



TAO Authorisation Scheme

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Document history

Revision	Effective date	Summary of changes
1.0	8 May 2017	First issued as T MU MD 00009 SP <i>AEO Authorisation Model</i>
2.0	29 August 2017	Second issue – changes to previous content include inclusion of maritime engineering disciplines.
3.0	22 January 2021	Third issue – changes to previous content include: inclusion of references to rapid assessment and updates to descriptions of the asset-specific specialist engineering disciplines particularly in rolling stock, communications, track, buildings and electrical sections.
1.0	30 March 2022	First issue as TS 06197.2:1.0 <i>TAO Authorisation Scheme</i> – changes to previous content include: change of name, updates to the maturity rating, system to provide further clarity and specificity, removal of two engineering capability areas, updates to process steps to reflect new business operations which are now online.
1.1	30 March 2022	This is a minor revision issued to include reference to TS 06197.5 <i>TAO Engineering Services Matrix – Maritime</i> .
2.0	19 December 2022	Second issue. Changes include updating the document to provide clarity to authorisation arrangements and authorisation scoping guidance.
3.0	8 December 2023	Third issue. Changes from the previous version include outdated scoping guidance removed; surveillance audit process updated to reflect current practice; maturity rating calculation updated to reflect current practice; sections reorganized and editorial updates made to enhance readability; references to standards and various definitions updated.
4.0	01 March 2025	Fourth issue. Changes from the previous version include: updated authorisation assessment process, added details of TAO maturity profile, reinforced requirement of TAO's participation in surveillance program, improved alignment with the Technical Supplier Assurance Framework and other documents in the TAO suite, updated references to standards and definitions.

Preface

This is a fourth issue.

This specification forms part of a series of documents that describe the management of the TAO Scheme.

This specification provides details of the TAO Scheme and authorisation process for engineering organisations and other stakeholders, including AMB and other TfNSW business units. This process allows organisations to obtain or amend TAO authorisation by demonstrating that they have appropriate systems, processes, resources and competencies to deliver and assure technical services and products to the Transport Network.

The changes from the previous version include the following:

- authorisation assessment process updated to adopt current best practice
- details of TAO maturity profile added to reflect current practice
- reinforced requirement of TAO's participation in surveillance program to maintain authorisation
- various sections updated to better align with the Technical Supplier Assurance Framework and other documents in the TAO suite
- references to standards and definitions updated.

To enable industry preparation for the implementation of the new assessment process, and to ensure the Portal is enhanced to support it, there is a transitional period in place for the effective date of this document. This document will come into effect on 1 March 2025.

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1 Scope

This document is part of a suite that governs the TAO Scheme. This document sets out the scheme rules and administration including details of the assessment process that are in place to attain and maintain TAO status.

2 Application

This document applies to organisations applying for authorisation to provide self-assured technical services and products to TfNSW and organisations that have gained TAO status. It provides the details of the authorisation assessment process including process steps, the required input and expected output, and arrangements for maintaining TAO authorisation.

This document is also designed to inform TfNSW and industry partners of the TAO Scheme rules and administration including the assessment and surveillance activities and maturity ratings.

3 Referenced documents

The following documents are cited in the text. For dated references, only the cited edition applies. For undated references, the latest edition of the referenced document applies.

Australian standards

AS ISO 55000 *Asset management – Overview, principles and terminology*

AS/NZS ISO 9001 *Quality management systems – Requirements*

AS/NZS ISO/IEC/IEEE 15288 *Systems and software engineering – System life cycle processes*

TfNSW standards

TS 00018 *Technical Supplier Assurance Framework*

TS 06197.1 *TAO Authorisation Requirements*

TS 06197.3 *TAO Engineering Services*

TS 06197.4 *TAO Engineering Services Matrix – Rail*

TS 06197.5 *TAO Engineering Services Matrix – Maritime*

4 Terms, definitions and abbreviations

The following terms, definitions and abbreviations apply in this document:

AMB Asset Management Branch

applicant an organisation that has applied to the AMB for consideration for authorisation as a TAO

asset life cycle stages for an asset from recognition of need through to disposal and any residual risks or liability period

assurance a set of structured and planned activities conducted through the asset life cycle providing progressive justified confidence that objectives are being achieved and that the asset is or will be fit for purpose

authorisation the conferring of authority, by means of an official instruction and supported by assessment and audit

compliance the state or fact of according with, or meeting, rules, requirements or standards

conformance compliance with a requirement, standard or procedure

corrective action an action imposed by the AMB on a TAO as a result of a nonconformance to implement improvements to its system, processes or procedures to achieve conformance

EMCA engineering management capability area

EPCM engineering, procurement and construction management

noncompliance not having the ability to operate in accordance with the TAO authorisation requirements

nonconformance non-fulfilment of a requirement

review a method to provide assurance by a competent person that an engineering output complies with relevant standards and specific requirements, is safe and fit for purpose

service provider a party providing a service to an accountable party or responsible party either directly or indirectly

SME subject matter expert

TAO Technically Assured Organisation, a legal entity to whom TfNSW has issued a TAO Authorisation

technical supplier a party, external or internal to TfNSW, providing a technical service related to TfNSW assets and services

TfNSW Transport for NSW

TfNSW stakeholder a stakeholder is any internal or external person, group or organisation that has a direct or indirect commercial, vocational or lifestyle interest in the performance of TfNSW. They can affect or be affected by the actions, objectives and policies of TfNSW

TfNSW transport assets for the purpose of this document transport assets vested in or owned, managed, controlled, commissioned or funded by TfNSW or a subsidiary NSW Government Agency

transport infrastructure infrastructure used for or in connection with or to facilitate the movement of persons and freight by road, rail, sea, air or other mode of transport (including walking and cycling). It includes:

- railways and railway infrastructure
- roads and road infrastructure
- maritime infrastructure and ports
- transport safety infrastructure
- systems, works, structures, buildings, plant, machinery and equipment associated with or incidental to transport infrastructure. (Source: *Transport Administration Act 1988*).

5 TAO authorisation arrangements

The TAO Scheme provides justified confidence in an entity's ability to provide self-assured services when working on TfNSW transport assets. Once issued, AMB authorisation confers the status of TAO to an entity (which can be a private or public sector entity).

The TAO authorisation process consists of an assessment for the defined scope of engineering services against which authorisation may be granted. Periodic surveillance of the engineering services provided by a TAO is a condition of authorisation. An entity that has already been authorised may expand its recognised engineering services through a scope expansion assessment. TAOs that have not worked for TfNSW for a significant period of time may be required to undergo a reassessment to maintain their authorisation.

Authorisation assessment is a process that determines whether a technical supplier that plans to provide engineering services that affect TfNSW transport infrastructure, or the integrity of its assets, has the necessary capabilities to provide self-assured engineering services. It also provides confidence that a technical supplier can perform those services at the necessary level of maturity.

The initial surveillance audit is scheduled to take place approximately 12 months after authorisation is granted. The date may be brought forward should the AMB have concerns regarding residual risks from the authorisation assessment, or any reported TAO performance issues that may impact on TfNSW project outcomes.

The surveillance process provides confidence to AMB that TAOs continue to maintain their approved systems and can demonstrate effective deployment within a TfNSW project environment. See Section 5.2 for more details.

5.1 TAO assessment method

Authorisation assessment evaluates the completeness and maturity of the systems and processes that support the asset life cycle services. It also determines whether a technical

supplier has the capabilities to repeatedly deliver and assure the authorised scope of engineering services in accordance with TfNSW requirements, including standards.

The assessment is conducted by examining evidence against the TAO requirements and industry best practice as applicable to the proposed scope of authorisation.

The authorisation assessment process outputs are as follows:

- approved scope of authorisation
- organisational maturity profile
- conditions, weaknesses, improvement suggestions together with corrective actions that are to be taken to confirm and retain the authorisation.

The approved scope of authorisation is represented in the technical supplier's engineering services matrix, which lists the range of transport related engineering disciplines, services and activities a supplier is authorised to deliver and assure. See Section 6 for more details.

The scope allocation is done during the assessment. It includes verification of the applicant's record of relevant experience and suitability of the relevant organisational processes and practices.

The scope of authorisation can be expanded through a scope expansion assessment.

The authorisation assessment also includes evaluation of the maturity of the organisational systems that are used to deliver the assured engineering services. The TAO maturity assessment scheme used by the AMB is based upon recognised industry frameworks and standards.

The assessment is conducted in the following three phases:

- Initial engagement
 - when the applicant works with the TfNSW assessment team to clarify the scope of assessment and confirm timeframe and resource expectation.
- Stage 1 assessment
 - when applicant's complete submission is fully assessed, including maturity of the organisational systems and processes through evaluation of compliance to the relevant TAO requirements.
 - when a detailed gap report is provided
- Stage 2 assessment
 - when the applicant presents further evidence addressing identified gaps at stage 1
 - when the assessment team verifies gap closures and concludes the assessment with the recommendation to either grant the applied scope of authorisation partially or in full, or to deny authorisation.

The assessment outcome, including identified weaknesses and maturity profile, are made available to TfNSW agencies to assist them in mitigating the associated risks.

When a TAO undergoes a material change that might affect the conditions of its authorisation or have an impact on its ability to deliver the authorised services, the TAO shall inform AMB as soon as possible, so that an impact assessment can be performed. If a reassessment is required, the details will be determined by the AMB in collaboration with the TAO. Material changes can include, but are not limited to, changes to the following:

- TAO ownership
- scope and type of engineering services offered
- TAO organisation, including roles, responsibilities and reporting lines
- TAO engineering plans, processes and procedures
- fines, penalties, and challenges (issues that the TAO is or becomes aware of).

5.1.1 TAO authorisation consultants

An external consultant may be used to assist an applicant in setting up their systems and processes or in stage 1 and 2 preparation.

However, such a consultant shall not be the key or the only communication point between AMB and the applicant organisation during initial engagement, scoping or assessment stages. The external consultant shall not be part of the applicant team or participate in the assessment.

Both TAO applicants and TAOs shall establish long-term direct engagement with the AMB to ensure mutually beneficial collaboration and knowledge transfer on TAO related matters.

A member of the applicant organisation management team shall be appointed as a TAO representative to act as a direct contact with the AMB. This role shall not be substituted by an external consultant.

5.2 TAO surveillance method

TAOs shall participate in the ongoing surveillance program as a condition of authorisation. Surveillance activities aim to maintain AMB's awareness and confidence in relation to TAO performance, scope of authorisation and level of maturity through audits and reviews of engineering outputs. The AMB surveillance activities monitor the systems, processes, procedures, tools and deliverables of TAOs.

The surveillance approach is based on the following:

- residual risks identified in the original assessment including level of maturity rating and identified findings, including nonconformances

- service delivery risks that depend on the nature and level of the TAO involvement with TfNSW works (ranging from complex high risk works to low profile low risk activities)
- TAO performance including issues of a systemic nature identified through other sources during TAO engagements with TfNSW.

The surveillance phase aims to ensure that a TAO remains compliant against its assessed level of capability within the authorised scope, and to understand the impacts of major changes or incidents on an organisation's authorisation.

The following are key inputs to the surveillance process:

- agreed actions and risks arising from the assessment
- feedback on the TAO received from ongoing projects
- TAO's maturity profile.

The surveillance is aligned with TAO involvement in TfNSW works and its performance. While surveillance is an independent AMB program, it relies on communication from the TAO and the involved TfNSW business unit to provide early warning of factors or incidents that can impact on a TAO's authorisation. Surveillance activities can also be informed through the outcomes of relevant TfNSW service delivery activities such as project or program monitoring and control events, judgement of significance events, and other assurance activities.

The surveillance activities program is based upon the following:

- scheduled surveillance audits based on the maturity level of the TAO
- TAO diligence in managing agreed actions from assessment and surveillance audit findings and the type of findings
- risk factors such as project or contract technical risk and the TAO's maturity ratings and identified weaknesses
- notification by TfNSW business units of TAO performance issues indicating systemic issues with a TAO
- incidents such as project delivery or TAO organisational changes that represent a systemic issue impacting on a TAO's ability to deliver asset life cycle services.

Surveillance is performed through the following:

- collection and review of information about TAO engagements and performance on TfNSW projects
- monitoring the progress of actions arising from nominated AMB assessment and surveillance audit activities
- targeted TAO audits triggered by TAO non-performance or at the request of TfNSW
- AMB TAO technical reviews if required

- regular periodic TAO surveillance audits of the TAO performance within the existing scope of authorisation.

The initial frequency of surveillance audits is based on the level of risk associated with the TAO's maturity assessed during the authorisation phase and the results of ad hoc audits triggered by incidents, risks or nonconformances raised by a TfNSW stakeholder.

The output of these ongoing surveillance activities impacts on the consequent frequency, depth and focus of subsequent surveillance activities.

The outcomes of surveillance of a TAO may include the following:

- modification or removal of authorisation partially (scope reduction) or fully
- imposition of conditions on an authorisation
- modification of maturity profile based on evidence of TAO performance, strengths and weaknesses, collected and reviewed during surveillance audits
- requirement for action plans from the TAO to address all identified nonconformance.

5.2.1 Participation in surveillance program to maintain authorisation

All TAOs shall participate in the surveillance program. TAOs may present a range of projects for audit that showcase deployment of their management system and technical capability.

Transport projects or contracts are required; however, projects from other sectors may be used when a Transport project is not available. Where a TAO has no suitable project for inclusion in a surveillance audit scope for a continuous period of three years, the TAO's authorisation status will be reviewed and considered for removal. This three-year continuous period without audit may occur following initial assessment, scope expansion or audit.

Note: In the event that the TAO has no TfNSW rail or maritime work suitable to put forward for a surveillance audit then a non-TfNSW project may be presented, for example an interstate rail/maritime project, a TfNSW road project or another agreed project in which the TAO can demonstrate deployment of its authorised systems.

5.2.2 Serious nonconformance action or incident

In the event of a serious incident or nonconformance, the AMB may conduct an extraordinary audit of a TAO's engineering management and assurance arrangements focusing on the cause of the incident or nonconformance. The AMB shall consult with the TAO and affected TfNSW stakeholders on the audit findings to determine appropriate actions. Actions may include the following:

- updates to the TAO's published maturity profile
- imposition of requirements for corrective actions with prescribed implementation timescales
- imposition of requirements for immediate corrective action

- withdrawal of selected engineering service areas from the authorised scope
- withdrawal of the entire TAO authorisation pending successful completion of appropriate corrective actions
- withdrawal of the entire TAO authorisation on a permanent basis.

5.3 Withdrawal of authorisation

TAO authorisation may be either partially or completely withdrawn under the following conditions:

1. serious nonconformance affecting potential safety or integrity of TfNSW assets
2. serious incident affecting TfNSW staff, contractor, passenger or general public safety
3. repeated or systemic TAO sub-standard or non-performance leading to additional costs to TfNSW or affecting the TfNSW transport network capability
4. TAO non-performance in managing agreed actions from assessment and surveillance audit or failure to participate in the surveillance program
5. at the voluntary request of the TAO due to withdrawal of engineering services or organisational change
6. not meeting evidence requirements to maintain authorisation, as set out in Section 5.2.1.

Conditions one and two would normally be reported to the AMB by means of existing TfNSW contracting arrangements with the TAO.

5.4 TAO organisational boundaries

The term of organisation within the TAO Scheme means an entity that has a coherent process that it operates within, as well as a coherent set of business goals, shared or common engineering services or products offered.

Organisation within the TAO Scheme can be any of the following:

- a business entity with its own registered business name, own Australian Business Number or overseas equivalent (see Section 7.5 for further details)
- a subsidiary of a larger organisation
- an entire multinational organisation
- a distinct organisational unit or department within a larger organisation
- an alliance consisting of more than one organisation.

Any TAO or TAO applicant that is an alliance of more than one organisation, or a subsidiary of, or organisational unit within, another organisation, does not have to be a registered company in its own right but shall form a clearly identifiable entity within a registered company and bound by

its legal compliance requirements. Further, any such entity shall demonstrate ownership of its own processes, systems and tools distinct to that of the overall company. The agreed TAO organisational boundaries for its authorisation are decided at the time of authorisation.

A change of organisational or business structures triggers an evaluation of the change impact on the accreditation via the material change process to determine the potential impact on its TAO status in terms of the authorised scope, recognised maturity level and authorisation boundaries.

6 TAO authorisation scheme

The TAO Scheme allows for assessing and representing organisational capability to deliver assured engineering services through the following:

- authorised organisational engineering services scope
- organisational processes, systems and practices
- maturity ratings against standard organisational engineering management capability attributes detailed in the TAO requirements.

The scope of authorised engineering services outlines the range of engineering services that a TAO is capable of providing in relation to transport assets that support the TfNSW asset life cycle. It is represented in TS 06197.4 or TS 06197.5 (two-dimensional representations of engineering services). The horizontal axis is based on the asset life cycle phases to ensure consistent coverage and ease of alignment of engineering activities a TAO may offer with the TfNSW asset life cycle. The vertical axis shows engineering disciplines and sub-disciplines that require distinctly different skills, systems, tools, and processes. Both matrix templates also include a section for non-asset life cycle specific services.

When an organisation applies for TAO status, it shall define the scope of engineering services it intends to deliver to TfNSW or on behalf of TfNSW using the matrices in TS 06197.4 or TS 06197.5.

TS 06197.1 specifies a set of TAO requirements that represent recognised industry best practice, which need to be in place to attain TAO authorisation. TAO requirements are grouped into nine EMCAs which shall be applied, as suitable, to the scope of authorisation. TAO requirements and associated capabilities are used to assess and quantify organisational maturity within the selected scope of engineering services.

Figure 1 represents an overview of the TAO Scheme, showing the nine EMCAs that shall be to be followed. See Section 8 for further details of these TAO Scheme elements.

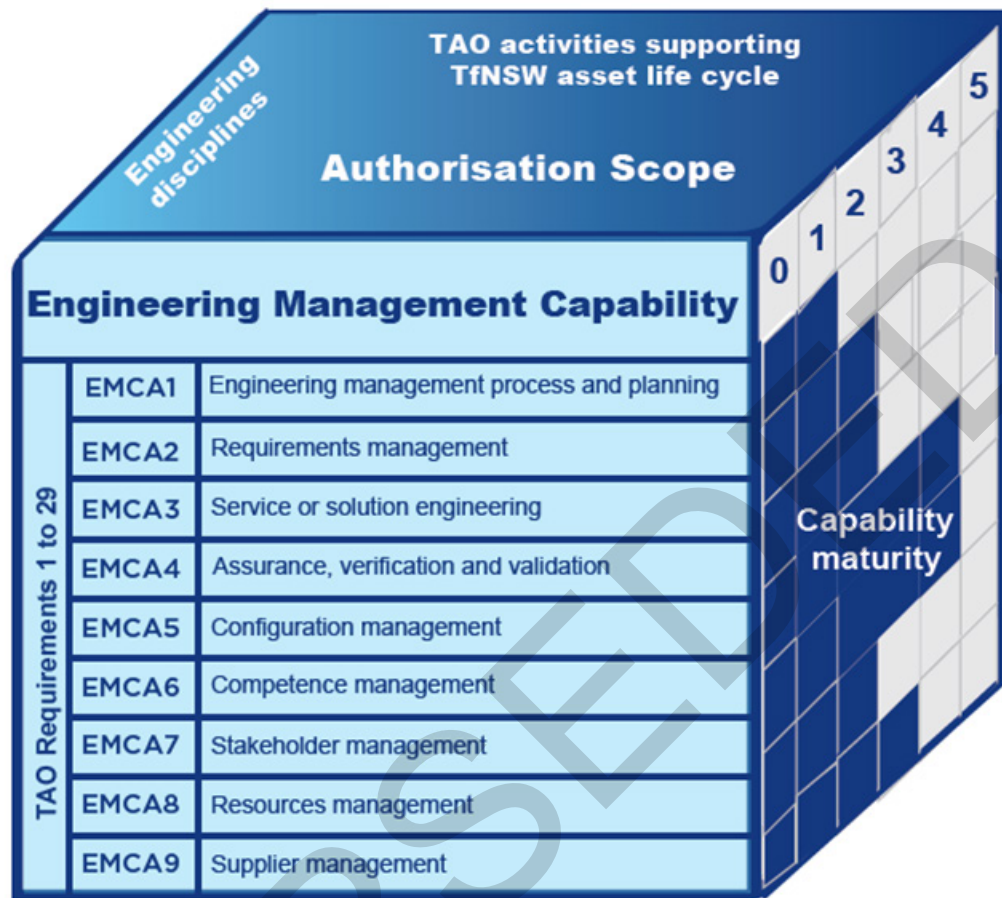


Figure 1 – TAO Scheme

7 TAO authorisation scoping

Organisations are granted specific engineering scope when they are authorised as TAOs. This scope represents the engineering services that an organisation has demonstrated capability of delivering across the asset life cycle. A TAO's authorised scope is documented in its approved engineering services matrix (TS 06197.4 or TS 06197.5). The matrix is used by the following parties for the accompanying reasons:

- TAO and TAO applicants, to represent their organisations' services and to define scope for TAO authorisation assessment or scope expansion
- TfNSW, to define project or contract engineering services capability requirement for specific projects or services
- entities responding to procurement submissions, to demonstrate their individual or combined TAO authorisation coverage against the project or service needs
- TfNSW, for verifying a TAO's authorised capability during delivery.

Sections 7.1 to 7.6 elaborate on rules for authorisation scope identification and documentation. Figure 2 shows TS 06197.4 elements for rail engineering services. Figure 3 shows TS 06197.5 elements for maritime engineering services.

The information in TS 06197.4 and TS 06197.5 is arranged as follows:

- specialist asset-specific engineering disciplines in horizontal rows related to engineering areas that share common or related principles, practices, systems, processes and skills that make this engineering discipline or area distinctly different from other engineering disciplines in terms of the following:
 - output provided
 - standards, requirements to be complied with
 - resources including systems and methodologies used
 - specialist engineering sub-disciplines used to further define and clarify the specific service an organisation can provide at the lowest level allowed by the TAO Scheme
- engineering services related to the TfNSW asset life cycle activities in vertical columns that a TAO may offer which has direct reference to the systems engineering life cycle processes defined by AS/NZS ISO/IEC/IEEE 15288
- non-asset specific services provided as specialist services directly to TfNSW or in relation to other service providers for or on behalf of TfNSW.

The current list of specialist engineering disciplines covers heavy rail, metro, light rail services in TS 06197.4 and maritime services in TS 06197.5.



Matrix use:

X	<p>In the version published on the TfNSW website an 'X' in a cell indicates the organisation is capable of provisioning the assured services.</p> <p>Where an 'X' appears in a cell in the 'Specialist engineering disciplines' area it relates to the asset life cycle activity for the specialist engineering sub-discipline whereas 'X' in a cell in the 'Non-asset specific engineering services' area covers the whole asset life cycle.</p> <p>Refer to TS 06197.2 and TS 06197.3 for more details.</p>
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TAO #	<Insert TAO or contract name or title>	TfNSW asset life cycle	Plan		Create/Acquire					Operate/Maintain		Renew / Dispose					
			SRS development	Concept or reference design	Design	Material procurement	Manufacturing or fabrication	Construction or installation	Subsystem integration	Testing and commissioning	Handover or acceptance services	Plan asset maintenance	Maintain assets	Conduct asset condition surveys	Plan decommissioning or disposal	Conduct decommissioning or disposal	
Engineering services matrix - Rail		TAO activities supporting TfNSW asset life cycle															
Specialist engineering disciplines	Fleet Engineering	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 (specify in the notes)															
		Rolling stock subsystems (specify in the notes)															
		Signals and Control Systems Engineering	Operational control systems														
	Safety and non-safety systems																
	Trackside systems																
	Onboard signalling supervisory systems																
	Telecommunications Engineering	Telecom routes and cables															
		Telecom systems															
		Supervisory control and monitoring systems															
		Telecom wired or fixed networks															
		Telecom wireless or mobile networks															
	Corridor Infrastructure and Engineering	Telecommunications facilities															
		Wheel and rail interface															
		Geometry and alignment															
		Components and structures															
		Roads and pavements															
	Civil Engineering Infrastructure	Drainage and hydrology															
		Railway surveying															
		Engineering surveying															
		Geotechnical															
		Combined services route															
Tunnelling																	
Bridges and structures																	
Interchanges and Buildings	Earthworks																
	Architecture																
	Buildings structure (specify in the notes)																
	Low voltage customer installations (specify in the notes)																
	Heating, ventilation, air-conditioning and refrigeration (specify in the notes)																
	Building management and control systems (specify in the notes)																
	Lifts, escalators and moving walks (specify in the notes)																
	Hydraulic systems (specify in the notes)																
	Tunnel ventilation (specify in the notes)																
	Fire life safety (specify in the notes)																
Energy Networks and Systems	Crown certification (specify in the notes)																
	Other specialist buildings expertise (specify in the notes)																
	High voltage aerial feeders																
	High voltage cables																
	Traction substations 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) (specify in the notes)																
Overhead wiring																	
Electrical network planning and modelling (specify in the notes)																	

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 TS 06197.3 if required)	
Service	Service
Asset management services (refer to Non-asset specific services tab)	Systems engineering and assurance (including systems and safety integration) services (refer to Non-asset specific services tab)
Engineering management services (refer to Non-asset specific services tab)	Other professional engineering services (refer to Non-asset specific services tab)

Notes: specify details of the selected activity for the discipline if required:

Figure 2 – TS 06197.4 elements

7.1 Specifying scope of authorisation in TS 06197.4 and TS 06197.5

Authorisation can be granted for a range of the engineering disciplines and activities over the full asset life cycle. These can be as follows:

1. services specific to a particular asset life cycle activity for a specialist engineering sub-discipline
2. a variety of management services such as asset management and engineering management
3. non-asset specific specialist engineering services (for example systems engineering) which are not necessarily life cycle specific.

An organisation is recognised by default to be fully capable of managing and assuring (including necessary technical assurance) the entire scope of its authorised services, including providing specialist cross-discipline and life cycle activities of integration and interfacing and systems safety assurance integration.

The scope of authorisation is specified by marking the relevant cell with an X in the matrix.

Placing an X in a cell indicates an entity is capable of providing the assured (including technical assurance) selected life cycle activity for the corresponding specialist engineering sub discipline, or non-asset specific specialist engineering service.

The Notes section at the bottom of the matrix should be used to specify details of the selection as suitable. The Notes section of the matrix is also used to clarify and record any conditions or limitations to the authorised capability.

7.2 Scoping for non-asset specific engineering services

An organisation can be recognised to provide a range of non-asset specific services directly to TfNSW, or to other service providers, or on behalf of TfNSW.

These are not internal organisational capabilities supporting its own operations, but services that an organisation can deliver as specialist services – although some names of those services can be identical to the internal organisational capabilities listed in TS 06197.1.

For example, there could be a service that provides specialised non-asset specific requirements management engineering, verification and validation, human factors integration, configuration management, or systems integration service (process, tools, personnel or management) to other organisations for a project or program.

Scoping is documented by placing an X in the relevant cell of the Non-asset specific services section of the matrix and adding notes where necessary. The selection indicates that an

organisation is capable of delivering and self-assuring (including technical assurance) the selected non-asset specific service.

Conditions and limitations for those capabilities shall be outlined in the Notes section of the matrix.

7.3 Scale and complexity of authorised services

The TAO Scheme does not provide explicit rules or categorisation in relation to the scale or complexity of services an organisation is recognised to be able to deliver within its authorised scope. TAO suitability to a specific project or activity in terms of size and complexity is verified during procurement.

The Notes section of the matrix is available to provide relevant comments based on assessment outcome and findings.

7.4 Grouping and exclusion of cells in the matrix

Each cell in TS 06197.3 and TS 06197.4 represents its own unique scope defined in the TAO Scheme. Some asset lifecycle activities may not be applicable for certain sub-disciplines. Refer to TS 06197.3 for more details on exclusions.

Typical authorisation scope pattern or grouping of certain services capabilities in accordance with industry practice may be discussed during assessment.

Grouping of various service capabilities in the organisational matrix for the purpose of matching the requirements for a particular work package, project or service delivery outcome is a project or contract matter therefore is not defined in the TAO Scheme.

7.5 Arrangements for personnel

There may be no in house competent personnel available for some positions at the time of assessment to cover the entire scope of authorisation. This is acceptable if an organisation can demonstrate through documentation and proven delivery history that it meets all competency management TAO requirements set out in TS 06197.1. The organisation shall demonstrate its capability to successfully mobilise or demobilise its resources and manage its service delivery teams using its own competency management system and necessary core permanent in-house personnel. It is unlikely that an organisation will be able to demonstrate compliance with the TAO competency management requirements without having any skilled core specialist personnel in house. However, the TAO Scheme does not explicitly prohibit this type of arrangement.

Where the organisation does not have in house competent personnel, the organisation is encouraged to inform and discuss with AMB when selecting its scope of service. Evidence of

the organisation's ability to manage the local Australian and NSW domain knowledge capability is important.

The authorised assured service provisions is accomplished using the organisation's own processes, tools and competency. Within a TAO's authorised scope, external resources (another TAO or non-TAO organisation or individual contractors) may be engaged for service delivery, that is, work can be delivered by the organisation's personnel, or by a hired specialist workforce (licensed or otherwise qualified professionals) who work under the hiring organisation's processes and competency management system.

Where a non-TAO is sub-contracted, the work must fall within the engaging TAO's scope of authorisation and be assured under their management systems. The hiring organisation is responsible for providing full progressive engineering or technical assurance activities.

Note: Employment agencies are not authorised as TAOs.

7.6 Evidence supporting the selected scope

An applicant organisation or an existing TAO seeking to change the scope of authorisation shall provide the AMB with the proposed scope of engineering services using TS 06197.4 or TS 06197.5.

The applicant shall demonstrate its most relevant experience of successful delivery and assurance for its proposed scope. The evidence should be meaningful and specific for each selected activity:

- a. the project name and brief meaningful description of the relevant successfully delivered and assured service
- b. the most suitable evidence supporting the service referred to in item a. which could be work product examples (reports and design examples), signed plans, acceptance certificates and so on – that should clearly demonstrate to the relevant TfNSW SME what work has been done, how it has been assured and successfully accepted
- c. evidence of appropriate engineering processes and practices implementation as it is expected for the selected scope.

Only the most relevant evidence is to be provided for each TAO requirement and discipline applied for. Necessary detailed guidance in relation for any particular scope or discipline will be provided by the AMB.

8 TAO maturity

An applicant shall demonstrate compliance to the relevant TAO requirements via their own systems and processes to deliver self-assured services.

These requirements are specified in TS 06197.1 and represent the necessary organisational practices that are defined according to recognised industry best practice. Assessment of the requirements in TS 06197.1 allows for quantifying organisational maturity for the selected engineering services in the scope of authorisation.

The assessed maturity is an indication of the level of risk associated with the delivery processes of an organisation. A higher rating indicates a greater likelihood that an organisation will repeatedly produce consistent quality outcomes for its customers. Maturity ratings, as a part of TAO maturity profile, are used to inform risk mitigation across the supply chain.

Where practices are not sufficiently mature, organisations are encouraged to improve their existing processes and systems using recognised industry best practice as suitable for their business.

The maturity assessment is done by verifying the submitted evidence against industry best practice, relevant TfNSW guides and standards for TAO requirements, as applicable to a particular scope.

Expected evidence includes project plans, organisational policies, processes, procedures, templates, relevant reports, records and evidence of actual delivery of engineering and technical services in accordance with organisational systems and processes.

8.1 TAO requirements

Requirements for TAOs, as specified in TS 06197.1, describe the expected activities to be in place and the expected outcome in accordance with the relevant industry practice as appropriate to the scope of authorisation. These are based on the principles outlined in AS/NZS ISO 9001 and AS ISO 55000.

Fulfilment of requirement intent, through relevant practice and producing expected outcome, is examined during authorisation assessment and expressed through the following:

- assessment report
- final maturity ratings
- list of identified weaknesses (if any) in relation to the assigned maturity rating.

There are 29 TAO requirements that are grouped into 9 EMCAs as follows:

1. engineering management process and planning (two TAO requirements)
2. requirements management (one TAO requirement)
3. service or solution engineering (seven TAO requirements)
4. assurance, verification and validation (nine TAO requirements)
5. configuration management (one TAO requirement)
6. competency management (six TAO requirements)

7. stakeholder management (one TAO requirement)
8. resources management (one TAO requirement)
9. supplier management (one TAO requirement).

A full list of requirements, including supporting guidance specific for the life cycle phase, references to other relevant standards, and examples of typical evidence to assist the applicant to self-assess, are set out in TS 06197.1.

The AMB provides self-assessment tools and guides to the applicants in relation to the TAO requirements and evaluation of compliance.

All EMCAs are applicable to a new authorisation application. However, the extent of applicability and typical evidence for TAO requirements will vary depending on the scope of authorisation and other limitations. For example, some requirements are applicable to entities seeking authorisation in specific areas such as design or solution engineering, while they may not be applicable to services such as construction or technical advisory.

If a particular capability area consists of only one TAO requirement, this requirement is always applicable and assessed. For example, the configuration management requirement is always applicable although the method of fulfilment may vary depending on the nature of TAO scope.

For each applicable TAO requirement, the applicant shall provide evidence relevant to the requirement and details of key processes and activities.

8.2 TAO maturity rating and profiles

The TAO maturity rating quantifies the level of confidence that the AMB has that a TAO will consistently and reliably deliver and assure its authorised engineering services.

Maturity ratings range from zero to five as shown in Table 1. A rating of zero demonstrates that the relevant TAO requirement is not implemented and its purpose is not achieved. A rating of five demonstrates evidence of effective and efficient fulfilment of the requirement, including continuous measured optimisation and improvement.

Table 1 – Maturity ratings

Rating level	Rating level description
0	The organisation does not currently have or meet the requirement or capability.
1	The requirement or capability largely achieves its purpose, but with no plan or control as it is ad hoc and reactive.
2	The requirement or capability is implemented in a managed fashion (planned, monitored and corrective actions are taken) on a case by case (project or service) basis.
3	The requirement or capability is implemented in a managed fashion using a defined organisational process and is tailored for projects or services accordingly.
4	The requirement or capability is implemented in a managed fashion using a defined organisational process that is measured. Results of measurement are collected, analysed and reported in order to monitor the extent to which the process achieves the business goal.
5	The requirement or capability is implemented in a managed fashion using a defined organisational process that is measured, data analysed and sources of non-performance or variations identified, improvement objectives defined considering opportunities for best practices and innovations, and in alignment with the current and projected business goals. The improvement implementation is managed and effectiveness of the change is evaluated.

Each step in the maturity rating increment is based on fulfilment of the conditions for all preceding levels and includes the additional criteria specified in that level.

The rating impacts the frequency of surveillance audits. An organisation that demonstrates a high level of maturity and compliance will have a less frequent surveillance schedule than an organisation that demonstrates a low level of maturity.

8.2.1 Maturity rating scoring rules

The maturity rating scoring rules are based on the ISO/IEC 15504 series of standards, then simplified and tailored for the purpose of TAO in order to:

- ensure consistency of rating during assessments or surveillance audits
- increase visibility of where weaknesses are to encourage continuous improvement, and to inform scoping for surveillance audits and assurance planning for projects
- link nonconformances and their criticality with the scoring system to encourage closure of actions.

Each of the 29 TAO requirements is assessed and scored against the zero to five rating levels in Table 1. These scores are then calculated to provide the final maturity level score for the EMCAs. Major and minor findings against a TAO requirement may reduce the score.

The rating description is defined as an objective characteristic of a practice or work product or achievement that is supported by evidence. It is used to confirm that certain activities have been performed in a particular way and are demonstrated through supporting evidence.

An automated tool is used to mark the TAO requirement compliance against each of five rating definitions. EMCA ratings are calculated by averaging scores of its TAO requirements. The final organisational rating is calculated by averaging scores of EMCAs.

8.2.2 TAO maturity profile

TAO maturity ratings form the basis of a TAO's maturity profile. A TAO's maturity profile is updated through the following:

- assessment
- action management
- surveillance audit.

Maturity profiles are made available within TfNSW to assist project risk mitigation and enable conversations between suppliers and TfNSW during project or service delivery.

9 TAO authorisation assessment process

TAO assessment applications consist of:

- new applications from organisations seeking TAO status
- scope expansion applications from existing TAOs to add service areas
- renewal applications after withdrawal of TAO status.

An organisation should apply for an assessment prior to entering any procurement or contract. The scope of assessment will depend on the organisational business goals and service experience. The scope will be clarified and verified during the assessment.

An organisation may be required to apply for TAO status or undertake a TAO scope expansion for a particular project. In this case, the scope and the timeline for the assessment will be discussed and defined according to project needs.

A TAO assessment consists of six steps:

1. initial engagement
2. preparation for stage 1
3. stage 1 assessment
4. preparation for stage 2
5. stage 2 assessment

6. assessment finalisation.

The assessment process has three main stages with each having hold points and expected outputs. Moving to the next step in the process is based on fulfilment of the preceding steps. Failure to meet entry condition for the next step within pre-defined timeframes may lead to assessment cancellation.

Note: After cancellation, the process may restart from the beginning depending on available resources and business priorities. However, this may not always be permitted and second attempts may incur timeframe restrictions and/or fees.

Initial engagement and preparation for stage 1 may take an extended time, from weeks to months. It depends on an application's scope, complexity and quality of the submission. The duration may also depend on the application priority and resourcing. Stage 1 assessment is to occur within 6 months after the scope meeting(s).

Stage 2 assessment occurs within 6 months after stage 1 assessment is completed. Stage 2 assessment and assessment finalisation normally take up to five or six weeks from the stage 2 assessment commencement date. Applicants are encouraged to take these timeframes into account and commence working on their application well in advance of the expected assessment finalisation date.

AMB can issue a letter of intent to recommend TAO authorisation after the TfNSW assessors have completed their assessment and confirmed confidence to recommend authorisation. This option is available to support the project and contract delivery where necessary.

The AMB issues the following documentation to the applicant after successful completion of the assessment:

- TAO letter of authorisation
- authorised services matrix
- authorisation certificate
- final authorisation assessment report including the following:
 - assessment details
 - organisational maturity ratings (for initial assessment or maturity re-assessment)
 - organisational strengths and weaknesses identified during the assessment
 - agreed actions with the applicant including due dates to address those weaknesses.

Further information about steps one to six is provided in Sections 9.1 to 9.6.

9.1 Initial engagement

An applicant organisation seeking TAO status or scope expansion initiates the application process by following the instructions provided on the TfNSW website.

This phase is where Transport verifies an applicant's needs, sets an expectation of timeframe and resources, and clarifies expected scope of engineering services and management system requirements in order to establish the applicant's commitment to prepare and follow through an assessment.

The AMB assigns an authorisation facilitator to guide the applicant through the assessment process. The authorisation facilitator holds an initial meeting to meet with the applicant, and to provide guidance and relevant information on process and the Portal.

The applicant is requested to prepare for a scoping meeting, where they are expected to present the scope of application and high-level overview of the management system. The purpose of a scoping meeting is to establish further engagement with the applicant and confirm commitment. The authorisation facilitator provides templates and guides the applicant regarding their SME and management representation for the scoping meeting.

The scope of application and possible gaps are discussed at the scoping meeting(s). The applicant's SMEs are expected to overview their relevant capability and will subsequently receive additional guidance in relation to expected evidence.

At this stage a determination of whether an applicant needs to become a TAO may be made in consultation with relevant TfNSW SMEs. This determination is based on the applicant organisational profile and other information related to the nature of the applicant's business and services provided.

Where an existing TAO requires a scope expansion or reassessment, the process commences with a meeting with the authorisation facilitator who explains the process as applicable.

The priority of application and the assessment timeline is also determined and agreed at this stage.

In some circumstances, where a TAO requests limited scope expansion that does not span into a new asset lifecycle phase, if the applicant has a reasonable level of maturity, a rapid assessment approach is used. This approach is in line with that is outlined in this document.

Expected outputs of this step include:

- agreed scope of application
- an agreed and committed assessment timeline
- preliminary feedback summarising evidence recommendation.

9.2 Preparation for stage 1

After scoping meeting(s), the applicant works independently of Transport, to prepare their stage 1 submission based on tailored feedback and other supporting information. Once they are satisfied with their self-assessed preparation, the applicant adds their responses and evidence

against each system and scope requirement into their TAO application online. This step may potentially take a few weeks or even months.

A complete submission is required. The applicant shall respond to all requirements with evidence of documented process and its deployment (ranging from key intermediate outputs to final work examples). The focus of the stage 1 assessment, however, is on the documented systems and processes. If an applicant is introducing a new or updated management system where there is no or limited deployed evidence, it is acceptable at stage 1. Further deployed evidence can be provided during the stage 2 assessment.

After a complete submission is made, the authorisation facilitator verifies its completeness and confirms stage 1 assessment timing with the applicant. Note that the stage 1 assessment will occur at least four weeks after the receipt of a complete submission. This allows sufficient time to check the completeness of the submission and for the applicant to make any updates.

During this step, the authorisation facilitator guides the applicant in the following ways:

- responding to applicant's queries in relation to Portal use, expected evidence and response to TAO scope and system requirements
- assisting the applicant to enrol in relevant TfNSW training and information sessions where the applicant needs education or guidance in relation to particular TAO requirements or documents.

The AMB provides a variety of supporting materials including standards and guides. TS 06197.1 provides guidance on each TAO requirement and expected evidence. TS 06197.3 provides guidance on services in the engineering services matrix and expected evidence.

Only the most relevant evidence should be submitted and listed with an explanation that demonstrates relevance to a particular TAO requirement or applied scope of services. An excess of evidence can be considered as a misunderstanding of the TAO requirements or applied scope of services.

Key expected outputs of this step include:

- a complete 'accepted for assessment' submission on the Portal
- confirmed dates of stage 1 assessment.

9.3 Stage 1 assessment

After preparation for stage 1 is confirmed to be complete, the authorisation facilitator plans and manages stage 1 assessment in accordance with the agreed assessment timeline.

The authorisation facilitator works with the applicant and TfNSW SMEs to ensure the following:

- alignment and concurrency of assessment activities and information flow from an AMB perspective

- communication with the applicant including requests for clarification raised by SMEs
- additional evidence submission if necessary
- other necessary resourcing and logistic arrangements for participants.

The TfNSW SMEs typically perform desktop assessments combined with assessment interviews, individually or in groups as appropriate. Necessary interactions (phone and Microsoft Teams conference, applicant visiting the AMB office, site visit if required) with the applicant are facilitated by the authorisation facilitator.

The authorisation facilitator ensures collaboration between systems SMEs, who assess systems and processes maturity, and TfNSW specialist SMEs who verify suitability of systems and engineering capability against the specific engineering scope.

The rapid assessment process for scope expansion provides an option of an extended assessment workshop where the assessment conclusion is expected to be achieved at the end of the workshop.

The duration of this assessment step depends on the scope of assessment; however, it should typically take less than three weeks including one week for assessment and two weeks for post assessment evidence submission and validation, assessors preparing their assessment reports and recommendation.

In order to keep the applicant informed throughout the process, the TfNSW SME advises the applicant of any issues identified during an assessment. The authorisation facilitator ensures the integrity of the assessment process and protocol including communication.

This stage aims to achieve the following outcomes:

- evaluation of applicant engineering management processes maturity
- verification of applicant engineering services scope.

An organisation's process maturity evaluation is done by verifying the correctness and suitability of the applicant responses and evidence as follows:

- against TAO authorisation requirements
- against scale of maturity defined in the TAO Scheme
- for adherence to the acceptable TfNSW and industry expectation or practice for that requirement implementation as suitable for the applied scope of engineering disciplines.

This is done by checking the following:

- relevant process framework documentation (organisational processes, project plans, procedures, tools, records and other supporting evidence)
- evidence of process execution for disciplines or services within the scope of authorisation (relevant records, deliverables and processes tailoring to the specific discipline)

- evidence that demonstrates the achievement and technical assurance of the expected requirement intent, outcome, samples of work product as practical and appropriate.

Stage 1 assessment provides the applicant with a report that articulates whether the TAO requirements have been met by the stage 1 submission and what further requirements need to be met for successful completion of stage 2. More specifically, the report includes feedback including gaps in relation to:

- maturity of relevant practices for the applicable TAO requirements within the scope of authorisation
- the applied scope of services.

The authorisation assessment is not an assessment of the applicant's personnel involved in the assessment unless the assessed capability depends on a particular person's expertise. In this case it will be a condition of authorisation that the person is available and that the organisation shall undertake agreed reasonable action or effort to document the process or capability.

An organisation's engineering services scope of authorisation is verified by checking the relevant evidence of experience within the applied scope.

Note: The authorisation assessment does not include detailed technical review of the work products for compliance to all applicable TfNSW engineering standards as it is limited to verification that a suitable process was applied and the presented outcome was successfully delivered or accepted by the client.

Key expected output of this step is a consolidated report with feedback in relation to TAO requirements and applied scope of authorisation.

Note: An onsite visit or an onsite assessment is possible. This can be done as face to face individual or group assessment interviews at the applicant's site if required. The efficiency in conducting the assessment shall be taken into account.

9.4 Preparation for Stage 2

After reading the report from stage 1, the applicant should have a clear understanding of what is required to successfully complete the stage 2 assessment. The applicant is given up to five months to address gaps in their systems and prepare for the next assessment stage.

The authorisation facilitator will confirm dates for stage 2 assessment with the applicant.

Stage 2 assessment is scheduled at least four weeks after the completion of stage 1 to allow time for preparation for both Transport and the applicant.

Evidence submission must be uploaded in full on the Portal at least four weeks before the agreed stage 2 assessment commencement date. The authorisation facilitator validates the completeness of the submitted evidence against the stage 1 assessment report within the first week after evidence submission. If a gap or inadequacy in the submission is identified, the

applicant has up to two weeks to update and complete their evidence submission to avoid impact on stage 2 assessment commencement.

Changing assessment dates will only be acceptable due to rare and unforeseeable circumstances. A lack of preparedness is not an acceptable cause for moving scheduled dates for assessment.

If the applicant is unable to proceed with the scheduled stage 2 assessment, the assessment may be concluded based on the result of the stage 1 assessment which may indicate non-achievement of TAO authorisation. If this occurs and the applicant wishes to reapply, timeframe restrictions and/or fees may apply.

Key expected outputs of this step include:

- a complete and timely evidence submission on the Portal addressing the outcome of the stage 1 assessment
- commitment and agreement for the Stage 2 assessment.

9.5 Stage 2 assessment

Stage 2 assessment shall occur within 6 months after stage 1 assessment completion. During stage 2, the assessment team verifies that the previously identified gaps from the stage 1 assessment have been addressed and reviews any additional evidence (both documented and deployed). The focus and expectations in the stage 2 assessment are the same as those in the stage 1 assessment with a greater focus on completeness for the purposes of authorisation.

Assessment interviews are mandatory unless an exception is agreed to. The applicant is allowed up to 5 days to provide any further required evidence after the assessment interview. The SME assessors finalise the assessment reports and final findings within 2 weeks of the assessment interview or additional evidence provision.

9.6 Finalisation

The authorisation facilitator prepares a draft summary report including details of the assessment team, scope, method of assessment and findings which are circulated to the assessment team members.

After the assessment report is reviewed internally within the AMB, the applicant is consulted to obtain their commitment and timeline to address nonconformance findings with the closure of actions.

A post-assessment internal TfNSW review is conducted. This review requires the assessment team to undertake a final joint overview of the applicant's submission and the assessment outcomes. During the review the assessment team shares opinions and concerns, discusses risks and issues and identifies new concerns or risks. This can result in raising additional areas of concern, conditions of authorisation, or a decision not to recommend TAO authorisation.

Where the assessment identifies partial or full noncompliance against some TAO authorisation requirements, it does not necessarily lead to refusal but can result in an imposition of conditions on the TAO status. The imposition of conditions occurs if the AMB concludes that identified noncompliance findings are not significant enough to refuse authorisation and agrees to accept the applicant's commitment to eliminate the noncompliance within a reasonable period. The authorisation facilitator will discuss, agree and record any actions the applicant needs to perform to achieve compliance.

After the assessment is finalised internally and reviewed with the customer, the authorisation pack including TAO letter of authorisation, TAO certificate, signed and approved TAO assessment summary report and signed engineering services matrix is issued.

The new or updated TAO engineering services matrix is published on the TfNSW website.

SUPERSEDED