

Master Specification

Part PC-PL2

Planning Investigations

September 2024



Government of South Australia
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PC-PL2 Planning Investigations

1 General

- a) This Master Specification Part set out the requirements for planning investigations undertaken in support of a planning study including:
- i) the requirements for investigation reports, as set out in section 2;
 - ii) the requirements for planning investigations, as set out in section 3;
 - iii) the requirements for engineering, sustainability, heritage and environmental investigations, as set out in section 4;
 - iv) the requirements for social, community and stakeholder investigations, as set out in section 5;
 - v) the requirements for land use, rights, planning and approval investigations, as set out in section 6; and
 - vi) the analysis requirements, as set out in section 7.
- b) The planning investigations must comply with the Reference Documents, including:
- i) Department Climate Change Adaptation Guidelines (available from: https://dit.sa.gov.au/standards/standards_and_guidelines);
 - ii) Department EHTM Attachment 1A - Environment and Heritage Impact Assessment Guideline (available from: <https://dit.sa.gov.au/standards/manuals#EHTM>);
 - iii) Department EHTM Attachment 4B - Vegetation Impact Assessment Guideline (available from: <https://dit.sa.gov.au/standards/manuals#EHTM>);
 - iv) Department EHTM Attachment 6A - Protecting Waterways Guideline (available from: <https://dit.sa.gov.au/standards/manuals#EHTM>);
 - v) Department Sustainability Manual;
 - vi) Department Traffic Modelling Guidelines: SIDRA Intersection https://www.dit.sa.gov.au/_data/assets/pdf_file/0009/365895/Traffic-Modelling-Guidelines-SIDRA-Intersection-Version-2_2-August-2023.PDF;
 - vii) Department Traffic Modelling Guidelines TRANSYT 15 https://www.dit.sa.gov.au/_data/assets/pdf_file/0017/151172/TRAFFIC_MODELLING_GUIDELINES_-_TRANSYT_15_PUBLICATION_VERSION_CREATED_11_11_2014_16_03.pdf;
 - viii) National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) (ASC NEPM);
 - ix) Native Vegetation Council (NVC) Guide for calculating a Significant Environmental Benefit; and
 - x) Tactical Adelaide Model (TAM) Guidelines (available at https://dit.sa.gov.au/_data/assets/pdf_file/0016/1122541/Tactical_Adelaide_Model_TAM_Guidelines_Version_.pdf).

2 Investigation reports

- a) The Contractor must summarise the planning investigations undertaken in accordance with this Master Specification Part and document the findings, a gap analysis and recommendations for further investigations (if any) in investigation reports.

- b) Discrete investigation reports and information created during the planning investigations must be summarised in, and attached to, the planning study report in accordance with PC-PL1 “Framework for Planning Studies”.
- c) If required by the Contract Documents, the investigation reports must facilitate disclosure to tenderers of subsequent design or construction head contracts.
- d) As per PC-PL1 “Framework for Planning Studies”, the investigation reports are proving phase deliverables. If additional investigations are required in the Contract Documents for the pre-delivery phase, the investigation reports must be updated by the Contractor at that time.
- e) The Contractor must submit draft versions of all investigation reports to the Principal in accordance with section 6 of PC-PL1 “Planning Investigations”.
- f) In the event the Principal provides comments to the draft investigation reports, the Contractor must address each comment prior to finalisation of the reports. Final versions of all deliverables in this Master Specification Part must also be provided to the Principal electronically for review and for approval in accordance with section 6 of PC-PL1 “Planning Investigations” as an ‘Issued for Use’ deliverable.
- g) Final investigation reports must be provided as part of preliminary business case development submission required by PC-PL1 “Framework for Planning Studies”.

3 Planning investigations

- a) The purpose of the planning investigations is to support delivery of the planning study and its objectives in accordance with PC-PL1 “Framework for Planning Studies”.
- b) Planning investigations must inform an understanding of constraints, risks and drivers associated with the proposed Project as inputs to development of the planning study and business case.
- c) The Contractor must review all information provided by the Principal as part of the investigations to assess its currency, adequacy and appropriateness.
- d) Based on its review of the information provided by the Principal, the Contractor must determine what additional planning investigations are required.
- e) The Contractor must notify the Principal of additional planning investigations and then undertake any such additional investigations as approved by the Principal.
- f) The Contractor must undertake the planning investigations 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.
- g) In the course of its planning investigations, and as soon as practical once identified, the Contractor must inform the Principal of critical path items and approvals and any additional detailed planning investigations that should be expedited in order to meet the Principal’s program or given the materiality of the critical path item or approval.
- h) The Principal may request supplementary planning investigations to be undertaken to deliver on the planning study objectives or as a recommendation of the proving phase.

4 Engineering, sustainability, heritage and environmental investigations

4.1 Engineering survey

- a) The Contractor must procure, manage and collate an engineering survey in accordance with the requirements of PC-SI5 “Engineering Surveys”.
- b) The Contractor must provide an engineering survey 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.

4.2 Utility Services

- a) The Contractor must collate and undertake a review of Utility Services that may be impacted by the construction of the Project including any Utility Services located in areas identified for delivery of additional greening.
- b) The Contractor's review must consider the requirements of PC-US1 "Utility Services".
- c) The Contractor must consider and document in the investigation report the impacts of the Project on Utility Services including:
 - i) Utility Services that require relocation or adjustment;
 - ii) feasibility of re-locating Utility Services; and
 - iii) cost, time and community impact to relocate or adjust Utility Services.
- d) Where a Utility Service is identified that may present a high risk for the Project, the Contractor must:
 - i) develop a concept for Utility Services re-location to obtain a better understanding of the cost and impact of the Utility Service;
 - ii) consult with the Principal's representatives with previous experience with Utility Service relocations or adjustment; and
 - iii) in coordination with the Principal, consult with the Utility Service Authority to obtain a better understanding of the cost and impact to the Project.

4.3 Sustainability

- a) In accordance with the Department Sustainability Manual, the Contractor must:
 - i) include non-infrastructure solutions in options generation;
 - ii) estimate whole of life greenhouse gas emissions and assess options for net zero alignment;
 - iii) include whole of life greenhouse gas emissions and net zero alignment as criteria in the ranking and assessment methodology used in PC-PL1 "Framework for Planning Studies"; and
 - iv) refine estimates of whole of life greenhouse gas emissions for shortlisted options.
- b) The Contractor must identify and assess opportunities to reduce whole of life greenhouse gas emissions, manage physical climate risks and incorporate reused or recycled products and materials into the asset, in accordance with:
 - i) the Department Sustainability Manual; and
 - ii) the mandatory sustainability initiatives listed in PC-ST1 "Sustainability in Design" and PC-ST2 "Sustainability in Construction".
- c) The Contractor must identify and recommend in the investigation report those opportunities from section 4.3b) that are considered viable for delivery.
- d) The Contractor must implement viable opportunities identified in section 4.3c) into the Concept Design.
- e) The Contractor must apply the pre-screening and screening criteria in the Department Climate Change Adaptation Guidelines to determine whether a Climate Change Risk Assessment is required.
- f) Where pre-screening and screening determines that a Climate Change Risk Assessment is required, the Contractor must undertake and document a Climate Change Risk Assessment

in accordance with the Department Climate Change Adaptation Guidelines. Appropriate adaptation options must be identified in the investigation report for extreme and high level risks identified in the Climate Change Risk Assessment.

- g) The Climate Change Risk Assessment must be completed during the proving phase to allow the outcomes to help inform selection and assessment of options.

4.4 Aboriginal heritage assessment

- a) The Contractor must undertake an assessment of Aboriginal heritage sites, objects or remains that may be located within (or in proximity to) the Project area.
- b) As a minimum, the assessment must comply with the following:
 - i) be of sufficient detail to inform an Aboriginal heritage risk assessment in accordance with requirements included in PC-H1 "Aboriginal Heritage and Native Title";
 - ii) include documented Aboriginal heritage and the potential for previously undiscovered Aboriginal heritage;
 - iii) include the significance of the Project area and the identification, location and description of archaeological, historical, anthropological or traditional heritage values of the area; and
 - iv) 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.
- c) The Contractor must 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.
- d) Where the Contractor proposes to consult with Aboriginal heritage representatives to support its assessment, the consultation must be undertaken in accordance with section 5.5.

4.5 Environment and Heritage Impact Assessment (EHIA)

4.5.1 General

- a) The Contractor must undertake an environment and heritage impact assessment (EHIA) and technical investigations including all relevant and required disciplines.
- b) The EHIA must be used to inform the selection of a preferred option pursuant to PC-PL1 "Framework for Planning Studies" and to support the design development process.
- c) The EHIA must be undertaken in accordance with the Department EHTM Attachment 1A - Environment and Heritage Impact Assessment Guideline.
- d) The Contractor must document the outcome of the EHIA and investigations in both the proving and pre-delivery phases in the EHIAR as set out in the EHTM .
- e) The Contractor must undertake a preliminary EHIA of all long list options during the proving phase.
- f) The Contractor must undertake a detailed EHIA report on the preferred option during the pre-delivery phase.
- g) The Contractor must prepare a Constraints and Values Sketch to be included as part of the Concept Design drawing package . The Constraints and Values Sketch must be developed in GIS or CAD format and be used to inform the selection of a preferred option pursuant to PC-PL1 "Framework for Planning Studies" and to support the design development process.
- h) Where stakeholder or community engagement is required to support, or as a result of, the EHIA, the consultation must be undertaken in accordance with section 5.

4.5.2 Native Title

- a) The Contractor must 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) in section 6.1.
- b) The assessment must be in accordance with this Master Specification Part and any additional requirements included in PC-H1 "Aboriginal Heritage and Native Title".
- c) As a minimum, the assessment must include:
 - i) determining if the land is subject to a Native Title claim;
 - ii) determining if the land is subject to a Federal Court Native Title determination;
 - iii) where either of the above exists, identify the relevant Registered Native Title Body Corporates (RNTBC) or legal representatives;
 - iv) determining if the land is subject to an Indigenous Land Use Agreement (ILUA) and (if known) if there are any parameters within the ILUA that may apply to the Project; and
 - v) an assessment of whether there is evidence to indicate that Native Title has been extinguished.
- d) The Contractor must provide the Principal with all necessary information regarding the land (e.g. plans, Project details, parcel identifiers, Native Title claims, Native Title determinations, etc.).
- e) If required for the planning study, the Principal will undertake the Native Title notification process.

4.6 Site contamination

- a) The Contractor must undertake a site contamination investigation in accordance with PC-SC1 "Site Contamination" to the extent described in the Contract Documents and this section 4.6.
- b) As a minimum, the Contractor must undertake a high level desktop investigation to assess site conditions which may impact the Project, including soil movement and management considerations.
- c) The desktop investigation may require a Preliminary Site Investigation (PSI).
- d) In undertaking contamination investigations, the Contractor must undertake any and all investigation in accordance with the National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) (ASC NEPM).

4.7 Geotechnical and hydrogeological investigation

- a) The Contractor must undertake a geotechnical and hydrogeological investigation to assess potential impacts on constructability but also the impact of the Project on the groundwater flow regime.
- b) As a minimum, the geotechnical and hydrogeological investigation must 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.

4.8 Stormwater and hydrology

- a) The Contractor must 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 as per RD-DK-D1 "Road Drainage Design".
- b) The stormwater and hydrology investigation must 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.

- c) As a minimum, the stormwater and hydrology investigation must include review of any Principal supplied reports, relevant publicly available information and consultation with the Principal's stormwater representatives.
- d) The Contractor must undertake a water quality risk assessment in accordance with the Department EHTM Attachment 6A - Protecting Waterways Guideline and in consultation with stakeholders to identify any water quality requirements specific for the Project site.

4.9 Green Infrastructure

- a) Where Projects are located in metropolitan Adelaide or rural township zones, the Contractor must undertake a Green Infrastructure Assessment in accordance with the Department's Sustainability Manual to:
 - i) confirm Green Infrastructure targets to be achieved within the Site;
 - ii) identify priority areas for delivery of greening within the Site; and
 - iii) determine the amount and location of any additional greening to be delivered beyond the Project boundary.
- b) Where a Green Infrastructure Assessment is not undertaken, the Contractor must apply the Department's standard Green Infrastructure targets for Projects in Metropolitan Adelaide and rural township zones.

4.10 Vegetation assessment and offsets

- a) Vegetation impact assessments must be undertaken during the proving and pre-delivery in accordance with the Department EHTM Attachment 4B - Vegetation Impact Assessment Guideline.
- b) The Contractor must provide vegetation impact sketches using the Principal's drawing templates in CAD format as part of the planning study documentation and, where relevant, drawing package.
- c) The vegetation impact sketch must be used to inform design development and justify and demonstrate impacts to vegetation.
- d) The vegetation impact sketch must be of sufficient quality to support vegetation impact approval applications and must include an aerial photograph background and the design elements which affect vegetation.
- e) 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 Guide for calculating a Significant Environmental Benefit), opportunities to provide on-ground SEB offsets via an Native Vegetation Council Accredited Third Party Provider must be investigated by the Contractor. Relevant details of the investigations must be documented as part of the EHIAR.
- f) The Contractor must use a Native Vegetation Council accredited third party 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 Native Vegetation Council approval process.

5 Social, community and stakeholder investigations

5.1 General

- a) The Contractor must undertake the required social, community and stakeholder requirements in this section 5 to the extent required by the Contract Documents.

5.2 Approach to investigations

- a) The Contractor must undertake social, community and stakeholder investigations in order that their interests, issues and concerns may be considered as inputs to the planning study.

- b) The Contractor must 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.
- c) The Contractor must not undertake any activity which could unnecessarily lead to community or stakeholders developing unrealistic expectations of the Project or planning study.
- d) The Contractor must undertake investigations in a manner that endeavours to develop and maintain a positive relationship between the Principal and the community and stakeholders.
- e) The Contractor must ensure investigation and engagement methods and processes are accessible to the targeted community and stakeholders to enable them to provide input and appropriately participate in the study.

5.3 Engagement plan and reporting

- a) At the commencement of the investigations the Contractor must prepare a planning study engagement plan for foreseeable and relevant engagements with the community and stakeholders that are required to deliver on the planning study scope.
- b) The planning study engagement plan must document the following:
 - i) the proposed method and manner of assessment and engagement, including the specific approach with:
 - A. the Aboriginal community in accordance with section 5.5;
 - B. the local community in accordance with section 5.6;
 - C. stakeholder engagement in accordance with section 5.7; and
 - D. impacted landowners in accordance with section 6.1;
 - ii) 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;
 - iii) a schedule of implementation and reporting that references the planning study;
 - iv) the commitment to providing prior written notice to the Principal of the time and date of meetings so that a representative of the Principal may attend the meeting if necessary;
 - v) the process for actively managing and responding to community input and how this will be fed in to the planning study and used to drive planning study outcomes; and
 - vi) the process for approval by the Principal of additional unforeseen engagements later in the planning study.
- c) The Contractor must submit the planning study engagement plan to the Principal in accordance with the requirements of PC-PL1 "Framework for Planning Studies". The Contractor must not commence any social, community and stakeholder investigations until the planning study engagement plan has been approved by the Principal in accordance with PC-PL1 "Framework for Planning Studies".
- d) The Contractor must maintain a 'live' 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 Principal's consultation management system for the Contractor.
- e) Following completion of the planning study, the Contractor must prepare a social, community and stakeholder investigations report that includes:
 - i) a stakeholder list;
 - ii) the interests, issues, concerns and outputs identified by the investigations; and
 - iii) how the above were addressed by the planning study outcomes and if not addressed by the study outcomes, justification for the decision.

- f) The social, community and stakeholder investigations report must document the requirements of section 5.3e) with specific reference to small business and Aboriginal people.

5.4 Socio-economic assessment

- a) The Contractor must undertake a socio-economic assessment of the proposed Site in accordance with the requirements in PC-PL1 “Framework for Planning Studies”.
- b) The nature and extent of the assessment must be determined by the Contractor in consultation with the Principal and as a minimum will include an assessment and description of the demographic, economic, social and technological profile and trends in the proposed Project area.

5.5 Aboriginal community consultation

- a) The Contractor must undertake targeted and tailored consultation with the Aboriginal community regarding the proposed Project as an input to the planning study.
- b) The Contractor must undertake consultation to support its assessment of Aboriginal heritage and outcomes for Aboriginal people.
- c) As a minimum, the consultation will include:
 - i) building a shared understanding of how input from Aboriginal people will inform the planning study;
 - ii) requesting and adhering to direction from the Aboriginal community regarding cultural restrictions including allowing for culturally inappropriate days or times for consultation; and
 - iii) considering issues such as transport (how Aboriginal people travel to meetings) and fitting in with work, family, and community obligations.
- d) The Contractor must ensure individuals undertaking consultation on its behalf are culturally competent and respectful.
- e) The Contractor must not undertake any engagement with the Aboriginal community prior to understanding potential impacts and compliance matters relating to Aboriginal heritage and Native Title in accordance with this Master Specification Part.
- f) The proposed consultation team and the method and manner of the consultation must be documented in the planning study engagement plan.

5.6 Local community consultation

- a) The Contractor must undertake consultation with the local community, including small business owners, regarding the proposed Project as an input to the planning study.
- b) The method and manner of this consultation must be documented in the planning study engagement plan.

5.7 Stakeholder engagement

- a) The Contractor must 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.
- b) The Contractor must also engage with external stakeholders including:
 - i) community groups;
 - ii) industry bodies;
 - iii) businesses;
 - iv) Utility Service Authorities; and
 - v) Emergency Services.

- c) If required in order to deliver on the Project objectives, the Contractor must consult with the local Authority to obtain a holistic understanding of the Project site, issues, and the local Authority's maintenance requirements, including:
 - i) drainage, hydrology and flooding;
 - ii) changes to access of council roadways, footpaths and shared paths;
 - iii) landscaping requirements; and
 - iv) proposed maintenance and responsibility interface.
- d) Where a Green Infrastructure Assessment must be undertaken, consultation with the local council must include opportunities and approach to delivery of increased greening within the Site and beyond the Site (in the immediate vicinity).
- e) Where Utility Services have been identified that will (or potentially will) impact the Project, the Contractor must consult with the Utility Service Authority in accordance with section 4.2.
- f) The method and manner of the engagement with stakeholders external to the Principal must be documented in the planning study engagement plan.

5.8 Assessment of outcomes for Aboriginal people

- a) The Contractor must undertake an assessment of outcomes for Aboriginal people as a result of the Project.
- b) The assessment must be based on inputs including the outcomes of consultation with the Aboriginal community, including the Aboriginal heritage outcomes, and other benefits the Project can provide to the community in accordance with other requirements of this Master Specification Part.
- c) The assessment must 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.
- d) The assessment must include:
 - i) the potential for protection and preservation of Aboriginal heritage, history and culture;
 - ii) the potential for Aboriginal Cultural Expression in the design of the Project;
 - iii) the potential for naming of assets;
 - iv) the potential for Aboriginal employment outcomes or engagement of Aboriginal businesses;
 - v) the potential for disturbance, interruption or disruption to Aboriginal sites, ceremony, land access, cultural practices, or services;
 - vi) acquisition or use (temporarily or permanently) of land subject to Native Title or an Indigenous Land Use Agreements (ILUAs); and
 - vii) 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.
- e) The findings of the assessment must be documented in the investigation report of outcomes for aboriginal people.

6 Land use, rights, planning and approvals

6.1 Land acquisition and impacts on rights and ownership

- a) The Contractor must identify any land acquisition or land use required to complete the Project and determine the land ownership and property rights.

- b) The Contractor must assess property viability, impacts on the land, livelihood and effect on property values as a result of the Project.
- c) The land use and acquisition requirements must include temporary land requirements for items such as site offices, laydown, Utility Services re-location, stormwater management and temporary traffic management.
- d) The Contractor must consider potential land acquisition requirements associated with the Green Infrastructure assessment undertaken in section 4.9.
- e) In the event that engagement with landowners is required, the Contractor must document the proposed method and approach in the planning study engagement plan.
- f) As a critical path item, provision of the investigation report for 'land acquisition and impacts on rights and ownership' must occur at the earliest stage possible.

6.2 Land use, business and industry

- a) The Contractor must undertake an assessment of the land use, businesses and industry in the vicinity of the proposed Project area including:
 - i) the movement of employees and freight;
 - ii) land acquisition requirements;
 - iii) construction phase impacts; and
 - iv) small business impacts, in general accordance with the Department Small Business Support Framework.
- b) In the event that engagement with business owners is required to undertake the assessment, the Contractor must document the proposed method and approach in the planning study engagement plan.

6.3 Land use planning

- a) The Contractor must 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.
- b) The Contractor must 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.

6.4 Approvals

The Contractor must identify local, state and Federal Approvals that may be required for the Project and document within the investigation report in section 2.

7 Analysis

7.1 Transport modelling

- a) The Contractor must undertake all transport modelling or analysis in accordance with the relevant guidelines and standards.
- b) Prior to the commencement of any transport modelling or analysis work, the Contractor must, as a minimum, consult relevant stakeholders and the Principal's Transport Analytics and Network Management Services, to collect data and information for the preparation of the transport modelling scope document.
- c) The Contractor must familiarise itself with the Strategic Adelaide Model (SAM) including its inputs, assumptions, and methodologies as the SAM outputs inform the Tactical Adelaide

- Model (TAM), subarea traffic assignment models at the microscopic level, and the future year microanalytical traffic modelling undertaken within SIDRA or TRANSYT software packages.
- d) When a microscopic traffic simulation modelling is required for the planning study and this requirement is reflected in the transport modelling scope document required by section 7.1h), the Contractor must use a Subarea of TAM, as provided by the Principal, in accordance with TAM Guidelines.
 - e) The version of the Aimsun Next software compatible with the version of TAM in use at the time of the traffic simulation modelling exercise must be agreed with the Principal and included in the transport modelling scope document required by section 7.1h).
 - f) The Contractor must engage an appropriately qualified and experienced independent auditor, to undertake the following tasks in accordance with the TAM Guidelines:
 - i) audit the base year traffic simulation model calibration and validation; and
 - ii) audit the future and project case traffic simulation model scenarios.
 - g) The independent auditor required by section 7.1f) must be nominated in the transport modelling scope document required by section 7.1h).
 - h) The Contractor must submit the transport modelling scope document to the Principal in accordance with section 6 of PC-PL1 “Framework for Planning Studies”. The Contractor must not continue with the transport modelling until it receives the Principal’s approval in accordance with section 6 of PC-PL1 “Framework for Planning Studies”.
 - i) The Contractor must calibrate and validate the traffic simulation Subarea model to develop a base year traffic simulation model, with the calibration and validation of the base year traffic simulation model being in accordance with TAM Guidelines.
 - j) As noted in section 7.1f), the Contractor must engage the nominated independent auditor to complete an audit of the base year traffic simulation model calibration and validation, with the microsimulation model audit checklist in accordance with the TAM Guidelines.
 - k) The Contractor must provide the completed base year traffic simulation model, documentation and the microsimulation model audit checklist to the Principal in accordance with section 6 of PC-PL1 “Framework for Planning Studies”. The Contractor must not continue with the transport modelling until it receives the Principal’s approval in accordance with section 6 of PC-PL1 “Framework for Planning Studies”.
 - l) The Principal will issue the Contractor the endorsed based year traffic simulation model with future/project case demand matrices embedded in the model. Timeframes for incorporating the future/project case traffic demand matrices in the endorsed model must be agreed with the Principal and be reflected in the transport modelling scope document required by section 7.1h).
 - m) The Contractor must develop any required Project case option traffic simulation models from the endorsed base year traffic simulation model, using the “Geometry Configuration” capability in the TAM Subarea (base year and future years).
 - n) The Contractor must develop the project case microscopic traffic simulation models in accordance with the TAM Guidelines.
 - o) As noted in section 7.1f), the Contractor’s independent auditor must complete an audit of the Project case option traffic simulation models and record the outcome on the microsimulation model audit checklist in accordance with the TAM Guidelines.
 - p) The Contractor must submit the Project case option traffic simulation models, relevant documentation and microsimulation model audit checklists in Microsoft Excel version to the Principal in accordance with section 6 of PC-PL1 “Framework for Planning Studies”. The Contractor must not continue with the transport modelling until it receives the Principal’s approval in accordance with section 6 of PC-PL1 “Framework for Planning Studies”.
 - q) Where microscopic traffic simulation modelling is identified in the Contract Documents and reflected in the transport modelling scope document required by section 7.1h), the Contractor must prepare, as a minimum, the following traffic modelling deliverables:

- i) endorsed TAM Subarea model (base year and future years/project cases) in Aimsun Next (.ang file), RDS (in .csv files), imagery files, path files (in .apa files) and simulation output files (in sqlite files) in accordance with the "Model Folder Structure", specified in of the TAM Guidelines;
 - ii) endorsed base year traffic simulation model development, calibration and validation report including the final version of the microsimulation model audit checklist (indicating the responses); and
 - iii) Project case option traffic simulation models development report and the final version of the microsimulation model audit checklist (indicating the responses).
- r) SIDRA modelling application must be used for the assessment of individual intersections, including traffic signals, roundabouts and priority (give way) intersections.
 - s) SIDRA must 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.
 - t) SIDRA models must be developed in accordance with the Department Traffic Modelling Guidelines: SIDRA Intersection.
 - u) The Contractor must provide future turning movement forecasts for use in SIDRA, TRANSYT or LINSIG to the Principal in accordance with section 6 of PC-PL1 "Framework for Planning Studies". The Contractor must not continue to develop the traffic modelling further until the earlier of the Principal's approval under PC-PL1 "Framework for Planning Studies", or the timeframe specified in the Contract Documents.
 - v) The Contractor must engage an appropriately qualified and experienced third party external auditor to undertake auditing of the SIDRA models.
 - w) The Contractor must submit the SIDRA base case model to the Principal in accordance with section 6 of PC-PL1 "Framework for Planning Studies". The Contractor must not continue to develop the traffic modelling further until the earlier of the Principal's approval under PC-PL1 "Framework for Planning Studies", or the timeframe specified in the Contract Documents.
 - x) The Contractor must submit the SIDRA Project case model to the Principal in accordance with section 6 of PC-PL1 "Framework for Planning Studies". The Contractor must not continue to develop the traffic modelling further until the earlier of the Principal's approval under PC-PL1 "Framework for Planning Studies", or the timeframe specified in the Contract Documents.
 - y) The submission of SIDRA model reports must 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 section 7.1v).
 - z) TRANSYT or LINSIG modelling applications must be used where the assessment of traffic signal co-ordination and offset optimisation is required for traffic signal controlled networks.
 - aa) 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.
 - bb) TRANSYT models must be developed in accordance with the Department Traffic Modelling Guidelines TRANSYT 15. LINSIG models must be developed in accordance with the general principles contained in the TRANSYT guidelines.
 - cc) The Contractor must engage an appropriately qualified and experienced third party external auditor to undertake auditing of the TRANSYT or LINSIG models.
 - dd) The Contractor must submit the TRANSYT or LINSIG base case models to the Principal in accordance with section 6 of PC-PL1 "Framework for Planning Studies". The Contractor must not continue to develop the traffic modelling further until the earlier of the Principal's approval under PC-PL1 "Framework for Planning Studies", or the timeframe specified in the Contract Documents.
 - ee) The Contractor must submit the TRANSYT or LINSIG Project case models to the Principal in accordance with section 6 of PC-PL1 "Framework for Planning Studies".. The Contractor must

not continue to develop the traffic modelling further until the earlier of the Principal's approval under PC-PL1 "Framework for Planning Studies", or the timeframe specified in the Contract Documents.

- ff) The submission of TRANSYT or LINSIG model reports must 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 referenced in section 7.1cc).
- gg) Modelling reports to be supplied as pdf documents and must include an executive summary of the findings supported by detailed tables, graphs and lists on input data and the source of the input data.
- hh) A modelling report of the base case must include full details of the calibration and validation of the model and the report must justify any modifications made to the model to ensure the validation is within acceptable tolerance.

7.2 Generation of options

- a) The Contractor must generate options as required by PC-PL1 "Framework for Planning Studies".
 - b) The initial generation of a long list of Project options must include:
 - i) build nothing option;
 - ii) upgrades or repurposing of existing infrastructure;
 - iii) using assets for multiple purposes;
 - iv) concepts to maximise road safety benefits;
 - v) concepts to achieve best possible level of service for traffic numbers, i.e. the best possible traffic solution with no constraints;
 - vi) concepts to minimise land acquisition;
 - vii) concepts that deliver minimum cost and program;
 - viii) concepts to maximise realisation of the stated benefits;
 - ix) concepts to minimise environmental and community impacts and maximise sustainability, including low carbon design and construction methods;
 - x) concepts to maximise potential for integrated, sustainable infrastructure and transport;
 - xi) concepts to maximise value; and
 - xii) concepts which find a balance between the competing requirements understood from the planning investigations.
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