

SKILLS FRAMEWORK FOR ENGINEERING SERVICES			
SKILLS MAP – PRINCIPAL ENGINEER/MANAGER (ENGINEERING CONSTRUCTION)			
Sector	Engineering Services		
Track	Engineering Construction and Commissioning		
Occupation	Engineering Professional		
Job Role	Principal Engineer/Manager (Engineering Construction)		
Job Role Description	<p>The Principal Engineer/Manager (Engineering Construction) acts as a technical advisor to provide problem-solving consultation and discipline engineering expertise for complex projects. He/She drives stakeholder and contractor management, and manages key project metrics for cost, time, quality, risk, safety and environmental impact. He leads mechanical completion activities to ensure compliance with project requirements, regulations, and safety and quality standards in accordance with local and international regulations. He is a professional engineer, specialising in mechanical, electrical, control and instrumentation, civil, structural or geotechnical engineering disciplines. He manages a team of senior engineers and ensures efficient business operations.</p> <p>He is a key resource person who advises senior management, and internal and external stakeholders on engineering matters. He is highly analytical, enjoys solving challenging problems, and is able to lead others effectively. He possesses strong project management and decision-making skills. He works on-site, and is expected to travel occasionally to project locations.</p>		
Critical Work Functions and Key Tasks / Performance Expectations	Critical Work Functions	Key Tasks	Performance Expectations* (For legislated / regulated occupations)
	Manage execution of engineering construction projects	Establish construction strategy and methods for engineering construction activities	In accordance with: <ul style="list-style-type: none"> • Professional Engineers Act and Rules; • Workplace Safety and Health (WSH) Act; • Building Control Act; • Electricity Act; • Fire Safety Act
		Provide expert technical advice for project scoping, procurement and contractor selection	
		Provide technical expertise to validate constructability and feasibility reviews for engineering designs	
		Formulate procedures to ensure compliance with work permits and regulatory and legislative pre-requisites	
		Drive effective working relationships using appropriate communication protocols, and conflict and dispute resolution mechanisms	
Oversee installation of	Approve installation and assembly of equipment, components and systems		

	equipment, components and systems	Resolve incidences of technical deviation from design specifications using appropriate change plans
		Implement strategies to optimise contractor performance in line with organisation's standards and practices
		Collaborate across departments to drive compliance with organisational quality standards and guidelines
		Provide expert technical recommendations for equipment and system degradation issues to enhance reliability and availability
	Conduct mechanical completion activities	Drive checks and inspections to guarantee fulfilment of project requirements
		Endorse functional and technical tests to deliver high quality and reliable installation of equipment, components and systems
		Collaborate across departments to drive smooth handover to commissioning and operations
		Drive compliance with applicable codes, regulations and authority requirements
		Approve technical documents for mechanical completion to ensure compliance with organisational procedures
	Manage health, safety and environment	Establish departmental plans aligned to organisational strategies and frameworks to drive compliance with Workplace Safety and Health (WSH) and Environmental Management Systems (EMS)
		Drive contractors' and vendors' compliance with the organisation's WSH and EMS standards and practices
		Review WSH and EMS accident and incident findings and trends to recommend improvements
		Drive sustainable engineering strategies, procedures and guidelines
	Manage people and organisational function	Develop strategies for resource planning and utilisation
		Drive department performance to achieve organisational goals

		Drive talent recruitment and development for the department in alignment with organisational strategy		
		Manage the department's financial inflow and outflow against allocated budgets and forecasts		
		Validate risk management plans and risk controls to ensure compliance with organisation's risk management framework		
		Manage continuous improvement and change management initiatives for time, cost and quality improvements		
			*Performance Expectations are non-exhaustive and subject to prevailing regulations	
Skills & Competencies	Technical Skills & Competencies		Generic Skills & Competencies (Top 5)	
	3D Modelling	Level 5	Communication	Advanced
	Artificial Intelligence Application	Level 5	Decision Making	Advanced
	Budgeting	Level 4	Teamwork	Advanced
	Building Information Modelling Application	Level 5	Problem Solving	Advanced
	Business Performance Management	Level 4	Developing People	Advanced
	Business Presentation Delivery	Level 4		
	Change Management	Level 4		
	Civil and Structural Engineering Management	Level 5		
	Conflict Resolution	Level 5		
	Continuous Improvement Management	Level 4		
	Cost Management	Level 5		
	Data and Statistical Analytics	Level 4		
	Design for Safety	Level 3		
	Electrical Engineering Management	Level 4		
	Engineering Drawing Interpretation and Management	Level 5		
	Engineering Safety Standards Interpretation	Level 5		
	Environmental Management System	Level 5		

Framework Development and Implementation	
Equipment and Systems Testing	Level 4
Geotechnical Engineering Management	Level 5
Hazards and Risk Identification and Management	Level 4
Installation and Assembly	Level 5
Instrumentation and Control Design Engineering Management	Level 4
Internet of Things Management	Level 4
Inventory Management	Level 5
Learning and Development	Level 4
Manpower Planning	Level 4
Mechanical Engineering Management	Level 4
Organisational Resource Management	Level 5
Organisational Risk Management	Level 4
Programme Management	Level 4
Project Risk Management	Level 4
Quality System Management	Level 4
Robotic and Automation Technology Application	Level 5
Staff Management	Level 4
Stakeholder Management	Level 4
Strategy Development	Level 4
Structural Testing	Level 4
Sustainable Engineering	Level 3
Systems Integration	Level 5
Technical Inspection	Level 4
Technical Writing	Level 4
Technology Application	Level 4
Third Party Management	Level 5
Workplace Safety and Health Culture Development	Level 4

	Workplace Safety and Health Framework Development and Implementation	Level 5	
Programme Listing	For a list of Training Programmes available for the Engineering Services sector, please visit: www.skillsfuture.sg/skills-framework/engineeringservices		

The information contained in this document serves as a guide.