



**Transport**  
Asset Standards  
Authority

# Asset Standards Authority

AEO assessments, Project assurance and AEO model

Neal Hook, Lead Engineer Electrical



# Scope

- Existing electrical AEOs
- AEO assessment recap
- AEO assessment feedback
- AEO surveillance audits

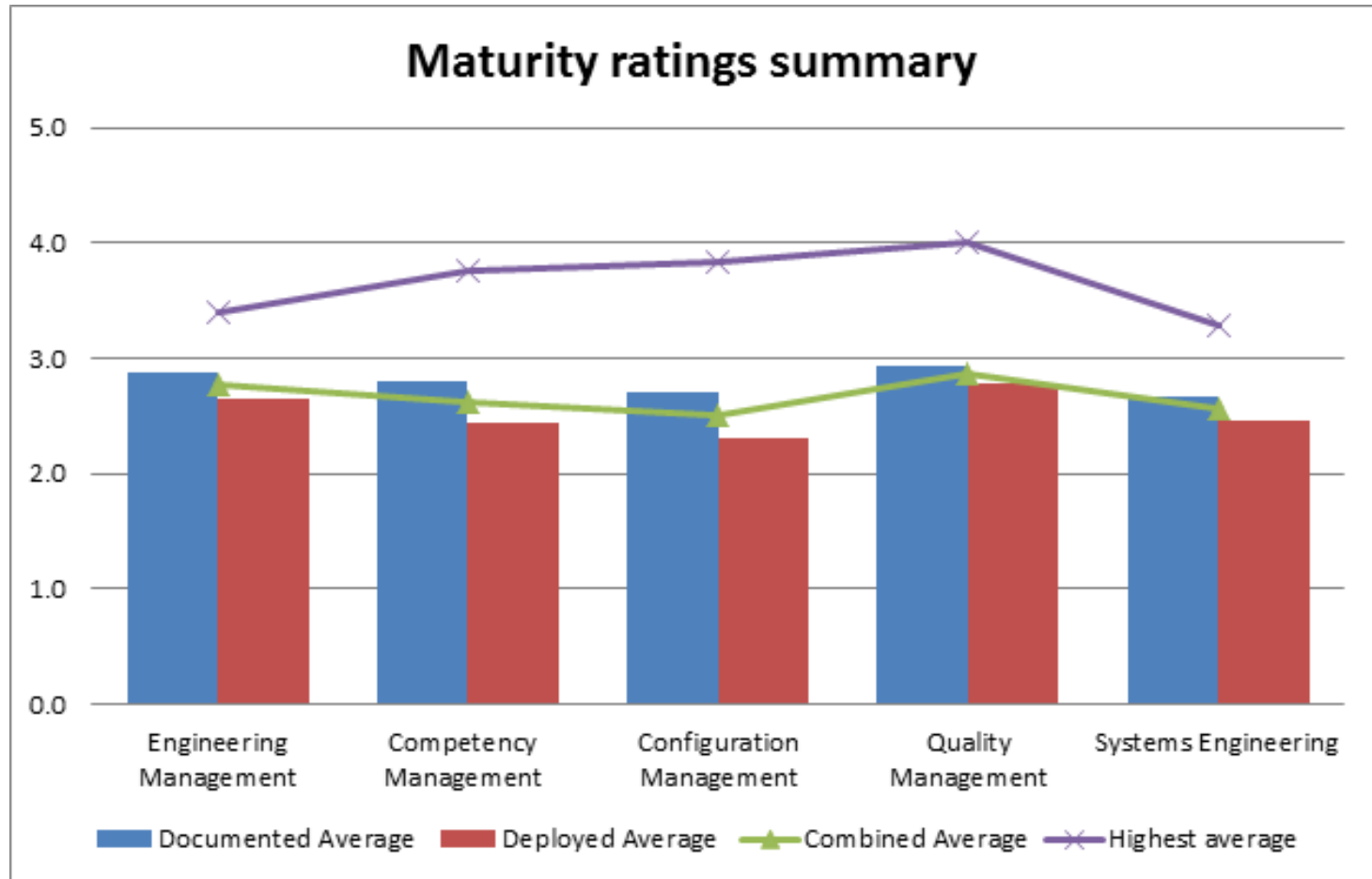
# AEO's authorised

- Total 18 Electrical AEOs
  - ❑ Sydney Trains
  - ❑ AEOEP
  - ❑ Parsons Brinckerhoff
  - ❑ GHD
  - ❑ Laing O'Rourke Pty. Ltd.
  - ❑ Leighton Contractors
  - ❑ Novo Rail
  - ❑ AECOM
  - ❑ Alstom Transport
  - ❑ Interfleet Technology
  - ❑ Downer Infrastructure
  - ❑ SMEC
  - ❑ Mott Macdonald
  - ❑ SNC Lavalin Transportation (Australia)
  - ❑ John Holland
  - ❑ Aurecon
  - ❑ URS Pty. Ltd.
  - ❑ BECA

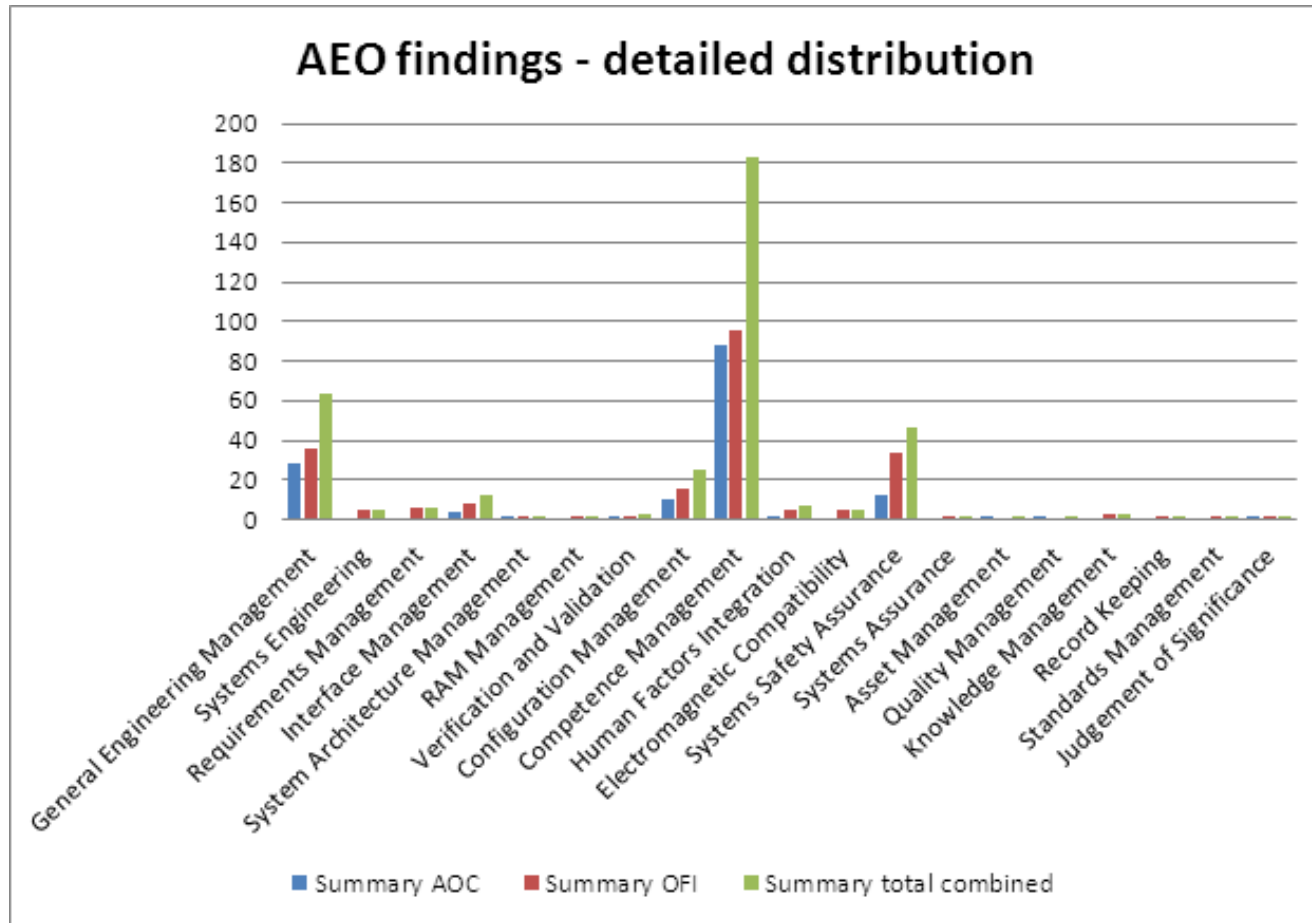
# AEO assessments recap

- AEO authorisation process will assess capability, competency and maturity of an organisations engineering management function to deliver engineering services to NSW rail network without compromising safety
- AEO applicant will undergo an assessment of its systems and tools for initial authorisation and later ongoing surveillance audits once authorised
- AEO applicant will need to provide documented evidence of their ability to manage risk associated with their defined scope of authorisation.
- Evidence should cover:
  - engineering management
  - competency management of engineering resources
  - configuration management
  - quality management
  - systems engineering


# Authorised Engineering Organisation (AEO)



# Authorised Engineering Organisation (AEO)



# AEO services matrix

 <b>Transport Asset Standards Authority</b> <small>Insert AEO or contract name/title &gt;</small> <b>Engineering Services Matrix</b>		Asset Life Cycle Phases																								
		Plan			Acquire			Operate/Maintain		Dispose																
Asset Life Cycle Activities		Transport Needs Analysis/Model/Plan	Operations Concept Development	Maintenance Concept Development	Optimising	BRS / URD development	Single Option Development	Safety Change Planning	SPS development	Concept / Reference Design	Preliminary Design	Detailed Design to AFC	Material Procurement	Manufacturing / Fabrication	Construction / Installation	Subsystem Integration	Testing and Commissioning	Acceptance Services	Plan Asset Maintenance	Maintain / Upgrade Assets	Conduct Asset Condition Surveys	Manage Asset Configuration	Plan Decommissioning / Disposal	Conduct Decommissioning / Disposal	Update Asset Configuration/Disposal	
Correct as at:		Detailed Life Cycle									Authorisation framework documents			Authorisation process			Authorisation documents									
		Feasibility	Concept	Design	Fabricate / Manufacture	Install	Integrate, Test and Commission	Asset	Maintenance	Disposal	Authorisation requirements	Authorisation guide	Authorisation checklist	First contact	Scoping meeting	Preparation	Initial authorisation assessment	Evidence and checklist	Summary Report Draft letter of authorisation	Letter of authorisation and actions advised	Draft letter of authorisation and actions advised	Summary Report	Letter of authorisation and actions advised	Findings log	Surveillance Plan	
Electrical Engineering		High Voltage Aerial Feeders																								
		High Voltage Cables																								
		Traction Substation and Sectioning Hut																								
		Distribution Substations																								
		High Voltage Protection Systems																								
		LV Power Systems and LV Protection																								
		Earthing, Bonding, Electrolysis and Lightning Protection																								
		Electrical Control Systems (SCADA) (must specify in the Notes)																								
		Overhead Wiring																								
		Electrical Network Planning and Modelling																								

- Matrix is not the “scope of work”
- Matrix provides the capability to deliver the “scope of work”
- AEO Framework V2.0 effective from 1st Jan 2015



# Changes between AEO Framework V1 & V2

- New version of AEO Framework removed various inconsistencies within the documentation and has introduced greater clarity on the requirements
- Engineering Services Scoping Matrix (V1) is relabelled as Engineering Services Matrix (V2)
- **No change to the rating methodology** and so there will be **no impact on current or future AEO ratings**
- New framework clarified Specialist Engineering Services/Disciplines and Asset Life Cycle Activities across Asset Life Cycle Phases
- The new scoping matrix has already been introduced to recent applicants



# Changes between AEO Framework V1 & V2

- Electrical Engineering

Electrical Engineering & OHW	Electrical - HV Aerial Feeders
	Electrical - HV Buried Cables
	Electrical - Substations
	Electrical - Protection Systems
	Electrical - LV Power Systems
	Electrical - Lighting
	Electrical - Earthing, Bonding & Electrolysis
	Electrical - Control Systems (SCADA)
	Overhead Wiring

Table 1 - AEO Framework V1 (Electrical)

Electrical Engineering	High Voltage Aerial Feeders
	High Voltage Cables
	Traction Substation and Sectioning Hut
	Distribution Substations
	High Voltage Protection Systems
	LV Power Systems and LV Protection
	Earthing, Bonding, Electrolysis and Lightning Protection
	Electrical Control Systems (SCADA) (must specify in the Notes)
	Overhead Wiring
	Electrical Network Planning and Modelling

Table 2 - AEO Framework V2 (Electrical)

For more information see: <http://www.asa.transport.nsw.gov.au/aeo/FAQs>

# Changes between AEO Framework V1 & V2

- Asset Life Cycle Activities

Asset Lifecycle Stages and Activities							
Transport Needs Analysis/Model/Plan	Operations Concept development	Maintenance Concept development	Optioneering	BRS/URD development	Single Option development	Safety Change Development	SRS development
Concept/Reference Design	Preliminary Design	Detailed Design	Independent Design to AFC	Design Safety Verification	Material procurement	Manufacturing/Fabrication	Construction/Installation
Construction Assurance	Construction Assurance (Inspection)	Subsystem Integration	Testing & Commissioning	Commissioning	Acceptance Services	Plan Asset Maintenance	Maintain/Upgrade Assets
Conduct Asset Condition Surveys	Plan Decommissioning/Disposal	Update Asset Configuration Data					
Feasibility	Concept	Design	Fabrication/Manufacturing	Installation	Integration, Test & Commissioning	Asset Maintenance	Decommission & Disposal

Figure 1 - AEO Framework V1

Asset Life Cycle Phases	Plan			Acquire	Operate/Maintain	Dispose																	
Asset Life Cycle Activities	Transport Needs Analysis/Model/Plan	Operations Concept Development	Maintenance Concept Development	Optioneering	BRS / URD development	Single Option development	Safety Change Development	SRS development	Concept / Reference Design	Preliminary Design	Detailed Design to AFC	Material Procurement	Manufacturing / Fabrication	Construction / Installation	Subsystem Integration	Testing and Commissioning	Acceptance Services	Plan Asset Maintenance	Maintain / Upgrade Assets	Conduct Asset Condition Surveys	Plan Decommissioning / Disposal	Conduct Decommissioning/Disposal	Update Asset Configuration Data
Detailed Life Cycle	Feasibility	Concept	Design	Fabricate / Manufacture	Install	Integrate, Test and Commission	Asset Maintenance	Disposal															

Figure 2 - AEO Framework V2

For more information see: <http://www.asa.transport.nsw.gov.au/aeo/FAQs>

# AEO assessment feedback – ASA SME

- Most AEO applicants have good high level engineering documentation
- Most AEO applicants provided project specific evidence to support their application
- In general the lifecycle activities AEO applicants have requested have been deemed as competent. Positively reflect on the AEO process and the AEO applicants understanding of the process.
- Experience of AEO's outside NSW and/or Australia may be relevant. AEO applicants need to consider adaptability to TfNSW needs

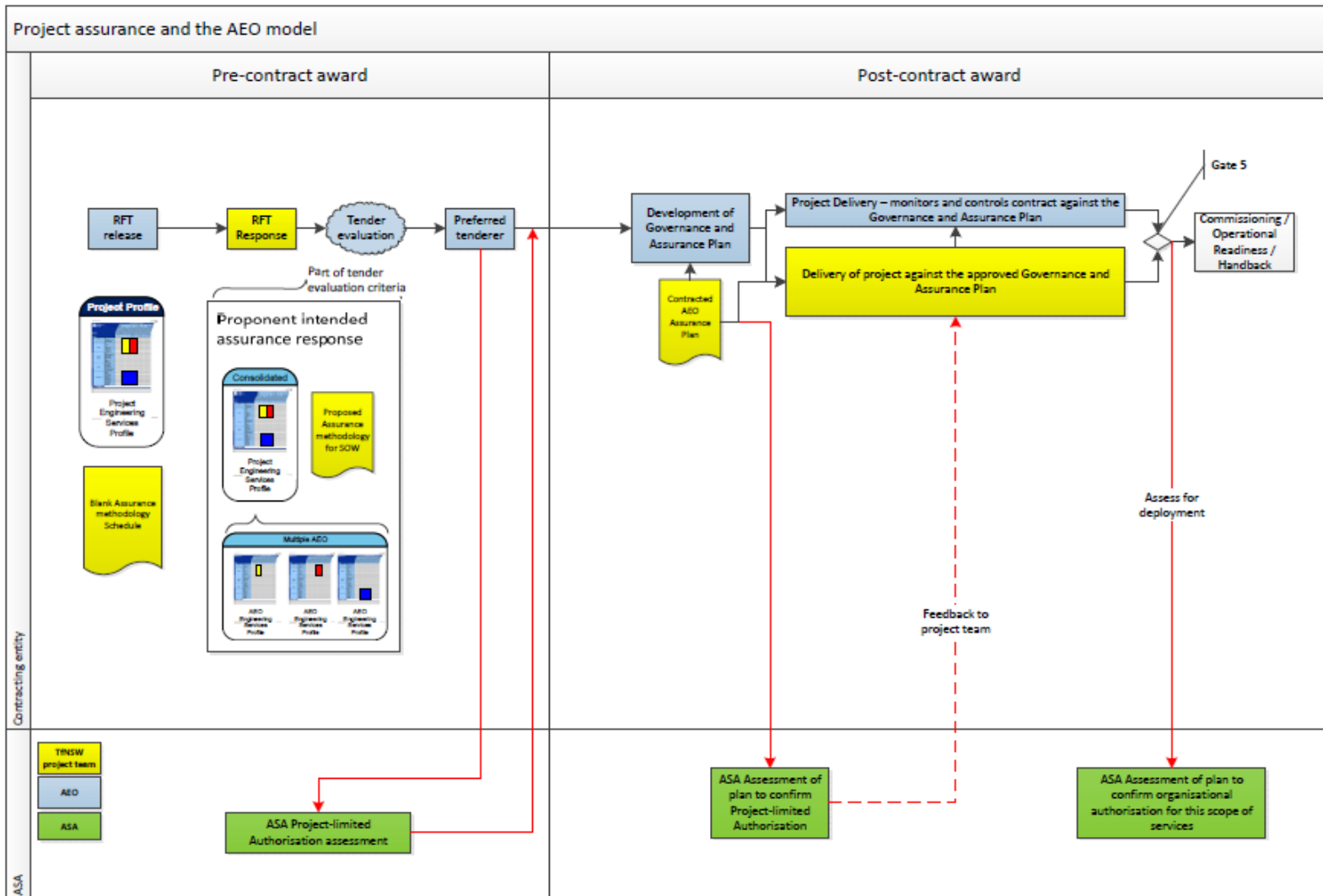
# AEO assessment feedback

- AEO applicants need to understand RailCorp is an Electrical Distributor for HV network in NSW
- Interdisciplinary interface processes, requirements and system integration require development and improvement for most AEO's
- Judgement of Significance (JOS) processes for all AEO's requires significant work

# AEO assessment feedback

- Replies to questions asked by the ASA SME from the AEO applicant prior to the assessment was not provided on time
- Some AEO applicants amend the engineering services scoping matrix during the assessment
- In general during the assessment, project evidence was not available and submitted at a later date. This delays the process of awarding the AEO status
- Documents sent through as project evidence are lacking clear titles and are not grouped into appropriate disciplines & sub- disciplines. This delays the AEO application process.

# Project Assurance and the AEO model



End

