Project Controls

Master Specification

PC-ST1 Sustainability in Design

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DEPARTMENT FOR INFRASTRUCTURE AND TRANSPORT

Government of South Australia
Department for Infrastructure and Transport

Document Amendment Record

Version	Change Description	Date
1	Initial Issue	02/05/2019
2	Removed reference to sustainability returnable schedule and for projects undergoing an IS rating. Added requirements projects undergoing an IS rating. Added specific sustainability initiatives to be investigated. Reduced requirements for Estimation of Impacts and removed requirement for Socially Sustainable Procurement.	August 2020
3	Significant changes throughout	August 2021
4	Additions to Mandatory Sustainability Initiatives	July 2022

Document Management

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PC-ST1 Sustainability in Design

1 General

1.1 This Part specifies the requirements for understanding impacts and investigating and implementing initiatives to improve sustainability through design. 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 12 "Infrastructure Sustainability (IS) Rating" applies, and Clauses 3 – 11 and 13 do not apply.

1.3 Where the Contract Documents specify that the project will undergo a Level 1 sustainability assessment, Clauses 2 – 11 and 13 apply and Clause 12 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 – 11, and 13 apply and Clauses 5, 7 and 12 do not apply.

2 Sustainability Objectives

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

a) minimise the generation of greenhouse gases across the full asset lifecycle;

b) contribute to circular economy outcomes by optimising use of recycled materials and minimising waste generated across the full asset lifecycle;

c) minimise use of mains water across the full asset lifecycle through demand reduction strategies and through use of captured rainwater and recycled water;

d) minimise materials' lifecycle impacts across the full asset lifecycle;

e) mitigate sustainability risks and drive improved sustainability performance in the project's supply chains;

f) deliver increased green infrastructure to improve liveability (including climate change resilience), amenity, biodiversity, water quality and reduce peak stormwater flows;

g) minimise future maintenance, repair, re-engineering and / or replacement costs, having regard to future climate change impacts;

h) design assets to facilitate and encourage greater use of public transport and active transport modes, including cycling and walking as well as facilitating use of sustainable low occupancy low / zero emission vehicles;

i) design assets to facilitate private sector investment and contribute to local prosperity; and

j) recognise and promote the role of smart technology and infrastructure in achieving sustainability outcomes.

3 Sustainability Plan

3.1 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 an up-to-date 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 the final Sustainability Initiatives Register, which complies with the requirements in the Department's Sustainability Manual Part 6.

4 Mandatory Sustainability Initiatives

4.1 Design of all concrete elements 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).

4.2 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 Design 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).

4.4 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.

4.5 Design of noise barriers must achieve a reduction in embodied carbon and increased recycled content compared to Business As Usual materials and technologies (described in the Department's Sustainability Manual Appendix 6).

4.6 The Contractor must investigate alternatives to concrete as a means of reducing embodied carbon and increasing recycled content in noise barriers, with assessment completed in accordance with Section 9 of the Department's Sustainability Manual and justification provided for selection of the final approach.

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 and confirm sustainability initiatives to be further investigated and/or implemented for the contract, including any sustainability initiatives recommended in the planning phase Sustainability Plan. The workshop must:

a) be held at the earliest available opportunity and no later than 1 month of tender award, or as otherwise agreed by the Principal;

b) involve all relevant Contractors' design and construction 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.

5.3 The Contractor shall undertake triple-bottom-line assessment of sustainability initiatives in accordance with the DIT Sustainability Manual Part 9.

5.4 The Contractor shall record the outcomes of the assessment, including the decision to implement, in the Sustainability Progress Report(s) and/or Final Sustainability Plan.

6 Implementation of Sustainability Initiatives

6.1 As a minimum, the Contractor shall implement:

a) all mandatory sustainability initiatives listed in Clause 4 of this Part;

b) any additional Principal-nominated sustainability initiatives specified in 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 The Contractor must develop a 'base case' for the purpose of estimating whole of life greenhouse gas emissions. The base case must:

a) be based on the project's Reference design unless agreed otherwise with the Principal;

b) adopt business as usual (BAU) assumptions outlined in Appendix 6 of the DIT Sustainability Manual;

c) be developed to represent construction and operation of the project using business as usual technologies and design approaches;

d) document a methodology to account for data not available for the base case, how scope change will be managed and a list of exclusions; and

e) be included in the Preliminary Sustainability Plan.

7.2 The Contractor shall model whole of life greenhouse gas emissions associated with energy use and materials lifecycle impacts for the base case and for the final design, in accordance with the Department's Sustainability Manual Part 7.

7.3 The Contractor shall implement emission reduction strategies to reduce the whole of life greenhouse gas emissions associated with energy use and materials lifecycle impacts, such that modelling for the project's final design demonstrates:

a) a reduction in whole of life scope 1 and scope 2 greenhouse gas emissions (measured in units t CO2-e) of at least 10%, compared to the project's base case; and

b) a reduction in whole of life scope 3 greenhouse gas emissions associated with materials use (measured in units t CO2-e) of at least 10%, compared to the project's base case unless otherwise specified in the Contract requirements.

7.4 Justification must be provided for all emission sources for which the final design is found to result in an increase or decrease in whole of life greenhouse gas emissions.

8 Circular Economy

8.1 The Contractor shall optimise use of recycled materials and apply the principles of the waste hierarchy to the design of the asset, in accordance with the Department's Sustainability Manual Part 9.

9 Potable Water Use

9.1 The Contractor shall investigate and assess the feasibility of using non-potable water sources for the construction and operation of the asset (including, if necessary, extension of the current network to the project site).

9.2 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, in the 70% design report.

10 Green Infrastructure

10.1 Where a Green Infrastructure Assessment has been undertaken during the Planning phase, the Contractor shall review (and update where necessary) the green infrastructure concept plan to ensure it is appropriate for the scope of work that is being delivered, and will achieve the relevant business requirements and contract requirements.

10.2 Where a Green Infrastructure Assessment has not been undertaken during the Planning phase, and the project is being delivered in Metropolitan Adelaide or townships, the Contractor shall assess the potential/ need to incorporate Green Infrastructure into the asset, having regard to DIT Sustainability Manual Part 11. Where there is potential/ need to incorporate Green Infrastructure, the Contractor shall undertake a Green Infrastructure Assessment in accordance with the Department's Sustainability Manual Part 11.

10.3 The Contractor must ensure the outputs of the Green Infrastructure Assessment are incorporated into the landscape drawings (refer Part PR-LS-D1).

11 Climate Change Risk Assessment and Adaptation

11.1 Where a Climate Change Risk Assessment has been undertaken during the Planning phase, the Contractor must review the risk assessment to ensure it is appropriate for the scope of work that is being delivered, and update (where necessary) the relevant risks and treatments.

11.2 Where a Climate Change Risk Assessment has not been undertaken during the Planning phase, the Contractor must carry out a risk assessment, in accordance with the Department's Climate Change Adaptation Guideline. Appropriate risk treatments must be identified for extreme and high level risks.

11.3 The Contractor must demonstrate that appropriate risk treatments have been incorporated into the design, and residual risks entered in the project risk register.

12 Infrastructure Sustainability (IS) Rating

12.1 Where the Contract Documents specify that the Contractor must obtain an IS rating, the Contractor must comply with the requirements outlined in the Department's Sustainability Manual part 5, unless otherwise agreed in writing with the Principal.

12.2 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.

12.3 The Contractor shall 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 these are not able to be achieved.

13 Records

13.1 The Sustainability Initiatives Register (produced in accordance with clause 3 of this Part) is to be provided in the 30%, 70% and 100% Design Reports, in accordance with the Engineering and Design Management Plan PC-EDM1.

14 Hold Points

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

Table PC-ST1 14-1 Hold Points

Document Ref.	Hold Point	Response Time
3.1	Preliminary Sustainability Plan	10 Working Days