

# Project Controls

## Master Specification

## PC-PL2 Planning Investigations

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DEPARTMENT FOR  
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## Document Amendment Record

Version	Change Description	Date
1	Initial Issue	27/06/19
2	Minor to Section 4 and 5 and update to Transport Modelling	20/08/19
3	Revision of requirements for EIA, Heritage Assessment, Aboriginal engagement and assessment of outcomes for Aboriginal people, Native Title, Green Infrastructure, Land Acquisition and Transport Modelling	August 2020
4	Revision of requirements for EHIA and native vegetation offset, GHG estimates and sustainability assessment and opportunities and minor amendment to site contamination. Updated references to new version of guidelines and standards	August 2021
5	Update to EHIA and Veg requirements to reference and align with the EHTM requirements.	July 2022

## Document Management

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## PC-PL2 Planning Investigations

### 1 General

#### Scope

1.1 This Part defines Planning Investigations undertaken in support of a Planning Study.

#### Definitions

1.2 The following definitions apply to terms used in this Part:

**Table PC-PL2 1-1 Definitions**

Term	Definition
Planning Study Investigations (Investigations)	Investigations undertaken by the Principal and / or Contractor to ensure the Planning Study task objectives are met.

#### References

1.3 The framework for undertaking a Planning Study is documented in the following:

- a) PC-PL1 "Framework for Planning Studies".

### 2 Planning Investigations

2.1 The purpose of the Planning Investigations (Investigations) is to support delivery of the Planning Study and its objectives in accordance with PC-PL1 "Framework for Planning Studies".

2.2 Investigations will inform an understanding of constraints, risks and drivers associated with the proposed project as inputs to development of the Planning Study and Business Case.

2.3 The Contractor shall review all information provided by the Principal as part of the Investigations to assess its currency, adequacy and appropriateness.

2.4 Based on its review of the information provided by the Principal, the Contractor shall determine what additional Investigations are required and, unless specified by the Principal in the Contract Documents, shall undertake the Investigations.

2.5 The Investigations will be to a level of detail commensurate with the size and complexity of the project and the preliminary nature of the Planning Study and related concept design development.

2.6 In the course of its Investigations, and as soon as practical once identified, the Contractor shall inform the Principal of critical path items and approvals and any additional detailed Investigations (e.g., vegetation surveys, ground investigation) that should be expedited in order to meet the Principal's program or given the materiality of the item or approval.

2.7 Supplementary Investigations may be undertaken to deliver on the Planning Study objectives or as a recommendation of the Proving Phase. If not already being undertaken by the Principal or Contractor, the Contractor may be required to undertake these Investigations.

2.8 Where undertaken, Investigations will be in accordance with this Part.

### 3 Documentation

#### Investigation Reports

3.1 The Contractor shall summarise Investigations undertaken and document the findings, a gap analysis and recommendations for further investigations (if any) in Investigation Report(s).

- 3.2 Discrete Investigation Reports and information created in the course of the Planning Investigations may be summarised in, and attached to, the Planning Study Report.
- 3.3 If required by the Contract Documents, the Investigation Report(s) will be of a factual nature to facilitate disclosure to tenderers of subsequent design and / or construction head contracts.
- 3.4 As per PC-PL1 “Framework for Planning Studies”, the Investigation Report(s) are Proving Phase deliverables. If additional Investigations are required for the Pre-delivery Phase, the Investigation Reports will be updated at that time.
- 3.5 Draft versions of all Investigation Reports will be provided to the Principal electronically via email for review and comment prior to issue of final versions. Final versions of all deliverables in this Part will also be provided to the Principal electronically via email for review and for approval as an ‘Issued for Use’ deliverable.
- 3.6 Provision of both draft and final Investigation Reports will constitute a **Hold Point**.

## 4 Engineering, Sustainability, Heritage and Environmental Investigations

### Engineering survey

- 4.1 The Contractor shall procure, manage and collate a survey with regard to the requirements of PC-S15 “Engineering Surveys”.
- 4.2 The survey will be to a level of detail commensurate with the size and complexity of the project and the preliminary nature of the Planning Study and related concept design development, i.e., a full engineering level survey may not be required to support optioneering for multiple sites.

### Utility Services

- 4.3 The Contractor shall collate and undertake a review of Utility Services that may be impacted by the construction of the Project.
- 4.4 The Contractor’s review shall consider the requirements of PC-US1 “Utility Services”.
- 4.5 The Contractor shall consider and document the impacts of the project on Utility Services including, but not limited to, the following:
  - a) Utility Services that require relocation or adjustment;
  - b) feasibility of re-locating Utility Services; and
  - c) cost, time and community impact to relocate or adjust Utility Services.
- 4.6 Where a major (or potentially major) Utility Service is identified that may result in a major issue for the project, the Contractor shall:
  - a) develop a concept services re-location to obtain a better understanding of the cost and impact of the service;
  - b) consult with representatives from the Transport Project Delivery section within the Department who have previous experience with service relocations or adjustment; and
  - c) in coordination with the Principal, consult with the Service Authority to obtain a better understanding of the cost and impact to the project.

### Greenhouse gas estimates

- 4.7 The Contractor shall assess the scope to influence greenhouse gas emissions through option selection, having regard to the Department’s Sustainability Manual Part 2.
- 4.8 Where there is scope to influence greenhouse gas emissions through options selection, the Contractor shall:

- a) undertake a high level estimate of GHG emissions for each shortlisted option, in accordance with the Department's Sustainability Manual Part 7; and
- b) include greenhouse gas emissions as one of the criteria in the ranking and assessment methodology.

## Assessment of emissions reduction and circular economy opportunities

- 4.9 The Contractor shall identify and assess opportunities to reduce embodied emissions and incorporate reused and/or recycled products/ materials into the asset, in accordance with:
  - a) the Department's Sustainability Manual Part 9; and
  - b) the mandatory sustainability initiatives listed in Parts PC-ST1 "Sustainability in Design" and PC-ST2 "Sustainability in Construction".
- 4.10 The Contractor shall identify and recommend those opportunities that are considered viable for delivery.

## Climate change risk assessment

- 4.11 The Contractor shall apply the pre-screening and screening criteria in Sections 1.4 and 2 of the Department's Climate Change Adaptation Guideline to determine whether a climate change risk assessment is required.
- 4.12 Where pre-screening and screening determines that a climate change risk assessment is required, the Contractor shall undertake and document a climate change risk assessment, in accordance with the Department's Climate Change Adaptation Guideline. Appropriate adaptation options shall be identified for extreme and high level risks.
- 4.13 The risk assessment must be completed sufficiently early to allow the outcomes to help inform selection and assessment of options.

## Aboriginal Heritage Assessment

- 4.14 The Contractor shall undertake an assessment of Aboriginal heritage sites, objects or remains that may be located within (or in proximity to) the project area.
- 4.15 As a minimum, the assessment will be of sufficient detail to inform an Aboriginal Heritage Risk Assessment in accordance with requirements included in PC-H1 "Aboriginal Heritage and Native Title".
- 4.16 The assessment will include documented heritage and the potential for previously undiscovered heritage.
- 4.17 The assessment will include the significance of the project area and the identification, location and description of archaeological, historical, anthropological or traditional heritage values of the area.
- 4.18 The assessment will include how Aboriginal people may have utilised the landscape both in the past and any local traditional and cultural practices that are currently associated with the area.
- 4.19 The Contractor shall assess if the Aboriginal heritage has the potential to be damaged, disturbed or interfered with as a result of the proposed project and provide recommendations as to how the project can avoid, manage or mitigate the risk of damage, disturbance or interference.
- 4.20 Where the Contractor proposes to consult with Aboriginal heritage representatives to support its assessment, the consultation shall be undertaken in accordance with other requirements of this Part.

## Environment and Heritage Impact Assessment

- 4.21 The Contractor shall undertake an Environment and Heritage Impact Assessment (EHIA) and technical investigations including relevant and required disciplines.
- 4.22 The EHIA shall be used to inform the selection of a preferred option and to support the design development process.

- 4.23 The EHIA shall be undertaken in accordance with the Department's Environment and Heritage Impact Assessment Guideline (Environment and Heritage Technical Manual – Attachment 1A).
- 4.24 Unless otherwise approved by the Principal, the Contractor shall document the outcome of the Environment and Heritage Impact Assessment and investigations in both the Proving and Pre-delivery phases using the Environmental and Heritage Impact Assessment report templates available from: <https://www.dit.sa.gov.au/documents>. During the Proving Phase, Preliminary EHIA outcomes on alternative options would usually be provided in Planning Study documentation. During the Pre-delivery Phase, a Detailed EHIA Report on the preferred option/design is required.
- 4.25 The Contractor shall prepare a Constraints and Values Sketch to be included as part of the drawing package in accordance with Department's Environment and Heritage Impact Assessment Guideline. The sketch shall be developed in GIS or CAD format and be used to inform the options selection and design development.
- 4.26 Where stakeholder and/or community engagement is required to support, or as a result of, the EHIA, the consultation shall be undertaken in accordance with other requirements of this Part.

### Site contamination

- 4.27 The Contractor shall undertake a site contamination investigation. As a minimum, this will include a high level desktop investigation to assess site conditions which may impact the project, including soil movement and management considerations. The desktop investigation may require a Preliminary Site Investigation (PSI).
- 4.28 In undertaking contamination investigations, the Contractor shall undertake any and all investigation in accordance with the National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) (ASC NEPM).

### Geotechnical and hydrogeological investigation

- 4.29 The Contractor shall undertake a geotechnical and hydrogeological investigation to assess potential impacts on constructability but also (for example) the impact of the project on the groundwater flow regime.
- 4.30 As a minimum, it will be a desktop geotechnical assessment including review of any Principal supplied reports, relevant publicly available information (i.e. expected ground conditions) and a site inspection.

### Stormwater and hydrology

- 4.31 The Contractor shall undertake a stormwater and hydrology investigation to assess the impact on the project as well as the project's impact on the local hydrological regime.
- 4.32 The investigation will include predicted flooding characteristics of the project having regard to projected increased intensity of extreme rainfall and storm events as a result of climate change.
- 4.33 As a minimum, it will include review of any Principal supplied reports, relevant publicly available information and consultation with the Principal's Stormwater Unit.
- 4.34 The Contractor shall undertake a water quality risk assessment in accordance with the Department's Protecting Waterways Manual and in consultation with stakeholders to identify any water quality requirements specific for the project site.

### Green infrastructure

- 4.35 For projects in Metropolitan Adelaide or townships, the Contractor shall assess the opportunity to incorporate Green Infrastructure into the asset, having regard to DIT Sustainability Manual Part 11.
- 4.36 Where it has been determined that there is opportunity to incorporate Green Infrastructure, the Contractor shall:
- a) undertake a Green Infrastructure Assessment and develop a Green Infrastructure Concept Plan in accordance with the Department's Sustainability Manual Part 11; and

- b) include alignment with the Department's green infrastructure commitments as one of the criteria in the ranking and assessment methodology.

## Vegetation Assessment and Offsets

- 4.37 Vegetation impact assessments shall be undertaken during the proving, pre-delivery and delivery phase in accordance with the Department's Vegetation Impact Assessment Guideline.
- 4.38 Vegetation Impact Sketch(es) using the Department's drawing templates shall be provided in CAD format as part of the planning study documentation and, where relevant, drawing package. The sketch shall be used to inform design development and justify and demonstrate impacts to vegetation. The Sketch shall be of sufficient quality to support vegetation impact approval applications and shall include an aerial photograph background and the design elements which affect vegetation (refer <https://dit.sa.gov.au/documents/roads-all>).
- 4.39 For works (including packages of spatially related works), that are likely to require a native vegetation offset obligation greater than 150 Significant Environmental Benefit (SEB) Points (in accordance with the Native Vegetation Council (NVC) Guide for calculating a Significant Environmental Benefit), opportunities to provide on-ground SEB offsets via an NVC Accredited Third Party Provider shall be investigated by the Contractor. The details of the Investigations shall be documented in the Environment and Heritage Impact Assessment Report, for consideration by the Principal.
- 4.40 Use of an NVC Accredited Third Party Provider will only be considered if the SEB can be delivered for an equivalent or lesser cost to the Native Vegetation Fund payment, and would not result in a delay to the NVC approval process.

## 5 Social, Community and Stakeholder Investigations

### Approach to Investigations

- 5.1 The Contractor shall undertake social, community and stakeholder Investigations in order that their interests, issues and concerns may be considered as inputs to the Planning Study.
- 5.2 The Contractor shall adopt a collaborative approach with the Principal in undertaking its Investigations to ensure that its approach aligns and integrates with the Principal's broader engagement and communication strategy.
- 5.3 The Principal shall oversight the Contractor's Investigations and provide approval on communications through release of Hold Points.
- 5.4 The Contractor shall not undertake any activity which could unnecessarily lead to community or stakeholders developing unrealistic expectations of the project or Planning Study.
- 5.5 The Contractor shall undertake Investigations in a manner that endeavours to develop and maintain a positive relationship between the Principal and the community and stakeholders.
- 5.6 Investigation and engagement methods and processes will be accessible to the targeted community and stakeholders to enable them to provide input and appropriately participate in the Study.

### Engagement Plan and Reporting

- 5.7 At the commencement of the Investigations the Contractor shall prepare a Planning Study Engagement Plan (Engagement Plan) for foreseeable and relevant engagements with the community and stakeholders that are required to deliver on the Planning Study scope. This will be implemented with oversight and appropriate approval of the Principal.
- 5.8 Where known at the time of preparation, the Engagement Plan will document the following:
  - a) the proposed method and manner of assessment and engagement;
  - b) the intention (if any) to release information and not make any commitment on behalf of Principal unless prior approval to do so has been given;
  - c) a schedule of implementation and reporting that references the Study;



- d) the commitment to providing written prior notice of the time and date of meetings to the Principal so that a representative of the Principal may attend the meeting if necessary;
  - e) the process for actively managing and responding to community input and how this will be fed in to the Study and used to drive Study outcomes; and
  - f) the process for approval by the Principal of additional unforeseen engagements later in the Planning Study.
- 5.9 Approval of the Engagement Plan prior to commencement of any assessment and engagement shall constitute a **Hold Point**.
- 5.10 On an ongoing basis, the Contractor shall maintain a record of all outputs of the Investigations and associated engagements (including information sessions) and provide information to the Principal within 48 hours for inclusion in the Principal's consultation management system. The Principal may, on request, provide direct access to the system for the Contractor.
- 5.11 Following completion of the Study, the Contractor shall prepare a Social, Community and Stakeholder Investigations Report that includes the following:
- a) a Stakeholder List;
  - b) the interests, issues, concerns and outputs identified by the Investigations; and
  - c) how the above were addressed by the Study outcomes and if not addressed by the Study outcomes, justification for the decision.
- 5.12 In particular, the Social, Community and Stakeholder Investigations Report will document the above with reference to Small Business and Aboriginal People.

## Socio-economic assessment

- 5.13 The Contractor shall undertake a socio-economic assessment of the proposed project area.
- 5.14 The nature and extent of the assessment shall be determined by the Contractor in discussion with the Principal but as a minimum will include an assessment and description of the demographic, economic, social and technological profile and trends in the proposed project area.

## Aboriginal community consultation

- 5.15 Unless specified by the Contract Documents, the Contractor shall undertake targeted and tailored consultation with the Aboriginal community regarding the proposed project as an input to the Planning Study.
- 5.16 In accordance with other requirements of this Part, the Contractor may also undertake consultation to support its assessment of Aboriginal heritage and outcomes for Aboriginal people.
- 5.17 As a minimum, the consultation will:
- a) build a shared understanding of how input from Aboriginal people will inform the Planning Study;
  - b) request and adhere to direction from the Aboriginal community regarding cultural restrictions including allowing for culturally inappropriate days or times for consultation; and
  - c) consider issues such as transport (how Aboriginal people travel to meetings) and fitting in with work, family, and community obligations.
- 5.18 The Contractor shall demonstrate that the individuals undertaking consultation on its behalf are culturally competent and respectful.
- 5.19 The Contractor shall not undertake any engagement with the Aboriginal community prior to understanding potential impacts and compliance matters relating to Aboriginal Heritage and Native Title as per other requirements of this Part.
- 5.20 The proposed consultation team and the method and manner of the consultation will be documented in the Engagement Plan.

## Local community consultation

- 5.21 Unless specified by the Contract Documents, the Contractor shall undertake consultation with the local community regarding the proposed project as an input to the Planning Study.
- 5.22 The method and manner of this consultation will be documented in the Engagement Plan.

## Stakeholder engagement

- 5.23 In addition to other requirements of this Part, the Contractor shall coordinate and consult with stakeholders internal to the Principal in order to obtain a holistic understanding of the proposed project as inputs to the Planning Study. Stakeholders will include, and are not limited to, community groups, industry bodies, businesses and providers of essential services.
- 5.24 In particular, and if required in order to deliver on the project objectives, the Contractor shall consult with the local authority to obtain a holistic understanding of the project site, issues, and the local authority's maintenance requirements, including:
- a) drainage, hydrology and flooding;
  - b) changes to access of Council roadways, footpaths and shared paths;
  - c) landscaping requirements; and
  - d) proposed maintenance and responsibility interface.
- 5.25 Where Utility Services have been identified that will (or potentially will) impact the project, the Contractor shall consult with the service authority to obtain a better understanding of the cost and impact of the Utility Services to the project.
- 5.26 The method and manner of the engagement with stakeholders external to the Principal (if any) will be documented in the Engagement Plan.

## Assessment of outcomes for Aboriginal people

- 5.27 The Contractor shall undertake an assessment of outcomes for Aboriginal people as a result of the project.
- 5.28 The assessment will be based on, amongst other things, the outcomes of consultation with the Aboriginal community, including the heritage outcomes, and other benefits the project can provide to the community in accordance with other requirements of this Part.
- 5.29 The assessment will include how the project (including during its construction phase) has the potential to deliver positive outcomes and impacts and respond to potential sensitivities for Aboriginal people.
- 5.30 The assessment will include, as a minimum, the following:
- a) the potential for protection and preservation of Aboriginal heritage, history and culture;
  - b) the potential for Aboriginal cultural expression in the design of the project;
  - c) the potential for naming of assets;
  - d) the potential for Aboriginal employment outcomes and/or engagement of Aboriginal businesses;
  - e) the potential for disturbance, interruption or disruption to Aboriginal sites, ceremony, land access, cultural practices, or services;
  - f) acquisition or use (temporarily or permanently) of land subject to Native Title or an Indigenous Land Use Agreements (ILUAs); and
  - g) the accessibility and inclusiveness of the asset for Aboriginal people and in turn the potential for it to improve access to health and wellbeing services.
- 5.31 The findings of the assessment will be documented in an Assessment Report of Outcomes for Aboriginal People.

## 6 Land Use, Rights, Planning and Approvals

### Land acquisition and impacts on rights and ownership

- 6.1 The Contractor shall identify any land acquisition or land use required to complete the project and in turn the land ownership and property rights.
- 6.2 The Contractor shall assess property viability, impacts on the land, livelihood and effect on property values as a result of the project.
- 6.3 The land use and acquisition requirements shall include temporary land requirements for (for example) site offices, laydown, services re-location, stormwater management or temporary traffic management and potential land acquisition requirements associated with the Green Infrastructure assessment.
- 6.4 In the event that engagement with landowners is required to undertake the assessment, the Contractor will document this in the Engagement Plan.
- 6.5 As a critical path item, provision of the Investigation Report for 'land acquisition and impacts on rights and ownership' will occur at the earliest stage possible.

### Native Title

- 6.6 The Contractor shall undertake an assessment to identify the Native Title status of land that may be impacted by the Project including land that may need to be acquired (wholly or partially).
- 6.7 The assessment will be in accordance with this Part and any additional requirements also included in PC-H1 "Aboriginal Heritage and Native Title".
- 6.8 As a minimum, the assessment shall determine the following:
  - a) is the land subject to a Native Title Claim?;
  - b) is the land subject to a Federal Court Native Title Determination?;
  - c) where either of the above exists, identify the relevant Registered Native Title Body Corporates (RNTBC) or legal representatives;
  - d) is the land subject to an Indigenous Land Use Agreement (ILUA) and (if known) are there any parameters within the ILUA that may apply to the project?; and
  - e) is there evidence to indicate that Native Title has been extinguished?
- 6.9 The Contractor shall also provide the Principal with all necessary information regarding the land (e.g. plans, project details, parcel identifiers, etc.) to enable the Principal to seek Crown advice and confirm the Contractor's preliminary assessment findings regarding Native Title.
- 6.10 If required, the Principal will undertake the notification process under the Native Title Act 1994.

### Land use, business and industry

- 6.11 The Contractor shall undertake an assessment of the land use, businesses and industry in the vicinity of the proposed project area regarding, but not necessarily limited to, the following:
  - a) the movement of employees and freight;
  - b) land acquisition requirements;
  - c) construction phase impacts; and
  - d) small business impacts, in general accordance with the Principal's Small Business Framework.
- 6.12 In the event that engagement with business owners is required to undertake the assessment, the Contractor will document this in the Engagement Plan.

## Land use planning

- 6.13 The Contractor shall assess the proposed project relative to the applicable zoning provisions and strategic land use and infrastructure plans, such as the 30 Year Plan for Greater Adelaide.
- 6.14 The Contractor shall assess the proposed project relative to its potential contribution to local, regional and State planning strategies and objectives (if any). This assessment must consider the range of credible options for land use change in light of the infrastructure asset options being considered, and the potential benefits / dis-benefits.

## Approvals

- 6.15 The Contractor shall identify local and State approvals that may be required.

# 7 Analysis

## Transport Modelling

- 7.1 Prior to commencement of any transport modelling work, the Contractor shall provide the Transport Modelling Scope document to the Principal for endorsement. This shall constitute a **Hold Point**.
- 7.2 The Contractor shall undertake all transport modelling and analysis in accordance with relevant guidelines and standards available at:
- a) [https://www.dit.sa.gov.au/standards/transport\\_modelling\\_and\\_analysis](https://www.dit.sa.gov.au/standards/transport_modelling_and_analysis)
- 7.3 The Metropolitan Adelaide Strategic Transport Evaluation Model (MASTEM) will be used for any strategic transport modelling that requires:
- a) any future travel demand analysis as part of a transport / economic assessment;
- b) any future traffic volume forecasts required for any sub-area traffic simulation model(s) or subsequent analysis.
- 7.4 Unless specified in the Contract Documents, the most up to date version of the MASTEM and the Cube modelling software shall be used. The Principal will provide the Contractor with a copy of the current version of the MASTEM model after the initial modelling meeting.
- 7.5 The Contractor shall engage an appropriately qualified and experienced third party external auditor to undertake the following in accordance with the MASTEM Version 3 User Guidelines:
- a) audit the base case transport model scenario(s); and
- b) audit the project case transport model scenario(s).
- 7.6 The Contractor shall develop, code and document the Cube Scenarios required for this investigation in accordance with the MASTEM Version 3 User Guidelines.
- 7.7 For all Cube Scenarios developed, the Contractor shall provide the completed documentation and MASTEM Audit Checklists (Microsoft Excel version) to the Principal for endorsement. This shall constitute a **Hold Point**.
- 7.8 The Contractor shall source any necessary future travel demand forecasts from the relevant Cube Scenario(s) in MASTEM subject to the following:
- a) Future traffic volume forecasts extracted from MASTEM will be adjusted before being used in any sub-area model(s) or subsequent analysis.
- b) The Contractor shall submit details of the MASTEM output adjustment process to the Principal for approval. This shall constitute a **Hold Point**.
- c) Endorsement of the adjusted MASTEM outputs by the Principal shall constitute a **Hold Point**.
- 7.9 The Contractor shall prepare the following transport modelling deliverables:
- a) Transport Modelling Report, including details of the MASTEM output adjustment process and the Audit Checklist for all Cube Scenarios developed for this investigation.

- 7.10 The Metropolitan Adelaide Traffic Simulation and Analysis Model (MATSAM) will be used for any traffic simulation modelling. Unless specified by the Contract Documents, the most up to date version of the Aimsun Next software shall be used for any sub-area traffic simulation modelling.
- 7.11 The Contractor shall engage an appropriately qualified and experienced third party external auditor to undertake the following in accordance with the MATSAM Traffic Simulation Model Development Guidelines (Aimsun Next):
- a) audit the base case traffic simulation model scenario(s); and
  - b) audit the project case traffic simulation model scenario(s).
- 7.12 Where provided by the Principal, the Contractor shall calibrate and validate the traffic simulation sub-area model to develop a base year transport model. The calibration and validation of the base year transport model will be in accordance with the MATSAM Traffic Simulation Model Development Guidelines (Aimsun Next).
- 7.13 The Contractor shall provide a copy of the completed base year traffic simulation model, documentation and MATSAM Model Audit Checklist (Microsoft Excel version) to the Principal for review. This shall constitute a **Hold Point**.
- 7.14 If the Principal requires any changes to the model submitted under Clause 7.12, a copy of the Audit Checklist with directions for changes required will be returned to the Contractor.
- 7.15 The Contractor shall provide a copy of the final base year traffic simulation model, associated documentation and MATSAM Model Audit Checklist (Microsoft Excel version) to the Principal for endorsement. This shall constitute a **Hold Point**.
- 7.16 The Contractor shall develop any required project option traffic simulation model(s) from the endorsed base year traffic simulation model.
- 7.17 The Contractor shall provide a copy of the project option traffic simulation model(s), relevant documentation and MATSAM Model Audit Checklist(s) (Microsoft Excel version) the Principal for review. This shall constitute a **Hold Point**.
- 7.18 If the Principal requires any changes to the model(s) submitted under Clause 7.16, a copy of the Audit Checklist(s) with directions for changes required will be returned to the Contractor.
- 7.19 The Contractor shall provide a copy of the final project option traffic simulation model(s), associated documentation and MATSAM Model Audit Checklist(s) (Microsoft Excel version) to the Principal for endorsement. This shall constitute a **Hold Point**.
- 7.20 The Contractor shall prepare the following transport modelling deliverables:
- a) Base Year Traffic Simulation Model Development, Calibration and Validation Report including MATSAM Model Audit checklist; and
  - b) Project Option Model(s) Development Report including MATSAM Model Audit checklist(s) as well as any MASTEM output adjustment methodology and results.
- 7.21 SIDRA modelling application shall be used for the assessment of individual intersections, including traffic signals, roundabouts and priority (Give Way) intersections.
- 7.22 SIDRA shall be used to derive traffic signal control input parameters for scenarios and future year projections for strategic and network models. These parameters include signal phasing sequences and phase timings.
- 7.23 SIDRA models shall be developed in accordance with the Department Traffic Modelling Guidelines: SIDRA Intersection.
- 7.24 The Contractor shall provide future turning movement forecasts for use in SIDRA, TRANSYT and/or LINSIG to the Principal for review and endorsement. This shall constitute a **Hold Point**.
- 7.25 The Contractor shall engage an appropriately qualified and experienced third party external auditor to undertake auditing of the SIDRA models.
- 7.26 The review of SIDRA base case models shall be a **Hold Point**.
- 7.27 The endorsement of SIDRA base case models shall be a **Hold Point**

- 7.28 The review of SIDRA project case models shall be a **Hold Point**.
- 7.29 The endorsement of SIDRA project case models shall be a **Hold Point**.
- 7.30 The submission of SIDRA model reports shall include, native files, and relevant data files in sufficient detail to enable the Principal to review the models. A review by the Principal does not remove the requirement for third party auditing (See Clause 7.25)
- 7.31 TRANSYT or LINSIG modelling applications shall be used where the assessment of traffic signal co-ordination and offset optimisation is required for traffic signal controlled networks.
- 7.32 TRANSYT or LINSIG may be used to derive traffic signal control and offset parameters for input to scenarios and future year projections for strategic and network models.
- 7.33 TRANSYT models shall be developed in accordance with the Department Traffic Modelling Guidelines: TRANSYT 15. LINSIG models shall be developed in accordance with the general principles contained in the TRANSYT guidelines.
- 7.34 The Contractor shall engage an appropriately qualified and experienced third party external auditor to undertake auditing of the TRANSYT or LINSIG models.
- 7.35 The review of TRANSYT or LINSIG base case models shall be a **Hold Point**.
- 7.36 The endorsement of TRANSYT or LINSIG base case models shall be a **Hold Point**.
- 7.37 The review of TRANSYT or LINSIG project case models shall be a **Hold Point**.
- 7.38 The endorsement of TRANSYT or LINSIG project case models shall be a **Hold Point**.
- 7.39 The submission of TRANSYT or LINSIG model reports shall include, native files, and relevant data files in sufficient detail to enable the Principal to review the models. A review by the Principal does not remove the requirement for third party auditing (See references in Clause 7.30).
- 7.40 Modelling reports to be supplied as pdf document shall include an executive summary of the findings supported by detailed tables, graphs and lists on input data and the source of the input data.
- 7.41 A modelling report of the base case shall include full details of the calibration and validation of the model and the report shall justify any modifications made to the model to ensure the validation is within acceptable tolerance.

## Generation of Options

- 7.42 The Contractor shall generate options as required by PC-PL1 “Framework for Planning Studies”.
- 7.43 The initial generation of a long list of project options will consider, amongst other things, the following:
- a) concepts to maximise road safety benefits;
  - b) concepts to achieve best possible level of service for traffic numbers, i.e. the best possible traffic solution with no constraints;
  - c) concepts to minimise land acquisition;
  - d) concepts that deliver minimum cost and program;
  - e) concepts to maximise realisation of the stated benefits;
  - f) concepts to minimise environmental and community impacts and maximise sustainability;
  - g) concepts to maximise potential for integrated, sustainable infrastructure and transport;
  - h) concepts to maximise value; and
  - i) concepts to balance between the above.

## Cost Estimation and Constructability

- 7.44 Unless required by the Contract Documents, the Contractor shall prepare cost estimates and undertake constructability assessments for the following:
- a) longlist of options;

- b) shortlist of approved Concept Designs; and
  - c) approved Reference Design.
- 7.45 The cost estimates and constructability assessments will be undertaken in accordance with the following:
- a) PC-PL4 “Constructability”; and
  - b) PC-PL5 “Cost Estimation”.

## Project Funding and Budget Impacts

- 7.46 The Contractor shall make an assessment of the cash flow requirements, potential procurement strategy and program in order to meet timeframes on required spend and project completion taking in to account the requirements and outputs of PC-PL5 “Cost Estimation”.

## 8 Hold Points

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

**Table PC-PL2 8-1 Hold Points**

Document Ref.	Hold Point	Response Time
3.6	Provision of draft and final Investigation Reports	10 Working Days
5.9	Approval of the Engagement Plan	5 Working Days
7.1	Endorsement of Transport Modelling Scope document	2 Working Days
7.7	Endorsement of MASTEM Cube Scenario(s) Model(s)	2 Working Days
7.8b)	Approval of the MASTEM output adjustment process	2 Working Days
7.8c)	Endorsement of the adjusted MASTEM outputs	10 Working Days
7.13	Review of the Base Year Sub-Area model in Aimsun Next	10 Working Days
7.15	Endorsement of the final Base Year Sub-Area model in Aimsun Next	2 Working Days
7.17	Review of the Project Option Model(s) in Aimsun Next	5 Working Days
7.19	Endorsement of the final Project Option Model(s) in Aimsun Next	2 Working Days
7.24	Provide future turning movement forecasts for use in SIDRA, TRANSYT and/or LINSIG	10 Working Days
7.24	Endorsement of future turning movement forecasts	2 Working Days
7.26 & 7.35	Review of SIDRA/TRANSYT/LINSIG base case models	10 Working Days
7.27 & 7.36	Endorsement of SIDRA/TRANSYT/LINSIG base case models	2 Working Days
7.28 & 7.37	Review of SIDRA/TRANSYT/LINSIG project case models	5 Working Days
7.29 & 7.38	Endorsement of SIDRA/TRANSYT/LINSIG project case models	2 Working Days