Job Number @ Type here

Functional Specification Template

C7523 - Preliminary Design

* To be used as a guide when compiling project‑specific specifications.
* @ = project‑specific detail required.
* For clauses / items not required – insert text 'Not Required' in clause heading, do not delete clause.
* Delete this table when document finalised.

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# General

## Definitions / abbreviations / acronyms

The most common definitions / abbreviation / acronyms that relate to the delivery of road infrastructure projects, are contained in the various relevant Department of Transport and Main Roads (department) manuals[[1]](#footnote-1), such as:

* Road Planning and Design
* Road Drainage
* Drafting and Design Presentation Standards
* Queensland Manual of Uniform Traffic Control Devices
* Road Landscape
* Soil Management
* Pavement Rehabilitation
* Pavement Design Supplement
* Design Criteria for Bridges and Other Structures
* Geotechnical Design Standards
* Standard Drawings Roads
* Transport and Main Roads Technical Specifications
* Road Traffic Air Quality Management
* Transport Noise Management Code of Practice – Volumes 1 and 2
* Interim Guideline – Operational Railway Noise and Vibration
* Transport Infrastructure Project Delivery System
* Project Cost Estimating
* Sustainability Framework
* Cultural Heritage Process Manual, and
* Environmental manuals and guidelines

In addition, throughout the Functional Specifications the following are used:

| Terms, abbreviations and acronyms | Meaning |
| --- | --- |
| ASD | Approach Sight Distance |
| BC | Business Case |
| BCR | Benefit Cost Ratio |
| BIM | Building Information Modelling |
| CBR | California Bearing Ratio |
| CH | Cultural Heritage |
| CHMA | Cultural Heritage Management Agreement |
| CHFA | Cultural Heritage Field Agreement |
| CHRA | Cultural Heritage Risk Assessment |
| CMP | Compliance Management Plan |
| Consultant | Concept and/or Development phase Consultant (this Contract) |
| Contract Administrator | Department Administrator, referred to as Administrator in a typical Construct Only Contract |
| Contractor | Construction Contractor |
| DBYD | Dial Before You Dig |
| DCP | Dynamic Cone Penetrometer |
| DD | Detailed Design stage |
| Department | Department of Transport and Main Roads |
| EDR | Environmental Design Report |
| EMP(C) | Environmental Management Plan (Construction) |
| EMP(P) | Environmental Management Plan (Planning) |
| EMP(SI) | Environmental Management Plan (Site Investigations) |
| EPM | Environmental Processes Manual |
| ESD | Entering Sight Distance |
| GIS | Geographic Information System |
| HADR | Hydraulic Analysis and Design Report |
| IAS | Impact Assessment Study |
| MGSD | Minimum Gap Sight Distance |
| NT | Native Title |
| OA | Options Analysis stage (also referred to as Preliminary Evaluation stage) |
| PD | Preliminary Design stage |
| PEA | Preliminary Environmental Assessment |
| Principal | The State of Queensland acting through the Department of Transport and Main Roads |
| Project Manager | Department Project Manager |
| PUP | Public Utility Plant |
| RDM | Road Drainage Manual |
| REF | Review of Environmental Factors |
| RLM | Road Landscape Manual |
| ROW | Right of Way |
| RPDM | Road Planning and Design Manual |
| SEO | Senior Environment Officer |
| SISD | Safe Intersection Sight Distance |
| TRACS | Traffic Responsive Adaptive Control System |

## Purpose of the Preliminary Design stage

The Preliminary Design stage:

* finalises the technical solution developed during the Business Case
* finalises the resumption requirements and resumption documentation
* finalises the limited access requirements and documentation (for example, for greenfield Sites)
* reviews the Business Case compiled during the Concept phase, and
* justifies the project.

## Scope of the Preliminary Design stage

The Preliminary Design is about the following activities:

* Fine‑tuning the horizontal and vertical alignments
* pavement design
* bridge fixing and design
* designing of other structures
* longitudinal and cross drainage
* landscape and urban design
* concept Erosion and Sediment Control Plan (ESCP)
* designing of environmental and cultural heritage mitigation measures, including cultural heritage surveys, negotiating agreements, heritage approvals, fauna fencing, fauna crossings, noise fences and other mitigation measures
* establishing ROW requirements
* establishing limited access requirements
* producing engineering drawings
* producing electronic 3D string bases and 3D object‑based models of the final design
* construction specifications
* designing of items to the extent necessary to achieve the required accuracy for estimating
* Preliminary Design cost estimate
* obtaining necessary approvals
* preparing the Planning Report, and
* drafting the project plan for implementation phase.

At the end of this stage, there should be no further pure design activities required. The Detailed Design stage that follows, completes the documentation so the construction tender Contract can be called, assessed and let.

The completed design must be for Works which will:

* accommodate predicted road user types and volumes
* reduce traffic congestion
* improve amenity, including access
* improve or maximise flood immunity
* provide a comfortable ride for road users
* incorporate Environmental Management Plan (EMP) requirements
* minimise or reduce nuisance to contiguous land owners
* be aesthetically pleasing
* complement existing land use
* where practicable, incorporate innovative techniques and solutions
* reflect the purpose of the Works defined in the Business Case and the Invitation for Offer
* reflect the government's policies
* meet legislative requirements
* meet the department’s standards
* maintain an optimum balance of total construction and maintenance costs to quality
* produce clear, easily understood documents that will enable construction of the Works to proceed smoothly, with minimum supervision costs
* protect the Principal's interests, particularly about:
* environmental management
* safety including construction safety, and
* claims escalation due to latent conditions, variations, delay and so on.

@ Type here for a National Highway project, the design shall also reflect the relevant standards and guidelines as required by Australian Government’s Department of Infrastructure and Regional Development.[[2]](#footnote-2)

# Summary of design / work elements in the Contract (Preliminary Design stage)

|  |
| --- |
| Project Manager: the extent of work needed (if any) under each item, is determined based on the level of detail carried out during the Concept phase. This stage should complete the major design components, with only minor design, detailing (plan work) and finalising the following documents as part of the Detailed Design stage. |

## Liaison with the Principal (Item No. PD 01)

This item shall be limited to the prestart conference, meetings and all liaison with the Principal and its Project Manager, including issuance of minutes. Each meeting shall be attended by at least the Consultant's Project Director and Project Manager.

## Consultant’s Internal Project Management (Item No. PD 02)

This item shall be limited to the Consultant’s Internal Project Management including quality control, administration, non‑project deliverables (such as printing reports) and so on.

## Environmental and Cultural Heritage Management (Item No. PD 03)

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| Project Manager: this item will need careful consideration. It is highly recommended that the departmental District Environmental Officer and Cultural Heritage Officers for the project, are consulted to gain an understanding of the relative importance of environmental and cultural heritage management to the successful delivery of the design. Delete / modify the following relevant Clauses as applicable (including the situation heading).  For projects where the environmental and cultural heritage constraints have a high impact on project delivery, an REF, CHRA and EMP(P) may have already been developed. In which case, they should be reviewed and updated if required. For projects where the environmental and cultural heritage constraints have a medium impact on project delivery, an REF, CHRA and EMP(P) shall be undertaken during the Preliminary Design. |

### General

Works undertaken by the Consultant shall be conducted in accordance with the department’s current versions of the Environmental Processes Manual and Cultural Heritage Process Manual.*[[3]](#footnote-3)*

Prior to Preliminary Design, the following environmental and cultural heritage processes and documentation have been completed:

|  |
| --- |
| @ Type here Project Manager: to delete the outputs not applicable or add additional. |

* @ Type here Preliminary Environmental Assessment (PEA)
* @ Type here Review of Environmental Factors (REF)
* @ Type here Environmental Management Plan (Planning) (EMP(P))
* @ Type here Cultural Heritage Risk Assessment (CHRA)
* @ Type here Cultural Heritage Field Assessment for Aboriginal or Torres Strait Islander Heritage
* @ Type here Cultural Heritage Field Assessment for Historical / European Heritage
* @ Type here Road Traffic Noise Assessment Report.

The Consultant shall ensure that they are familiar with the existing environmental and cultural heritage documentation relating to the project. The Consultant is advised to review any previous environmental and related reports produced during the previous related phases (as determined by the Principal).

### Environmental and cultural heritage management process

The environmental management process involved in the Preliminary Design phase is:

1. Review previous studies to ensure adequacy.
2. If a detailed assessment (REF) has been completed during the Business Case, proceed with addressing environmental and cultural heritage constraints and opportunities identified in the report through design.
3. If a detailed assessment was not undertaken during the Business Case, undertake a suitable detailed assessment, based on impact of the environmental constraints on project delivery and uncertainty associated with the project. Then proceed with addressing environmental and cultural heritage constraints and opportunities identified in the report through design and Contract documentation.
4. Undertake any additional environmental assessments as required.
5. Where required, undertake a cultural heritage field assessment.
6. Where required, develop a Cultural Heritage Management Plan (CHMP) for the project.
7. Review the environmental legislation requirements and update as necessary, based on changes to legislation or scope of Works.
8. Prepare applications for necessary environmental and cultural heritage approvals and submit to the administering authority.

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| @ Type here Project Manager: to delete the outputs not applicable. |

The outputs of the Preliminary Design environmental and cultural heritage management item are:

* a Review of Environmental Factors (REF)
* an Environmental Management Plan (Planning) (EMP(P))
* Concept Erosion and Sediment Control Plan
* Cultural Heritage Assessments (CHFA, CHMA or CHMP) (if applicable)
* Historical / European Heritage Approvals
* necessary environmental approvals
* Operation Noise Assessment
* noise barrier design
* Noise and/or Vibration Assessment‑Construction, and
* Construction Vibration Assessment. This assessment shall be used to inform the Constructability Review. Vibration damage issues raised, may require amendment of the Structural Assessment and/or Pavement Design Report.

Note: Where the Principal has elected to deliver environmental and cultural heritage assessments external to the engineering Contract, the Principal shall ensure that the Consultants receive the assessment reports for consideration as part of the options analysis deliverables. Consultants are required to review the environmental and cultural heritage assessments and consider identified impacts, legislative requirements and recommended management strategies and measures.

### @Type here Review of Environmental Factors (REF)

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| Project Manager: delete / modify the following relevant Clauses as applicable (including the situation heading).  If no previous REF has been completed go to Situation 1: Delete Situation 2.  If an REF has been previously completed, such as for projects where the environmental constraints have a high impact on project delivery or major projects, go to Situation 2. Delete Situation 1. |

@ Type here - Delete if not applicable Situation 1: Detailed environmental assessment has not been completed for the project. An REF and EMP(P) is required.

A detailed environmental assessment has not been undertaken for the project. Based on Factor risks, the Principal has determined that an REF and EMP(P) is required.

The Consultant shall prepare an REF in accordance with the Environmental Processes Manual and Clause 5 of the Functional Specification Annexure.

The purpose of the REF is to:

1. identify and assess existing environmental values within the assessment area
2. assess the potential impacts of the project on these values during the Construction phase of the project and the ongoing operation of the road section after construction
3. assess the potential impacts or constraints on the project from the existing environment, and
4. consider applicable legislative requirements and potential approval requirements triggered by the Works.

@ Type here - Delete if not applicable **Situation 2: Detailed assessments have been completed, but require review and update due to incomplete assessment, scope change, new information and/or legislation amendments since the assessment report was compiled.**

Review and update previous environmental assessment and management reports

Detailed environmental assessments have been completed during previous phases of this project. However, the Principal has identified that the assessments require review and update due to project scope change, new project information and/or possible legislation amendments that may affect the project occurring since the assessments were completed.

The Consultant shall review the previous environmental assessment and management reports, to ensure the reports comprehensively addresses environmental risks. The Consultant shall provide the Principal with a comprehensive list of additional issues to be assessed and considered as part of an update to the environmental assessment document.

The additional requirements to complete the REF and EMP(P), shall be forwarded to the Project Manager by the date specified in the Contract Program referred to in Clause 6.2.3 of Supplementary Conditions of Contract – Prequalified Consultants (Form C7554).

The Consultant shall prepare an REF in accordance with the Environmental Processes Manual and Clause 5 of the Functional Specification Annexure.

#### Review of REF

Prior to finalisation, the Consultant shall provide a draft of the REF to the Principal for review. At least 10 business days shall be allowed for departmental officers to undertake a review of EMP(P) in the Consultant's program. The department's Environmental Officer may meet with the Consultant to request amendments to the documents.

The Consultant shall update the REF in accordance with departmental advice and submit the final documentation to the Project Manager.

### Environmental Management Plan (Planning) (EMP(P))

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| @ Type here Project Manager: delete / modify the following relevant Clauses as applicable. |

The outcomes of the REF shall be used to prepare an Environmental Management Plan (Planning). The EMP(P) provides recommendations for the project planning, design and Contract documentation that will avoid and mitigate the various environmental and cultural heritage impacts identified in the REF.

The Consultant shall prepare an EMP(P) in accordance with the Environmental Processes Manual and Clause 5 of the Functional Specification Annexure.

The Consultant must take a multi‑disciplinary consideration to outcomes of the REF and recommendations made in the EMP(P) shall be integrated with other components of the Business Case services.

The Consultant shall also meet the specific objectives, guidelines and various departmental policies / manuals[[4]](#footnote-4) that include:

* Road Landscape Manual
* Road Traffic Noise Code of Practice Manual Volume 1 and 2
* Cultural Heritage Requirements
* Fauna Sensitive Road Design Manual Volume*2*, and
* Road Traffic Air Quality Management Manual.

Maintenance requirements for all permanent environmental control devices designed into the project, shall be included in the EMP(P).

#### Review of EMP(P)

Prior to finalisation, the Consultant shall provide a draft of the EMP(P) to the Principal for review. At least 20 business days shall be allowed for departmental officers to undertake a review of EMP(P) in the Consultant's program. The department's Environmental Officer may meet with the Consultant to request amendments to the documents. The Consultant shall update the EMP(P) in accordance with departmental advice and submit the final documentation to the Project Manager.

### @Type here Concept Erosion and Sediment Control Plan (Concept ESCP)

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| @ Type here Project Manager: delete / modify the following relevant Clauses as applicable (including the situation heading). |

For high erosion risk projects, the Consultant shall develop a Concept ESCP. The Concept ESCP shall:

* sufficiently identify and estimate cost of construction, maintenance and decommissioning of erosion and sediment controls during the construction Contract period
* identify disturbed area and catchment area at clearing stage, at cut and fill and final design formation
* calculate estimate soil loss for each catchment, using RUSLE (Revised Universal Soil Loss Equation for each stage
* determine the typical types of controls for each catchment at each stage
* determine the number and approximate size of International Erosion Control Association, Type 1 controls for each catchment (for example, sediment basins)
* determine if additional land is likely to be required to be resumed or negotiated for use, for Principal to have shown due diligence
* plan and design erosion and sediment controls that may have a dual function of construction phase control and be permanent control during operation, and
* provide an estimate of costs for construction phase erosion and sediment control.

The Consultant shall prepare a Concept ESCP in accordance with International Erosion Control Associated Australasia Best Practice Sediment and Erosion Control Manual. The Consultant shall also consider the requirements of the department’s technical specification MRTS52 Erosion and Sediment Control to ensure suitability and applicability to the Construction phase.

#### Review of Concept ESCP

Prior to finalisation, the Consultant shall provide a draft of the Concept ESCP to the Principal for review. At least 10 business days shall be allowed for department officers to undertake a review of Concept ESCP in the Consultant's program. The department may meet with the Consultant to request amendments to the documents.

The Consultant shall update the Concept ESCP in accordance with departmental advice and submit the final documentation to the Project Manager.

### Legislation approvals and offsets

Where one or more environmental and cultural heritage approvals are required for the project, the Consultant shall determine which approvals can be obtained as part of the preliminary design phase and which approvals will need to be obtained as part of detailed design or construction phase. The Consultant shall seek instruction from the Principal prior to commencing approval applications.

Where approvals can be feasibly obtained during preliminary design, the Consultant will consult with the Project Manager and other disciplines to obtain the necessary information for the approval applications. Prior to submission to administering authorities, the Consultant shall submit the approval applications to the department’s project Environmental and/or Cultural Heritage Officer for review and acceptance. The Consultant will consult with the other disciplines and Project Manager, as required, to obtain the necessary information for the approval applications.

In drafting permit submission documents and the Contract, the Consultant shall ensure that the responsibility for all conditions and actions to be undertaken by the Contractor are clearly transferred to the Contractor. The Consultant shall seek advice from the Principal as to the devolution of responsibility when uncertain.

Where offsets are determined or likely to be triggered, the Consultant shall inform the Project Manager. The Consultant will then be advised by the Project Manager, whether they will be required to negotiate offset arrangements on behalf of the department. The Consultant shall develop a strategy for offsets and submit to the Project Manager to obtain approval. The Consultant must have the offset plan signed off, or direct offsets paid prior to awarding of tender.

### @TypeHere Cultural Heritage

#### Cultural Heritage Agreements (CHFA, CHMA or CHMP)

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| @ Type here Project Manager: delete / modify the following relevant Clauses as applicable, including the situation heading. |

The Consultant shall draft an agreement in accordance with the department’s current Cultural Heritage Process Manual and the Cultural Heritage Agreement requirements outlined in the C7559 Terms of Reference for Cultural Heritage Assessment. The Principal will stipulate in the Annexure whether a CHFA, CHMA or CHMP is required. The field agreement must cover the design footprint of the project and all areas likely to be used for ancillary Works for construction, including gravel pits and water sources.

Note:The departmental Project Manager and District Cultural Heritage Officer must be involved in key decision‑making steps, particularly where potential issues with the Aboriginal Party(ies) may be involved. Only departmental staff can sign off on any agreements.

The Cultural Heritage Agreement (CHFA, CHMA or CHMP) shall be completed, and a draft submitted with the @ Type here design package.

#### Historic / European Heritage Approvals

The Consultant shall manage the process for any required Historical / European heritage approvals in accordance with the department's current Cultural Heritage Process Manualand the Historical / European Heritage Approvals requirements outlined in the C7559 Terms of Reference for Cultural Heritage Assessment.

The Consultant shall keep the departmental Project Manager and District Cultural Heritage Officer informed of progress at all times, including being copied in on key correspondence.

### Environmental Management Plan (Site Investigations) (EMP(SI)) (Provisional Item, if ordered)

The Consultant will advise the Principal of the Site investigations, such as geotechnical investigations, soil sampling, or vegetation clearing, to inform project design. The Principal shall instruct the Consultant if an EMP(SI) is required for these activities. If instructed by the Principal, the Consultant shall develop and implement a suitable EMP(SI) prior to undertaking the Works. The EMP(SI) shall identify the potential environmental and cultural heritage impacts from Site investigations and mitigation measures and strategies to be implemented.

The EMP(SI) shall be submitted to the Principal for acceptance five business days prior to commencing operations. Site investigations cannot commence unless agreed to by the Principal.

The Consultant shall notify the departmental District Cultural Heritage Officer in the event Site investigations are required to ensure the necessary heritage approvals and agreements are in place prior to commencing Works.

### Integration of Infrastructure Sustainability

For projects valued > $100M required to undertake an Infrastructure Sustainability Council of Australia (ISCA) rating, the Consultant shall incorporate the applicable Infrastructure Sustainability assessments within environmental and cultural heritage management. In particular, requirements of Eco‑1, Eco‑2 and Dis‑1 to Dis‑4 shall be considered and, where identified as additional scope to the REF, integrated into the methodology and deliverables for the REF assessment.

### Noise and Vibration Assessment

#### Operational Noise Assessment

|  |
| --- |
| Project Manager: if a noise assessment is required, nominate the number of measurement Sites anticipated.  Operational railway noise and vibration and/or operational car park / bus terminal noise, will need additional requirements to those included below.  In some instances, the operational scope of the assessment may be reduced where all (or the majority of) sensitive receivers have direct access to the state-controlled road corridor or the project does not trigger Upgrading Existing Road or New Road in the Transport Noise Management Code of Practice – Volume 1.  Please contact the E & T noise team to confirm project requirements. |

The Consultant shall undertake a Noise Assessment in accordance with the department’s current Transport Noise Management Code of Practice[[5]](#footnote-5) – Volume 1*.* The Consultant shall also meet the requirements specified in applicable industry standards.

The Consultant shall produce a Noise Assessment Report that complies with the requirements of Transport Noise Management Code of Practice – Volume*1*.

The Consultant shall conduct all field work required, to ensure that the noise model is an adequate representation of the project Site and surrounds, including field checking existing noise barriers (together with, type, ownership (any relevant development conditions), condition, height) and sensitive receivers (including tenancies).

The Consultant shall include all approved development (including unbuilt) in the assessment. The relevant conditions and application details are required to be summarised in the report, to ensure that all project obligations are considered.

The Consultant shall determine the need for noise barriers and, where required, shall determine the length, height and offset from the road in consultation with the design team. The minimum noise barrier height shall be 2.4 m. The Consultant shall present investigations in the report which have led to the final recommended noise treatment design (that is, review of different barrier heights). The noise barriers shall cover a reasonable angle of view from the receiver's perspective, for example it does not terminate at the mid‑property boundary and extended for equity for a row of sensitive receivers in accordance with the requirements of Transport Noise Management Code of Practice – Volume 1.

The assessment shall be conducted and/or supervised by a Registered Professional Engineer of Queensland (RPEQ) with relevant experience in noise assessment for infrastructure projects. The report shall be submitted to the Principal by the signing RPEQ and not the report author, unless they are the signing RPEQ.

|  |
| --- |
| Project Manager: include reference to local document, for example, the district’s Design Guide – Noise Issues. |

The Consultant shall submit a road traffic noise monitoring proposal to the Principal for acceptance prior to conducting road traffic noise measurements. The proposal shall detail the nominated noise measurement and traffic monitoring Sites, proposed duration and schedule for the monitoring to be carried out.

The Principal may request (with justification) changes to or additional noise measurement and/or traffic monitoring Sites to be included in the Consultant’s road traffic noise monitoring proposal.

All noise and meteorological measurements shall be carried out in accordance with the department’s current Transport Noise Management Code of Practice – Volume 1.

The Consultant shall not undertake any noise measurements before the:

* Principal issues Notice of Entry(Corporate Form M727) forms,) and acceptance (completed M727 form) in writing is received from the owner and/or occupier for the Site, and
* Principal completes an Authorisation to Enter Upon Land (Corporate Form F5163) form.

It is the Consultant's responsibility to update the road traffic noise monitoring proposal, to ensure adequate coverage for the project, if a Notice of Entry is not signed and returned to the Principal. The Consultant shall submit an updated road traffic noise monitoring proposal to the Principal for acceptance prior to conducting road traffic noise measurements.

|  |
| --- |
| Project Manager: include reference to relevant local document, for example, the district's Design Guide – Noise Issues*.* |

The Consultant will need to consult with the owner / occupier at the nominated road traffic noise measurement Sites.

Any enquiries received from the community by the Consultant while conducting the assessment, shall be referred promptly to the Project Manager.

The Consultant shall not advise any residents that noise barriers, or any other noise amelioration measures, are to be incorporated into the project, until advised in writing by the Project Manager that such measures are to be included in the project. All project communications shall be carried out via the Project Manager.

#### Construction Vibration Assessment

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| --- |
| Project Manager: please contact Engineering and Technology noise team to confirm project requirements. |

The Consultant shall undertake a construction Vibration Assessment in accordance with the department’s current *Transport Noise Management Code of Practice[[6]](#footnote-6) – Volume 2*. The Consultant shall also meet the requirements specified in applicable industry standards.

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| --- |
| Project Manager: include reference to local document, for example, the district’s Design Guide - Noise Issues. |

The assessment shall be conducted and/or supervised by an RPEQ with relevant experience in vibration assessment for infrastructure projects. The report shall be submitted to the department by the signing RPEQ and not the report author, unless they are the signing RPEQ.

Vibration assessment, mitigation and management for Public Utility Plant (PUP) shall be as per Clause 2.10 and shall be excluded from the Transport Noise Management Code of Practice – Volume 2 assessment.

The Consultant's RPEQ (conducting the vibration assessment) shall consult with the design team to obtain expected details of construction. The Consultant will assess a range of different equipment sizes and methods (for example, different piling methods, multiple roller sizes, multiple hammer sizes, and so on) to determine if there are any restrictions / limitations to equipment selection to maintain safe working distances. Where a vibration issue arises, it is expected that the Consultant's RPEQ (conducting the vibration assessment) shall develop a solution to vibration issues in consultation with the design team and revise the vibration assessment to resolve any issues (for example, initial piling method is not suitable due to potential for damage to structures, and so on, and an alternative piling method is required).

It is the responsibility of the assessing Consultant's RPEQ (conducting the vibration assessment) to contact relevant asset owners and obtain their vibration criteria and other requirements. Vibration limits and requirements shall be requested by the Consultant's RPEQ (conducting the vibration assessment) in writing and all correspondence to and from the asset owner shall be appended to the report.

The Consultant's RPEQ (conducting the vibration assessment) will need to source information (via written correspondence) on the type, location, condition, and so on, of assets and summarise the information in their report. The information obtained by the Consultant's RPEQ (conducting the vibration assessment) shall be clearly documented in the assessment report.

The Consultant's RPEQ (conducting the vibration assessment) shall provide project‑specific vibration mitigation. Vibration mitigation shall be provided to ensure that safe working distances are maintained.

The Consultant's RPEQ (conducting the vibration assessment) shall prepare a Construction Noise and Vibration Assessment Report in accordance with Transport Noise Management Code of Practice – Volume 2. The Consultant's RPEQ (conducting the vibration assessment) shall summarise vibration issues, equipment restrictions, and so on, and ensure that they are included in the Constructability Review. Vibration damage issues raised may require amendment of the Structural Assessment and/or Pavement Design Report.

|  |
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| Project Manager: include reference to relevant local document, for example, the district's Design Guide – Noise Issues. |

Any enquiries received from the community by the Consultant while conducting the assessment, shall be promptly referred to the Project Manager. All project communications shall be carried out via the Principal.

### Payment

The Lump Sum for Item No. PD 03 Environmental and Cultural Heritage Management, shall include all Works necessary to complete the identified deliverables as specified in Clause 2.3 of this Functional Specification - Preliminary Design. This includes the consultation specified in this Clause 2.3, to be carried out as part of the EMP.

Locating Potential Acid Sulphate Soils shall be paid for in the item for geotechnical investigation.

## Public Consultation (Item No. PD 04 and PD 05)

### Consultation Planner

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| --- |
| Project Manager: the Consultation Planner for this project may have been compiled during the Concept phase. If this is the case, it is to be reviewed and resubmitted for approval. If not, follow the normal course below. |

@ Type here the Consultation Planner for this project was completed as part of the Concept phase.

@ Type here the Consultation Planner for this project has been completed, but not signed off.

The Consultant shall review the planner and submit for approval at the Milestone reference point (Review of Proposed Public Consultation Process).

The Consultant shall carry out the public consultation in accordance with the approved Consultation Planner and complete the Consultation Planner for the project. Where a sign‑off is required, the Consultant shall forward the Consultation Planner to the Project Manager before proceeding to the next stage.

### Aims of public consultation

The aims of the public consultation include:

* adding value to the decision‑making process by seeking public input into a wide range of issues, including but not limited to environmental issues, social issues, traffic operations, access, potential effect of resumptions, potential effect on business operations and local residents, road safety, traffic operations, and so on, that specifically relate to this project.
* Obtaining specific information for input into the planning and subsequent design. This is defined in the following Clauses of this Functional Specification - Preliminary Design (where applicable): @ Type here

|  |  |
| --- | --- |
| * Clause 2.3 | Environmental Management |
| * Clause 2.5 | Traffic Counting and Analysis |
| * Clause 2.6 | Property Access |
| * Clause 2.7 | Hydraulic Analysis |
| * Clause 2.9 | Bus Facilities |
| * Clause 2.9.3.4 | Service Roads |
| * Clause 2.9.5 | Resumption Requirements |
| * Clause 2.10 | Public Utility Plant Conflicts |
| * Clause 2.11 to 2.12 | Geotechnical Investigation |
| * Clause 2.15 | Local Government Involvement, and |
| * Clause 2.25 | Bridge Planning Report |

and in the relevant sections of the following local Code of Practice:

|  |
| --- |
| Project Manager: include reference to local document, for example, Design Guide - Design Vehicles and Curve Widening. |

* determining and reaching agreement with local government on cost sharing as applicable
* reducing the risk to the Principal by identifying constraints to successful implementation of the project as early as possible and recommending appropriate courses of action
* liaising with property owners and others affected by resumption and limited access issues, as requested by the Principal
* keeping the agenda relevant to the project
* gauging public opinion (polling is not acceptable)
* seeking public comment on all issues relevant to the project, and
* keeping the public informed of the project’s progress, conclusions and decisions.

The Consultant shall ensure the public understands that:

* the decision‑making shall not be handed over to the public
* the decision‑making processes will consider public concerns, information and submissions, and
* decisions will be made by the department.

The Consultant's staff involved in the public consultation process, shall not convey the impression that they are employees of the department.

### Consultant's performance

The Consultant shall demonstrate:

* the ability to work as part of a project team, within specified times and with specific goals
* the ability to adapt the public consultation strategy to meet changed circumstances and project needs
* an appreciation of the sensitive nature of issues
* a proactive approach
* the ability to monitor the process as it occurs, and
* the ability to consult with people from diverse backgrounds.

### Toll free phone

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| --- |
| Project Manager: consider deleting this section for projects that are expected to raise few public concerns or where not warranted. On major projects, consider adding paragraphs on shop fronts Internet page and so on. |

The Consultant shall establish a toll free 1800 telephone number for this project. This hot line shall be monitored by the Consultant when possible and by an answering service out of hours.

The department will pay telephone expenses separately, including connection and calls associated with public consultation for this project. The Consultant shall include an allowance for this in the offer.

### Consultation with contiguous property owners and lessees

The Project Manager will supply title searches for all properties that are contiguous with the project.

The Consultant shall be particularly sensitive to the impacts of the road project on owners, residents and organisations whose property is contiguous with the proposed project.

An overriding principle on consultation, is that the Consultant shall not discuss any issues, layouts and so on, before people whose land is directly affected by possible land acquisition action, have been consulted.

The Consultant shall identify the names and addresses of all lessees and all other persons or organisations with an interest in the property.

1. Access

The Consultant shall consult with property owners and lessees whose property abuts the project, or whose access is affected by the project as defined in Clause 2.6 of this Functional Specification - Preliminary Design.

1. Possible property acquisition impacts

When a proposal is likely to impact privately‑owned land, the Consultant shall consult with the potentially directly‑affected property owners and any lessees.

Through consultation, the Consultant shall seek to achieve practicable and economical solutions which will maintain the viability of existing businesses, agricultural land and other property. Normally the Consultant will be accompanied by departmental staff, which may include the department’s Property Officer and other representatives.

Normally the Principal negotiates directly with property owners during the resumption and access limitation phase concerning compensation. However, the Principal reserves the right to determine whether the Consultant shall be present during discussions on land acquisition and access limitation issues with affected property owners, particularly during compensation discussions.

### Consultation with Aboriginal or Torres Strait Islander Parties (if ordered)

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| --- |
| Project Manager: please ensure Aboriginal or Torres Strait Islander Parties are mentioned in the Consultation Planner. Depending on the project, responsibility will generally rest with the departmental District Cultural Heritage Officer. However, the Consultant's representatives may need to attend meetings or provide information. Allow for two, two‑hour meetings with each party. Delete the following sentence and the Payment Clause if a Cultural Heritage Agreement is not to be ordered.  @ Type here Consultation with Aboriginal or Torres Strait Islander Parties is only to be undertaken by departmental District Cultural Heritage Officers, unless specified otherwise. |

### Consultation with local interest groups

Consultation with local environmental interest groups should be limited until a clear understanding of the likely issues has emerged. The Consultant shall seek information from local environmental groups who shall be contacted through the Project Manager and the district’s Environmental Officer. The Consultant shall contact such groups by personal visitation. Two meetings per group with @ groups shall be allowed in the offer.

#### Payment

@ Type here payment for this part of the consultation process shall be made under the Fixed Fee Item PD 03 Environmental Management.

@ Type here the Principal will undertake consultation directly with Traditional Owners' representatives. The Project Manager will take minutes or notes of conversations for inclusion in the Consultation Report.

### Project stages

Public consultation must be structured to mesh with the various stages of project implementation.

1. Concept phase @ (not in this Contract)

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| --- |
| Project Manager: reword the following Clauses to reflect the extent of the targeted public consultation undertaken during the Concept phase. |

Throughout the Options Analysis stage, targeted / public consultation focused on identifying stakeholders, and obtaining input from targeted sources (which may include shire councils and other government departments).

Throughout the Business Case stage, targeted / public consultation refined the consultation (if any), undertaken during the Options Analysis stage, focusing on issues relating to the Approved Recommended Option. Possible mitigation measures were discussed in general terms.

@ Type here where an IAS is necessary seeking comment on the Terms of Reference should happen in this stage. Public education may be most cost effective during this stage.

1. Preliminary Design stage

Throughout the Preliminary Design stage, public consultation shall focus on identifying additional stakeholders, obtaining public input, identifying issues and identifying public perception of impacts. Public education may be most cost effective during this stage. @ Type here where an IAS is necessary, seeking comment on the Terms of Reference should occur at this stage. Public education may be most cost effective during this stage.

1. Detailed Design stage @ Type here (not in this Contract)

A focus of the Detailed Design stage will be to provide feedback and obtain public acceptance of decisions made during project planning and to provide general information to the public on the proposed Works.

Another focus will be on liaising with the local government, contiguous and other affected property owners, to achieve practicable solutions, particularly on access, construction impacts and accommodation Works issues.

1. Construction @ Type here (not in this Contract)

The Construction Contractor will be responsible for public relations concerning the construction of the project.

|  |
| --- |
| Project Manager: generally the public consultation shall not extend past the Development phase, however public education may need to extend into this stage where unusual or different traffic operations are incorporated into the design (for example, some median closures removal, or U‑turn facilities and roundabouts in towns without existing roundabouts). @ Add text if this applies. |

### Queensland Rail

If this project is close to a Queensland Rail line, the Consultant shall consult with the department’s @ Type here area (contact name is @ Type here) to determine if Queensland Rail has any requirements in the area.

### Monitoring

The Consultant shall monitor the effectiveness of the public consultation. The extent of monitoring shall reflect the size and importance of the project. Phone sampling of residents in the nearby area may be a suitable method.

### Reporting

The Consultant shall produce a report on the public consultation detailing:

* an outline of the Public Consultation Model and Program (including public education and monitoring)
* copies of consultation material issued during consultation (for example: copies of press releases, mail outs, letter box drops, displays, and so on)
* effectiveness of monitoring and methods of monitoring used
* information on how the model (including public education and monitoring) was implemented and amended throughout the process to address the public's needs
* details of public involvement, how public input was considered
* details of specific issues raised and the amount of interest in each issue
* details of the outcomes and conclusions, and
* information gathered to address the requirements defined throughout this Functional Specification - Preliminary Design.

### Payment

The draft Consultation Planner identifies which aspects of public consultation shall be deemed to be covered in Item No. PD 04 Public Consultation (Fixed Fee), and which aspects are deemed to be covered in Item No. PD 05 Public Consultation (Time Rate).

The following Clause of this Functional Specification - Preliminary Design, include other consultation that is covered in the Fixed Fee Item No PD 04:

* Clause 2.6 Property Access

The following Clauses of this Functional Specification - Preliminary Design may include other consultation that is to be covered in the Time Rate Item No PD 05:

* Clause 2.6 Property Access
* Clause 2.7 Hydraulic Analysis
* Clause 2.25 Bridge Planning Report

#### Payment

All costs associated with the consultation with council, shall be provided for in Item No. PD 04 or PD 05 Public Consultation as specified elsewhere.

All costs associated with preparing the report shall be provided for in Item No. PD 21 Planning Report.

## Traffic Counting and Analysis (Item No. PD 06)

The Principal has provided traffic counts as detailed on the following:

|  |
| --- |
| Project Manager: include reference to local documents. |

and is currently obtaining traffic counts at:

* @ Type here, and
* @ Type here.

The Consultant is responsible for determining if any additional traffic information is required. The Principal will not unreasonably reject requests for additional traffic information.

When additional traffic counting is required, the Principal will generally supply that traffic information within ten business days. The Consultant is responsible for providing adequate and timely requests to the Principal, to ensure that the Contract can be completed on time.

Where the Principal considers that additional traffic counts are unwarranted or impracticable for any reason, the Consultant shall estimate the traffic volumes.

### Traffic analysis

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| Project Manager: the following is for a simple traffic analysis. A more rigorous approach is usually appropriate on major projects or projects that will significantly alter the traffic regime. These will require a detailed traffic model and so on and the following is not appropriate in such situations. |

The Consultant shall be responsible for all traffic analysis and interpretation of results.

The Consultant shall consult with and obtain from the local government, future traffic management proposals that may affect the project.

The Consultant shall predict growth rates and percentage of heavy vehicles, by analysing historic traffic figures, local government's strategic plan and previous traffic studies of the area where these are available. The traffic analysis shall allow for traffic likely to be generated by possible future developments and local government's future traffic management proposals.

The required design life is specified in Clause 3 of the Functional Specification - Preliminary Design Annexure.

Signalised and unsignalised Intersection Design and Research Aid or a similar computer program shall be used to analyse intersections.

### Traffic report

The Consultant shall produce a traffic report that:

* details traffic issues raised during public consultation
* justifies adopted growth rates and other assumptions
* includes all traffic calculations (degree of saturation, signal phasing, and so on)
* details the outcomes of the investigation, and
* lists the advantages and disadvantages of future traffic management, of the various options considered.

The Traffic Analysis Report shall be appended to the Planning and Preliminary Design Report.

### Payment

The Lump Sum for Item No. PD 06 Traffic Counting and Analysis, shall include all Works necessary to complete the Traffic Analysis Report as specified in Clause 2.5 of this Functional Specification - Preliminary Design. This includes consultation with local government.

## Property Access (Item No. PD 07)

The following outcomes are not‑negotiable:

|  |
| --- |
| No direct property access shall be permitted to @ Type here Road.  No direct access from any of the following properties shall be permitted onto @ Type here Road:  @ No additional direct property access shall be permitted onto @ Type here Road. |

The Consultant must negotiate with property owners concerning access, to ensure the above not‑negotiable outcome. Refer also to local documents:

|  |
| --- |
| Project Manager: include reference to local document, for example, Design Guide - Design Vehicles and Curve Widening. |

Notwithstanding the department's preferred location indicated below; the Consultant shall ensure that all access locations are located where road safety can be adequately addressed.

The department’s preferred access provision or service roads to some other properties is as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| Property description | Name of Road property is to access | Department preferred location for proposed new access | Other Comments |
| Lot @ Type here RP @ Type here | @ Type here Road via Service Road |  | Refer Note @ Type here |
|  |  |  | Note 1 |

Note 1 This property is owned by the department.

Note 2 @ Type here

The following applies to all accesses, whether access limitation exists or not.

The Consultant shall seek, through negotiation with the property owner to:

* reduce the total number of accesses where multiple accesses to one property exist
* reduce the total number of access points where accesses to adjacent properties can be amalgamated
* relocate the access onto a lower order road, and
* provide accesses at locations that maximise visibility and safety.

The Consultant shall communicate to property owners that, upon completion of the Construction phase of the project, all legal property accesses shall be reinstated to a standard at least equivalent to that which existed prior to the commencement of construction. Illegal property accesses are dealt with in Clause 2.6.2 of this Functional Specification.

Details of these communications shall form part of the Planning Report.

### Property owners

It is the Consultant's responsibility to obtain names and addresses of property owners and lessees unless these have been supplied with the Invitation Documents.

### Existing accesses and consultation with property owners and lessees concerning access

Should the Consultant find the need to modify or relocate an existing access remaining within the completed project, the Consultant shall evaluate the existing access and modify as practicable observing the following:

* Available visibility to all existing accesses shall be determined (ASD, SISD and MGSD) and, where practicable, maximised or increased to meet minimum visibility standards or greater. Design for sight lines must address requirements of Austroads Guide to Road Design - 4A – Chapter 3 (design speeds where the 85th percentile is not known shall be taken as posted speed plus 10 km/h.

This may involve shifting access locations, gates, and so on and connecting to the existing access either within the property or within the road reserve. Any other safety issues concerning accesses will also be considered. Note the requirements of Clause 2.6.4).

* The Consultant shall determine the maximum sized vehicle that regularly uses the access requiring modification. Where this vehicle is larger than the design vehicle indicated in the department’s current Road Planning and Design Manual, the larger vehicle shall be the design vehicle.
* Where there is an existing gate that abuts the road that is not to be used in the future or an access that is to be closed, the Consultant shall negotiate with the property owner to have that gate or access to be completely removed from the construction project.
* Where it is necessary to work within private property boundaries to provide adequate access to a property, the Consultant shall discuss this issue with the property owner.

The Consultant shall prepare a draft letter to each property owner whose access is proposed to be altered, removed or relocated. This letter will refer to the meeting held with the property owner to discuss the issue and will be forwarded to the Project Manager for approval within five business days of such a meeting. Where it is necessary to work within the private property boundaries to provide adequate access to any property, the Consultant shall include this issue in the letter.

### Existing access limitation

In addition to the above requirements, where limited access exists on a road, existing illegal accesses shall not be included in the planning or subsequent design.

If the Consultant finds that an existing access is not shown on the Limited Access Plan or detailed in approved access locations supplied with local documents:

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| --- |
| Project Manager: include reference to local document. |

@ Type here the Consultant shall confirm with the property owner that they do not have written approval for such access.

### New central median

Where it is intended to install a central median, all affected property owners shall be consulted directly in a one‑to‑one interview. Consultation shall include seeking a consensus on proposed alternative provisions for turning movements.

### Advice to Project Manager

The Consultant shall advise the Project Manager at least two business days before any consultation with property owners occurs. The Project Manager may choose to attend any consultation meeting concerning access.

The Consultant shall obtain Permission to Proceed before meeting with and advising any property owner that the access will be removed.

An interim written advice of the outcome shall be forwarded to the Project Manager within 24 hours of consultation with each property owner.

### Consultation with property owners and lessees concerning access

The Consultant shall consult with property owners and lessees whose property abuts the project or whose access is affected by the project. Issues that shall be addressed include the following (as applicable):

* the maximum sized vehicle that regularly uses each access
* location of existing accesses, and
* the legality of existing accesses not shown on the Access Limited Plan or detailed in approved access locations supplied with.

|  |
| --- |
| Project Manager: include reference to local document. |

(the Consultant shall confirm with the property owner that they do not have written approval for such access).

* removal of existing gates that abut the road and are not to be used in the future
* removal of existing accesses that are to be closed, and
* work within private property boundaries to provide adequate access to properties.

The Consultant should note that the department does not have the authority to remove a gate without the landowner's permission (who is the owner of the gate). In some cases, it may be necessary for the department to build an additional fence inside the road reserve blocking access to the road.

The Consultant shall prepare a draft letter to each property owner whose access is proposed to be altered, removed, or relocated. This letter will refer to the meeting held with the property owner to discuss the issue and will be forwarded to the Project Manager for approval within five business days of that meeting. Where it is necessary to work within private property boundaries to provide adequate access to any property, the Consultant shall include this issue in the letter.

### Property Access Report

The results of the consultation on accesses (including any written agreements) will be included in the Property Access Report that shall be appended to the Planning Report. The Property Access Report shall include information on the maximum vehicles regularly using the access, available visibility distances, safety at all property accesses and the results of the consultation. A table with provision for comments may be a suitable presentation method.

### Payment

|  |
| --- |
| Project Manager: consider the impact of the proposed work on accesses before nominating the amount of consultation to be done as fixed fee work (suggest nil for an asphalt overlay or similar minor Works, but heaps for a major project that involves new service roads and so on. The aim is to get the minimum reasonable amount that can be defined (but not all) of the consultation locked in as fixed fee. |

There appears to be @ Type here properties that are contiguous with the road and @ Type here properties with either access to the road or gates that abut the road.

The Consultant shall allow the cost of two, one‑hour meetings onsite with the owner of each property that is contiguous with the project and has an existing access (legal or otherwise) to the road or has a gate that is on the road boundary. These costs shall be included in the Fixed Fee Item No. PD 04 Public Consultation and are deemed to include all travel and other expenses.

For the purpose of the Offer the Consultant shall allow travel and other costs for an additional onsite meeting of one hour duration with each property owner on access issues in the Time Rate Item No. PD 05 Public Consultation.

The costs associated with the layout development, preparation of letters, and reporting on property access shall be included in Item No PD 07 Property Access.

## Hydraulic Analysis (Item No. PD 08)

Drainage, including road surface drainage, shall meet the requirements of the department’s current Road Drainage Manual.*[[7]](#footnote-7)*

The Consultant shall consult with local property owners and local government to discover all available information on flooding in the area including flow paths, dates of significant events and extent of flooding. Where property owners can define flood extents, the Consultant shall request the points be levelled through the Project Manager. Flood levels will be surveyed by the department at no cost to the Consultant. The Data Collection Checklist (Appendix 4A in the department’s current Road Drainage Manual) defines the information that the designer shall seek to obtain for each new or existing drainage structure, irrespective of the size of the drainage structure or the work (if any) to be done at the drainage structure.

If flooding is an issue or is raised as an issue during public consultation, the Consultant shall ensure that there is close liaison between staff performing the hydraulic assessment and public consultation staff.

The Consultant shall assess drainage requirements to the extent necessary to ensure that the proposed Works are feasible, and a reasonable estimate of the cost of structures can be made.

Where flooding of the road or adjacent properties is a significant issue (for example, road over a flood plain, road downstream of developed areas, and so on) or a bridge is required, the Consultant shall notify the Project Manager and provide details of investigations.

The following solutions are normally not acceptable for any drainage structure:

* road approaches lower than the bridge / culvert deck
* structures that do not meet environmental requirements (stream disturbance, fauna corridors, and so on) either in their proposed final layout or during construction (temporary damming, bunding, and so on)
* structures that require significant excavation under the structure
* stream diversions
* designs that are calculated to cause excessive afflux when floods greater than the design immunity occur. Allowable afflux will be determined by @ Type here shire requirements when the road is downstream of:
* a development
* an area which has development potential, or
* any other area sensitive to flooding, and
* designs which are likely to:
* cause scouring and/or erosion during the life of the structure
* expose the road or bridge to potential damage during floods greater than the design immunity
* increase flooding frequency or severity in developed areas
* designs that place piers in the low or normal stream flow, and
* designs that are predicted to change the stream flow characteristics.

### Bridge or structure

|  |
| --- |
| Project Manager: consider the risks associated with flooding and whether a separate Hydraulics Contract should be used for this structure. E & T Hydraulics and Flooding can assist in:   * assessing the risk and determining whether a separate Hydraulics Contract is necessary * determining hydraulic design criteria appropriate to the local context, and * specialist Hydraulic Peer Review to ensure departmental requirements are being met. |

This project requires cross drainage at @ Type here water crossing. The Consultant shall undertake complete hydraulic investigations and calculations, sufficient to allow the bridge design to proceed.

The hydraulic calculations shall include at least the design flood, a flood just above the point of overtopping the road or bridge, one‑in‑2000‑year flood (also referred to as Annual Exceedance Probability of 0.05%) (if required, to meet the requirements of the Bridge Design Code) and a Probable Maximum Flood.

### Reporting

The results of the hydraulic analysis shall be appended to the Planning Report.

### Payment

All costs associated with preparation of the report, shall be provided for in Item No. PD 08 Hydraulic Analysis.

All public consultation costs associated with determining flood levels, shall be paid for under the Time Rate Item No. PD 05 Public Consultation. The Consultant should allow @ Type here onsite meetings in the offer.

## Structural Assessment (Item No. PD 09)

Each existing structure is to remain or be incorporated in the project, shall be inspected and reported in accordance with a Level 2 inspection as defined in the department’s current Structures Inspection Manual.*[[8]](#footnote-8)* This includes structures associated with the existing roads that are proposed to become service roads and all culverts within the road reserve for the extent of the project.

The Consultant shall immediately notify the Project Manager and await directions should any structure be considered unsound and remedying the situation may have a major impact on the scope of the project, either physically or financially.

### Structural assessment reporting

The results of the structural assessment shall be appended to the Planning and Preliminary Design Layouts and Report. A table with provision for comments may be a suitable presentation method.

### Payment

All costs associated with the preparation of the report, shall be provided for in Item No. PD 08 Structural Assessment.

## Progressing Preferred Option Layouts (Item No. PD 10)

|  |
| --- |
| Project Manager: include reference to local document for example, the district's Preconstruction Administration Code of Practice contains guidance on many issues relating to design. The Consultant shall incorporate the district's policies and preferred practices into the planning and Preliminary Design. Where the code indicates a preferred standard and a minimum standard, the preferred standard shall be used unless the Project Manager approves the use of the minimum standard. Should the Code of Practice conflict with the department’s current Road Planning and Design Manual,*[[9]](#footnote-9)* the Consultant shall immediately notify the Project Manager for a clarification of the issue. |

### Reviewing the Business Case

The Business Case and supporting documentation will provide a wealth of information relating to the Principal requirements for the project. It is essential that the Consultant reviews this documentation to ensure that they gain a comprehensive understanding of the actual requirements of the Principal.

When evaluating the approved Business Case option, the Consultant shall ensure that environmental issues, constructability issues, PUP issues and issues raised during the public consultation, are fully considered and built into the evaluation process.

### Conduct a Detailed Options Analysis

@ Type here the Consultant shall develop the layout option approved in the Business Case to meet the requirements of this Functional Specification. The Consultant’s offer shall develop at least three layout options for each significant issue (for example, interchange layouts, bridges, highway, service roads and so on). The Consultant shall not commence development of interchange or intersection options before traffic desire lines are established.

@ Type here the Consultant shall conduct Detailed Options Analyses for the major components of the approved Business Case option. The Consultant’s offer shall develop at least three options for each significant issue and must consider the following issues:

* type of pavement (for example, unbound gravel versus asphalt)
* type of drainage structure (bridge versus culverts)
* use of retaining structures to reduce land impact, and
* PUP impacts.

@ Type here

@ Type here

These options should be developed to the stage where they can be proven viable or unsatisfactory.

@ Type here of the viable options that remain, the Consultant shall select and recommend its preferred option.

@ Type here the Consultant shall develop the layout option approved in the Business Case to meet the requirements of this Functional Specification.

### Preliminary Design engineering drawings

Following on the Detailed Options analyses, the Consultant shall develop Preliminary Design engineering drawings for the recommended option that show the proposed future facilities including:

* lane configurations (including shoulders, parking lanes, and so on)
* median locations
* traffic islands
* auxiliary, climbing and overtaking lanes
* intersection layouts
* interchange layouts
* noise barrier and other environmental management devices
* safety barrier systems (including nominating type)
* allowance for information technologies (if any)
* pedestrian and cyclist facilities
* bus facilities
* anticipated PUP relocations, alignment and any additional land requirements
* major and critical drainage structures
* bridge configurations and approximate deck levels
* cross sections at critical locations
* cross sections at 50 metre maximum intervals at 1:100/1:100 scale (showing services and road boundary location)
* special features: innovative solutions; retaining wall locations
* vertical and horizontal geometry (including radii, superelevation)
* extents of kerbing and kerb and channel, and
* construction of sidetracks (if any).

For simple rural projects, this should be presented on the following A3 size plans:

* Type Cross Sections
* Working Plans
* Drainage Cross Sections, and
* Various Detail Plans.

For urban projects, the plans should include:

* Type Cross Section Plans
* Layout Plans at a scale of 1:1000 on A3 sheets
* Grading Plans
* Cross Section Plans, and
* Intersection Plans at a scale of 1:500 A3 sheets.

@ Type here for more complex projects, additional plans may be required, such as landscaping and urban design plans.

@ Type here

### Service roads

During the Preliminary Design, the Consultant shall assess the service road requirements to determine:

* whether existing roads should become service roads, and
* where new service roads are required.

Where a service road is proposed within the right of way of the declared road, the Consultant shall provide a map to the Project Manager for approval and negotiation with the local authority over future maintenance of the service road. The map shall detail the location and extent of the proposed service road and define that portion of the right of way of the declared road that should be reasonably apportioned to the service road.

#### Landscape and Urban Design Deliverables

The Consultant shall prepare Preliminary Landscape and Urban Design Plans in accordance with the Drafting and Design Presentation Standards Manual, Volume 2 and Part B2 and Part C of the department’s Road Landscape Manual. The drawing scale shall be typically identical to civil design layout plans. Plans will clearly illustrate design constraints which impact on the design, such as clear zones, sight visibility, retained and new services. The plans should consider aspects of the landscape assessment(s) conducted in previous stages.

The Consultant shall provide for revegetation of all exposed batters, drainage devices and areas of anticipated disturbance beyond the road formation. The Consultant shall also make provision for the urban design treatment of project structures (for example, overpasses, noise barriers and retaining walls) relative to project scale, budget and Site context. A ‘whole‑of‑life’ outcome should be considered in determining landscape and urban design treatments. Higher capital costs may be justified in some areas to minimise the risk of environmental nuisance or harm and reduce future maintenance costs / traffic control. The Consultant shall recommend the most appropriate method for the Project Manager's approval.

In addition, special beautification landscaping of specific areas (for example, local roads, pocket parks on departmental land) may be required by the local government. This, however, will be at the local government's expense and / or maintenance responsibility. The issue of landscaping shall be raised with local government as part of the negotiations for Local Government Contribution and shall be covered in a cost share agreement with local government.

A principle objective of the landscape design shall be to provide an integrated harmonious approach over long sections of road with appropriate transitions between the various settings through which the road passes. The Consultant shall consider and seek to reflect and/or enhance the existing landscape context along adjacent road sections.

The Consultant shall also make provision of the following preliminary management plans in accordance with Part B2 of the Road Landscape Manual.

|  |
| --- |
| Project Manager: for remote and large‑scale projects (particularly at Sites with known high‑risk soils), consideration should be given to requiring the Consultant to provide for Preliminary Soil Management Plan. This will assist in the early identification of associated soil risks, mitigation strategies and ensure allowances are made for supply of ameliorants under the design and budget forecasts. |

### Resumption requirements

In addition to this Clause, the Consultant's attention is drawn to Functional Specification - Resumptions, Limitation of Access and Native Title Issues.

The Consultant shall determine the resumption requirements and include these details in the Planning Report. The Consultant is referred to Design Standard Drawings[[10]](#footnote-10) and Design Specifications[[11]](#footnote-11) and local standards:

|  |
| --- |
| Project Manager: include reference to local document. |

Resumption requirements shall be based on 8.0 metres minimum clearance from the cut or fill toe, unless otherwise directed by the Project Manager and make allowance for PUP requirements. At interchanges, minimum clearance shall be 15 metres as defined in:

|  |
| --- |
| Project Manager: include reference to local document, for example, Grade Separated Interchanges – A Design Guide. |

Resumption plans are required for all properties including properties owned by the department. Where properties may be affected by resumptions, the Consultant shall:

* obtain approval from the Project Manager, and
* discuss the proposed resumptions with the property owner, in the presence of the district Property Officer and officers from the Principal's Property Services Branch. The Project Manager may choose to attend these meetings. Other district representatives may also attend these meetings.

### Payment

Payment for work needed to determine resumption requirements, prepare resumption plans and documentation, shall be deemed to be included in Item RP1, Resumption Plans, Limited Access Plans and Associated Documentation, except for consultation matters which are to be paid under Item Nos.  PD 04 and PD 05.

### Electronic design model

The Consultant shall develop electronic models of the approved design that meets the requirements of Clause 10.3 Special Conditions of Contract – for Prequalified Consultants for the department's Planning and Design Contracts.

The electronic models shall be supplied to the department via a digital data transfer methodology as agreed with the Principal and defined in the Design BIM Execution Plan.

### Constructability review

The Consultant shall conduct a constructability review of the preferred option.

The review shall include detailed analyses of:

* provision for traffic (including side-tracking, detours and so on)
* provision for pedestrians
* evaluation of the impact of PUP relocation (including impact of delays)
* construction safety (road users and construction workers)
* the feasibility of the proposal (can it be constructed), and
* can the project be economically constructed?

The Reviewer shall be an RPEQ with over 10 years’ experience in road construction of projects similar to this project and shall be independent from the design team.

#### Reporting

The review shall be presented in a similar format to a road safety audit and shall identify the schedule item, the issues to be examined, the project, the reviewer, the date of review and shall have a section to identify that the issue has been checked and another section for comments.

## Public Utility Plant (PUP) (Item No. PD 11)

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| --- |
| This Clause has been replaced by Public Utility Plant (PUP) Addendum to C7523 / C7524 Link: Engineering Consultants webpage *(*[*https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Consultants-for-engineering-projects.aspx*](https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Consultants-for-engineering-projects.aspx)*)* |

All costs associated with consultation, assessment, design and documentation shall be paid for under the Fixed Fee Item PD 11 PUP.

## Geotechnical Investigation (Item No. PD 12)

The Consultant's attention is drawn to Clause 12 of the Supplementary Conditions of Contract – Prequalified Consultants (Form C7554), and the following local standards:

|  |
| --- |
| Project Manager: include reference to local documents for example Environmental Management Preconstruction Strategy. |

The Consultant shall conduct sufficient geotechnical investigation to produce the following reports on the recommended option:

* Pavement Design Report
* Bridge Foundation Report, and
* General Geotechnical Report.

Testing shall be in accordance with the department’s current Material Testing Manual.*[[12]](#footnote-12)*

Notwithstanding the above, the Consultant shall carry out at least the testing defined in Clause 4 of the Annexure to this Functional Specification.

The aim of the geotechnical investigation at the Preliminary Design stage is to reduce risk - refer also to local references:

|  |
| --- |
| Project Manager: include reference to local documents for example Risk Management and Analysis. |

At the completion of geotechnical Works, the Consultant shall:

* deliver, properly labelled, all samples and drill core associated with their Works to the department Project Manager for its assessment by the department’s Materials Laboratory Services, and
* if requested, the Consultant shall provide an officer with in‑depth project knowledge, to be present during the core inspection and Construction Contract tendering process. This will be paid for as a variation.

### Payment

All costs associated with the geotechnical investigation shall be provided for in Item No. PD 12 Geotechnical Investigation.

Implementing the Environmental Management Preconstruction Strategy, so far as it relates to geotechnical investigation, shall also be provided for in Item No. PD 12 Geotechnical Investigation.

## Geotechnical Analysis and Report (Item No. PD 13)

The Consultant shall consult with the public, property owners, local government and the Road Maintenance Contractor to assist in determining any areas where past Works or natural features may have an impact on the design (for example, previous land use (rubbish dump, saw mill waste disposal areas, mining Sites) springs, landslides and so on).

The Consultant shall prepare a General Geotechnical Report on the recommended option that shall contain sufficient test results, analysis and interpretations to determine:

* amount of topsoil that can be reasonably stripped for reuse in landscaping
* indicative number of unsuitable materials
* potential settlement areas
* batter slope requirements
* erosion potential of all soils to be exposed during earthwork operations (testing shall comply with AS 1289.3.8.1‑2017)
* Acid Sulphate Soils extent, including mapping and sampling in accordance with the current Department of Natural Resources and Mines’ Queensland Acid Sulphate Soils Investigation Team's (QASSIT) publication Sampling and Analysis of Procedure for Lowland Acid Sulphate Soils (ASS) in Queensland[[13]](#footnote-13) Test results shall be included in the General Geotechnical Report (note that samples in a Potential Acid Sulphate Soil area must be taken at intervals not exceeding 50 metres)
* rippability and workability of any naturally occurring material, and
* any other issue, including issues raised in the public consultation, likely to have significant construction ramifications (for example, settlement, springs, rock, retaining structures, and so on).

### Payment

All costs associated with the Geotechnical Analysis and Report shall be provided for in Item No. PD 13 Geotechnical Analysis and Report.

This includes all consultation with the public, property owners, local government and the maintenance Contractors.

## Pavement Design Report (Item No. PD 14)

The Consultant shall consult with the maintenance Contractors for the existing road to determine Site specific issues such as subsoil water, and so on. The date for a meeting to discuss the proposed pavement design prior to beginning design, must be shown in the Contract Program described in Clause 6.2.3 of Special Conditions of Contract – for Prequalified Consultants for the department's Planning and Design Contracts.

The Consultant shall conduct sufficient geotechnical analysis to produce a pavement design on the Recommended Option that complies with local requirements:

|  |
| --- |
| Project Manager:  include reference to local documents, for example, Design Guide - Pavement Design. |

@ Type here

and document the design in a report. Minutes of meetings with the maintenance Contractors shall be included in the report.

### Pavement design

The Consultant shall prepare a Pavement Design Report on the Recommended Option that shall contain:

1. testing results
2. full details of existing pavement, including depth, strength, type and suitability for re‑use
3. existing road and proposed new road subgrade strengths as applicable
4. the various pavement configurations considered (minimum of three configurations to be investigated)
5. the recommended pavement design configuration (including any allowance for asphalt overlay) and the reasons for the recommendation
6. possible pavement sources, and
7. cost comparison of the pavement options.

The recommended pavement design shall be a practical, economical pavement structure designed in accordance with Part 2: Pavement Structural Design of the Austroads Guide to Pavement Technology (Austroads, 2019) and the department’s current Pavement Design Supplement[[14]](#footnote-14) and local requirements:

@ Type here

|  |
| --- |
| Project Manager: include reference to local documents, for example, Design Guide - Pavement Design. |

### Payment

All costs associated with the Pavement Design Report, including consultation with the maintenance Contractor shall be provided for in Item No. PD 14 Pavement Design Report (including Geotechnical Analysis).

## Risk Mitigation and Record (Item No. PD 15)

Risk Management shall be carried out in accordance with ISO 31000:2018.

### Detailed risk identification

The Consultant shall:

* review and confirm the risk factors identified in the Preliminary Project Risk Assessment compiled as part of the Business Case stage
* identify other risk factors that may have arisen because of:
* further refinement of project planning
* changes to the scope of the project, and
* discussions / negotiations with the customer, and so on.
* access the probability of occurrence of each of the risk factors now identified
* delete previously identified risk factors which are no longer relevant. This may occur because of an event happening, which makes the risk factor a constraint, or as a result of events being overcome by the passage of time, and
* assign a likelihood of occurrence against each risk factor.

### Detailed assessment of impact

Detailed assessment of the impact on the project is conducted in conjunction with the Detailed Risk Identification.

To assess how the occurrence of a risk factor will impact on the project, the Consultant shall:

* assess how the project would be affected should the risk arise, in the areas of:
* time
* cost
* quality, and
* customer perception.

### Risk response options

The Consultant shall identify options for particular courses of action that may minimise, transfer, or negate either the occurrence or the impact of the identified risk factors by addressing the following for each:

* when is the risk situation likely to occur?
* what can be done if it does occur?
* what are the available possible courses of action if it does occur?
* what pre‑planning can be undertaken ahead of the risk occurring?
* develop contingency plans to address the risk, and
* develop a schedule for monitoring and control of each risk factor.

### Risk Management Plan

The Consultant shall prepare a report on the issues mentioned above, including the department’s current OnQ Risk template[[15]](#footnote-15) (refer Risk Management Plan, Risk Register, and, when necessary, Risk Grid templates). This report shall be a living document and issues will be discussed and updated at progress meetings. The Risk Management Plan will be appended to the Planning Report and will form the basis for ongoing project risk management.

### Payment

All costs associated with Risk Mitigation and Record shall be allowed for in Item No. PD 15 Risk Mitigation and Record.

## Local government involvement

The Consultant shall consult with local government to determine its requirements regarding:

* future traffic management proposals
* service roads
* footpaths or bikeways
* PUP, and
* Landscaping (refer to local requirements):

|  |
| --- |
| Project Manager: include reference to local documents, for example, Design Guide – Landscaping. |

The Local Government Association of Queensland and the department have an agreement called Cost Sharing Based on Responsibilities within State‑controlled Roads[[16]](#footnote-16) 2000 version (included in Chapter 1 of the department’s Roads Policy Manual). The Consultant shall apply the principles in the agreement to determine cost sharing liabilities.

The Consultant shall assist the Project Manager in negotiations with local government on cost sharing.

### Responsibilities

The Project Manager will undertake most of the consultation with the local government about contributions. However, the Consultant will be required to:

* arrange appropriate meetings to meet the Consultant's timing
* provide all necessary information including plans, estimates and so on, as required, to enable these discussions to occur, and
* accompany the Project Manager to meetings and so on, when requested.

The Project Manager, assisted by the Consultant shall negotiate with the local government on all relevant issues detailed above and in the abovementioned agreement. This shall be done through meetings with local government officers and councillors. The Consultant shall allow at least two, one‑hour meetings to be held in the Council office in the offer.

Where cost sharing arrangements are involved, the Consultant shall, following the initial meeting, prepare a draft agreement including all necessary estimates, plans, maps, and so on, for the Project Manager. The Project Manager will be responsible for the execution of the agreement.

The Project Manager will submit the formal agreement documentation prepared by the Consultant (see Clause 2.15.3 of this Functional Specification) to the local government for their concurrence.

#### Reporting

The Consultant shall submit, in writing, to the Project Manager at the Submit Planning Report Milestone, the following based on the principles detailed in the agreement between the Local Government Association of Queensland and the department's Cost Sharing Based on Responsibilities Within State‑Controlled Roads, 2000 version:

* Sketch Plan, or plans as necessary for clarity, showing area of possible local government contribution for the following:
* Activity 1 - Traffic Facilities
* Activity 2 - Through Traffic and Auxiliary Lanes
* Activity 3 - Road Shoulders and Kerb and Channel
* This activity may need to be considered in conjunction with Activity 5, Parking.
* Activity 4 - Acceleration and Deceleration Lanes
* Activity 5 - Parking:
* the Consultant shall check the additional information and note any existing defined responsibility. In all cases, the Consultant shall:
* define the scope of Works necessary within the parking area
* provide a cross section showing proposed Works within the parking area
* provide an estimate of cost of the proposed Works within the parking area
* no existing parking
* where no parking areas exist, but the work is adjacent to existing development, the Consultant shall:
* estimate the cost of providing parking lanes (including kerb and channel if required), and
* provide a cross section showing the proposed Works.
* Activity 6 - Bikeways
* Activity 7 - Footways and Footpaths
* Activity 8 - Stormwater Drainage
* the Consultant shall also forward to the Project Manager:
* calculations, and so on to justify the cost apportionment, and
* estimated cost of both the department and Local Government Contributions.
* Activity 9 - Utility Services
* Activity 10 - Service Road
* the Consultant shall provide on the map or plan, details of the location and extent of proposed Service Roads. Where the service road is within the Declared Roads' Right of Way, the plan shall define the area that should be reasonably apportioned to the service road
* fences (where required) may generally be adopted as an appropriate division line, and
* no separate estimate is required for service roads at this stage.
* Activity 11 - Intersections
* Activity 12 - Bridges
* Activity 13 - Pedestrian Footways on Bridges and Pedestrian Footbridges
* the Consultant shall evaluate the need for the footway and forward to the Project Manager calculations, observations and so on, to justify the Consultant's conclusions. The Consultant shall provide a plan view and cross section of the proposed bridge showing the location and width of the footway and how it can be incorporated into the Works.
* Activity 14 - Landscaping and Litter / Vegetation Control
* Activity 15 - Road Lighting
* Activity 16 - Roadside Furniture and Facilities
* Activity 17 - Signs and Road Markings, and
* Activity 18 - Grade Separated Carriageways.
* estimate of cost (including proposed apportionment of cost between the department and the local government), and
* other issues.

The Consultant shall provide a proposed scope of Works (cross section, plan, and so on) and an estimate of cost. These issues will normally be identified during discussions with local government officers. Issues previously raised by various local governments in previous Works include special landscaping treatments and replacement or supplement of inadequate infrastructure (water supply, sewage, drainage, and so on).

### Project Manager's evaluation

The Project Manager shall examine the proposed cost sharing arrangement, request amendments where necessary, or give Approval to Proceed with the preparation of a submission to the local government.

### Preparation of submission to local government

After Approval to Proceed has been received, the Consultant shall prepare formal agreement documentation, meeting the requirements specified below, fully detailing the work required for possible local government contribution and forward same to the Project Manager.

Formal Agreement Documentation for Local Government Contribution shall include at least the following:

* detailed estimates
* construction specifications (where local government standards vary from the department's standards, the relevant work shall be fully specified and detailed as applicable)
* Type Cross Section Plan (responsibility to be shown above the widths on each type cross section)
* Working Plan (extent of local government responsibility shown on the long section where joint responsibility exists)
* Scheme Cross Sections (local government responsibility shown on the long section where joint responsibility exists)
* special cost sharing plans as required
* Scheme Cross Sections (local government responsibility shown on each cross section)
* other plan details defined in Section (a) to (f) as follows:

1. Longitudinal Drainage (including Kerb and Channel)

Cross section to include sizes and dimensions of proposed structures.

1. Service Road

The Consultant shall provide a plan view detailing the location and extent of proposed Service Roads, including an allowance for future PUP services. Where the service road is within the Right of Way of the Declared Road, the plan shall define the area to be apportioned to the service road.

1. Lighting

The Consultant shall provide a plan showing the proposed route lighting, together with estimated costs of route lighting, and apportionment of cost.

1. Footways on Bridges

Type cross section showing width of proposed footway including provision for future services.

1. Parking Lanes

Provide a type cross section showing proposed Works within the parking lane, including pavement depths, surfacing treatments, subsoil drainage, services and so on.

Detail on the type cross section, local government and departmental responsibility, including future maintenance responsibility.

1. Other Issues

The Consultant shall provide a proposed scope of Works (cross section, plan, and so on).

Project Manager shall seek written confirmation of agreement for local government contribution and forward copies of agreement to Consultant.

### Negotiations with local government

The Consultant shall arrange all necessary meetings with the local government to negotiate cost sharing. Meetings shall be attended by Consultant, Project Manager and other departmental officers as necessary. The Consultant shall take minutes of all meetings and distribute within two business working days.

### Contract document requirements

Areas of local government responsibility shall be defined as applicable on the following scheme plans:

* Type Cross Section (extent shown above the widths on each type cross section where joint responsibility exists)
* Working Plan (extent shown on the long section where joint responsibility exists)
* Special Cost Sharing Plan, and
* Scheme Cross Sections (extent shown on each cross section where joint responsibility exists):
* in the final scheme Contract documents.

Refer to local requirements:

|  |
| --- |
| Project Manager: include reference to local documents, for example, Design Guide - Estimate and Schedule. |

Where local government standards vary from departmental standards, the relevant work shall be fully specified and detailed as applicable.

Refer to local requirements:

|  |
| --- |
| Project Manager: include reference to local documents for example Report for Construction Contract Administrator. |

### Payment

The general work described at the start of this Clause 2.15, will be paid under Item No. PD 10 Progressing Preferred Option Layouts. The specific work detailed in sub‑clauses 2.15.1 to 2.15.5 (inclusive), if needed, will be paid for as a variation to the Contract.

## Information Technologies (ITS) (Item No PD 16)

The Consultant shall consult with the consultation bodies nominated below to determine the need for information technology devices. The Project Manager may elect to attend all meetings with Traffic Operations section. In general, the following should be considered the minimum local requirements:

|  |
| --- |
| Project Manager: include local requirements in place of following example: |

SAMPLE ONLY

|  |  |
| --- | --- |
| Information technology device | Consultation body |
| Connection of all traffic signals into the Department’s TRACS system.  CCTV | * Traffic Operations section of North Coast Region at Maroochydore. * Traffic Operations section of North Coast Region at Maroochydore. |
| Emergency phones | * Traffic Operations section of North Coast Region at Maroochydore. |
| On the Sunshine Motorway and multi-lane Bruce Highway projects, installation of or provision for:   * vehicle detector loops at 500 metre centres * cameras at appropriate locations, and * electronic message boards at appropriate locations. | * Traffic Operations section of North Coast Region at Maroochydore. |
| Weight in motion Site Heavy vehicle enforcement areas | Principal Engineer (Asset Management) in Planning section of North Coast Region. |

|  |
| --- |
| Project Manager: on projects with congested urban intersections, CCTVs are usually warranted to monitor and/or assist traffic control during construction. In many cases, CCTVs already exist. |

### Reporting

The Consultant shall prepare a report outlining the ITS technologies required for the project. The report shall cross reference strategies undertaken by the district’s manager of Traffic Operations. Where no strategy exists, the provision of ITS is to be justified.

### Payment

All costs associated with determining what information technology devices are to be allowed for in the project, shall be paid for under the time rate Item No. PD 16 Information Technologies.

## Preliminary Estimate of Cost (Item No. PD 17)

The Consultant shall prepare an estimate for the Recommended Option using estimated quantities and historical rates, in accordance with the department’s current Project Cost Estimating Manual*[[17]](#footnote-17)* and local standard:

|  |
| --- |
| Project Manager: include local requirements: for example, Design Guide – Estimate and Schedule. |

The estimates shall include:

* Preconstruction cost
* Concept phase, and
* Development phase
* Implementation (Construction) phase costs
* Principal's materials, and
* Contingencies allowance.

### Principal's materials / works

Unless advised otherwise by the Project Manager, Principal's materials / Works normally only include the following:

* supply of bitumen excluding any modified bitumen product
* relocation of non‑contestable PUP assets
* line marking
* removal of existing traffic signal and red‑light camera above ground Works
* installation of traffic signals and red‑light camera above ground Works
* rate 2 lighting, and
* fees that must be paid by the Principal.

### Reporting

The Preliminary Estimate of Cost (PEC) shall be compiled using the Concept Estimate of Cost developed during the Business Case, by the date specified at the prestart meeting (usually within 20 working days following the meeting). The department’s Project Cost Estimating Manual shall be used as the standard for presentation of the estimate.

The PEC is to be updated on an ongoing basis, reflecting the changes resulting from the refinement of the design undertaken during the Preliminary Design stage. The PEC is to be included in the monthly progress report. This will allow the department’s Project Manager to monitor the estimated total project cost as a means of early identification of cost over runs.

### Planning Report

The Consultant shall attach to the Planning Report:

* estimates of cost (including any cost sharing arrangements), and
* risk analysis calculations supporting the contingencies allowance.

### Payment

All costs associated with providing the estimate of cost on an ongoing updated basis, shall be provided for in Item No. PD 17 Preliminary Estimate of Cost.

## Calculation of Benefit Cost Ratio (BCR) (Item No. PD 18) (if ordered)

This Item is 'if ordered'. Recalculation of the BCR will only be considered if the scope has changed significantly from when the BCR was calculated during the Concept phase.

If ordered in writing, the Consultant shall review the BCR appended to the Business Case and calculate the BCR for the recommended option, using the recommended reference material and principles, as indicated in Functional Specification Economic Analysis (Development and Reporting (Form C7526). Link: Publications webpage *(*[*https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Consultants-for-engineering-projects.aspx*](https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Consultants-for-engineering-projects.aspx)*)*

## Road Safety Audit (Item No. PD 19)

The Consultant shall undertake a road safety audit (stages 1 and 6 as applicable), in accordance with the Austroads Guide to Road Safety AGRS06‑19 Part 6: Road Safety Audit, of the Preliminary Design.

In addition to the requirements of the above documents, the road safety audit must include a statement certifying that the layout plans included with the Planning Report are the plans that were audited. The auditor must also be registered as Senior Safety Auditor on the department’s current registration system.[[18]](#footnote-18)

## Disability discrimination audit

The Consultant must consider the requirements of the *Disability* Discrimination Act 1992 (Cth), and the Anti‑Discrimination Act 1991 (Qld).

The Preliminary Design shall be reviewed for compliance with the requirements of this legislation. Any aspects of the project unable to comply with the requirements of this legislation must be reported to the Principal.

## Project Plan (Item No. PD 20)

The Consultant shall update the draft Project Plan compiled during the Business Case. The Project Plan is to be compiled using OnQ templates.[[19]](#footnote-19) Electronic copies of the Draft Project Plan are available from the Project Manager.

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| --- |
| Project Manager: to confirm the template to be used by the Consultant based on the size of the project or project requirements, available through search on link: [*https://www.tmr.qld.gov.au/business-industry/OnQ-Project-Management-Framework/Templates.aspx*](https://www.tmr.qld.gov.au/business-industry/OnQ-Project-Management-Framework/Templates.aspx) |

## Project Proposal Report (PPR) (Item No. PD 21) (if ordered)

This is a National Highway Project, and the following shall apply. The Consultant shall prepare a PPR which meets the requirements of and reflects the relevant standards and guidelines as required by Australian Government’s Department of Infrastructure and Regional Development[[20]](#footnote-20).

## Planning Report (Item No. PD 22)

### Planning Report

The Consultant shall prepare a comprehensive Planning Report, discussing the various options examined, highlighting their advantages and disadvantages. This report will include justification of the proposed layouts and safety devices and a summary of relevant comment received from the community. Refer to local requirement:

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| --- |
| Project Manager: include local requirements: for example Planning Report (Typical Format). |

Justification and information to meet the requirements of the department’s road safety barrier systems is to be included in the Planning Report.

The Consultant shall compile the Planning Report and the Design Development Report (template available through the Project Manager) and all relevant attachments, in accordance with Clause 3 of Functional Specification - Preliminary Design. The Design Development Report shall be appended to the Planning Report.

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| --- |
| Project Manager: include small project or large project Design Development Report as per the project requirements, available through search on link: [*http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications.aspx*](http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications.aspx) |

## Bridge Foundation Report (Item No. PD 23)

The Consultant shall conduct sufficient geotechnical analysis and interpretation to produce a Bridge Foundation Report on the recommended option that shall contain:

1. bore logs, and
2. interpretations sufficient to establish foundation types and depths.

## Bridge Planning Report (Item No. PD 24)

@ Type here large structures which are expected to be bridges are required for this project:

* A @ Type here span x @ Type here m minimum width between kerbs square @ Type here prestressed concrete deck unit bridge comprising conventional units or super tees with a concrete deck over @ Type here River. The final bridge width is expected to be affected by the intersection with @ Type here Road.
* A @ Type here span x @ Type here m minimum width between kerbs square @ Type here cast in situ concrete deck bridge on prestressed girders with a concrete deck as part of the interchange at @ Type here Road. The final bridge width is expected to be affected by the intersection with @ Type here Road.
* A @ Type here span x @ Type here m wide @ Type here overpass bridge or other structure at@ that provides a minimum of @ Type here m clearance to the ultimate @ Type here lane roadway. The Consultant shall examine and cost options for the replacement structure including options using either steel or concrete structures. The final structure width is expected to be affected by the intersection with @ Type here Road.

The Consultant shall determine the most cost‑effective solution (including bridge approach costs) that meets the above requirements. The Consultant shall consider all aspects of the proposed structure, including but not limited to aesthetics, cost, function, safety, provisions for PUP services and recommend an appropriate structure in the Bridge Planning Report.

Where the project requires bridges, a Bridge Planning Report (Item No PD 24) shall be compiled.

Statutory Bodies (for example, Environmental Protection Agency, Department of Primary Industries Queensland, Queensland Rail and so on, as applicable) shall be consulted and their requirements determined.

Environmental impact mitigation measures to be included in the bridge design shall be defined in the Bridge Planning Report.

The Bridge Planning Report shall discuss the options to upgrade @ Type here Road to future @ Type here lanes.

Forms HYD5 and Bridge Fixing shall be prepared for each bridge and appended to the Bridge Planning Report. Forms M685 Bridge Design Request for Bridges over Streams and Data Collection Checklist (in Chapter 4 of the Road Drainage Manual[[21]](#footnote-21)) or M2414 Bridge Design Request for Bridges over Roads and/or Railways, as appropriate, shall be prepared for each bridge and appended to the bridge planning report. These forms are available through the Project Manager.

### Provision for pedestrians / bicycles

The agreement between the Local Government Association of Queensland and the department’s current Cost Sharing Based on Responsibilities within State‑controlled Roads states under Activity 13, that a risk assessment will be required to determine the need for a dedicated footway.

The Consultant shall carry out the risk assessment.

The Consultant shall evaluate the need for the footway and forward to the Project Manager calculations, observations and so on, to justify the Consultant's conclusions.

The Consultant shall provide a plan view and cross section of the proposed bridge showing the location and width of the footway and how it can be incorporated into the Works.

Approval will be required from the @ Type here local government for the locations and cost sharing arrangements associated with provision of pedestrian / bikeway facilities.

### Queensland Rail

If this project includes bridges over railways, the Consultant shall obtain all necessary agreements from Queensland Rail to permit the bridge to be constructed in the Construction Contract. This includes determining the required opening for the rail (and associated access tracks, and so on), allowable rail closure times for construction and any other restrictions that Queensland Rail requires to permit construction of the bridge and road approaches.

The Consultant shall confirm in writing, the vertical and horizontal clearances required with Queensland Rail before commencing bridge design.

### Payment

All costs associated with consultation and preparation of the report shall be provided for in Item No. PD 24 Bridge Planning Report.

Consultation with Queensland Rail shall be paid for under the time rate Item No. PD 05 Public Consultation. The Consultant should allow three, one‑hour meetings at Queensland Rail’s office in Brisbane, plus travel, preparation of minutes and so on.

## Building Information Modelling (BIM) (Item No. PD 25)

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| --- |
| Project Manager: this item is required where the Project Business Case meets the criteria set down by the Queensland Government that states all major government construction projects > = $50M which commenced with detailed Business Case from 1 July 2019, are required to use BIM processes in line with the BIM Principles outlined in the Queensland Government’s Digital enablement for Queensland infrastructure – principles for BIM implementation, the Building Information Modelling for Transport and Main Roads Guideline and the Building Information Modelling (BIM) for Bridges Design Manual. |

### General

The department has adopted the BIM processes outlined in ISO19650 Part 1: Concepts and principles and Part 2: Delivery Phase of the assets and the NATSPEC National BIM Guide, for the management of information captured throughout the project's design development phases, including the Business Case phase.

BIM processes must be implemented during the Business Case development phase of the project including:

* create, manage, and implement a BIM Execution Plan that meets the requirements outlined in the department's BIM Exchange Information Requirements (EIR), and
* use BIM technology and processes to create and manage a Common Data Environment (CDE) that provides a single source of truth for all project information. The CDE is to be used to collect, manage, and disseminate all relevant project information in a managed process that allows information to be shared between all members of the project team.

### BIM Execution Plan

To meet this requirement, the Consultant must create, implement and manage the ongoing development of a Design BIM Execution Plan addressing the following:

* project objectives and goals
* BIM protocols (roles, responsibilities and obligations)
* experience of BIM leadership staff
* outline the Common Data Environment systems that will be used to manage the capture of Project Information Requirements and the collaboration protocols that will be put in place to ensure data integrity during project delivery
* hardware requirements and software selections, file format, file exchange requirements
* relevant industry standards which have been applied in the development and execution of BIM for the project
* schedule of BIM activities including milestones and submittals
* process to communicate the design to project key stakeholders
* file folder structure and file naming conventions
* plan for file sharing, storage and retrieval, and data security
* methodology for ensuring the validation of BIM and CAD files, project‑wide
* communication and collaboration strategies among the Consultant’s design team and with the Consultant’s BIM Manager and the Administrator
* specific uses of BIM
* Model Level of Development Matrix requirements, and
* required elements and outcomes for clash detection.

### BIM Deliverables in the BIM Execution Plan

BIM Deliverables in the BIM Execution Plan are to include:

* Specific uses of BIM applied to the project.
* Schedule of BIM activities including milestones and submittals including:
  + Design Model delivered at the 15%, 50%, 85% and 100% milestones (or other milestone submission timeframe as agreed with the Principal to suit the Consultant's delivery programme) with client review at these key milestones, and
  + the department has access to all digital content at agreed timeframes as the model progresses through the lifecycle of the project. (Note: Additional monthly data drops may be required with an understanding that the model is a 'work in progress' nonverified data).
* The Consultant shall provide a copy of the following electronic files:
  + BIM Execution Plan in PDF format.
  + updated electronic model(s) provided at key milestones for review
  + work in progress electronic model(s) provided each month or as requested, and
  + electronic drawings to be provided in accordance with the department's Drafting and Design Presentation Standards Manual.
* The final report(s) and electronic files are to be supplied in accordance with Clause 3 Deliverables.

### Payment

All costs associated with consultation and preparation of the BIM Execution Plan and its deliverables shall be provided for in Item No. PD 25 Building Information Modelling (BIM).

## Additional Preliminary Design Requirements (Item No. PD 26) (if ordered)

This item is to provide for issues that are nominated throughout this Functional Specification to be paid as a variation, plus other possible changes in scope which may occur throughout the project.

The Consultant shall not undertake Works under this item without the written approval of the Project Manager.

The Consultant shall allow the number of hours of work detailed in the following table and include the estimated cost of these hours in the Schedule of Fees.

|  |  |
| --- | --- |
| Item No. PD 26 – Additional Preliminary Design Requirements (if ordered) | @ hours |

The Consultant shall determine an appropriate split of hours between their staff and shall nominate such allocation in its Fee Schedule.

# Deliverables

The Consultant shall produce the following deliverables (as applicable) to complete the Planning stage. One original and two copies of all information, reports, plans, and so on, is required.

For each bridge as applicable:

|  |  |
| --- | --- |
| Form M685 - Bridge Design Request for Bridges over Streams | |
| Form HYD5 - Bridge Hydraulic Design Summary | |
| Form Bridge Fixing (as agreed) | |
| Form M2414 - Bridge Design Request for Bridges over Roads and/or Railways | |
| Data Collection Checklist | |
| Bridge Planning Report | (Refer Clause 2.25) |
| Queensland Rail Agreement for structures over Railways | (Refer Clause 2.25.2) |
| Bridge Foundation Report | (Refer Clause 2.24), and |
| Local Government Agreement for footways and so on. | (Refer Clause 2.15) |
| Design Development Report | (Refer Clause 2.23.1) |

Planning Report (Refer Clause 2.23) and appendices as follows:

|  |  |
| --- | --- |
| Review of Environmental Factors | (Refer Clause 2.3.3.1) |
| Environmental Management Plan (Planning) | (Refer Clause 2.3.4) |
| Cultural Heritage Agreement (CHFA, CHMA or CHMP) | (Refer Clause 2.3.7.1) |
| Historical / European Heritage Approvals | (Refer Clause 2.3.7.2) |
| Construction Vibration Assessment Report | (Refer Clause 2.3.10.2) |
| Traffic Report | (Refer Clause 2.5.2) |
| Property Access Report | (Refer Clause 2.6.7) |
| Hydraulic Analysis | (Refer Clause 2.7) |
| Structural Assessment | (Refer Clause 2.8.1) |
| Layouts | (Refer Clause 2.9.3) |
| Type Cross Sections, Working Plan, Cross Sections, and so on | (Refer Clause 2.9.3) |
| Landscape Plans | (Refer Clause 2.9.4.1) |
| Constructability Review | (Refer Clause 2.9.8.1) |
| Public Utility Plant Report | (Refer Clause 2.10.1.5) |
| General Geotechnical Report | (Refer Clause 2.11) |
| Pavement Design Report | (Refer Clause 2.13) |
| Risk Management Plan | (Refer Clause 2.14.4) |
| Local Government Contributions | (Refer Clause 2.15) |
| ITS Technologies Report | (Refer Clause 2.16.1) |
| Preliminary Estimate of Cost | (Refer Clause 2.17.2) |
| BCR analysis | (Refer Clause 2.18) |
| Road Safety Audit (Preliminary Design stage) | (Refer Clause 2.19) |
| Updated Project Plan | (Refer Clause 2.21) |
| Relevant Correspondence |  |
| Other pertinent Data |  |
| @ Project Proposal Report (For Federally Funded Jobs) | (Refer Clause 2.22) |
| BIM Execution Plan | (Refer Clause 2.26) |
| Electronic models, including Survey and Design files, and the IFC federated object-based models, are to be supplied to the department via a digital data transfer methodology as agreed with the Principal and defined in the Design BIM Execution Plan | (Refer Clause 2.26) |

In addition to the hard copy of all required documents, the Consultant shall also supply an electronic copy of all project files, prototype drawings and supplementary specifications and Contract conditions (in MS Word) and schedules, and all estimates shall be provided in a 3PCM (.csv file) estimating import template format supplied to the department via a digital data transfer methodology as agreed with the Principal.

1. [*http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications.aspx*](http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications.aspx) [↑](#footnote-ref-1)
2. [*https://infrastructure.gov.au/roads/publications/index.aspx*](https://infrastructure.gov.au/roads/publications/index.aspx) [↑](#footnote-ref-2)
3. [*http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Environmental-processes-manual.aspx*](http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Environmental-processes-manual.aspx) [↑](#footnote-ref-3)
4. [*http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications.aspx*](http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications.aspx) [↑](#footnote-ref-4)
5. [*http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Transport-noise-management-code-of-practice.aspx*](http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Transport-noise-management-code-of-practice.aspx) [↑](#footnote-ref-5)
6. [*http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Transport-noise-management-code-of-practice.aspx*](http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Transport-noise-management-code-of-practice.aspx) [↑](#footnote-ref-6)
7. [*http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Road-drainage-manual.aspx*](http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Road-drainage-manual.aspx) [↑](#footnote-ref-7)
8. [*https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Structures-Inspection-Manual*](https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Structures-Inspection-Manual) [↑](#footnote-ref-8)
9. [*http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Road-planning-and-design-manual-2nd-edition.aspx*](http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Road-planning-and-design-manual-2nd-edition.aspx) [↑](#footnote-ref-9)
10. [*http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Standard-drawings-roads.aspx*](http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Standard-drawings-roads.aspx) [↑](#footnote-ref-10)
11. [*http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Specifications.aspx*](http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Specifications.aspx) [↑](#footnote-ref-11)
12. [*http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Materials-testing-manual.aspx*](http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Materials-testing-manual.aspx) [↑](#footnote-ref-12)
13. [*https://russellriver.files.wordpress.com/2012/05/ass\_sample\_analysis\_guide.pdf*](https://russellriver.files.wordpress.com/2012/05/ass_sample_analysis_guide.pdf) [↑](#footnote-ref-13)
14. [*http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Pavement-design-supplement.aspx*](http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Pavement-design-supplement.aspx) [↑](#footnote-ref-14)
15. [*http://www.tmr.qld.gov.au/business-industry/OnQ-Project-Management-Framework/Templates.aspx*](http://www.tmr.qld.gov.au/business-industry/OnQ-Project-Management-Framework/Templates.aspx) [↑](#footnote-ref-15)
16. [*http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Cost-sharing-based-on-responsibilities-within-state-controlled-roads.aspx*](http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Cost-sharing-based-on-responsibilities-within-state-controlled-roads.aspx) [↑](#footnote-ref-16)
17. [*http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Project-cost-estimating-manual.aspx*](http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Project-cost-estimating-manual.aspx) [↑](#footnote-ref-17)
18. [*https://www.tmr.qld.gov.au/Safety/Road-safety/Road-safety-auditors*](https://www.tmr.qld.gov.au/Safety/Road-safety/Road-safety-auditors) [↑](#footnote-ref-18)
19. [*http://www.tmr.qld.gov.au/business-industry/OnQ-Project-Management-Framework/Templates.aspx*](http://www.tmr.qld.gov.au/business-industry/OnQ-Project-Management-Framework/Templates.aspx) [↑](#footnote-ref-19)
20. [*https://infrastructure.gov.au/roads/publications/index.aspx*](https://infrastructure.gov.au/roads/publications/index.aspx) [↑](#footnote-ref-20)
21. [*http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Road-drainage-manual.aspx*](http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Road-drainage-manual.aspx) [↑](#footnote-ref-21)