

Master Specification

Part PC-SI2

Site Investigations

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Contents

Contents	3
PC-SI2 Site Investigations	4
1 General	4
2 Geotechnical and hydrogeological investigations	4
3 Hydrology investigations	5
4 Environmental investigations	5
5 Aboriginal and non-Aboriginal heritage investigations	7
6 Site contamination investigations	7
7 Pavement site investigations	7

PC-SI2 Site Investigations

1 General

- a) This Master Specification Part sets out the requirements for site investigations and subsequent reporting, including:
 - i) the geotechnical and hydrogeological investigations, as set out in section 2;
 - ii) the hydrology investigations, as set out in section 3;
 - iii) the environmental investigations, as set out in section 4;
 - iv) the Aboriginal and non-Aboriginal heritage investigations, as set out in section 5;
 - v) the site contamination investigations, as set out in section 6; and
 - vi) the pavement site investigation, as set out in section 7.
- b) Site investigations and subsequent reporting must comply with the Reference Documents, including the Department Environment and Heritage Technical Manual (EHTM), including all attachments and supporting documentation (available from: <https://dit.sa.gov.au/standards/manuals>).
- c) The Contractor must ensure all site investigations and assessments of the condition of the existing infrastructure necessary for the execution of the Works and the Temporary Works are undertaken.

2 Geotechnical and hydrogeological investigations

- a) The Contractor must:
 - i) review any Principal supplied reports, relevant publicly available information (i.e. expected ground conditions) and subsequently develop and then undertake a suitable scope of works that will:
 - A. provide sufficient geotechnical and hydrogeological information to inform a Concept Design, Reference Design, or Detailed Design (as relevant to the Project); and
 - B. achieve the environmental objectives outlined in PC-ENV1 “Environmental Management”; and
 - ii) obtain any Environmental Authorisations necessary to complete the Works and Temporary Works or to operate / maintain the infrastructure.
- b) The geotechnical reports must be provided to the Principal with electronic borehole and test pit logs for all geotechnical and pavement investigations provided in the gINT program format and any necessary library files. The gINT files will be included into the Principal’s geotechnical gINT database.
- c) Site investigations must be sufficient to provide information for the design of structures, railway infrastructure, pavements, and any associated earthworks, and conform to any relevant Reference Documents.
- d) Where appropriate based on the scope of the proposed Works and Temporary Works, a geotechnical interpretive report (GIR) must be completed and provided to the Principal as part of the relevant planning phase submission or Design Documentation submission (as applicable). The report must:
 - i) present all geotechnical or hydrogeological design parameters, factors of safety and accompanying assumptions;

- ii) identify any residual geotechnical or hydrogeological risks that may impact the ongoing design, construction, or maintenance of the Project; and
 - iii) provide sufficient detail (i.e. methods and calculations) to allow for review by a third party or the Principal.
- e) The Contractor must develop (where required for the Project) and implement any additional geotechnical, hydrogeological, or trial investigations (if required) to confirm design parameters and assumptions (e.g. trial piling, soil nail, lime stabilisation trials, preloading and surcharging trials).
- f) Where existing natural soils or fill are proposed to be reused then laboratory soil testing of representative layers must be tested to classify the material types as per RD-EW-C1 "Earthworks".
- g) All test locations are to be surveyed to the MGA 2020 grid (0.1 m accuracy) and for level to the Australian Height Datum (0.1 m accuracy). Levels in both depth below the surface and RL to AHD must be provided on all borehole / test pit logs and dynamic cone penetration test results. Hydrogeological investigations may require an increased accuracy in RL and must be evaluated on a case by case basis.
- h) Prior to Completion, the Contractor must ensure that all (if any) groundwater monitoring wells installed for the Works and Temporary Works and no longer required for ongoing monitoring, are decommissioned as per the requirements of National Uniform Drillers Licensing Committee publication Minimum Construction Requirements for Water Bores in Australia. Evidence of the decommissioning of wells (if required) must be provided as part of the Quality Management Records.

3 Hydrology investigations

- a) The Contractor must review any existing drainage and flood studies of the area, in consultation with the Principal (Department Stormwater Unit).
- b) Where there is an identified potential flooding risk, the Contractor must conduct a hydrological investigation of the existing flooding characteristics and predicted flooding characteristics with construction of the project for both minor (0.2 EY) and major (1% AEP) flood events.

4 Environmental investigations

4.1 General

- a) The Contractor must:
 - i) review any available reports and associated investigations, and undertake all additional environmental investigations necessary to meet the requirements of the Contract Documents, including any design requirements; and
 - ii) obtain any Environmental Authorisations necessary to complete the Works and Temporary Works or to operate / maintain the infrastructure.
- b) The Contractor will be responsible for undertaking any further environmental investigations (including updates to previous investigations) to confirm design assumptions prior to the commencement of the Final Design.
- c) All environmental investigations must be undertaken by a suitably qualified specialist.
- d) All environmental investigations and associated factual reports must be provided to the Principal for review and acceptance as set out in the Contract Documents.
- e) Refer to PC-ENV1 "Environmental Management" for responsibility for preparing and obtaining Environmental Authorisations.

4.2 Vegetation surveys

- a) Vegetation surveys are required for the clearance of vegetation. The survey and required reporting for Approvals must be undertaken in accordance with Department EHTM Attachment 4A - Vegetation Survey Guidelines.
- b) Native vegetation assessments/surveys must be undertaken by a Native Vegetation Council Accredited Consultant (refer to <https://www.environment.sa.gov.au/topics/native-vegetation/accredited-consultants>).
- c) Where vegetation assessments are required under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth), these must be undertaken in accordance with the relevant Laws and Reference Documents.
- d) Spatial information, including the area surveyed, tree locations, vegetation areas, etc. must be provided in accordance with PC-SI4 "GIS & Aerial and Remote Data Capture Standard".

4.3 Fauna survey

- a) Fauna surveys must be carried out where required, and in accordance with, Department EHTM Attachment 5A - Fauna Impact Assessment Guidelines.
- b) Where fauna surveys are required under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth), these must be undertaken in accordance with relevant Laws and Reference Documents.

4.4 Noise investigations

- a) The Contractor must undertake an investigation of existing and predicted noise levels and the impact of the Project in accordance with:
 - i) for road traffic noise - Department EHTM Attachment 7A - Road Traffic Noise Guidelines;
 - ii) for rail noise - the SA EPA Guidelines for the Assessment of Noise from Rail Infrastructure and Department EHTM Attachment 7B - Operational Rail Noise [EPA: Guidelines for the Assessment of Noise from Railway Infrastructure] (collectively known as EPA GARNI);
 - iii) for construction (day and night) works - Department EHTM Attachment 7C - Guideline for the Management of Noise and Vibration: Construction and Maintenance Activities; and
 - iv) PC-ENV4 "Noise Assessment, Treatment Design, and Implementation".
- b) The Contractor must identify the need to undertake noise monitoring to determine the existing conditions of the Project area or to validate the noise model. Monitoring at or adjacent to residential properties must be undertaken at locations which provide an adequate level of information on the existing situation.
- c) The monitoring location selection must be undertaken in accordance with AS 1055 Acoustics - Description and measurement of environmental noise, and EPA requirements.
- d) Existing and post-construction noise monitoring must be undertaken as necessary for the assessments required.
- e) Noise monitoring must be undertaken for a minimum of 7 days at each location, outside of school holidays, and in accordance with relevant Reference Documents and EPA requirements. Concurrent traffic counts may also be required.

4.5 Vibration investigations

- a) The Contractor must undertake vibration assessment for the construction and operation of the infrastructure. This may require undertaking vibration measurements pre, during and post construction.

- b) The vibration monitoring must be undertaken in accordance with appropriate Reference Documents and Department EHTM Attachment 7A - Road Traffic Noise Guidelines, at locations with similar characteristics to the Project area for both structural and human exposure.

4.6 Air quality investigations

- a) The Contractor must undertake a detailed air quality assessment in accordance with:
 - i) Department EHTM Attachment 3A - Air Quality Assessment Guidelines; and
 - ii) for any other air emission sources - in accordance with the *Environment Protection Act 1993* (SA) and Environment Protection Policy requirements.
- b) The Contractor must determine the need for and if necessary, undertake site specific air quality monitoring in accordance with Department EHTM Attachment 3A - Air Quality Assessment Guidelines. When determining the need for monitoring, the Contractor must assess other available background data (e.g. EPA air quality monitoring data) and determine its' adequacy for undertaking the air quality assessment.

5 Aboriginal and non-Aboriginal heritage investigations

The Contractor must undertake Aboriginal and non-Aboriginal heritage investigations in accordance with:

- a) PC-H1 "Aboriginal Heritage and Native Title"; and
- b) PC-H2 "Non-Aboriginal Heritage".

6 Site contamination investigations

The Contractor must undertake site contamination investigations in accordance with PC-SC1 "Site Contamination".

7 Pavement site investigations

The Contractor must undertake pavement site investigations in accordance with RD-PV-D1 "Pavement Investigation and Design".
