

Matrix use:

X	<p>In the version published on the ASA website an 'X' in a cell indicates the organisation is capable of producing or delivering and self-assuring the selected services.</p> <p>Where an 'X' appears in a cell in the 'Specialist engineering disciplines' area it relates to the asset lifecycle activity for the specialist engineering sub-discipline whereas 'X' in a cell in the 'Non-asset specific engineering services' area covers the whole asset lifecycle.</p> <p>Refer to T MU MD 00009 SP for more details.</p>
■	This asset lifecycle activity is not applicable for the selected specialist sub discipline

Correct as at: 16 Feb 2015	TfNSW asset life cycle	Demand, need, plan							Acquire					Operate and maintain			Dispose												
		Transport needs analysis, model or plan	Operations concept development	Maintenance concept development	Optimising	BRS or user requirements	Single option development	SRS development	Concept or reference design	Design	Material procurement	Manufacturing or fabrication	Construction or installation	Subsystem integration	Testing and commissioning	Acceptance services	Plan asset maintenance	Maintain or upgrade assets	Conduct asset condition surveys	Plan decommissioning or disposal	Conduct decommissioning or disposal								
Specialist engineering disciplines	Rolling stock	Locomotives																											
		Freight vehicles																											
		Heavy commuter electric multiple units or diesel multiple units																											
		Rail bound infrastructure maintenance vehicles																											
		Rail road vehicles																											
		Trolleys and trailers																											
		Light rail vehicles																											
		Other rail vehicles (must be specified in notes)																											
		Rolling stock subsystems (must be specified in notes)																											
	Signalling and control systems	Supervisory and control systems																											
		Interlocking systems																											
		Trackside systems (including cabling)																											
	Communications	Cables and routes, optical fibre and other																											
		Applications and systems – telephony (VOIP and analogue)																											
		Applications and systems – passenger information systems																											
		Applications and systems – alarm and CCTV surveillance																											
		Applications and systems – condition monitoring and wayside telemetry																											
		Networks wired - packet switched (IP, MPLS)																											
		Networks wired - circuit switched (SDH, DWDM and other)																											
		Networks wireless - packet switched (WiFi, WiMax, 4G, LTE and other)																											
		Networks wireless - circuit switched radio systems																											
		Telecommunications power systems and facilities																											
		Network and application management systems (must be specified in notes)																											
	Track engineering	Wheel and rail interface																											
		Geometry and alignment																											
		Components and structures																											
		Railway surveying																											
	Civil and related engineering	Engineering surveying																											
		Geotechnical																											
		Combined services route																											
		Tunnelling																											
		Bridges and structures																											
		Earthworks																											
	Stations and buildings	Roads and pavements																											
		Drainage and hydrology																											
		Buildings architecture	X	X	X	X	X	X	X	X	X	X		X*	X*	X	X	X	X		X	X	X*						
		Buildings structure (note specific areas of specialisation if appropriate in notes)																											
	Electrical engineering	Buildings services (must be specified in the notes)																											
		Specialist buildings expertise (must be specified in the notes)	X	X	X	X	X	X	X	X	X	X		X*	X*	X	X	X	X		X	X	X*						
		High voltage aerial feeders																											
		High voltage cables																											
		Traction substation and sectioning huts																											
		Distribution substations																											
		High voltage protection systems																											
		Low voltage power systems and low voltage protection																											
		Earthing, bonding, electrolysis and lightning protection																											
		Electrical control systems (SCADA) (must be specified in the notes)																											
	Overhead wiring																												
	Electrical network planning and modelling																												

Non-asset specific engineering services			
Provided as specialist services directly to TfNSW, or in relation to other service providers in the interest of or on behalf of TfNSW (select from definitions in T MU MD 00009 SP if required)			
Service		Service	
Asset management systems services (must be specified in the notes) See Note 3	X	Systems engineering and assurance (including systems and safety integration) services (must be specified in the notes) See Note 5	X
Engineering management services (must be specified in the notes) See Note 4	X	Other professional engineering services (must be specified in the notes) See Note 6	X

Notes: specify details of the selected activity for the discipline if required:	
1	Assure only (i.e. providing confidence that the requirements are fulfilled). AEO does not produce the actual deliverable/service.
2	Specialist Building include Urban Planning, Heritage Architecture, Urban Design, Wayfinding and Signage and Landscape Architecture, management and co-ordination of DDA, BCA, Building Services, Landscape Architecture
3	The level of coverage of system safety processes is appropriate for architectural services only and not for integrating/leading role with the design asset lifecycle projects
4	Asset Management in Architectural Services only
5	Multi-Discipline Engineering Management in Architectural Services only
6	Requirement Management (AS5) and Verification & Validation (AS8) in Architectural Services only
7	Competency Management (S1) in Architectural Services only

Signed: 

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Position: Executive Director, Asset Standards Authority

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