

15 - 16 November, Wembley Stadium, UK

Improving Megaproject Performance through Efficient Project Controls

Presented By:

Cameron Mills – Director, Project Controls NELP

Date: 16/11/2022 | Session Code: P7. 16:10 - 17:05



Project and Industry Context



Australian Road Network and Context

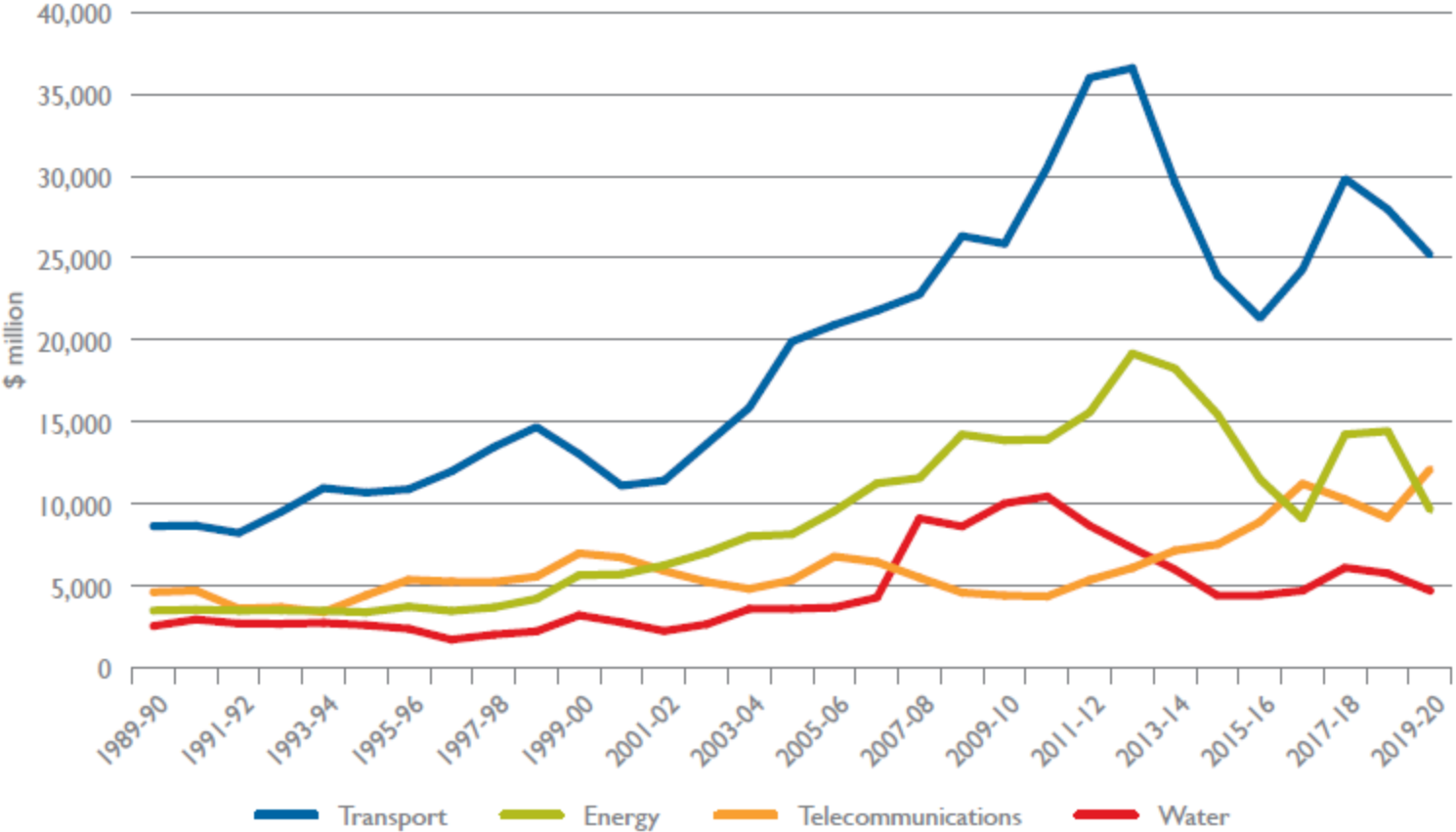
- 95% the size of the USA
- Population of Australia 25 million
- Population of UK 67 million
- Population of Melbourne 5.2 million
- Population of inner London 9.5 million

National road network



Source: Bureau of Infrastructure and Transport Research Economics (BITRE), 2020, Key Australian Infrastructure Statistics 2020, Canberra ACT.

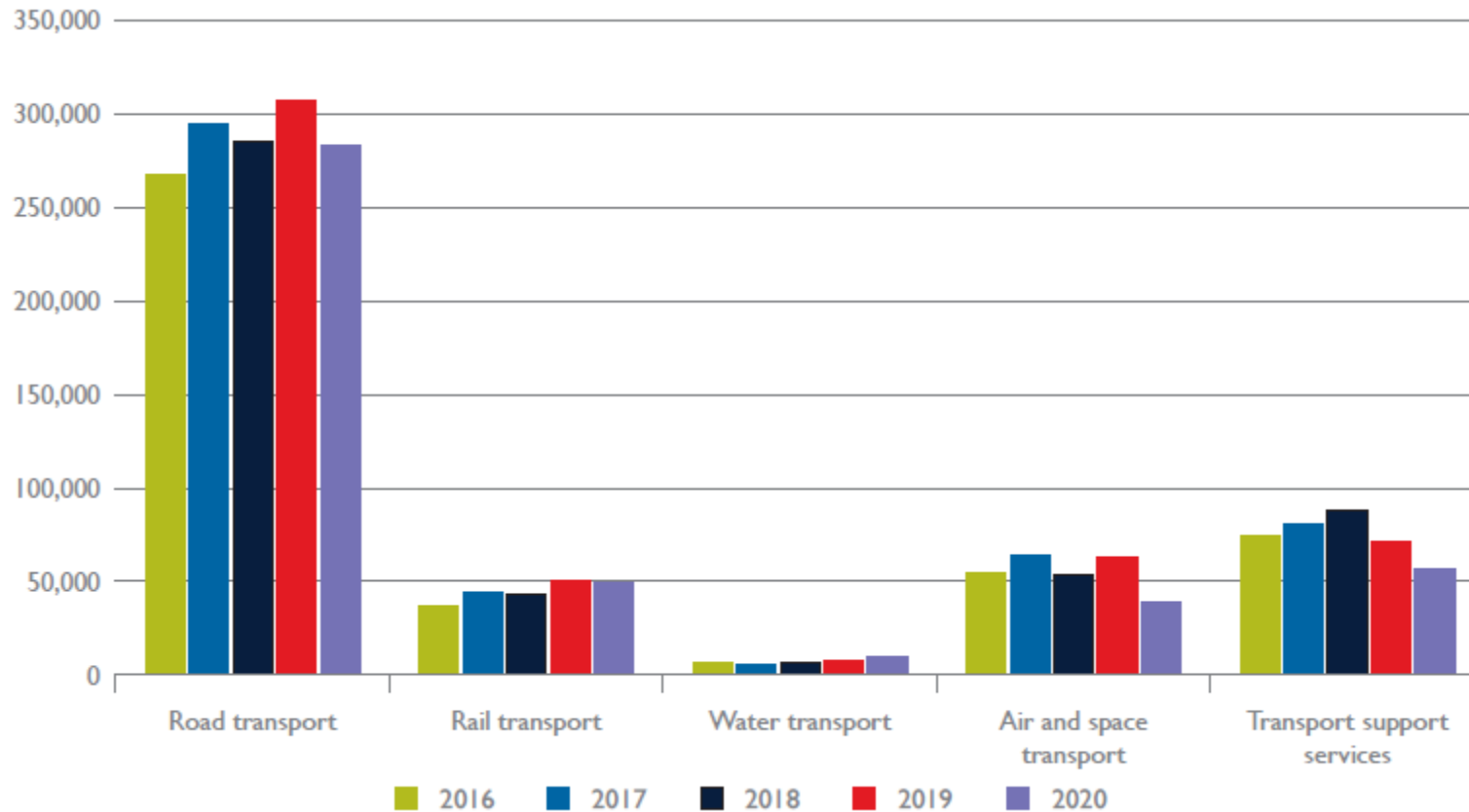
Australian Infrastructure Construction Activity: Adjusted by chain volume index



Source: BITRE, Australian Infrastructure Statistics Yearbook 2020, Figure 11.

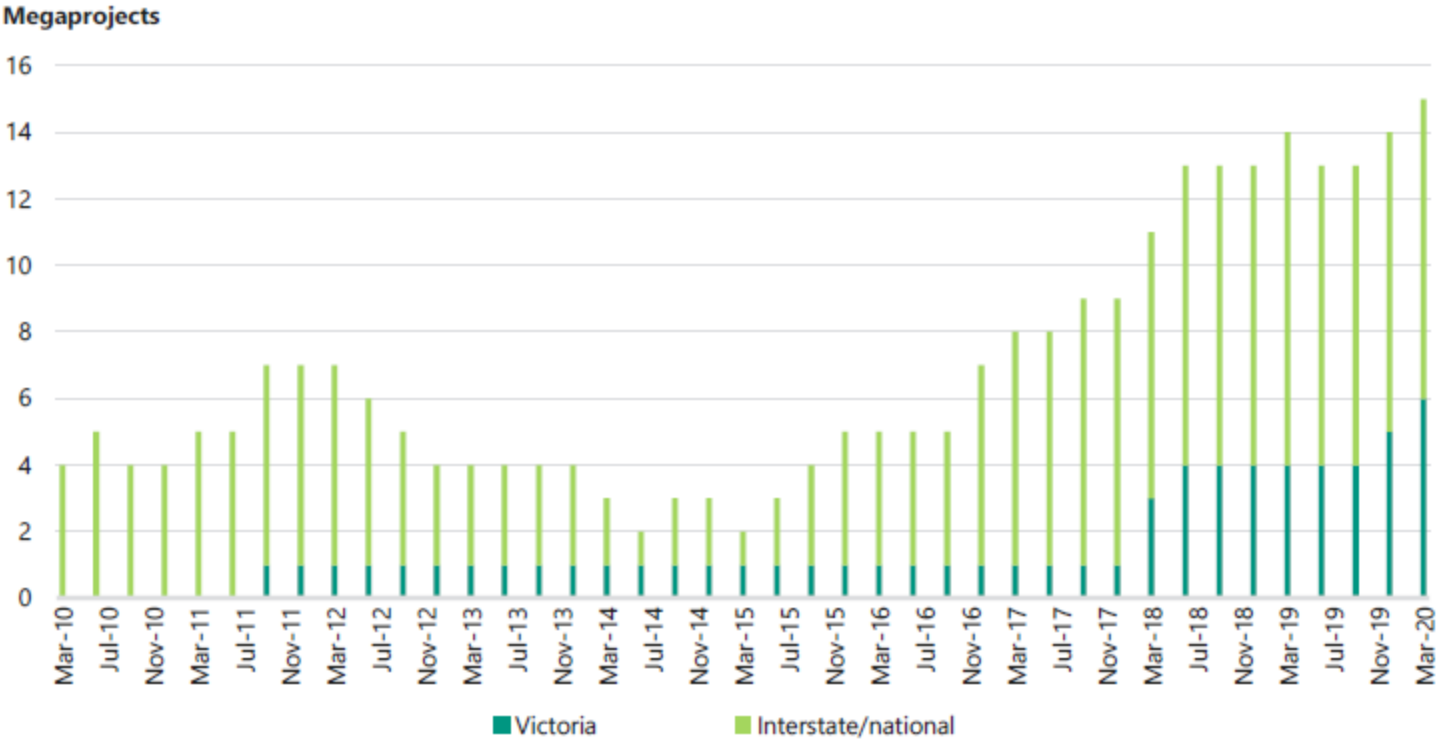


Australian employment numbers in selected major infrastructure industries



Source: BITRE, Australian Infrastructure Statistics Yearbook 2020, Figure 13.

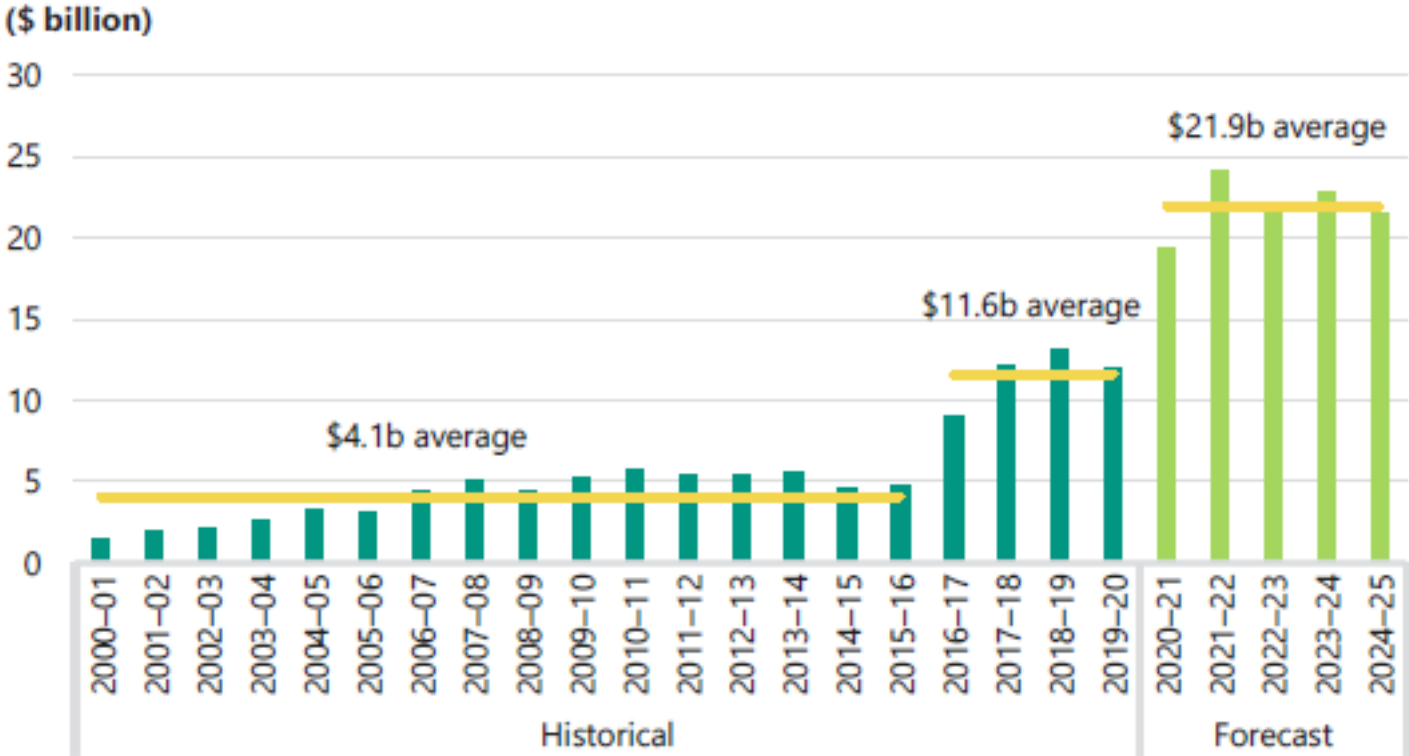
National Growth of Megaprojects (+\$2 billion) under construction



Source: VAGO, based on The rise of megaprojects: counting the costs, Grattan Institute, 2020, using Grattan Institute data.

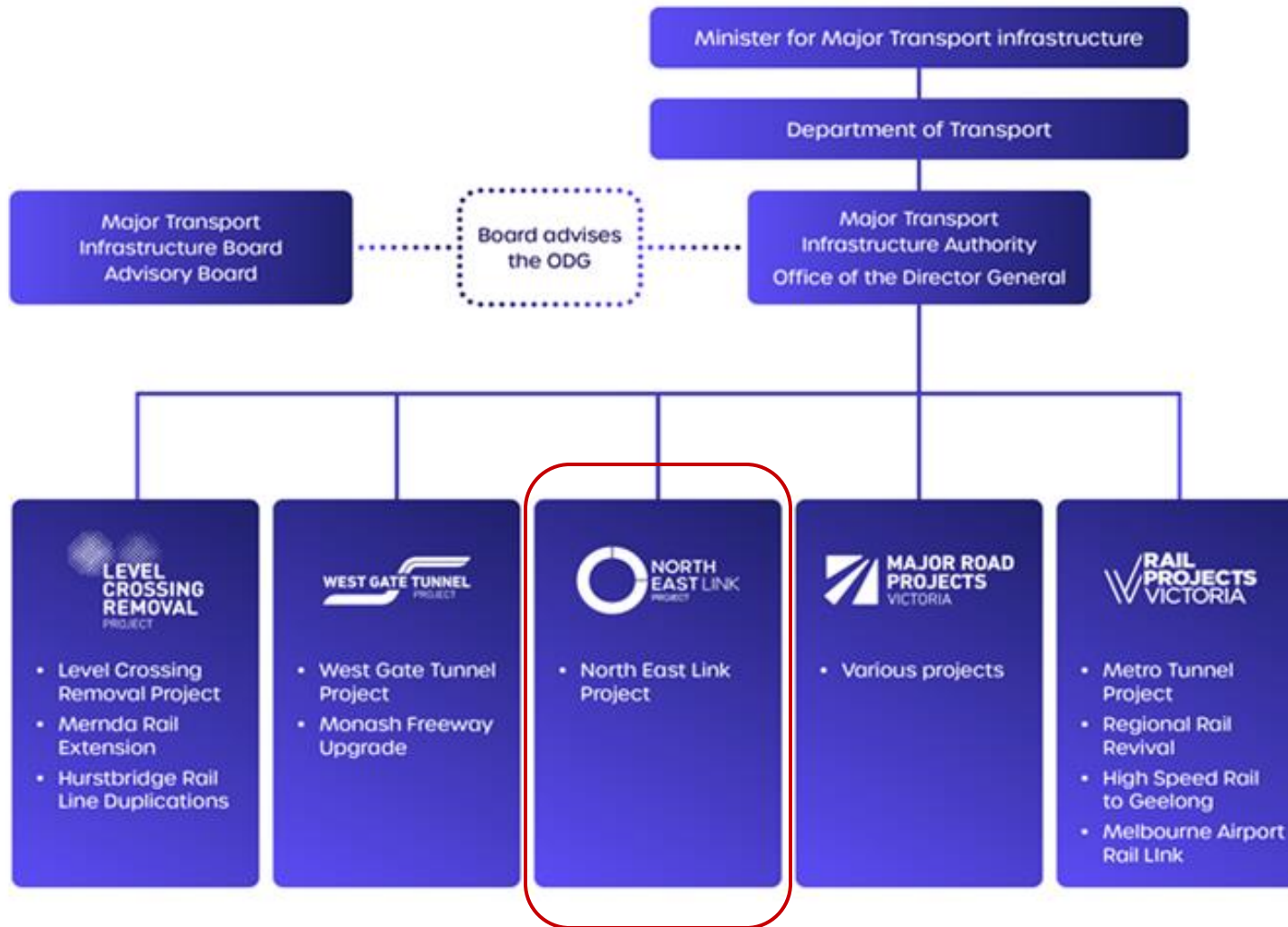


Victoria's Infrastructure Investment Annual Spending



Source: VAGO, using DTF data

Major Transport Infrastructure Authority (MTIA)



- A Part of Victoria's Big Build
- ~\$110b transport projects being delivered
- 119 major road & rail projects
- Over 25,000 jobs across Victoria

Fixing the missing link between our city's north and east



15,000 trucks off local roads every day



Up to 135,000 trips a day



35 minutes slashed between Melbourne's north and east



Skip 18 sets of traffic lights on your way to the airport



5 interchanges



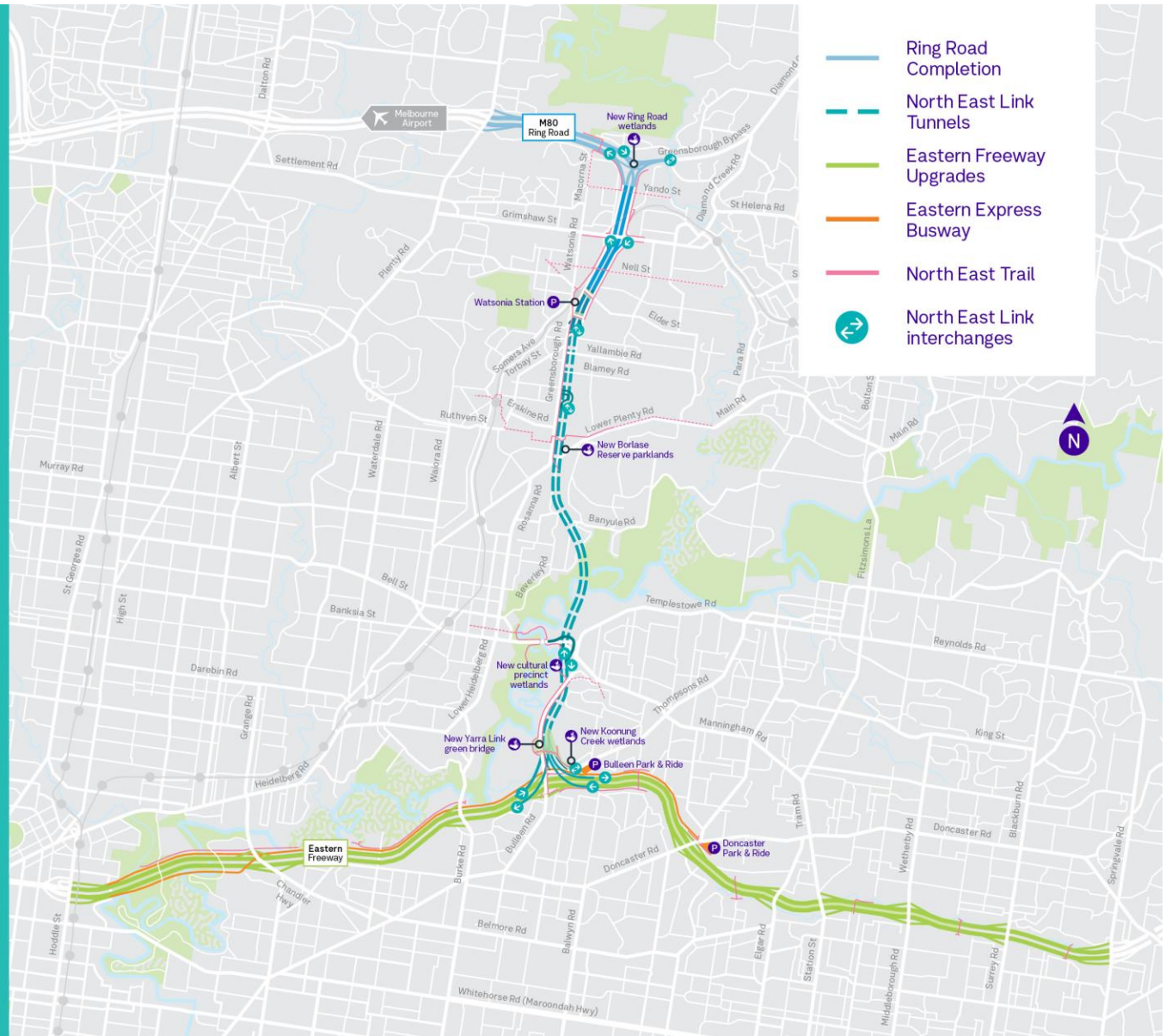
50 MCGs of open space



30,000+ trees planted

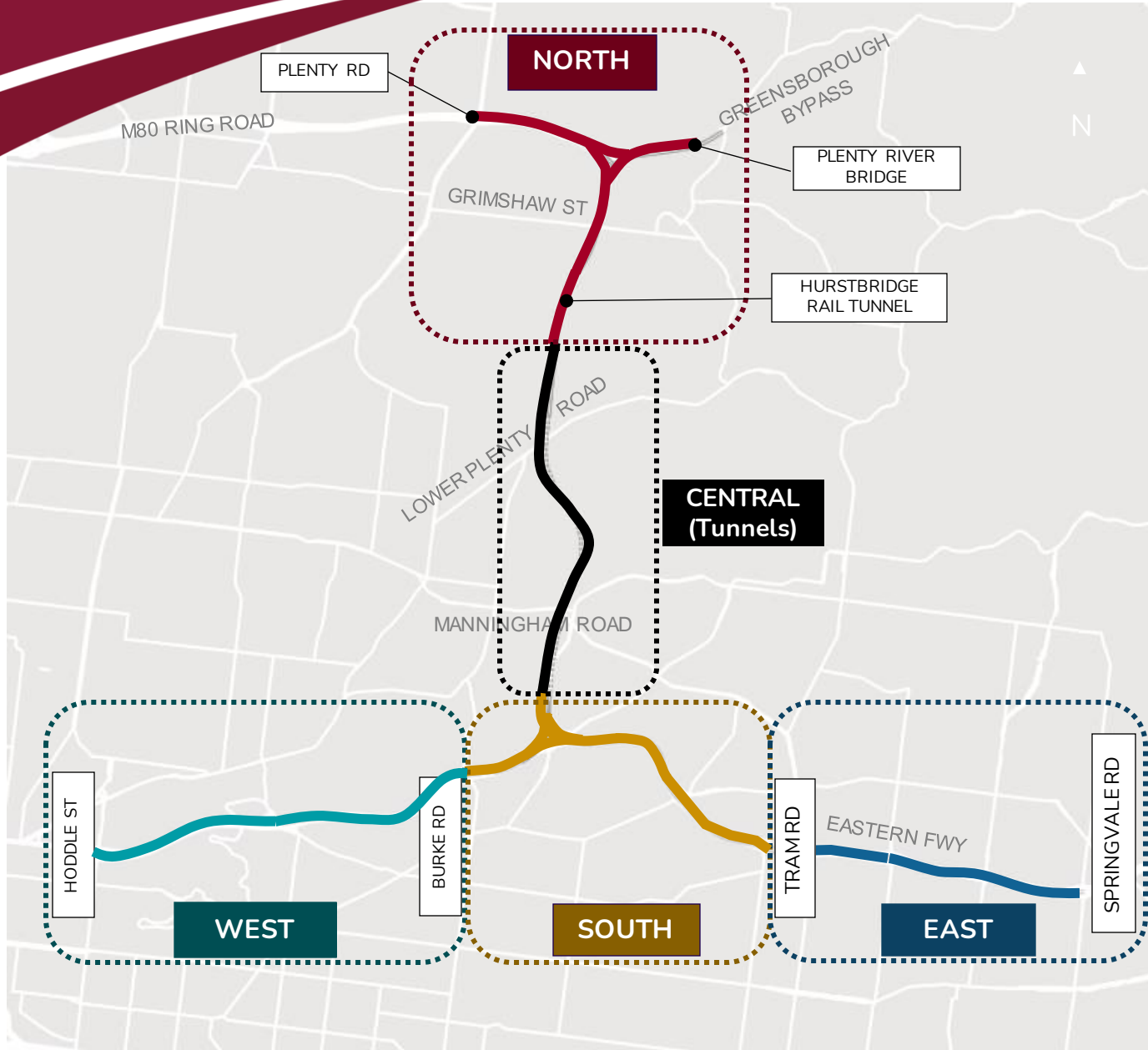


10,000+ new jobs for Victorians



NELP Package Overview

- Main construction works will be delivered through five packages:



Package Name:

Contract Model:

Central (Tunnels) Package

PPP

North Package

Alliance

South Package

Alliance

East Package

Alliance

West Package

Alliance

Project Controls Context



Key Principles to Effective Project Controls

Standardisation

System Integration

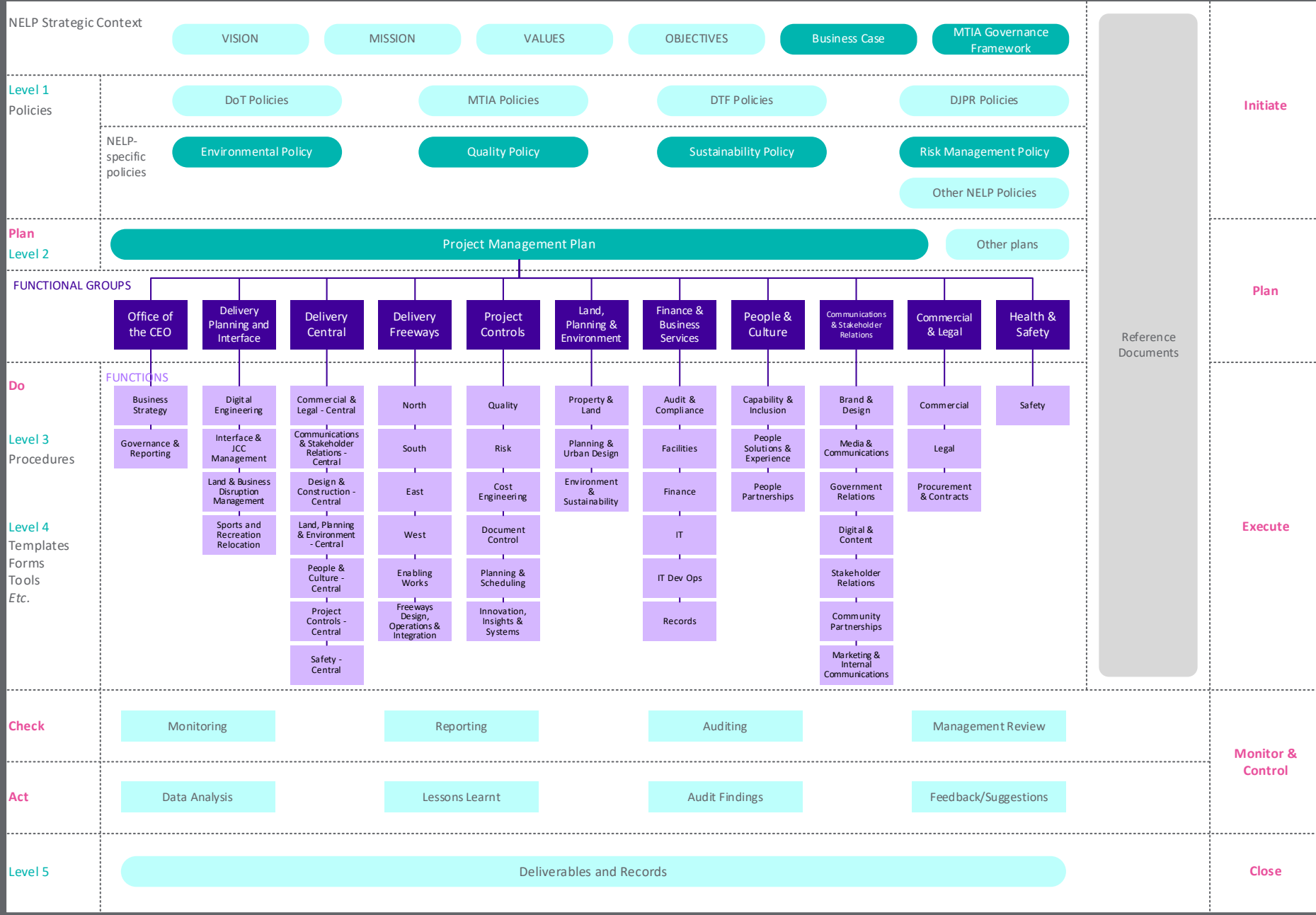
Data Integrity

Scalability

Increased Certainty

Increased Staff Capability

NELP PROJECT MANAGEMENT FRAMEWORK – PROCUREMENT AND DELIVERY



Project Management Framework

AS ISO 21500



AS/NZS ISO 9001

Implementing an Approach to Improve Performance Using Effective Project Controls



Opportunity to Challenge the Status Quo in Alliance Contracting

- The scale and complexity of modern projects necessitates a fundamental step change, instigated by the Project Owner to deliver the current market pipeline of work.
- Effective data management is now critical to the industry to adequately plan, predict and justify outcomes. From Business Case through to Operations and Maintenance.
- We encourage the formation of functional, integrated project control teams in the proponent organisational structure, rather than separated amongst other functions.
- We advocate Project Controls specialists to be placed within the Alliances, in the capacity of Owner Participant to foster a culture of benefits realisation, collaboration and transparency.
- The specialists will support the Alliance's performance outcomes by optimising the potential of VfM, cost and time certainty, and satisfactory outcomes for project stakeholders.
- Alignment between people, process and technology is paramount to effective Governance and enables improvement in capability and capacity for staff in a constrained market.

Project Breakdown Structures

The Project Owner developed Project Breakdown Structures to standardise the management and reporting of key elements across NELP Projects.



WBS Development

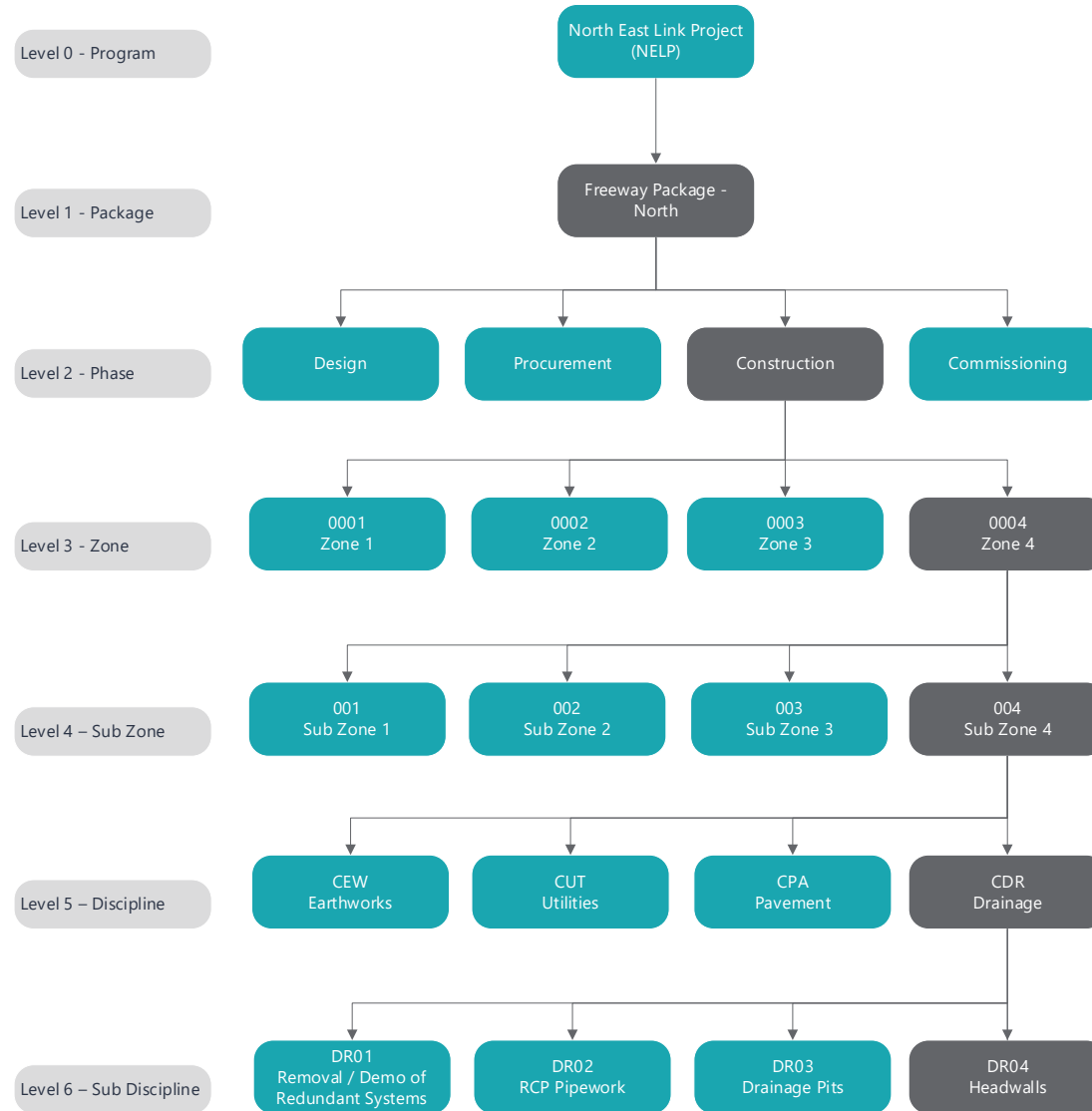
WBS Level	1	2	3	4	5	6
	Package	Phase	Zone	Sub-Zone	Discipline	Sub-Discipline
Example item	Freeway Package - North	Construction	M80 Ring Road - Plenty Road to Macoma Street SUP Overpass	Sub-Zone 1 (TBC)	Drainage	Headwalls
Example WBS Code	DC	C	3100	01	CDR	DR04

Key:

- Defined by Project Owner
- Suggested by Project Owner
- Defined by Alliance

WBS Level	WBS Title	Description
1	Package	Determines the Contract Package.
2	Phase	Determines the project Phase that the activity is assigned to.
3	Zone	Project Owner suggested elements (geographic) of the Freeways Package.
4	Sub-Zone	Proponent defined (by staging element geographic, Median, Shoulder, Ramp, Structure, etc.) elements of the Freeways Package, providing more granular detail than Zone.
5	Discipline	Identify elemental categories to enable consistency in descriptions with the CBS at the Discipline level. Accurate identification and reporting of the Freeways Package works to the level of breakdown required by the Project Owner.
6	Sub-Discipline	Identify works activity at a more granular level to enable consistency in descriptions with the CBS at the Sub-Discipline level. Accurate identification and reporting of the Freeways Package works to the level of breakdown required by the Project Owner.

WBS Example



CBS Development

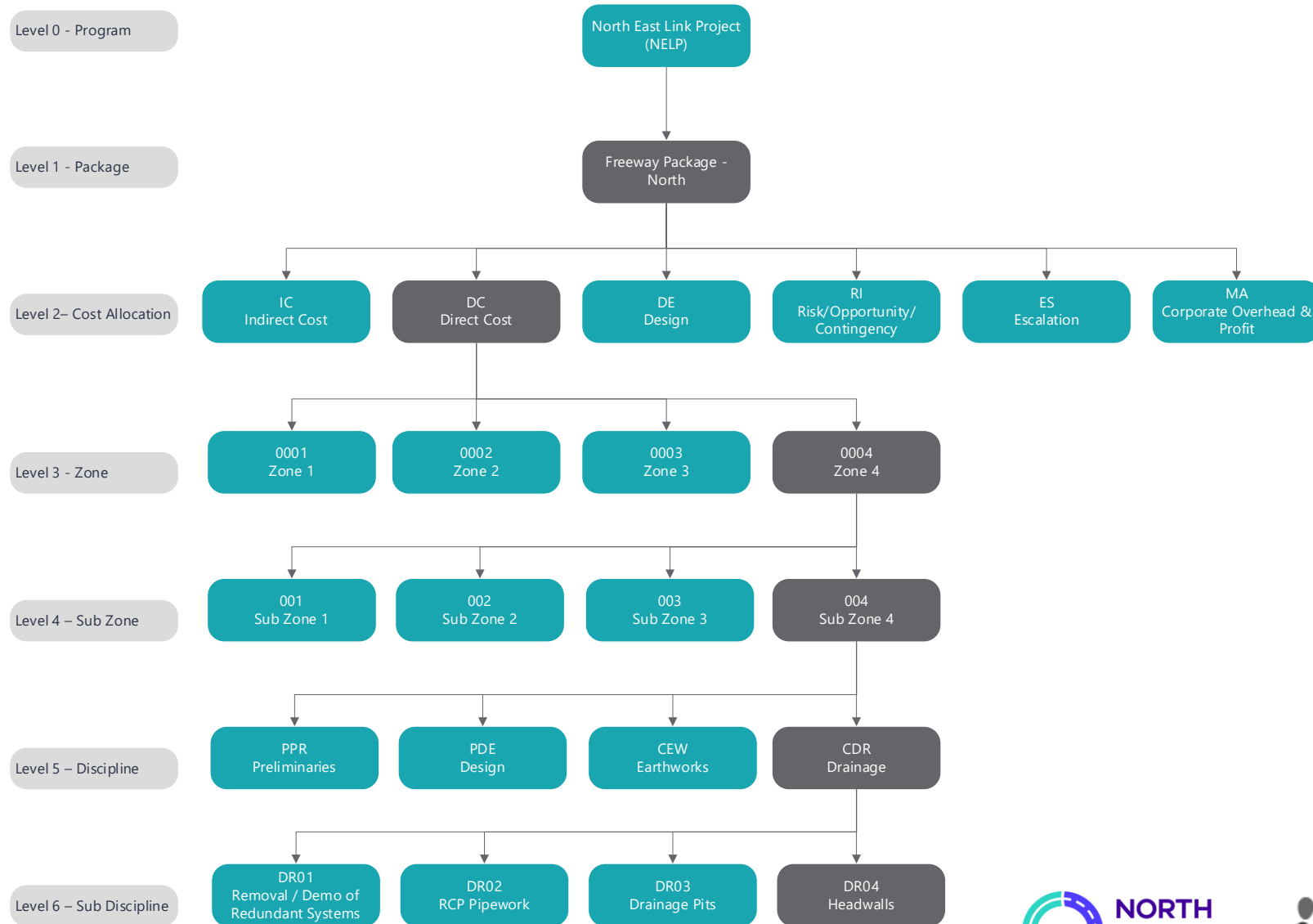
CBS Level	1	2	3	4	5
	Cost Allocation	Zone	Sub-Zone	Discipline	Sub-Discipline
Example cost item (Freeway Package - North)	Direct Costs	M80 Ring Road - Plenty Road to Macoma Street SUP Overpass	Sub-Zone 1 (TBC)	Drainage	Headwalls
Example CBS Code	DC	3100	01	CDR	DR04

Key:

- Defined by Project Owner
- Suggested by Project Owner
- Defined by Alliance

CBS Level	CBS Title	Description
1	Cost Allocation	Determines to which element of the TOC the costs are allocated.
2	Zone	Project Owner suggested elements (geographic) of the Freeways Package.
3	Sub-Zone	Proponent defined (by geographic, structure, etc.) elements of the Freeways Package, providing more granular detail than Zone.
4	Discipline	Identify costs into elemental categories to enable accurate identification and reporting of the costs of the Freeways Package works to the level of breakdown required by the Project Owner. The level 4 CBS Discipline code is made up of three alpha characters.
5	Sub-Discipline	Identify costs by works activity at a more granular level to enable accurate identification and reporting of the costs of the Freeways Package works to the level of breakdown required by the Project Owner. The level 5 CBS Sub-Discipline code is made up of four alphanumeric characters.

CBS Example



RBS Development

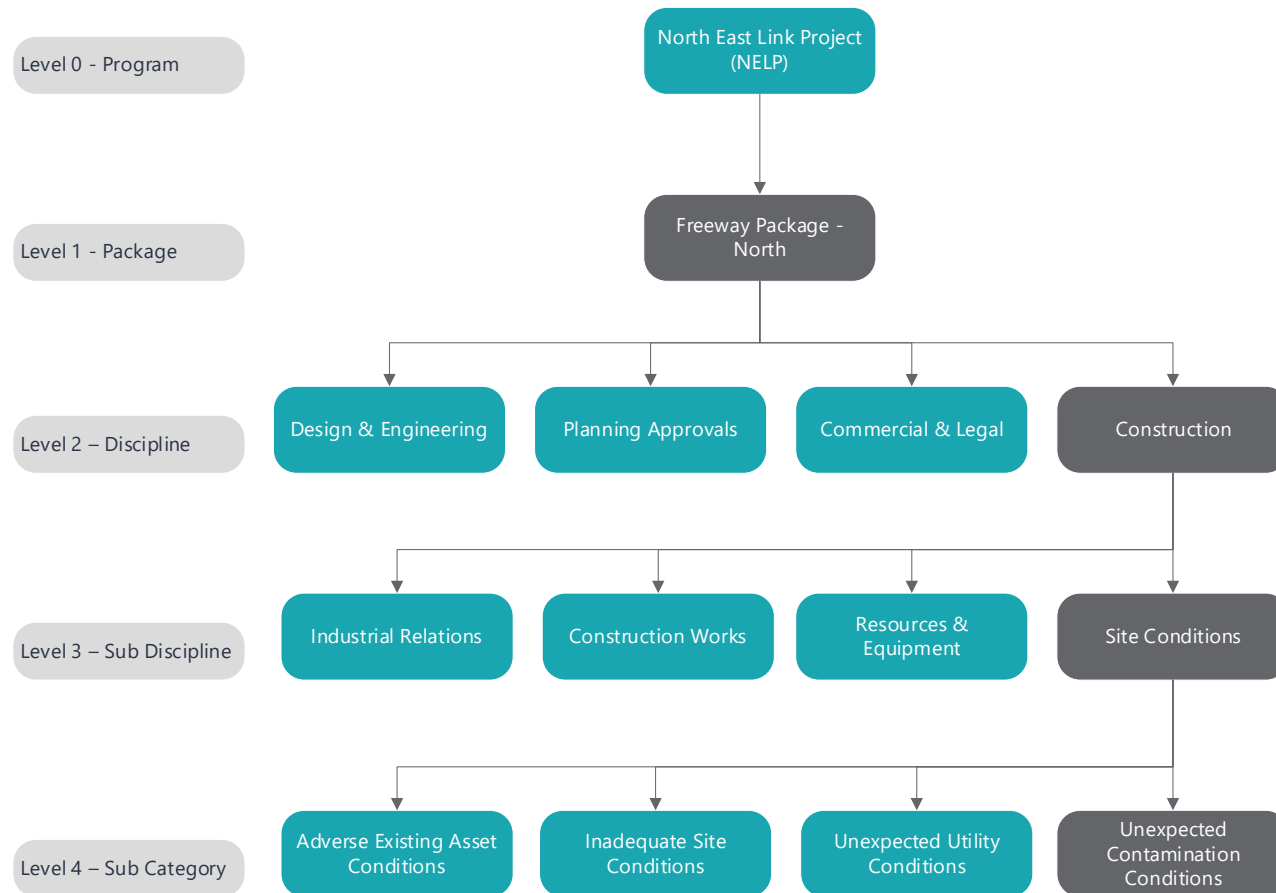
RBS Level	1	2	3
	Category	Sub-Category	Sub-Category
<i>Example cost item</i>	Construction	Site Conditions	Sub-Category (TBC)
<i>Example RBS Code</i>	CN	SC	CN.SC.X

Key:

- Defined by Project Owner
- Defined by Alliance

RBS Code	RBS Level 1 Code	RBS Level 1 Risk Category	RBS Level 2 Code	RBS Level 2 Risk Sub-Category	RBS Level 3 Code	RBS Level 3 Risk Sub-Category
CN.SC.X	CN	Construction	SC	Site Conditions	[1]	[Sub-Category Description]

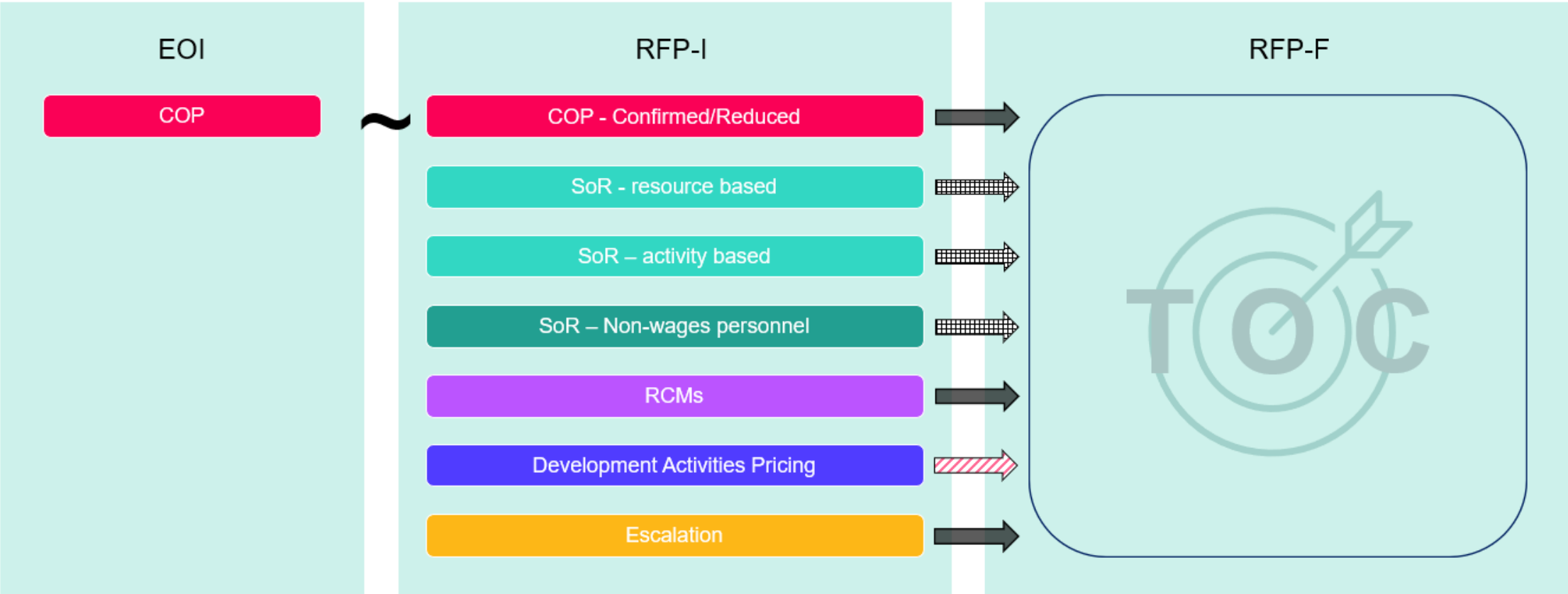
RBS Example



Enhancing Procurement with Project Controls to improve Performance outcomes

- Promote Value for Money (VfM), Cost and Time certainty, and equitable risk apportionment through the development of a robust and transparent Target Outturn Cost (TOC).
- The TOC, developed during an interactive Request for Proposal (RFP) Phase formed part of the Preferred Proponents Final Proposal.
- A TOC Workbook was provided in the RFP Initial Phase (RFP-I Phase) and contained a series of proforma tabs to be completed by the Proponents. Each tab provided specific instructions for completion in accordance with the Project Owner's requirements.
- The Project Owner's project controls team interacted with and provided guidance to the Proponents during the RFP Phases in populating the relevant tabs of the TOC Workbook in accordance with the Project Owner's requirements.

TOC Development Tender Phases



Key:	TOC build-up 	TOC build-up / validation 	TOC considers RFP-F Development Activities Reimbursable Costs 
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TOC Workbook

General overview RFP-I Deliverables



TOC category	Direct Cost	Indirect Cost	Design	Risk & Contingency	Escalation	COP
Related tab	<ul style="list-style-type: none"> SoRs <ul style="list-style-type: none"> - Resource based - Activity-based Development Activities Pricing 	<ul style="list-style-type: none"> SoR <ul style="list-style-type: none"> - Non-Wages Personnel RCM's Development Activities Pricing 	<ul style="list-style-type: none"> SoR <ul style="list-style-type: none"> - Non-Wages Personnel Development Activities Pricing 	<ul style="list-style-type: none"> Not included at RFP-I 	<ul style="list-style-type: none"> Escalation 	<ul style="list-style-type: none"> COP Development Activities Pricing

Innovation & Optimisation

- I&O Register
- Development Activities Pricing

Unconstrained Options

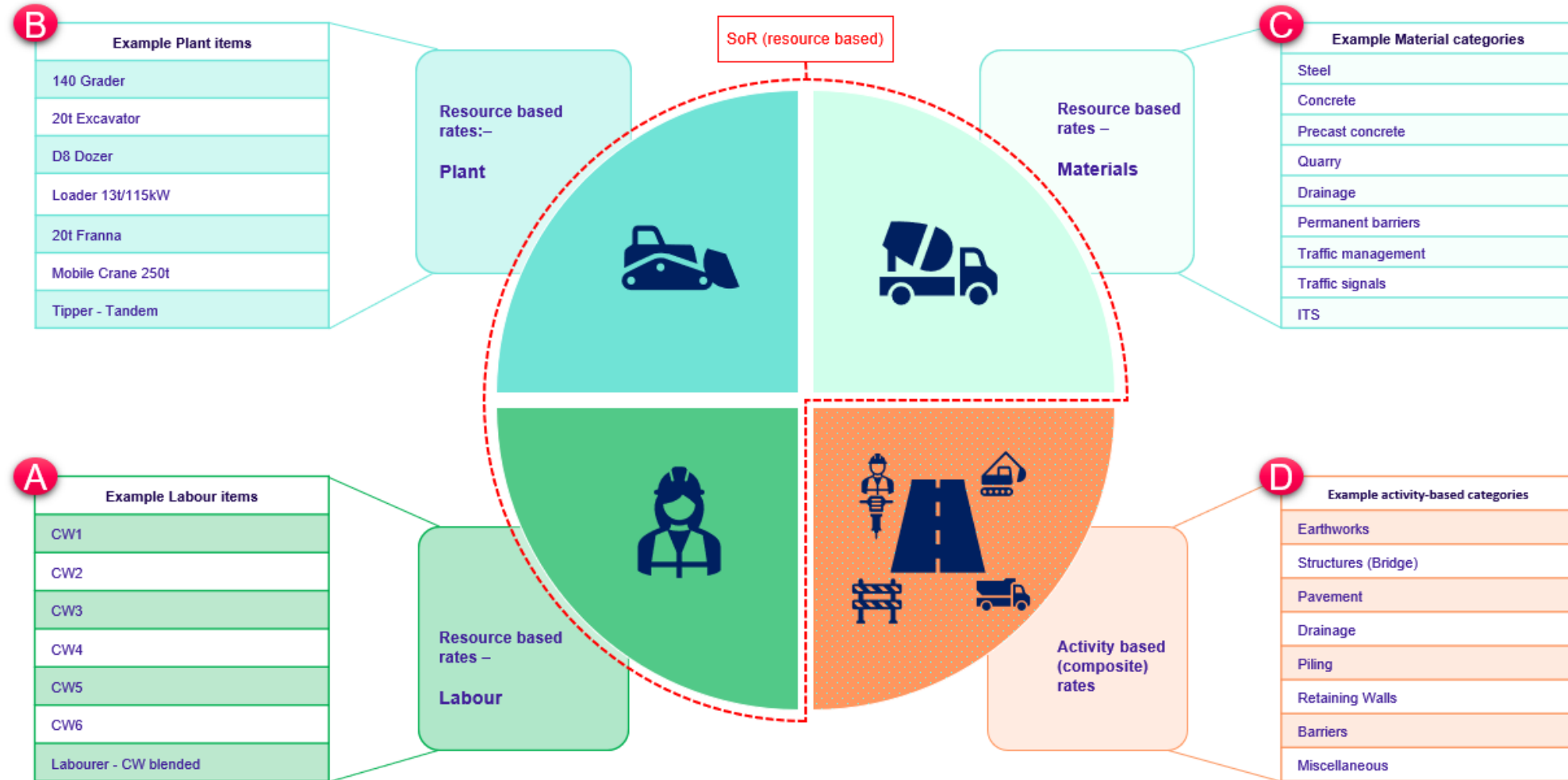
- UO Register

CBS Structure

- CBS Coding List

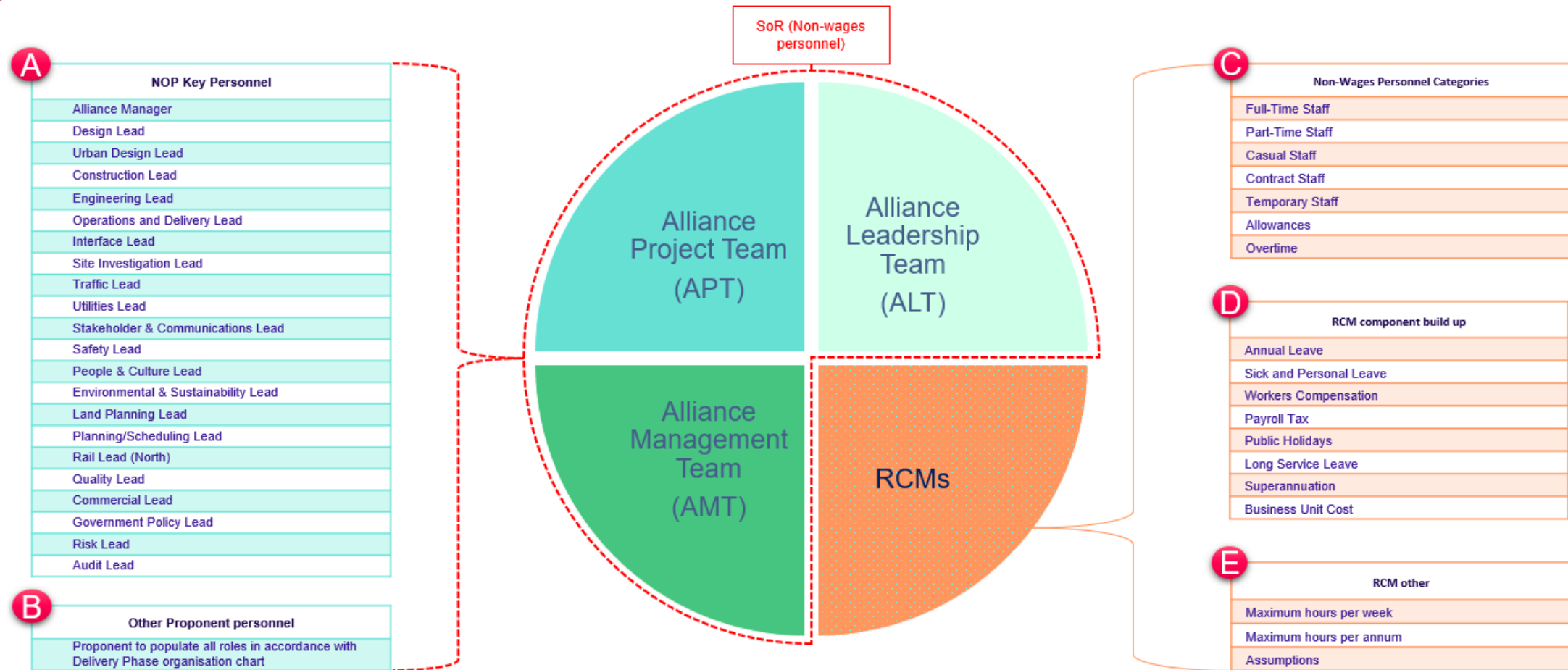
TOC Workbook

Direct Cost rates

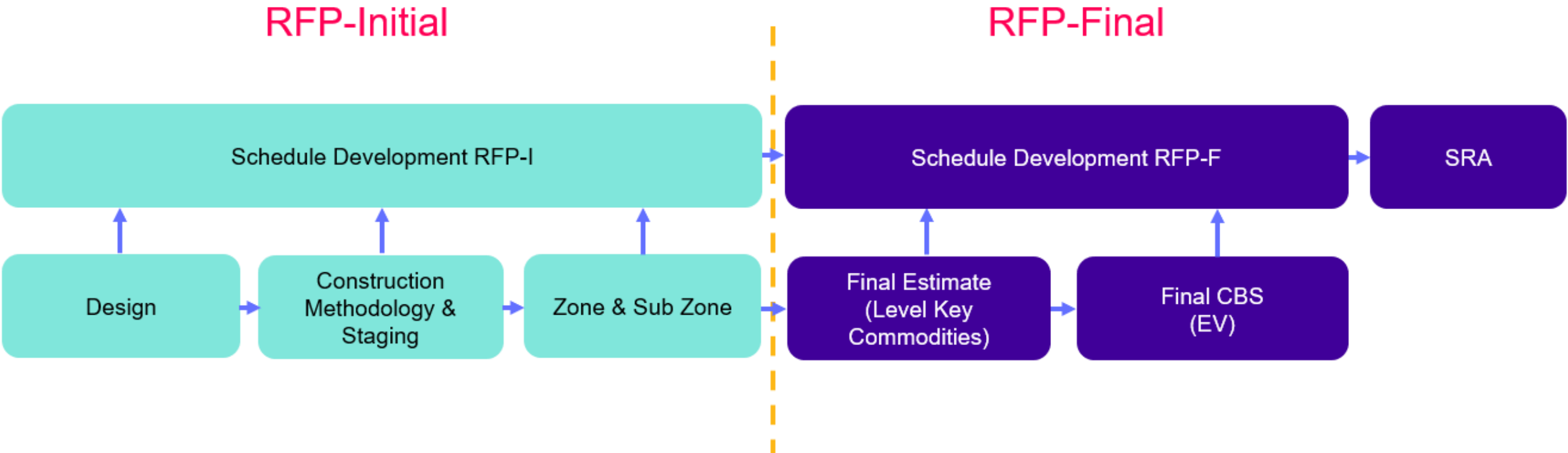


TOC Workbook

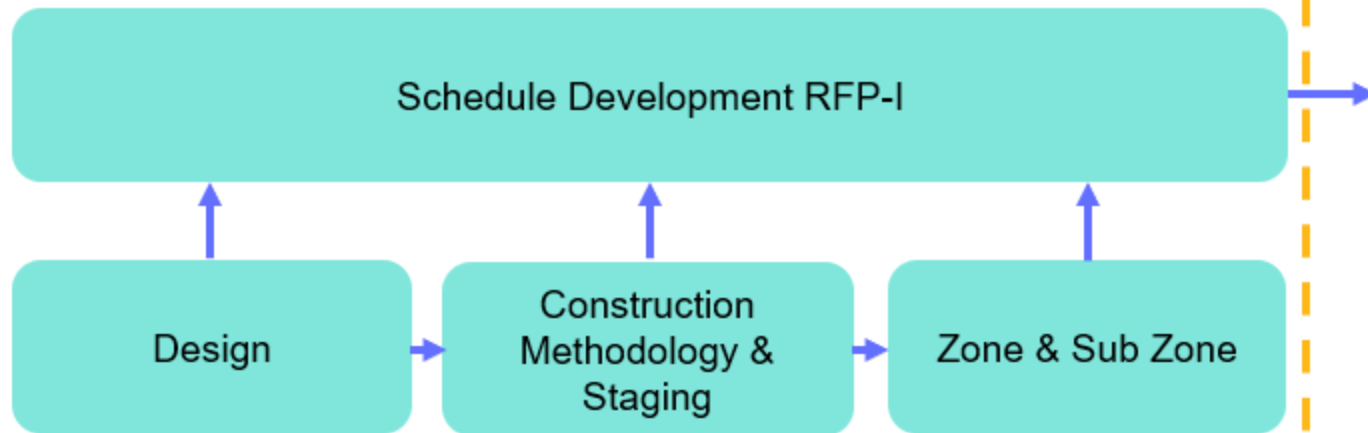
Indirect Cost rates



Overview Schedule Development



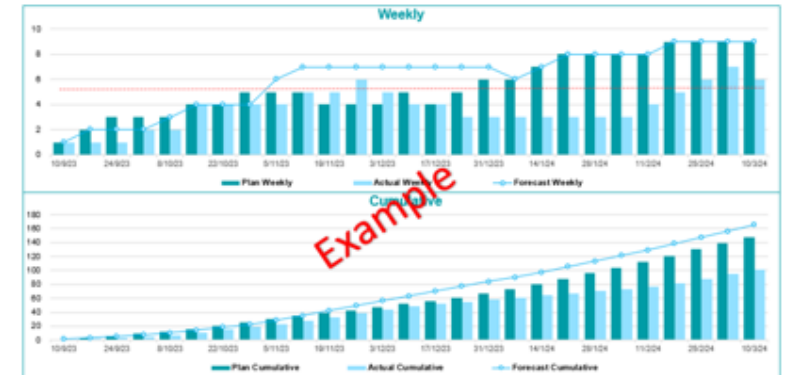
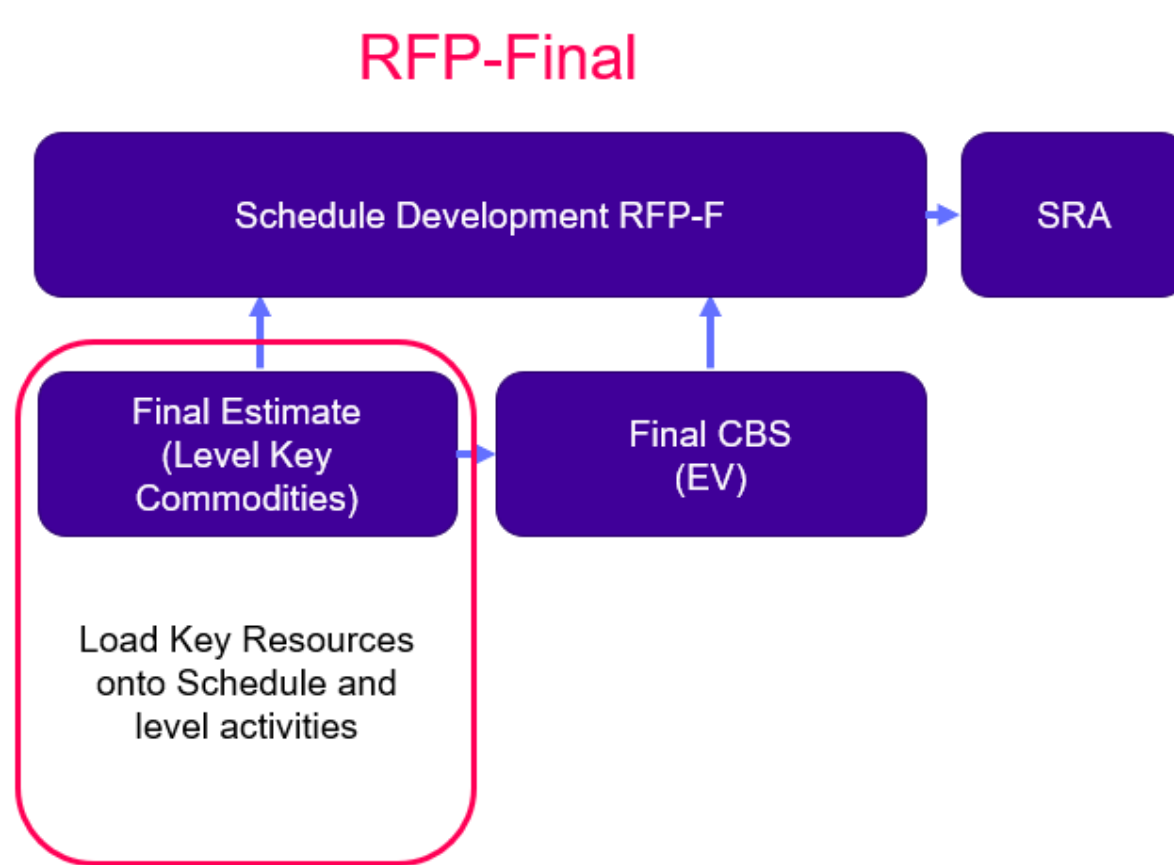
RFP-Initial



- Schedule (Working Copy)
- Basis of Schedule (Working Copy)
- Staging Drawings (Working Copy)

Schedule Development RFP-Final

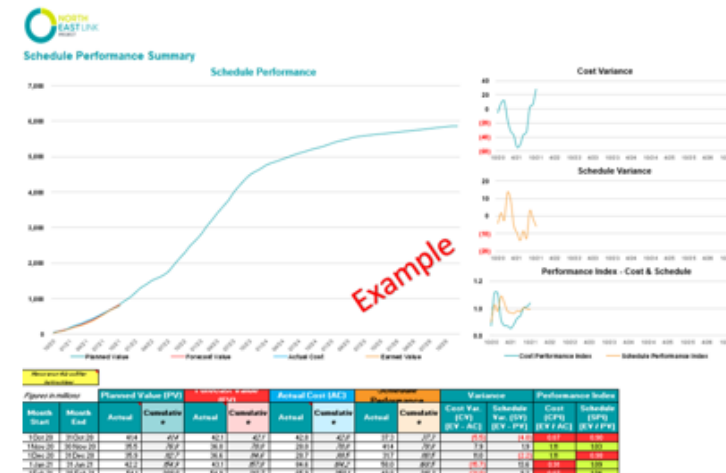
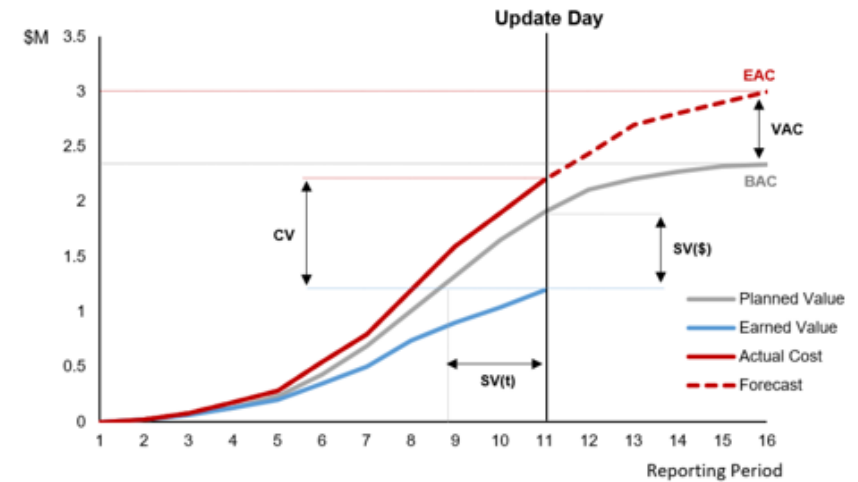
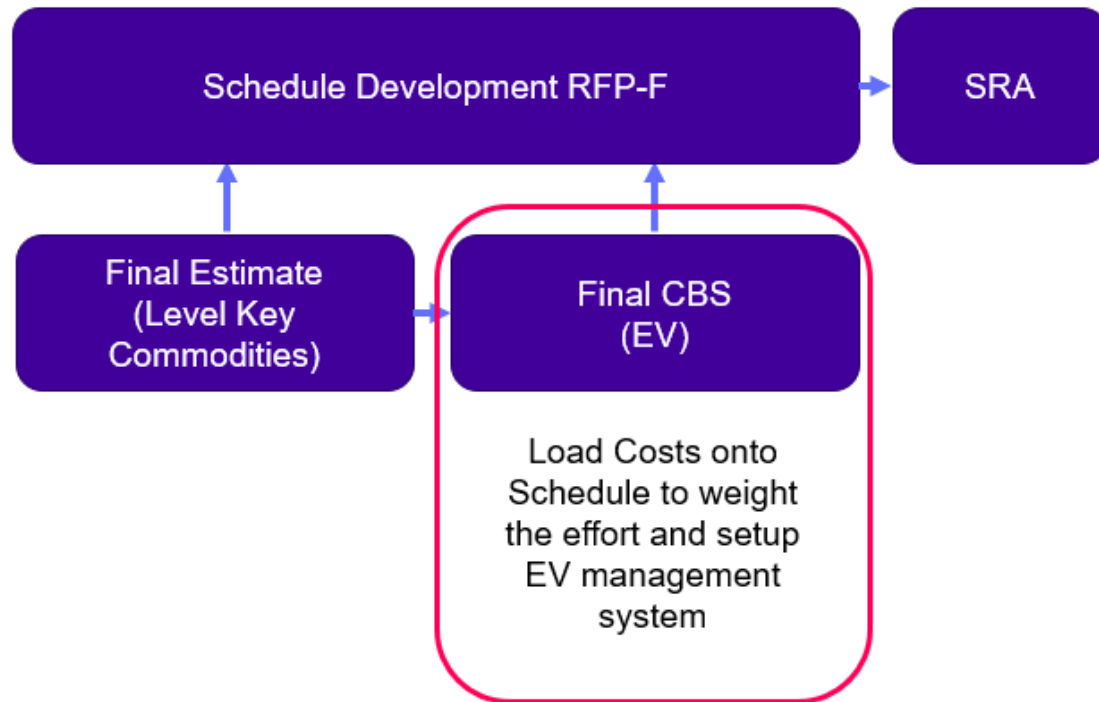
RFP-Final



Week Ending	Period	Sep '23	Sep '23	Sep '23	Oct '23	Oct '23	Oct '23	Oct '23	Oct '23	Nov '23	Nov '23	Nov '23	Nov '23	Nov '23	Dec '23	Dec '23	Dec '23
	10	1	1	1	2	2	4	22	4	5	5	5	5	26	5	4	4
	17	2	3	5	7	11	15	19	23	28	33	39	44	48	52	56	60
	24	3	5	9	12	16	20	25	30	35	39	43	47	51	55	59	63
	1	2	3	5	7	11	15	20	25	30	35	39	43	47	51	55	59
	8	3	5	9	12	16	20	25	30	35	39	43	47	51	55	59	63
	15	5	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79

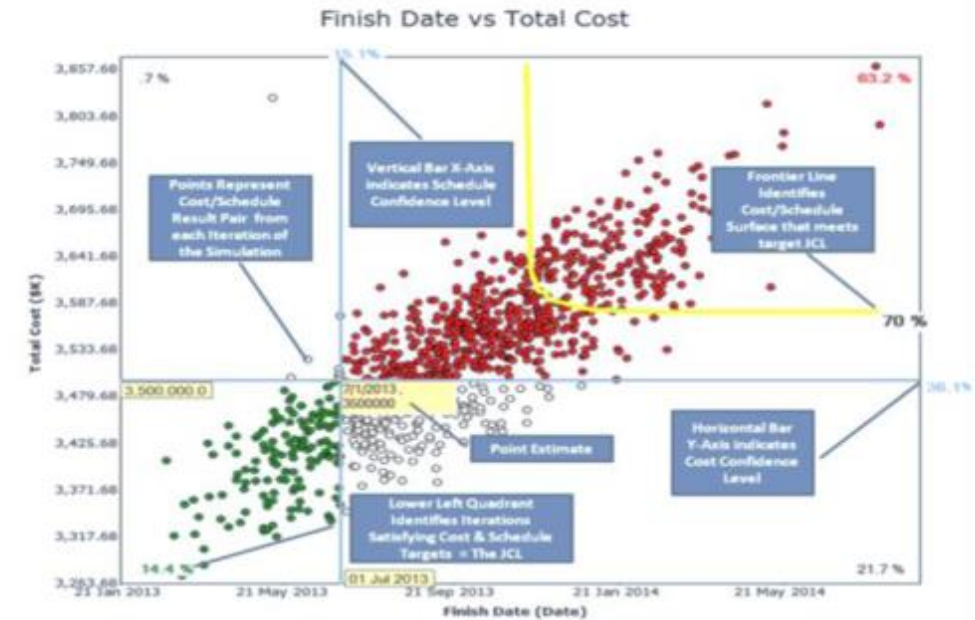
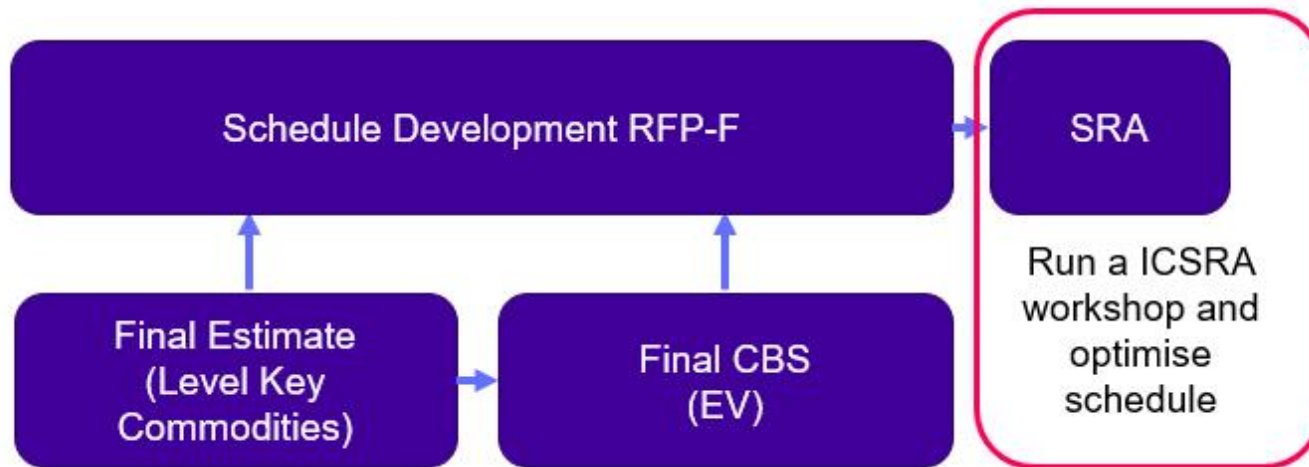
Schedule Development RFP-Final

RFP-Final



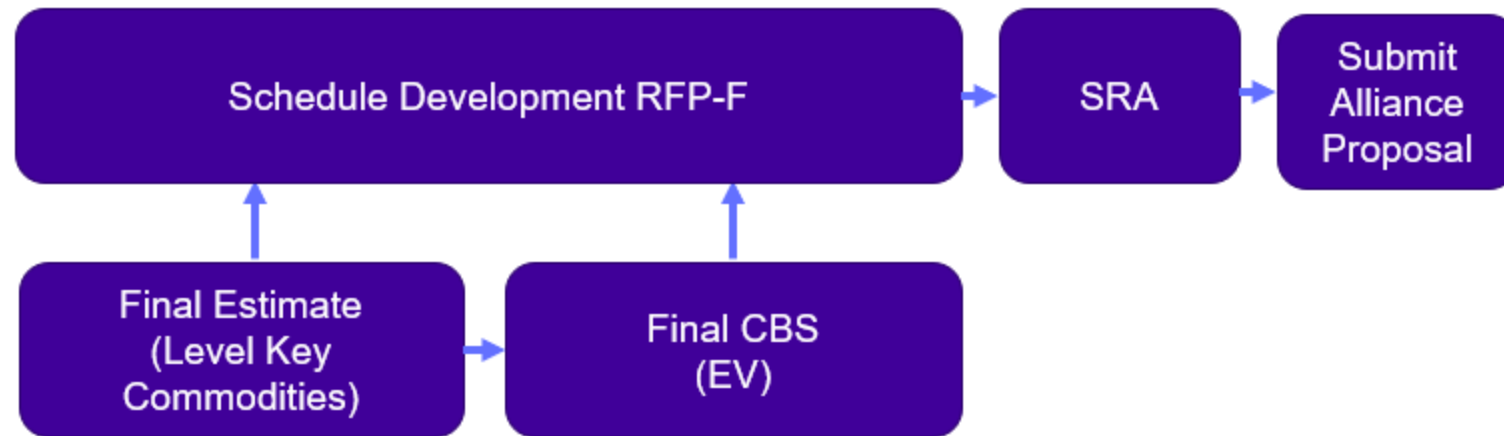
Schedule Development RFP-Final

RFP-Final



Schedule Development RFP-Final

RFP-Final



- Schedule
- Basis of Schedule
- Staging Drawings
- EV Management Tools
- Key Resources (Histograms)
- ICSRA Results
- Project Controls Management Plan (PRS-F1)

Requirements for Successful Approach

- Gain support from the organisation and stakeholders for the proposed approach.
- Ensure the Project Owner people, processes and technology are in place and operational. This includes developing the approach and implementing it to prove the concept.
- Brief the market at the earliest opportunity of your intentions and planned approach, to ensure they do not progress down a path of no return.
- Provide guidance in early procurement phases such as Expression of Interest (EOI) for the planned approach – you must continually reinforce your intentions to prevent them reverting to the status quo.
- Ensure all requirements are inserted into the Contractual documentation, including technical specifications and reporting requirements.
- Develop templates for the proponents to complete as a part of their tender response, issue these with updated guidance for each tender phase.
- Depending on the nature of the contract, you may also insert resources or hold guidance / briefing sessions to assist with compliance of the response.



THANK YOU

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