

Project Controls

Master Specification

PC-ST2 Sustainability in Construction

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1	Initial Issue	02/05/19
2	Removed reference to sustainability returnable schedule and for projects undergoing an IS rating. Added requirement for projects undergoing an IS rating. Added specific sustainability initiatives to be investigated. Reduced requirement for Estimation of Impacts.	August 2020
3	Significant changes throughout	August 2021
4	Addition to Mandatory Sustainability Initiatives	July 2022

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PC-ST2 Sustainability in Construction

1 General

- 1.1 This Part specifies the requirements for understanding impacts and investigating and implementing initiatives to improve sustainability through construction. Depending on the project's value, risk, and opportunity to influence sustainability outcomes, projects will either undergo an Infrastructure Sustainability (IS) rating, a Level 1, or a Level 2 sustainability assessment.
- 1.2 Where the Contract Documents specify that the project is to obtain a rating under the Infrastructure Sustainability Council of Australia (ISCA) rating scheme, Clause 13 "Infrastructure Sustainability (IS) Rating" applies, and Clauses 2 to 12 do not apply.
- 1.3 Where the Contract Documents specify that the project will undergo a level 1 sustainability assessment, Clauses 2 - 12 apply and Clause 13 "Infrastructure Sustainability (IS) Rating" does not apply.
- 1.4 Where the Contract Documents specify that the project will undergo a level 2 sustainability assessment, Clauses 2 – 4, 6, 8 – 10, and 12 apply and Clauses 5, 7, 11, and 13 do not apply.

2 Sustainability Objectives

- 2.1 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 and / or replacement costs, having regard to future climate change impacts.

3 Sustainability Plan

- 3.1 Unless excluded by the Contract Documents, the Contractor shall prepare a Preliminary Sustainability Plan, including a Sustainability Initiatives Register, which complies with the requirements in the Department's Sustainability Manual Part 6. Submission of the Preliminary Sustainability Plan shall constitute a **Hold Point**.
- 3.2 The Contractor shall, on a six-monthly basis following acceptance of the Preliminary Sustainability Plan and until submission of the Final Sustainability Plan, submit Sustainability Progress Reports, including a Sustainability Initiatives Register, to the Principal, in accordance with the Department's Sustainability Manual Part 6.
- 3.3 The Contractor shall prepare a Final Sustainability Plan, including a Sustainability Initiatives Register, which complies with the requirements in the Department's Sustainability Manual Part 6.

4 Mandatory Sustainability Initiatives

- 4.1 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 the Department's Sustainability Manual Appendix 6).

- 4.2 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's Sustainability Manual and justification provided for final mix design.
- 4.3 As a minimum, the Contractor must ensure the minimum Ordinary Portland Cement replacement levels in ST-SD-D1 Design of Structures (Table 4-1) are achieved or exceeded, or alternative mixes that achieve equivalent or greater reduction in whole-of-life embodied CO₂-e emissions are used:
- 4.4 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 the Department's Sustainability Manual Appendix 6).
- 4.5 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's Sustainability Manual and justification provided for selection of the final approach:
- a) warm mix asphalt
 - b) increased levels of recycled asphalt planings:
 - i) up to 100% for footpaths/ cyclepaths and temporary pavements (eg site compounds)
 - ii) >20%-50% for deep lift asphalt
 - c) in-situ cold recycling of asphalt
 - d) in-situ hot recycling of asphalt
 - e) up to 100% recycled crushed concrete (with supplementary materials) as a substitute for virgin quarried granular materials.
 - f) crumb rubber as a substitute for polymer modified binders in spray seals
 - g) recycled glass aggregate as a substitute for sand:
 - i) in asphalt (2.5% in wearing and 10% in other layers)
 - ii) in pavement materials (up to 5% in Class 1, 10% in Class 2 and 15% in Class 3); and
 - h) in-situ and ex-situ stabilisation of pavement and / or subgrade materials.
- 4.6 Construction of noise barriers must achieve a reduction in embodied carbon compared to Business As Usual materials and technologies (described in the Department's Sustainability Manual Appendix 6), with assessment completed in accordance with Section 9 of the Department's Sustainability Manual and justification provided for selection of the final approach.
- 4.7 The use of diesel during the construction phase must be reduced by replacing at least two diesel-fuelled technologies with solar / hybrid / electric solutions (e.g. solar powered lighting towers, solar powered site offices, hybrid construction plant and site vehicles)

5 Identification of Sustainability Initiatives

- 5.1 In addition to the sustainability initiatives described in Clause 6.1, the Contractor shall use its best endeavours to identify initiatives which:
- a) minimise whole of life greenhouse gas emissions;
 - b) achieve circular economy outcomes (without markedly adversely impacting greenhouse gas emissions);
 - c) minimise whole of life potable water use;
 - d) ensure climate resilience; and
 - e) increase green infrastructure.
- 5.2 The Contractor must undertake at least one workshop to identify sustainability initiatives to be further developed and implemented for the contract. The workshop must:

- a) be held at the earliest available opportunity and no later than 1 month of Contract Award, or as otherwise agreed by the Principal;
- b) involve all relevant Contractors' personnel and Principal's personnel and other relevant stakeholders; and
- c) be facilitated by a suitably qualified professional with specific experience in undertaking sustainability assessments for major construction projects.

6 Implementation of Sustainability Initiatives

- 6.1 As a minimum, the Contractor must implement:
 - a) all Mandatory initiatives listed in Clause 4 of this Part;
 - b) any Principal-nominated sustainability initiative specified in the Contract Documents; and
 - c) any Contractor-nominated sustainability initiatives included in the Contractor's tender submission (unless excluded by the Principal).
- 6.2 Where the Contractor has identified and assessed additional sustainability initiatives in accordance with Clause 5 of this part, and has determined that an initiative should be implemented, the Contractor must either:
 - a) implement the initiative (where no departure or variation is required); or
 - b) seek approval from the Principal to implement the initiative (if a departure or variation is required).

7 Whole of Life Emissions Reduction

- 7.1 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:
 - a) implement the necessary emission reduction strategies to ensure the as constructed asset achieves:
 - i) $\geq 10\%$ reduction in whole of life scope 1 and scope 2 greenhouse gas emissions, compared to the base case; and
 - ii) $\geq 10\%$ reduction in whole of life scope 3 greenhouse gas emissions associated with materials use, compared to the base case.
 - b) 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 the Department's Sustainability Manual Part 7; and
 - c) provide justification for all emission sources for which the as built design is found to result in an increase or decrease in whole of life greenhouse gas emissions compared to the base case.
- 7.2 Where whole of life greenhouse gas emissions have not been estimated during the design phase, the Contractor must:
 - a) develop a 'construction base case' for the purpose of estimating whole of life greenhouse gas emissions. The construction base case must:
 - i) be based on the Final Design unless agreed otherwise with the Principal;
 - ii) adopt business as usual (BAU) assumptions outlined in Appendix 6 of the Department's Sustainability Manual;
 - iii) be developed to represent construction and maintenance of the asset using business as usual technologies and design approaches;
 - iv) 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;
 - v) be included in the Preliminary Sustainability Plan;

- b) implement emission reduction strategies to reduce the whole of life greenhouse gas emissions, such that modelling for the project's final design demonstrates:
 - i) a reduction in whole of life scope 1 and scope 2 greenhouse gas emissions (measured in units t CO₂-e) associated with energy use from construction and maintenance activities;
 - ii) a reduction in whole of life scope 3 greenhouse gas emissions (measured in units t CO₂-e) associated with materials lifecycle impacts from construction and maintenance activities; and
- c) provide justification for all emission sources for which the as built design is found to result in an increase or decrease in whole of life greenhouse gas emissions compared to the final design.

8 Circular Economy

- 8.1 The Contractor must optimise use of recycled and recyclable materials and apply the principles of the waste hierarchy to the construction of the asset, in accordance with the Department's Sustainability Manual Part 9.
- 8.2 The Contractor shall maintain a record of the amount of recycled materials used on the project, and the amount of project-generated materials sent for recycling / disposal. The record shall conform to the template provided in the Department's Sustainability Manual (Appendix 5).
- 8.3 The record shall be provided to the Principal upon request and at Completion of work on Site, via the Contractor's Final Sustainability Plan.

9 Potable Water Use

- 9.1 Where non-potable water use has been assessed in the design phase, and the preferred approach approved by the Principal, the Contractor shall implement the preferred approach.
- 9.2 Where non-potable water use has not been assessed in the design phase, the Contractor shall investigate and assess the feasibility of using non-potable water sources for construction of the asset.
- 9.3 The Contractor shall present the outcomes of the investigations, including selection and justification for the preferred approach for use of non-potable water for the project, to the Principal for approval prior to construction commencing on site.

10 Sustainable Site Accommodation and Equipment

- 10.1 The Contractor shall identify and implement actions to improve the sustainability of site accommodation and equipment used in the works, including:
 - a) site accommodation facilities in accordance with the Department's Sustainability Manual Part 10.4 (not required for projects undergoing level 2 assessment);
 - b) reducing the environmental as well as community / workforce health impacts of vehicles, plant and equipment emissions through a combination of:
 - c) 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
 - d) requiring sub-contractors 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).
 - e) ensuring engines are correctly repaired and regularly serviced to ensure efficiency and to prevent / minimise spills and leaks;
 - f) restricting unnecessary idling time of vehicles, plant and equipment;
 - g) improving an engine's emission performance by fitting it with an anti-pollution control device;
 - h) ensuring fuel conforms with relevant quality standards;

- i) locating plant and equipment away from sensitive populations such as schools, hospitals, and / or using lowest emission equipment near these areas;
 - j) locating plant and equipment away from residential areas;
 - k) restricting site access to essential vehicles and machinery only; and
 - l) avoiding onsite use of diesel or petrol powered generators by substituting for / or combination of mains, renewables or battery powered options.
- 10.2 The Contractor shall record all actions implemented in response to Clause 10.1 in the Sustainability Plan and provide this information to the Principal upon request.
- a) evidence that site accommodation complies with Clause 10.1a); and
 - b) details of emissions standards of all mobile non-road diesel plant and equipment used on site.

11 Sustainable Procurement

- 11.1 The Contractor shall, in accordance with the Department's Sustainability Manual part 10:
- a) provide evidence of a formal commitment to address sustainability risks and opportunities in the supply chain;
 - b) review the project / asset's supply chains to identify material sustainability risks and opportunities; and
 - c) implement procurement actions to mitigate material sustainability risks and realise social sustainability opportunities.
- 11.2 Progress and outcomes shall be recorded in the Sustainability Plan.

12 Climate Change Risk Assessment and Adaptation

- 12.1 The Contractor must ensure 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 handover documents

13 Infrastructure Sustainability (IS) Rating

- 13.1 Where the Contract Documents specify that the Contractor must obtain an IS rating, the Contractor shall comply with the requirements outlined in the Department's Sustainability Manual part 5, unless otherwise agreed in writing with the Principal. The Principal has nominated Minimum Sustainability Requirements for the asset in the Contract Documents, including a minimum IS rating score for the project and minimum levels to be achieved for specified credits.
- 13.2 The Contractor shall achieve the minimum IS rating score and minimum levels for specific credits as specified in the Contract Documents, unless
- a) appropriate justification is provided to and approved by the Principal as to why the Minimum Sustainability Requirements are not able to be achieved.

14 Hold Points

- 14.1 The following is a summary of Hold Points referenced in this Part:

Table PC-ST2 14-1 Hold Points

Document Ref.	Hold point	Response time
3.1	Preliminary Sustainability Plan	10 Working Days