



Finance Technical Guideline

TG040 Environmentally Sustainable Design Guideline for Non-Residential Government Buildings

1. Purpose

This technical guideline (Guideline) provides instruction and advice to the project design team, on the application of the environmentally sustainable design (ESD) for non-residential government buildings.

The intent of the Guideline is to:

- provide practical and achievable standards, using empirical evidence and market-based rating tools to reduce environmental impact during the construction and operation of the facility,
- demonstrate leadership in the non-residential building sector to reduce greenhouse gas emissions through appropriate design and construction methodologies,
- assist in moving towards a fully electric building model in support of the Government's commitment of an 80% reduction in greenhouse gas (GHG) emissions from government operations by 2030 (from a 2020 baseline), to achieving net zero GHG emissions by no later than 2050,
- ensure the State's Electric Vehicle Strategy is considered in the facility's design; and
- deliver on the Government's commitments for effective waste and water management practices.

The project design must comply with all relevant legislation, the National Construction Code, Australian Standards, and project specific Customer Agency briefs provided by the Department of Finance (Finance). Note, Customer Agency briefs may be tailored on a project-by-project basis by the Customer Agency to meet their service delivery requirements. Where the Guideline present a higher performance standard, the Guideline take precedence.

An important and fundamental approach to minimise environmental impact, which shall be applied to all projects, is to build less, dematerialise projects wherever possible, and design to allow for adaptive reuse.

2. Responsibilities

A Customer Agency is responsible for launching and obtaining Government approval of each project, including establishing an appropriate scope to meet its service delivery requirements and address stakeholder concerns, securing sufficient budget, and setting achievable timelines for delivery, in accordance with the Strategic Asset Management Framework Western Australian Public Sector.

Finance is responsible for delivering capital works projects for its Customer Agencies within appropriate time-cost-quality parameters, in accordance with Government priorities and procurement requirements, including the imperative to achieve value for money outcomes. Government also expects Finance, as a central agency independent of its Customer Agencies, to review and at times challenge the appropriateness of design and its alignment to Government's policies and priorities.

Finance, and by extension the design team engaged by Finance, is committed to collaborating with its Customer Agencies and being responsive to Customer Agency requirements, in the context of its primary responsibilities to, and the priorities of Government.

Design teams shall be fully engaged and responsible for the building achieving the required ESD performance, within the project budget and throughout the duration of the project. Typical project stages are defined in Figure 1 below.

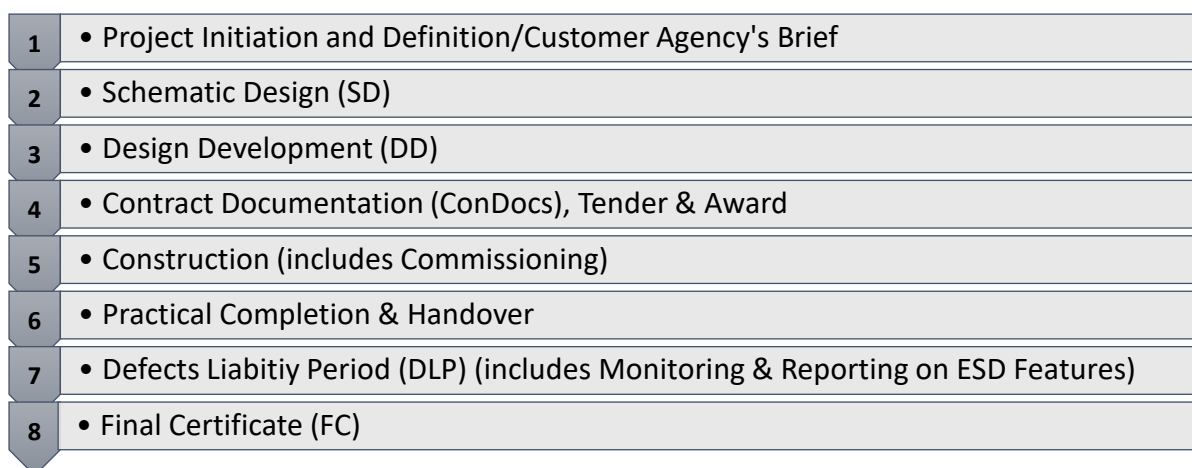


Figure 1: Typical Stages in Project Delivery

3. Application of the ESD Guideline

Legislation at the state and federal level, and government emissions reduction requirements will continue to evolve in response to the latest scientific advice, and the need for urgent action on climate change. Consequently, there is a need to ensure that any guideline is sufficiently adaptable to enable realignment with new, or interim government targets or requirements. Therefore, the targets provided in this Guideline may be more frequently updated.

The design for all non-residential government building projects, whether new works or significant upgrades to existing, will need to comply with the version of the Guideline current at the commencement of the project design phase, unless otherwise instructed by the Finance Project Manager.

Explanatory Information: Building Classifications

This Guideline is only applicable to non-residential facilities, with the following exceptions. Class 3 buildings, as defined in the National Construction Code, covers residential buildings that provide a social, educational or health related function and are included in Finance's non-residential government building category.

Specifically excluded are dwellings covered by Classes 1, 2, & 4, Class 6 retail outlets, and non-habitable shed type structures covered by Class 10, where energy consumption is insignificant. For the purpose of this Guideline, designs for new external swimming pools and separate central energy plant facilities, are required to comply with the requirements of this Guideline.

4. ESD Principles

4.1 Foundation

The guiding principle behind sustainability is meeting the needs of current and future generations through an integration of environmental protection, social advancement, and economic prosperity.

Hence, a robust multifaceted approach is needed to address ESD, due to the complexity of the task, interconnected activities, and requirement for auditable outcomes.

The Green Building Council of Australia (GBCA) provide project specific rating tools which offer a robust framework for applying ESD principles. Finance, through the application of this Guideline, will continue to apply the GBCA's rating tools to projects with a construction value of \$2 million or greater (excluding GST).

For projects with a construction value less than \$2 million (excluding GST) it is a requirement that the design team must consider incorporating ESD features into the project design and demonstrate the project's ESD credentials by completing Finance's **ESD Worksheet**, referenced in Section 7, and detailed in Appendix 2.

4.2 Rating Tools

There are currently two building rating tools provided by GBCA for new projects:

- Green Star Buildings - applies to new buildings, and major refurbishments to existing.
- Green Star Interiors - applies to new fitout projects and is generally relevant to office type interior fitout projects.

The Department of Finance’s Government Office Accommodation Standards should be referenced for ESD targets on new fitout projects and buildings with a significant office component.

The Green Star Buildings (GSB) rating tool is applicable to the application of this Guideline, whichever version of the rating tool that is current at commencement, i.e., Stage 1 - Project Initiation and Definition/ Customer Agency’s Brief.

To obtain a GSB rating, the sustainability attributes of a project are evaluated across eight categories, titled: Responsible, Healthy, Resilient, Positive, Places, People, Nature, and Leadership. For a full description of each category refer to GBCA’s Green Star Buildings Submission Guidelines.

Star rating values particular to the GSB rating tool, are provided in Table 1 and are representative of the completed building at project handover stage. Hence, where a star rating is required on a project, as well as embedded in the design, it shall be incorporated throughout construction.

Table 1: Green Star Buildings Rating Values		
Assessed Point Score	Related Rating Value	ESD Classification
15-34	4 Star	Australian Best Practice
35-69	5 Star	Australian Excellence
70-100	6 Star	World Leader

It is important to note that GBCA’s approach to delivering net zero greenhouse gas emissions is known as the Climate Positive Pathway, which for organisations applying the GSB rating tool, has the effect of increasing the ESD performance of each green star rating over time. As an example, a 4 Star building designed after 2026 will have a higher ESD performance than one designed prior to 2026.

4.3 Setting Sustainability Rating Requirements

The appropriate sustainability rating and reporting requirements for each project are to be determined on a project-by-project basis. The decision as to which rating to apply will be made by the Customer Agency’s Representative during the Project Definition/Briefing stage, to align with their policy commitments and consistent with this Guideline. Finance’s Project Manager will provide direction to the design team as to which rating to apply.

Finance’s Project Manager, in consultation with the Customer Agency’s representative is also responsible for ensuring that:

- an appropriate ESD budget is available from the Customer Agency to align with the performance requirements,
- the consultancy contracts for consultants and sub-consultants include targeted ratings and reporting requirements (including where relevant, Round 1 and Round 2 submissions for GBCA’s Green Star Certification Process) as a condition of the project,
- under this Guideline, an integrated design process is conducted, where the Customer Agency’s Representative and relevant stakeholders meet to decide on the integration of appropriate sustainability initiatives to achieve the specified rating before schematic design is commenced; and
- refinement of the sustainability initiatives in consultation with the Customer Agency’s Representative throughout the design phase.

The Western Australian Climate Policy requires government agencies to lead by example. Therefore, government agencies are encouraged to pursue higher design standards, where it aligns with their asset portfolio obligations and business objectives.

Table 2 of this Guidance establishes expectations as to the minimum rating that projects should achieve. A project design brief that fails to meet these expectations will require approval from the Customer Agency’s Representative.

Where the project needs to obtain formal “certification,” the documentation will be assessed by GBCA for compliance and hence registration of the project and submission of the documentation by the design team, needs to align with GBCA’s certification process.

Where an equivalency rating is permitted, documentation shall be submitted to the Finance project manager for assessment.

Table 2: Compliance Requirements					
Project Construction Values (Note 1)	Finance’s ESD Worksheet Required	Green Star Rating (Equivalency) (Note 2)	Green Star Rating (Certification) (Note 3 & 4)	Green Star Accredited Professional required (Note 5)	All new services to be Electric (Note 6)
< \$2 million	Yes	-	-	No	Yes
\$2 million to < \$5 million	No	4	-	No	Yes
\$5 million to < \$20 million	No	4	-	Yes	Yes

\$20 million and over	No	-	4	Yes	Yes
Notes	1. Project construction value excluding fees, design contingencies and GST.				
	2. Where projects, construction value at less than \$20 million (excluding GST), are unable to meet all Minimum Expectations for an equivalency rating, the Lead Consultant provides justification to Finance’s Project Manager as to why the Minimum Expectation credits cannot be achieved.				
	3. Projects to be certified by GBCA. Consultants must allow for Registering the project with the GBCA prior to Practical Completion, and for making formal submissions for Certification one year after Practical Completion. <u>Consultants must allow for both Round 1 and Round 2 submissions in the Green Star Certification Process.</u>				
	4. It is recognised that by 2026, to register a new building project for a 4 star rating, will require a commitment to have the building supplied with 100% renewable electricity and energy.				
	5. Where projects, construction value \$5 million or greater (excluding GST), (those requiring a Business Case under the Government’s Strategic Asset Management Framework), a GBCA Accredited Professional is required to deliver appropriate and timely advice, from inception to final certificate, or in the case of projects where a construction value is \$20 million or greater (excluding GST), from inception to completion of the GBCA Certification process.				
	6. Exceptions to an ‘all electric’ design are provided in Table 3 below.				

The Lead Consultant is to ensure that all relevant data is provided at the completion of each project stage and either complete:

- Finance’s ESD Worksheet (Section 7); or
- GBCA’s Green Star Submission Planner.

All documentation to be submitted to Finance’s Project Manager at each stage of the project.

4.4 Targeted Design Features

As noted above, there are eight categories included in the Green Star Building assessment, titled: Responsible, Healthy, Resilient, Positive, Places, People, Nature, and Leadership. Within the GSB rating tool all categories with exception of the Leadership category, have a set of Minimum Expectations. The Minimum Expectations aim to, “ensure all Green Star rated buildings meet a basic definition of a green building (energy efficient, water efficient, good healthy spaces, built responsibly, and on sites that are not critical natural areas).” There are no points awarded for the Minimum Expectations requirements.

All projects with a construction value of \$2 million or greater (excluding GST) unless otherwise approved by the Customer Agency’s Representative and instructed by Finance’s Project Manager, should achieve all Minimum Expectation

criteria. Projects where the construction value is \$20 million or greater (excluding GST) should achieve all Minimum Expectations and in addition are required to be certified under the GBCA Green Star Program.

Points are awarded within the eight categories for initiatives that meet the criteria of the rating tool's Credits (including Exceptional Credits). Credits are then totalled, and an overall score is assessed. The quality of the ESD solution is established by the overall project score obtained, aligning with the values set out in Table 1.

To deliver on the Government's Climate Policy, Waste Avoidance and Resource Recovery Strategy, and Kep Katitjin – Gabi Kaadadjan – Waterwise Perth Action Plan 2, certain Credits & Exceptional Credits, shall be incorporated into the project design, as detailed in Appendix 1 - Tables A1A to A1H. The primary aim of this approach, in addition to compliance with government directives, is to target features that address direct and indirect greenhouse gas emissions, waste minimisation, and water efficiency.

Provided the targets for net zero GHG emissions are satisfied, the design team have flexibility in selecting Credits & Exceptional Credits to achieve the Green Star rating specified in Table 2, the selection of which is a collaborative assessment between the Customer Agency's Representative, design team and Finance.

5. Electrification of Non-Residential Government Buildings

To facilitate achieving net zero emissions, sectors of the economy that currently use fossil fuels to provide energy will need to transition to lower emissions energy sources. This may include hydrogen, biogas, or low emissions electricity. In the non-residential government building sector, it is likely the lowest cost replacement for the use of fossil fuels will be renewable-energy powered electrification. Table 3 establishes minimum expectations regarding the transition of non-residential government buildings to electricity.

Table 3: Electrification of Non-Residential Government Building				
Construction Activity	Description	Compliant Requirement	Exceptions (Note 5)	Additional Actions if Non-Compliant
1) New Building Projects	1a) Additional building on an existing campus (Campus Expansion)	Shall be fully electric (Note 1)	If the electrical infrastructure is incapable of taking the additional load and the fossil fuel fired central energy plant was designed to enable this campus	Exceptional circumstances must be justified and a Net Zero Carbon Action Plan must be provided at Contract Documentation stage to demonstrate how

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			expansion, or in exceptional circumstances.	the campus can be electrified by 2050. (Note 3)
	1b) Stand-alone building and SWIS connected (Note 2)	Shall be fully electric	Only in exceptional circumstances.	Exceptional circumstances must be justified, and a Net Zero Carbon Action Plan must be provided at Contract Documentation stage. (Note 3)
	1c) Regional or remote building/Off-SWIS grid (campus expansion or stand-alone)	Shall be fully electric	If the electrical infrastructure is incapable of taking the additional load without significant upgrade and in exceptional circumstance.	Exceptional circumstances must be justified, and a Net Zero Carbon Action Plan must be provided at Contract Documentation stage. (Note 3)
2) Upgrades to Existing Buildings (Note 4)	Refurbishments, conversions and non-office related fit outs.	Shall be fully electric	If the existing fossil fuel fired infrastructure is not due for replacement or electrical infrastructure is incapable of taking the additional load without significant upgrade.	A Zero Carbon Action Plan must be provided at Contract Documentation stage to demonstrate how the existing assets can be electrified by 2050. (Note 3)
Notes	<ol style="list-style-type: none"> 1. Fully electric means - fossil fuels cannot be used on site for any domestic hot water, space heating or cooking, including base build or tenant use. Fossil fuels for industrial processes are excluded from the assessment. Any fossil fuels used for emergency power or laboratory equipment must be less than 1% of the total building energy consumption and be offset for the first five years of operation, (refer to the GSB Submission Guidelines). 2. South West Interconnected System (SWIS). 3. Net Zero Carbon Action Plan, as defined in GBCA Green Star Buildings Submissions Guidelines, must demonstrate how the facility can be electrified by 2050 for approval by the Customer Agency's Representative. 4. Where fossil fuel fired plant or equipment has failed and needs to be replaced on existing projects they should be replaced with efficient all-electric plant and equipment unless there are exceptional circumstances. 5. Exception Circumstances must be endorsed by the Customer Agency's Representative and may include items such as unavailable plant, technical challenges to electrify, lack of project funds or the equipment is deemed a component (i.e. child asset within a larger parent asset or system, such as gas fired components in absorption chillers). 			

Where the buildings and systems cannot be fully electrified, they must be designed to operate at conditions suitable for future electrification of existing infrastructure.

6. Reporting Requirements

ESD design principles must be reported on either separately or as a distinct section in the Lead Consultant’s main report at each stage of the design and construction process. This shall specifically focus on how the design team is meeting the requirements of this Guideline and National Construction Code (NCC) Section J.

Deliverables for each phase of the project are defined below in Table 4.

Table 4: ESD Reporting Deliverables	
Project Stage	Description of ESD Reporting Content
Project Initiation and Definition / Customer Agency’s Brief Preparation	The ESD component of the brief must acknowledge the ESD targets to be achieved relevant to the project type and scale. The Brief is to provide an overview of the intent of the project with respect to how it will achieve the ESD targets. The brief must also define the stakeholders and their responsibilities for delivering key components of the project’s ESD strategy.
Schematic Design (SD)	<p>For projects with a construction value below \$2 million (excluding GST), provide a completed ESD Worksheet, including an update to the information provided at the briefing stage.</p> <p>For projects where a construction value of \$2 million or greater (excluding GST), provide a draft Green Star Submission Planner and a descriptive ESD Assessment Report. The ESD Assessment Report must include:</p> <ul style="list-style-type: none"> • an update to the information provided at the briefing stage, • proposed design features and strategies relevant to the 41 categories detailed in Appendix 1, Tables A1A to A1H, • estimated costs for each of the ESD strategies (where there are competing options to deliver the ESD target an assessment of the options, including cost, is to be provided for the Project Manager to assess in consultation with the Customer Agency’s Representative); and • an assessment of the project’s likely green star rating outcome (and risk of not achieving that outcome), including a brief synopsis of GHG emission reduction strategies.
Design Development (DD)	Update all documents provided at SD stage, including: the ESD Assessment Report, and the Green Star Submission Planner where relevant.

<p>Contract Documentation (Con Docs)</p>	<p>Update all documents provided at DD stage, including the ESD Assessment Report, and the Green Star Submission Planner where relevant.</p> <p>Provided a detailed NCC Section J, Provisions Reporting Checklist, including anticipated energy usage. For details of the report content refer to Section 8 and associated template provided in Appendix 3.</p> <p>Embed detailed ESD specifications for the project, as outlined in GBCA's Specifying for Green Star Buildings using NATSPEC. The specification will also cover all requirements outlined in this Guideline that the contractor needs to execute during the currency of their contract. An outline of the requirements is provided below:</p> <p>1. General</p> <p>1.1 Overview (Details of the project including intended ESD outcomes and details of each GBCA Green Star Buildings Rating Tool category targeted, where relevant).</p> <p>1.2 Responsibilities (Obligations on each party for the submission of documentation to demonstrate compliance and/or support the GBCA Certification process).</p> <p>1.3 Cross Reference (Include all work sections that the Contractor needs to reference, for example: 0164 Commissioning, 0171 General Requirements, 0172 Environmental Management, 0201 Demolition, etc).</p> <p>1.4 Interpretations.</p> <p>2. Section J Compliance Requirement</p> <p>Identify the minimum standards to be achieved, i.e., for thermal properties, building sealing, etc.</p> <p>3. Submission Documentation (identifying the documentation required from the Contractor to show compliance with this Guideline and NCC, and where necessary include reference to the documentation required to support the submission to GBCA for Certification).</p> <p>Where there are additional specification requirements relevant to the project that are deemed necessary to convey the intent of the design and obligation on the contractor, it is acceptable to create a separate specification referenced, 0168 ESD Requirements and Reporting.</p>
<p>Construction (including Commissioning)</p>	<p>Testing and Commissioning Plan. Implement BSRIA Soft landing approach to all projects where the construction value is \$2 million or greater (excluding GST).</p> <p>For projects with a construction value of \$20 million (excluding GST) and greater, engage an Independent Commissioning Agent, fulfilling the role required by GBCA's Verification and Handover credit.</p>
<p>Handover</p>	<p>Ensure building managers and users are trained on both passive and active ESD features and control configurations and processes required to achieve the energy efficiency, water efficiency and waste minimisation targets.</p>

	<p>At Practical Completion, the Contractor must provide, from Appendix 3, an updated NCC Section J Provisions Reporting Checklist to demonstrate compliance with the design. This will form part of the Technical Documents referred to in BA17 - Certificate of Construction Compliance.</p>
<p>Between Practical Completion and Before Final Certificate</p>	<p>The consultant will report the energy used at the end of each month, between Practical Completion and Final Certificate, to Finance’s Project Manager, relevant consultants, and Customer Agency’s Representative using the Department of Finance’s Energy Use Report Form. The actual energy used monthly must be compared to the anticipated use and major differences highlighted, to ensure any potential discrepancies are dealt with in a timely manner.</p> <p>https://www.wa.gov.au/government/publications/energy-use-report-department-of-finance-projects</p> <p>At the end of the Defects Liability Period and before a Final Certificate is issued, the Consultant is to submit a completed Energy Use Report Form to Finance’s Project Manager, with discrepancies between design and actual usage reconciled, and costed remedial measures provided where relevant.</p>

7. Finance’s ESD Worksheet

Finance’s ESD Worksheet, provided in Appendix 2, has been designed as a guide to prompt the design team on possible sustainability initiatives for projects with a construction value less than \$2 million, and to ascertain what sustainability improvements measures, over the NCC requirements, are employed on the project.

The NCC requirements are considered minimum acceptable standards rather than ‘best practice.’ Therefore, it is incumbent on the Consultant to improve on the NCC requirements where possible.

The worksheet promotes a holistic approach with considerations for energy and water efficiency, waste minimisation, materials, durability, universal access, indoor environment quality, etc.

The design team must complete the checklist for projects with a construction value up to \$2 million in value, as specified in Table 2.

8. National Construction Code Compliance & Reporting

All government buildings must comply with the requirements of the National Construction Code (NCC).

Section J of the NCC sets minimum energy efficiency standards for new buildings. These standards relate to all facets of the building project including building fabric, glazing, sealing of the building, air quality, power and artificial lighting, hot water supply, commissioning, and access for maintenance.

Where the requirements of this Guideline provide a higher standard than the NCC for sustainability, this Guideline will take precedence, provided the building approvals process is not compromised.

For the purposes of this Guideline only, buildings will be designed to comply fully with Section J of the National Construction Code 2022. However, if the building approvals process is subject to a later NCC version than the above, the building designers must use that version. The Consultants are still obligated to certify compliance with the applicable NCC version that applies to the building approvals process.

It must be demonstrated that, for the proposed project, the building attributes achieve or exceed the minimum requirements of NCC 2022 Section J.

The report on compliance with Section J of the NCC, shall be sufficiently detailed to enable an independent assessor to ascertain that the design achieves compliance. For instance, NCC 2022 J1P4 requires a building to “*have features that facilitate the future installation of on-site renewable energy generation and storage and electric vehicle charging*”. In addition, NCC 2022 J9D4 provides specific requirements for car park charging requirements based on building class. How the designer has accommodated these requirements in their design needs to be demonstrated and they are strongly encouraged to review the adequacy of the vehicle charging requirements in line with the Customer Agency’s electric vehicle transition plans.

The checklist in Appendix 3 can be used as a reporting tool for Energy Efficiency. Note, this reporting requirement is only relevant to this Guideline and does not form part of the building approvals process.

NCC’s Verification Method J1V3 - Verification Using a Reference Building is required for all projects with a construction value at \$2 million or greater.

At Practical Completion, the Contractor must provide an updated NCC Provisions Reporting Checklist to demonstrate compliance with the design.

9. Energy Modelling

The consultant is required to deliver to the Project Manager, an Energy Report at key design stages, showing modelled outcomes and supporting text to explain anticipated energy use.

It is imperative that the Consultant has in writing from the Customer Agency's Representative, the anticipated occupancy patterns, and hours of operation in order that the results can be reconciled with actual consumption, post occupation. Therefore, the report should include the anticipated user patterns and any assumptions, such as specific actions that would need to be undertaken by the building managers and users to utilise the passive design features (e.g., lowering blinds to reduce solar gain).

Modelling shall conform to ASHRAE Standard 140-2017 Addendum A.

10. Anticipated Revision Trajectory

As noted previously, it is anticipated that this document will be updated frequently to align with future government legislation and decarbonisation targets.

In due course, the government owned non-residential buildings will become fossil fuel free, highly efficient buildings, powered by renewables, and built with low embodied carbon materials.

However, the following should be factored in when master planning projects with a construction value of \$20 million and greater, that will require registration with GBCA from 2026 onwards. These projects will be required to comply with the Climate Positive Pathway, comprising:

- 100% renewable electricity.
- 100% renewable energy.
- 20% less energy use than those of a reference building.
- 20% less upfront carbon emissions than those of a reference building.
- Eliminating or offsetting Scope 1 emissions, including fossil fuels and refrigerants.

The requirements for 5- & 6-star buildings are more onerous than the above.

11. Glossary

Terminology and abbreviations used throughout this document.

BSRIA Soft Landings	Requirements as defined in GBCA's Green Star Buildings Rating Tool.
Campus Expansion	Additional property located on the Customer Agency's current campus (typically associated with health and education projects).
Carbon Neutral	Buildings that address all their emissions so that the carbon account is zero.
Customer Agency	The Customer Agency engaging the Department of Finance to deliver non-residential buildings program.
Customer Agency's Representative	A person engaged by the Customer Agency to act on behalf of the agency.
Finance	Department of Finance (typically represented by Finance's Buildings & Contracts Directorate).
GBCA	Green Building Council of Australia.
GSB	GBCA's Green Star Buildings Rating Tool.
Lead Consultant	A person or practice/business engaged by the Department of Finance to provide specialist advice or services to a project. Also known as the Lead Consultant. Typically performed by an architect.
NABERS	National Australian Built Environment Rating System.
NCC	National Construction Code.
Net Zero	Balance between the amount of greenhouse gas produced and the amount removed from the atmosphere on a net annual basis.

12. Referenced Documents

The following documents are referenced:

- National Construction Code 2022 Volume 1
(<https://ncc.abcb.gov.au/editions/ncc-2022>)
- WA Government's Architectural Services Brief for Non-Residential Government Buildings
(<https://www.wa.gov.au/government/publications/architectural-services-brief-non-residential-buildings>)
- WA Government's Waste Avoidance and Resource Recovery Strategy 2030
(https://www.wasteauthority.wa.gov.au/images/resources/files/Strategic_Direction_Waste_Avoidance_and_Resource_Recovery_Strategy_2030.pdf)
- Kep Katitjin– Gabi Kaadadjan – Waterwise Perth action plan 2
(<https://www.wa.gov.au/government/publications/kep-katitjin-gabi-kaadadjan-waterwise-perth-action-plan-2>)
- Government Office Accommodation Standards,
(<https://www.wa.gov.au/government/publications/government-office-accommodation-standards>)
- GBCA's Green Star Buildings Submission Guidelines
(<https://www.gbca.org.au/shop/green-star-rating-tools/>)
- GBCA's Specifying for Green Star Buildings using NATSPEC
(https://www.google.com/search?q=Specifying+for+Green+Star+Buildings+using+NATSPEC&rlz=1C1GCEA_enAU990AU990&oq=Specifying+for+Green+Star++Buildings+using+NATSPEC+&gs_lcrp=EgZjaHJvbWUyBggAEEUYOTIKCAEQABiiBBiJBTIHCAIQABiiBDIHCAQQABiiBDIHCAQQABiiBNIBDTMxMzU3MDY1ajBqMTWoAgCwAgA&sourceid=chrome&ie=UTF-8&safe=active&ssui=on)
- WA Government's Energy Use Reporting
(<https://www.wa.gov.au/government/publications/energy-use-report-department-of-finance-projects>)
- State Electric Vehicle Strategy for Western Australia
(https://www.wa.gov.au/system/files/2020-11/State_Electric_Vehicle_Strategy_for_Western_Australia_0.pdf)
- ASHARE Standard 140-2017 Addendum A
(https://www.ashrae.org/file%20library/technical%20resources/standards%20and%20guidelines/standards%20errata/standards/140_2017_a_20200901.pdf)

13. Document Control

Document Control			
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13/06/2023	G McDonald	Draft Release for Review	All
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14. Document Approval

This Guideline was endorsed and approved for use on 6th July 2023 by:
Dean Wood, Principal Architect

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Appendix 1:

Green Star Rating Tool Targets

Appendix 1: Green Star Rating Tool Targets

The following tables provide guidance to the design team on specific areas of the GBCA's Buildings Rating Tool to be targeted (i.e., specifically mandated) on non-residential government building projects.

Where the action includes a statement to the effect “[consider all optional criteria](#),” this requires the design team to review all other criteria in the Credit & Exceptional categories that are not mandated within the tables, and incorporating the requirements where viable to do so, in addition to achieving the Minimum Expectations.

Table A1.A: Responsible Design Categories			
Ref	Category	Description	Actions
1	Industry Development	General	Consider all optional criteria.
		Appointment of ESD Consultant	Projects with the construction value \$5 million (exc. GST) and greater, require a Green Star Accredited Professional.
		Green Star Certification	Projects with the construction value \$20 million (exc. GST) and greater need to be formally Certified by GBCA.
		ESD Consultant's Scope of Work.	Defined in the Department of Finance's Architectural Services Brief or as otherwise instructed in the ESD consultant's contract.
2	Responsible Construction	General	<p>Achieve Minimum Expectations, noting that achieving 80% diversion of construction and demolition waste from landfill for regional projects is a requirement that the design team should pursue, mindful of avoiding excessive transport costs and GHG emissions.</p> <p>As defined within the project Preliminaries (AS 2124), the Contractor will be required to divert 80% of C&D waste from landfill on Metro projects. Outside of the Metro area, a minimum of 80% of construction and demolition waste must be recycled/diverted from landfill unless the Contractor is unable to recycle the material within a 50km radius of the site's location.</p> <p>Consider all optional criteria.</p>
3	Verification and Handover	General	<p>Achieve Minimum Expectations.</p> <p>Consider all optional criteria.</p>

		Note: Soft Landings & Independent Commissioning Agent	Implement BSRIA Soft landing approach to all projects where the construction value is \$2 million (exc. GST) and greater and for projects where the construction value is \$20 million and greater, engage an Independent Commissioning Agent.
4	Responsible Resource Management	General	Achieve Minimum Expectations.
		Note on Responsible Resource Management	In addition to achieving the Minimum Expectations, the project must provide a (Soft Landings) smooth transition into use of the waste-management. This must include on-site demonstration to the building manager and users, on how to minimise waste to landfill.
5	Responsible Procurement	General	The building's design and construction procurement processes must follow AS ISO 20400:2018 Sustainable Procurement – Guidance by undertaking a risk and opportunities assessment. A responsible procurement plan must be developed to mitigate risks and implement opportunities identified in the assessment.
6	Responsible Structure	General	Consider all optional criteria.
7	Responsible Envelope	General	Consider all optional criteria.
8	Responsible Systems	General	Consider all optional criteria.
9	Responsible Finishes	General	Consider all optional criteria.

Table A1.B: Healthy Design Categories

Ref	Category	Description	Actions
10	Clean Air	General	Achieve Minimum Expectations. In addition to the Minimum Expectation, the building's ventilation systems allow for easy maintenance. Consider all optional criteria.
11	Light Quality	General	Achieve Minimum Expectations. Consider all optional criteria.
12	Acoustic Comfort	General	Achieve Minimum Expectations. Consider all optional criteria.

13	Exposure to Toxins	General	Achieve Minimum Expectations. Consider all optional criteria.
14	Amenity and Comfort	General	Consider all optional criteria.
15	Connection to Nature	General	Consider all optional criteria.

Table A1.C: Resilient Design Categories

Ref	Category	Description	Actions
16	Climate Change Resilience	General	Achieve Minimum Expectations. Consider all optional criteria.
		Climate Change Risk & Adaptation Assessment	Achieve the Credit criteria on all Regional Projects where the construction value is \$2 million (exc. GST) and greater and all Metropolitan Projects where the construction value is \$5 million (exc. GST) and greater.
17	Operations Resilience	General	Consider all optional criteria.
18	Community Resilience	Community Resilience Plan	Achieve the Credit criteria on all Regional Projects where the construction value is \$2 million (exc. GST) and greater and all Metropolitan Projects where the construction value is \$5 million (exc. GST) and greater .
19	Heat Resilience	Heat Island Reduction	Achieve the Credit criteria on all projects where the construction value is \$2 million (exc. GST) and greater Where trees are being introduced, it is incumbent on the landscape designer to use native varieties and where possible consult with local communities for selection of appropriate native species.
20	Grid Resilience	General	Consider all optional criteria. Grid resilience is a key component in the transition to fully electrified buildings and hence, methods to reduce peak electrical demand shall be considered for all projects.
		Passive Design Solutions	Achieve the Credit criteria on all Projects where the construction value is \$2 million (exc. GST) and greater.

Table A1.D: Positive Design Categories			
Ref	Category	Description	Actions
21	Upfront Carbon Emissions	General	Achieve Minimum Expectations.
		Reducing Upfront Carbon Emissions - Credit	Climate Positive Pathway – The design team should achieve this Credit criteria where practical. Where it is not practical, such as the market is unable to meet the requirements, the design team must provide justification.
		Reducing Upfront Carbon Emissions - Exceptional	Exceptional criteria is optional but should be considered.
22	Energy Use	General	Achieve Minimum Expectations.
		Reducing Energy Use - Credit	Climate Positive Pathway – Credit criteria must be achieved. The Reference Building Pathway is required for all projects where the construction value is \$2 million (exc. GST) and greater, unless the Customer Agency’s Representative confirms in writing that they will be signing a NABERS Energy Commitment Agreement, whereby the Energy Use will be evaluated based on the NABERS Energy Commitment Agreement Pathway.
		Reducing Energy Use - Exceptional	Exceptional criteria is optional but should be considered.
23	Energy Source	General	Achieve Minimum Expectations.
		Note on Renewable Electricity - Credit	While having the project achieve the Credit criteria is ideal, it is recognised that having 100% of the electricity supplied by renewables, may be currently unattainable for some projects.
		Note on Renewable Energy - Exceptional	While having the project achieve the Exceptional criteria is a requirement under the Climate Positive Pathway and noting that an Exceptional criteria can only be targeted if the Credit criteria is achieved, it is recognised that having 100% of the energy supplied by renewables, may be currently unattainable for some projects.
24	Other Carbon Emissions	Other Carbon Emissions - Credit	Climate Positive Pathway: Projects where the construction value is \$2 million (exc. GST) and

			<p>greater must comply with one of the following criteria:</p> <ul style="list-style-type: none"> • Eliminating Refrigerants • Offsetting Refrigerants 								
		Note on Refrigerants	While having the project achieve the Credit criteria is a requirement, it is recognised that the refrigerant market in Australia is in a transition period and offsetting may be the only viable option currently available for most projects.								
		Other Carbon Emissions - Exceptional	Exceptional criteria is optional but should be considered.								
25	Water Use	General	<p>Achieve Minimum Expectations and in particular the building must install water fixtures complying with the following WELS rating efficiency:</p> <table style="margin-left: 40px;"> <tr> <td>Taps:</td> <td>5 Star</td> </tr> <tr> <td>Toilet Cisterns:</td> <td>4 Star</td> </tr> <tr> <td>Urinal Cisterns:</td> <td>5 Star</td> </tr> <tr> <td>Showers:</td> <td>3 Star</td> </tr> </table> <p>Toilet cisterns shall be dual flush. Cisterns for urinals shall not be set-cycled or activated by any method other than manual or use activation. This requirement does not apply to a programmed solenoid operated flushing system if programmed to shut down during extended periods of non-occupancy of a building. Where sensor control is used for urinal flushing, sensors should be located to avoid unnecessary 'nuisance' flushing triggered by pedestrian traffic.</p>	Taps:	5 Star	Toilet Cisterns:	4 Star	Urinal Cisterns:	5 Star	Showers:	3 Star
		Taps:	5 Star								
Toilet Cisterns:	4 Star										
Urinal Cisterns:	5 Star										
Showers:	3 Star										
Water Use - Credit	Ideally the building should use 45% less water compared to a reference building. Therefore, exploring opportunities for recycling water is encouraged. However, only proposals that have a positive reduction on energy and water use in operation, should be promoted.										
26	Life Cycle Impacts	General	<p>Ideally the design specification should result in a 30% reduction in life cycle impacts when compared to standard practice. Therefore, exploring opportunities to achieve this is encouraged.</p>								

Table A1.E: Places Design Categories			
Ref	Category	Description	Actions
27	Movement and Place	General	Achieve Minimum Expectations. Consider all optional criteria. Consult with the Customer Agency's Representative to ascertain the EV charging requirements and ideally meet the credit achievement.
28	Enjoyable Places	General	Consider all optional criteria.
29	Contribution to Place	General	Consider all optional criteria.
30	Culture Heritage and Identity	General	Consider all optional criteria.
Table A1.F: People Design Categories			
Ref	Category	Description	Actions
31	Inclusive Construction Practices	General	Achieve Minimum Expectations. Consider all optional criteria.
32	Indigenous Inclusion	General	Consider all optional criteria.
33	Procurement and Workforce Inclusion	General	Consider all optional criteria.
34	Design for Inclusion	General	Consider all optional criteria.
Table A1.G: Nature Design Categories			
Ref	Category	Description	Actions
35	Impacts to Nature	General	Achieve Minimum Expectations. Consider all optional criteria.
36	Biodiversity Enhancement	General	Consider all optional criteria.
37	Nature Connectivity	General	Consider all optional criteria.

38	Nature Stewardship	General	Consider all optional criteria.
39	Waterway Protection	General	Consider all optional criteria.
Table A1.H: Leadership Design Categories			
Ref	Category	Description	Actions
40	Market Transformation	General	On receipt of the data from the processes associated with this Guideline, Finance will review the high performing products on WA Government projects and set these performances as the new standard. It is, therefore, incumbent for each project to consider the potential to use products with higher quality and efficiency especially those that may encourage local manufacturing. Consider all optional criteria.
41	Leadership Challenges	General	Consider all optional criteria.

Appendix 2:

ESD Worksheet

Appendix 2: ESD WORKSHEET

Project:

Buildings & Contracts Project Manager:

Updated On:

Consultant:

Project Number:

By:

Signature:

Sustainability Provision	Design Features Incorporated	Yes	No	Anticipated Capital Cost	Comments: advantages, disadvantages, alternative solutions
Re-use of Existing Building Assets	Adaptive Re-use				
Energy Efficiency	Passive solar design				
	Optimise daylighting penetration				
	Maximise passive cooling, heating and ventilation opportunities (consider including security screens and filters for night venting)				
	Minimise active heating and cooling requirements through energy efficient design				
	Provide energy efficient plant and equipment				
	Provide energy efficient lighting systems				

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for Non-Residential Government Buildings

	Provide efficient control and effective maintenance systems, including monitoring of energy consumption				
	Optimised opportunities to use renewable energy sources and incorporate renewable energy technologies and as a minimum provide for future installation of renewable energy systems (consider wiring and metering facilities, roof orientation and structure, access for cleaning and maintenance, etc)				
	Where specifically for office accommodation, meeting the Government Office Accommodation Standards for specific energy rating criteria.				
Water Efficiency	Provide water efficient appliances and fixtures Taps: 5 Star Toilet Cisterns: 4 Star Urinal Cisterns: 5 Star Showers: 3 Star				
	Ensure system design enables effective monitoring and maintenance of systems				
	Consider grey water reuse system (not recommended for schools)				

Finance Technical Guideline:TG040 Environmentally Sustainable Design Guideline
for Non-Residential Government Buildings

	Consider rainwater and stormwater collection tanks				
	Manage stormwater runoff on site to recharge aquifers				
Waste Minimisation	Consider opportunities to recycle materials such as green waste and excavated material on site within the works.				
	Consider recycling all construction waste				
	Design buildings for disassembly, to maximise the opportunities to recycle materials in future				
	Design buildings to maximise longevity through the quality of materials and creation of flexible and readily adaptable designs.				
Building Materials	Design for resource conservation (using the minimum amount of material required for the function)				
	Maximise the use of recycled material				
	Use of materials, as much as possible, that can be sourced from suppliers close to the site				
	Minimise life cycle costs through using materials and equipment requiring minimal				

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for Non-Residential Government Buildings

	maintenance and with maximised expected useful life				
	Minimise or avoid the use of materials made from toxic or hazardous substances or which may result in off-gassing of emissions				
	Minimise the use of building materials with high embodied energy				
	Minimise building materials that have damaging ecological effects during harvesting, manufacturing and/or construction				
	Minimise building materials produced from limited or non-renewable natural resources				
Building Durability	Design elements that contribute to durability				
	Attach schedule of maintenance including frequency and, anticipated costs, derived through research				
	Minimisation of wilful and accidental damage opportunities				
Requirement for bicycle end of trip facilities in government buildings	Incorporated bicycle end of trip facilities with power points for bicycle/scooter charging				

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for Non-Residential Government Buildings

Universal Access	Compliance with Commonwealth Disability Discrimination Act 1992				
	Compliance with the NCC for Access for People with Disabilities				
Furniture Services	Choose materials with low volatile organic compound (VOC) emissions in: Floor coverings Furniture components Blinds				
	Give preference to bio plastics over synthetic plastics				
	Natural fabrics with high flame resistance and low toxicity qualities				
	Materials which can be cleaned with organic products				
	Indoor plants that filter toxins from internal environments				
	Handover manual which specifies organic cleaning products and desired frequency of maintenance				

Note: the above requirements do not negate the obligations on consultants and contractors to comply with legislation, National Construction Code, Australian Standards Codes of Practice, and Government directives and policy objectives.

Appendix 3:

NCC Section J Provisions Reporting Checklist

Appendix 3: NCC SECTION J PROVISIONS REPORTING CHECKLIST

Project:

Buildings & Contracts Project Manager:

Updated On:

Consultant:

Project Number:

By:

Signature:

Description	Details of How the Standard is achieved	Compliance with TG040.v1	Compliance with NCC 2022
J1 Energy Efficiency Performance Requirements			
J1P1 Energy use			
J1P4 Renewable energy and electric vehicle charging			
Verification Methods			
J1V3 Verification using a reference building			
J1V4 Verification of building envelope sealing			
J4 Building fabric			
J4D3 Thermal construction – general			
J4D4 Roof and ceiling construction			
J4D5 Roof lights			

J4D6 Walls and glazing			
J4D7 Floors			
Part J5 Building sealing			
J5D3 Chimneys and flues			
J5D4 Roof lights			
J5D5 Windows and doors			
J5D6 Exhaust fans			
J5D7 Construction of ceilings, walls and floors			
J5D8 Evaporative coolers			
Part J6 Air-conditioning and ventilation			
J6D3 Air-conditioning system control			
J6D4 Mechanical ventilation system control			
J6D5 Fans and duct systems			
J6D6 Ductwork insulation			
J6D7 Ductwork sealing			
J6D8 Pump systems			
J6D9 Pipework insulation			

J6D10 Space heating			
J6D11 Refrigerant chillers			
J6D12 Unitary air-conditioning equipment			
J6D13 Heat rejection equipment			
Part J7 Artificial lighting and power			
J7D3 Artificial lighting			
J7D4 Interior artificial lighting and power control			
J7D5 Interior decorative and display lighting			
J7D6 Exterior artificial lighting			
J7D7 Boiling water and chilled water storage units			
J7D8 Lifts			
J7D9 Escalators and moving walkways			
Part J8 Heated water supply and swimming pool and spa pool plant			
J8D2 Heated water supply			
J8D3 Swimming pool heating and pumping			
J8D4 Spa pool heating and pumping			

Part J9 Energy monitoring and on-site distributed energy resources			
J9D3 Facilities for energy monitoring			
J9D4 Facilities for electric vehicle charging equipment			
J9D5 Facilities for solar photovoltaic and battery systems			