Transport Roads & Maritime Services

QA SPECIFICATION PS301

PROFESSIONAL SERVICES FOR DETAILED DESIGN SCOPE AND REQUIREMENTS

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IC-QA-PS301

VERSION FOR: ***Macquarie Park Bus Priority and Capacity Improvement Project - Stage 2***
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CLAUSE PAGE

FOREWORD

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PROJECT SPECIFIC CHANGES

Any project specific changes have been indicated in the following manner:

(a) Text which is additional to the base document and which is included in the specification is shown in bold italics e.g. ***Additional Text***.

(b) Text which has been deleted from the base document and which is not included in the specification is shown struck out e.g. ~~Deleted Text~~.

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RMS SPECIFICATION PS301

PROFESSIONAL SERVICES FOR DETAILED DESIGN

SCOPE AND REQUIREMENTS

1 INTRODUCTION

1.1 PROFESSIONAL SERVICES SPECIFICATION

Typical standard issue Professional Service Specifications for delivery of Detailed Design Services are listed below. The specifications applicable to this project are identified in Annexure PS301/A Project Specific Requirements.

Table 301.1 – Professional Service Specification

Number	Specification
PS301	Professional Services for Detailed Design Scope and Requirements
~~PS302~~	~~Building Information Modelling (Under development)~~
~~PS311~~	~~Environmental Design and Compliance (REF and EIS)~~
PS321	Detailed Survey and Utility Investigations and Adjustments
PS331	Geotechnical Investigation and Design
~~PS333~~	~~Geotechnical Investigation and Design for Tunnels (Under development)~~
PS341	Pavement Investigation and Design
PS351	Road Design
PS361	Bridge and Structure Design
PS371	Hydrology and Drainage Design
PS381	Urban Design
PS391	Quantity Survey
PS392	Construction Contract Tender Documentation

Additional specifications may be added on a project specific basis.

1.2 SCOPE & PROJECT DESCRIPTION

This Specification sets out the requirements of Professional Services for detailed design to be engaged under the C72 Panel Deed for Professional Services or equivalent Professional Services Conditions of Contract.

Special notes:

(i) RMS will not accept time and or cost variations due to deliverables that do not meet the requirement of this specification.

(ii) RMS may, at its discretion, return any documentation without undertaking the required review if the document is deemed to be of poor quality or is not complete to the required Hold or Review Point. In this instance RMS will not accept time or cost variations.

1.2.1 Project Specific Requirements

Refer to Annexure PS301/A for Project Specific Requirements.

1.3 PROJECT INTRODUCTION

RMS is a multi-modal transport agency within the broader Transport for NSW Transport Cluster.

RMS implements initiatives to improve movement of people by various transport modes, including public transport (bus and ferry), cycling and walking, as well as motor vehicles. RMS also delivers initiatives to improve the movement of goods on the freight network, by improving accessibility and infrastructure, with a focus on reliability, productivity and safety initiatives.

Refer to Annexure PS301/A for specific Project Introduction details.

1.3.1 Roads and Maritime Services Purpose

To enable safe and efficient journeys by:

(i) Managing the road network and optimising travel times

(ii) Providing capacity and maintenance solutions for road and maritime infrastructure

(iii) Educating and licensing drivers and vessel operators, and registering and inspecting vehicles and vessels

(iv) Improving road and maritime safety

(v) Timely and cost effective delivery and maintenance of infrastructure.

1.3.2 Roads and Maritime Services Vision

Our vision is to be the leader in the management and delivery of safe, efficient and high quality services and infrastructure to the community and businesses of NSW.

Our vision is supported by three focus areas:

(i) Customer focus

(ii) Efficiency and effectiveness

(iii) Impact and reputation.

1.3.3 Roads and Maritime Services Values

Our values underpin every decision we make and our behaviour when working with customers, colleagues, stakeholders and partners.

(i) Customer focus - We place the customer at the centre of everything we do

(ii) Risk – We manage risk to meet ISO31000 and other government requirements

(iii) Collaboration - We value each other and create better outcomes by working together

(iv) Solutions - We deliver sustainable, innovative, value for money and fit for purpose solutions to NSW's transport needs

(v) Technology – We interact with and make use of technology and seek to contribute to and take advantage of developing technologies

(vi) Integrity - We take responsibility and communicate openly

(vii) Safety - We prioritise safety for our people and our customers and apply due diligence to designs to ensure they are safe, efficient and practical for workers

(viii) Legislation – We ensure compliance with legislation including for the environment

(ix) Contracting – We practice cooperative contracting and effective collaboration with our design, construction and maintenance industry partners.

1.3.4 Roads and Maritime Services Team

Refer to Annexure PS301/A for details regarding the Road and Maritime Team.

1.4 BACKGROUND AND PROJECT SPECIFIC INFORMATION

Refer to Annexure PS301/A for details regarding the project background, milestones and project specific information.

1.5 FUNDAMENTAL OBLIGATIONS OF THE PROFESSIONAL SERVICES CONTRACTOR (PSC).

The specified requirements in this document must be used for all Professional Services undertaken by the PSC in regard to the project.

The specified requirements in this document are the technical and performance requirements for the project services and the project. The PSC must ensure that all Professional Services are fully integrated and compatible and that the services mutually satisfy all requirements of this Specification. The PSC must incorporate all elements of this and associated Specifications.

The PSC must:

(i) Review all existing work on the project and identify any additional work that may be required, provide justifications for the additional work and the additional value the work will add to the project.

(ii) Ensure that PSC's planning and programming is comprehensive.

(iii) Coordinate with RMS Representative for the scheduling of all meetings, presentations and workshops and provide the following services:

a. All meeting and workshop invitations.

b. Preparation of all agendas. (This includes pre-meeting distribution of meeting purpose, agenda and target meeting outcomes)

c. Record and distribution of minutes.

d. Preparation and distribution of workshop outputs and reports.

(iv) Coordinate booking/hiring of venues/rooms for meetings, workshops/presentations with the RMS Representative, including provision of specialist staff such as facilitators and conveners.

(v) Ensure that its reporting is comprehensive, timely and in accordance with the requirements of this Specification.

(vi) Ensure that the project will provide for safe, efficient, practical, durable and reliable construction, maintenance, operation, modification, demolition and user convenience, at maximum value for money.

(vii) Ensure integration with all relevant RMS stakeholders and disciplines involved in the implementation of the project.

(viii) Ensure that all subcontractors and consultants the PSC engages are apprised of the full requirements of this Specification to ensure an integrated approach to the project.

(ix) Manage risk.

(x) Where required, develop a design that clearly communicates the project to the recipients of the next stage of the project and minimises the risk of future scope variations.

(xi) Ensure that any Community and Stakeholder Engagement are managed pro-actively.

(xii) Apply the principles of avoiding and minimising impacts to the environment.

(xiii) ***Prepare an environmental assessment that fulfils the relevant legislative requirements of the Planning and Assessment Act 1979 and*** implement the environmental assessment and requirements, and undertake supplementary assessment.

If more than one requirement above applies in respect of any part of the PSC's project services, then all requirements must be satisfied. If there is a conflict between the requirements, clarification should be sought from the RMS Representative.

A reference to any work item (additional investigation, design, construction, maintenance or decommissioning activity) must include any additional activities necessary for the satisfactory completion and performance of that work item and full compliance with this Specification.

1.6 FUNDAMENTAL PROJECT OBJECTIVES

The fundamental project objectives, in addition to those identified in Annexure PS301/A are to upgrade ***Macquarie Park Bus Priority and Capacity Improvement Project - Stage 2*** in a way that:

(i) Improves journey time and journey time reliability for road users travelling along the corridor.

(ii) Eases traffic congestion.

(iii) Is considerate of road function, local land use activity and access needs.

(iv) Is considerate of potential environmental impacts.

(v) Improves connectivity to the wider road network for all road users and improves amenity.

(vi) Improves safety for all road users.

(vii) Fit for purpose design to meet the required design life for the identified need and that minimises the project "whole of life cost".

(viii) Design that meets WHS legislation and in particular is safe, efficient and practical for workers and those in the vicinity during temporary traffic arrangements.

(ix) Manages risk.

The design and environmental assessment must support the project objectives listed above by:

(i) Designing the project works to meet the environmental requirements and avoiding and minimising adverse impacts to the environment while maximising the environmental benefits.

(ii) Satisfying the technical and procedural requirements of the RMS with respect to the design of the project works.

(iii) Optimising the design to ensure that the project can be practically and efficiently constructed, maintained and decommissioned while meeting all other project objectives.

(iv) Applying appropriate urban design principles, objectives and mitigating adverse landscape character and visual impact in the design of the project elements.

(v) Designing all connections, modifications and improvements necessary to link the project works to the existing road system.

(vi) Planning temporary arrangements that minimise disruption to local and through traffic and maintain access to adjacent properties during construction.

(vii) Developing, implementing and maintaining effective Quality Management Systems.

All design, documents and computerised information and control systems must be in English including specified items for the construction contractor to provide as part of a future construction contract.

The overall project goal is to achieve the best possible result for each of the above objectives, both in isolation, and when considered together.

1.7 PROJECT SPECIFIC OBJECTIVES

Refer to Annexure PS301/A for details regarding the Project Specific Objectives.

1.7.1 Project Status

Refer to Annexure PS301/A for details regarding the Project Status.

1.7.2 Reference Studies

Refer to Annexure PS301/A for details regarding the Reference Studies.

1.8 STRUCTURE OF THE SPECIFICATION

1.8.1 Schedules of HOLD POINTS, WITNESS POINTS, DELIVERABLES, MEETINGS AND WORKSHOPS.

The schedules in Annexure PS301/C list the **HOLD POINTS, WITNESS POINTS, DELIVERABLES, MEETINGS AND WORKSHOPS** that must be observed.

1.8.2 Design Reference Documents and Supporting Information.

The schedules in Annexure PS301/M list the **DESIGN REFERENCE DOCUMENTS** AND **SUPPORTING INFORMATION** that apply to this Specification.

Unless otherwise specified the applicable issue of a reference document, other than a RMS Specification, is the issue current at the date one week before the closing date for tenders, or where no issue is current at that date, the most recent issue.

1.8.3 Departures From Standards.

No investigation or assessment has been undertaken to identify existing departures from standards on the project, other than those identified in Annexure PS301/A.

Existing departures from standards identified during this contract must be referred to RMS Representative for consideration and to determine where remedial works for these departures should be included within the scope of this project.

1.9 DEFINITIONS

The following interpretations apply to this Specification:

BIM	Building Information Model. Refer to PS202. 3D model with additional non-spatial attributes about the objects and features represented. The acronym BIM is also used to refer to the process of creating and using the 3D model. BIM is also sometimes referred to as Digital Engineering (DE) although it is a sub-set of DE. See the definition of DE. If required by PS302 the 3D model can be associated with programme data (4D) and cost data (5D).
Concept Design	The design prepared in association with the Environmental Assessment. A design completed with sufficient detail to spatially define each design element of the work in association with the environmental assessment. The concept design has been completed in sufficient detail to: (i) allow calculation of material quantities, including pavement quantities (ii) ensure integration with existing road infrastructure Potential conflicts with existing utilities and other infrastructure are to be identified during the design process and have addressed safety in design through early intervention in planning and design.
Constructability	The extent to which a project design is optimised to ensure the project can be constructed and maintained safely, efficiently and practically, while meeting project objectives. Constructability is closely related to Health and Safety in Design (HSiD). The two sets of processes are paired to provide safe, efficient and practical design.
Design Element	A specific asset class type that forms part of the project and will need to be designed as part of this Specification.
Design Life	The period over which an asset element of the project performs its intended function without replacement, refurbishment or significant maintenance.
Detailed Design	All investigations, engineering design, drawings, construction and tender documentation and technical reports of all works to be constructed on this project.

Digital Engineering	Creation, organisation and management of the project information into a collaborative digital environment with control access and procedures. Although the terms BIM and DE are sometimes used as synonyms, DE is not limited to BIM but includes BIM and GIS and other graphical and non-graphical Project data and information. Refer to PS302.
Documenter	The person responsible for the preparation of construction contract tender documents.
DTM	Digital Terrain Model.
EIA and Environmental Assessment	Means environmental impact assessment. These are generic terms that can refer to either: (i) the process of environmental impact assessment, which involves identifying the future consequences of a current or proposed action; and/or (ii) a report documenting an environmental impact assessment.
EIS	means Environmental Impact Statement, being a report that documents the environmental impact assessment conducted to meet requirements of part 5.1 of the *Environmental Planning and Assessment* Act 1979 (EP&A Act).
Environmental Documents	Preliminary Environmental Investigation (PEI), Review of Environmental Factors (REF) or Environmental Impact Statement (EIS) including any determination and or any other environment guidelines, controls or conditions.
"GIS"	Geographic Information System is a system designed to capture, store, manipulate, analyse, manage and present spatial or geographic data.
HSiD	HSiD means Health and Safety in Design as required by the Work Health and Safety Act 2011. It is the integration of control measures early in the design processes to eliminate hazards so far as is reasonably practicable or to otherwise control them according to the Hierarchy of Control (HOC) as set forth in the WorkCover approved Safe Design of Structures Code Of Practice (COP). HSiD protects workers and those in the vicinity through all project lifecycle stages. An important aspect of HSiD is the duty to consult, cooperate and collaborate.
Hold Point	A point beyond which a work process must not proceed without the RMS Representative express written authorisation.
IDD	Infrastructure Development Division in RMS.
LEP	Local Environment Plan.
Permits	Includes any statutory consent, approval, authorisation or land owner's permission.
Project Area	The area formed by the boundaries of the design/study area, and an area either side of the route and associated haul routes and access areas that is directly impacted by the proposal. It includes those areas affected by the work including utility tie-ins and other connectivity.
Project Services	All the necessary services and activities required to complete the works detailed in this Specification.

Project Team	The Project Team, made up of representative(s) from the PSC and RMS and other designated representatives or stakeholders, relevant to the activity being performed.
Project Works	All elements of the work to be constructed for the project to achieve its required functionality. (Not to be confused with limit of work-the contract term.)
PSC	The Professional Services Contractor
REF	Means the Review of Environmental Factors, being a report that documents the environmental impact assessment conducted under part 5 of the *Environmental Planning and Assessment Act 1979*.
RMS	Roads and Maritime Services NSW
RTA or Roads and Traffic Authority	Roads and Maritime Services and a reference to any "RTA" document (including an RMS specification, Test Method or other document) is a reference to the equivalent document published by Roads and Maritime Services (or its predecessor, the RTA), regardless of whether it is titled "RTA" or "Roads and Maritime Services" or "RMS".
SEARs	Secretary's environmental assessment requirements (formerly Director-General's environmental assessment requirements) prepared in accordance with s.115Y of the EP&A Act.
Strategic Design	The strategic design provides the location and alignment, typically of a number of design solutions. The following drawings may be used to show details of various design options developed for the Strategic design phase: Alignment plans (including road corridor boundary) Longitudinal sections Typical cross sections Preliminary cross sections at specific chainages Supplementary information drawings Combined constraint maps including environment and major hazard creators, utilities. The alignment plan, longitudinal section and typical cross sections may be presented on the same drawing sheet or roll plan. A key part of strategic design is to identify the major constraints and risks and those things that may be creators of issues in the future design stages.
Study Area	Any area agreed between RMS and the PSC within which any studies are required to be made as part of the project services, generally (but not necessarily) contained within the area shown on the locality plan.
Urban Design	The process and product of giving physical design direction to growth, conservation and change. Within RMS this is taken to include the design of transport infrastructure but also the effect of that infrastructure on the design and function of the area through which it passes.
Witness Point	A point in a work process where the PSC must give prior notice to the RMS Representative and the option of attendance or review of a document or process may be exercised by RMS, before the PSC proceeds.

Works Item	Any element included as part of this project that requires study, investigation, design, dimensioning and/or specification to be incorporated in the project.

1.10 PROFESSIONAL SERVICES

Refer to Annexure PS301/A for details regarding the Professional Services project specific requirements and delivery timeframes.

1.11 PROJECT SERVICES STUDY AREA

The project services study area, in which the project services are to be performed, is the area agreed between the RMS and the PSC within which any studies are required to be made as part of the project services.

The boundaries of the agreed area may change depending on the type of study or investigation being undertaken. For example, the area in which investigations are undertaken for survey and geotechnical may be different to the area that is considered for design refinements, biodiversity impact assessment, noise impact assessment, hydrologic and hydraulic investigations, traffic modelling or access and haul route. The PSC is to propose to the RMS Representative for approval the proposed study and investigation areas for the range of technical and specialist investigations. This may also include the areas to be included in mapping for inclusion in the environmental assessment documents. The RMS Representative can provide guidance on the areas to be adopted for each.

The PSC acknowledges that the project services boundaries and impacts associated with the project may evolve as the project services are performed and more information becomes available.

Refer to Annexure PS301/A for the Project Services Boundaries for this project.

1.12 DESIGN LIFE

Assets include Asset items and Asset Sub-items which for the purposes of project Asset management are also identified by Asset Element and Asset Type.

Except as specified and agreed with RMS and Section 1.13 - Retained Infrastructure of this Specification, the various Assets must have, as a minimum, the Design Life as specified in Tables PS301.1 and PS301.2 - Asset Design Life.

Where Asset Items and Asset Sub-items are specified and agreed with RMS as having a Design Life less than specified in Table PS301.1 and PS301.2 - Asset Design Life or where they are determined as being accessible for the purposes of Table PS301.1 and PS301.2– Asset Design Life, the design documentation must detail the reasons the design life cannot be achieved, methodology of replacement including all access provisions for both inspection and replacement. Asset Items that cannot be replaced without road closure or severe disruption to traffic must be deemed to be inaccessible.

Where there is inconsistency between the tables the design life in table PS301.2 shall govern.

Table PS301.1 – Asset Design Life

The minimum design life in table PS301.1 is for RMS managed roads. For Council managed roads, the PSC is required to consult with Ryde Council and agree upon the minimum design life prior to commencing design of the asset.

Item No.	Asset	Minimum Design Life
1	Inaccessible drainage elements	100 years
2	Drainage elements that are accessible for refurbishment and maintenance including sedimentation and detention basins	40 years
3	Sign faces	10 years
4	Sign support structures and other roadside furniture	40 years
5	Fences including fauna fences	20 years
6	Lighting and electrical equipment	20 years
7	Bridge structures, including underpasses, overpasses and wildlife tunnels	100 years
8	Retaining Walls including reinforced soil walls	100 years
9	Noise barriers, noise attenuation devices and headlight screens	50 years
10	Pavements Main carriageway including ramps Local roads	 40 years ~~20~~ ***40*** years
11	Local Road embankment and support structures	100 years
12	Embankments, including reinforced embankments	100 years
13	Cut batters, including batter treatments	100 years
14	Timber furniture	30 years
15	Other assets not detailed above	Typical industry values for similar Assets of a high standard and quality
16	Intersection capacity improvements	10 years

Table PS301.2 – Asset Design Life

Element	Asset type	Asset item	Asset sub item	Life (years)
~~Bridge and roadway support structures including short underpasses (100 years)~~	~~Bridges~~	~~Superstructure~~	~~Steel trough girder protective coating~~	~~25~~
			~~Bearings~~	~~25~~
			~~Anti-throw & privacy screens/rails etc.~~	~~20~~

Element	Asset type	Asset item	Asset sub item	Life (years)
	Short underpasses	Fencing	Safety hand rails	20
Retaining walls including reinforced soil walls and soil nails (100 years)	Retaining walls	All types of trough structure	Safety hand rails	20
		Rock nail cutting	Safety hand rails	20
~~Buildings (50 years)~~	~~Ventilation & Substation Buildings Steel Portal Frame~~	~~Superstructure~~	~~Portal frame protective coating~~	~~25~~
			~~Decorative coatings to external/internal wall panels~~	~~15~~
	~~Ventilation & Substation Buildings RC Portal Frame~~	~~Superstructure~~	~~Decorative coatings to internal wall~~	~~15~~
		~~Access stairs & safety rails~~	~~Safety Rails~~	~~20~~
	~~Tunnels – Internal Buildings/Structure~~	~~Superstructure~~	~~Portal Frame Coating~~	~~25~~
			~~Decorative coatings to internal wall~~	~~15~~
Sign support structures and other roadside furniture including bridge safety screens (40 years)	Sign supports	Superstructure	Structural steelwork protective coating	25
	Bridge safety screens		Infill panels	20–40
~~Tunnel and long underpass~~	~~Structural elements~~			~~100~~
~~Tunnel and long underpass secondary linings and architectural panels (35 years)~~	~~Architectural panels~~	~~Galvanised steel fixing frame~~	-	~~100~~
~~Mechanical and Electrical Equipment (25 years)~~	~~LV System~~	~~UPS~~	~~Batteries~~	~~10~~
	~~Ventilation System~~	~~Jet Fans~~	~~Bearings 40,000h or 10 years~~	~~40,000 h or 10 years~~
			~~Sensors~~	~~10~~
		~~Axial Fans~~	~~Bearings~~	~~10~~
			~~Sensors~~	~~10~~
		~~Air Monitoring~~	~~Air Quality Monitor~~	~~10~~

Element	Asset type	Asset item	Asset sub item	Life (years)
			~~Air Velocity Monitor~~	~~10~~
	~~Station Pumping System~~	~~Pump Stations~~	~~Level Sensors~~	~~10~~
			~~pH Sensor~~	~~10~~
			~~Pump~~	~~10~~
			~~Pipework~~	~~40~~
	~~Water Treatment Plant~~	~~Water Treatment Plant~~	~~Tanks~~	~~50~~
			~~Pipework~~	~~50~~
			~~Compressor~~	~~10~~
			~~Flocculent Motor Arm~~	~~10~~
			~~Pumps~~	~~10~~
-	~~Buildings/ plant equipment~~	~~General lighting~~ -	~~Luminaires~~	~~20~~
			~~Lamps etc.~~	~~4~~
		~~MVAC system~~	~~Air conditioning units~~	~~13~~
		-	~~Ventilation fans~~	~~13~~
		~~Door monitoring system~~	~~Door switches~~	~~10~~
	~~Fire detection~~	~~Main fire panel~~	-	~~20~~
-	-	~~Sub fire panel~~	-	~~20~~
~~Mechanical and electrical equipment (25 years) *(continued)*~~	-	~~Hydrocarbon sensors~~	-	~~10~~
	-	~~Smoke detectors~~	-	~~10~~
	-	~~Deluge marshalling panels~~	-	~~20~~
	-	~~Fibre optic controllers~~	-	~~20~~
	-	~~VESDA (smoke sampling system)~~	-	~~20~~
	-	~~Hydrocarbon control panels~~	-	~~20~~
-	~~Fire suppression~~	~~Fire extinguishers~~	-	~~10~~
Lighting System (20 years)	Tunnel lighting	HPS lights tunnel	400W lamp	4
			250W lamp	4
			150W lamp	4
		Street Lighting	400W lamp	4
			250W lamp	4
			150W lamp	4
		Emergency Exit lights	Lamps etc.	10
		Exit strobe lights	Lamps etc.	10
		Exit door down-lights	Lamps etc.	10
		Low level luminaires	Lamps etc.	10
		Egress Lighting	Lamps etc.	10
		Building services lighting	Lamps etc.	10
	Photometers	Photometers	Housing	25
			Detector	10
~~Tunnel Control Systems (20 years)~~	~~Operations Management and Control System (OMCS)~~	~~Server Computer~~	-	~~7~~
		~~Storage Area Network (SAN)~~	-	~~7~~
		~~Network Switches 10G~~	-	~~7~~
		~~Network Switches 1G~~	-	~~10~~
-		~~Operator Workstation~~	-	~~7~~

Element	Asset type	Asset item	Asset sub item	Life (years)
		~~Printer~~	-	~~5~~
	~~Control Cabinets~~	~~Housing~~	-	~~25~~
		~~Control Equipment~~	-	~~10~~
	~~Large Screen Display~~	~~LCD Monitors~~	-	~~5~~
		~~Display Controller~~	-	~~7~~
	~~CCTV Video Wall~~ -	~~LCD monitors~~	-	~~5~~
		~~Display controller~~	-	~~7~~
	~~PLC~~	~~PLC equipment~~	-	~~15~~
	~~CCTV System~~ -	~~Fixed camera assemblies~~	~~Camera~~	~~10~~
	-		~~Housings~~	~~25~~
	-	~~Pan/Tilt head camera assemblies~~	~~Camera~~	~~10~~
	-		~~Housings (integral with camera)~~	~~10~~
	-	~~Structures~~	~~Poles~~	~~40~~
	-	-	~~Brackets~~	~~25~~
	~~RRB System~~	~~AM Head End Equipment~~	-	~~12~~
	-	~~FM Head End Equipment~~	-	~~12~~
	-	~~BIF Head End Equipment~~	-	~~7~~
~~Tunnel control systems (20 years)~~ ~~*(continued)*~~	~~Rrb system~~ ~~*(continued)*~~	~~BIF console~~	-	~~7~~
		~~Police radio head end equipment~~	-	~~12~~
		~~GRN radio head end equipment~~	-	~~12~~
		~~O&M radio head end equipment~~	-	~~12~~
		~~AM tunnel amplifier~~	-	~~12~~
		~~FM tunnel amplifier~~	-	~~12~~
		~~Police radio tunnel repeater~~	-	~~12~~
		~~GRN radio tunnel repeater~~	-	~~12~~
		~~O&M radio repeater~~	-	~~12~~
		~~1 1/4" leaky feeder cable~~	-	~~25~~
		~~1 1/4" leaky feeder installation materials~~	-	~~25~~
		~~1/2" leaky feeder cable~~	-	~~25~~
		~~1/2" leaky feeder installation materials~~	-	~~25~~
	~~Mobile phone system~~	~~Mobile phone master unit~~	-	~~12~~
		~~Triband repeater (remote unit)~~	-	~~12~~
		~~Quad band repeater (remote unit)~~	-	~~12~~
~~Tunnel control systems (20 years)~~ ~~*(continued)*~~	~~Mobile phone system~~ ~~*(continued)*~~	~~System management, configuration software~~	-	~~12~~
		~~1 5/8" leaky feeder cable~~	-	~~25~~
		~~1 5/8" leaky feeder mounting materials~~	-	~~25~~
	~~Public address system~~	~~Speakers~~	-	~~25~~
		~~Paging console~~	-	~~13~~
		~~8 channel power amplifier~~	-	~~13~~
		~~Control server~~	-	~~13~~

Element	Asset type	Asset item	Asset sub item	Life (years)
		~~Cobranet audio interface~~	-	~~13~~
		~~Cobranet microphone & station~~	-	~~13~~
		~~Ambient noise sensing microphone~~	-	~~13~~
		~~Cabling~~	-	~~25~~
	~~Telephone system~~	~~Equipment cabinet~~	~~Cabinet~~	~~25~~
			~~Server~~	~~10~~
	~~METS phone~~	~~METS phone~~	~~Assembly~~	~~25~~
			~~Electronics~~	~~10~~
	~~Fire phone~~	~~Fire phone~~	~~Assembly~~	~~25~~
			~~Electronics~~	~~10~~
	~~Operators phone~~	~~Operators phone~~	~~Assembly~~	~~25~~
			~~Electronics~~	~~10~~
	~~Other phones~~	~~Other phones~~	~~Assembly~~	~~25~~
			~~Electronics~~	~~10~~
	~~Cabling~~	~~Cabling~~	-	~~25~~
Traffic management and control systems (20 years)	Traffic management control system	Variable message sign (VMS)	Sign Housing	25
			LED Pixels	10
			Structure	40
		Integrated speed and lane use sign (ISLUS)	Sign Housing	25
			LED Pixels	10
			Structure	40
		Changeable message sign	Sign Housing	25
			LED Pixels	10
		Over-height detection	Sensor (Tx/Rx)	10
			Structure	40
		In-pavement lights	LED Lamps	10
		Roadside cabinets	Housing	25
			Control Equipment	10
		Equipment Room Control Cabinets	Housing	25
			Control Equipment	10

1.13 RETAINED INFRASTRUCTURE

The PSC in consultation with RMS, is to identify areas where the retention of existing infrastructure e.g. bridges, culverts, pavements etc. on, under or in the vicinity of the carriageway and local roads may provide benefit to the project and lifecycle stages. (e.g. time, cost).

If required in annexure PS~~23~~01/C the PSC must undertake a full assessment retained infrastructure and prepare a Retained Infrastructure Report on the adequacy of this infrastructure for its proposed purpose. The report must accurately estimate the residual durability aspects and remaining life of the infrastructure and detail the cost of any modifications needed to incorporate the retained infrastructure in the works or in the vicinity.

The report will be reviewed by RMS and confirmation of any retained infrastructure is to be obtained.

Retained infrastructure must comply with all other requirements of this Specification, including:

(i) Functional requirements.

(ii) Flooding and drainage performance and design requirements.

(iii) Environmental performance and design requirements.

(iv) Geometric performance and design requirements, including clear zone requirements.

(v) Structural performance and design requirements

(vi) Delineation, signposting and roadside furniture performance and design requirements.

(vii) Lighting requirements.

(viii) Suitable to carry out its intended function.

(ix) Health and Safety in Design.

(x) Constructability of modifications.

Retained Infrastructure must be included in the independent road safety audits required by the Section 2.6 - Road Safety Audit of this Specification, including audit review and assessment of conformity.

Refer to Annexure PS301/C for the Retained Infrastructure requirements delivery timeframes for this project.

1.14 PRINCIPAL ITEMS OF INFRASTRUCTURE AND DESIGN ELEMENTS

The project must consider all infrastructure necessary for the project with the project services study area defined in this Specification. In general, the following design elements may be included in the project.

The PSC must obtain approval from RMS representative for any proposed temporary reduction in speed limits to allow for safe construction before undertaking design.

1.14.1 Roadworks

This includes all applicable fencing, property adjustment, noise barriers, drainage, sub surface drainage, erosion and sediment control, flood control, earthworks, retaining walls, pavement, pedestrian and cycle paths, landscaping, safety barriers, roadside furniture, street lighting, pavement marking, traffic signals, VMS, signage and all additional related work required for the operation of the project.

1.14.2 Bridgeworks

This includes all substructure and superstructure works and includes all abutments, foundations, concrete and/or steel works, precast concrete works, pre- and post- tensioning, voids, protective treatments, minor fittings, aluminium/steel barrier railings, bearings, (stainless steel, elastomeric etc.), joint sealing compounds, bituminous water proofing of the deck, asphaltic concrete running surface, drainage and utility fitments, bridge-screens and all miscellaneous works, as may be necessary to allow for the full and proper operation of the project at the lowest overall lifecycle cost. It includes infrastructure (large and small) for safe, efficient and practical maintenance.

1.14.3 Earthworks

This includes removal of vegetation, removal and stockpiling of topsoil, preparation and treatment of foundations, construction of cuttings, verge materials, treatment of batters, haulage of material, construction and preloading (if required) of embankments (including selected material zone), checks for negative skin friction on piles, trimming, compaction, processing, removal and replacement of unsuitable materials, stockpiling, spoil, offsite works and additional processing of excavated materials, reinstatement and landscaping for the operation of the project. It includes sourcing construction water options, balancing earthworks and ensuring efficiency.

1.14.4 Underpass, Stormwater Drainage, Pipe Work and other Culverts

This includes underpasses for the passage of pedal cyclists and pedestrians. This also includes pipes and culverts that form a complete system for carrying water through and away from the project. This includes the incorporation of fauna requirements (aquatic and terrestrial) and property access requirements. The requirements generally include location and installation type, concrete, reinforcement, scour protection, fauna provisions, sediment traps and basins, gross pollutant traps, chemical and spill containment traps, stormwater interceptors, constructed wetlands, metal work, maintenance vehicle access and emergency vehicle access and retro-fitting of drainage and spill containment to the existing bridges.

1.14.5 Pavements

This includes subsurface and sub pavement drainage, drainage layers, sub grade treatments, pavement construction, wearing surface construction, road furniture, pavement markers, marking and line marking and any associated works to complete the pavements for traffic. This includes local road works and connections, and property access.

1.14.6 Property Adjustments

This includes all changes in access arrangements, changes to drainage, fencing, gates, demolition and adjustment of built features, adjustment of natural features, adjustments to buildings and all other property adjustment works necessary as a consequence of the project, including those arising from property acquisition and noise attenuation.

1.14.7 Road Networks

This includes adjustment to any existing local road affected by the project including:

(i) All boundary fencing, drainage including subsurface drainage, erosion and sediment control works, earthworks, all structures (retaining walls, bridges, etc.), pavements and planting.

(ii) All provisions to allow pedestrians and pedal cyclists to use the network.

(iii) All arrangements to allow people and vehicles to access property affected by the project.

(iv) Pavement markings, signs (and sign support systems) and the provision of street lighting.

(v) Items of roadside furniture erected to provide safety and the provision of all fencing and other security measures necessary to prevent either unlawful or accidental access to the project.

(vi) Measures to mitigate noise during operation of the road.

(vii) Measures to achieve environmental requirements (e.g. water quality).

1.14.8 Services Adjustments

This includes identification and protection of, or adjustments to, any public or private utility that is affected in any way by the project. It also includes new services and consultation with service providers for the provision for future development. It includes new RMS ITS underground infrastructure.

1.14.9 Emergency Vehicle Access

This includes the maintenance of access as required by the relevant emergency response authorities.

1.14.10 Street or General Lighting

This includes the provision of lighting at the connections between the project and the existing roads, at intersections, over the length of the project and feature lighting of bridges, underpasses etc. All lighting must ensure minimal disturbance to residential premises.

1.14.11 Access

Safe access must be provided to all properties and permanent infrastructure (sedimentation basins, culverts, areas requiring mowing etc.) including ongoing access for maintenance and inspection purposes. Access also includes temporary access required to stage the construction.

1.14.12 Safety Barriers

This includes the provision of median barriers to limit the possibilities of head-on collisions where median widths are reduced or are less than contemporary design guidelines and the provision of other safety barriers to reduce the risk of vehicle collision with hazards, or to protect people and infrastructure from injury or damage by vehicle collision.

1.14.13 Signposting

This includes the provision of signposting (and sign support systems), on the project, and as required on the approaches to the project and local roads, including:

(i) Advance direction signs.

(ii) Direction signs.

(iii) Regulatory signs.

(iv) Advisory signs.

(v) Variable message sign and its associated infrastructure

(vi) Local road and water-way name signs, and

(vii) Special signs including tourist signs.

1.14.14 Noise mitigation

(i) This includes the provision of all required noise mitigation measures.

1.14.15 Traffic control

(i) This includes the provision of any arrangements to control traffic.

1.14.16 Open Drains, Channels, Drainage Basins and Related Watercourses

This includes the provision of open drains, channels, drainage basins and related watercourses, gross pollutant traps, stormwater interceptors and constructed wetlands which must, in conjunction with pipes and culverts, form a complete system for carrying water through and away from the project. This includes compliance with the requirements of relevant authorities and the incorporation of the principles of fish friendly waterway crossings. Checking for reshaping required on private property.

1.14.17 Security and Fauna Fencing

This includes the provision of fences or other means to ensure public safety and fauna safety.

1.14.18 Urban Design and Landscape Character and Visual Impact Assessment

This includes the incorporation of urban design objectives and principles into the design of the project and includes the mitigation of landscape character and visual impact.

1.14.19 Urban Art

This includes the provision of urban art, sculpture and interpretive facilities as deemed appropriate in the consideration of urban design principles and the outcomes of working with the community.

1.14.20 Traffic Signals

This covers traffic signal lights, signal posts, and associated structures including position and size of all cables, conduits, pits, detectors, control equipment, and associated components.

1.14.21 Temporary Works

This includes all temporary works required to construct the project including earthworks, ground support, drainage, utilities, pavements, temporary access, temporary parking, delineation and worksite traffic control.

1.14.22 Tunnels and Long Underpasses

This includes all permanent and temporary structures associated with a tunnel or long underpass. This includes retaining structures, cut and cover structures, portal ground support, tunnel ground support, tunnel lining, ventilation and fire suppression systems and the associated drainage network and tunnel control systems. The tunnel, or a section of tunnel may be required to be drained or undrained.

1.14.23 Miscellaneous Works

Includes all other works, not included above, that are required for the proper functioning of the project in its permanent and temporary state during work.

1.15 PROJECT FUNCTIONALITY

The project must be designed to cater for:

(i) Pedestrian movements across the corridor and to/from major land-use attractors situated on the corridor.

(ii) Give due consideration for safe bicycle movements along sections of the local bicycle network which interface with the Corridor

(iii) Cater for public transport vehicle and freight vehicle movements along the lengths of the corridor which relates to the respective networks, including access and egress from the corridor.

(iv) Access for emergency service vehicles, personnel and plant.

(v) Access for future maintenance activities.

(vi) Appropriate vehicle movements.

(vii) The vehicle design loadings in accordance with sections 5, 6 and 7 of the Australian Standard AS 5100:2-2004.

(viii) Other requirements that may need to be inserted; e.g. local flooding requirements, drainage, ITS etc.

1.16 AUTHORITIES AND SERVICES OPERATIONAL REQUIREMENTS

The PSC must:

(i) Engage with all relevant authorities including emergency service providers and any other appropriate stakeholders and take their requirements into account.

(ii) Consider the future access requirements for all parts of the project site for operation and maintenance purposes.

1.17 AUSTROADS GUIDES AND OTHER DESIGN REFERENCE DOCUMENTS

Austroads has released a set of Technical Guides covering the design, construction, maintenance, operation and safety of Australian and New Zealand road networks. Austroads Guides and the RMS Supplements are the primary design reference documents and they cover the following subject areas:

(i) Guide to Asset Management (8 parts)

(ii) Guide to Bridge Technology (7 parts)

(iii) Guide to Pavement Technology (10 parts)

(iv) Guide to Project Delivery (4 Parts)

(v) Guide to Project Evaluation (8 Parts)

(vi) Guide to Road Design (8 Parts)

(vii) Guide to Road Safety (9 Parts)

(viii) Guide to Transport Planning (1 Part)

(ix) Guide to Traffic Management (13 Parts)

(x) Guide to Road Tunnels (3 parts)

Refer ANNEXURE PS301/A – PROJECT SPECIFIC REQUIREMENTS, Section A7 PROFESSIONAL SERVICES, for additional Specification, Guidelines and Standards that apply in the development of the detailed design.

The Austroads guides and the Australian Standards, which are referenced in them, are the primary technical references for design and project development services specified in this document. RMS has produced a range of mandatory Austroads Supplements in a number of the above subject areas. These Supplements are issued to clarify, add to, or modify the Austroads Guides.

Where a requirement in this document refers to an Austroads Guide, Australian Standard or reference document, then that requirement must be read in conjunction with the relevant RMS Austroads Supplement and Austroads Guide document. Where a requirement of a RMS Austroads Supplement conflicts with a requirement in another document, the requirement to be adopted must be that specified in the RMS Austroads Supplement.

The following order of precedence must apply in the event of any inconsistency, ambiguity or discrepancy between the design reference documents and other standards:

(i) This Specification.

(ii) Technical Directions and quality alerts.

(iii) RMS supplements to Austroads Guides and Australian Standards.

(iv) Austroads Guides and Australian Standards.

(v) Other current RMS publications.

(vi) Others sources, as agreed with RMS representative.

The PSC must refer any conflicts that cannot be resolved using the above criteria to the RMS Representative for resolution.

Additional design reference documents are listed at the commencement of each Specification appropriate to that reference document. Where the design reference documents do not include any relevant applicable standards, the PSC's Representative may elect to justify in report form, the application of other recognised compatible state or national standards. This report must be submitted to the RMS representative for approval. The application of these standards must only be permitted after receipt of written approval from the RMS Representative. In permitting this, the RMS Representative must first obtain written concurrence from the RMS Discipline Principal.

1.18 ROAD SAFETY AND SAFE SYSTEMS

The 'Safe System' approach has been espoused by the Australian National Road Safety strategy and by the separate state and territory road authorities. Details are given in the National Road Safety Action Plans (ATC 2008) and summarised in the Austroads Guide to Road Safety, Parts 1, 2, 3 and 10 (Austroads 2006a, 2006b, 2006d, 2008a).

The Safe System takes human errors and frailty into account, acknowledging that crashes will continue to occur but seeking to avoid death and serious injury as outcomes. Speed is a critical element in this approach. Speeds must be contained so that in the event of a crash the impact forces remain below human injury tolerance.

The goal is to provide safer travel and traffic movement for all road users by minimising the risk posed by the interacting elements of the road transport system.

The approach aims to provide a safer road and traffic environment in which alert and responsible road users should not be killed or seriously injured as a result of a crash. It values the health and wellbeing of road users and takes human error into account while focusing on:

(i) Safer roads and roadsides – good design of new roads and road furniture, identification and treatment of sites with adverse crash histories or inherent safety deficiencies, and good road management practices

(ii) Safer vehicles – vehicles which have improved functional design and protect occupants through structural design and protective equipment

(iii) Safer speed environment – speed limits which are appropriate for the road's function, construction, terrain and adjoining land use, so that speeds are contained within the limits of human injury tolerance.

Providing a safer road environment involves application of road design and traffic management principles with a clear safety focus. Practitioners responsible for the road network should ensure that it is designed and managed from a safety perspective, and that its operation is adequately monitored and measured.

1.19 PROJECT FAMILIARISATION AND INFORMATION PROVIDED BY RMS

1.19.1 Introduction

The PSC's staff must ensure that they develop a full working knowledge of the project. The PSC must review the information received in accordance with the PSC's quality system. This must include, but not be limited to:

(i) Review historical information about the project from all available sources including, but not limited to, RMS files, route selection report, previous design reports and previous design drawings and any plans for adjoining sections.

(ii) Undertake site inspections and confirm the status of adjacent land use and zoning.

(iii) Confirm or update land ownership details and contact information.

(iv) Confirm the project scope of the works and the project stakeholders.

(v) Conduct an inception meeting involving RMS, the PSC and sub-contractors as required.

(vi) Identify additional data requirements and source that data with agreement with RMS.

1.19.2 Inception Meeting Requirements.

The PSC is to carry out an Inception Meeting with RMS representatives at RMS's Offices and cover the following topics as a minimum:

(i) Welcome and Introductions.

(ii) RMS to hand over two copies of the Work Order contract for signature.

(iii) Confirm roles and RMS responsibilities in regard to management of the project and management of the contract; refer to Annexure PS301/A for contact details.

(iv) Availability of data and confirmation on exchange of data.

(v) Identify any areas or issues with the Specification, including outputs required, that require clarification / confirmation from RMS representatives.

(vi) Acknowledgement of the deliverables required and their timeframe.

(vii) Outline of the PSC's initial two weeks (start-up) and availability of personnel to commence work.

(viii) Confirm delivery timeframe for the Project Familiarisation Statement as specified in Annexure PS301/C.

1.19.3 Project Familiarisation Statement

The PSC must prepare a Project Familiarisation Statement of actions taken to ensure familiarity with the project, including a summary of minutes of all meetings and discussions held to date, and lists of actions to be carried out and submit this report to RMS.

The Project Familiarisation Statement must cover the follow topics, as a minimum:

(i) Introduction.

(ii) Objectives of the Project.

(iii) Summary of Professional Services required.

(iv) PSC Team, RMS Team and Project Stakeholders.

(v) Information received from RMS.

(vi) Information outstanding from RMS.

(vii) Key challenges in delivery of the project for both the PSC and RMS.

(viii) Key risks in delivery of the project for both the PSC and RMS.

(ix) Summary of all project deliverables.

(x) Summary of the next steps over the first 8 weeks of the project.

Refer to Annexure PS301/C for for the requirements and delivery timeframe for the Project Familiarisation Statement.

1.19.4 Information Provided By RMS

RMS accepts no responsibility for, and does not guarantee or make any representation as to the accuracy of, or fitness for purpose, of the information it provides (including the drawings and sketches). It is the PSC's responsibility to make its own assessment of the suitability and accuracy of all the information provided, and resource and/or supplement that information by other means.

RMS will retain copyright over the above material and information provided.

RMS will endeavour to meet reasonable requests from the PSC in a time determined by RMS for additional project related information. Any request for additional information should not be used as a means or justification for a contract variation unless warranted.

Refer to Annexure PS301/A for a list of information provided by RMS.

1.19.5 Handover Meeting Requirements

The PSC is to carry out a Handover Meeting at the conclusion of the project with RMS Representative and cover the following topics, as a minimum:

(i) Welcome and Introductions.

(ii) Summary of the project from Inception meeting to Handover.

(iii) Summary of milestone compliance.

(iv) Key challenges of the project.

(v) Key risks encountered along the course of the project.

(vi) Transfer of WHS knowledge from designer to client.

(vii) Lessons learnt from the project.

(viii) Key items that were done well.

(ix) Key items that could have been done better.

(x) Complete list of items delivered on the project and their date including any items being handed over at this meeting.

(xi) Meeting close

1.20 DESIGN REVIEW AND VERIFICATION INCLUDING INDEPENDENT VERIFICATION

1.20.1 Introduction

RMS requires review and verification of the design. Refer to Austroads Guide to Road Design Part 8: Process and Documentation.

For all disciplines it is mandatory that all deliverables of any kind (for example documents and models) are subjected to verification processes to ensure they are free from errors and that design processes and deliverables are reviewed against input requirements including requirements of the PSC's Quality System before transmittal to RMS and to other involved parties for example to utility authorities. Verifiers and reviewers, whether internal to the organisation or external persons, must not be part of the project design team. RMS requires written certification that the transmitted deliverables are verified free from errors. It is preferable the confirmation be included on the Transmittal Advice. The PSC must create quality system records with complete details of the verification and reviewing suitable for RMS to audit.

Further to the above RMS requires a person designated as Independent Verifier (IV) verify certain specified deliverables. The PSC must submit to RMS for agreement the name and credentials of each proposed IV and must not substitute another person without written approval from RMS.

1.20.2 Internal and External Reviews and Verification

Whether the design is reviewed and verified within an organisation or by a person external to the PSC, the PSC is to ensure the person has adequate experience and qualifications to do so and as a guide not less than 10 years industry experience will be accepted by RMS.

Review and verification must include:

(i) A full independent assessment of all factors influencing the final integrity of the project works and the temporary works and must be undertaken in order to assure compliance with the Specification

(ii) A comprehensive review of comments made on the various stages (~~nominally 20%,~~ 80% and 100% of the completed design drawings) to ensure all identified issues have been addressed

1.20.3 Independent Verification

The required credentials, tasks and deliverables for the Independent Verifier of Health and Safety in Design (HSiD) are defined in RMS Project Pack document ILC-MI-TP0-520-F12. Refer also to Section 2.2 of this Specification.

For details of qualifications for independent verification of Construction Contract Tender Documentation refer to PS392.

Independent verification (other than HSiD) by an agreed designated IV must be based on the design drawings and include performing a dimensional check, as well as review of the specifications and without reference to the design computations. Independent Verification must be carried out by suitably qualified personnel with experience in the design of the relevant element of the works and eligibility for Chartered Professional Engineer status of Engineers, Australia unless RMS agrees in writing that alternative credentials are acceptable. The IV must have adequate experience and qualification to do so and as a guide not less than 10 years industry experience will be accepted by RMS.

All advice and comment including calculations provided to the PSC by the Independent Verifier must be in writing.

Evidence of the Independent Verifier's detailed check and acceptance must be indicated on every drawing cover set issued for construction. Where required, submission of initialled drawings, technical reports (including geotechnical reports) and specifications must be accompanied by an independent verification certificate of compliance in the format given in Annexure ~~PS201~~ PS301/D.

Any amendment to the design after the issue of the independent verification certificate of compliance must be referred to the Independent Verifier for review and written confirmation that the certificate remains valid.

Any amendments agreed to by RMS Representative, the PSC and the Independent Verifier must be incorporated into the final design drawings.

The table below identifies aspects of the design requiring independent verification, along with details of what the independent verification will involve.

1.20.4 Internal Review and Independent Verification – All Disciplines

Table PS301.4 – Independent Verification Requirements

Aspects of the Design to be Independently Verified	When is Independent Verification required	Who undertakes the Independent Verification	What the Independent Verification involves
Road Design	Prior to submission to RMS.	Suitably experienced Road Designer	The Design meets the requirements of the brief and appropriate standards.
Geotechnical investigations and geotechnical report	When a geotechnical report is produced	Independent geotechnical contractor (proposed by the PSC with concurrence by	Overall review of geotechnical investigations

Aspects of the Design to be Independently Verified	When is Independent Verification required	Who undertakes the Independent Verification	What the Independent Verification involves
		RMS Representative)	and the geotechnical report.
Flood modelling	When one or more of the following conditions exist: (i) When the modelling is complex. (ii) When the accuracy of the flood model is critical to the outcomes of the design. (iii) When there are assumptions made that are critical to the outcome of the modelling. (iv) When compliance with any the conditions of approval or agency requirements require accurate modelling.	Contractor from the RMS Drainage Investigation & Study Panel.	Independently derived flood modelling results.
Bridges, structures and retaining walls - refer to PS361 – Bridge and Structure Design	Always	Independent technical expert	Verification and other additional checking are performed by the "proof checker" as defined in - refer to PS361 Bridge and Structure Design.
Construction Staging drawings	When one or more of the following conditions exist: (i) On complex projects with multiple solutions. (ii) When in-house experience in construction staging is limited & independent consultation is not undertaken.	Independent contractor with recognised expertise in construction and construction staging (proposed by the PSC with concurrence by RMS) or RMS Road Design Review	Recorded review of the construction staging drawings.
Detailed design quantity take off and estimate - refer to PS391 – Quantity Survey	Detailed Estimate	Quantity Surveyor	Independent take off of the quantities that make up 80% of the estimate (e.g. earthworks, pavement, drainage) using

Aspects of the Design to be Independently Verified	**When is Independent Verification required**	**Who undertakes the Independent Verification**	**What the Independent Verification involves**
			different method to quantity take off being verified
Construction and tender documentation. Refer to PS 392 – Construction Contract Tender Documentation.		Independent Contractor with recognised expertise in construction contract tender documentation (proposed by the PSC with concurrence by RMS) or RMS Road Design Review	Recorded review of the construction contract tender documentation.
Work Health and Safety Health and Safety in Design ***in detailed design phases***	(a) Pre-design all HSiD verify actions are complete (b) At 80% completion (c) At Completion	Independent Verifier from the RMS Approved Panel	Compliance with the WHS Act 2011, the Regulation and approved Codes of Practice for the design services under this brief AND for the Project as a whole to the date of these services (includes RMS due diligence obligations for these design services AND for previous Project stages of planning and design AND putting in place mechanisms and providing advice as required under the Act for subsequent

Aspects of the Design to be Independently Verified	When is Independent Verification required	Who undertakes the Independent Verification	What the Independent Verification involves
			stages such as construction. Operation and maintenance.)

1.21 INTEGRATION REVIEW AND CONFLICT ANALYSIS

Refer to Annexure PS301/C for the Integration Review Report and Conflict Analysis Report timing requirements for the project.

1.21.1 Integration Review

An integration review is required to check the integration between all elements from all disciplines associated with the project. If required, the elements that have been reviewed need to be identified in an Integration Review Report or Design Approval Process. Elements that require integration review must include (if applicable) but not limited to:

(i) Road alignment including pavement and geotechnical information.

(ii) Bridges, retaining walls and other structures.

(iii) Drainage networks and drainage structures.

(iv) Road furniture including safety barrier systems and signs.

(v) Road lighting and intelligent transport systems.

(vi) Utility and ITS information & noise reduction solutions

(vii) Environment, urban design and heritage requirements.

(viii) Freight, bus and active transport requirements.

1.21.2 Conflict Analysis

A check of relevant design elements is to be carried out to assess space allocation issues and conflict analysis. This is to ensure there are no conflicts or clashes (either underground or above ground) between all project infrastructure elements, either existing or designed. Relevant design elements to check for conflict analysis must include at least the following:

(i) Pavement and kerbing envelopes.

(ii) Elements of bridges, retaining walls and other structures that interact with road design elements including foundation envelopes

(iii) Longitudinal and cross drainage networks and structures including foundation envelopes

(iv) Subsurface drainage pipes, systems and structures.

(v) Utility service assets.

(vi) Road lighting and intelligent transport system conduits and structures including foundation envelopes

(vii) Sign and sign support structures including foundation envelopes

(viii) Safety barrier systems including terminal foundation envelopes and post footing envelopes

(ix) Street furniture

Roll plans of the project shall be prepared showing all built assets on a single plan to assist with clash detection. The plan is to be prepared at a scale of 1:250 with each plan being a maximum of 1.5 m long. The plan is to be submitted in pdf format only.

1.22 VISUALISATION

Visualisation may be required for design projects to assist with integration review and design review. The level of detail required depends on the scope of the project, the design review requirements at various stages and the requirements for design presentations.

Refer to Annexure PS301/A11 for Visualisation requirements for this project. ~~Where BIM is implemented, see PS 202 for visualisation requirements~~

1.23 REPORTING STANDARD

The standard for all reports prepared by the PSC must meet the following as a minimum:

(i) All reports should be in clear plain English.

(ii) The layout of reports should enable ease of reading, and should not be cluttered by long sentences, inadequate or uneven spacing, or poor presentation.

(iii) Reports should be concise and to the point. Detail that is repeated and/or does not directly relate to or support the findings and recommendations should be omitted.

(iv) Figures and tables should be used to convey information where possible rather than lengthy text descriptions.

(v) Reports should be logically structured so that related findings and implications follow on from each other.

(vi) The reports should not only advise ‘what is’ and ‘why’ but should also identify potential implications of findings. All recommendations offered should be based on the findings documented in the reports, and not opinion, and are to be cost effective and practical to implement.

(vii) The draft and final copies of reports must be vetted for typographical, grammatical errors and content before submission to RMS. The reports must follow the RMS Editorial Style Guide (March 2014) with spelling consistent with the Australian Macquarie Dictionary.

(viii) All tables, graphs and figures in the report should be simple to understand and clearly support the point being made. Titles, scales, north point and legends should be included as appropriate.

(ix) All maps included for the environmental assessment must be based on topographical information rather than cadastral information. If published maps are reproduced their source must be acknowledged and referenced.

(x) Where possible maps for the environmental assessment must be laid out so that north is to the top of the page. Key features such as landmarks, roads, rivers and towns should be clearly labelled.

(xi) Photos of the study area should generally be provided in the appendix of reports. Photos are to be in provided to RMS in high resolution jpeg format.

(xii) All "environmental" documents should be of a standard suitable for public availability with no 'branding' of the report with the PSC's logo or name should occur.

(xiii) Any appendices, annexures and attached data files must be clearly labelled and readily referenced into the body of the reports.

(xiv) Jargon, acronyms and technical words should be minimised. Where they are used they should be clearly explained at the first point of reference in the reports and included in a terms table or definition list within the report.

(xv) Electronic outputs (MS Word, PDF and other) must meet Website Content Accessibility Guidelines 2.0 (WCAG 2.0) Level AA.

(xvi) Copies of all reports (draft and final) must be provided in both MS Word (compatible with Word 2003) and PDF formats.

(xvii) All environmental documents, maps and other data collected (such as environmental constraints) will be supplied separately in electronic format in their native format. They are to be compatible with ArcGIS version 10 and Google Earth (e.g., kmz) and are the property of RMS for further use.

(xviii) Draft copies of reports are to be clearly watermarked 'draft'; if for other purposed such as payment claim, then the purpose is also to be clearly watermarked.

(xix) The preparation of material for public display/exhibition will be managed by the RMS's Communication and Stakeholder Engagement Branch. Any documents prepared by the PSC for public display/exhibition must be produced in accordance with the RMS's Community Participation and Communications document; A resource manual for staff (March 2010). Multi-media technologies required for community consultation and other communication purposes are to be provided by the RMS's Multi-media Technology Panel contract and not by the PSC. The PSC will liaise with the RMS Representative to procure multi-media resources for the project.

(xx) The reports are to be of a standard suitable for public display/exhibition.

(xxi) Prepare KMZ files at ~~20%~~, ***50%***, 80% and 100% to allow for the designs to be superimposed on Google Earth.

Refer to Annexure PS301/C for the reports required for the project.

Special note:

Time delays as a result of any inadequate reports submitted to RMS will be the responsibility of the PSC.

1.24 EXCLUSION FROM CONSTRUCTION SITE MANAGEMENT SERVICES

The PSC is excluded from participating as a tenderer in any tender process relating to the provision of construction site management services for this Project. This exclusion extends to any tender lodged by a subsidiary or related entity of the PSC. RMS reserves the right to reject any tender, lodged in breach of this condition, as a nonconforming tender.

1.25 STANDARD UNITS AND DESIGN DATUM

Unless otherwise specified, SI units must be used for the project development services and for all design documentation and construction and tender documentation.

All design levels must refer to Australian Heights Datum (AHD). All design coordinates must refer to the Map Grid of Australia (MGA).

1.26 RMS COPYRIGHT

All communication materials prepared by the PSC must comply with RMS intellectual property guidelines covering copyright, trade mark, patents, designs, moral rights and confidential information.

1.26.1 Copyright

The PSC must include copyright notices on all materials and publications, particularly those documents that will be issued for public distribution. This should be represented as:

© Roads and Maritime Services

The allocated publication number must identify the date of publishing.

Additional copyright statements should also be included where appropriate. These can include:

(i) The information in this [brochure] is intended as a guide only and is subject to change at any time without notice.

(ii) The information in this [brochure] is intended as a guide only and is subject to change at any time without notice. It does not replace the relevant legislation.

(iii) The concepts and information contained in this [brochure] are the property of Roads and Maritime Services.

1.26.2 Disclaimers

Any material prepared by the PSC which will be provided to a third party (in hard copy or in electronic form) must include appropriate disclaimers in relation to the information being provided. The RMS Representative will provide the disclaimer statements to be included.

1.26.3 Limitations on use of material

On material that will be issued for public distribution (whether in hardcopy or in electronic form), the PSC must include a statement on the material which specifies the use that may be made of the material and expressly states that no other use is permitted.

For example, where relevant these statements can include:

(i) You must not reproduce any part of this [brochure] without the prior written approval of Roads and Maritime Services

(ii) This [report] may be used for non-commercial uses only and reproduced [a maximum of [two] times], without further permission of Roads and Maritime Services or charge provided that any reproduction clearly acknowledges the copyright of Roads and Maritime Services.

(iii) It must not be made available online or stored in electronic form accessible by third parties.

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2 THE PSC'S MANAGEMENT SYSTEM REQUIREMENTS

This section of the Specification details the management system requirements and management system deliverables the RMS requires of the PSC for this project.

2.1 QUALITY MANAGEMENT

2.1.1 Quality Management System

The PSC must maintain for the duration of the project services a documented Quality Management System (QMS) accredited to AS/NZS ISO 9001 Quality Management Systems – Requirements.

The Quality Management System must cover all aspects of the PSC's obligations under this Specification.

2.1.2 Work Health and Safety (WHS) Management System

This section specifies the requirements for the PSC's WHS Management System which must align with RMS corporate Safety Management System.

The requirements for the delivery of effective WHS management of the design (HSiD) and the outputs of the Project Services are provided in Section 2.2 - Health and Safety in Design.

The requirements for the Road Safety Audit (RSA) process are provided in Section 2.6. Further details are included in RMS Specification G22.

The PSC must:

(i) Incorporate work health and safety in all aspects of the project development services, including but not limited to:

   a. Survey and geotechnical investigations near traffic.
   b. Any field work adjacent to traffic or of a more hazardous nature including utilities investigations.
   c. The provision for the safe movement of all road users at all times.

d. All field personnel have appropriate WHS qualifications and competencies.

(ii) Ensure that all vehicles used by the PSC for the project development services must only enter, operate within or exit from the traffic flow in a manner that does not endanger the public and in accordance with Australian road laws.

(iii) Ensure that all traffic management complies with RMS specification G10 Traffic Management and AS1742.3. The PSC must implement traffic management practices as set out in the RMS publication Traffic Control at Work Sites Manual and relevant Australian Standards, and comply with any conditions contained in a RMS (Traffic Management Centre) issued Road Occupancy Licence.

(iv) Develop and maintain a work health and safety management plan which must be submitted to RMS prior to undertaking any field or site visits. This must include the preparation of a safe work method statement (SWMS) which must also be signed off by persons working or visiting in the field.

HOLD POINT	
Process held:	Commencement of field work
Submission details:	Work health and safety management plan within 21 days of ~~award of the professional services contract~~ ***RMS granting approval to proceed with the detailed design***
Release of hold point	RMS representative will release the hold point following consideration of, and agreement between RMS and the PSC to the content of the Work Health and Safety Management Plan

2.1.3 Environmental Management System

The PSC must maintain for the duration of the project services a documented Environmental Management System (EMS) and must demonstrate commitment and responsiveness to the environment and to environmental issues. Before any work is undertaken on site the PSC must ensure they have investigated any environment issues and identified all significant items, including aboriginal and non-aboriginal heritage, vegetation to be disturbed and sensitive properties and receivers

2.1.4 PSC's Management Responsibilities

Without limiting Section 2.1.1 - Quality Management System, the Quality Plan must:

(i) Nominate a management Representative (the Quality Manager) who is directly responsible to the PSC and who has the defined authority and responsibility for ensuring that the requirements of the quality plan and ISO 9001 are implemented and maintained.

(ii) Identify how independent inspection, witnessing and monitoring must be carried out.

(iii) Identify the qualifications, experience and required competencies of personnel who must undertake the duties required in each item of this sub-section.

(iv) Contain systems, processes and procedures which give effect to and co-ordinate the implementation of each plan.

(v) Address the processes required to achieve durability and value for money for all design elements of this project.

(vi) Responsible for providing the required documentation to RMS.

2.1.4.1 Hold Points

The quality plan must include a schedule of hold points. Each hold point must be assigned a nominated authority to release the hold point. The RMS representative may nominate persons to attend or witness the release of any hold point. The RMS's requirements in regard to its hold points are in Annexure PS301/C – **SCHEDULES OF HOLD POINTS, WITNESS POINT, DELIVERABLES, MEETINGS AND WORKSHOPS**.

2.1.4.2 Release of Hold Points

The Quality Manager must be satisfied that all activities in the process including methods of work, sequences of activities, inspections and tests preceding any hold point specified in the quality plan comply fully with the requirements of this Specification and, once satisfied, must:

(i) either release that hold point, where authorised according to the schedule of hold points, in order that the work may proceed on that part of the project, or

(ii) Obtain a release from the nominated authority, as outlined in Annexure PS301/C, that work may continue on that part of the project.

The PSC must not proceed beyond any hold point referred to in the Quality Plan without release by the nominated authority.

The PSC must give the RMS representative at least five working days written notice prior to reaching any hold point for which a release by the RMS representative is required.

The release of a hold point by the nominated authority allowing the work to proceed beyond that hold point, will not relieve the PSC of responsibility for carrying out all of the PSC's work and delivering the project in accordance with the requirements of this Specification.

The PSC must arrange a procedure, acceptable to the RMS representative, for the notification and release of the hold points and include this in the Project Quality Plan.

2.1.4.3 Continuous Improvement

The PSC must amend the Quality Plan and the other project plans in order to prevent the recurrence of any nonconformities.

The RMS representative may advise the PSC of apparent nonconformities. In this event, the PSC must treat the matter as nonconformity to be addressed within the PSC's Quality System. If required, a nonconformity/CAR register for the project services is to be maintained by the PSC.

The PSC must review and analyse the cause of all nonconformities and develop a plan of corrective action to prevent a recurrence. Details of such corrective action must be entered onto a nonconformity report or corrective action request register as appropriate.

Refer to Annexure PS301/C for the requirements for a Non-conformity reporting and CAR Register for the project.

2.1.4.4 Project Design Communications Management

The PSC must maintain close liaison with the RMS staff during the development of the project. The PSC's Representative and the RMS representative must organise meetings with other staff as required. Direct dialogue between all the RMS project team members and those of the PSC's team, will be encouraged for the various aspects of the work. The PSC contract is to be carried out in an atmosphere of co-operation and consultation.

The PSC's staff may also be required to attend meetings to brief senior RMS staff, community and other agencies.

Refer to Annexure PS301/C for meetings required and their frequency.

The meetings are to be held at the RMS's offices although some of these meetings may be held, at the discretion of the RMS representative, at other locations, which may include the study area or the PSC's office.

A record of all formal communications, in addition to those listed in Annexure PS301/C, must be prepared by the PSC and sent to the RMS Representative within the timeframes specified in Annexure PS301/C.

RMS's Regional Environmental Advisor representative will closely monitor environmental aspects of the work from a technical and statutory viewpoint and will provide advice to the PSC's Representative and the RMS Representative on specific aspects of the project, which must be incorporated into the project's design and environmental assessment.

2.1.4.5 Monthly project progress report

The report shall be completed in accordance with section 2.1.7.

2.1.5 Project Quality Plan

The PSC must develop and maintain a Project Quality Plan (PQP) which documents the quality management system required in accordance with Section 2.1 - Quality Management, of this Specification.

The PSC must also undertake regular surveillance, audits and reviews of its Project Quality Plan and its processes and products, and report on all surveillance, audits and reviews and all nonconformities identified. The Project Quality Plan must be developed from the Framework (generic) Quality plan, submitted by the PSC within the tender submission.

The Project Quality Plan must identify the procedures, processes and management systems which are not included in any other plan required in this Specification and that the PSC intends to apply to ensure delivery of the project services.

The Project Quality Plan must detail:

(i) The management team structures, nominated management and supervisory personnel, the minimum skill requirements of each position, the lines of communication and the performance milestones for the management team.

(ii) The PSC's methodology for working with service authorities.

(iii) The PSC's project services cost and schedule management.

(iv) The PSC's resources management.

(v) The PSC's project reporting system.

Refer to Annexure PS301/C for the requirements and delivery timeframe for the Project Quality Plan.

HOLD POINT	
Process held:	Commencement of design
Submission details:	Project quality plan
Release of hold point	RMS representative will release the hold point following consideration of, and agreement between RMS and the PSC to the content of the project quality plan.

2.1.5.1 Project Services Program

As part of the Project Quality Plan, the PSC must develop a Project Services program that must include all activities required to complete the project services.

The project services program must be in the format of an event orientated, critical path network, drawn to a weekly time scale and must provide sufficient detail to allow the RMS representative to identify the duration and sequence of, and the inter-relationships between the planned milestones and activities which comprise the work under the Specification. Completed activities must also be shown.

As a minimum, the program must identify all the separate activities contained in this Professional Service specification, in addition to meeting the requirements detailed above. An example Project Services Program showing minimum requirements is included in Annexure 301/C. The program must be submitted in both hard copy and electronic format. The PSC must use Microsoft Project 2007. PSC must provide electronic files suitable for incorporation in the RMS Primavera Master Schedule.

The RMS requires that the PSC executes a high standard of project management of the PSC's project services work. The RMS will be using Contractor Performance Reporting as part of this project development services contract in accordance with RMS Policy. If the PSC fails to implement a Project Quality Plan or to comply with its reporting obligations, then this failure will be reflected in the Contractor Performance Reports for the PSC during the Professional Services Contract period.

The PSC's performance and the Contractor Performance Reports will be used to assess the PSC's suitability for future work.

Refer to Annexure PS301/C for the requirements and delivery timeframe for the Project Services Program.

2.1.6 Design Development Plan

2.1.6.1 Introduction

The PSC must develop and maintain a Design Development Plan (which must be a quality assured document prepared in accordance with ISO 9001). The Design Development Plan must identify the procedures, processes and management systems to ensure that the following are achieved:

(i) The application of the correct and latest design standards, guidelines etc. (roads and bridges).

(ii) Roadscape design strategies (refers to road furniture, shoulder widths).

(iii) Functionality requirements and fitness for purpose.

(iv) Construction staging planning.

(v) Durability.

(vi) Design optimisation of economic construction methods, value for money, constructability and ongoing maintenance.

(vii) Integration of WHS design principles (HSiD).

(viii) Road Safety Audits.

(ix) Urban design including-landscape design.

(x) Integration of avoid and minimise environmental impact principles.

(xi) Project performance requirements.

(xii) Acknowledge approved temporary reductions in speed limits to allow for safe construction.

Refer to Annexure PS301/C for the requirements and delivery timeframe for the Design Development Plan.

2.1.6.2 Durability (design deliverable output for each element)

General

The PSC must ensure that all project design elements are durable. Durability must be addressed in the design and specification of all elements of the project works. The processes for achieving durability must be included in the Design Development Plan.

The Design Development Plan must consider the durability of the project's design elements throughout the design process. The Design Development Plan must demonstrate how the selected design, materials and construction processes will achieve the durability objectives for each element. For each design element, the plans must:

(i) Define the characteristics of the environment.

(ii) Identify the potential deterioration mechanisms in that environment.

(iii) Determine the likely rate of deterioration.

(iv) Assess the design element life.

(v) Define the required design element performance.

(vi) If appropriate, assess the need for further protection.

(vii) If appropriate, develop procedures for replacement of elements.

(viii) Determine inspection and monitoring requirements for both critical and non-critical elements.

(ix) If appropriate, outline possible remedial measures.

Construction Specifications

RMS construction specifications are based on ensuring durability in the context of RMS design guidelines and documentation. Based on the durability objectives of the project and the service life requirements, the performance criteria for materials for each design element must be reviewed against the following:

(i) The micro-environment in which the element must perform its function.

(ii) Potential deterioration mechanisms in this micro-environment.

(iii) The likely design element life.

(iv) The feasibility and cost of in-situ monitoring, maintenance and/or repair and replacement.

(v) The necessity of providing additional protection (e.g. coatings).

(vi) The significance of failure.

The performance criteria must then be confirmed as being either satisfied by RMS specifications or as requiring additional controls.

The Design Development Plan must incorporate a decision tracking mechanism, whereby all decisions made in the development of the design are recorded (together with the rationale for the decision) and are capable of later audit by the RMS or an Independent Verifier.

HOLD POINT	
Process held:	Commencement of design.
Submission details:	Design development plan
Release of hold point	RMS representative will release the hold point following consideration of, and agreement between RMS and the PSC to the content of the design development plan

Refer to Annexure PS301/C for the requirements and delivery timeframe for the Design Development Plan.

2.1.7 Monthly Project Progress Report and Progress Meetings

2.1.7.1 Introduction

The PSC must provide a Monthly Project Progress Report to the satisfaction of the RMS representative.

The PSC must convene regular progress meetings either fortnightly or monthly as specified in this Specification. The Progress Meeting agenda should include a review of actions from the previous meeting, the items in the Monthly Progress Report and any new business.

The PSC must report on the preparation, implementation, review and amendment of the various plans required by this Specification. The Monthly Project Progress Report must include, but is not limited to, the following information relevant to the month being reported:

(i) Status of the Project Services

(ii) Financial Report in accordance with Section 2.1.7.2 - Financial Report.

(iii) Details of any delays, potential delays and issues likely to affect timely completion of the Project Services

(iv) A reviewed and updated Project Services program, refer to Section 2.1.5.1 – Project Services Program, showing actual versus planned progress, including a description of rework undertaken due to PSC error or for other reasons

(v) Progress of discussions with relevant service authorities, local authorities and emergency services.

(vi) Approvals and information required from the RMS.

(vii) Any variations/changes in scope/changes in quality

(viii) Resources current and planned.

(ix) The results of internal and external quality audits.

~~(x) The Community and Stakeholder Participation Plan, refer to Section 2.7 - Community Participation Plan, including:~~

~~a. Feedback and progress relating to Public Displays.~~

~~b. Community Meeting Reports.~~

~~c. Monthly Progress Newsletters.~~

~~d. Media Releases.~~

~~e. Complaints Register.~~

~~f. Progress on any other activities required under the Community Participation Plan.~~

(xi) The implementation of Work Health and Safety into the services and details of updates to the Work Health and Safety (WHS) management system

(xii) Environmental management issues, including the integration of the required environmental practices and processes, refer to PS311 - Environmental Design and Compliance (REF and EIS).

(xiii) Value Engineering ~~Workshop Action Plan~~ update.

(xiv) Design changes that will eliminate or otherwise control work health and safety risks, environmental and community impacts and project whole of life cost.

(xv) Status of implementation of the Risk Management Plan, including the highlighting of new risks and advice on managing the new risks that have been identified. Status of constructability assessment issues.

(xvi) All HSiD activities and outcomes including verification records carried out during the month and cumulative. Include the updated HSiD Risks Register. Report planned HSiD activity including any constraints or issues of concern, highlighting anticipated inputs by RMS. Report cumulative resources (name and approximate hours) for specific HSiD activities utilised and planned.

(xvii) All Constructability activity and outcomes. Report planned Constructability activity to achieve safe, efficient and practical design including progress on Construction Staging and Construction Program, any constraints or issues of concern and highlighting anticipated inputs by RMS. Report cumulative resources (name and approximate hours) for specific Constructability activities utilised to date and planned.

(xviii) Property acquisition, easements, lease, affects and spatial needs for construction and maintenance. This includes land for construction contractor's use including site office, compound, parking, stockpile, processing, batch plans, access, and ancillary sites. Land for stormwater easement and discharge,

shaping for levels in private property, ERSED including basins (temporary and permanent). Strategy and space for mulched material. Safe access and width for utilities maintenance. Width for fencing construction. Width for safe clearance for overhead electricity cross arms and sway.

Refer to Annexure PS301/C for the requirements and delivery timeframe for the Monthly Project Progress Report and ***fortnightly*** Progress Meetings.

2.1.7.2 Financial Report

The RMS operates an accrual accounting system to determine the full value of its completed work to date on an end of month basis. The PSC must advise the RMS of the following financial information, in the Monthly Project Progress, Report, including:

(i) Cash flow estimates for the PSC's project services work for the remaining duration of the contract.

(ii) Value of all work performed as well as the value incurred but not yet invoiced.

The accuracy of the PSC's financial information must be within ± 5% of the invoice value for the month.

The PSC's financial information is to be provided as a component of the Monthly Project Progress Report.

2.1.7.3 Project Quality Plan Management Monthly Update.

The PSC must provide the RMS Representative with an update on the Project Quality Plan Management each month, certified as correct by the Quality Manager. The report must be in a format approved by the RMS Representative. The report must contain the following information:

(i) Results of corrective and improvement action taken on the Project Quality Plan since the last Monthly Project Progress Report.

(ii) A schedule of all current nonconformities identifying:

a. The details of the nonconformity.

b. The effect of the nonconformities on the project development services and/or the project.

c. The proposed dispositions.

d. The party or parties responsible for implementing the dispositions.

e. The date by which the dispositions are to be implemented.

(iii) The results of quality reviews and audits (internal and external) undertaken during the preceding month.

(iv) A schedule of all holds points released by either the PSC or the RMS and the lot or portion of work covered by the hold point.

The Project Quality Plan Management monthly update is to be provided as a component of the Monthly Project Progress Report.

2.2 HEALTH AND SAFETY IN DESIGN (HSiD)

This section specifies the requirements for the delivery of effective WHS Management of the design and the outputs of the Project Services with regard HSiD. HSiD is the integration of control measures early in the design processes to eliminate hazards so far as is reasonably practicable or to otherwise control them according to the Hierarchy of Control (HOC) as set forth in the WorkCover approved Safe Design of

Structures Code of Practice (COP). HSiD protects workers and those in the vicinity through all project lifecycle stages. An important aspect of HSiD is the duty to consult, cooperate and collaborate.

The requirements for the PSC's WHS Management System are provided in Section 2.1.2 - WHS Management Systems.

The requirements for the Road Safety Audit (RSA) process are provided in Clause 2.6

Further details are included in RMS Specification G22.

The PSC must:

(i) Comply with Technical Procedure ILC-MI-TP0-520 Health and Safety in Design. Attention is drawn to the two guides ILC-MI-TP0-520-G01 and ILC-MI-TP0-520-G02 and ILC-MI-TP0-520-F01 (F01) HSiD Overview. The RMS Project Pack document "F01" contains a list of other Project Pack documents which detail requirements the PSC must adhere to and also tools, templates and reference documents. The PSC must familiarise itself with the entire suite of RMS's HSiD documents which cover all stages of the project lifecycle and must comply with those that are relevant to the scope of this Brief. If there is any doubt or ambiguity as to which requirements must be met the PSC must raise the matter with RMS immediately. The following points are not exhaustive but are provided as a guide to the PSC of some of the requirements of RMS's HSiD system. For the sake of completeness all design phases are mentioned below however the PSC must refer to its scope to determine which apply:

   a. The RMS's HSiD system framework can be found in ILC-MI-TP0-520-G02.

   b. HSiD considerations for a project start in Strategic Design Phase. Where the PSC's scope is for subsequent phases (Concept and/or Detailed Design) RMS requires the PSC, utilising the specific HSiD IV employed / engaged by the PSC to carry out a due diligence check on behalf of RMS on the design process and HSiD management of previous work. The outcome is a list of issues to address and required actions.

   c. The PSC must commence HSiD activity at the pre-design stage for his particular scope. The PSC's design programme must show each of the required pre-design HSiD activities. These include three site visits (as described in the Project Pack documents), specific HSiD training, receipt of RMS supplied inputs and information transfer from previous design development phases.

   d. Workshops are required however they are to be in the context of a holistic approach through all design activities and must not be regarded as the only place and time "where HSiD is done".

   e. HSiD workshops must be facilitated by a person with equivalent credentials to those on the RMS HSiD and Constructability Panel for the type of workshop.

   f. The design must be independently verified from a Health and Safety in Design perspective by a competent Health and Safety in Design Independent Verifier (IV). The Project Pack documents provide information on minimum criteria for the IV. Clause 1.20 of this Brief provides more information.

   g. RMS maintains panels of approved providers for HSiD and Constructability work. For HSiD three roles are defined (Facilitator, Support and IV). For constructability, the facilitator role is defined in the Panel documents as well as various specialised constructability advisors. The PSC must use resources that are on the approved HSiD Panel unless RMS approves otherwise (RMS does not necessarily confine itself to the approved panel).

   h. All relevant project staff must achieve an understanding of Health and Safety in Design roles, responsibilities, activities and methodologies. Evidence of specific HSiD training at all levels of the PSC's design team is required.

i. Documentary evidence of the design team's efforts and due diligence with regard to Health and Safety in Design throughout the design process must be retained.

j. A register of hazards must be maintained and hazards eliminated must be retained within it, along with residual hazards and the controls proposed to minimise the risks they pose. Drawings should be annotated with comments regarding residual hazards. The register is to be specific to HSiD and is not the same as the Project Risk Register. Project Pack documents provide a template.

k. All documentary evidence must be maintained in a WHS file that is a project deliverable for the attention of RMS and the contractors it engages for further work on the proposal and on the completed asset.

l. Provide a Design Safety Report and for Detailed Design, a Safety Report to meet the requirements of WHS Regulation 295 and HSiD ProjectPack.

2.2.1 Deliverables and Submission Details

(i) WHS File. The WHS file is an organised repository of all information relevant to HSiD activity undertaken for the project (all stages of design). It is a key part of demonstrating HSiD elements have been carried out and it facilitates verification. See Project Pack document ILC-MI-TPO-F15. The WHS file contents include the Design Safety Report and the HSiD specific Hazards and Risk Register.

(ii) Detailed Design deliverables include the Safety Report suitable for RMS to provide to the Construction Contractor. See Project Pack document ILC-MI-TPO-F26.

2.3 RISK MANAGEMENT (OTHER THAN HSiD)

2.3.1 Objectives

(i) To ensure the implementation of risk management techniques to determine risks and the development of risk management strategies to manage those risks.

(ii) To use the processes and tools specified in ProjectPack, RMS technical procedure ILC-MI-TP0-201.

HSiD hazards and risks are to be dealt with separately from non-HSiD risks and requirements regarding these are addressed in Section 2.2

2.3.2 Risk Management Process

The PSC must progressively develop, maintain and implement a Risk Management Plan in accordance with Project Pack RMS technical procedure ILC-MI-TP0-201. Health and Safety in Design hazards and risks are not dealt with in the Project Risk Management Plan but are recorded and managed in the specific HSiD Risk Register (see Section 2.2). (Ref WHS Act 2011- Risk Management).

The Risk Management Plan is to target all phases of the project life cycle and must include the development and implementation of risk management strategies to manage those risks that could affect the delivery of the requirements of the PSC services and the overall delivery and operation of the project. Risk Management must be an ongoing process embraced by all team members.

The Risk Management Plan is to be a **living document** and is to be reviewed continuously and updated as changes to the project risks are identified, eliminated or otherwise dealt with. The Risk Management Plan must be used by the PSC in the successful management of the design. The review and update of the Risk Management Plan is to be an agenda item at all ~~monthly~~ ***fortnightly*** project progress meetings. The Risk Management Plan must also be updated and reported monthly in the Monthly Project Progress Report in accordance with Clause 2.1.7 - Monthly Project Progress Report.

The Risk Management Plan is to be reviewed at the end of the project services so that any residual risks that are not mitigated during the design and environmental assessment phase can be reported as a part of the Design Report. These residual risks will need to be addressed during the subsequent stage of the project.

The risk management process should be divided into two distinct processes:

(i) Risk Identification/assessment.

(ii) Risk Management action/status.

In the risk identification/assessment process, the Risk Management Plan must be divided into major risk elements e.g. community issues, aesthetics/visual appearance, bridges, pavements, environmental etc. Risks must be identified and tagged under each of the major elements. For each risk the possible consequence, likelihood, impact, risk priority and risk ranking is to be addressed.

In the risk management action/status process, management measures, actions, responsibility, timing and status must be identified for each risk.

The PSC must use the RMS risk analyser when developing its risk management plan.
See ILC-MI-TP0-201-F01

2.3.3 Risk Management Workshop

A Risk Management Workshop is to be held early in the project life at the ~~20%~~ ***50%*** stage, to review and further develop the Risk Management Plan. The workshop is to include key stakeholders, as agreed by the RMS representative. The workshop should review the output of any previous Risk Management Workshops.

Refer to Annexure PS301/C for the Risk Management Workshop requirements for the project.

2.3.4 Imported Product Risk

Provide a list of imported products that may be incorporated into the work, for example from the bridges, major structures and barriers and how these risks will be addressed.

2.4 VALUE MANAGEMENT REVIEW

2.4.1 Not Used

2.4.2 Value Management Review

2.4.2.1 Objectives

(i) Incorporate value management in the design development process to refine and add value to the development of the design.

(ii) Deliver high quality and value for money outcomes for the community.

For the purpose of this specification, “value management review” is defined as the use of systematic techniques to identify the elements of the project, establish the value/worth of the elements, and optimise these elements to meet the required functions and performance requirements at the lowest overall whole of life cost. Value Management Review must be used to evaluate engineering options for significant high value design elements.

For the purpose of this specification value for money can be considered as:

i. Economy – careful use of resources to save expense, time or effort.

ii. Efficiency – delivering the same level of service for less cost, time or effort.

iii. Effectiveness – delivering a better service or getting better return for the same amount of expense, time or effort.

2.4.2.2 Value Management Review Process

It is not mandatory to undertake a Value Management Review Workshop. VM principles are to be used to examine preferred options and treatments. If a workshop is to be undertaken it would be informed by a preceding constructability process and workshop.

Value Management Review may involve the use of value management techniques, as described in RMS procedure ILC-MI-TP0-230 Value Management, or other equivalent analysis tools. The process used to implement Value Management must be incorporated into the PSC's Project Quality Plan and Design Development Plan.

2.4.3 Previous Studies

Refer to Annexure PS301/A for details of any previous Value Management undertakings.

2.5 CONSTRUCTABILITY INTEGRATION

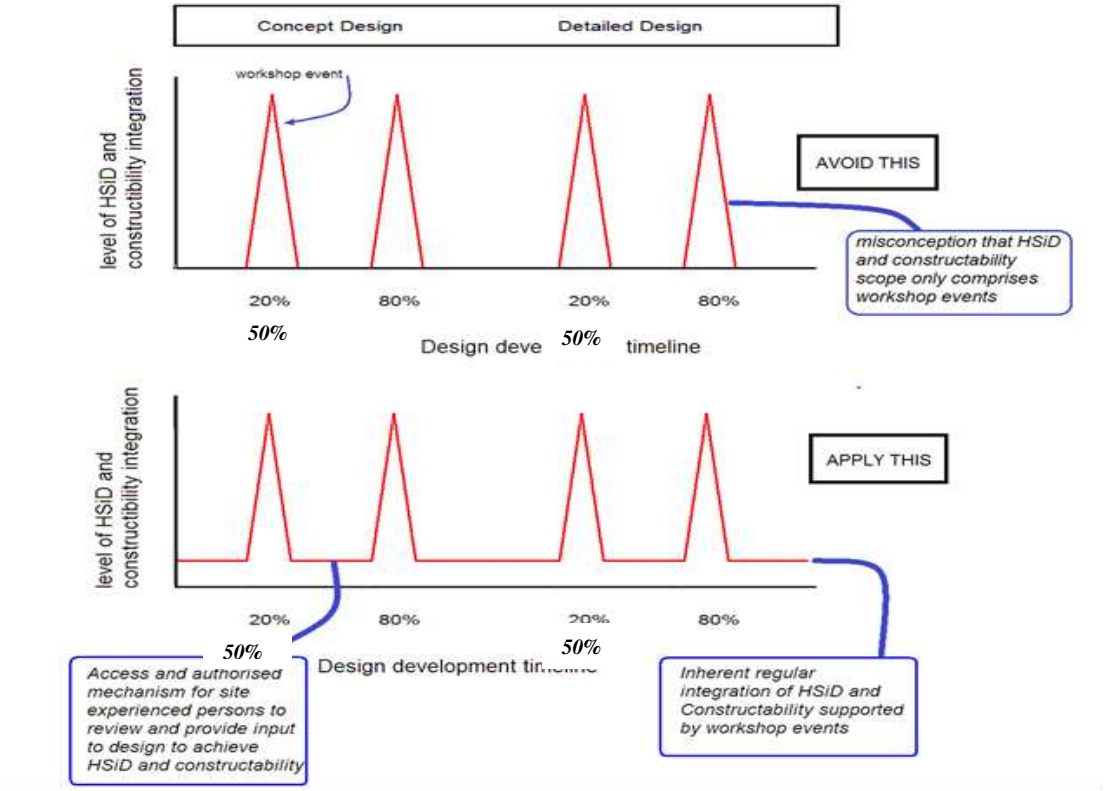
Constructability integration along with HSiD are continually applied throughout the design process to achieve safe, efficient and practical (SEP) design

The purpose of constructability integration is to optimise the design to ensure the project can be constructed and maintained safely, efficiently and practically, while meeting project objectives. Constructability is closely related to Health and Safety in Design (HSiD). The two sets of processes are paired to provide safe, efficient and practical design.

A secondary purpose is to ensure that construction flexibility and innovations are not unnecessarily constrained by construction and tender documentation, and so that opportunities to reduce costs are maximised by innovation during construction

The site visit required by ILC-MI-TPO-620 prior to a Constructability Workshop can be held in conjunction with a site visit as preparation for the Health and Safety in Design Workshop

Constructability must also be considered during all design development and optimisation processes. Constructability assessment is intended to augment, but does not replace other design optimisation and value engineering/risk management processes.



Graphical representation of regular integration of HSiD and Constructability supported by workshop events

Constructability Integration reporting indicators given in Annexure A are to be updated in the monthly progress report.

Constructability Integration is supported by the following key milestone events:

(i) **Constructability Workshop** – this workshop is to be held at appropriate times during the design process. It involves the use of construction and asset management knowledge and experience in considering and addressing construction and maintenance issues which affect or which are affected by the project design and design documentation. The objective of this is to ensure that designs are practical, easily constructed and easily maintained.

(ii) **Constructability Review** – a review of the project to ensure that constructability has been adequately addressed in the project's management processes, environmental assessment and design documentation. Typically, project process and design documentation to be reviewed would include: design drawings, staging drawings, traffic management plans, Design Reports, specifications, project estimates, project quality, value management or value engineering study reports, risk management reports, environmental assessments and any previous constructability review reports.

The PSC must prepare Constructability Assessment Reports (one report for each workshop or review) in accordance with ProjectPack ILC-MI-TP0-620 – Constructability Assessment and the following schedule:

~~(i) 20% of the completed design drawings – constructability workshop (to be held prior to and separate from the 20% Health and Safety in Design Workshop~~

(ii) At least 4 weeks prior to 80% of the completed design drawings – constructability workshop (to be held alongside Health and Safety in Design Workshop)

2.6 ROAD SAFETY AUDITS

2.6.1 Definition and Objectives

A road safety audit is a formal examination of proposed or existing road related areas from the perspective of all road users with the intention of identifying road safety deficiencies and area of risk that could lead to road crashes. It does not consider crash history. It is conducted by an independent, qualified team of professionals.

The objectives of road safety audits are to:

(i) Identify potential safety problems for road users and others affected by the project.

(ii) Ensure that measures to eliminate or reduce road safety problems are considered fully during the development of the project.

2.6.2 References

The road safety audits are to be undertaken with reference to:

NSW Centre for Road Safety Guidelines for Road Safety Audit Practices.

2.6.3 Road Safety Audit Team

The audit team must:

(i) Be independent of the design and project management teams.

(ii) Be experienced in road safety engineering and principles with an understanding of traffic engineering, road design/construction and road user behaviour.

(iii) Have knowledge of NSW traffic legislation / road rules.

(iv) Be appropriately experienced in road safety auditing. The lead auditor must be certified to Level 3 in Transport NSW Register of Road Safety Auditors.

2.6.4 Road Safety Audit

The Road Safety Audit is to be carried out towards the end of the design stage*s*, typically at 80% of the completed design drawings.

Refer to Annexure PS301/C for the requirements and delivery timeframe for the Road Safety Audit Report and corrective action program.

HOLD POINT	
Process held:	Finalisation of detailed design
Submission details:	Submission of stage 3 road safety audit report and post audit action plan
Release of hold point	RMS representative will release the hold point following consideration of the stage 3 audit report findings and written agreement to the action plan

2.6.5 Road Safety Audit process, meetings and report

The detailed design audit process, meetings and report are to follow the steps and structure outlined in the NSW Centre for Road Safety Guidelines for Road Safety Audit Practices.

Recommendations are NOT to be included in the audit report. The report should focus on the identification of safety deficiencies only. Should RMS Representative require recommendations, this must be provided as a separate exercise and or document.

Each RSA recommendation is to be included on the HSiD Risk Register unless RMS advises that it is not relevant under the WHS Act and RMS HSiD System.

Sufficient time is to be allowed in the program to address the issues raised and to incorporate the appropriate mitigation measures into the design.

Where possible, any issues identified in the Road Safety Audit are to be incorporated into the design. The incorporation of the Road Safety Audit elements would not constitute a variation in either time or cost to the contract.

~~2.7 COMMUNITY AND STAKEHOLDER PARTICIPATION PLAN~~

~~Refer to Annexure PS301/ for the Project Community and Stakeholder Participation requirements.~~

~~**HOLD POINT**~~	
~~Process held:~~	~~Stakeholder engagement~~
~~Submission details:~~	~~Community and stakeholder engagement plan~~
~~Release of hold point~~	~~The RMS representative will release the hold point following consideration of, and agreement between RMS and the PSC to the content of the Community and Stakeholder Engagement Plan~~

2.8 PROJECT SCOPE CONTROL AND ESTIMATING

2.8.1 Objectives

(i) To monitor, control and report the project scope throughout the project development.

(ii) To prepare reports at key milestones in the project life cycle.

(iii) To prepare project cost estimates at key milestones submissions in the project life cycle and project scope changes.

(iv) To monitor and regularly update the project estimate and economic evaluation.

(v) To target delivery of the project to the estimated value.

(vi) To prepare an Estimate Report.

(vii) To value options to assist in decision making, refer to Section 2.4 - Value Management and Value Engineering.

Refer to PS391 Quantity Survey for further requirements on estimating.

2.8.2 General

The PSC must control, monitor and report the scope of the project to ensure an appropriate balance between cost and function. The PSC must analyse any significant changes in scope to determine causes and effects and propose solutions to maintain the development of the project within the project estimate.

The PSC must prepare detailed estimates at the stages stipulated in the RMS's ProjectPack ILC-MI-TP0-601 Estimating Procedure, in accordance with the RMS's Estimating Manual, 2008 and PS391 Quantity Survey.

The estimates, including supporting work quantity schedules, must be continuously maintained and developed to a level of detail that will enable appropriate cost control of the project at all times. The estimate must be in an excel spread sheet format and as approved by the RMS representative. The estimates, including supporting quantity schedules, must be maintained as controlled documents and are to be reviewed as changes to the scope are made. Estimates must be prepared at each stage, using the empirical method.

The probabilistic method to the 90% (P90) and 50% (P50) probability of not being exceeded standard (as specified in the RMS's Estimating Manual) is also required (i.e. in addition to the empirical method) for the following projects:

(i) Projects which have a total estimated value greater than $75 million.

(ii) Projects which have been classified as KIPs (Key Infrastructure Projects).

(iii) Projects which are federally funded.

For projects with a total estimated value of equal or less than $75 million the RMS Representative shall specify if the probabilistic method is required.

Estimates must be submitted for formal approval at key stages of the project and must be accompanied by supporting documentation appropriate to the stage of the project development. The supporting documentation is to include: the current project scope details, extracts from reports and design drawings, assumptions used in determining unit rates, a "reality check" of unit rates against those for other projects, discussion of the proposed construction staging and techniques and some assessment of risk and how it is encompassed in the estimate and a list of items which have varied from the previous approved estimate and the reason for the variance (refer to the Estimating Manual). The compilation of the estimate with the supporting information is the Estimate Report.

The Quantity Take-off source documents indicating from what drawings each quantity has been measured is to be included with the final Estimating Report (i.e. for the final Detailed estimates).

The PSC ~~may~~ ***will*** be ***required*** ~~asked~~ to:

(i) Prepare ~~a 20% estimate~~, an 80% estimate ***and a 100% detailed design estimate,*** an estimate at any major occurrence which impacts on the costs and a final ***(IFC)*** estimate.

(ii) Monitor and review the project scope and estimate of cost and report any changes in the Monthly Project Progress Report.

(iii) Revise the economic evaluation whenever the project cost estimate is significantly updated and at each formal estimate approval stage.

(iv) Prepare material for presentation to RMS senior management.

Refer to Annexures PS301/C and PS391/C for the requirements and delivery timeframe for Project Control and Estimating.

2.9 CONSTRUCTION STAGING AND CONSTRUCTION PROGRAM

The PSC must prepare a Construction Program that accurately determines the overall expected construction duration for inclusion in the Construction Contract Tender Documentation.

The Construction Program must be submitted to RMS in both hard copy and electronic copies. The electronic copy must be readable by MS Project 2007 software.

The program must be based on the assumed staging method and include realistic productivity for all activities

The Construction Program must be accurate, comprehensive and complete and must show:

(i) the construction timeframe for the whole of the works and any Milestones;

(ii) the intended duration of all construction activities and other significant events;

(iii) the proposed activities that are to be performed outside of working hours;

(iv) consistency with all known constraints on access, performance and coordination; and

(v) logical relationships between events along with the sequence of activities which constitute the critical path(s).

The construction program must reflect the delivery strategy for the total construction and detailed construction arrangements for each delivery package.

The PSC must consider the following, when developing staging and traffic management plans. Staging considerations are not to be limited to traffic staging but must consider staging of elements such as bridge, culverts, walls, cuts and embankments:

(i) Provision of temporary signage, pavement markings and other forms of delineation.

(ii) Previous constructability assessment review reports and issue register

(iii) The use of appropriate turning path templates at intersections.

(iv) Temporary access to properties.

(v) Temporary pavements to connect various stages.

(vi) Temporary provision for pedestrians and cyclists.

(vii) Temporary provision for buses (i.e. bus stops etc.).

(viii) Clearance between work sites and traffic, provision of temporary traffic barriers as required.

(ix) The interaction of construction traffic with normal road traffic including heavy vehicle access points from local roads to the site and heavy vehicle routes on local roads.

(x) The impact of construction activities that will be in progress, and the construction methods.

(xi) The locations of sources of construction materials.

(xii) Include viable alternatives that a construction contractor may consider, where they exist.

(xiii) Construction time schedule.

(xiv) Restrictions to work hours including hours allowed for blasting etc.

(xv) Road occupancy licensing requirements.

(xvi) Drainage – all areas under traffic to be effectively drained at all times.

(xvii) Temporary alternative routes (refer to section on-road user delay management).

(xviii) Haulage of construction materials (refer to section on-road user delay management).

2.10 PROJECT RECORDS

The PSC must comply with the requirements of the State Records Act and other relevant acts.

3 DETAILED DESIGN AND DOCUMENTATION DELIVERABLES

3.1 INTRODUCTION

This section specifies the requirements for the design drawings and project documentation required to be produced as a result of the detailed design process specified in PS301. These must include the:

(i) Deliverables required for review and comment by internal and external stakeholders.

(ii) Detailed design drawings and Digital models or BIM model if required.

(iii) Project quantities.

(iv) Project estimates at ~~20% detailed~~, 80% and 100% detailed and at any major occurrences which impact on the costs ***and a final (IFC) estimate.***

(v) Project estimate report and the "quantity take off" source documents indicating from what drawings each quantity has been measured.

(vi) Detailed design report.

(vii) Full construction and tender documentation.

(viii) E-tender CD.

(ix) Pre-tender meeting information.

(x) Addenda to construction and tender documents.

3.2 DESIGN PRESENTATION AND REVIEW

3.2.1 Objective

To enhance conformity with the RMS CADD Manual 2014 – Section 3.5 regarding drawing organisation, presentation and data exchange.

To ensure that the design is complete in all detail and continuity, and meets the performance requirements of the project including the integration of the outcomes of Constructability, HSiD, Risk~~, VM~~ and other reviews and workshops.

3.2.2 RMS review

The PSC must incorporate RMS, and other stakeholder comments, throughout the detailed design process and implement them into the final design as appropriate. To ensure that changes are applied with the correct interpretation, the PSC must obtain final RMS agreement to all changes made.

RMS may, at its discretion, return any documentation without undertaking the required review if the document is deemed to be of poor quality or is not complete to the required hold or review point. In this instance Roads and Maritime will not accept time and or cost variations

3.2.2.1 Progressive review by RMS

During the design development, the investigations and design must be submitted to the RMS Representative at various stages, for review in accordance with this Specification.

At ~~20%~~ ***50%*** drawing completion of design, of the whole project, this includes, but is not limited to:

(i) A design, reviewed by the PSC, as a roll plan with any opportunities for improvement identified as per:

a. Horizontal alignment of the main alignment.

b. Vertical alignment of the main alignment.

c. Compliance with the Design Reference Documents.

d. Health and Safety in Design requirements.

e. Constraints identified and mapped.

f. Constructability requirements.

(ii) ~~20%~~ ***50%*** complete detailed design drawings.

(iii) Draft detailed design report.

(iv) Digital models or BIM model where required.

(v) Internal/independent verification reports to be included in the submission.

(vi) The agreed Typical Cross-Section, signed and authorised.

(vii) Long sections of the main alignment and side roads (where required).

(viii) A3 Sheet layout for the A3 Sheet layout for the detailed design.

(ix) Identification of areas requiring further investigation over and above specified in this Specification.

(x) Items detailed in the Annexure PS351/C Schedule of Deliverables and Submission Details.

HOLD POINT	
Process held:	Detailed design
Submission details:	~~20%~~ ***50%*** complete detailed design, Digital or BIM models, internal/independent verification reports (if appropriate) and presentation to the RMS Representative
Release of hold point	The RMS Representative will release the hold point following review of the ~~20%~~ ***50%*** completed detailed design, and incorporation of RMS comments by the PSC

At 80% drawing completion of design, of the whole project, this includes, but is not limited to:

(i) 80% complete design roll plan drawings detailed design roll plan drawings.

(ii) 80% complete detailed design A3 drawings.

(iii) Draft design report detailed design report.

(iv) Digital or BIM models.

(v) Internal/independent verification reports.

(vi) A3 Sheet layout for the A3 Sheet layout for the detailed design.

(vii) Items listed in the ***50%*** ~~20% and detailed~~ design completion***s*** are to be included in the 80% submission***s*** but further developed to match the 80% design levels.

(viii) Items detailed in the Annexure PS351/C Schedule of Deliverables and Submission Details.

HOLD POINT	
Process held:	Finalisation of design
Submission details:	80% complete design, Digital or BIM models, stage 3 road safety audit report, internal/independent verification reports (if appropriate) and presentation to the RMS representative
Release of hold point	The RMS representative will release the hold point following review of the 80% completed detailed design and incorporation of RMS comments by the PSC

At completion of the design.

- Completed A3 drawings completed design A3 drawings
- Completed design report completed design report
- Digital models.
- Items detailed in the Annexure Schedule of Deliverables and Submission Details and Annexure PS351/C Schedule of Deliverables and Submission Details.

Completion of design in the submission above is reached when the following activities have been completed and the design is ready for RMS acceptance:

(i) Detailing and drafting of all sheets;

(ii) Drawing checks and certification by the designer(s);

(iii) Road safety audit and close out; and

(iv) Internal and or external verification of the design/drawings.

HOLD POINT	
Process held:	Acceptance of the detailed design
Submission details:	Complete detailed design, Digital or BIM models, stage 3 road safety audit report, internal/independent verification reports (if appropriate) and presentation to the RMS representative
Release of hold point	The RMS representative will release the hold point following completion of the detailed design, including the incorporation of RMS comments into the final detailed design by the PSC

The PSC must allow 10 business days minimum for each review in their program. Submissions may be staged by work sections or components. It is considered preferable that ongoing review by the RMS of stages of work be undertaken where possible to ensure a smooth flow of output and so that any issues or concerns are addressed as they arise. ***Refer Annexure PS301 A.8.2 for more detail on the design submission and review process including timeframes for the reviews.***

Refer to the constructability assessment reports, ~~VM reports~~, HSiD Hazards Register and reports and the Risk Register and reports in addition to the general design reviews above.

3.2.3 Drawing presentation

Drawing presentation includes the presentation of all information, reports and computer model format necessary to meet the requirements of this Specification.

Drawing presentation must conform to RMS CADD Manual 2014 – Section 3.5 regarding drawing organisation, presentation and data exchange. Notwithstanding the content of this manual the PSC must:

(i) Ensure that the drawings and reports are consistent with the requirements of this Specification.

(ii) Confirm, and obtain agreement, to the structure, type and composition of drawings, reports, and computer models, with the RMS Representative.

(iii) Ensure that specific requirements contained elsewhere within this Specification are incorporated.

(iv) Ensure the appropriate cross-referencing between the detailed design drawings and the construction and tender documentation

(v) Incorporate and reference appropriate model and standard drawings. Where model drawings are not available or not suitable for a specific purpose, develop a supplementary drawing that fulfils the purpose or include all the necessary details on the drawings.

3.2.4 Digital Model requirements

The detailed design for the road works must be developed using digital models and must conform with RMS CADD Manual 2014

Digital design is required for all components of the work that will be constructed. The design model(s) is (are) to be complete in every way and must include all permanent changes to the existing terrain.

The PSC should be aware that the final digital models will be provided to the construction contractor for use in setting out, quantity calculations etc. The models are to be complete in every way and are to be fully documented. Superfluous or superseded data shall be removed from the model files.

The model must be suitable for set out for construction also suitable for machine/robot control.

3.3 DETAILED DESIGN REPORTS

3.3.1 Objective

To sufficiently describe and detail the project detailed design to enable RMS representatives to undertake a critical review and evaluation.

3.3.2 Report contents

The PSC must prepare a design report (separate reports) that addresses each significant element of the works (e.g. each pavement, each drainage structure, each structure and each fill, etc.). The sub parts of the report must be submitted to the RMS Representative as soon as that respective element of the work is completed, and in a combined volume at the end of the detailed design process.

The design reports must include, but not be limited to:

(i) Details of design work undertaken.

(ii) Road design related calculations.

(iii) Structural design calculations.

(iv) Supporting logic and justification of any unorthodox design treatments.

(v) Design criteria.

(vi) Design guides and references adopted.

(vii) Certification for all structural designs (where required).

(viii) Road safety audits - refer to Section 2.6

(ix) Report on how HSiD issues have been incorporated

(x) Documentation of Digital models or BIM model if required.

~~(xi) Project environmental management plan - refer to PS311 - Environmental Design and Compliance (REF and EIS).~~

(xii) Report on:

a. how the detailed design has incorporated environmental mitigation measures. ~~Refer to PS311 Environmental Design and Compliance (REF and EIS).~~

(xiii) Embankment design (including details of pre-loading, if so determined) refer to PS331 – Geotechnical Investigation and Design.

(xiv) Batter design.

(xv) Earthworks materials management assumptions, including availability of fill material at assumed construction stages (including estimated quantities and material characteristics) from assumed sources.

(xvi) Utility/other services adjustment plans - refer to PS321 - Detailed Survey and Utility Adjustments and Investigations.

(xvii) Property adjustment plans

(xviii) Property adjustment plans - refer to PS351 Road Design Section 9 - Property works.

(xix) Schedule of quantities for the design.

(xx) Construction cost estimates for the design.

(xxi) Construction staging

(xxii) Provision for traffic Detailed Survey and Utility Locations.

(xxiii) Details of identified issues, considerations and justification for any critical decisions and source documents used.

(xxiv) Summary of the interim design reviews, including constructability assessments, listing major issues and how they were addressed in the detailed design documentation.

(xxv) Evidence that the detailed design has been verified (internal and independent if appropriate) and is satisfactory with respect to the brief

(xxvi) Durability assessment report

The structural design report must include, but not be limited to (also refer PS361 – Bridge and Structure Design):

(i) Outline of the design methods, used material properties and load factors adopted, critical load combinations and assumptions used, resistance assumed under critical load combinations, long term serviceability bearing pressures and the ultimate bearing pressures for foundations.

(ii) Certification that the design and outputs comply with the appropriate codes.

4 ~~CONSTRUCTION DESIGN SUPPORT~~

~~The PSC will be required to provide design support services during the construction of the project. Design support services includes correction of defects and omissions in the design deliverables and provision of additional design services. Refer to the "call-back", in the Professional Services Contract (Construction Industry) C71, clause 11.5 and the Agreement Form, Schedule 1, Item 12.~~

5 PAYMENT

Claim for Payment is to be delivered to the RMS Representative no later than 10 days following the last day of the month that is being reported. Claim for Payment must include an itemised list of works undertaken and percentage completed for each respective monthly claim.

ANNEXURE PS301/A – PROJECT SPECIFIC REQUIREMENTS

A1 PROJECT INTRODUCTION

Table PS301.A1 – Project Details

Project Name	***Macquarie Park Bus Priority and Capacity Improvement Project - Stage 2***
Project Number	***P.0023019***
Location	***Epping Road, Herring Road, Waterloo Road and Lane Cove Road, Macquarie Park***
Local Council	***Ryde Council***
Length (size) of the project	***MR 373 Epping Road to MR 162 Lane Cove Road via Herring Road (7486) and Waterloo Road at Macquarie Park and MR 162 Lane Cove Road from Waterloo Road to Epping Road.*** ***Project length approximately 2.8km.***
Project features	• ***Upgrade of the state and local road network in the Macquarie Park precinct to improve travel times and reliability for buses and for other road users*** • ***3 new signalised intersections and upgrades to the existing signalised intersections*** • ***Installation of bus lanes and road widening with improved pedestrian and cyclist crossing facilities at signalised intersections*** • ***Partial (strip) property acquisitions along Herring Rd, Waterloo Road, Byfield St, Khartoum Rd and Lane Cove Rd to enable the road widening and intersection upgrade works*** • ***Service relocations to allow kerb relocation and lane widening***

Design Development

The Macquarie Park Bus Priority and Capacity Improvement project (Stage 2) design has been progressed by RMS from strategic design to a 20% concept design level. The current 20% concept design is only in 2D horizontal design development. No 3D design has been undertake and the vertical geometry has not been tested or verified as correct.

The PSC team will be required to complete the concept design, the detailed design and the preparation of Issued for Construction drawings and construction contract tender documentation for all components of the project as defined in this request for tender. This includes managing all design review and approval processes for each stage of the design development.

For ease of procurement and delivery of the concept and detailed design, the development of the design to 100% concept design (and approval) and then to 100% detailed design (and approval) will be under the RMS Professional Services Specifications for Detailed Design.

Key considerations in the development of the concept design and detailed design include, but are not limited to, the following:

- ***This project has been developed as part of the Bus Priority and Infrastructure Program (BPIP) to upgrade the bus and road network in Macquarie Park***
- ***Drainage – All proposed works will connect into the existing drainage system. The key requirement is to maintain current surface water levels / flooding conditions on the road and the adjacent properties.***
- ***Existing Utilities – The extent of the works contain a high density of existing utilities, both major and local connections. The detailed design is reliant on the strategy of the Consultant minimizing the impact to existing utilities, aiming to develop a design that minimises the relocation of existing utilities by protecting them, or developing alternate design options that avoid the utility, in the first instance, and only relocating them if protection will not be approved by the utility authority.***
- ***Existing Utility relocations – a number of existing in ground and overhead utilities will require relocation and will require design development and consultation with the relevant Authorities and Ryde Council***
- ***Stage 1 work co-ordination. The Stage 2 concept design will be progressing while the Stage 1 works are under construction. The Stage 2 works will build on and link into the Stage 1 works. However a large portion of Stage 1 works at the interface of the Stage 2 work will require demolition to provide a seamless interface of the 2 designs. Stage 1 As-Built drawings will be issued to the PSC during the mid-to later stages of the Stage 2 concept design. The Stage 2 design must interface and tie into the Stage 1 As-built works.***
- ***Property acquisition adjustment (approximately 35) and a number of other driveway/footway entrance adjustments are required with associated meetings with land owners for agreement are required in the design development process***
- ***3 existing non-signalised roundabouts will require upgrading to new signalised intersections and 5 existing signalized intersections will require traffic signal and associated work modifications and/or upgrades***
- ***Stakeholder, community and property owner consultation will be undertaken by RMS. However, the PSC will be required to attend consultation meetings/presentations/forums with the RMS consultation officer and RMS Project Manager and to provide necessary information in advance for such meetings/presentations/forums as required.***

A2 KEY MILESTONES AND PROGRAM REQUIREMENTS

A2.1 Key milestones for the services as a whole

The key milestones for the project development services and the project are identified below, and may be subject to change.

Table PS301.A2 – Critical Milestones

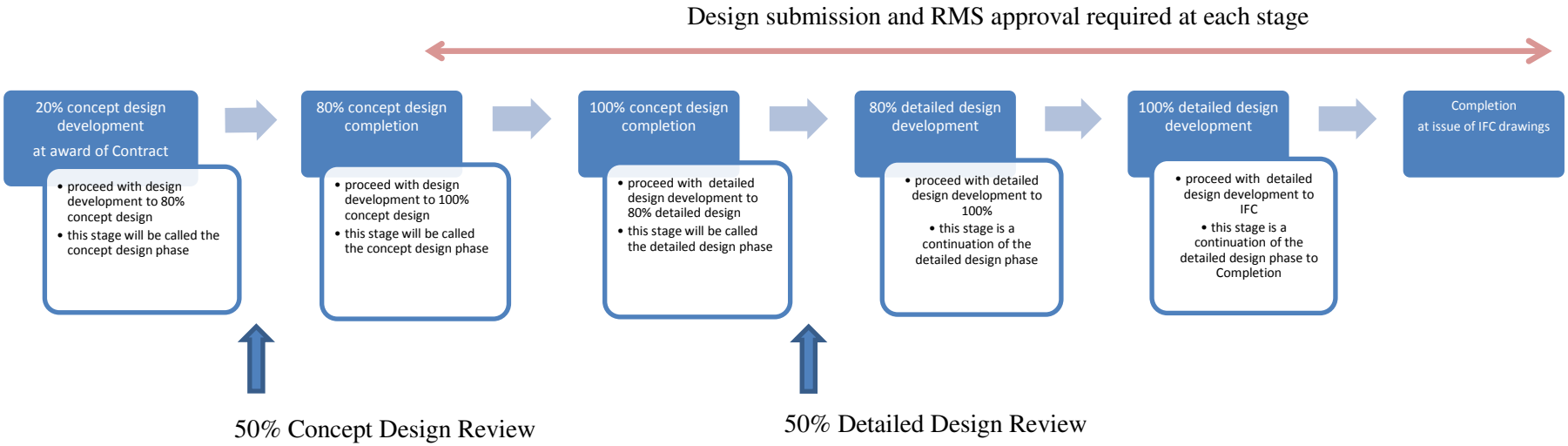
Task	*Finish*
Detailed design	***To be completed by Tenderer***
50% Detailed Design submission	***To be completed by Tenderer***
Constructability, HSiD and Risk Workshop	***To be completed by Tenderer***
80% Detailed Design submission	***To be completed by Tenderer***
100% Detailed Design (final design)	***To be completed by Tenderer***
Construction contract tender documentation	***To be completed by Tenderer***

Issue for Construction Design (IFC)	***No later than 4 weeks prior to Construction Tender close date***

A2.2 Key program requirements

The program requirements shown in this section are intended as a "quick look" overview. In case of ambiguity the entries in the table below take precedence over other specific programme requirements in the Specification including those in other specifications within the set of project specifications. If a specific date is not mentioned the PSC is to propose a date within the Stage Activity shown. The notation of clauses referenced is a general guide for convenience and is not necessarily exhaustive.

Macquarie Park Stage 2 Design Development Life Cycle



The 50% design reviews are required as an interim process to monitor the design development during the relevant design phase. There is no Hold Point for the 50% design reviews.

Key Program Activities/Deliverables

Date	Description	Clause(s) referenced	Comment
Stage 1: Activities / deliverables below are required in the first 4 weeks			
Working Day 5	Inception meeting	1.19.2	
Working Day 7	WHS Plan	2.1.2	WHS for the Design Team
Working Day 12 ~~7~~	Familiarisation Report	1.19.3	Includes a summary look ahead program to the end of the first 8 weeks
Working Day 10	Quality Plan, Design Development Plan, Project Services Program	2.1.5; 2.1.6	
Working Day 15 ~~12~~	WHS File including HSiD Risk Register, Design Issues Log	2.2; 2.2.1	RMS to provide HSiD ***Stage 1*** information to PSC. ***PSC to review all Stage 1 unresolved risks and design issues and carry them forward into the Stage 2 WHS file and Design Issues Log.*** ~~including information carried forward from previous design phases.~~
	3 site visits: • ***one to the Project site*** • ***one to a similar site under construction*** • ***one to a completed project with similarities*** prior to the commencement of design activity	1.19.1; 2.2; 2.5;	The HSiD requirement for 3 site visits is derived from the WHS Act 2011 and is not negotiable. Site visits also contribute to project familiarisation (e.g. adjacent land use and zoning) and constructability integration.
Working Day 20	***Gaps Analysis***	***A8.1***	***PSC is required to cross-reference all design documentation and drawings issued including, services***

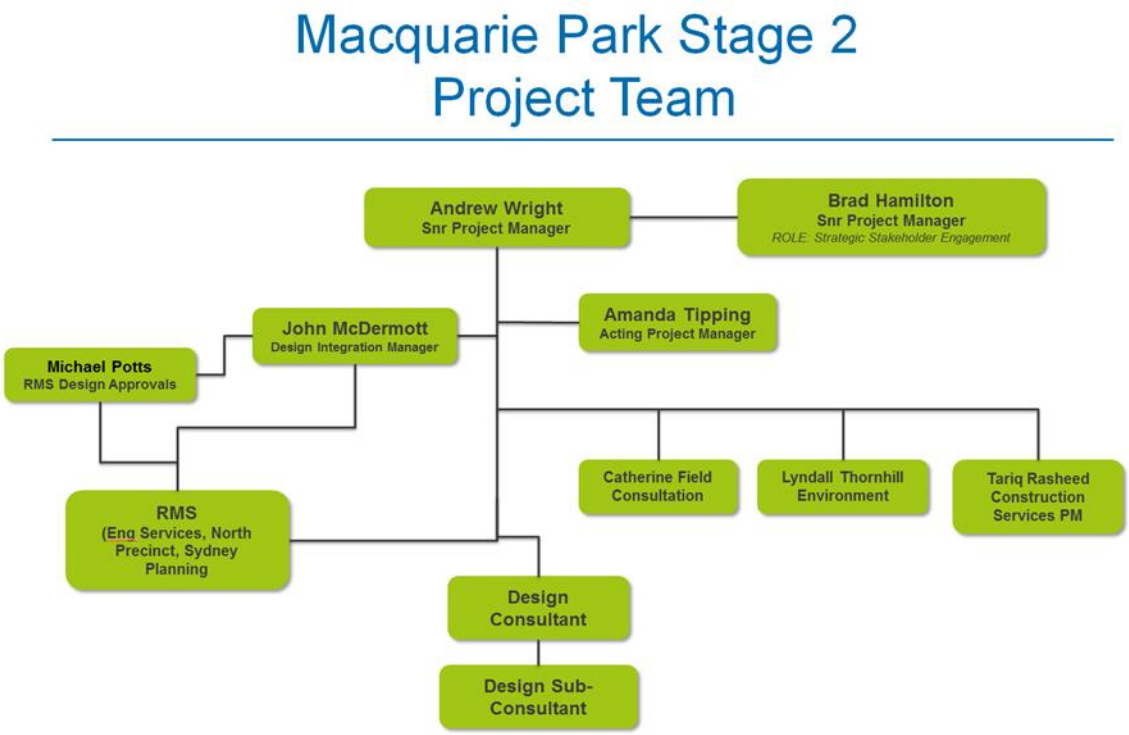
Date	Description	Clause(s) referenced	Comment
			search drawings, DBYG information, survey drawings etc and document in a Gaps Analysis Report all missing information required to develop the design documentation. Refer PS221.2 and PS221.3
	~~HSiD IV report on previous phases~~	~~2.2; table 1.20.4~~	
Stage 2: Activities / deliverables below are required at or about 80%			
Within 20 working days of approval of the 100% Design. Refer PS301.A2.2	***Update all Management and WHS Plans***		***Refer section "Stage 1: Activities / deliverables below are required in the first 4 weeks" of this Key Program Activities/Deliverables table. These plans need to be updated within 10 working days of RMS granting approval to proceed with the detailed design***
Before detailed design starts Refer PS301.A2.2	***Gaps Analysis***	***A8.1***	***PSC is required to cross-reference all design documentation and drawings issued including, services search drawings, DBYG information, survey drawings etc and document in a Gaps Analysis Report all missing information required to develop the design documentation. Refer PS321.2 and PS321.3***
	Monthly Project Progress Report	***2.1.7***	
	Construction Program ***(at 80% detailed design)***	2.9	For Detailed Design this provides input to Tender Documentation. Provides input to the Constructability Integration 80% Review. Includes construction strategy and sequencing of construction of elements not just traffic staging.
	Constructability Integration 80% Review	2.5	
	HSiD, Constructability	2.2, 2.5, 2.3	

Date	Description	Clause(s) referenced	Comment
	and Risk Workshop at least 4 weeks prior to 80% detail design submission		
	Road Safety Audit	2.6	
	50% detailed design submission	***3.2***	
	Final design property adjustment drawings		***To be included in the 80% design submission***
	Consistency check of design against REF	***Annexure A8.1***	***To be included in the 80% design submission***
	80% detailed design submission	***3.2***	
	Cost Estimate at 80% detailed design submission	***2.8***	
	Independent Verification	***1.20***	***As required for each submission***
Stage 3: Activities / deliverables below are required at or about 100% Detailed Design and at completion			
	Handover meeting at completion	1.19.5	Includes lessons learnt and handover of the WHS file.
	100% detail design report	***3.2, 3.3***	
	100% detail design submission	***3.2, 3.3***	
	Construction staging drawings	***3.2, 3.3***	

Date	Description	Clause(s) referenced	Comment
	Cost Estimate at 100% detailed design submission	*2.8*	
	HSiD Report	*3.2, 3.3, 1.20*	*Including IV review certification of report*
	100% quantities and estimate	*3.2, 3.3*	
	Construction contract tender documentation	*3.1*	
	Independent Verification	*1.20*	*As required for each submission*
	IFC report	*3.2, 3.3, 1.20*	*Including IV review certification of report*
	IFC drawings	*3.2, 3.3*	

A3 RMS TEAM

The following diagram shows the structure of the project team



A4 PROJECT BACKGROUND, STUDIES AND PROGRAMS

A4.1 Project Background

The project is located within Macquarie Park suburb, which is within City of Ryde Council local government area. Macquarie Park is located 12 kilometres from Sydney CBD and 13 kilometres from Parramatta CBD, with over 200 hectares of mixed use, commercial and business land use. It is a nationally significant economic corridor for research and business, specialising in the communications, medical research, pharmaceutical and IT&T sectors.

The NSW State Government has designated Macquarie Park as one of sixteen strategic centres across Sydney and it is anticipated that Macquarie park will experience some of the highest levels of employment growth in New South Wales, with an additional 7000 workers expected over the next decade. The additional jobs expected in Macquarie Park will add to the number of people travelling to and from Macquarie Park. The surrounding region is also expected to be home to an increasing number of residents in the future. Providing access to and from Macquarie Park is a major challenge that requires significant resources and co-ordination.

Macquarie Park has two railway stations and access to bus transport, but there are limited linkages between existing roads and the surrounding road network. The urban structure is characterised by wide streets and large street blocks with a commercial core centred around Macquarie Park Station and Waterloo Road, a retail core anchored on Macquarie Shopping Centre, an educational and health precinct comprising Macquarie University and Macquarie Hospital, business park areas, and protected vegetation in the Lane Cove National Park and Shrimptons Creek.

Macquarie Park is envisioned to mature into a premium location for globally competitive businesses with an enhanced sense of identity and strong links to the university and research institutions.

Public transport to Macquarie Park is currently delivered at a level more appropriate to a suburban business park, rather than a Strategic Centre. The roads currently experience substantial congestion and unreliable bus travel times. Implementation of bus priority measures within Macquarie Park is essential to allow a reliable and punctual public transport service. The NSW State Government is responding to the transport challenges by implementing the Sydney Metro Northwest Epping to Chatswood Rail Link and the Macquarie Park Rapid Bus Routes (RBR) [RBR 6: Hurstville to Macquarie Park (M41) and RBR 9: Parramatta to Macquarie Park via Epping (M54)] to provide a high frequency service for customers into and out of the precinct.

Construction of the Sydney Metro Northwest Epping to Chatswood Rail Link will require the existing Epping to Chatswood Rail Link to be temporarily shut down from end September 2018 for around 7 months. During the shutdown a significant number of bus services via Epping Road, Herring Road, Waterloo Road and Lane Cove Road will replace existing rail services between Epping and Chatswood.

Due to the limited time available for design and construction before the rail shut down period the Macquarie Park Bus Priority and Capacity Improvement Project is to be delivered in two stages:

- ***Stage 1 is a design that allows for the increased bus services and pedestrian movements during the rail shutdown period. The Stage 1 design and construction is complete***
- ***Stage 2 is to develop a design that will build upon the Stage 1 design and the Stage 2 20% concept design to provide the ultimate solution when it comes to improving bus priority and traffic flow through Macquarie Park. This stage is to be built post the opening of the Sydney Metro, construction commencing in around mid-2020 and taking around 18-24 months to complete.***

This design brief is for the engagement of a suitably qualified professional services consultant (PSC) team to provide concept design and detailed design for Stage 2 of the Macquarie Park Bus Priority and Capacity Improvement Project. The PSC will provide a complete packaged design and quality assurance service and deliver the scope of works described or implied by this Request for Tender. The PSC is required to engage and co-ordinate all sub consultants as necessary and be responsible for their output.

Key features of the proposal are listed below and shown indicatively on the Stage 2 Reviewed 20% Concept Design Layout (Document No.: P0023019-SKT-CS-101001) include, but are not limited to:

- ***Widening and upgrading sections of Herring Road, Waterloo Road and Lane Cove Road to allow for the installation of bus lanes.***
- ***Upgrading of 3 existing roundabout intersections to new signalised intersections at:***
  - ***Ivanhoe Place/Herring Rd,***
  - ***Waterloo Rd/Byfield St and***
  - ***Waterloo Rd/Khartoum Rd***
- ***Upgrade, adjustments and modifications of the following intersection with a suite of improvements that include new kerb alignments, slip lanes, new turn lanes, bus lanes, traffic islands, traffic signals (where applicable) , bus priority measures, pedestrian/cyclist upgrades, share path crossing, etc:***
  - ***Epping Rd/Herring Rd***
  - ***Herring Rd/Windsor Drive***
  - ***Herring Rd/Waterloo Rd***
  - ***Waterloo Rd/Macquarie Centre Access***
  - ***Waterloo Rd/Cottonwood Cres***
  - ***Waterloo Rd/Coolinga St***
  - ***Waterloo Rd/Lane Cove Rd***
  - ***Lane Cove Rd/Epping Rd***
- ***New concrete mediums including pedestrian fences as required***

- ***New road pavements to provide the infrastructure upgrade required and resurfacing (mill and re-sheet) of existing road pavements to provide a smooth transition to the existing road pavements interface***
- ***Mill and re-sheet of all intersections and roads where line markings are to be removed or adjusted***
- ***New and/or modifications/adjustments/upgrades to existing footways, footpaths and shared paths required, including granite paving (where required), signage, line marking and pavement symbols, required as a result of the infrastructure upgrade***
- ***Stormwater: new stormwater infrastructure and adjustments/upgrades to the existing stormwater infrastructure required as a result of the infrastructure upgrade***
- ***Relocating and/or adjusting utility services that are in conflict with the proposal***
- ***Removal of trees to allow for the construction of the works***
- ***Removal of parking to allow for the construction of the works***
- ***Levels: Existing road, footway and footpath levels will generally be maintained where feasible. Any proposed or required changes to existing levels will need to be resolved to comply with Australian Standards and DDA requirements***
- ***Adjusting property accesses (driveways and footpath access to building) that are affected by the work.***
- ***Parking: removal of on street parking to accommodate the installation of bus lanes, new traffic lanes and new turn lanes and other infrastructure required as a result of the infrastructure upgrade***
- ***Lighting and Electrical works: Road, footway and shared path lighting is currently provided on a mixture of Multi-function and Ausgrid poles. Lighting levels will require verification that they meet design standards. Where design standards are not met, new lighting infrastructure will have to be design to ensure compliance with lighting design standards***
- ***Street furniture will need to be relocated or replaced to accommodate the works. Exact numbers will be confirmed during the design development***
- ***Bus zones/stops and associated furniture may need to be relocated as part of the works. Exact numbers will be confirmed during the design development***
- ***Aimsun and SIDRA traffic modelling has been undertaken and will be made available to the successful consultant.***
- ***Road Safety Audits will be required at concept design (Stage 2 RSA) and detailed design (Stage 3 RSA)***
- ***Partial (strip) property acquisitions to approximately 38 number properties are required to allow the construction of the works. The consultant will be required to develop property adjustment designs, drawings and documentation to enable the property adjustments to be constructed.***

A4.2 Project Studies

In 2016 and 2017, AECOM undertook the B-PIP Macquarie Park Bus Priority and Capacity Improvement Stage 1 detailed design. Stage 1 is currently under construction and scheduled for completion in September/October 2018. A project REF for Macquarie Park Stage 1 and Stage 2 works was approved in Sept 2017. The Stage 2 scope has increased since the REF was approved with some Stage 1 works being deferred for inclusion in the Stage 2 scope but the intent of the project remains the same. The Stage 2 extent of works has marginally increased since the REF determination. A consistency review of the Stage 2 design against the REF will be required by the successful consultant to ensure that the final design complies with the REF. The Stage 1 design report, REF and other project information is provided in Annexure E for information only. The Stage 2 Reviewed 20% Concept Design Layout (Document No.: P0023019-SKT-CS-10100) and 20% Concept Design Review Report is provided in Annexure E for information only.

A4.3 Project Program

In February 2015, the NSW Government committed $260 million to improve the bus priority measures and increase the capacity along 4 rapid bus routes, RBR 6, 7, 10 and 11. Since 2015 the program of

work has increased to include RBR 3, 4, 8 and 7 and a number of suburban bus routes. The Bus Priority Infrastructure Program (BPIP) will deliver on this commitment.

The BPIP is a 10-year rolling infrastructure program that improves bus service reliability and/or travel times for selected locations of the Sydney metropolitan bus network.

The scope of the BPIP supports the delivery of the objectives of Future Transport, Sydney's Bus Future and the Bus Strategic Operations Plan. The strategic outcome from BPIP is to improve the attractiveness of bus travel and support / encourage a mode shift from private vehicles to public transport.

The program has the following core customer objectives:

1. ***Improve bus service reliability to contribute to the achievement of 95% on time running of bus services***
2. ***Improve bus travel times within the Core Bus Network***
3. ***Improve road safety by improving bus operation infrastructure***
4. ***Support the future growth in bus services as outlined in Future Transport and through plans to support 30-minute cities***

A4.3 Project Status

Summary project status:

- ***The Macquarie Park Bus Priority and Capacity Improvement Project has been developed as part of BPIP to upgrade the road network in the Macquarie Park precinct to provide improved bus priority and travel time reliability for buses and also general traffic***
- ***The project was split into 2 Stages as highlighted in Section A4.1 "Project Background"***
- ***In December 2017, the Stage 1 construction contract was awarded. The contractor commenced mobilisation for construction in late January 2018 and commenced works on-site in March 2018. The target date for completion is September/October 2018***
- ***The Project REF for Stage 1 and Stage 2 was undertaken in one REF which was publically displayed across April-May 2017 and was approved in October 2017 with the release of the REF Submissions Report. A copy of REF and the REF Submissions Report is included in Annexure E for information only.***
- ***The property acquisition process to acquire land to enable the design and construction to the project has commenced. This process has an approximate 12 to 18 month life cycle depending on the complexity of the acquisition. Target date (for information purposes only) for the completion of property acquisitions is late 2019/early 2020***
- ***A Traffic and Transport Assessment was completed for the REF by AECOM in March 2017. Stage 1 was assessed in detail using an Aimsun Hybrid model. A preliminary assessment of Stage 2 was undertaken using SIDRA. The report is provided as an information document only in Annexure E.***
- ***The Macquarie Park Bus Priority and Capacity Improvement Project Stage 2 Traffic Assessment Report was completed by AECOM in August 2017 and built on the March Traffic and Transport Assessment. It further informed the REF and responded to issues as part of the REF Submissions Report and the ultimate approval of the project. The report is provided as an information document only in Annexure E.***
- ***Geotechnical investigations on the Stage 1 works were carried out by Arup and on the Stage 2 work by GHD both in 2017. The reports are provided as an information documents only in Annexure E.***
- ***A Utilities Impact Assessment was carried out by AECOM as part of the Stage 1 design and update in the design development of the Stage 2 20% Concept Design Layout. The impacts are included in the 20% Concept Design Review Report and are provided as an information document in Annexure E***
- ***A number of other investigations were undertaken as part of the Stage 1 design and the Stage 2 20% Concept Design and are included in the AECOM Macquarie Park Bus Priority and Capacity Improvement Stage 1 - AFC Detail Design Report and 20% Concept Design***

Review Report . These reports are provided as information documents only in Annexure E.

A5 PROJECT SPECIFIC OBJECTIVES

Summary of projects specific objectives:

- ***Support the Rapid Bus Routes (RBR) and local bus routes that services Macquarie Park by providing more reliable bus services for customers***
- ***Provide optimal access for public transport to and within Macquarie Park***
- ***Provide improved road safety outcomes for all road users, especially for pedestrians and cyclists with improved crossing facilities provided at signalised intersections***
- ***Develop a cost-effective, value-for-money solution***
- ***Improve traffic flow and maximise use of road space, while minimizing the number of and extent of property acquisition and service relocation***
- ***Help ease traffic congestion and improve the reliabilityof travel times road users and bus services particularly during peak hours***
- ***Help improve quality and safety at bus stops***

A6 REFERENCE STUDIES

Relevant studies include:

1. ***B-PIP Macquarie Park Bus Priority and Capacity Improvement Stage 1 - AFC Detail Design Report***
2. ***Macquarie Park Bus Priority and Capacity Improvement Project, Review of Environmental Ractors (REF), March 2017and Submissions Report, October 2017***
3. ***Macquarie Park Bus Priority and Capacity Improvement Project Stage 2 Traffic Assessment Report***
4. ***B-PIP Macquarie Park Bus Priority and Capacity Improvement Stage 2 - 20% Concept Design Review Report***
5. ***TfNSW Sydney's Bus Future.***

A7 PROFESSIONAL SERVICES

The specifications applicable to this project are:

Table PS301.A3 – Professional Services Required

Service	Spec.	Included Y/N	Service	Spec.	Included Y/N
Community Engagement	PS301	***Y***	Bridgeworks & structures	***PS261 and*** PS361	***Y***
~~Environmental Management (Project REF)~~	PS311	***N***	Flood Modelling	***PS271 and*** PS371	***Y***
Detail Survey	***PS211 and*** PS321	***Y***	Drainage Design	***PS271 and*** PS371	***Y***

Service	Spec.	Included Y/N	Service	Spec.	Included Y/N
Utility Locations	PS321	***Y***	Water Quality Design	***PS271 and*** PS371	***Y***
~~Geotechnical Investigations~~	***PS231 and*** PS331	***N***	Urban Design	***PS281 and*** PS381	***Y***
Geotechnical Design	***PS231 and*** PS331	***Y***	Landscape Design	***PS281 and*** PS381	***Y***
Embankment Management	***PS231 and*** PS331	***Y***	Quantity Take off and detailed estimate	***PS291 and*** PS391	***Y***
Pavement Design	***PS241 and*** PS341	***Y***	~~Road User Delay Management~~	PS351	***N***
Road Design	***PS251 and*** PS351	***Y***	Construction staging & Traffic management	***PS251 and*** PS351	***Y***
Cycleway & Pedestrian Facilities	***PS251 and*** PS351	***Y***	Property Works	***PS251 and*** PS351	***Y***
Delineation & signposting	***PS251 and*** PS351	***Y***	Construction Contract Tender Documentation	PS392	Y
Roadside Furniture	***PS251 and*** PS351	***Y***			
Traffic Signals	***PS251 and*** PS351	***Y***			
Street Lighting	***PS251 and*** PS351	***Y***			

Both Waterloo Road and Herring Road are owned, maintained and operated by City of Ryde Council. Lane Cove Road and Epping Road are state roads maintained and operated by RMS. In general:

- ***City of Ryde design specifications and standards apply to Herring Road and Waterloo Road.***
- ***RMS design specification and standards apply to Lane Cove Road and Epping Road.***

Notwithstanding this, all TCS intersections are controlled by RMS and all kerb ramps at TCS intersections are to be installed to RMS standard drawings. The exact interface of the different design specifications will be determined during the concept phase of the design in consultation with RMS and City of Ryde Council.

Additional Specification, Guidelines and Standards that apply in the development of the detailed design:

- ***Austroads Guide to Road Design (AGRD);***
- ***Roads and Maritime Supplements to Austroads Guides;***
- ***Australian Rainfall and Runoff***
- ***City of Ryde Stormwater and Floodplain Management, City of Ryde***
- ***Council Stormwater and Floodplain Management Technical Manual***
- ***City of Ryde Standard drawings and specifications***
- ***City of Ryde, Macquarie Park Corridor, Public Domain Technical Manual***
- ***City of Ryde Development Control Plan 2014 Part 8.3 Driveways***
- ***City of Ryde Development Control Plan 2014 Part 8.5 Civil Works***
- ***Australian Standards***
- ***Roads and Maritime Traffic Signal Design***
- ***Roads and Maritime Traffic Modelling Guidelines***
- ***Roads and Maritime Delineation Guidelines***

NOTE: All existing footways along City of Ryde Council owned roads, affected by the work (including grass verges), must be design with full footway width granite paving or concrete, like material finish for like material finish.

A8 SCOPE OF WORKS TO BE UNDERTAKEN

A8.1 Detailed Design

The PSC must undertake and finalise the detailed design, and present final, detailed drawings, ***Issued for Construction*** drawings and construction contract tender documentation which are complete in all detail and continuity. The major components include, but are not limited to:

(i) Road alignment and geometry (including highway, service roads, local roads, access roads and cycleway/pedestrian facilities) – refer to PS351 Road Design

(ii) Design of embankments – refer to PS331 Geotechnical Investigation and Design.

(iii) Design of pavements – refer to PS341 Pavement Investigation and Design.

(iv) Bridgeworks and other structures – refer to PS361 Bridge and Structure Design.

(v) Drainage and water quality – refer to PS371 Hydrology and Drainage Design.

(vi) Delineation, signposting and roadside furniture – refer to PS351 Road Design

(vii) Design of Traffic Signals – refer to PS351 Road Design

(viii) Street lighting – refer to PS351 Road Design

(ix) Urban design – refer to PS381 Urban Design.

(x) Road user delay management – refer to PS351 Road Design

(xi) Construction staging and traffic management – refer to PS351 Road Design

(xii) Property works, access, fencing, gates etc. – ***refer to*** PS351 Road Design

~~(xiii) Constructed wetland design – refer to PS311 Environmental Design and Compliance (REF and EIS).~~

(xiv) Estimates and quantities – refer PS391 Quantity Survey

(xv) Construction contract tender documentation – refer to PS392 Construction contract tender documentation

(xvi) Independent verification of design – refer to Section 1.20 ***of PS301***

(xvii) Progress the detailed design and to IFC drawings – Refer to Table PS301.A2 – Critical Milestones and Section A2.2 Key program requirements, in particular the table of Activities / deliverables for Stage 1 and Stage 2 of the design process for specific design milestone and deliverables required

(xviii) Gap Analysis: Review/audit topographical and property survey, 2D and 3D utility serves information provided by RMS and identify any design, service and infrastructure issues or conflicts and advise of any gaps in the survey and services search information to enable the RMS to update the survey information if required. In particular the consultant must review the topographical survey and the properties required for acquisition to confirm if addition topographical survey on private property is required to undertake design for the property acquisitions and adjustments. Refer PS321.2 and PS321.3

(xix) A consistency check review of the Stage 2 design against the REF will be required by the successful consultant to ensure that the design complies with the REF. The RMS project team will coordinate and manage any necessary REF addendums as required.

(xx) Cycleway & Pedestrian Facilities design- Refer to PS351 Road Design

(xxi) Design approval through RMS – Refer A8.2

A8.2 *Detailed Design Approval Process*

The successful consultant is responsible for obtaining the required RMS design sign-off and approvals. The RMS Macquarie Park Stage 2 Team will help to facilitate the design approval process but will not be responsible for progressing/chasing the design approvals nor will they be liable for any delays in the design approval process.

Design submission process:

1. ***The design package must be issued to the RMS project manager (PM) by the consultant.***
2. ***Documents will be uploaded to Objective by the RMS PM. RMS PM will email a link to the RMS Engineering Services Manager (ESM) for distribution to RMS Stakeholders for review.***
3. ***The design package is distributed to RMS Stakeholders for review by their teams and to the Project Manager Team for their information.***

Review structure:
Reviews are split into two workflows TCS reviews and non-TCS reviews. Typical RMS stakeholders are identified below:

Review workflow 1: TCS Review

- ***Traffic Signals Operations (TSO)***
  - ***TCS Civil***
  - ***Electrical***
  - ***Adaptive***
- ***Network Operations***
- ***Network & Safety Services***

Review workflow 2: Non-TCS review

- ***Engineering Services***
  - ***Road Engineering (Road Design, Geometry & Drainage)***
  - ***Bridge Branch (bridges, culverts, retaining walls, drainage structures, signage, TCS and other new structures)***
  - ***Survey (setout, preservation of survey infrastructure, cadastral boundaries etc)***
  - ***Pavement and Geotech***

- *Construction Traffic & Staging*
- *Network & Safety Services*
- *Guidance & Delineation / Advanced Directional Signage*
- *Street Lighting*
- *Asset Sydney*

Non-TCS review process

Once the design packages have been reviewed RMS Stakeholders will forward their comments onto the ESM and CC to the PM and design manager. They will:

- ***Populated the comments into ESC's combined comments spreadsheet. This spreadsheet is intended to follow the project throughout the projects lifecycle.***
- ***Comments are addressed by the design team, consulting the reviewer where required. Close out of the comments will be assessed by the originating reviewer at the next submission.***
- ***Departures from design standards and guidelines are identified for approved.***

Non-TCS Approval Process

Pre-IFC/Review Certificate.

At the end of the delivery Readiness Phase (following the Final or 100% issue) a Pre-IFC drawing set is issued so that amendments can be made to close out stakeholder comments prior to the final IFC release. A Review Certificate is produced to provide evidence of the approval process and once completed the package can be issued for IFC (Issued for Construction). Note this is for Non-TCS design documents.

The Pre-IFC / Review Certificate process is as follows:

- ***Each discipline comments are addressed and closed in the review comment spreadsheet***
- ***Concurrence of RMS Stakeholder comments closure, email correspondence evidence printed as a PDF, which becomes an attachment to the certificate***
- ***Variations from current approved design standards have been approved by appropriate delegation (included as an attachment to the certificate or appendix to the report)***
- ***Review Certificate completed by design team and signatures collected***
- ***Final approval is linked to the project's tier (Delegation 5440) where Tier 1-4 approved by level 3 (General Manager GM) and Tier 5-6 approved by level 4 (Program Directors)***

TCS Review

The review and approval of TCS designs is a minimum three stage (i.e. minimum of three review submission and responses to comments) process that must be followed. Refer to the Traffic Signal Design, Issue No 1.1, 16 May 2016, Section 3 Design Process for details of the process.
Link: http://www.rms.nsw.gov.au/documents/business-industry/partners-and-suppliers/guidelines/complementary-traffic-material/tsdsect03v1-1.pdf
This document identifies the approval process for consultant prepared standard designs in Section 3.12.2 and Section 3.12.3 for non-standard designs (exemptions to standards). Management of the review process is undertaken by Traffic Signals Operations (TSO) towards an approved TCS design plan signed by TSO, Network Operations and Accepted by Network and Safety.

Review time frames.

- ***TCS Reviews: the TCS review process includes at least 3 submissions and reviews of the TCSs as a minimum. The TCS review time frame is a lengthy process. This is to allow for the linear review process which includes Traffic Signal Office (TSO) Civil, Electrical, Adaptive, Network Operations (NOP) and Network & Safety Services (NSS) who provide the final acceptance of the TCS plan. It is advised that the consultant commences the TSC design development early in the design process and that separated TCS design meetings are arranged with RMS to present and develop the design prior to each design submission. Please note that***
- ***Non TCS Reviews: Allow up to 10 days for all general non TCS reviews. This time period is an***

indicative non-contractual time period. The consultant will not be entitled to claim for any delays should a review take longer than this indicative 10 days period.

A9 PROJECT SERVICES BOUNDARIES

The drawing below (Stage 2 Reviewed 20% Concept Design Layout (Document No.: P0023019-SKT-CS-10100) describes the Project Services Boundaries (extent of works) as per the 20% Concept Design. The boundaries of the final design may change depending on the design development and/or investigation being undertaken. The PSC is to develop the design and propose for approval the final Project Services Boundary and extent of work.

Note: The extent of work within the yellow circle was not included in the REF. There may be additional minor areas not included in the REF.

A10 INFORMATION PROVIDED BY RMS

The information below will be provided by RMS.

- ***AECOM's Macquarie Park Bus Priority and Capacity Improvement Stage 1 - AFC Detail Design Report and AFC drawings. Key documents included in this report are:***
  - ***Stage 1 Utilities Impact Assessment Register***
  - ***Stage 1 Geotechnical Interpretative Report, by ARUP.***
- ***AECOM's Macquarie Park Bus Priority and Capacity Improvement Stage 2 – 20% Concept Design Report and drawings. Key documents included in this report are:***
  - ***Stage 2 Reviewed 20% Concept Design Layout (Document No.: P0023019-SKT-CS-10100)***
  - ***Utilities Impact Assessment Register***
  - ***UT4950 RMS Utility Survey including potholing***
- ***Stage 2 Factual - Geotechnical Investigation Report, by GHD.***
- ***Macquarie Park Bus Priority and Capacity Improvement Project Stage 2 Traffic Assessment Report***
- ***Contract terms and Brief Document***
- ***REF and Submissions Report***
- ***Property acquisition spreadsheet including ownership and contact details for***

Property Adjustments
- *Stage 1TUFLOW flood models*
- *Traffic volumes to inform pavement design*
- *Topographical survey*

Table PS301.A4 – Information Provided by RMS

No.	Item	File Name	Method of delivery	Project Folder	Sent Y/N
Previous Design					
1	*AECOM Macquarie Park Bus Priority and Capacity Improvement Stage 1 - AFC Detail Design Report*		*Electronic Project Package*	*Annexure PS301/E*	
2	*Appendix A to Appendix DD of the above Stage 1 AFC Detailed Design Report*		*Electronic Project Package*	*Annexure PS301/E*	
3	*AECOM's Macquarie Park Bus Priority and Capacity Improvement Stage 2 – 20% Concept Design Report and drawings.*		*Electronic Project Package*	*Annexure PS301/E*	
4	*Appendix A to Appendix J of the above Stage 2 – 20% Concept Design Report*		*Electronic Project Package*	*Annexure PS301/E*	
5	*Macquarie Park Bus Priority Program (Stage 2) Factual Report - Geotechnical Investigation 14.2166.0517 -0118 Geotechnical Services October 2017*		*Electronic Project Package*	*Annexure PS301/E*	
6	*Macquarie Park Bus Priority and Capacity Improvement Project Stage 2 Traffic Assessment Report*		**Electronic Project Package**	**Annexure PS301/E**	
7					
8					
Previous Studies					
9	*Review of Environmental Factors and Submissions Report*		*Electronic Project Package*	*Annexure PS301/E*	

RMS accepts no responsibility for, and does not guarantee or make any representation as to the accuracy of, or fitness for purpose, of the information it provides (including the previous design drawings). It is the PSC's responsibility to make its own assessment of the suitability and accuracy of all the information provided, and resource and/or supplement that information by other means.

RMS will retain copyright over the above material and information provided.

A11 VISUALISATION REQUIREMENTS

The following table identifies the level of Visualisation required for the project. Only items with a Y are required for this project

Table PS301.A11 – Visualisation Requirements

Level	Description of items required in drive through animation	Style	Required Y/N
Artist Impression/s	Artist impression sketch looking from a road user's perspective.	8 x A3 pdfs.	Y
~~Basic (.avi) for review purposes~~	~~Rendered Pavement surface, kerbing, footpath, line marking, safety barrier systems~~	~~One way drive through 1.1m eye height~~	N
Standard ~~(.avi)~~ for stakeholder engagement	As basic with addition of natural surface, aerial imagery, road corridor vegetation.	~~Two way drive through 1.1m eye height~~ A3 and/or A4 pdfs for inclusion in ***monthly*** newsletters, presentations, or similar publications	Y
~~Consultation (.avi) for Community Consultation~~	~~Using RMS's Multi-Media Technology Panel contract~~	~~As per RMS Visual Identity Guidelines.~~	N
~~Structural (3D PDF)~~	~~Structure, foundation envelopes, natural surface, all other conflicting existing and design elements~~	~~3D pdf~~	N

A12 CONSTRUCTABILITY INTEGRATION REPORTING INDICATORS

The following table shows the constructability integration reporting indicators that must be reported on in the Monthly Report and must be progressively updated and available for RMS audit or review at any time during the development of the design. Refer to Section 2.5.

Table PS301.A6 – Constructability integration reporting indicators

Item	* Status description	% complete	Verify (Y/N and Initials)
1. Site establishment			
Land for construction contractor's use			N
Site water			N
2. Environment			
Draft sediment basins and swales-land			N

Item	* Status description	% complete	Verify (Y/N and Initials)
Land to store mulch			N
Sufficient hectares to build			N
Area for fence clearing			N
3. Drainage			
Multiple transverse drainage x-ings minimised			Y
Inlet, outlet re-shape and easement approved by property owner			Y
Tail out of levels approved by property owner			Y
4. Earthworks			
Quantities minimised			Y
Balanced			Y
Minimum haul length			Y
Haul routes			Y
5. Traffic-public			
Logical, intuitive, safe			Y
Cyclist			Y
Pedestrians			Y
Business access			Y
6. Traffic-work			
Safe separation			Y
x-over same level			Y
Offset from deep excavation			Y
7. Utilities			
Overhead not clash with sediment basins, bridgeworks, structures, trees			Y
UG utilities not clash bridges, structures, foundations, drainage			Y

Item	* Status description	% complete	Verify (Y/N and Initials)
Relocation timing not clash with sequence			Y
x-sections verify all can fit in			Y
8. Pavement			
Pavement types rationalised			Y
Kerb details practical			Y
Place for batch plant			Y
Source of AC local			Y
9. Structures			
Pre-cast opportunities review			Y
Utilities cross checked. Exist and new			Y
Fence at top of walls			Y
Temporary excavation slope			Y
Reinforcing details practical			Y
~~**10. Bridge Work**~~			N
~~Reinforcement. detail in 3d check for bunching~~			N
~~Skew minimised~~			N
~~Length minimised~~			N
~~Piles and crane access and stable pad~~			N
~~Piles and cranes diagram and clearance~~			N
~~Haul around ends of structure~~			N
~~Time delay for negative skin friction at earthworks specified~~			N
~~**11. Imported product and materials**~~			N
~~List of imported product. Temporary, permanent~~			N
~~List of typical quality issues of imported product~~			N

Item	* Status description	% complete	Verify (Y/N and Initials)
12. Property and footprint			
Footprint and access checked against diagrams in ILC…520			Y
Property needs identified in EA			Y
All remaining acquisition ***adjustment designs*** commenced before ~~20%~~ ***50%*** ~~detailed~~ design			Y
13. Tender documents			Y
Payment mechanism for each item on drawings and in scope			Y
Measurement & Payment clauses cover pay items			Y
Temporary earthworks activities-temporary stockpile			Y
Quantities sanity check for earthworks, pavement, pile length			Y
Duration of contract			Y
Environment requirements in the scope			Y

* Note:

Status description in the table above is to consist of bullet points. Significant unresolved issues are to be listed and if space is not adequate reference is to be made in accompanying brief notes. The intentions are (a) to give confidence that constructability is being continuously integrated and not left until workshops or reviews and (b) to highlight matters of concern immediately they arise so RMS can be informed and involved.

A13 PREVIOUS RISK MANAGEMENT, VALUE ENGINEERING, HSiD AND CONSTRUCTABILITY REVIEWS

The following table details any previous Risk Management, Value Management, Value Engineering, HSiD and or Constructability Reviews and workshops that may have been carried out.

Table PS301.A13 – Previous Reviews

Previous Review type carried out	Stage at which the Review was carried out	Location of the Review (annexure, online, email)	Included Y/N

Previous Review type carried out	Stage at which the Review was carried out	Location of the Review (annexure, online, email)	Included Y/N
Risk Management	***Nil – Refer Stage 1 AFC Detailed Design Report for Stage 1 reviews***	***Appendix Q of Stage 1 - AFC Detail Design Report***	Y
Value Management	***Nil – Refer Stage 1 AFC Detailed Design Report for Stage 1 reviews***	***Appendix Q of Stage 1 - AFC Detail Design Report***	Y
Value Engineering	***Nil – Refer Stage 1 AFC Detailed Design Report for Stage 1 reviews***	***Appendix Q of Stage 1 - AFC Detail Design Report***	Y
Constructability Review	***Nil – Refer Stage 1 AFC Detailed Design Report for Stage 1 reviews***	***Appendix Q of Stage 1 - AFC Detail Design Report***	Y
WHS HSiD	***Nil – Refer Stage 1 AFC Detailed Design Report for Stage 1 reviews***	***Appendix Q of Stage 1 - AFC Detail Design Report***	Y

A14 COMMUNITY ENGAGEMENT

~~Community Engagement for this project will be conducted by RMS, Sydney Region Communications and Stakeholder Engagement Team. As such, RMS will provide the following:~~

~~(i) The overarching engagement strategy/plans for the project.~~

~~(ii) Resources to draft/ prepare communication materials in collaboration with the selected contractor.~~

~~(iii) Resources to book advertisements and arrange print and distribution of communication materials.~~

~~(iv) Resources to coordinate and support Community Information Sessions, and (where required) stakeholder engagement.~~

~~To assist in the Community and Stakeholder Engagement, the specific requirements of the PSC for this project are:~~

~~(i) Provide project team resources to attend doorknocking, stakeholder briefing sessions and community information sessions.~~

~~(ii) Record community feedback, comment analysis and grouping and prepare community consultation reports~~

~~(iii) Respond to ad-hoc community correspondence and requests for information.~~

~~Or~~

~~The Project Community and Stakeholder Participation Plan will be provided to the PSC by the RMS Project Manager. The PSC must develop and maintain its own Community and Stakeholder Participation Plan as part of its Project Quality Plan, refer to Section 2.1.5 – Project Quality Plan, to manage its actions and responsibilities for community participation stated in the Project Community and Stakeholder Participation Plan.~~

~~The PSC's Community and Stakeholder Participation Plan must address at least the following activities:~~

~~(i) Meetings and workshops~~

~~(ii) Community updates, newsletters, brochures and alerts~~

~~(iii) Displays, exhibitions and information centres~~

~~(iv) Project openings and community and stakeholder events~~

~~(v) Digital products~~

~~(vi) Telephone info lines~~

~~(vii) Surveys and questionnaires~~

~~(viii) Conflict resolution and negotiation~~

~~(ix) Communicating with culturally diverse communities~~

~~(x) Reaching the 'silent majority'~~

~~(xi) Evaluating community and stakeholder participation~~

Or

RMS retains responsibility for engaging with the community as and when required to support the design development process

The PSC must plan and implement the following community participation activities in accordance with RMS publication, Community Participation and Communications-a Resource Manual for Staff and the Project Community and Stakeholder Participation Plan:

(i) ***Attend m***eetings and negotiations with property owners and other project stakeholders regarding the project impacts on their interests.

(ii) Provide existing design data and information to RMS for incorporation by RMS in community participation publications. ***In particular Standard (refer Table PS301.A11 – Visualisation Requirements) for stakeholder engagement through Community updates, newsletters, brochures and alerts or similar publications.***

No community engagement is to be undertaken without prior written approval from the RMS Representative. When conducting onsite / field investigations the PSC is to have the contact details of the RMS Representative available. All enquiries are to be referred back to the RMS Representative.

A15 STAKEHOLDER ENGAGEMENT

Stakeholder Engagement for this project will be conducted by RMS, ESCPO Communications and Stakeholder Engagement Team. ~~As such, RMS will provide the following~~:

~~(i) The overarching engagement strategy/plans for the project.~~

~~(ii) Resources to draft/ prepare communication materials in collaboration with the selected contractor.~~

~~To assist in the Stakeholder Engagement, the specific requirements of the PSC for this project are:~~

~~(iii) Review existing RMS Community and Stakeholder Participation Plan and provide feedback comments tailoring to the project services boundary.~~

~~(iv) Prepare community and stakeholder participation plan (for engaging key stakeholders only e.g. councils, bike groups).~~

~~(v) Organise, facilitate, minute and report all meetings and workshops with key stakeholders.~~

~~(vi) The list of key stakeholders are:~~

~~a. Local Government~~

~~b. Regional Organisations of Councils (ROCs)~~

~~c. State Transit Authority~~

~~d. Community Action Groups~~

~~No stakeholders are to be contacted without prior written approval from the RMS Representative.~~

The PSC will be required to engage/consult with the key internal stakeholders on technical and design approval issues throughout the design development. All technical engagement/consultation meetings with key stakeholders must be attended as a minimum by the RMS Project Manager or other nominated RMS officer.

Key Stakeholders Identified

Internal	**External**
Transport for NSW	City of Ryde (Council)
Network Sydney, RMS	Community/ Residents/ Businesses
Network Operations/ TMC, RMS	Utility Companies and Authorities
RMS Road Design Division	Developers
Sydney Co-ordination Office	Property Owners
Urban Growth	Construction Contractor - TBA
Sydney Metro and Sydney Trains	Others, as required
Property Services, RMS	
Assets Sydney, RMS	
Others, as required	

A16 PROJECT AND CONTRACTUAL ROLES AND RESPONSIBILITIES

The following table provides details regarding the RMS representatives responsible for the delivery of the project.

All requests are to be sent via the RMS Senior Project Manager, Andrew wright and/or Senior Construction Services Manager, Tariq Rasheed.

Table PS301.A16 – Contractual Responsibilities

Contractual Process	**Person Responsible**	**RMS Section**	**Contact Details**
Contract Management	***Tristan Gerke***	***A/Director, ESC – Contracts***	TBA on award of Contract

Principal Project Manager	***Hilary Johnson***	***Director, ESC Busway Programs***	TBA on award of Contract
Road Network Analysis Advice	***Lindsay Thorpe***	***ESC – Network Development Manager Program 3***	TBA on award of Contract
Road Design Advice	***Mark Gordon***	***RMS Engineering Services (Road Design and drainage)***	TBA on award of Contract
Traffic Signals Operations (TCS)	***Phillip Quigg***	***Traffic Signal Design***	TBA on award of Contract
Network and Safety advice	***Peter Carruthers***	***Network & Safety Services North Precinct***	TBA on award of Contract
Environmental Advice	***Joseph Fanous, Katie Round***	***ESC – Environment***	TBA on award of Contract
Communications Advice	***Rebecca Dean***	***ESC – Communications***	TBA on award of Contract
Asset Maintenance consultation resource	***Neil Walker***	***Sydney Maintenance***	TBA on award of Contract
Others	TBA as required	TBA as required	TBA on award of Contract

A17 DEPARTURES FROM STANDARDS

The following Departures from Standards are identified as existing departures from standards on the project and where remedial works for these departures are not considered to be within the scope of this project.

Nil.

The Macquarie Park Stage 1 AFC Design allowed a number of design Departures from Standards due to time constraints in designing and constructing non-conforming issues out. These will not apply to the Macquarie Park Stage 2 design. The Macquarie Park Stage 2 design will require the design to conform to Standards.

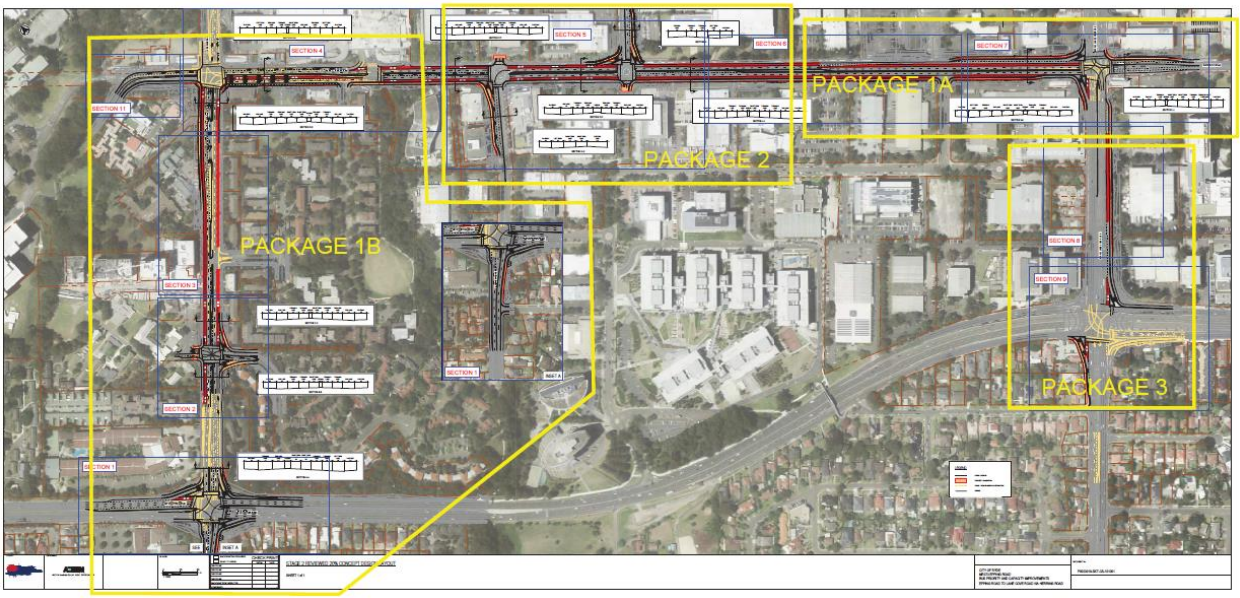
~~**Table PS301.A17 Identification of Departures from Standards**~~

~~**No.**~~	~~**Departure**~~	~~**Standard**~~	~~**Risk Assessment Outcome**~~
~~1~~	~~<insert the departure>~~	~~<insert the associated clause of the standard>~~	~~<insert the outcome of the risk assessment>~~
~~2~~	~~<insert the departure>~~	~~<insert the associated clause of the standard>~~	~~<insert the outcome of the risk assessment>~~

ANNEXURE PS301/B – PAYMENT

Payment will be made for all costs associated with completing the work detailed in this Specification in accordance with the following Pay Item(s).

Where no specific pay items are provided for a particular item of work, the costs associated with that item of work are deemed to be included in the rates and prices generally for the works.



DETAILED DESIGN Package 1A			
Description	**Description**	**Description**	**Description**
PS301.1A.1	Project Management Including: a) Preparation and submission of Project Management Plans b) WHS Management Plan c) Quality Management Plan d) Design Development Plan e) Risk Management Plan f) Progress meetings, Inception and Handover Meetings g) Project Services Program h) Progress Claims i) Monthly Reporting j) Quality Assurance Reviews k) Site Visits **l)** Other management plans and reporting as required in the relevant specifications	Lump Sum	$
PS301.1A.2	Review of existing geotechnical information and provide detailed geotechnical investigations proposal plan	Lump Sum	$
PS301.1A.3	50% Submission (drawings and ***draft*** design report including independent verifications ***not included in Sub***		

DETAILED DESIGN Package 1A			
Description	**Description**	**Description**	**Description**
	Contractor Costs) Refer note on breakdown of costs below: a) Pavement Design b) Road Design c) Drainage d) Structures ~~e) Utilities design: water (excluding Water Services Co-ordinator)~~ ~~f) Utilities design electrical (excluding ASP3 designer)~~ ~~g) Utilities design: Gas~~ h) ~~Utilities design: telecom~~	 Lump Sum Lump Sum Lump Sum Lump Sum ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~	 $ $ $ $ ~~$~~ ~~$~~ ~~$~~ ~~$~~
PS301.1A.4	Constructability, HSiD, Risk Workshop including submissions of relevant reports, Facilitator and Venue Cost	Lump Sum	$
PS301.1A.5	80% Submission (drawings and design report including independent verifications) ***Refer note on breakdown of costs below*** a) Pavement Design b) Road Design c) Drainage d) Structures ~~e) Utilities design: water (excluding Water Services Co-ordinator)~~ ~~f) Utilities design electrical (excluding ASP3 designer)~~ ~~g) Utilities design: Gas~~ h) ~~Utilities design: telecom~~	 Lump Sum Lump Sum Lump Sum Lump Sum ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~	 $ $ $ $ ~~$~~ ~~$~~ ~~$~~ ~~$~~
PS301.1A.6	100% Submission (drawings and design report including independent verifications) ***Refer note on breakdown of costs below*** a) Pavement Design b) Road Design c) Drainage d) Structures ~~e) Utilities design: water (excluding Water Services Co-ordinator)~~ ~~f) Utilities design electrical (excluding ASP3 designer)~~ ~~g) Utilities design: Gas~~ ~~h) Utilities design: telecom~~	 Lump Sum Lump Sum Lump Sum Lump Sum ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~	 $ $ $ $ ~~$~~ ~~$~~ ~~$~~ ~~$~~
PS301.1A.7	Pre-IFC and IFC Submissions (drawings and design report including independent verifications) ***Breakdown of costs not required***	Lump Sum	$
PS301.1A.8	Road Safety Audits	Lump Sum	$
PS301.1A.9	Property Acquisition: a) Property adjustment meetings b) Property adjustment drawings:	Lump Sum	$

DETAILED DESIGN Package 1A			
Description	**Description**	**Description**	**Description**
	c) Category Minor d) Category Standard e) Category Major	Lump Sum Lump Sum Lump Sum	$ $ $
PS301.1A.10	Community Engagement (meetings, presentations, production of Visualisation Requirements, other as required except for tasks relating to property acquisitions)	Lump Sum	$
PS301.1A.11	Quantities and Cost Estimate at ~~20%,~~ 80% and 100% design submissions	Lump Sum	$
PS301.1A.12	Construction and Traffic Staging Plans and Construction Program	Lump Sum	$
PS301.1A.13	Sub Contractor's cost (add/omit as required): a) TCS Design ~~b) ASP3 Street Lighting design~~ ~~c) Water Services Co-ordinator~~ d) Quantity Surveyor/cost estimator e) Urban Designer f) Construction tender documentation	 Lump Sum ~~Lump Sum~~ ~~Lump Sum~~ Lump Sum Lump Sum Lump Sum	 $ ~~$~~ ~~$~~ $ $ $
~~PS301.1A.14~~	~~*Geotechnical investigations and reports, approvals and Independent Verifier review*~~	~~*Provisional Sum*~~	~~*$150,000*~~

DETAILED DESIGN Package 1B			
Description	**Description**	**Description**	**Description**
PS301.1B.1	Project Management Including: a) Preparation and submission of Project Management Plans b) WHS Management Plan c) Quality Management Plan d) Design Development Plan e) Risk Management Plan f) Progress meetings, Inception and Handover Meetings g) Project Services Program h) Progress Claims i) Monthly Reporting j) Quality Assurance Reviews k) Site Visits **l)** Other management plans and reporting as required in the relevant specifications	Lump Sum	$
PS301.1B.2	Review of existing geotechnical information and provide detailed geotechnical investigations proposal plan	Lump Sum	$
PS301.1B.3	50% Submission (drawings and ***draft*** design report including independent verifications ***not included in Sub Contractor Costs) Refer note on breakdown of costs below:*** a) Pavement Design b) Road Design	 Lump Sum Lump Sum	 $ $

DETAILED DESIGN Package 1B			
Description	**Description**	**Description**	**Description**
	c) Drainage d) Structures ~~e) Utilities design: water (excluding Water Services Co-ordinator)~~ ~~f) Utilities design electrical (excluding ASP3 designer)~~ ~~g) Utilities design: Gas~~ h) ~~Utilities design: telecom~~	Lump Sum Lump Sum ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~	$ $ ~~$~~ ~~$~~ ~~$~~ ~~$~~
PS301.1B.4	Constructability, HSiD, Risk Workshop including submissions of relevant reports, Facilitator and Venue Cost	Lump Sum	$
PS301.1B.5	80% Submission (drawings and design report including independent verifications) ***Refer note on breakdown of costs below*** a) Pavement Design b) Road Design c) Drainage ~~d) Structures~~ ~~e) Utilities design: water (excluding Water Services Co-ordinator)~~ ~~f) Utilities design electrical (excluding ASP3 designer)~~ ~~Utilities design: Gas~~ g) ~~Utilities design: telecom~~	Lump Sum Lump Sum Lump Sum Lump Sum ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~	$ $ $ $ ~~$~~ ~~$~~ ~~$~~ ~~$~~
PS301.1B.6	100% Submission (drawings and design report including independent verifications) ***Refer note on breakdown of costs below*** a) Pavement Design b) Road Design c) Drainage d) Structures ~~e) Utilities design: water (excluding Water Services Co-ordinator)~~ ~~f) Utilities design electrical (excluding ASP3 designer)~~ ~~g) Utilities design: Gas~~ ~~h) Utilities design: telecom~~	Lump Sum Lump Sum Lump Sum Lump Sum ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~	$ $ $ $ ~~$~~ ~~$~~ ~~$~~ ~~$~~
PS301.1B.7	Pre-IFC and IFC Submissions (drawings and design report including independent verifications) ***Breakdown of costs not required***	Lump Sum	$
PS301.1B.8	Road Safety Audits	Lump Sum	$
PS301.1B.9	Property Acquisition: a) Property adjustment meetings b) Property adjustment drawings: c) Category Minor d) Category Standard e) Category Major	Lump Sum Lump Sum Lump Sum Lump Sum	$ $ $ $
PS301.1B.10	Community Engagement (meetings, presentations,	Lump Sum	$

DETAILED DESIGN Package 1B			
Description	**Description**	**Description**	**Description**
	production of Visualisation Requirements, other as required except for tasks relating to property acquisitions)		
PS301.1B.11	Quantities and Cost Estimate at ~~20%,~~ 80% and 100% design submissions	Lump Sum	$
PS301.1B.12	Construction and Traffic Staging Plans and Construction Program	Lump Sum	$
PS301.1B.13	Sub Contractor's cost (add/omit as required): a) TCS Design ~~b) ASP3 Street Lighting design~~ ~~c) Water Services Co-ordinator~~ d) Quantity Surveyor/cost estimator e) Urban Designer f) Construction tender documentation	 Lump Sum ~~Lump Sum~~ ~~Lump Sum~~ Lump Sum Lump Sum Lump Sum	 $ ~~$~~ ~~$~~ $ $ $
~~*PS301.1B.14*~~	~~*Geotechnical investigations and reports, approvals and Independent Verifier review*~~	~~*Provisional Sum*~~	~~*$150,000*~~

DETAILED DESIGN Package 2			
Description	**Description**	**Description**	**Description**
PS301.2.1	Project Management Including: a) Preparation and submission of Project Management Plans b) WHS Management Plan c) Quality Management Plan d) Design Development Plan e) Risk Management Plan f) Progress meetings, Inception and Handover Meetings g) Project Services Program h) Progress Claims i) Monthly Reporting j) Quality Assurance Reviews k) Site Visits **l)** Other management plans and reporting as required in the relevant specifications	Lump Sum	$
PS301.2.2	Review of existing geotechnical information and provide detailed geotechnical investigations proposal plan	Lump Sum	$
PS301.2.3	50% Submission (drawings and ***draft*** design report including independent verifications ***not included in Sub Contractor Costs) Refer note on breakdown of costs below:*** a) Pavement Design b) Road Design c) Drainage d) Structures ~~e) Utilities design: water (excluding Water Services Co-ordinator)~~ ~~f) Utilities design electrical (excluding ASP3~~	 Lump Sum Lump Sum Lump Sum Lump Sum ~~Lump Sum~~ ~~Lump Sum~~	 $ $ $ $ ~~$~~ ~~$~~

DETAILED DESIGN Package 2			
Description	**Description**	**Description**	**Description**
	~~designer)~~ ~~g) Utilities design: Gas~~ h) ~~Utilities design: telecom~~	 ~~Lump Sum~~ ~~Lump Sum~~	 ~~$~~ ~~$~~
PS301.2.4	Constructability, HSiD, Risk Workshop including submissions of relevant reports, Facilitator and Venue Cost	Lump Sum	$
PS301.2.5	80% Submission (drawings and design report including independent verifications) ***Refer note on breakdown of costs below*** a) Pavement Design b) Road Design c) Drainage d) Structures ~~e) Utilities design: water (excluding Water Services Co-ordinator)~~ ~~f) Utilities design electrical (excluding ASP3 designer)~~ ~~Utilities design: Gas~~ g) ~~Utilities design: telecom~~	 Lump Sum Lump Sum Lump Sum Lump Sum ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~	 $ $ $ $ ~~$~~ ~~$~~ ~~$~~ ~~$~~
PS301.2.6	100% Submission (drawings and design report including independent verifications) ***Refer note on breakdown of costs below*** a) Pavement Design b) Road Design c) Drainage d) Structures ~~e) Utilities design: water (excluding Water Services Co-ordinator)~~ ~~f) Utilities design electrical (excluding ASP3 designer)~~ ~~g) Utilities design: Gas~~ ~~h) Utilities design: telecom~~	 Lump Sum Lump Sum Lump Sum Lump Sum ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~	 $ $ $ $ ~~$~~ ~~$~~ ~~$~~ ~~$~~
PS301.2.7	Pre-IFC and IFC Submissions (drawings and design report including independent verifications) ***Breakdown of costs not required***	Lump Sum	$
PS301.2.8	Road Safety Audits	Lump Sum	$
PS301.2.9	Property Acquisition: a) Property adjustment meetings b) Property adjustment drawings: c) Category Minor d) Category Standard e) Category Major	 Lump Sum Lump Sum Lump Sum Lump Sum	 $ $ $ $
PS301.2.10	Community Engagement (meetings, presentations, production of Visualisation Requirements, other as required except for tasks relating to property acquisitions)	Lump Sum	$
PS301.2.11	Quantities and Cost Estimate at ~~20%,~~ 80% and 100% design submissions	Lump Sum	$

DETAILED DESIGN Package 2			
Description	**Description**	**Description**	**Description**
PS301.2.12	Construction and Traffic Staging Plans and Construction Program	Lump Sum	$
PS301.2.13	Sub Contractor's cost (add/omit as required): a) TCS Design ~~b) ASP3 Street Lighting design~~ ~~c) Water Services Co-ordinator~~ d) Quantity Surveyor/cost estimator e) Urban Designer f) Construction tender documentation	 Lump Sum ~~Lump Sum~~ ~~Lump Sum~~ Lump Sum Lump Sum Lump Sum	 $ ~~$~~ ~~$~~ $ $ $
~~PS301.2.14~~	~~*Geotechnical investigations and reports, approvals and Independent Verifier review*~~	~~*Provisional Sum*~~	~~*$150,000*~~

DETAILED DESIGN Package 3			
Description	**Description**	**Description**	**Description**
PS301.3.1	Project Management Including: a) Preparation and submission of Project Management Plans b) WHS Management Plan c) Quality Management Plan d) Design Development Plan e) Risk Management Plan f) Progress meetings, Inception and Handover Meetings g) Project Services Program h) Progress Claims i) Monthly Reporting j) Quality Assurance Reviews k) Site Visits **l)** Other management plans and reporting as required in the relevant specifications	Lump Sum	$
PS301.3.2	Review of existing geotechnical information and provide detailed geotechnical investigations proposal plan	Lump Sum	$
PS301.3.3	50% Submission (drawings and ***draft*** design report including independent verifications ***not included in Sub Contractor Costs) Refer note on breakdown of costs below:*** a) Pavement Design b) Road Design c) Drainage d) Structures ~~e) Utilities design: water (excluding Water Services Co-ordinator)~~ ~~f) Utilities design electrical (excluding ASP3 designer)~~ ~~g) Utilities design: Gas~~ h) ~~Utilities design: telecom~~	 Lump Sum Lump Sum Lump Sum Lump Sum ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~ ~~Lump Sum~~	 $ $ $ $ ~~$~~ ~~$~~ ~~$~~ ~~$~~

DETAILED DESIGN Package 3			
Description	**Description**	**Description**	**Description**
PS301.3.4	Constructability, HSiD, Risk Workshop including submissions of relevant reports, Facilitator and Venue Cost	Lump Sum	$
PS301.3.5	80% Submission (drawings and design report including independent verifications) ***Refer note on breakdown of costs below***	Lump Sum	$
	a) Pavement Design	Lump Sum	$
	b) Road Design	Lump Sum	$
	c) Drainage	Lump Sum	$
	d) Structures	~~Lump Sum~~	~~$~~
	~~e) Utilities design: water (excluding Water Services Co-ordinator)~~	~~Lump Sum~~	~~$~~
	~~f) Utilities design electrical (excluding ASP3 designer)~~	~~Lump Sum~~	~~$~~
	~~Utilities design: Gas~~	~~Lump Sum~~	~~$~~
	g) ~~Utilities design: telecom~~		
PS301.3.6	100% Submission (drawings and design report including independent verifications) ***Refer note on breakdown of costs below***	Lump Sum	$
	a) Pavement Design	Lump Sum	$
	b) Road Design	Lump Sum	$
	c) Drainage	Lump Sum	$
	d) Structures	~~Lump Sum~~	~~$~~
	~~e) Utilities design: water (excluding Water Services Co-ordinator)~~	~~Lump Sum~~	~~$~~
	~~f) Utilities design electrical (excluding ASP3 designer)~~	~~Lump Sum~~	~~$~~
	~~g) Utilities design: Gas~~	~~Lump Sum~~	~~$~~
	~~h) Utilities design: telecom~~		
PS301.3.7	Pre-IFC and IFC Submissions (drawings and design report including independent verifications) ***Breakdown of costs not required***	Lump Sum	$
PS301.3.8	Road Safety Audits	Lump Sum	$
PS301.3.9	Property Acquisition:		
	a) Property adjustment meetings	Lump Sum	$
	b) Property adjustment drawings:		
	c) Category Minor	Lump Sum	$
	d) Category Standard	Lump Sum	$
	e) Category Major	Lump Sum	$
PS301.3.10	Community Engagement (meetings, presentations, production of Visualisation Requirements, other as required except for tasks relating to property acquisitions)	Lump Sum	$
PS301.3.11	Quantities and Cost Estimate at ~~20%,~~ 80% and 100% design submissions	Lump Sum	$
PS301.3.12	Construction and Traffic Staging Plans and Construction Program	Lump Sum	$
PS301.3.13	Sub Contractor's cost (add/omit as required):		
	a) TCS Design	Lump Sum	$

DETAILED DESIGN Package 3			
Description	**Description**	**Description**	**Description**
	~~b) ASP3 Street Lighting design~~ ~~c) Water Services Co-ordinator~~ d) Quantity Surveyor/cost estimator e) Urban Designer f) Construction tender documentation	~~Lump Sum~~ ~~Lump Sum~~ Lump Sum Lump Sum Lump Sum	~~$~~ ~~$~~ $ $ $
~~PS301.3.14~~	~~*Geotechnical investigations and reports, approvals and Independent Verifier review*~~	~~*Provisional Sum*~~	~~*$150,000*~~

Item	DETAILED DESIGN Description Provisional Sums	Total
Provisional Sums (Detailed Design)	***Water relocation (All packages)***	***$220,000.00***
	Gas relocations (All packages)	***$125,000.00***
	Communications relocations (All packages)	***$375,000.00***
	Electrical relocations (All packages)	***$250,000.00***
	Geotechnical investigations and reports, approvals and Independent Verifier review (All packages)	***$300,000.00***
	Sub Total	***$1,270,000.00***

Item	DETAILED DESIGN Description	Total
PS301.1A	Detailed Design: Package 1A	$
PS301.1B	Detailed Design: Package 1B	$
PS301.2	Detailed Design: Package 2	$
PS201.3	Detailed Design: Package 3	$
	Provisional Sums (Detailed Design)	***$1,270,000.00***
	Sub Total	$
	GST	$
	TOTAL	$

Note: Breakdown of costs ***for each engineering discipline*** (i.e., Road Design, Pavement, Drainage, Utility, Structures, ~~Property Adjustments~~, TCS and Street Lighting, Turn Paths, Landscaping, Documentation including drafting etc. for each deliverables at 50%, 80%, 100% stages) must be provided.

ANNEXURE PS301/C – SCHEDULES OF HOLD POINTS, WITNESS POINTS, DELIVERABLES, MEETINGS AND WORKSHOPS

C1 SCHEDULE OF HOLD POINTS AND WITNESS POINTS

The PSC must give the RMS representative at least five working days written notice prior to reaching any hold point for which a release by the RMS representative is required. Only items marked with Y are required for this project.

Table PS301.C1 – Hold Point and Witness Point Requirements

Clause	Type	Description	Required
2.1.2	Hold	Commencement of field work	Y
2.1.5.1	Hold	Commencement of design (submission of project quality plan)	Y
2.1.6.2	Hold	Commencement of design (submission of design development plan)	Y
2.6.4	Hold	Finalisation of detailed design	Y
~~2.7~~	~~Hold~~	~~Stakeholder engagement~~	N
~~3.2.2.1~~	~~Hold~~	~~Detailed design~~	N
3.2.2.1	Hold	Finalisation of detailed design	Y
3.2.2.1	Hold	Acceptance of the detailed design	Y

C2 SCHEDULE OF DELIVERABLES AND SUBMISSION DETAILS

RMS may, at its discretion, return any documentation without undertaking the required review if the document is deemed to be of poor quality or is not complete to the required hold or review point. In this instance RMS will not accept time and or cost variations.

The PSC must give the RMS representative at least ten working days to review all deliverables identified in the table below. Only items marked with a Y are required for this project

Table PS301.C2 – Deliverables and Submission Details

Section	Description of Deliverables	Delivery timeframe	Required Y/N
~~1.13~~	~~Retained Infrastructure Report~~	~~As a standalone report at the issue of the 20% of the completed design drawings.~~	N
1.19	Project Familiarisation Report.	Within ~~7~~ 12 working days of the Inception meeting.	Y
1.21	Integration Review Report	As a component of the Design Report.	Y
1.21	Conflict Analysis Report and roll	As a component of the Design Report.	Y

Section	Description of Deliverables	Delivery timeframe	Required Y/N
	plans		
2.1.2	WHS Management Plan	Within 7 working days of award of the Professional Services contract.	Y
2.1.4.3	Corrective Action Requests Register	After the development of a plan of corrective action to prevent a recurrence.	Y
2.1.4.3	Nonconformity Report	On advice of apparent nonconformities.	Y
2.1.4.4	Record of all formal communications	3 working days from the end of the working day that the communication took place.	Y
2.1.5	Project Quality Plan	Within 10 working days of award of the Professional Services contract.	Y
2.1.5	Project Services program	Within 10 working days of award of the Professional Services contract.	Y
2.1.6	Design Development Plan	Within 10 working days of award of the Professional Services contract.	Y
2.1.7	Monthly Project Progress Report	10th day of the month following the month that is being reported.	Y
2.1.7	Project Quality Plan Management Report	As a component of the Monthly Project Progress Report	Y
2.2	WHS File, HSiD Hazards Register, Design Safety Report and Safety Report. ~~20% HSiD Workshops~~, 80% Detailed Design HSiD Workshop	***As a standalone report delivered as a draft 7 working days after the HSiD workshop.*** Continuous see Clause 2.2.	Y
2.2	HSiD Independent Verifier report	(a) Pre-design: all HSiD verify actions are complete (b) At 80% completion (c) At Completion	Y
2.3	Monthly Risk Management action/status including incorporation of actions etc. into the design and environmental assessment as required	Included in the Monthly Project Progress Report and Design Report.	Y
2.3	Risk Management Plan	Living document delivered 7 working days following the Risk Management Workshop and updated at ~~Monthly~~ ***fortnightly*** Project Progress meetings.	Y
2.3	Risk Management Report	As a component of the Design Report	Y
~~2.4~~	~~Value Management Report~~	[VM is not a requirement for Detailed Design]	N
2.4	~~Value Engineering Report~~	~~As a component of the Design Report~~	N

Section	Description of Deliverables	Delivery timeframe	Required Y/N
		~~and also a standalone report delivered 7 working days from the Value Engineering Workshop, if held~~	
2.4	Incorporation of agreed VE and VM ideas into the design and tender documentation	As required	Y
2.4	~~Value Management Action Plan~~	[VM is not a requirement for Detailed Design]	N
2.5	Constructability Workshop Report.	As a standalone report delivered as a draft 7 working days after the 80% Design Constructability Workshop and as a component of the Design Report. Must also be placed in the WHS file as evidence of HSiD processes.	Y
2.5	Constructability Review Report	At 80% completion of the design drawings submission and as a component of the Design Report.	Y
2.5	Incorporation of agreed Constructability ideas into the design and environmental assessment	As required	Y
2.6	Road Safety Audit Report (closed out) as standalone report.	At 80% completion of the design drawings submission and as a component of the Design Report.	Y
2.6	Incorporation of agreed outcomes into the design and environmental assessment	As required	Y
2.6	Incorporation of relevant findings in the HSiD Hazards and Risk Register	As required	Y
2.8	Updated economic evaluations for inclusion with the formal estimate in the design report	Included in the Design Report	Y
2.8	Monitor and review the Project Scope and Estimate of Cost and report any changes in the Monthly Project Progress Report	Included in the Monthly Project Progress Report and Design Report.	Y
2.8 & A11	Material for RMS management presentations	As required.	Y
2.9	Construction ***Staging and Construction*** Program	At 80% completion of the design drawings submission and as a component of the Design Report	Y
3.2, A2 and A8	~~20%~~ ***50%*** submission (drawings and ***draft*** design report ~~including~~	As specified by the PSC	Y

Section	Description of Deliverables	Delivery timeframe	Required Y/N
	~~Independent Verification)~~		
3.2, A2 and A8	80% submission (drawings and design report including Independent Verification)	As specified by the PSC	Y
3.2, 3.3, A2 and A8	100% submission (drawings and design report including Independent Verification)	As per the completion date	Y
A8	IFC drawings	As specified by the PSC	Y
A8	Construction contract tender documentation	As specified by the PSC	Y
~~A14 & A15~~	~~Stakeholder Engagement Plan~~	~~10 days prior to any stakeholder engagement occurs.~~	N

~~Table PS201.C2a – Survey Deliverables and Submission Details~~

~~Aspects of the Design to be Reviewed~~	~~When is Review required~~	~~Who undertakes the Review~~	~~What the Review involves~~
~~Completed detail survey in accordance with RMS specification G73 – Detail Survey~~	~~Before Detailed or Concept Design Starts~~	~~Regional Survey Manager or delegate~~	~~Sign off on the project specific G73 Detail Survey deliverables~~
~~Completed Control survey in accordance with site specific RMS specification G73 – Detail Survey~~	~~Before Detail Survey Starts~~	~~Regional Survey Manager or delegate~~	~~Sign off on the project specific G73 Detail Survey deliverables~~
~~Completed calculated boundaries cadastral model and preservation of survey infrastructure drawings.~~	~~At 80% design~~	~~Regional Survey Manager, or delegate~~	~~Sign off on the project specific G73 Detail Survey deliverables~~
~~Property Works~~	~~Before Tender for construction is issued~~	~~Regional Survey Manager, or delegate~~	~~Compilation of plans and strategies for the preservation of survey infrastructure in line with G73 Detail Survey, and G71 – Construction Surveys, Surveyor General's Directions, LPI and RMS Collaborative Agreement and Legislation~~
~~Set out requirements of bridges, structures and retaining walls~~	~~Before Tender for construction is issued~~	~~Regional Survey Manager, or delegate~~	~~Sign off that the design and survey control from the plans and electronic model is suitable for set out and conformity purposes in accordance G71 Construction Surveys requirements.~~

~~Aspects of the Design to be Reviewed~~	~~When is Review required~~	~~Who undertakes the Review~~	~~What the Review involves~~
~~utilities and services in 2D and 3D investigation in accordance with specification G73 – Detail Survey~~	~~Before Design Starts~~	~~Regional Survey Manager, or delegate~~	~~Sign off that the design and survey control from the plans and electronic model is suitable for specification G73 – Detail Survey and AS5488 Subsurface Utility Information~~
~~Set out requirements for delineation, signposting and road furniture~~	~~Before Tender for construction is issued~~	~~Regional Survey Manager, or delegate~~	~~Sign off that the design from the plans and electronic model is suitable for set out and conformity purposes with specification G71 Construction Surveys.~~
~~Review of accuracy of cadastral overlay model – refer PS321 Detailed Survey and Utility Adjustment and investigation.~~	~~Before Detail Design Starts~~	~~Regional Survey Manager, or delegate~~	~~Sign off that the design from the plans and electronic model is suitable for set out within the existing road corridor or is adequately defined for starting the acquisition process.~~
~~Road and bridge construction plans.~~	~~Before Tender for construction is issued~~	~~Regional Survey Manager~~	~~Sign off that the design from the plans and electronic model is suitable for set out and conformity purposes with specification G71 Construction Surveys.~~

C3 SCHEDULE OF MEETINGS REQUIRED

The purpose of progress meetings is for the PSC to present options and the latest design development, explain the design rationale, make recommendations and request information and advice. The PSC must record the minutes of the all meetings listed in Table PS301.C3 and issue them to all attendees in draft format for review within 3 working days of the meeting. Final minutes incorporating any updates/corrections are to be issued by the PSC within 5 working days of the meeting.

Table PS301.C3 – Meeting Requirements

Section	Description of Meetings Required	Frequency and Requirements
1.19	Inception meeting.	Within 5 days of successful notification As a minimum the inception meeting to be attended by the PSC project manager, environment manager, communications manager etc.
2.1.7	Project Progress meetings. (including review of the risk management Plan)	Fortnightly ~~/ Monthly~~ Face to face meetings at RMS office, Parramatta
	Property Acquisition meetings with RMS properties team	***Monthly*** ***Face to face meetings at RMS office,***

		Parramatta
1.14.6	***Property adjustments meetings on site, at the property, with property owners/agent***	***Allow for 1meeting in the concept design phase and 2 meetings in the detailed design phase. Allow for a 35 properties***
~~2.7~~	~~Stakeholder Engagement meetings~~	~~Single face to face meeting for each identified stakeholder (refer to table C4 for workshop requirements).~~
A14 &A15	***Project Stakeholder meetings:*** ***a) Internal stakeholders:*** ***b) External stakeholders***	***a) As required*** ***b) As required to progress the design for utility owners and service providers; monthly for Council;***
1.19	Handover meeting	At completion of the project. As a minimum the handover meeting to be attended by the PSC project manager, environment manager, communications manager etc.

Note:

***** PSC must accompany RMS Project Management team for meetings with TfNSW / Sydney Metro and the Ryde Council to provide technical design input.

* PSC must liaise with relevant Utility Service Providers as needed for the Utilities design and approvals from relevant authorities.

* PSC must liaise with relevant Property Owners / Residents for the Property adjustment works.

C4 SCHEDULE OF WORKSHOPS REQUIRED

Table PS301.C4 – Workshop Requirements

Clause	Description of Workshops	Required *(1 workshop in each design phase)*	Location	Minimum Expected Duration *(per workshop)*
2.2	Carry out Health and Safety in Design Workshops	Minimum 4 weeks prior to the submission of 80% ***nd*** Detailed Design	In consultation with RMS Representative	16 hrs
2.3.3	Carry out a Risk Management Workshop (Risks other than HSiD).	Around the ~~80%~~ ***50%*** design	In consultation with RMS Representative	8 hrs
~~2.4~~	~~Carry out a Value Management Workshop.~~	~~[VM is not a requirement for Detailed Design]~~	~~In consultation with RMS Representative~~	~~8hrs~~
2.4	Carry out a Value Management Review.	Around 50% detailed design	In consultation with RMS Representative	N/A

2.5	Carry out a Constructability assessment Workshop	At least 4 weeks prior to the submission of 80% and detailed design	In consultation with RMS Representative	8 hrs
~~A13~~	~~Carry out a Stakeholder Workshop~~	~~In consultation with RMS Representative.~~	~~In consultation with RMS Representative~~	~~8hrs~~

- Note: Minimum expected duration excludes any travel time incurred

The PSC, in consultation with the RMS Representative is required to:

(i) Organise and procure a suitably qualified facilitator with sound knowledge in the requirements of the project.

(ii) Organise and procure a suitable venue, including catering when required.

Prior to commencing the Health and Safety in Design, Option Selection, Risk Management and Constructability workshop the following is to be completed;

(i) Drawings to ~~20%~~ ***50%*** completion in ***each phase***. See Specification PS351 – Road Design for drawing requirements.

~~(ii) Project cost estimate and quantities consistent with the level of detail associated with the 20% drawings.~~

(iii) Completed traffic count and travel time modelling for all scenarios including draft report

(iv) Design issues log consistent with the level of work completed

(v) Safety In Design issues and methods of control, consistent with the level of work completed, identified in the design issues log

(vi) Identified constructability issues, consistent with the level of work completed, including utilities, drainage, property access, traffic etc. identified in the design issues log.

(vii) List of pros and cons for each option at each location.

(viii) Possible and probable project risks for each option at each location.

ANNEXURE PS301/D – INDEPENDENT VERIFICATION CERTIFICATE

Name of Project	
Name of Structure or design element	
Registration No of Drawings	
Drawing revision number and status	
Designer of structure or element	
Verification Certificate Date:	

(1) We certify that reasonable professional skill and care has been used in the verification of the design of [insert Name of Structure]. We certify that the design:

(a) has been checked in accordance with the independent verification requirements of clause 1.13 of Project Development Services requirements of Contract No [insert the contract no for this PSC brief]:

(b) has been checked for compliance with:

(i) the Project Development Services requirements of Contract No [insert the contract no for this PSC brief]

(ii) [insert any additional relevant requirements].

(c) has been accurately translated into the following drawings and these drawings are suitable for use as detailed design/construction [delete as appropriate] drawings . The unique numbers of these drawings are:

Sheet No	Issue	Title

Signature	
Name:	
	Independent Verifier

Signed for and on behalf of:	**Position Held**
	Name of Organisation
Date:	

ANNEXURE PS301/E – *INFORMATION PROVIDED BY RMS*

The documents, reports and drawings provided in Annexure E are for information purposes only. RMS accepts no responsibility for, and does not guarantee or make any representation as to the accuracy of, or fitness for purpose, of the information it provides (including the previous design drawings). It is the PSC's responsibility to make its own assessment of the suitability and accuracy of all the information provided, and resource and/or supplement that information by other means.

ANNEXURES PS301/F TO PS301/L – NOT USED

ANNEXURE PS301/M –REFERENCE DOCUMENTS AND SUPPORTING INFORMATION

M1 DESIGN REFERENCE DOCUMENTS

Refer to Clause 1.8.2

RMS Technical Directions and Quality Alerts

RMS CADD Manual 2014

RMS Design Guides

RMS Editorial Style Guide (March 2014)

RMS's Community Participation and Communications; A resource manual for staff (March 2010)

ILC-MI-TP0-201 – Risk Management

ILC-MI-TP0-601 - Estimating Procedure

RMS Standard Drawings

RMS Specifications

Austroads Guides

Australian Standards

Software Programs

M2 NOT USED

Not used.

M3 SUPPORTING INFORMATION

Refer to Clause 1.8.2