

Engineering Consultancy Scheme

PTD 0003-14

July 2018

Engineering Consultant Scheme PTD 0003-14 Disciplines and Role Definitions

This document provides buyers and suppliers with definitions of the Scheme:

- Disciplines
- Sub-disciplines
- Role types (including the corresponding desirable and mandatory qualifications and experience).

What do I use this document for?

Buyers should use these definitions to help decide whether the Scheme covers the services relevant to their scope of work.

Suppliers should use these definitions to:

- determine whether their business' services align with the Scheme when considering applying for Scheme membership
- determine whether their staff meet the requirements necessary to be considered for Scheme membership.

Tools and Templates

Government buyers can access Scheme information including templates and supplier information through [VendorPanel](#) (buyers will first need to register with VendorPanel to access this information). To register, simply select your department or agency name in the list provided ([VendorPanel access links](#)).

You can also access the link to register for VendorPanel on the Scheme page on the [Queensland Contracts Directory](#) (by searching for Engineering Consultant Scheme [PTD 0003-14](#)).

More Information

For more information, please e-mail the Scheme Manager at: ECScheme@qld.gov.au



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Scheme Discipline Definitions

The following disciplines are applicable to the Engineering Consultant Scheme

Table 1: Discipline descriptions and make-up

Discipline	Definition	Sub-Disciplines
1. Transport infrastructure design and engineering – pavements, roads, highways, bridges, rail and marine	Covers the planning, design and analysis of infrastructure related to pavements, road, highway, bridge, rail and marine transport structures (including modifications to and demolition of existing infrastructure).	<ul style="list-style-type: none"> 1.1 Bridge design and engineering 1.2 Road and highway design and engineering 1.3 Rail infrastructure design and engineering 1.4 Marine transport infrastructure design and engineering 1.5 Public Transport Design & Engineering 1.6 Active modes design & Engineering 1.7 Crash Analysis, Investigation & Mitigation 1.8 Road Systems Design & Engineering (Traffic Signals, Signing & Lining) 1.9 Traffic engineering
2. Transport / traffic planning, design and economic studies	Covers the planning, design and analysis of the systems and controls used to manage transport infrastructure. Also includes related economic impact assessments, analyses, planning and consideration of wider social and environmental factors requiring community and stakeholder consultation.	<ul style="list-style-type: none"> 2.1 Economic studies and urban planning 2.2 Transport planning 2.3 Community engagement 2.4 Passenger Transport Planning 2.5 Active Mode Planning 2.6 Land Use planning 2.7 Planning, Policy and Strategy 2.8 Integrated Planning/Network Planning 2.9 Road/Link Planning 2.10 Macro Modelling, mesoscopic modelling, microscopic modelling, data analysis / processing
3. Building design and engineering and economic studies	The planning, design, certification and analysis of buildings (including maintenance, modifications to and demolition of existing buildings) and the services installed inside and outside buildings to make the building safe and habitable.	<ul style="list-style-type: none"> 3.1 Acoustics 3.2 Civil Engineering 3.3 Electrical – Power 3.4 Electrical – Security / Data / Communications 3.5 Energy 3.6 Fire 3.7 Mechanical - HVAC 3.8 Mechanical – Lifts & Vertical Transportation 3.9 Plumbing 3.10 Structural Engineering 3.11 Economic studies, urban planning and community engagement

Discipline	Definition	Sub-Disciplines
9. General and other technical engineering		9.1 Landscaping 9.2 Dams, weirs and other water retaining infrastructure design and engineering

Scheme Role Definitions

The table below describes the relevant role types available under the Engineering Consultant Scheme.

Table 2: ECS Role Definitions

Role Type	Relevant to Discipline	Description	Qualifications, skills and experience	
Engineer / Designer	1, 2, 3, 5, 6, 7	Develops engineering designs, provides technical advice, manages projects	<u>Engineer:</u>	Mandatory qualifications: <ul style="list-style-type: none"> • Persons who provide an engineering service must be a Registered Professional Engineer Queensland (RPEQ) • Tertiary degree qualified (degree recognised by Engineers Australia)
			<u>Designer:</u>	Mandatory qualifications & experience: <ul style="list-style-type: none"> • Tertiary degree or other relevant design experience • Minimum of 5 years' experience in civil design of transport and / or building infrastructure projects
Design Draftsman / Technician	1, 2, 5, 6	Generates design drawings	Mandatory qualifications & experience: <ul style="list-style-type: none"> • Minimum of 5 years' experience in CADD systems in civil design of on transport and / or building infrastructure projects 	
Contract Administrator	8.4	Ensures contract compliance. Includes Superintendents and Site Engineers	Mandatory qualifications & experience: <ul style="list-style-type: none"> • Persons who provide an engineering service must be a Registered Professional Engineer Queensland • Tertiary degree qualified (degree recognised by Engineers Australia) • Experience in superintendence of transport and / or building infrastructure projects 	
Environmental	7	Environmental and cultural heritage services	Technical Specialists:	Mandatory qualifications: <ul style="list-style-type: none"> • Degree in Environmental Science / Environmental Engineering or equivalent • Persons who provide an engineering service must be a Registered Professional Engineer of Queensland (RPEQ) Desirable qualifications: <ul style="list-style-type: none"> • Post-graduate qualifications in Environmental (or related) Studies Mandatory experience: <ul style="list-style-type: none"> • Minimum of 5 years' relevant industry experience, involving transport and / or building infrastructure project delivery and minimum 10 years' experience in the discipline of environmental management, including the provision of

Role Type	Relevant to Discipline	Description	Qualifications, skills and experience	
				<p>environmental advice and reports to DTMR and DHPW standards</p> <p>Desirable experience:</p> <ul style="list-style-type: none"> • The person applying for this role will have a minimum of 10 years' experience as an environmental professional working on transport and / or building infrastructure projects and Auditor certification and demonstrated industry experience in an auditing role
			Environmental personnel:	<p>Mandatory qualification:</p> <ul style="list-style-type: none"> • Degree in Environmental Science / Environmental Engineering or equivalent • Persons who provide an engineering service must be a Registered Professional Engineer of Queensland (RPEQ) <p>Desirable qualifications:</p> <ul style="list-style-type: none"> • Post-graduate qualifications in Environmental (or related) Studies or Post-graduate qualifications in Project Management <p>Mandatory experience:</p> <ul style="list-style-type: none"> • Minimum of 5 years' relevant industry experience, involving the operational aspects of transport and /or building infrastructure projects, minimum 5 years' experience in the discipline of environmental management, for the provision of environmental advice and reports to DTMR and DHPW standards <p>Desirable experience:</p> <ul style="list-style-type: none"> • Auditor certification, or demonstrated industry experience in an auditing role, pre-construction, construction and post-construction phases of a transport or building infrastructure project and demonstrated experience in the implementation of environmental management systems in accordance with ISO1401
Project Manager	8.2	Develops and manages the execution of a work scope ensuring the work scope is developed to	<p>Mandatory qualifications & experience:</p> <ul style="list-style-type: none"> • Project management or relevant tertiary qualification • Minimum of 5 years' experience in the project management of transport and /or building infrastructure projects 	

Role Type	Relevant to Discipline	Description	Qualifications, skills and experience	
		specification and on time		
Inspector	8.4	Inspects designs pre and post construction to ensure compliance with relevant design standards.	Mandatory qualifications & experience: <ul style="list-style-type: none"> • Minimum of 10 years' experience in the supervision and/or surveillance of transport and / or building infrastructure projects 	
Surveyor	4	Undertakes Engineering Surveying and cadastral surveying	Engineering Surveyor	Mandatory qualifications: <ul style="list-style-type: none"> • Possess an Accredited Surveying Qualification, (Meets AQF level 5) Mandatory experience: <ul style="list-style-type: none"> • Minimum of 5 years' experience in surveying engineering projects Desirable qualifications: • Registration as a Surveyor or Registration as a Surveyor with an Engineering Endorsement • Specialist Certification with the SSSI - (ESP-AP), and/or Engineering Surveying Professional(Australasia Pacific) Desirable experience: <ul style="list-style-type: none"> • Delivering engineering surveys (pre-design, construction/ audit, geodetic) • Provide professional and specialist technical advice on surveying related issues. • Approve delivery of geospatial products and services, checking conformance with required type and format of deliverables, standards, specifications, delivery times and other conditions of contract • Demonstrated knowledge and skills in 12d software
			Cadastral Surveyor	Mandatory qualifications and experience: <ul style="list-style-type: none"> • Registered as a Surveyor with the Surveyors Board of Queensland (SBQ) and hold a Consulting Surveyor Endorsement • Minimum 2 years' experience in delivering cadastral surveys

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			<ul style="list-style-type: none"> Understanding of meso as well as strategic (macro) models preferred all levels
Spatial Science Officer	4	Capturing, storage, analysis, application and presentation of spatial information	<p>Mandatory qualifications:</p> <ul style="list-style-type: none"> Bachelor's degree in Spatial Science or a related degree with post graduate spatial science qualification <p>Mandatory experience:</p> <ul style="list-style-type: none"> Minimum 2 years' experience in capturing, storage, analysis, application and presentation of spatial information <p>Desirable qualifications:</p> <ul style="list-style-type: none"> Specialist certification with the Surveying and Spatial Sciences Institute E.g. GISP-AP Desirable experience: 4 years' experience in capturing, storage, analysis, application and presentation of spatial information
Spatial Science Officer (Cartography)	4	Application and presentation of spatial information including soft and hard copy map products	<p>Mandatory qualifications:</p> <ul style="list-style-type: none"> Bachelor's degree in Spatial Science or a related degree with post graduate spatial science qualification <p>Mandatory experience:</p> <ul style="list-style-type: none"> Minimum 2 years' experience in the application and presentation of spatial information including soft and hard copy map products <p>Desirable qualifications:</p> <ul style="list-style-type: none"> Specialist certification with the Surveying and Spatial Sciences Institute Eg. GISP-AP Desirable experience: 4 years' plus experience in the application and presentation of spatial information including soft and hard copy map products
Geotechnical Engineer / Engineering Geologist	5	Provides specialist geotechnical engineering services and	<p>Mandatory qualifications:</p> <ul style="list-style-type: none"> Degree in Civil Engineering or Engineering Geologist which is acceptable for Corporate Membership of Engineers Australia Registered Professional Engineer Queensland (RPEQ)

Role Type	Relevant to Discipline	Description	Qualifications, skills and experience
		technical advice to facilitate the planning, design, construction and maintenance of road transport infrastructure.	<p>Mandatory experience:</p> <ul style="list-style-type: none"> • Minimum 15 years' experience in geotechnical engineering projects associated with road transport infrastructure • Provision of geotechnical input into investigation, analysis, design and reporting of: stability and settlement of embankment of compressible subsoils, various ground improvement techniques, cut and fill slopes, structure foundations (including bridge), various type of retaining walls • Slope risk assessment, assessment of engineering properties of materials, and (planning, monitoring and interpretation of) geotechnical instrumentation <p>Desirable qualifications:</p> <ul style="list-style-type: none"> • Postgraduate qualifications in Geotechnical Engineering or Engineering Geology • RMS, NSW slope risk assessment accreditation <p>Desirable experience:</p> <ul style="list-style-type: none"> • Design of remedial works on slowly moving (creeping) hill slopes.
Hydrologist	6	Study and monitor the occurrence, quality and movement of water	<p>Mandatory qualifications:</p> <ul style="list-style-type: none"> • Relevant Bachelor Engineering (Civil or Environmental) or Science (Environmental, NRM, Soil and Water, etc.) Degree <p>Mandatory experience:</p> <ul style="list-style-type: none"> • Flood estimation: small to large catchments using a range of techniques including rainfall-runoff techniques, flood frequency analysis, etc. <p>Desirable qualifications:</p> <ul style="list-style-type: none"> • Masters or higher-level qualification specialising in hydrology <p>Desirable experience:</p> <ul style="list-style-type: none"> • N/A
Commercial Advisor	8.1	Commercial Advisors provide strategic advice and expertise	<p>Mandatory qualifications:</p> <ul style="list-style-type: none"> • Nil <p>Mandatory experience:</p>

Role Type	Relevant to Discipline	Description	Qualifications, skills and experience
		regarding the financial aspects of a project during capital, operations and maintenance phases under various funding scenarios	<ul style="list-style-type: none"> • Nil <p>Desirable qualifications:</p> <ul style="list-style-type: none"> • Bachelor degree in business, accountancy or similar in the field of finance. • CPA or further education in specialised area <p>Desirable experience:</p> <ul style="list-style-type: none"> • Discounted cash-flow analysis of a transport infrastructure related project • Provision of high-level advice or guide an analysis of a project in line with current accounting practices with an understanding of commercial issues regarding a range of transport and / or building infrastructure projects (e.g., PPP and other financing methods, risk analysis and property impacts)
Economist	2	Conducts economic modelling and evaluation of transport infrastructure and services projects/programs using relevant economic tools and theory and provides relevant advice	<p>Mandatory qualifications:</p> <ul style="list-style-type: none"> • Nil <p>Mandatory experience:</p> <ul style="list-style-type: none"> • Nil <p>Desirable qualifications</p> <ul style="list-style-type: none"> • Bachelor degree in economics (or similar with economics major) • Further qualifications or specialisation in a particular field <p>Desirable experience:</p> <ul style="list-style-type: none"> • Cost-benefit analysis for transport and / or building infrastructure related projects • Preparation of technical reports or peer reviewed research • High-level advising or guiding project analysis in line with current industry practices, with an understanding of broader economic issues regarding a range of transport and / or building infrastructure projects (e.g., understanding of CBA / assessment frameworks and guidelines in Australia, other economic tools and methods to assess economic impacts of transport projects).

Role Type	Relevant to Discipline	Description	Qualifications, skills and experience
Estimator	8.3	Estimate the volume and cost of materials needed for construction projects. Also, assist in project risk management.	<p>Mandatory qualifications:</p> <ul style="list-style-type: none"> • Nil <p>Mandatory transport infrastructure experience:</p> <ul style="list-style-type: none"> • Minimum 5 years' relevant experience in transport and / or building infrastructure projects including the development and preparation of civil construction contract estimates and tenders relating to transport and / or building infrastructure projects • Demonstrated expertise in the development and preparation of estimates to DTMR and DHPW policies, standards and specifications for different contract models e.g. Transport Infrastructure Contracts (TIC-CO), Design and Construct (D&C) Contracts, and Alliances <p>Desirable qualifications:</p> <ul style="list-style-type: none"> • Formal qualifications in engineering, quantity surveying, project management or construction management are desirable. • Bachelor degree in an engineering discipline from a recognised tertiary institution or equivalent engineering qualifications which are acceptable to the Institution of Engineers, Australia. • Registration as a Professional Engineer (Queensland) (RPEQ). • Registration as a Professional Quantity Surveyor (AIQS or equivalent) <p>Desirable experience:</p> <ul style="list-style-type: none"> • Computer skills in first principles estimating software (for example, but not limited to, Expert Estimation) and risk management software (for example @risk) in a commercial environment • Demonstrated ability in written communication, oral communication, negotiation skills • Comprehensive knowledge of the cost elements of civil construction projects • Proven experience as an independent estimator on civil construction projects • Commercial experience on major (\$50M+), large (\$100M+), Very large (\$500M+) & mega projects (\$1,000M+)
Project Scheduler	8	Develop construction project plans detailing timelines, required	<p>Mandatory qualifications:</p> <ul style="list-style-type: none"> • Nil <p>Mandatory experience:</p>

Role Type	Relevant to Discipline	Description	Qualifications, skills and experience
		resources, the sequencing of tasks and the responsibilities of project team members. Also assist in project risk management.	<ul style="list-style-type: none"> • Minimum 5 years of civil commercial construction scheduling, and reporting experience for civil construction projects • Computer skills in scheduling software (for example, but not limited to, Primavera P6) and time risk management software (for example Primavera Risk Analysis - Pertmaster) in a commercial environment • Demonstrated ability in written communication, oral communication, negotiation skills • Well-developed understanding of project activity sequencing for civil construction projects <p>Desirable qualifications:</p> <ul style="list-style-type: none"> • Formal qualifications in engineering, quantity surveying, project management or construction management are desirable. <p>The following qualifications are highly desirable:</p> <ul style="list-style-type: none"> • Possession of a Degree in an Engineering discipline from a recognised tertiary institution or equivalent engineering qualifications which are acceptable to the Institution of Engineers, Australia.