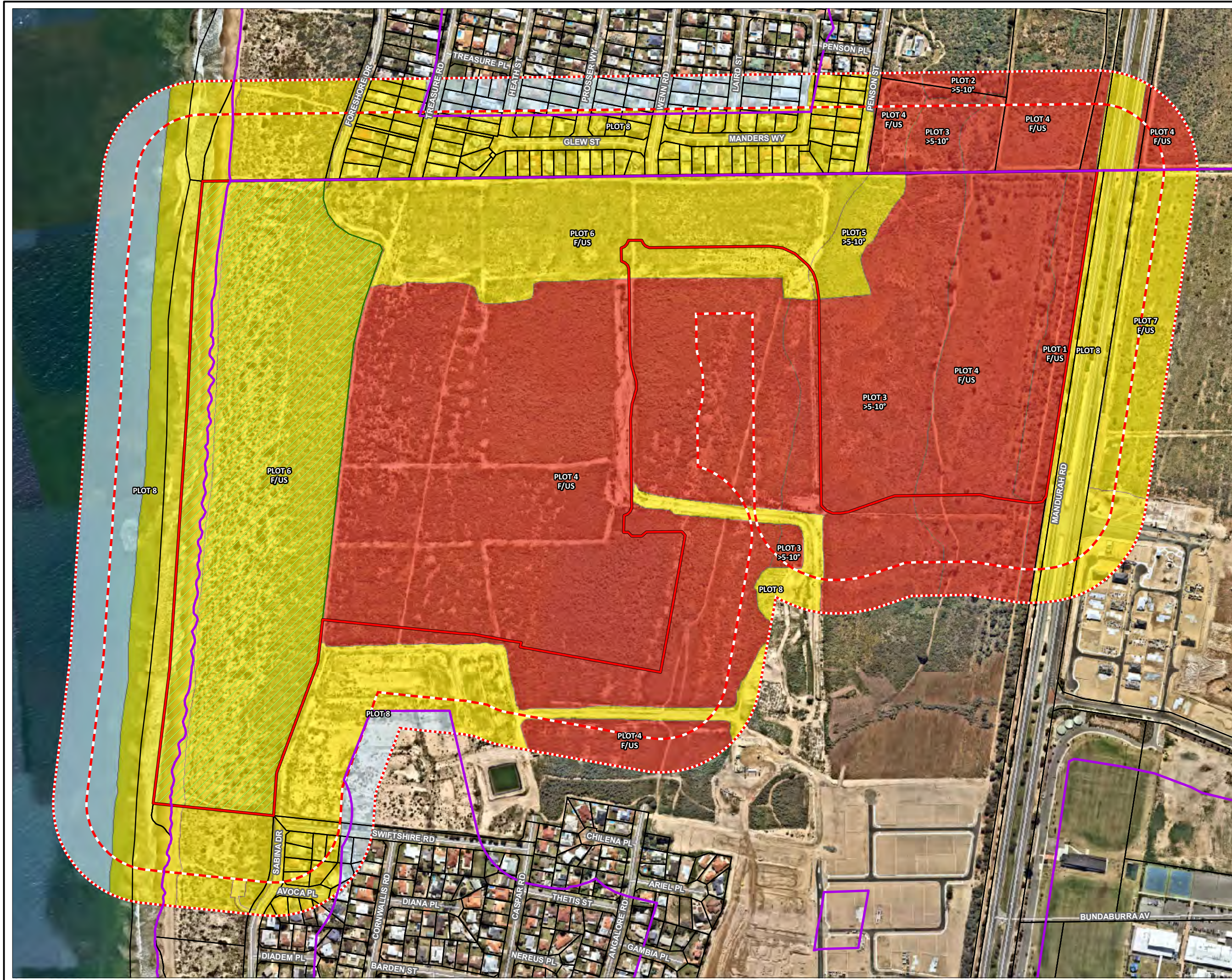
Strategen-JBS&G has mapped the pre-development bushfire hazard levels within the project area and adjacent 150 m wide assessment area. The bushfire hazard levels have been assessed on the basis of the vegetation discussed in Section 3.1.3 (i.e. the current pre-development extent of vegetation within and surrounding the project area).

The pre-development BHL assessment (refer to Figure 6) shows that based on the existing vegetation, the project area and adjacent 150 m contains land with low, moderate and extreme bushfire hazard levels.

#### 3.2.1.2 Post-development BHL

Strategen-JBS&G has mapped the anticipated post-development bushfire hazard levels to demonstrate that the future bushfire hazard levels will be acceptable for future development to occur within the project area. The bushfire hazard levels have been assigned on the basis of the vegetation discussed in Section 3.1.4 and the future expected vegetation extent within and surrounding the project area.

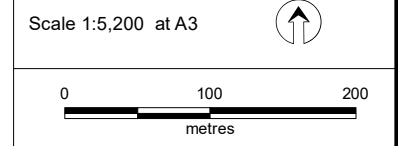
The post-development BHL assessment (refer to Figure 7) demonstrates that all future habitable development will be located on land with either a low or moderate bushfire hazard level, which is sufficient to address the requirements of acceptable solution A1.1 of Guideline bushfire protection criteria.



- Legend**
- Project area
  - 100m assessment area
  - 150m assessment area
  - Cadastral boundary
  - Bushfire prone areas
  - POS Foreshore
- Hazard level
- Extreme
  - Moderate
  - Low
- Roads (MRWA)



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 Version: A Date: 19-Oct-2021  
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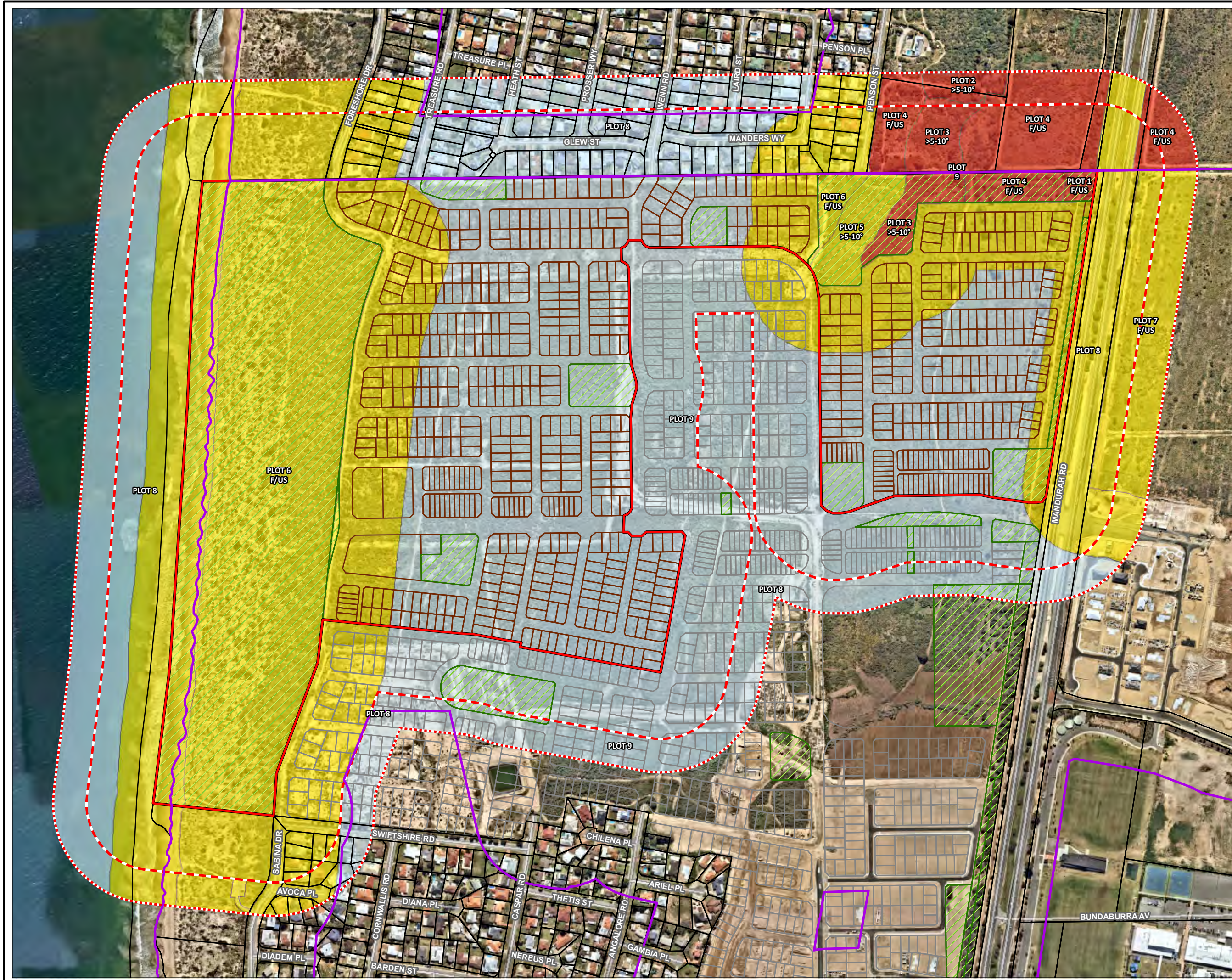
Coord. Sys. GDA 1994 MGA Zone 50

**Seaside Estate,  
 Madora Bay, WA**

**PRE-DEVELOPMENT  
 BUSHFIRE HAZARD LEVELS**

**FIGURE 6**

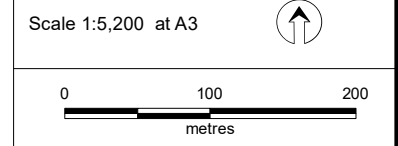
File Name: W:\Projects\1\Open\Satterley Property Group\Madora bay\60703 Madora Bay LSP amendment - BMP\GIS\Maps\R01\_Rev\_A\60703\_06\_A3\_PreDevBHLs.mxd  
 Image Reference: www.nearmap.com - Imagery Date: 13. August 2021.



- Legend**
- Project area
  - 100m assessment area
  - 150m assessment area
  - Cadastral boundary
  - Bushfire prone areas
  - POS
- Hazard level**
- Extreme
  - Moderate
  - Low
- Proposed lots
  - Indicative future subdivisions
  - Roads (MRWA)



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 Client: Satterley Property Group  
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**Seaside Estate,  
 Madora Bay, WA**

**POST-DEVELOPMENT  
 BUSHFIRE HAZARD LEVELS**

**FIGURE 7**

File Name: W:\Projects\1\Open\Satterley Property Group\Madora bay\60703 Madora Bay LSP amendment - BMP\GIS\Maps\R01\_Rev\_A\60703\_07\_A3\_PostDevBHLs.mxd  
 Image Reference: www.nearmap.com - Imagery Date: 13. August 2021.

## 4. Identification of bushfire hazard issues

### 4.1 Bushfire context

The project area is surrounded by existing urban development to the north and south in the form of constructed dwellings, roads, commercial precincts and low threat managed landscaping. Land to the east of the project area is in the process of being developed, with the vegetation being progressively cleared in accordance with staged development.

The greatest bushfire threat to the proposed development is from remnant scrub vegetation retained within the project area itself (noting this will be progressively removed as part of staged subdivision) and to the northeast of the project area. The fire run to the northeast is substantial (up to 4.5 km) throughout scrub vegetation retained within Bush Forever sites. Although fragmented by significant infrastructure corridors (i.e. from east to west being Kwinana Freeway, powerline corridor, Mandurah railway line and Mandurah Road), this vegetation has the potential to escalate to exhibit steady state bushfire behaviour and impact the project area with moderate to high levels of radiant heat and ember attack at the northeast development interface.

The foreshore reserve also has the potential to pose a bushfire threat to the project area, albeit the expected impacts from shrubland vegetation are expected to be significantly moderated compared to the long scrub fire runs to the northeast.

On the basis of the above, low threat separation, BAL rated construction (where required) and vehicular access should be prioritised at the key hazard interfaces to the west and northeast, with staging buffers to be employed to manage the risk from any temporary internal hazards.

### 4.2 Bushfire hazard issues

It is considered that the bushfire risk to the proposed development posed by the abovementioned hazards can be managed through application of standard acceptable solutions under the Guidelines, as well as through a direct bushfire suppression response if required. Examination of the bushfire hazards to the project area has identified the following bushfire hazard issues:

1. The ability for the proposed residential lots to achieve a compliant rating of BAL-29 or lower is dependent on the implementation and maintenance of non-vegetated/low threat public roads, POS and 100 m wide low threat staging buffers at the interface with classified vegetation. The required separation distances for BAL-29 to be achieved is provided for each of the abutting vegetation classifications depicted in Figure 5 as follows:
  - a. Plot 1 Class A forest (flat/upslope): 21 m
  - b. Plot 3 Class D scrub (downslope >5–10 degrees): 17 m
  - c. Plot 4 Class D scrub (flat/upslope): 13 m
  - d. Plot 5 Class C shrubland (downslope >5–10 degrees): 11 m
  - e. Plot 6 Class C shrubland (flat/upslope): 9 m.
2. Two different access routes that connect to the public road network will need to be provided throughout the development, including during stages development.
3. Reticulated water and a network of street hydrants will need to be provided for proposed development in accordance with DFES and Water Corporation design standards.

A compliance assessment against acceptable solutions of the bushfire protection criteria of the Guidelines is provided in Section 5.1 to demonstrate that each relevant acceptable solution can be delivered as part of future staged subdivision.



## 5. Assessment against the bushfire protection criteria

### 5.1 Compliance table

An acceptable solutions assessment against the bushfire protection criteria is provided in Table 5.

**Table 5: Compliance with the bushfire protection criteria of the Guidelines**

Bushfire protection criteria	Method of compliance	Proposed bushfire management strategies
	Acceptable solutions	
Element 1: Location	A1.1 Development location	The post-development BHL assessment (Figure 7) identifies that on completion of development, all proposed areas of habitable developable will comprise either a Low or Moderate BHL. All areas of habitable development will be avoided on land with an extreme BHL.
Element 2: Siting and design	A2.1 Asset Protection Zone	It is not anticipated that any formal Asset Protection Zones (APZs) will be required as part of proposed development since non-vegetated/low threat perimeter roads and POS will be provided at all interfaces with classified vegetation sufficient to achieve BAL-29 or lower for all proposed habitable development. Notwithstanding, should any minor APZ setbacks be required within proposed lots, these will be enforced via R-code setbacks, LDP provisions and/or restrictive covenants on title and established and maintained in accordance with Schedule 1 (APZ standards) of the Guidelines (refer to Appendix C). In addition, any low threat POS and staging buffers established as part of development will be required to achieve the relevant exclusion clauses under As3959 and/or Schedule 1 of the Guidelines.
Element 3: Vehicular access	A3.1 Two access routes	The proposed concept layout depicted in Figure 2 demonstrates that ultimately, the proposed public road network will provide through access throughout the development with no dead ends, with proposed connections to adjacent existing developments to the north and south, as well as a primary connection to Mandurah Road to the east.
	A3.2 Public road	All public roads will be constructed to the relevant technical requirements of the Guidelines (see Appendix D).
	A3.3 Cul-de-sac (including a dead-end-road)	No permanent cul-de-sacs are proposed, and the project area is not serviced by an existing cul-de-sac. However, any temporary cul-de-sacs required to achieve compliance during internal staging will be less than 200 m in length, will include minimum 17.5 m diameter turn-around heads and will be constructed to the relevant technical requirements of the Guidelines (see Appendix D).
	A3.4 Battle-axe	N/A – no battle-axes are proposed as part of the development and the project area is not serviced by an existing battle-axe.
	A3.5 Private driveway longer than 50 m	N/A – the proposed lots are of size where all future habitable development will be located within 50 m of a public road.
	A3.6 Emergency access way	No permanent emergency access ways (EAW) are proposed; however, if development and vehicular access construction is to be staged, any proposed temporary EAW is to be constructed to the relevant technical requirements of the Guidelines (see Appendix D).
	A3.7 Fire service access routes (perimeter roads)	N/A – the proposed subdivision design does not require fire service access routes (FSARs) to achieve access within and around the perimeter of the project area.
	A3.8 Firebreak width	Lot boundary firebreaks will not be required for proposed residential lots under firebreak notice provisions; however, lot boundary firebreaks may be required around the perimeter of vegetated POS areas (e.g. POS 9 and the Foreshore Reserve). This is to be determined at the subdivision/clearance stage in consultation with local government.

Bushfire protection criteria	Method of compliance	Proposed bushfire management strategies
	Acceptable solutions	
Element 4: Water	A4.1 Reticulated areas	The proposed development will be connected to reticulated water supply via extension of services from surrounding development in accordance with Water Corporations Design Standard 63 requirements (refer to Appendix E).
	A4.2 Non-reticulated areas	N/A – the proposed subdivision is located within an existing reticulated area.
	A4.3 Individual lots within non-reticulated areas (Only for use if creating 1 additional lot and cannot be applied cumulatively)	N/A – the proposed subdivision is located within an existing reticulated area.

## 6. Responsibilities for implementation and management of the bushfire measures

This BMP has been prepared as a strategic guide to demonstrate how development compliance will be delivered at future planning stages in accordance with the Guidelines. Aside from the preparation of future BMPs to accompany future subdivision and/or Development Applications (DAs) where appropriate, there are no further items to implement, enforce or review at this strategic stage of the planning process.

Future BMPs prepared for subsequent subdivision and/or DAs are to meet the relevant commitments outlined in this strategic level BMP, address the relevant requirements of SPP 3.7 (i.e. Policy Measures 6.4 or 6.5 where applicable) and demonstrate in detail how the proposed development will adopt the relevant acceptable solutions and meet the bushfire protection criteria of the Guidelines. Future BMPs are to include the following detailed information:

- proposed lot layout, including any public open space (POS)
- detailed landscaping design in regard to POS/Foreshore Reserve to demonstrate the intended classified vegetation and exclusions
- post-development classified vegetation extent, effective slope and separation distances
- post-development BAL application requirements
- BAL contour map demonstrating that proposed development areas will achieve a rating of BAL-29 or lower
- width and alignment of any required APZ setbacks into lots
- confirmation of how bushfire management will be addressed regarding temporary bushfire hazards on adjacent development stages, including low threat staging buffers or temporary quarantining of lots where required
- proposed approach to fuel management or AS 3959 application in response to on-site POS
- vehicular access provisions, including demonstration that a minimum of two access routes will be achieved for each stage of development (may require consideration of temporary compliant cul-de-sacs/EAWs)
- future requirements for any high-risk or vulnerable land uses, such as provision of Bushfire Risk Management Plans or Bushfire Emergency Evacuation Plans
- provisions for notification on Title for any future lots with a rating of BAL-12.5 or greater as a condition of subdivision
- compliance requirements with the annual City firebreak notice
- assessment against the bushfire protection criteria
- proposed implementation and audit program outlining all measures requiring implementation and the appropriate timing and responsibilities for implementation.

On the basis of the information contained in this BMP, Strategen-JBS&G considers the bushfire hazards within and adjacent to the site and the associated bushfire risks are readily manageable through application of standard acceptable solutions outlined in the Guidelines, which will be implemented as required throughout future planning stages. Strategen-JBS&G considers that on implementation of the proposed management measures, the site will be able to be developed with a manageable level of bushfire risk whilst maintaining full compliance with the Guidelines.

## 7. References

- Department of Fire and Emergency Services (DFES) 2019, *Map of Bush Fire Prone Areas*, [Online], Government of Western Australia, available from: <https://maps.slip.wa.gov.au/landgate/bushfireprone/>, [18/06/2021].
- Department of Planning (DoP) 2016, *Visual guide for bushfire risk assessment in Western Australia*, Department of Planning, Perth.
- Endplan Environmental 2013, *Environmental Assessment: Part Lot 100 Mandurah Road, Madora Bay North*, North Fremantle.
- Standards Australia (SA) 2018, *Australian Standard AS 3959–2018 Construction of Buildings in Bushfire-prone Areas*, Standards Australia, Sydney.
- Strategen-JBS&G 2020a, *Bushfire Management Plan (Subdivision Application): Lot 101 Mandurah Road, Mandurah*, Bunbury/Perth.
- Strategen-JBS&G 2020b, *Bushfire Management Plan (Subdivision Application): Precinct 2 - Lot 101 Mandurah Road, Mandurah*, Bunbury/Perth.
- Strategen-JBS&G 2021a, *Bushfire Management Plan (Subdivision Application): Phase 4 (Lot 101 Mandurah Road) Madora Bay*, Bunbury/Perth.
- Strategen-JBS&G 2021a, *Seaside Estate Foreshore Management Plan, Lot 101 on Plan 37957 Madora Bay, Mandurah*, Bunbury/Perth.
- Western Australian Planning Commission (WAPC) 2015, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*, Western Australian Planning Commission, Perth.
- Western Australian Planning Commission (WAPC) 2017, *Guidelines for Planning in Bushfire Prone Areas*, Version 1.3 August 2017, Western Australian Planning Commission, Perth.

## 8. Limitations

### Scope of services

This report ("the report") has been prepared by Strategen-JBS&G in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Strategen-JBS&G. In some circumstances, a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services. This report is strictly limited to the matters stated in it and is not to be read as extending, by implication, to any other matter in connection with the matters addressed in it.

### Reliance on data

In preparing the report, Strategen-JBS&G has relied upon data and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise expressly stated in the report, Strategen-JBS&G has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. Strategen-JBS&G has also not attempted to determine whether any material matter has been omitted from the data. Strategen-JBS&G will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to Strategen-JBS&G. The making of any assumption does not imply that Strategen-JBS&G has made any enquiry to verify the correctness of that assumption.

The report is based on conditions encountered and information received at the time of preparation of this report or the time that site investigations were carried out. Strategen-JBS&G disclaims responsibility for any changes that may have occurred after this time. This report and any legal issues arising from it are governed by and construed in accordance with the law of Western Australia as at the date of this report.

### Environmental conclusions

Within the limitations imposed by the scope of services, the preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted environmental consulting practices. No other warranty, whether express or implied, is made.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

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## Appendix A Landscape Plan



**LEGEND**

- 01 LOCAL VILLAGE PARK - 1.70 Ha - 80% IRRIGATED**
  - SMALL INFORMAL PARK
  - PATH CONNECTIONS INTO SURROUNDING STREETS
  - SMALL SHELTER WITH SEATING
  - INFORMAL PLAY ELEMENTS
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB, GROUND COVER PLANTING & TURF
  - FULLY IRRIGATED
- 02 LOCAL VILLAGE BASIN - 0.38 Ha - 0% IRRIGATED**
  - SMALL INFORMAL PARK
  - PRIMARY PURPOSE AS DRAINAGE BASIN
  - PATH CONNECTIONS INTO SURROUNDING STREETS
  - INFORMAL SEATING NODES
  - ADVANCED TREE PLANTING WITH AREAS OF LOW SHRUB & GROUNDCOVERS PLANTING
  - NOT IRRIGATED
- 03 LOCAL VILLAGE PARK - 0.39 Ha - 50% IRRIGATED**
  - SMALL INFORMAL PARK
  - PATH CONNECTIONS INTO SURROUNDING STREETS
  - SMALL SHELTER WITH SEATING
  - INFORMAL PLAY ELEMENTS
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB, GROUND COVER PLANTING & TURF
  - PARTIALLY IRRIGATED
- 04 SHARED COMMUNITY & PRIMARY SCHOOL OVAL - 2.33 Ha - 80% IRRIGATED**
  - TURF SPORTS FIELD, ACCOMODATING A VARIETY OF SPORTING CODES
  - SHARED USE WITH THE COMMUNITY & ADJACENT PRIMARY SCHOOL
  - MATURE TREE PLANTING TO EDGES
  - LARGE SHELTER WITH SEATING, BBQ, WATER FOUNTAIN
  - LARGE PLAYGROUND
  - POSSIBLE COMMUNITY FACILITY / SPORTING CLUB ROOMS
  - DRAINAGE BASIN(S)
  - FULLY IRRIGATED
- 05 COMMUNITY CONNECTOR PARKS - 0.62 Ha - 80% IRRIGATED**
  - SMALL INFORMAL PARKS
  - PATH CONNECTIONS INTO SURROUNDING STREETS WITH SEATING AND SMALL SHELTERS
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB & GROUND COVER PLANTING
  - SMALL ARTWORK PEICES, LIT DURING NIGHT TIME.
  - FULLY IRRIGATED
- 06 ENTRY PARK - 0.65 Ha - 0% IRRIGATED**
  - INFORMAL ENTRY PARK
  - SEASIDE ENTRY WALLS WITH SIGNS & ARTWORKS
  - PATH CONNECTIONS INTO SURROUNDING STREETS WITH SEATING
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB & GROUND COVER PLANTING
  - DRAINAGE BASIN(S)
  - NOT IRRIGATED
- 07 LOCAL VILLAGE PARK - 0.46 Ha - 50% IRRIGATED**
  - SMALL INFORMAL PARK
  - PATH CONNECTIONS INTO SURROUNDING STREETS
  - SMALL SHELTER WITH SEATING
  - INFORMAL PLAY ELEMENTS
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB, GROUND COVER PLANTING & TURF
  - DRAINAGE BASIN(S)
  - PARTIALLY IRRIGATED
- 08 NEIGHBOURHOOD PARK - 0.58 Ha - 50% IRRIGATED**
  - LARGE INFORMAL PARK
  - LARGE & SMALL SHELTERS WITH SEATING, BBQ'S & PICNIC FACILITIES
  - PLAY AREA & OUTDOOR EXERCISE EQUIPMENT
  - PUBLIC ARTWORK
  - OPEN INFORMAL RECREATION SPACE
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB, GROUND COVER PLANTING & TURF
  - PARTIALLY IRRIGATED
- 09 DUNE PARK - 2.33 Ha - 30% IRRIGATED**
  - COASTAL DUNE PARK
  - RETENTION OF DUNE LANDFORM & VEGETATION WHERE PRACTICABLE
  - CONNECTIONS TO SINGLETON TO THE NORTH & MANDURAH ROAD
  - SMALL NODES AT KEY LANDFORMS & VANTAGE POINTS WITH SHELTER, SEATING, INTERPRETATION SIGNS & SMALL ARTWORKS
  - DRYLAND DUNAL REVEGETATION PLANTING
  - PARTIALLY IRRIGATED
- 10 LOCAL VILLAGE PARK - 3.48 Ha - 50% IRRIGATED**
  - SMALL INFORMAL PARK
  - PATH CONNECTIONS INTO SURROUNDING STREETS
  - SMALL SHELTER WITH SEATING
  - INFORMAL PLAY ELEMENTS
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB, GROUND COVER PLANTING & TURF
  - DRAINAGE BASIN(S)
  - PARTIALLY IRRIGATED
- 11 LOCAL VILLAGE BASIN - 0.38 Ha - 0% IRRIGATED**
  - SMALL INFORMAL PARK
  - PRIMARY PURPOSE AS DRAINAGE BASIN
  - PATH CONNECTIONS INTO SURROUNDING STREETS
  - INFORMAL SEATING NODES
  - ADVANCED TREE PLANTING WITH AREAS OF LOW SHRUB & GROUNDCOVERS PLANTING
  - NOT IRRIGATED
- 12 NEIGHBOURHOOD PARK - 1.03 Ha - 60% IRRIGATED**
  - LARGE INFORMAL PARK
  - LARGE & SMALL SHELTERS WITH SEATING, BBQ'S & PICNIC FACILITIES
  - PLAY AREA & OUTDOOR EXERCISE EQUIPMENT
  - PUBLIC ARTWORK
  - OPEN INFORMAL RECREATION SPACE
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB, GROUND COVER PLANTING & TURF
  - PARTIALLY IRRIGATED
- 13 LOCAL VILLAGE PARK - 0.5 Ha - 50% IRRIGATED**
  - SMALL INFORMAL PARK
  - PATH CONNECTIONS INTO SURROUNDING STREETS
  - SMALL SHELTER WITH SEATING
  - INFORMAL PLAY ELEMENTS
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB, GROUND COVER PLANTING & TURF
  - DRAINAGE BASIN(S)
  - PARTIALLY IRRIGATED
- 14 CENTRAL SEASIDE PARK - 2.5 Ha**
  - LARGE REGIONAL PARK
  - LARGE & SMALL SHELTERS WITH SEATING, BBQ'S & PICNIC FACILITIES
  - DUAL USE INTERNAL PATH NETWORK WITH CONNECTIONS INTO SURROUNDING STREETS
  - LARGE PLAY AREA WITH HALF COURT & INFORMAL SPORT FACILITIES E.G. SKATE PARK
  - FENCED DOG PARK
  - OFF STREET PARKING
  - PUBLIC ARTWORKS
  - OPEN INFORMAL RECREATION SPACE
  - MATURE TREE PLANTING WITH AREAS OF LOW SHRUB, GROUND COVER PLANTING & TURF
  - FULLY IRRIGATED
- 15 MANDURAH ROAD BUFFER (NORTH & SOUTH)**
  - RETAIN, PROTECT & TIDY UP EXISTING VEGETATION ALONG MANDURAH ROAD
  - PATH CONNECTIONS TO MANDURAH ROAD DUAL USE PATH
  - INFILL MATURE TREE PLANTING WITH TUBESTOCK PLANTING OF LOW SHRUBS & GROUND COVERS
  - BUSH LAND FENCE ON BOUNDARY
  - NO IRRIGATION

NORTH BUFFER: 0.39 Ha  
SOUTH BUFFER: 1.49 Ha
- 16 FORESHORE RESERVE**
  - BEACH FRONT DUNES
  - RETAIN & PROTECT EXISTING DUNAL LANDSCAPE & VEGETATION
  - ESTABLISH PERMANENT FENCED PATH CONNECTIONS TO BEACH WITH INTERPRETATION / WAYFINDING SIGNS
  - DRYLAND REVEGETATION PLANTING WORKS TO DEGRADED SITES
  - NO IRRIGATION

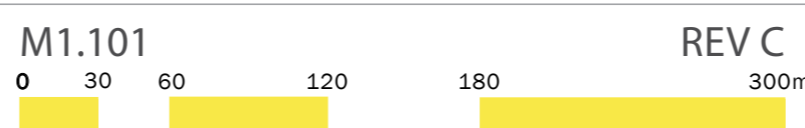
**SEASIDE MADORA BAY**

PREPARED FOR SATTERLEY

**LANDSCAPE PUBLIC OPEN SPACE MASTER PLAN**

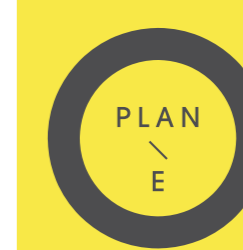
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LEGEND

- FULLY IRRIGATED POS
  - TURF
  - TREES
  - GARDEN BEDS
  - DRAINAGE BASIN PLANTING
  
- PARTIALLY IRRIGATED POS
 

2-3 YEARS FULLY IRRIGATED FOR ESTABLISHMENT. AFTER, DRAINAGE BASINS & GARDEN BEDS TO BE DISCONNECTED & NON IRRIGATED.

  - TREES
  - FEATURE GARDEN BEDS
  - SMALL TURF AREAS IF APPLICABLE

ALTERNATIVELY, HAND WATERING DURING MAINTENANCE TO THE ITEMS ABOVE, SUBSTITUTING OR REDUCING THE ALLOTMENT OF WATER TO THAT POS.
  
- NO IRRIGATION TO POS
 

HAND WATERING TO TREES AND PLANTING FOR ESTABLISHMENT ONLY.

WATER USED FOR IRRIGATION:

<b>01</b> AREA: 1.36 Ha	<b>03</b> AREA: 0.20 Ha	<b>10</b> AREA: 0.15 Ha	<b>02</b> AREA: 0 Ha
<b>04</b> AREA: 1.8 Ha	<b>07</b> AREA: 0.23 Ha	<b>12</b> AREA: 0.62 Ha	<b>06</b> AREA: 0 Ha
<b>05</b> AREA: 0.50 Ha	<b>08</b> AREA: 0.29 Ha	<b>13</b> AREA: 0.25 Ha	<b>11</b> AREA: 0 Ha
<b>14</b> AREA: 1.4 Ha	<b>09</b> AREA: 0.70 Ha	<b>15</b> AREA: 0 Ha	<b>16</b> AREA: 0 Ha

SUB TOTAL: 5.06 Ha

SUB TOTAL: 2.44 Ha

TOTAL GROUND WATER ALLOCATION ALLOWS FOR 7.5 Ha IRRIGATED PUBLIC OPEN SPACE.

SEASIDE MADORA BAY

PREPARED FOR SATTERLEY

LANDSCAPE IRRIGATION MASTERPLAN

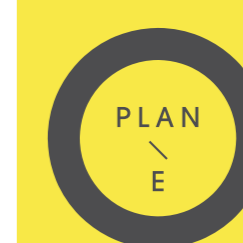
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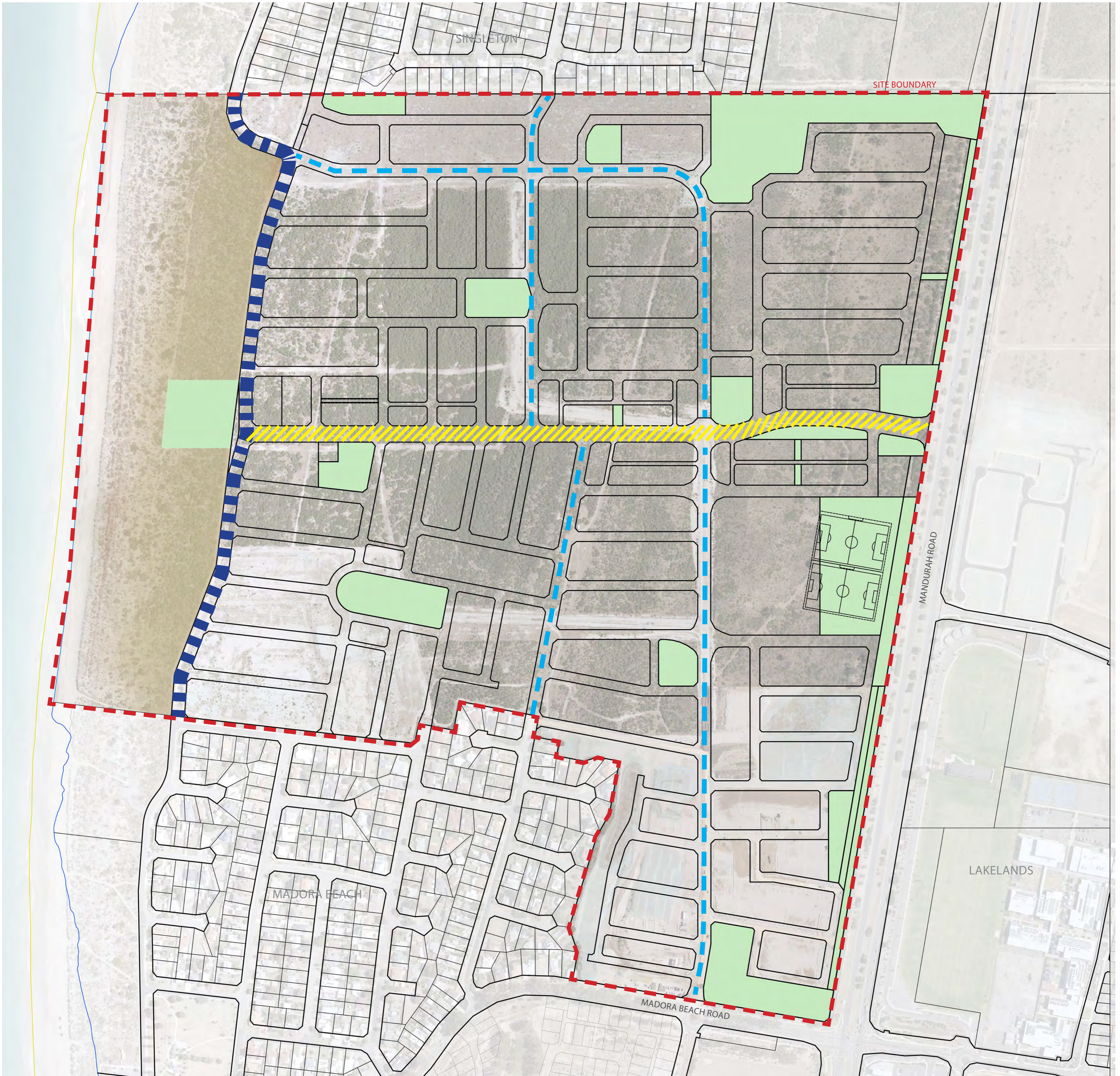
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LEGEND



COASTAL DRIVE

- NORTH - SOUTH COASTAL CONNECTION
- DUAL USE PATH TO WEST SIDE
- LOW COASTAL PLANTED VERGE TREATMENT
- STREET TREES TO BOTH SIDES
- IRRIGATED WITH WATER CART / TRUCK & RESIDENTIAL LOT MAINS WATER SUPPLY



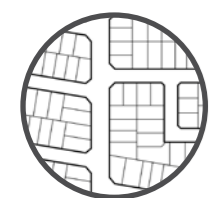
ENTRY BOULEVARD

- EAST - WEST CENTRAL CONNECTION & MAIN SEASIDE ENTRY ROAD
- DUAL USE PATH TO ONE VERGE WITH FOOTPATH ON OPPOSITE VERGE
- PLANTED & TURF VERGE TREATMENT
- PLANTED MEDIAN TREATMENT
- STREET TREES TO VERGE & MEDIAN
- FULLY IRRIGATED WITH BORE WATER SUPPLY



NEIGHBOURHOOD CONNECTORS

- MAIN NEIGHBOURHOOD CONNECTORS
- FOOTPATH TO BOTH SIDES
- STREET TREE PLANTING TO BOTH VERGES WITH 1 STREET TREE PER LOT & TREE PLANTING TO MEDIAN WHERE APPLICABLE
- TURF VERGE TREATMENT
- PLANTED MEDIAN TREATMENT
- VERGE & TREE IRRIGATED WITH WATER TRUCK & RESIDENTIAL LOT MAINS WATER SUPPLY
- MEDIAN PLANTING FULLY IRRIGATED WITH BORE WATER SUPPLY



LOCAL STREETS

- TURF & MULCH VERGE TREATMENT
- 1 STREET TREE PER LOT
- TURF VERGE & TREE PLANTING IRRIGATED WITH WATER CART / TRUCK & RESIDENTIAL LOT MAINS WATER SUPPLY

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LANDSCAPE BOULEVARD & CONNECTOR MASTERPLAN

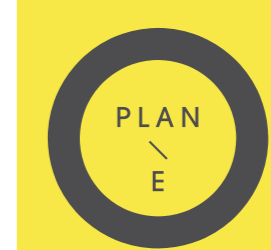
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- 01 EXISTING BEACH ACCESS
- 02 RETAINED QUANDONG TREES & HABITAT
- 03 DUAL USE PATH TO ROAD EDGE WITH STREET TREE PLANTING.
- 04 EXISTING VEGETATION
- 05 ASPHALT CAR PARK
- 06 BIKE PUMP PARK
- 07 SKATE PARK SUITABLE FOR ALL AGES
- 08 TURF AMPHITHEATRE WITH LARGE SHELTERS & BOARDWALKS.
- 09 POTENTIAL CAFE/RESTAURANT/PUB/SURF CLUB.
- 10 FLUSH ROAD & PEDESTRIAN UNIT PAVING. DESIGNATED PAVING COLOURS TO DELINEATE ROADWAYS AROUND VILLAGE SQUARE.
- 11 VILLAGE TOWN SQUARE WITH LARGE SHELTER & ARTWORK PIECE.
- 12 LARGE ALL AGES PLAYGROUND
- 13 BEACH ACCESS WITH BOARDWALK TO PROTECT EXISTING VEGETATION FROM EROSION.

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LANDSCAPE FORESHORE MASTERPLAN  
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## Appendix B Vegetation plot photos and description



Photo ID: 1a



Photo ID: 1b

<b>Plot number</b>	Plot 1
<b>Vegetation classification</b>	Class A Forest
<b>Description / justification</b>	Trees up to 30 m high; 30–70% foliage cover (may include understory of low trees or shrubs).



Photo ID: 2a

<b>Plot number</b>	Plot 2
<b>Vegetation classification</b>	Class B Woodland
<b>Description / justification</b>	A small pocket of sparse pine canopy over grass north of the project area.

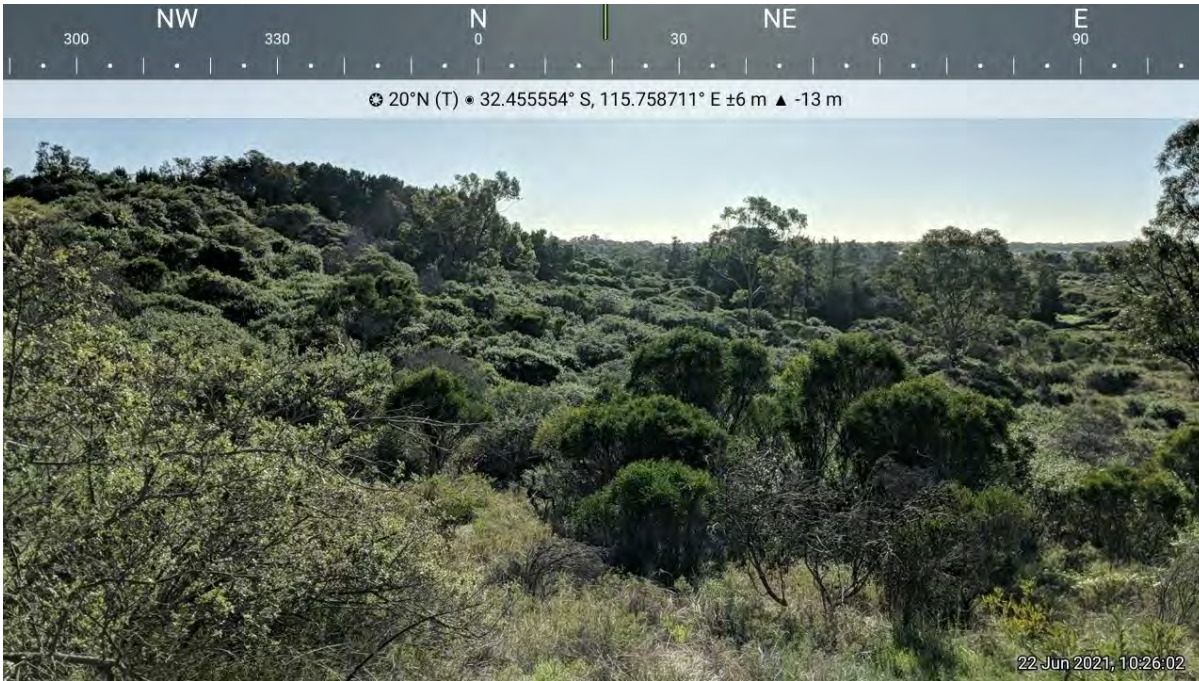


Photo ID: 3a (foreground)



Photo ID: 3b

<b>Plot number</b>	Plot 3
<b>Vegetation classification</b>	Class D Scrub
<b>Description / justification</b>	Shrubs greater than 2 m high; 10–30% foliage cover with a mixed species composition.



Photo ID: 4a



Photo ID: 4b



Photo ID: 4c (background)

<b>Plot number</b>	Plot 4
<b>Vegetation classification</b>	Class D Scrub
<b>Description / justification</b>	Shrubs between 2–6 m high; 10–30% foliage cover with a mixed species composition.



<b>Photo ID:</b> 5	
<b>Plot number</b>	Plot 5
<b>Vegetation classification</b>	Class C Shrubland
<b>Description / justification</b>	Shrubs <2 m high; greater than 30% foliage cover. Understory may contain grasses.





**Photo ID: 6a**



**Photo ID: 6b**



**Photo ID: 6c**



**Photo ID: 6d**

**Plot number**

Plot 6

**Vegetation classification**

Class C Shrubland

**Description / justification**

Shrubs <2 m high; greater than 30% foliage cover. Understory may contain grasses.



<b>Photo ID:</b> 7	
<b>Plot number</b>	Plot 7
<b>Vegetation classification</b>	Class G Grassland
<b>Description / justification</b>	Unmanaged grassland and weeds greater than 10 cm in height.



Photo ID: 8a



Photo ID: 8b

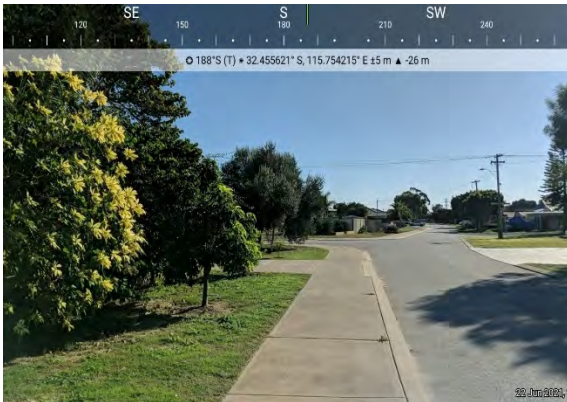


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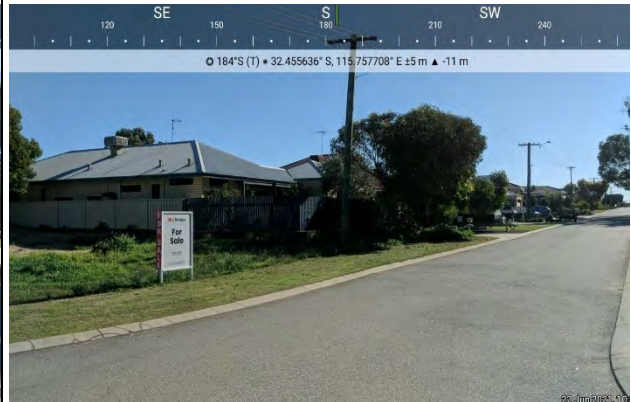


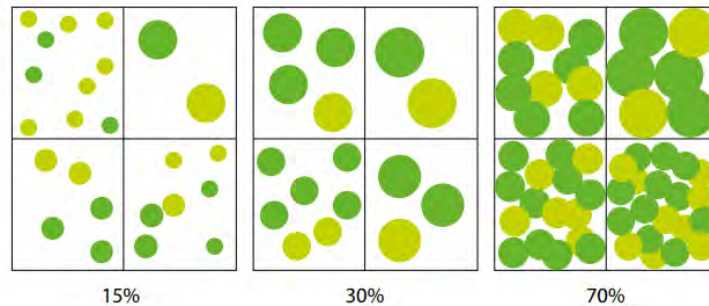
Photo ID: 8d

<b>Plot number</b>	Plot 8
<b>Vegetation classification</b>	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])
<b>Description / justification</b>	A combination of existing non-vegetated areas and low threat managed vegetation.

## Appendix C APZ standards (Schedule 1 of the Guidelines)


### Schedule 1: Standards for Asset Protection Zones

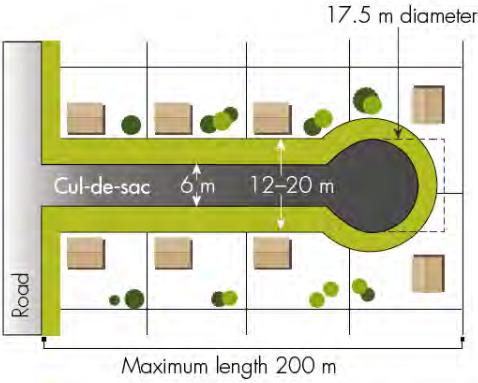
- **Fences:** within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used.
- **Objects:** within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors.
- **Fine Fuel load:** combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare.
- **Trees (> 5 metres in height):** trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy.

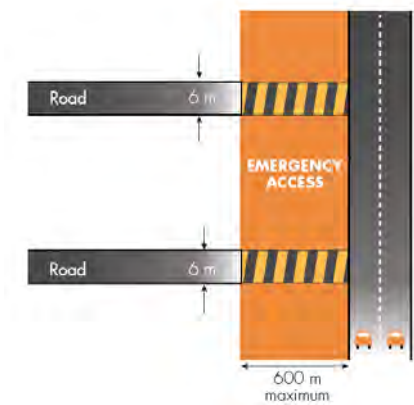


- **Shrubs (0.5 metres to 5 metres in height):** should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m<sup>2</sup> in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees.
- **Ground covers (<0.5 metres in height):** can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs.
- **Grass:** should be managed to maintain a height of 100 millimetres or less.

## Appendix D Vehicular access technical standards of the Guidelines

Public roads	
Acceptable solution A3.2	A public road is to meet the requirements in Table 1, Column 1.
Explanatory note E3.2	<p>Trafficable surface: Widths quoted for access routes refer to the width of the trafficable surface. A six metre trafficable surface does not necessarily mean paving width. It could, for example, include four metre wide paving one metre wide constructed road shoulders. In special circumstances, where eight lots or less are being serviced, a public road with a minimum trafficable surface of four metres for a maximum distance of 90 metres may be provided subject to the approval of both the local government and Department of Fire and Emergency Services.</p> <p>Public road design: All roads should allow for two-way traffic to allow conventional two-wheel drive vehicles and fire appliances to travel safely on them.</p>  <p>The diagram illustrates a road cross-section. It shows a central paved road with a dashed white line down the middle. On either side of the paved road is a shoulder. A red fire truck is shown on the left side of the road, and a smaller car is on the right. A vertical dimension line on the left indicates a 4 m height clearance. A horizontal dimension line at the bottom indicates a 4 m paving width. Another horizontal dimension line below the paving width indicates a 1 m shoulder on either side.</p>

Cul-de-sac (including a dead-end road)	
Acceptable solution A3.3	<p>A cul-de-sac and/ or a dead end road should be avoided in bushfire prone areas. Where no alternative exists (i.e. the lot layout already exists and/ or will need to be demonstrated by the proponent), the following requirements are to be achieved:</p> <ul style="list-style-type: none"> <li>• Requirements in Table 1, Column 2</li> <li>• Maximum length: 200 metres (if public emergency access is provided between cul-de-sac heads maximum length can be increased to 600 metres provided no more than eight lots are serviced and the emergency access way is no more than 600 metres)</li> <li>• Turn-around area requirements, including a minimum 17.5 metre diameter head.</li> </ul>
Explanatory note E3.3	<p>In bushfire prone areas, a cul-de-sac subdivision layout is not favoured because they do not provide access in different directions for residents. In some instances it may be possible to provide an emergency access way between cul-de-sac heads to a maximum distance of 600 metres, so as to achieve two-way access. Such links must be provided as right of ways or public access easements in gross to ensure accessibility to the public and fire services during an emergency. A cul-de-sac in a bushfire prone area is to connect to a public road that allows for travel in two directions in order to address Acceptable Solution A3.1.</p> <div style="text-align: center;">  <p>The diagram illustrates a cul-de-sac layout. On the left, a vertical road is labeled 'Road'. A horizontal road, labeled 'Cul-de-sac', branches off to the right. The width of this cul-de-sac is indicated as 6m. The length of the cul-de-sac is shown as 12-20 m. At the end of the cul-de-sac is a circular turn-around area with a diameter of 17.5 m. The total length of the cul-de-sac from the main road to the end of the turn-around area is labeled as 'Maximum length 200 m'. The diagram also shows several residential lots with houses and trees along the cul-de-sac.</p> </div>

Emergency access way	
Acceptable solution A3.6	<p>An access way that does not provide through access to a public road is to be avoided in bushfire prone areas. Where no alternative exists (this will need to be demonstrated by the proponent), an emergency access way is to be provided as an alternative link to a public road during emergencies. An emergency access way is to meet all of the following requirements:</p> <ul style="list-style-type: none"> <li>• Requirements in Table 1, Column 4</li> <li>• No further than 600 metres from a public road</li> <li>• Provided as right of way or public access easement in gross to ensure accessibility to the public and fire services during an emergency</li> <li>• Must be signposted.</li> </ul>
Explanatory note E3.6	<p>An emergency access way is not a preferred option however may be used to link up with roads to allow alternative access and egress during emergencies where traffic flow designs do not allow for two-way access. Such access should be provided as a right-of-way or easement in gross to ensure accessibility to the public and fire emergency services during an emergency.</p> <p>The access should comply with minimum standards for a public road and should be signposted. Where gates are used to control traffic flow during non-emergency periods, these must not be locked. Emergency access ways are to be no longer than 600 metres and must be adequately signposted where they adjoin public roads.</p> <p>Where an emergency access way is constructed on private land, a right of way or easement in gross is to be established.</p> <div style="text-align: center;">  <p>The diagram illustrates an emergency access way (EAW) as a vertical orange strip labeled 'EMERGENCY ACCESS'. It is flanked by two horizontal grey strips labeled 'Road'. The distance between the two roads is marked as '600 m maximum'. The EAW has yellow and black diagonal hazard stripes at its ends where it meets the roads. A dashed vertical line on the right side of the EAW indicates its boundary, and two small orange car icons are shown on the road to the right.</p> </div>

Technical requirement	1	2	3	4	5
	Public road	Cul-de-sac	Private driveway longer than 50 m	Emergency access way	Fire service access routes
Minimum trafficable surface (m)	6*	6	4	6*	6*
Horizontal distance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	N/A	4.5	4.5	4.5
Maximum grade <50 m	1 in 10	1 in 10	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33	1 in 33	1 in 33
Curves minimum inner radius	8.5	8.5	8.5	8.5	8.5

\* Refer to E3.2 Public roads: Trafficable surface



## Appendix E Water technical standards of the Guidelines

Reticulated areas	
Acceptable solution A4.1	The subdivision, development or land use is provided with a reticulated water supply in accordance with the specifications of the relevant water supply authority and Department of Fire and Emergency Services.
Explanatory note E4.1	Water supply authorities in Western Australia include the Water Corporation, Aqwest and the Busselton Water Board. The Water Corporation's 'No. 63 Water Reticulation Standard' is deemed to be the baseline criterion for developments and should be applied unless local water supply authorities' conditions apply.

## Appendix F City of Mandurah Firebreak Notice

# Fire Compliance Notice



## Burning during the prohibited and restricted burning period

This section relates specifically to fuel hazard reduction burns or running burns. Fuel hazard reduction burns or running burns are generally not permitted within the district of Mandurah. Any exemption is based on a full assessment of the hazard by a City authorised Bush Fire Control Officer in consultation with City's Chief Bush Fire Control Officer. Full demonstration of appropriate risk mitigation planning is required and a Permit to Burn must be issued by an authorised Bushfire Control Officer prior to commencing of any fuel hazard reduction or running burn.

The following sets out the Prohibited and Restricted Burning Periods as Gazetted by the Fire and Emergency Services Commissioner.

**RESTRICTED PERIOD 1/4/2021 – 30/11/2021**  
PERMIT REQUIRED

**PROHIBITED BURNING 1/12/2021 – 31/3/2022**

**RESTRICTED PERIOD 1/4/2022 – 30/11/2022**  
PERMIT REQUIRED

### Burning garden refuse

In accordance with the requirements of Section 24G of the Bush Fires Act 1954 the City notifies that it prohibits the burning of garden refuse or rubbish at all times within the district of Mandurah with the following exemptions:

Land zoned rural residential under the City of Mandurah Town Planning Scheme No. 3, and on all land 4000m<sup>2</sup> and greater. A Permit to Burn is required and permits will only be issued between **1 May and 31 October** annually.

**NOTE:** Only those properties that are 4000m<sup>2</sup> or greater are able to obtain permits to burn, all other sized properties are unable to have a fire to burn garden waste.

## Fire Compliance Notice

### Preparing for fire is a shared responsibility

The City of Mandurah has a role in setting the requirements for fire preparation on properties within its boundaries.

Owners are encouraged to contact Ranger Services to discuss fire management measures in the lead up to fire season, or seek further information from the City's website.

### What is required?

According to Section 33 of the Bush Fires Act 1954 you are required to carry out fire prevention work on land you own. Work must be carried out by 17 November 2021 or within 14 days of becoming the owner, and maintained until 31 May 2022.

### Who can enter my property?

An appointed Bush Fire Control officer is authorised under Section 39 of the Bush Fires Act 1954 and can enter your property to inspect firebreaks and/or anything they consider to be a fire hazard.

### Firebreak variations

If it is impractical to clear firebreaks or if natural features make firebreaks unnecessary, you may apply to the City by 1 November 2021 for an alternate solution.

### Fire Management Plans

Where an approved Fire Management Plan relates to a property, owners are required to fully comply with the requirements of that approved plan.

### It can happen to you...

All properties within Mandurah may be subject to ember attacks from nearby fires. Preparing your property can help prevent damage and loss.

If you do not meet your fire prevention responsibilities as a property owner, you could be liable for a **maximum penalty of \$5,000** plus costs. The City may access a property and undertake required work at the expense of the owner.

# Property preparation requirements

## Larger Blocks



### Occupied or unoccupied land 4000m<sup>2</sup> and over

When the area of land is 4000m<sup>2</sup> and over, provide a trafficable mineral earth firebreak of 4m wide, with a height clearance of 4.2m:

- Inside all external boundaries on the property.
- Surrounding all outbuildings erected on the property.
- Surrounding haystacks, fuel storage or other flammable materials.
- A vertical height clearance of 4.2m must be maintained on driveway access.
- On all land 4000m<sup>2</sup> and greater a minimum 2m gap between trees shrubs and any dwelling must be maintained.
- In addition no part of any tree should overhang any dwelling.



## Urban Areas



### Occupied or unoccupied land less than 4000m<sup>2</sup>

- Have the entire property clear of all flammable material, this does not include green standing trees, growing bushes and plants in gardens, and/or lawns.
- Mowing, slashing, whipper snipping to a height of no more than 4cm as far as reasonably practical over the entire area of land.
- Ploughing, cultivating, scarifying or chemical spraying, followed by slashing to 4cm or other approved method by the City.
- A four metre firebreak is not acceptable.

## Asset Protection Zones (APZ)

On all land 4000m<sup>2</sup> and greater a minimum 2m gap between trees, shrubs and any building, and to ensure that no trees overhang any dwelling.

An authorised Bush Fire Control Officer may issue a variation from Asset Protection Zone requirements where it is considered that adequate risk mitigation measures have been implemented, such as the reduction of fuel loads and appropriate management of understorey vegetation.

Property owners are encouraged to contact the City to discuss the installation of an APZ.

Applications can be made to the City to remove trees or vegetation in order to create an Asset Protection Zone within a tree preservation area as designated in the City's Town Planning Scheme No 3.

**NOTE:** Properties with dense vegetation will also need to be thinned out to reduce any significant fire risk, to the satisfaction of the City.

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**Document Status**

Report version	Rev No.	Purpose	Author	Reviewed and Approved for Issue	
				Name	Date
Draft Report	Rev A	For review by client	Ben Musitano	Zac Cockerill (BPAD 37803, Level 2)	21 October 2021
<b>Final Report</b>	<b>Rev 0</b>	<b>Issued for use: to accompany Structure Plan submission</b>	<b>Zac Cockerill (BPAD 37803, Level 2)</b>	<b>Zac Cockerill (BPAD 37803, Level 2)</b>	<b>26 October 2021</b>





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