Transport Asset Standards Authority

AEO Industry Briefing – AEO Framework v3.0

Authorised Engineering Organisation (AEO) – enabling the private sector

Transport for NSW
Authorised Engineering
Organisation


Transport
Asset Standards
Authority

This is to certify that

Company name

<address>

has achieved the status of

Authorised Engineering Organisation

and is approved to provide engineering services in accordance with its scope of authorisation.

Welcome

Andy Tankard
Director,
Asset Standards Authority

Emergency evacuation

Auditorium/Conference Centre

If the alarm siren sounds, everyone is to evacuate the building. The sound is like a “Whoop Whoop” and is usually accompanied by a message. If the fire alarm goes off, DO NOT use the lifts.

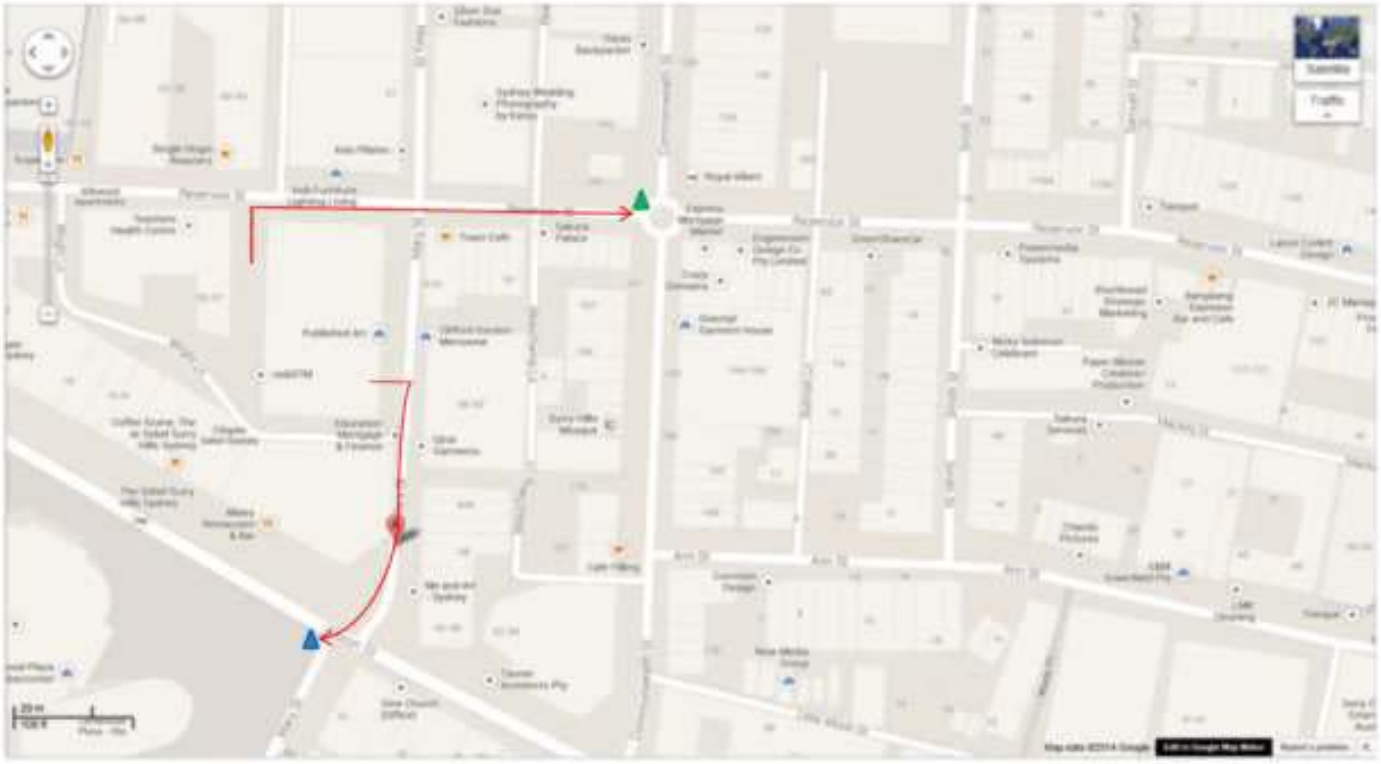
If you are in the auditorium and an alarm sounds, please proceed to the clearly marked green exit signs via the two side passageways or the back of the Auditorium that will take you to the stairs which use the two exits.

The **emergency exits** for the auditorium are:
1. The main entry from which you came in at Reservoir Street (to my left)
2. Wright Lane, which is at the opposite end (on my right)
3. The double doors near the Toilets in the Mezzanine and coffee area which will take you out to Mary Street via the Federation foyer.

Evacuation Locations
Evacuation delegates will direct you to the assembly areas:
1. Corner Mary Street and Albion Street under the sails (turn right out of Federation House on Mary Street) OR
2. Corner of Reservoir Street and Commonwealth Street (turn left out of Federation House on Mary Street).

Emergency evacuation locations

Corner Mary Street and Albion Street under the sails
Corner of Reservoir Street and Commonwealth Street



Main fire evacuation assembly area

Agenda

- Transport and AEOs
- AEO awards
- AEO Framework v3.0
- Update on the AEO Model and key findings from the surveillance process
- Competency aligned across TfNSW
- An AEO experience – Power Supply Upgrade Program
- The future AEO in Transport
- Future Transport – the longer term

Transport Asset Standards Authority

Tim Reardon

Secretary
Transport for New South Wales

AEOs delivering Transport Outcomes

Transforming transport

Game changing infrastructure and services

A compelling Transport future for NSW

Genuine engagement and partnerships

Delivering every day

Delivering excellence for customers

Enabling seamless movement across transport systems

Enhancing safety and sustainability

Leading innovation

Leveraging new technologies

Innovating how we fund and finance transport

Empowering people to make a difference

Doing business

- A step change in delivery
    - Significant AEO community
    - Increased complexity of the delivery environment
    - Continuing investment in NSW Transport infrastructure and fleet
    - Broader use of AEOs by the cluster and externally
- Through open, honest and transparent engagement with:
    - Industry,
    - Our customers,
    - Our partners, and
    - Local communities
- How we partner more effectively
    - Improve process efficiency
    - Maintain good governance

Transport of the future

AEO Awards

100th AEO

First Maritime AEO

AEO Framework v3.0 and industry update

Luke Homann
Director, Authorisation and Audit
Asset Standards Authority

AEO Framework v3.0 - Background

- First major review of the AEO Framework in four years
- Addressed initial inconsistencies in v2.0
- Listened to feedback from:
    - Industry
    - TfNSW
    - Lessons learnt from application

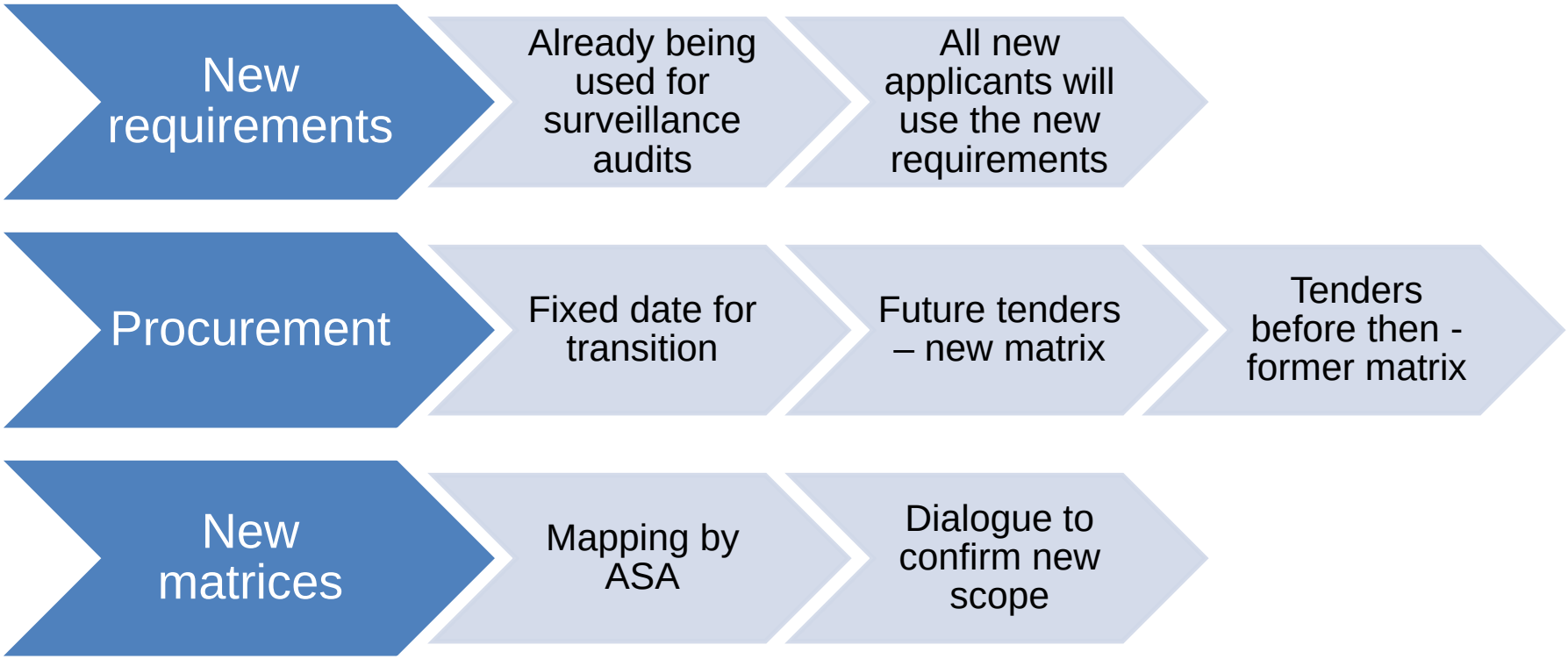
AEO Framework v3.0 – Outcomes

- Improved scalability
- More mode agnostic
- Alignment between AEO and project surveillance
- More representative of underpinning technical management needs
- Easier to use

What are the changes?

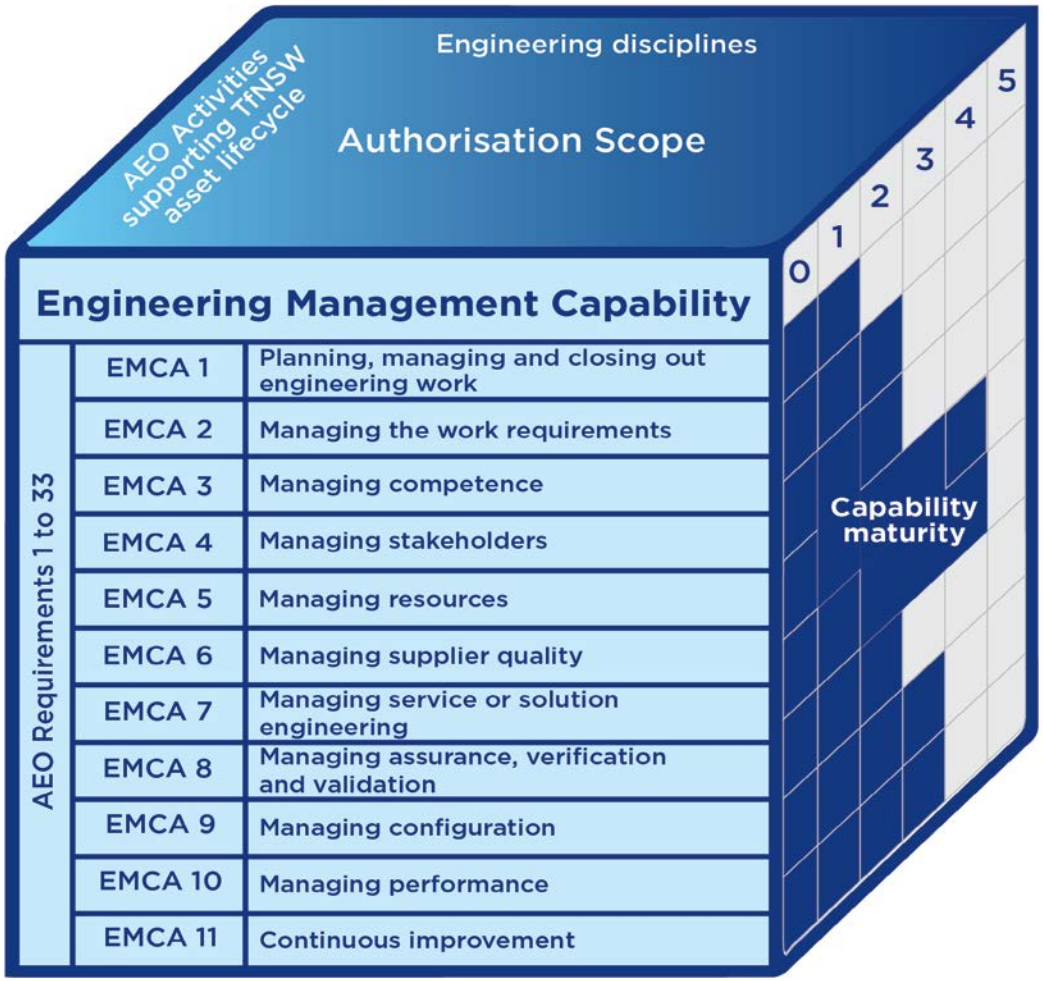
- Simplified AEO requirements
- New Engineering Management Capability Areas
- Better definitions
- Reduced the number of documents
- Modified the matrix

Transition to the new framework

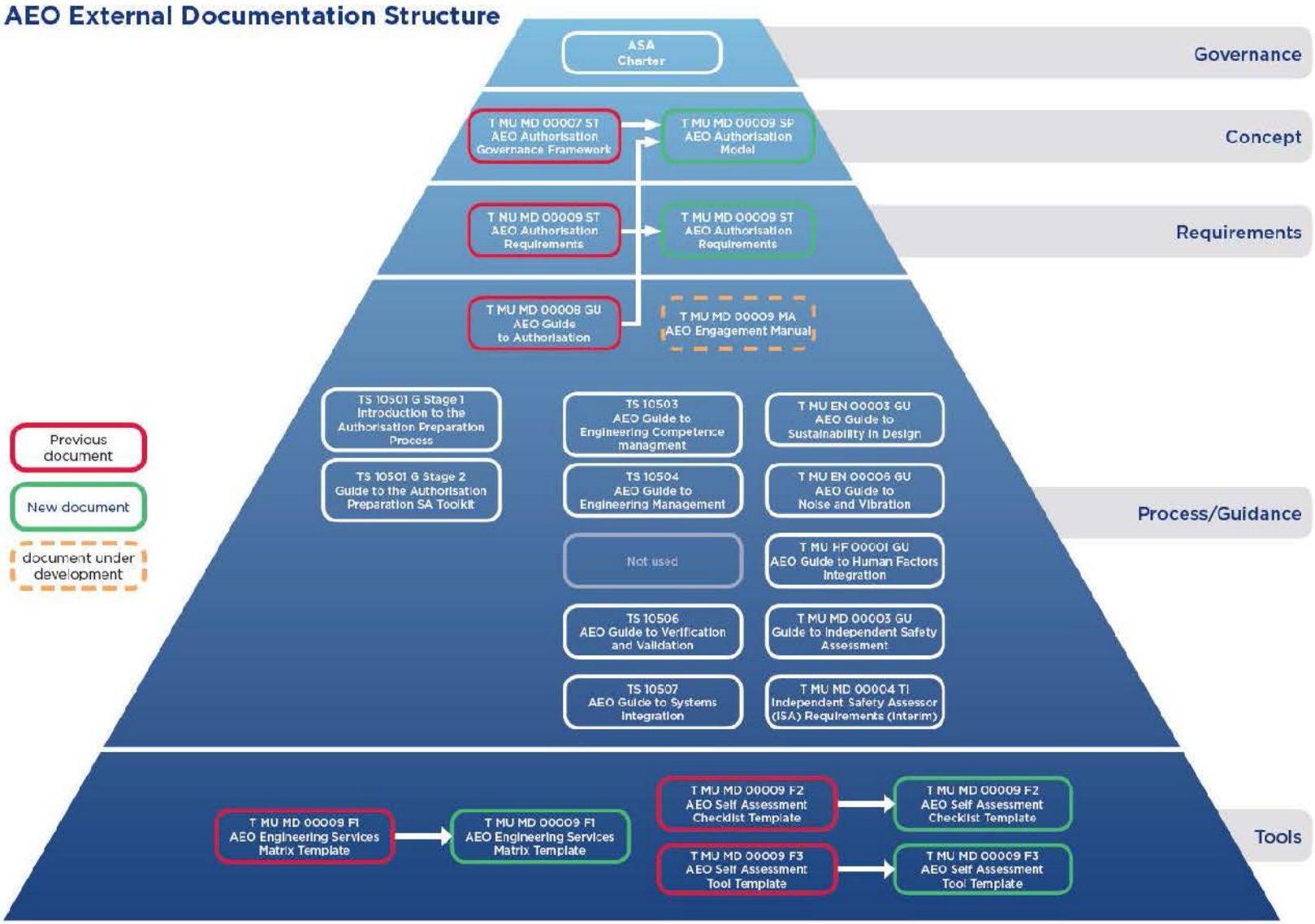


AEO Framework Overview

The AEO Model



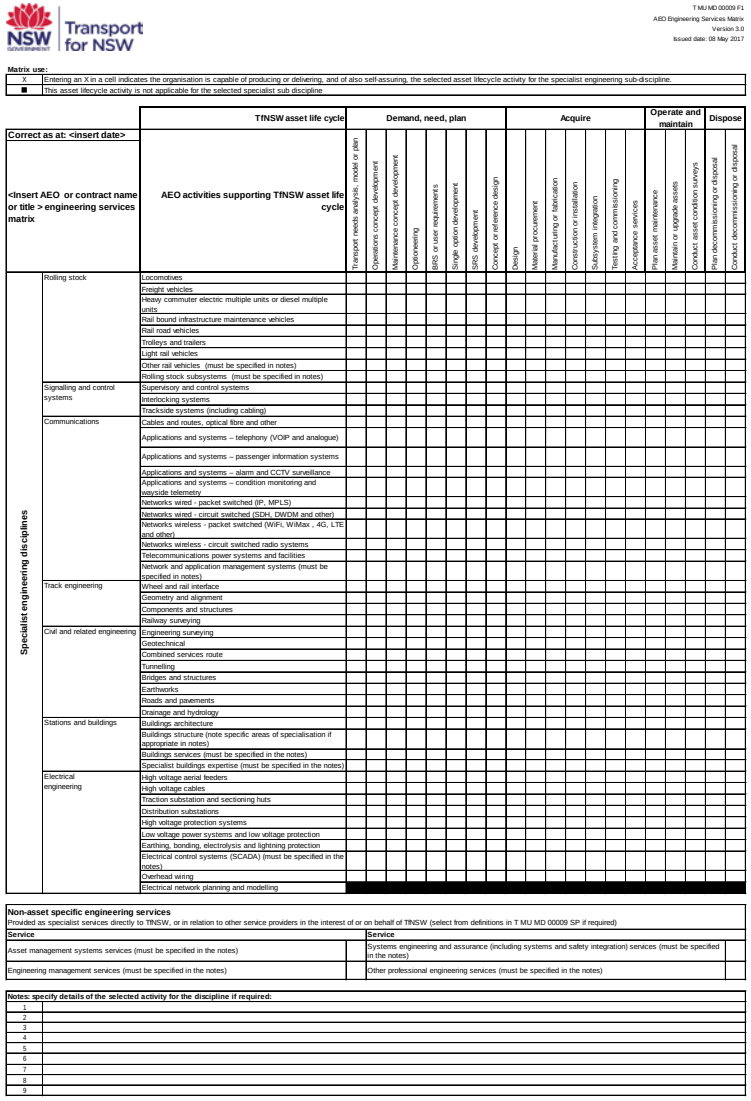
Framework document changes



Engineering Management Capability Areas (EMCA)

New matrices

- Removed “P/A”s and replaced with “X”s
- Simplified non-asset specific services across the Asset Life Cycle
- Rail matrix and Maritime matrix
- Aligned asset life cycle with Asset Management Framework



Transport for NSW

T MU MD 00009 F1
AEO Engineering Services Matrix
Version 3.0
Issued date: 08 May 2017

Matrix use:

X	Entering an X in a cell indicates the organisation is capable of producing or delivering, and of also self-assuring, the selected asset lifecycle activity for the specialist engineering sub-discipline.
■	This asset lifecycle activity is not applicable for the selected specialist sub discipline

Correct as at: <insert date>		TfNSW asset life cycle	Demand, need, plan								Acquire							Operate and maintain				Dispose	
<Insert AEO or contract name or title > engineering services matrix		AEO activities supporting TfNSW asset life cycle	Transport needs analysis, model or plan	Operations concept development	Maintenance concept development	Optioneering	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 operate 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																				
		Roads and pavements																				
		Drainage and hydrology																				
	Stations and buildings	Buildings architecture																				
		Buildings structure (note specific areas of specialisation if appropriate in notes)																				
		Buildings services (must be specified in the notes)																				
		Specialist buildings expertise (must be specified in the notes)																				
	Electrical engineering	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)		Systems engineering and assurance (including systems and safety integration) services (must be specified in the notes)	
Engineering management services (must be specified in the notes)		Other professional engineering services (must be specified in the notes)	

Notes: specify details of the selected activity for the discipline if required:	
1	
2	
3	
4	
5	
6	
7	
8	
9	

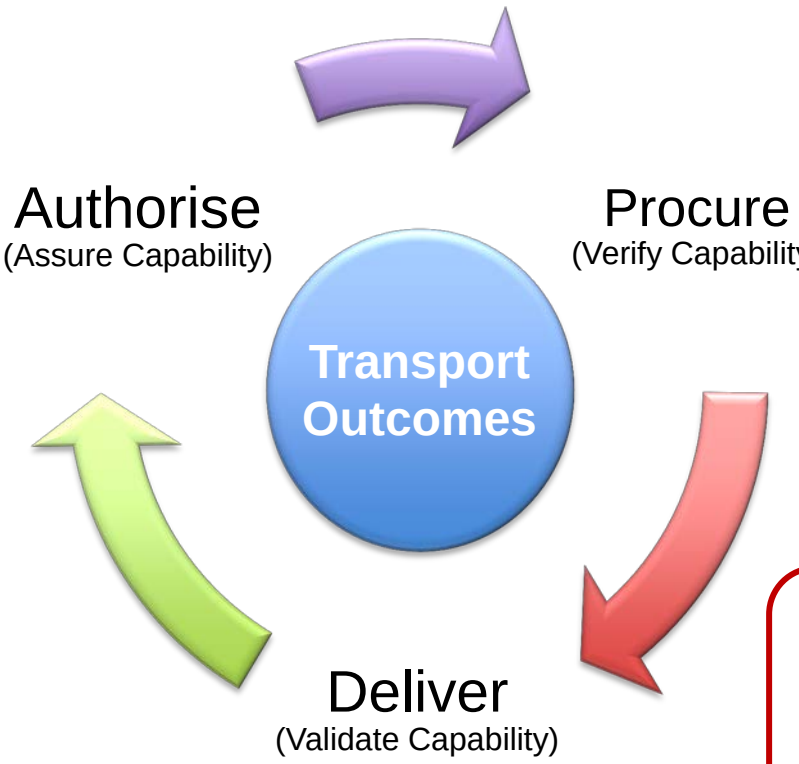
How will it impact industry?

- Current AEOs – no change aside from new matrix
- New applicants – comply with new requirements
- Surveillance – audits will be scoped against the new requirements
- Performance – elements of project audits aligning to the EMCAs
- Tendering – a “transition date” is to be set when all new procurements will be done against the new requirements

Accountabilities and expectations of an AEO

Assuring your services	• Competence of staff and sub-contractors • Effectiveness and quality of the engineering services • Compliance with engineering standards • safety and reliability of the engineering services
Manage stakeholders	• Identify necessary stakeholders • Engage their input • Respond to the concerns
Provide the safety assurance argument	• Statutory and regulatory compliance of its engineering services • Deliver the assurance argument enabling testing, commissioning and handed over
Coordinate delivery with the end user	• Engage with the end user early • Determine handover requirements • Demonstrate compliance with handover requirements

Visualising the Supply Chain Assurance Cycle

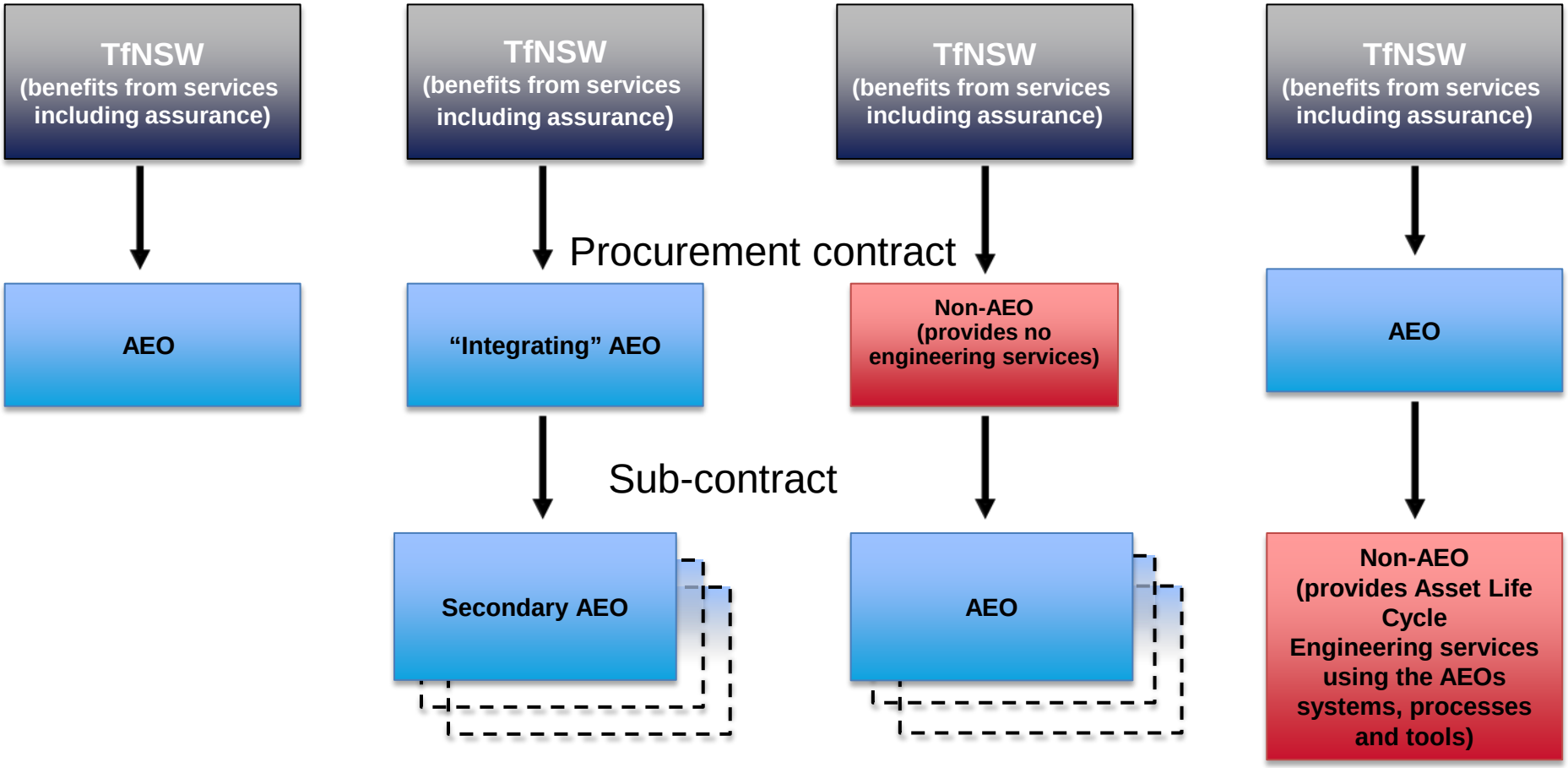


Ensuring that capability exists and continues to be deployed across TfNSW projects and services

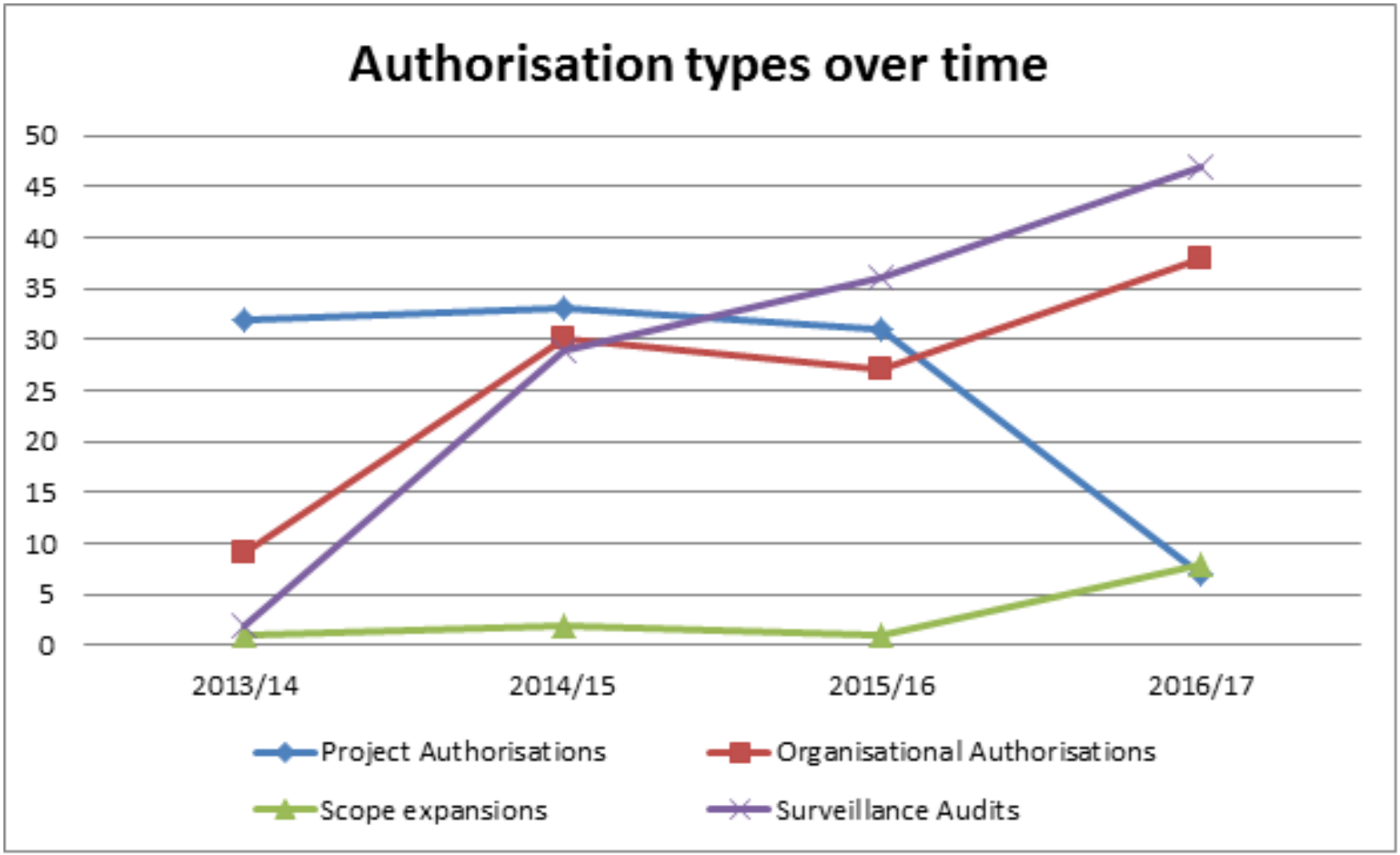
Ensuring that the engineering capability required for the job is appropriate

Ensuring that engineering capability is delivering the required service or product

Verify the particular AEO engagement model

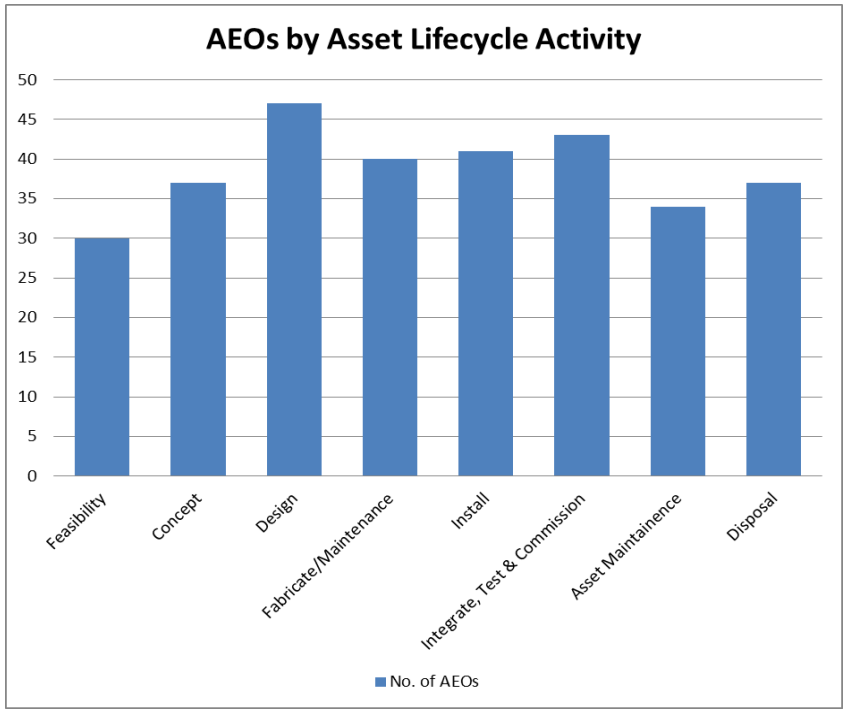


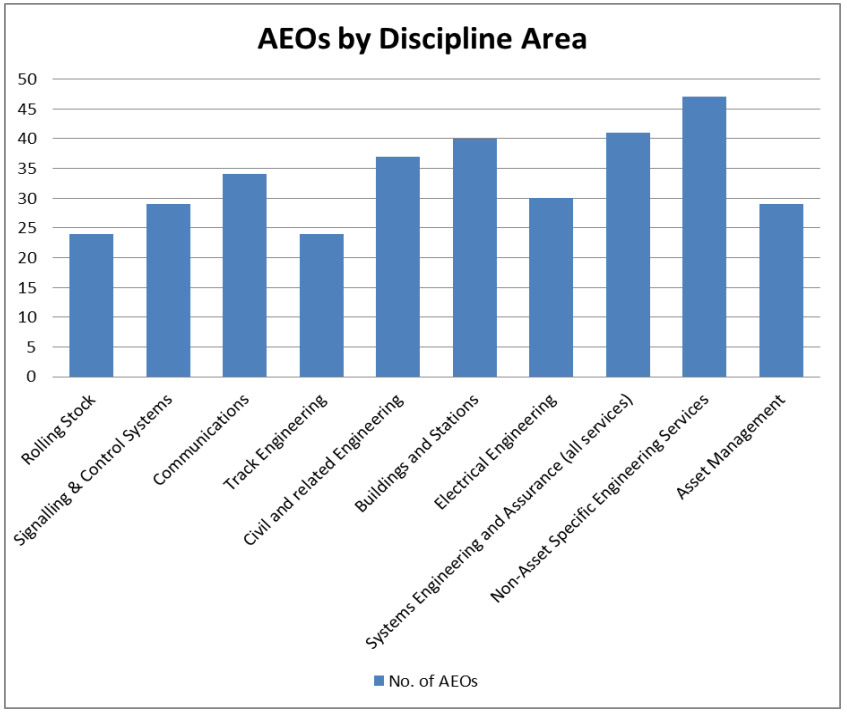
Authorisation activities over time



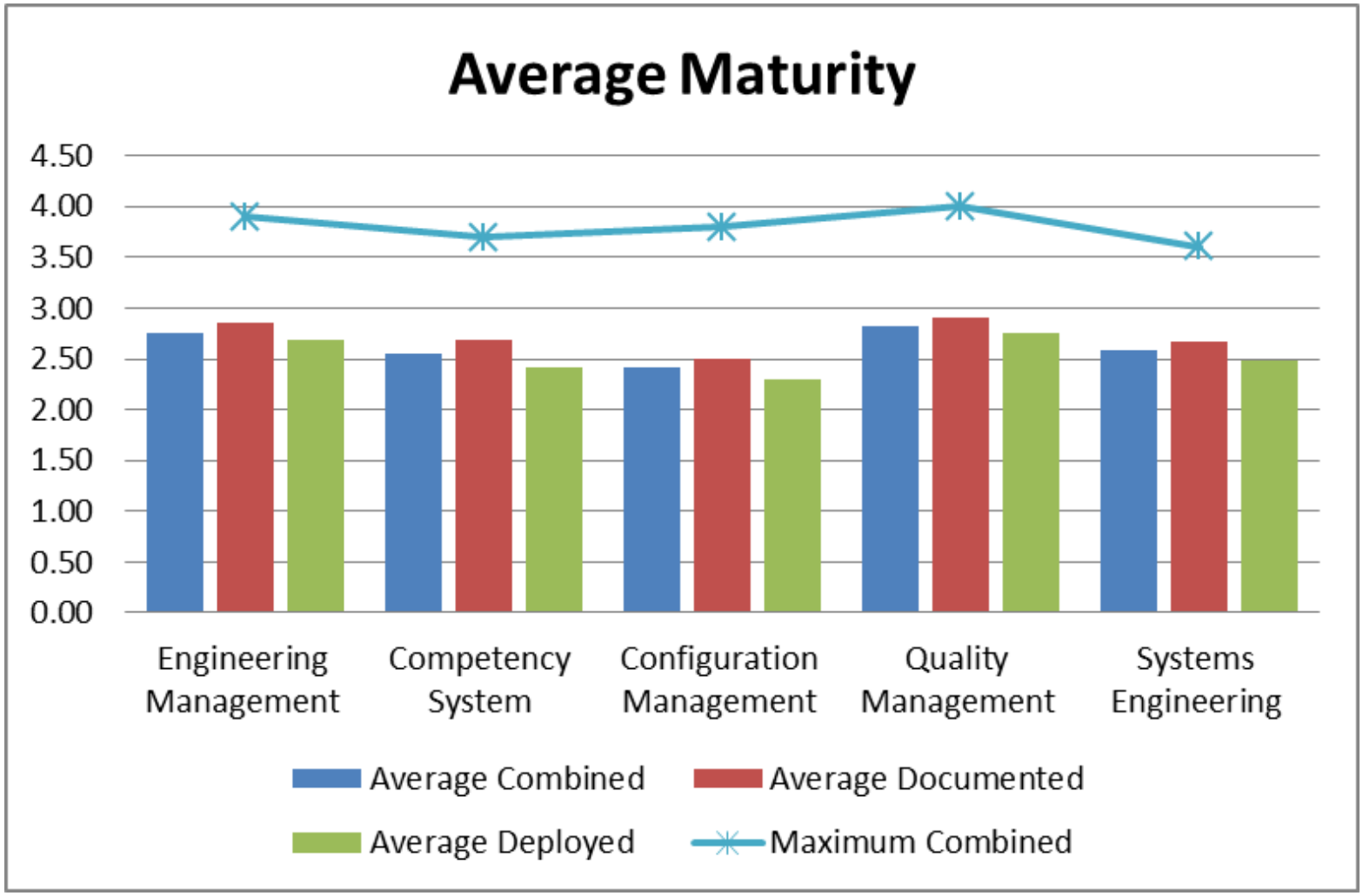
Current industry capability

- 100 Rail AEOs, 1 Maritime AEO
- 24 assessments underway
- 83 waiting to commence
- 115 Project-limited Authorisations



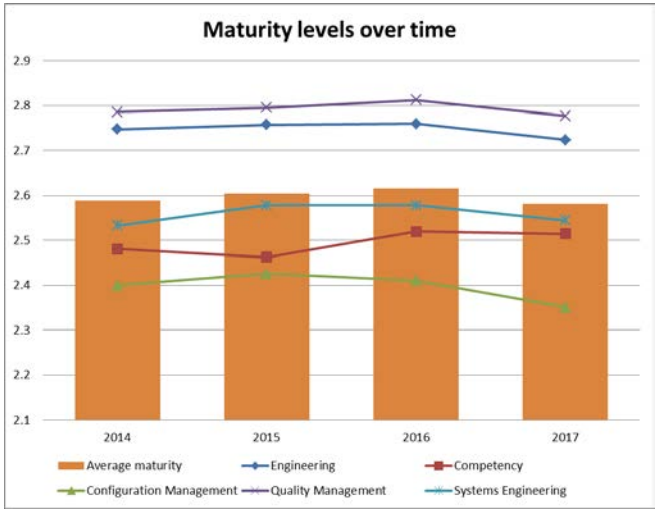


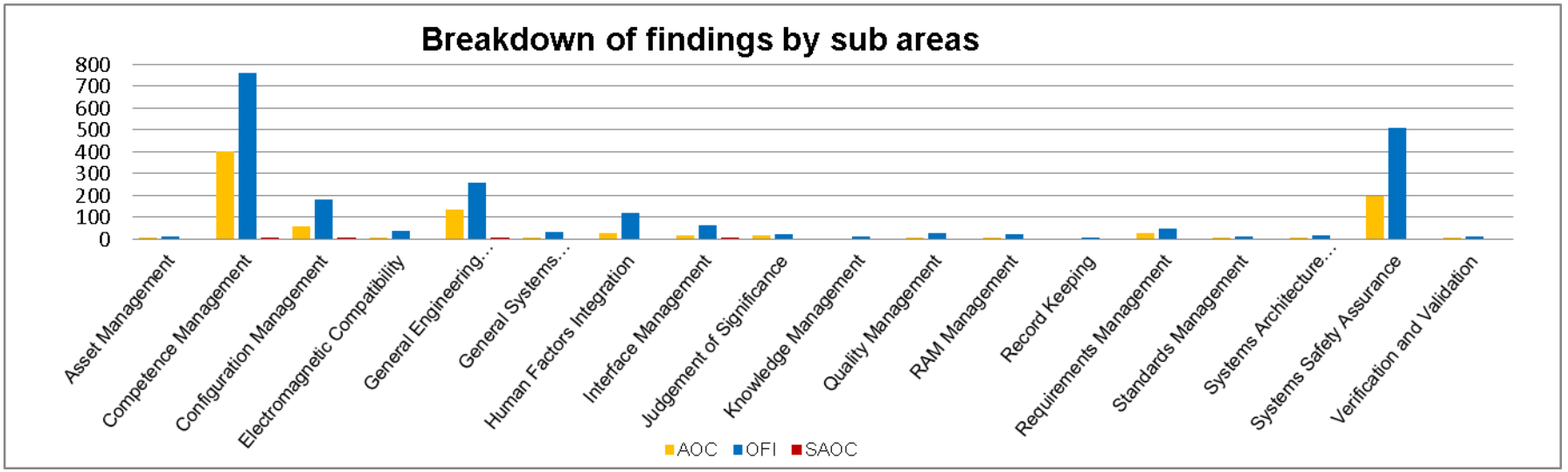
Snapshot of the average maturity of AEOs



Maturity and finding trends

- Some area have decreased in maturity over time
- Key finding areas:
  - Systems Safety
  - Engineering Management (integration)
  - Competency Management





What’s next for the AEO Model

- Expanding it to incorporate other modes
- Creation of supporting systems for TfNSW and industry
- Improving the efficiency of our processes
- Growing maturity of industry
- Further engagement to help TfNSW get more out of the AEO Model

Transport Asset Standards Authority

Morning tea break

Common themes from AEO surveillance

Garry Spencer
Manager
Audit & Compliance
Authorisation and Audit
Asset Standards Authority

Surveillance of AEOs

- Surveillance process assures an AEOs authorised capability continues to be deployed in support of Transport Outcomes
- Risk-based surveillance approach:
    - Understand the work you're doing
    - Understand the potential impacts to Transport Outcomes
- More aligned approach to TfNSW audit and surveillance
- Key finding areas:
    - Competency Management
    - Systems Safety
    - Integration

Competency management

Prominent areas	Risk to TfNSW
• Integrating the Competency Management Systems with the business model • Management of sub-contractor competency • Proficiency of resources • Deployment of competency systems	• Who is working on our assets? • How can we be assured that they don't introduce risk into our network? • Potentially the safety of the travelling public

Systems safety management

Prominent areas

- WHS versus systems safety
- Hazard Log management
- Hazard Log traceability
- Scaling the process to the change
- Use of ISAs

Risk to TfNSW

- Integrity of the asset compromised
- Latent issues may arise after commissioning
- Potentially the safety of the travelling public

Integration management

Prominent areas	Risk to TfNSW
• System safety • Stakeholder engagement • Integration planning • Holistic assurance “flow”	• Integrity of the asset compromised • Latent issues may arise after commissioning • Potentially the safety of the travelling public

Competency aligned across TfNSW

Mark Smith
Director
Industry and Technical Development
Asset Standards Authority

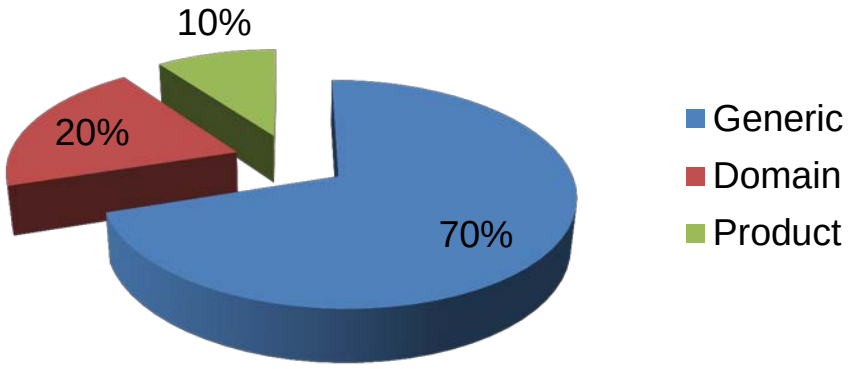
Competency - A Key Assurance Element

Challenges in Competence Assurance

- Increased reliance on contracted organisations to deliver under the AEO framework
- The involvement of local and international contractors required to deliver projects is unprecedented
- The scale and number of organisations operating as AEOs, poses a challenge
- Greater visibility of and confidence in the staff operating under the AEO “banner” is required
- Increased focus on competence of individuals, not just overarching AEO’s.

TfNSW Harmonising Competence Requirements

- Harmonising generic competence requirements across heavy rail, light rail and metro system provides greater visibility and clarity for the same functions across modes.
- Skills shift – New and advancing technologies, more integration. Project delivery and operations and maintenance.
- Value to industry is what is different between us all to allow greater efficiency in mobilising teams between projects.



Rail Industry Worker (RIW)

- Differing levels of maturity in supply chain in managing competence systems
- TfNSW is moving to a centralised competence platform
- Industry solution already in use at TfNSW and nationally
- Reduced cost for contractors by not introducing another card system
- Competence assessments, records matched to relevant discipline areas. Assurance that relevant competence is being applied by AEOs

How does it fit with AEO requirements?

- Portability of assurance between AEOs
- Visibility of competence gaps between other operator/ maintainers
- Database to assist in competence assurance of subcontractors
- Assessments still completed by AEOs – verification uploaded against requirements, signed by assessor/subject matter expert
- Audit simplification

Thank you

Mark Smith

Director

Industry and Technical Development

Email: ASACompetency@transport.nsw.gov.au

An AEO experience – Gosford Substation and Wyoming Sectioning Hut

John Gardner
National Manager Power
Zinfra

Harry Mercer
Program Director Power Supply Upgrade
Infrastructure and Services

Zinfra

Zinfra Journey as an AEO - Approach, Adaptation, Learnings

Tuesday, 18 July 2017

Gosford / Wyoming Project

- Prior to Demolition
- Current State

Project Background

- Gosford South Substation and Wyoming Sectioning Hut project is part of the Power Supply Upgrade (PSU).
- Construction of a new 66kV Gas Insulated Switchgear (GIS) substation at Gosford South and a Sectioning Hut at Wyoming to replace the existing Gosford Substation.
- The new substation consists of; 66/11kV transformer, two Rectifiers/Transformers, two 5MW rectifiers, with ten state-of-the art Direct Current Circuit Breakers from Hawker Siddeley.
- Constructed adjacent to the existing live operating rail system, fully integrated to existing electrical, telecommunications and civil infrastructure installations.

New to AEO

- Initially our poor knowledge of the competency framework
- Accountability to engineering expertise
- Cost to maintain and consistent standards
- It has made us much more aware of our responsibilities in design related to construction/commissioning.
- Has strengthened Zinfra.

Approach to Tender

- We lacked knowledge of D&C in a rail corridor
- Lack of detail in our tender design translation (Zinfra/Aurecon)
- 5 type approvals was a task that was completely underestimated in all aspects
- We have listened and learnt from TfNSW and ASA and acted on this feedback
- Implemented new systems

Adaptation through Project Delivery

- Requirement for documentation under TfNSW protocols. We have adapted but would not have survived without the extensive input and support from TfNSW/ASA/Sydney Trains
- Expedited process to apply additional skilled resources
- Established and agreed project deliverables as we improved (had we been experienced in this area our program would have reflected this at tender stage)
- Safety in design/program/delivery

What We Would do in Future

- Additional resources applied in tender stage (transparent to alleviate budget pressures)
- Establish and agree project deliverables much earlier
- Early design consolidation
- Delivery program agreed by both teams through T&C stage of contract signing
- For any future projects move the current dedicated team that have learnt the process of TfNSW/ASA/Sydney Trains and AEO requirements. Knowledge, behavioural protocols and relationship transfers

Key Takeaways

- Stakeholder Management
  - Collaboration – early and regular
  - Intelligent Compliance to standards
- Integration
  - Integrating AEO and secondary AEO's
  - The AEO has to deliver the assurance argument
  - Relationships getting in the way of delivering the assurance argument
  - Integrator of the work
- Attitude
  - Positive and receptive and responsive, we are all learning
- Documentation
  - Quality of and timeliness of submissions
  - Make sure they fit together
- Communication
  - We are all on a journey, learn share grow as an industry
  - It is the way we deliver projects – help us help you
  - Open and Honest and Timely

The future of AEO in transport

Jim Modrouvanos
Executive Director
Asset Standards Authority

The Asset Standards Authority - ASA

- Custodian and developer for corporate systems and frameworks
- We develop, promote and enable asset and safety assurance

Application of the AEO Model

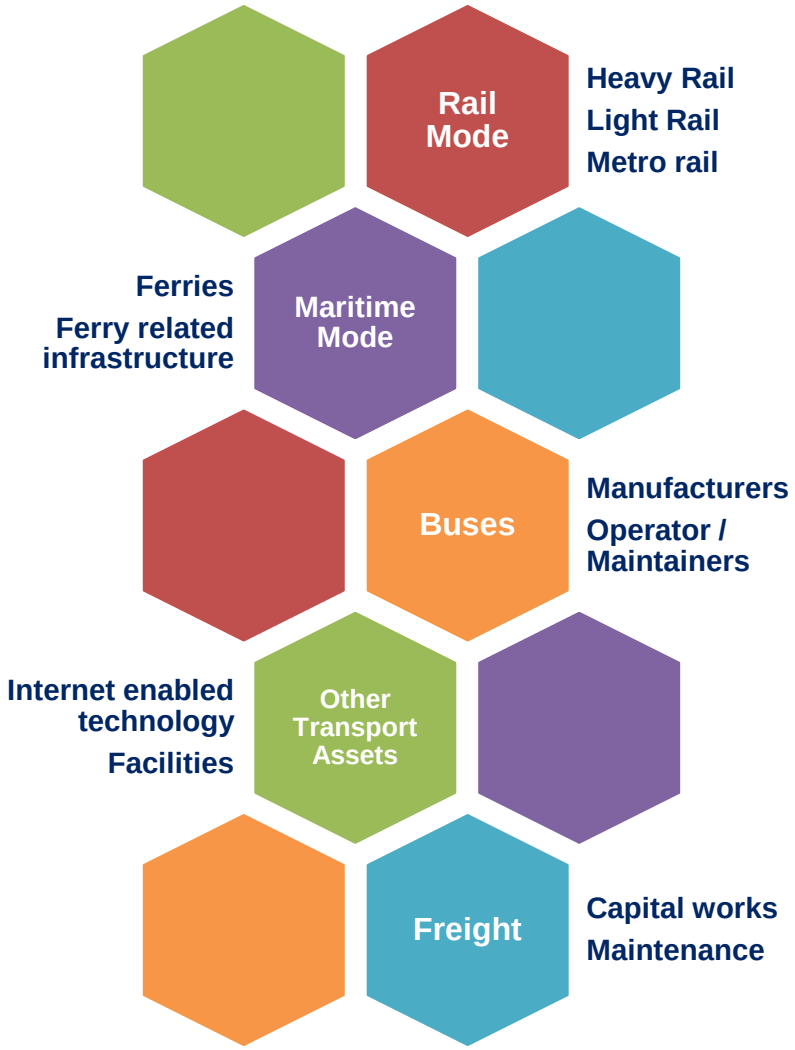
- How is assurance gained through increasingly complex delivery vehicles such as:
    - Consortia
    - Alliances
    - Developer-led works
- Developer and externally led- work:
    - Unsolicited proposals (Wynyard Place, Martin Place)
    - Improving the return on Transport Assets such as retail opportunities
- Wider recognition - nationally

Making it easier to do business

- Your feedback . . .

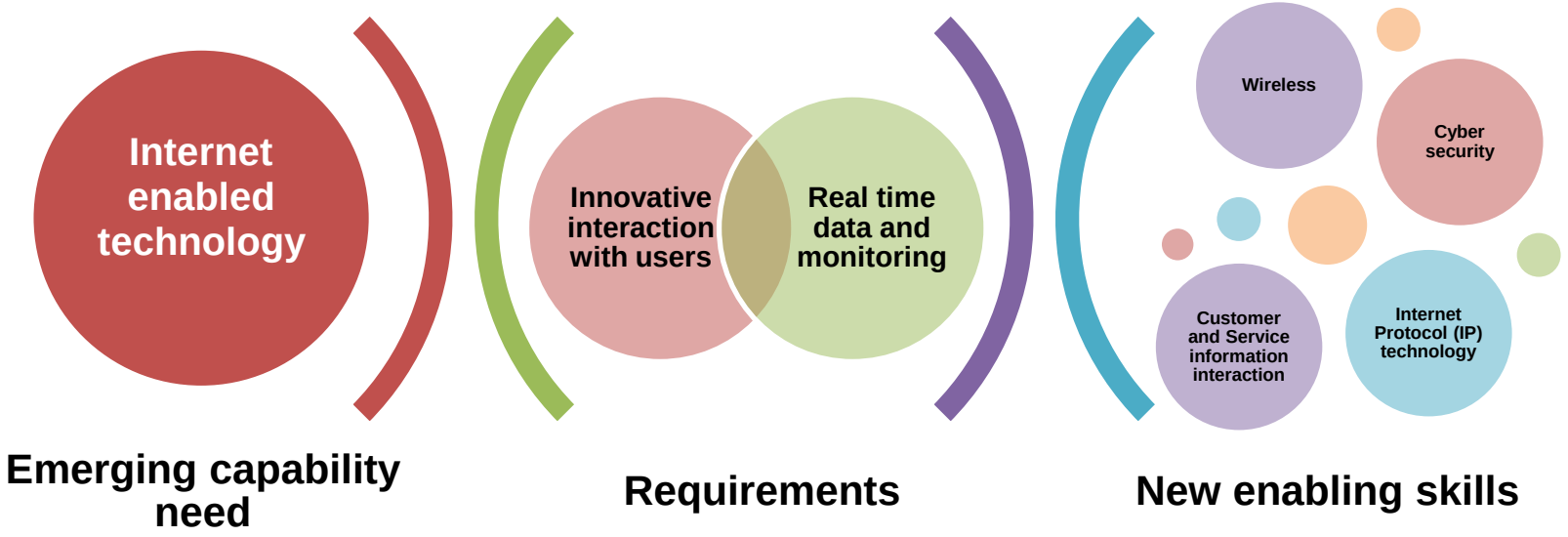
Multiple AEO modes

- Different industry approaches, cultures and expectations
- We need to scale and deploy the AEO Model accordingly



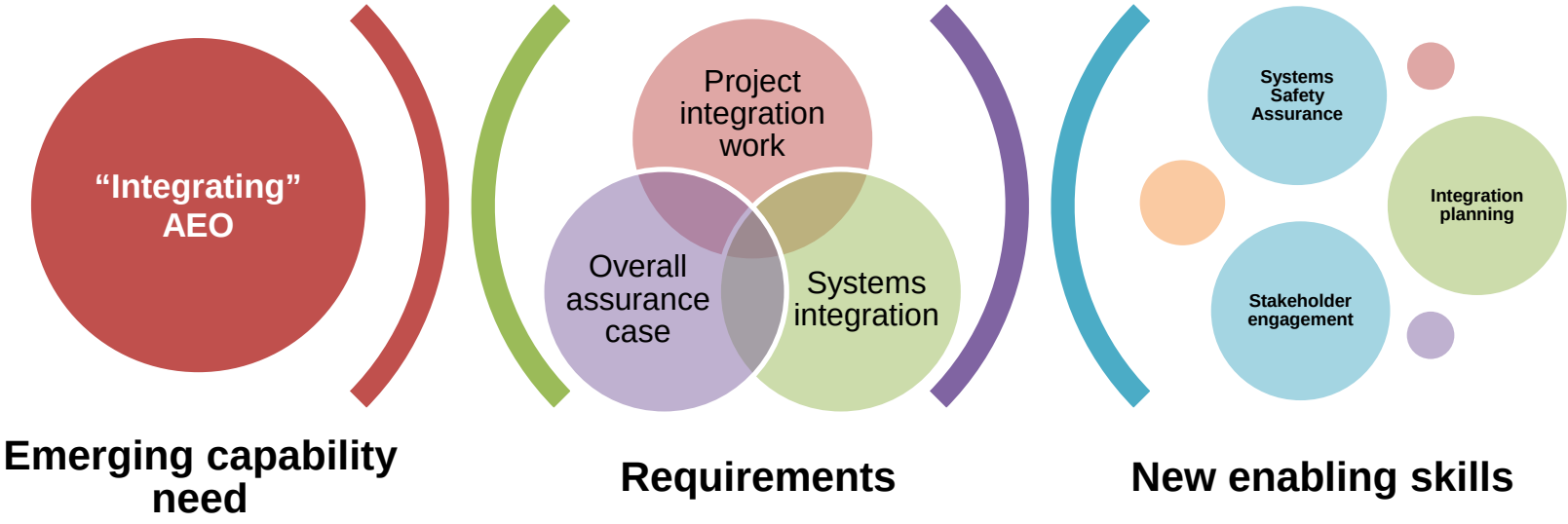
Emerging capabilities – Internet enabled technology

- Capability in the information technology space more and more important
- Most assets these days require an aspect of IT support



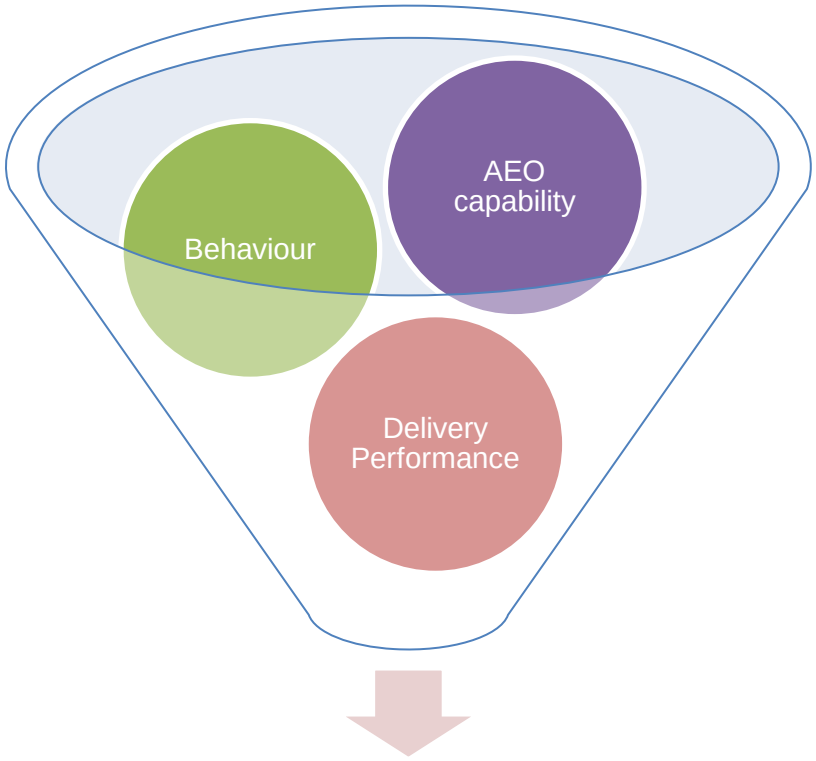
Emerging capabilities – Integration

- Emerging as increasingly important in complex engagements
  - Precinct development – multiple modes
  - Integrating multiple disciplines – engineering and non-engineering to develop a holistic approach to Transport Assets



Growing maturity … a potential "TfNSW Industry Scorecard"

- TfNSW benefits:
  - Outcomes more likely to be met
  - Recognises reliable delivery partners
  - Drives the right behaviours
  - More competitive proposals
  - Better performance and risk control
- Industry benefits:
  - "Weighting" recognition during tender evaluation
  - Better assured solutions
  - Better understanding of TfNSW requirements
  - Competitive advantage
  - Better performance and risk control



Industry Scorecard

Summary

- We are making changes and listening to your feedback to inform change
- We will continue to work with you on
    - Making it easier to do business
    - Maintaining good governance with minimum viable bureaucracy
    - Developing emerging skills and capability needed for the transport network of the future
- Delivery environment is growing in complexity and demanding more integrated solutions
- We need to balance the delivery of new technologies and capabilities with some more of what we've already got
- Further engagement on making it easier to do business

AEOs and Future Transport

Nick Berry
Manager Communications
Future Transport

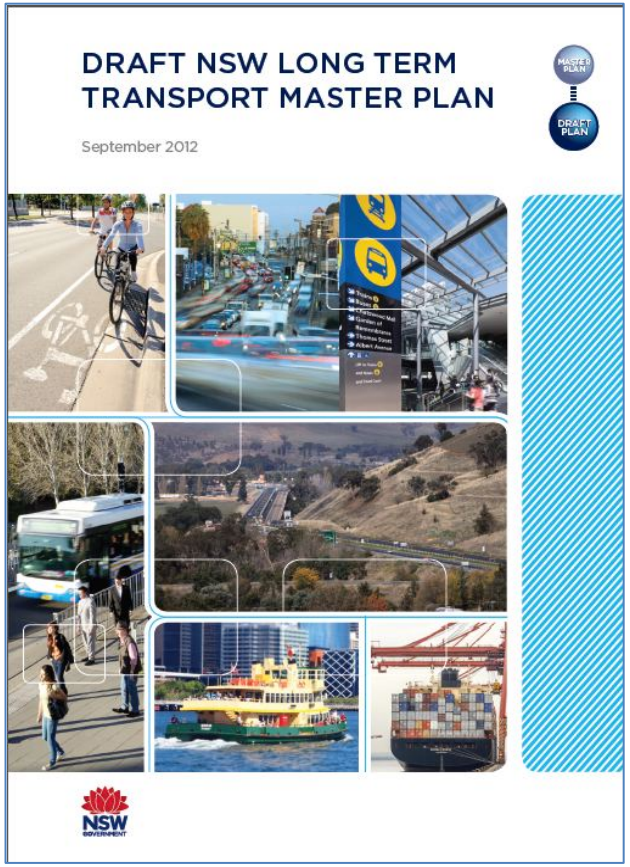
Future Transport

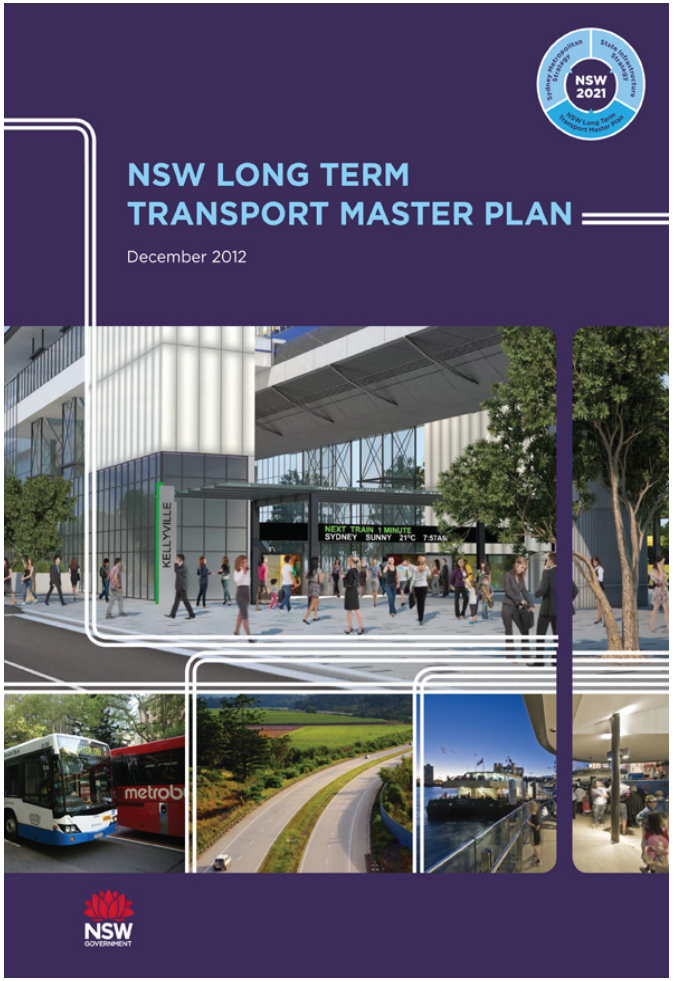
Nicholas Berry
Industry and Government Engagement Lead
Future Transport

18 July 2017

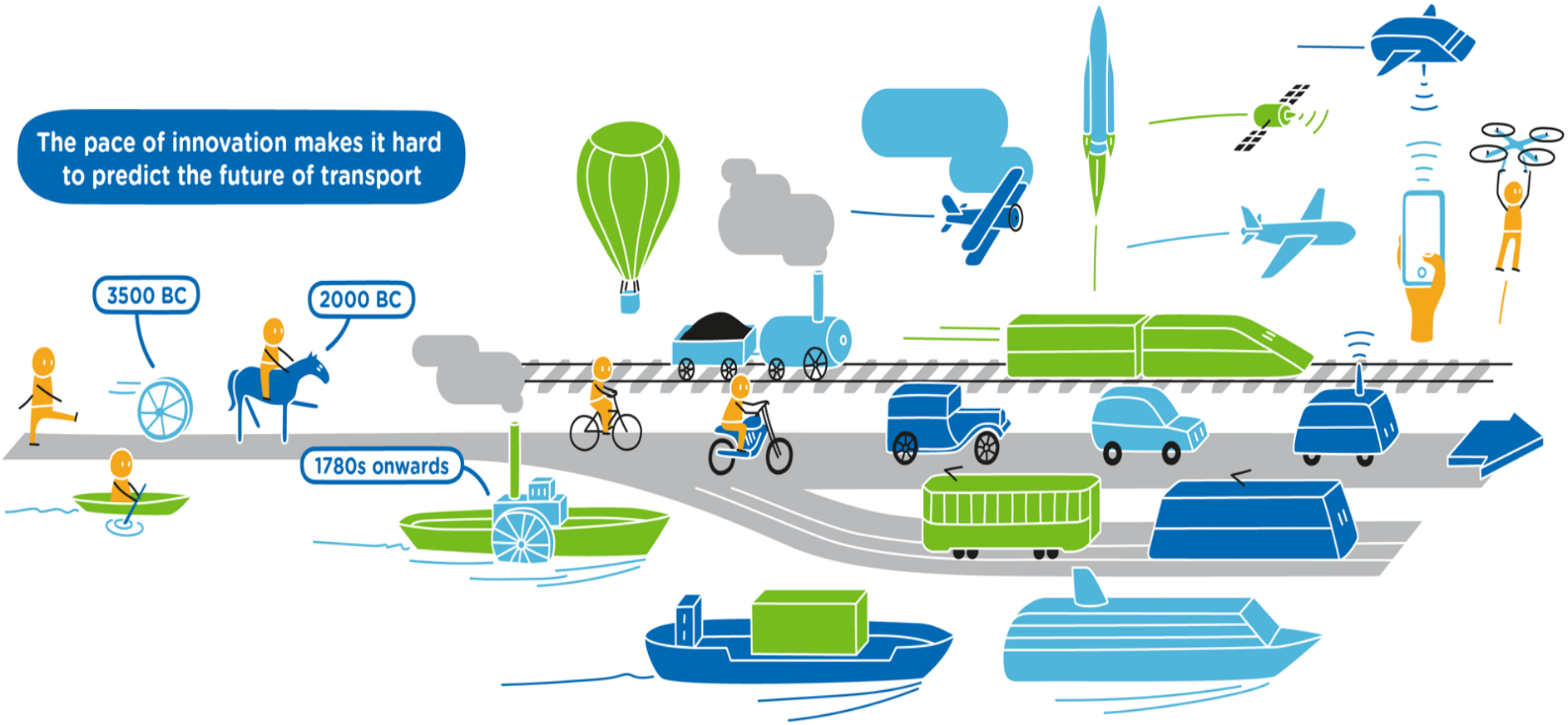
About Transport planning

The power of Transport plans





Megatrends changing transport

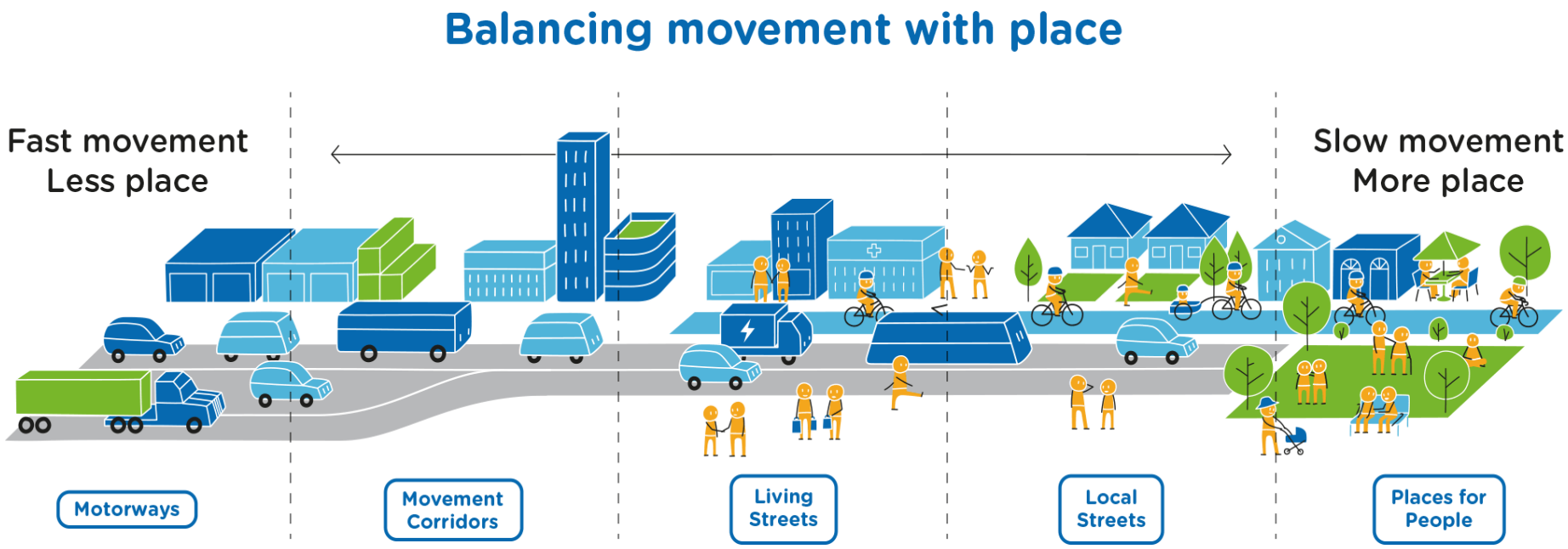


Integration

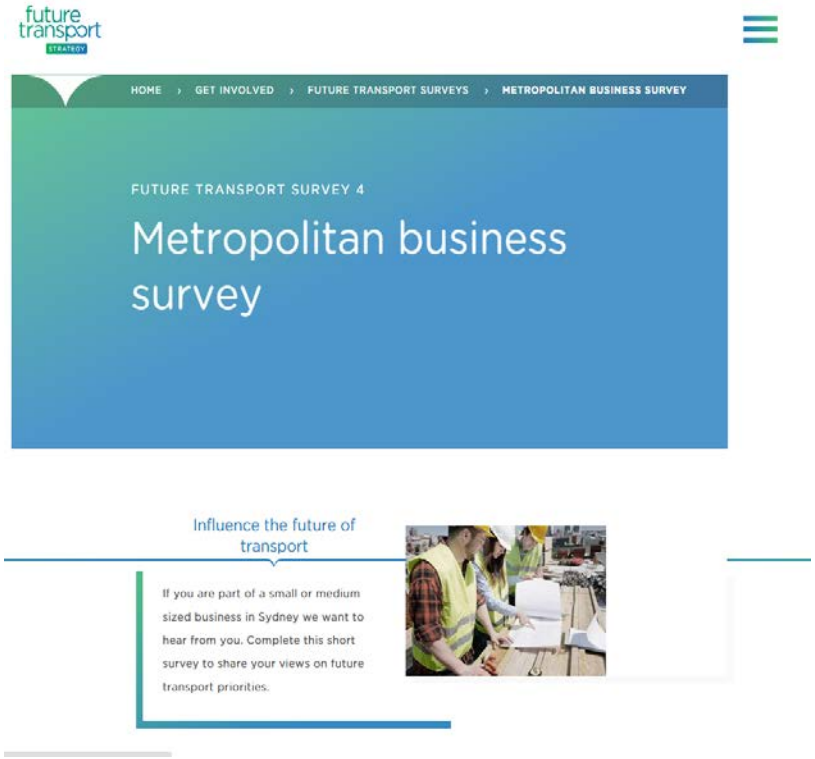
Future Transport Strategy

Engagement – CAV implementation

Engagement - Placemaking



Get involved



Web: future.transport.nsw.gov.au

Email: FutureTransport@transport.nsw.gov.au

Upcoming events

- 17 August – Signals & Control Systems Technical Forum
- 14 September – Civil Technical Forum
- 21 September – Safety Assurance Technical Forum
- 21 November – Configuration Management Technical Forum

**Information correct as of Friday 14 July 2017. Subject to change.*

Thank you!

Level 7, 12 Help St, Chatswood

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The presentation slides will be available on the ASA website after this event.