

Master Specification Part PC-ST2

Sustainability in Construction

September 2024



Government of South Australia
Department for Infrastructure
and Transport

Build.
Move.
Connect.

Document Information

Document Information	
K Net Number:	13945672
Document Version:	0
Document Date:	30/09/2024

Document Amendment Record

Version	Change Description	Date
0	Initial issue	30/09/2024

Document Management

This document is the property of the Department and contains information that is confidential to the Department. It must not be copied or reproduced in any way without the written consent of the Department. This is a controlled document and it will be updated and reissued as approved changes are made.

Contents

Contents	3
PC-ST2 Sustainability in Construction	4
1 General	4
2 Sustainability objectives	5
3 Documentation	5
4 Mandatory sustainability initiatives	6
5 Identification of sustainability initiatives	7
6 Implementation of sustainability initiatives	7
7 Whole-of-life emissions reduction	8
8 Circular economy	9
9 Potable water use	9
10 Green Infrastructure	9
11 Sustainable site accommodation and equipment	10
12 Sustainable procurement	10
13 Climate Change Risk Assessment and adaptation	11
14 IS rating	11

PC-ST2 Sustainability in Construction

1 General

- a) This Master Specification Part specifies the requirements for understanding impacts and investigating and implementing initiatives to improve sustainability through construction, including:
- i) the sustainability objectives, as set out in section 2;
 - ii) the documentation requirements, as set out in section 3;
 - iii) the mandatory sustainability initiatives, as set out in section 4;
 - iv) the identification of sustainability initiatives, as set out in section 5;
 - v) the implementation of sustainability initiatives, as set out in section 6;
 - vi) the whole-of-life emissions reduction requirements, as set out in section 7;
 - vii) the circular economy requirements, as set out in section 8;
 - viii) the potable water use requirements, as set out in section 9;
 - ix) the Green Infrastructure requirements, as set out in section 10;
 - x) the sustainability site accommodation and equipment requirements, as set out in section 11;
 - xi) the sustainable procurement requirements, as set out in section 12;
 - xii) the Climate Change Risk Assessment and adaptation requirements, as set out in section 13; and
 - xiii) the IS rating requirements, as set out in section 14.
- b) Depending on the Project's value, risk, and opportunity to influence sustainability outcomes, projects will either undergo:
- i) an IS rating;
 - ii) a level 1 sustainability assessment; or
 - iii) a level 2 sustainability assessment.
- c) Where the Contract Documents specify that the Project is to obtain a rating under the Infrastructure Sustainability Council (ISC) rating scheme, the requirements of section 2 and 14 apply, and sections 3 to 13 do not apply.
- d) Where the Contract Documents do not specify that the Project is to obtain a rating under the Infrastructure Sustainability Council (ISC) rating scheme, the Contractor must determine whether the Project is to undergo a level 1 or level 2 sustainability assessment, in accordance with the Department's Sustainability Manual and where:
- i) where the Project will undergo a level 1 sustainability assessment, the requirements of sections 2 to 13 apply, and section 14 does not apply; and
 - ii) where the Project will undergo a level 2 sustainability assessment, the requirements of section 2 to 4, 6, 8 to 11, and 13 apply, and sections 5, 7, 12 and 14 do not apply.
- e) Sustainability through construction must comply with the Reference Documents, including:
- i) the Department Sustainability Manual (available from: <https://dit.sa.gov.au/standards/manuals>); and
 - ii) the Department Climate Change Adaptation Guidelines (available from: https://dit.sa.gov.au/standards/standards_and_guidelines).

2 Sustainability objectives

The Contractor's construction methodology must be undertaken to maximise the achievement of the following sustainability objectives:

- a) minimise the generation of greenhouse gases during construction of the asset;
- b) contribute to circular economy outcomes by optimising use of recycled materials and minimising waste generated during construction of the asset;
- c) minimise use of mains water during construction of the asset through demand reduction strategies and through use of captured rainwater and recycled water;
- d) minimise construction materials' lifecycle impacts;
- e) mitigate sustainability risks and drive improved sustainability performance in supply chains;
- f) deliver increased Green Infrastructure to improve liveability (including climate change resilience), amenity, biodiversity, water quality and reduce peak stormwater flows; and
- g) minimise future maintenance, repair, re-engineering or replacement costs, having regard to future climate change impacts.

3 Documentation

3.1 General

This section 3 only applies to Projects where a level 1 or 2 sustainability assessment is to be undertaken (see section 1d).

3.2 Preliminary Sustainability Plan (Construction)

- a) Unless excluded by the Contract Documents, the Contractor must prepare a Preliminary Sustainability Plan (Construction), including a Sustainability Initiatives Register, which complies with the requirements in section 6 of the Department Sustainability Manual.
- b) The Preliminary Sustainability Plan (Construction) must be prepared, submitted and updated (where required) in accordance with the requirements of PC-PM1 "Project Management and Reporting" and at a minimum the timing set out in section 6 of the Department Sustainability Manual.

3.3 Sustainability Progress Reports

- a) The Contractor must, on a 6-monthly basis following acceptance of the Preliminary Sustainability Plan (Construction) and until acceptance of the Final Sustainability Plan (Construction), submit Sustainability Progress Reports, including a Sustainability Initiatives Register, to the Principal, in accordance with section 6 of the Department Sustainability Manual.
- b) The Sustainability Progress Reports may be submitted as part of the relevant monthly project report required by PC-PM1 "Project Management and Reporting".

3.4 Final Sustainability Plan (Construction)

- a) The Contractor must prepare a Final Sustainability Plan (Construction), including a Sustainability Initiatives Register, which complies with the requirements in section 6 of the Department Sustainability Manual.
- b) The Final Sustainability Plan (Construction) must be prepared and submitted in accordance with the requirements of PC-PM1 "Project Management and Reporting" and at a minimum the timing set out in section 6 of the Department Sustainability Manual.

3.5 Construction Documentation

In addition to the requirements of PC-CN3 “Construction Management”, the Construction Documentation must include the outcomes of all investigations in relation to non-potable water use, in accordance with section 9d).

3.6 Quality Management Records

In addition to the requirements of PC-QA1 “Quality Management Requirements” or PC-QA2 “Quality Management Requirements for Major Projects” (as applicable), the Quality Management Records must include evidence of the construction of climate change adaptation measures, as required by section 13c).

4 Mandatory sustainability initiatives

- a) This section 4 only applies to Projects where a level 1 or 2 sustainability assessment is to be undertaken (see section 1d).
- b) Construction of all concrete elements must achieve a reduction in whole of life embodied carbon compared with ‘business as usual’ materials and technologies (described in Appendix 6 of the Department Sustainability Manual).
- c) The Contractor must investigate opportunities to reduce ordinary Portland cement to the maximum extent practical as a means of reducing embodied carbon, with assessment completed in accordance with section 9 of the Department Sustainability Manual and justification provided for final mix design.
- d) As a minimum, the Contractor must ensure the minimum Portland cement replacement levels in ST-SD-D1 “Design of Structures” (Table ST-SD-D1 4-1) are achieved or exceeded, or alternative mixes that achieve equivalent or greater reduction in whole-of-life embodied CO₂e emissions are used.
- e) Construction of pavements must achieve a reduction in whole of life embodied carbon and increase in recycled content compared with ‘business as usual’ materials and technologies (described in Appendix 6 of the Department Sustainability Manual).
- f) As a minimum, the Contractor must investigate the following initiatives as a means of reducing embodied carbon and increasing recycled content, with assessment completed in accordance with section 9 of the Department Sustainability Manual and justification provided for selection of the final approach:
 - i) warm mix asphalt;
 - ii) increased levels of recycled asphalt plantings:
 - A. up to 100% for footpaths / cycle paths and temporary pavements (e.g. site compounds); and
 - B. >20%-50% for deep lift asphalt;
 - iii) up to 100% recycled crushed concrete (with supplementary materials) as a substitute for virgin quarried granular materials;
 - iv) crumb rubber as a substitute for polymer modified binders in spray seals;
 - v) recycled glass aggregate as a substitute for sand:
 - A. in asphalt (2.5% in wearing and 10% in other layers); and
 - B. in pavement materials (up to 5% in Class 1, 10% in Class 2 and 15% in Class 3); and
 - vi) in-situ and ex-situ stabilisation of pavement or subgrade materials.
- g) Construction of noise barriers must achieve a reduction in whole of life embodied carbon compared to ‘business as usual’ materials and technologies (described in Appendix 6 of the

Department Sustainability Manual), with assessment completed in accordance with section 9 of the Department Sustainability Manual and justification provided for selection of the final approach.

- h) The use of diesel during the construction phase must be reduced by replacing at least 2 diesel-fuelled technologies with solar / hybrid / electric solutions (such as solar powered lighting towers, solar powered site offices, hybrid construction plant and site vehicles).

5 Identification of sustainability initiatives

- a) This section 5 only applies to Projects where a level 1 sustainability assessment is to be undertaken (see section 1d).
- b) In addition to the sustainability initiatives described in section 6b), the Contractor must use its best endeavours to identify initiatives which:
 - i) minimise whole of life greenhouse gas emissions;
 - ii) achieve circular economy outcomes (without markedly adversely impacting greenhouse gas emissions);
 - iii) minimise whole of life potable water use;
 - iv) ensure climate resilience; and
 - v) increase Green Infrastructure.
- c) The Contractor must undertake at least one workshop to identify sustainability initiatives to be further developed and implemented for the Project. The workshop must:
 - i) be held at the earliest available opportunity and no later than 1 month following the Commencement Date, or as otherwise agreed by the Principal;
 - ii) involve all relevant Contractors' personnel, Principal's personnel, and other relevant stakeholders; and
 - iii) be facilitated by a suitably qualified professional with specific experience in undertaking sustainability assessments for major construction projects.

6 Implementation of sustainability initiatives

- a) This section 6 only applies to Projects where a level 1 or 2 sustainability assessment is to be undertaken (see section 1d).
- b) As a minimum, the Contractor must implement:
 - i) all mandatory initiatives listed in section 4;
 - ii) any Principal-nominated sustainability initiative specified in the Contract Documents; and
 - iii) any Contractor-nominated sustainability initiatives included in the Contractor's tender submission.
- c) Where the Contractor has identified and assessed additional sustainability initiatives in accordance with section 5, and has determined that an initiative should be implemented, the Contractor must either:
 - i) implement the initiative (where no Design Departure or Variation is required); or
 - ii) seek approval from the Principal to implement the initiative (if a Design Departure or Variation is required).

7 Whole-of-life emissions reduction

- a) This section 7 only applies to Projects where a level 1 sustainability assessment is to be undertaken (see section 1d).
- b) Where whole of life greenhouse gas emissions for the Project base case and Final Design have been estimated during the design phase, the Contractor must, unless otherwise specified in the Contract Documents:
 - i) implement the necessary emission reduction strategies to ensure the as constructed asset achieves:
 - A. $\geq 10\%$ reduction in whole of life greenhouse gas emissions from energy use (measured in units t CO₂e), compared to the Project's base case;
 - B. $\geq 10\%$ reduction in whole of life greenhouse gas emissions from materials use and haulage (measured in units t CO₂e), compared to the Project's base case; and
 - C. $\geq 10\%$ reduction in upfront greenhouse gas emissions (measured in units t CO₂e), compared to the Project's base case;
 - ii) update the whole of life greenhouse gas emissions estimate that was prepared for the Final Design to reflect the as-constructed asset, in accordance with section 7 of the Department Sustainability Manual;
 - iii) provide justification for all emission sources for which the as-constructed asset is found to result in an increase or decrease in whole of life greenhouse gas emissions compared to the Project base case; and
 - iv) identify any barriers faced in minimising greenhouse gas emissions during construction and describe how they were overcome. For any barriers which could not be overcome, where relevant, provide recommendations on how they could be on future projects.
- c) Where whole of life greenhouse gas emissions have not been estimated during the design phase, the Contractor must:
 - i) develop a 'construction base case' for the purpose of estimating whole of life greenhouse gas emissions. The construction base case must:
 - A. be based on the Final Design unless agreed otherwise with the Principal;
 - B. adopt 'business as usual' assumptions outlined in Appendix 6 of the Department Sustainability Manual, propose any additional assumptions, and include any additional assumptions as agreed with the Principal;
 - C. be developed to represent construction, operation and maintenance of the asset using 'business as usual' technologies and approaches;
 - D. document a methodology to account for data not available for the construction base case, how scope change will be managed and a list of exclusions; and
 - E. be included in the Preliminary Sustainability Plan (Construction);
 - ii) implement the necessary emission reduction strategies to reduce the whole of life greenhouse gas emissions, such that modelling for the Project's as-constructed asset demonstrates:
 - A. $\geq 10\%$ reduction in whole of life greenhouse gas emissions from energy use (measured in units t CO₂e), compared to the construction base case unless otherwise specified in the Contract Documents;
 - B. $\geq 10\%$ reduction in whole of life greenhouse gas emissions from materials use and haulage (measured in units t CO₂e), compared to the construction base case unless otherwise specified in the Contract Documents; and

- C. $\geq 10\%$ reduction in upfront greenhouse gas emissions (measured in units t CO₂e), compared to the construction base case unless otherwise specified in the Contract Documents;
- iii) provide justification for all emission sources for which the as-constructed asset is found to result in an increase or decrease in whole of life greenhouse gas emissions compared to the construction base case; and
- iv) identify any barriers faced in minimising greenhouse gas emissions during construction and describe how they were overcome. For any barriers which could not be overcome, where relevant, provide recommendations on how they could be on future projects.

8 Circular economy

- a) This section 8 only applies to Projects where a level 1 or 2 sustainability assessment is to be undertaken (see section 1d).
- b) The Contractor must optimise the use of recycled and recyclable materials and apply the principles of the waste hierarchy to the construction of the asset, in accordance with section 9 of the Department Sustainability Manual.
- c) The Contractor must maintain a record of the amount of recycled materials used on the Project, and the amount of Project-generated materials sent for recycling or disposal. The record must conform to the template provided in Appendix 5 of the Department Sustainability Manual.
- d) The records in section 8c) must be provided to the Principal upon request and at completion of work on Site, as part of the Contractor's Final Sustainability Plan (Construction).

9 Potable water use

- a) This section 9 only applies to Projects where a level 1 or 2 sustainability assessment is to be undertaken (see section 1d).
- b) Where non-potable water use has been assessed in the design phase, and the preferred approach approved by the Principal, the Contractor must implement the preferred approach.
- c) Where non-potable water use has not been assessed in the design phase, the Contractor must investigate and assess the feasibility of using non-potable water sources for construction of the asset.
- d) The Contractor must present the outcomes of the investigations required by section 9c), including selection and justification for the preferred approach for use of non-potable water for the Project, to the Principal for approval as part of the Construction Documentation prior to construction commencing on site.

10 Green Infrastructure

- a) This section 10 only applies to Projects where a level 1 or 2 sustainability assessment is to be undertaken (see section 1d).
- b) At the completion of the Works, the Contractor must demonstrate, as part of the Final Sustainability Plan (Construction), achievement of applicable Green Infrastructure objectives and targets, as defined in the Contract Documents. In doing so, the Contractor must review Issued for Construction (IFC) vegetation clearance extents and landscape Design Drawings in the Issued for Construction Design Documentation.
- c) Where changes in outcomes for each target have occurred, the Contractor must provide details and justification.

11 Sustainable site accommodation and equipment

- a) This section 11 only applies to Projects where a level 1 or 2 sustainability assessment is to be undertaken (see section 1d).
- b) The Contractor must identify and implement actions to improve the sustainability of site accommodation and equipment used in the Works and Temporary Works, including:
 - i) site accommodation facilities in accordance with section 10.4 of the Department Sustainability Manual (not required for Projects undergoing level 2 assessment);
 - ii) reducing the environmental as well as community and workforce health impacts of vehicles, plant, and equipment emissions through a combination of:
 - A. purchasing or hiring mobile non-road diesel plant and equipment that complies with highest practicable EU or US EPA emissions standards (for plant over 19kW); and
 - B. requiring Subcontractors to provide information on the emissions standards of the mobile non-road diesel plant and equipment they propose to use on Site, and applying a weighting for air emission standards (in conjunction with other environmental considerations) in tender selection processes (for plant over 19kW) (not required for Projects undergoing level 2 assessment);
 - iii) ensuring engines are correctly repaired and regularly serviced to ensure efficiency and to prevent or minimise spills and leaks;
 - iv) restricting unnecessary idling time of vehicles, plant and equipment;
 - v) improving an engine's emission performance by fitting it with an anti-pollution control device;
 - vi) ensuring fuel conforms with relevant quality standards;
 - vii) locating plant and equipment away from sensitive populations such as schools, hospitals, or using lowest emission equipment near these areas;
 - viii) locating plant and equipment away from residential areas;
 - ix) restricting Site access to essential vehicles and machinery only; and
 - x) avoiding onsite use of diesel or petrol powered generators by substituting for or adopting a combination of, mains, renewables or battery powered options.
- c) The Contractor must record all actions implemented in response to section 11b) in the Preliminary Sustainability Plan (Construction) and provide this information to the Principal upon request, including:
 - i) evidence that site accommodation complies with section 11b); and
 - ii) details of emissions standards of all mobile non-road diesel plant and equipment used on Site.

12 Sustainable procurement

- a) This section 12 only applies to Projects where a level 1 sustainability assessment is to be undertaken (see section 1d).
- b) The Contractor must, in accordance with section 10 of the Department Sustainability Manual:
 - i) provide evidence of a formal commitment to address sustainability risks and opportunities in the supply chain;
 - ii) review the Project and asset's supply chains to identify material sustainability risks and opportunities;

- iii) implement procurement actions to mitigate material sustainability risks and realise social sustainability opportunities;
 - iv) embed environmental and sustainability objectives and targets throughout all relevant subcontracts and tender schedules;
 - v) demonstrate that Environmental Product Declarations (EPDs) have been sought for products used;
 - vi) ensure that $\geq 3\%$ of products used (by cost) have a valid EPD complying to EN 15804 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products;
 - vii) source all steel from steelmakers with commitments to decarbonise or achieve carbon neutrality by the year 2050 at a minimum;
 - viii) provide evidence of decarbonisation commitments from steel suppliers;
 - ix) demonstrate that environmental, social and economic sustainability criteria are used in procurement activities; and
 - x) demonstrate that environmental social and economic sustainability criteria are used in procurement activities.
- c) Progress and outcomes must be recorded in the Preliminary Sustainability Plan (Construction) and Final Sustainability Plan (Construction).

13 Climate Change Risk Assessment and adaptation

- a) This section 13 only applies to Projects where a level 1 or 2 sustainability assessment is to be undertaken (see section 1d).
- b) The Contractor must ensure and provide evidence that appropriate risk treatments have been implemented for any high and extreme climate change risks identified for the Project's risk register, and any residual risks (and recommended treatments) incorporated into the relevant handover documents with management responsibility identified (such as O&M Manuals or Asset Handover Reports).
- c) The Contractor must submit evidence of the construction of adaptation measures as part of the Quality Management Records.

14 IS rating

- a) This section 14 only applies to projects where the Contract Documents specify that the project is to obtain a rating under the Infrastructure Sustainability Council (ISC) rating scheme.
 - b) Where the Contract Documents specify that the Contractor must obtain an IS rating, the Contractor must comply with the requirements outlined in section 4 of the Department Sustainability Manual, unless otherwise agreed in writing with the Principal.
 - c) The Principal has nominated a minimum IS rating score for the Project and minimum levels to be achieved for specified credits in the Contract Documents.
 - d) The Contractor must achieve the minimum IS rating score and minimum levels for specific credits as specified in the Contract Documents, unless appropriate justification is provided to and approved by the Principal as to why the minimum sustainability requirements are not able to be achieved.
-