Major Projects 2023
Roads and Maritime Services

Nepean River Bridge April 2018
Jeff McCarthy
Executive Director Technical and Project Services
Roads and Maritime Services
The big picture - transport ‘mega’ projects fuel the infrastructure ‘wave’ in Australia

Mega projects = over $2 billion

Source: BIS Oxford Economics 2018. Based on projects with over $2 billion in construction. Solid shading is roads. Dotted is rail.
60% are road ‘mega’ projects

NSW mega projects are in flight, Victoria ramping up

$ Billion (in FY16 constant prices) Forecast

Source: BIS Oxford Economics 2018. Chart is based on projects with over $2 billion in construction work done.
Not just mega projects - NSW continues to lead in roads

The NSW ‘Wave’ is peaking – at least 5 years of investment at current levels

Over the two years to FY17, total road construction increased by 21%.

75% growth in construction coming from NSW road construction.

Source: BIS Oxford Economics 2018
Our major project spend has lifted 160% over 4 years

- WestConnex and Rozelle
- F6 Extension Stage 1 (Planning)
- Western Harbour Tunnel and Beaches Link (Planning and Preconstruction)
- Sydney Gateway
- Pacific Highway
- Roads to Support Western Sydney Airport at Badgerys Creek
- Princes Highway
- Established Sydney Roads
- Easing Sydney’s Congestion
- Western Sydney Growth Roads
- Central Coast Roads
- Regional NSW Major Road Upgrades
- Hunter Roads
- Newell Highway
- New England Highway
- Bridges for the Bush
- Sydney Airport Area Road Upgrades
- Great Western Highway and Bells Line of Road
- Other Major Programs
- Other Projects

Excludes NorthConnex and construction funding M4 to M5. Excludes maintenance Capex.
Excluding Sydney motorways, NSW roads regional spend dominates

Sydney

Regional

Financial Year

$ million


$0 $500 $1,000 $1,500 $2,000 $2,500

$ million

Projects 2018 Presentation

R M S
## Construction contracts awarded in FY18

31 major projects, $3.1 billion contract value, 87% within 1 quarter of forward work plan dates

<table>
<thead>
<tr>
<th>Project</th>
<th>Contract award</th>
<th>Awarded within 1 quarter of target date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woolgoolga to Ballina - Bridge Construction - Maclean to Devils Pulpit - Floodplain Bridges</td>
<td>04-Jul-17</td>
<td></td>
</tr>
<tr>
<td>Woolgoolga to Ballina - Bridge Construction - Glenugie Upgrade to Tyndale - Bridge Structures</td>
<td>04-Jul-17</td>
<td></td>
</tr>
<tr>
<td>Woolgoolga to Ballina - Bridge Construction - Glenugie Upgrade to Tyndale - Structures &amp; Shark Creek Bridge</td>
<td>14-Jul-17</td>
<td></td>
</tr>
<tr>
<td>Woolgoolga to Ballina - Main Civil Works - Section 4 - Tyndale to Maclean</td>
<td>20-Jul-17</td>
<td></td>
</tr>
<tr>
<td>Woolgoolga to Ballina - Bridge Construction - Richmond River to Coolgardie Road - Bridge Structures</td>
<td>26-Jul-17</td>
<td></td>
</tr>
<tr>
<td>Woolgoolga to Ballina - Integrated Works - Sections 10 and 11 - Richmond River to Ballina Bypass</td>
<td>11-Aug-17</td>
<td></td>
</tr>
<tr>
<td>Woolgoolga to Ballina - Main Civil Works - Section 3 - Glenugie Upgrade to Tyndale Gocup Road</td>
<td>24-Aug-17</td>
<td></td>
</tr>
<tr>
<td>Woolgoolga to Ballina - Main Civil Works - Sections 7, 8 and 9 - Devils Pulpit Upgrade to Richmond River Ellerton Drive Extension</td>
<td>31-Aug-17</td>
<td></td>
</tr>
<tr>
<td>Woolgoolga to Ballina - Main Civil Works - Section 6 - Iluka Road to Devils Pulpit Upgrade</td>
<td>01-Sep-17</td>
<td></td>
</tr>
<tr>
<td>M1 Pacific Motorway Upgrade - Karingo to Somersby</td>
<td>01-Nov-17</td>
<td></td>
</tr>
<tr>
<td>M1 Pacific Motorway - Intersection Upgrade at Weakleys Drive and John Renshaw Drive</td>
<td>07-Dec-17</td>
<td></td>
</tr>
<tr>
<td>Reconfiguration of Croom Regional Sporting Complex</td>
<td>15-Jan-18</td>
<td></td>
</tr>
<tr>
<td>Sydney Harbour Bridge Step Free Access - Pedestrian Lifts Managing Contract</td>
<td>20-Feb-18</td>
<td></td>
</tr>
<tr>
<td>HW9 New England Highway Upgrade at Bolivia Hill</td>
<td>13-Mar-18</td>
<td></td>
</tr>
<tr>
<td>A15 New England Highway Bypass of Scone</td>
<td>14-Mar-18</td>
<td></td>
</tr>
<tr>
<td>M5 - Belmore Road Interchange Upgrade</td>
<td>26-Mar-18</td>
<td></td>
</tr>
<tr>
<td>Princes Highway Upgrade between Berry and Bomaderry</td>
<td>11-May-18</td>
<td></td>
</tr>
<tr>
<td>MR177 - Campbelltown Road Upgrade from East Town Centre Road to new Macdonald Road Bardia</td>
<td>15-May-18</td>
<td></td>
</tr>
<tr>
<td>Woolgoolga to Ballina - Flexible Pavements - Sections 10 and 11 - Richmond River to Ballina Bypass</td>
<td>22-May-18</td>
<td></td>
</tr>
<tr>
<td>MR658 - O’Riordan Street Widening, Mascot</td>
<td>24-May-18</td>
<td></td>
</tr>
<tr>
<td>MR182 Windsor Bridge Replacement Project</td>
<td>28-May-18</td>
<td></td>
</tr>
<tr>
<td>Design and Construction of the Batemans Bay Bridge Project</td>
<td>02-Jun-18</td>
<td></td>
</tr>
<tr>
<td>Albion Park Rail Bypass - Design and Construction</td>
<td>06-Jun-18</td>
<td></td>
</tr>
<tr>
<td>Woolgoolga to Ballina - Rigid Pavements - Sections 3 and 4 - Glenugie Upgrade to Maclean</td>
<td>29-Jun-18</td>
<td></td>
</tr>
<tr>
<td>Gee Gee Bridge Replacement</td>
<td>29-Jun-18</td>
<td></td>
</tr>
<tr>
<td>Princes Highway between President Avenue and the Kingsway</td>
<td>08-Dec-17</td>
<td></td>
</tr>
<tr>
<td>BP1P Macquarie Park Bus Priority and Capacity Improvement - Stage 1</td>
<td>15-Dec-17</td>
<td></td>
</tr>
<tr>
<td>M4 Smart Motorway Construction of Stage 2</td>
<td>04-Apr-18</td>
<td></td>
</tr>
<tr>
<td>M4 Smart Motorway Construction of Stage 3</td>
<td>04-Apr-18</td>
<td></td>
</tr>
</tbody>
</table>
Major contracts awarded – last 3 years

Average of 23 contracts per annum and $100 million per contract

- Major contracts awarded – last 3 years
  - Average of 23 contracts per annum and $100 million per contract

  **Contracts Awarded**
  - FY 15/16: 20
  - FY 16/17: 15
  - FY 17/18: 30
  - FY 18/19 Estimated: 25

  **Awarded Value ($b)**
  - FY 15/16: $1.1b
  - FY 16/17: $1.5b
  - FY 17/18: $3.1b
  - FY 18/19 Estimated: $3.4b

Excludes NorthConnex and construction funding M4 to M5
Contracts awarded by contract size

<table>
<thead>
<tr>
<th>Contract Size</th>
<th>FY 15/16</th>
<th>FY 16/17</th>
<th>FY 17/18</th>
<th>FY 18/19 Estimated</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; $100m</td>
<td>25</td>
<td>15</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>$100m - $200m</td>
<td>10</td>
<td>10</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>&gt; $200m</td>
<td>5</td>
<td>10</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

- 31 projects in FY 2018
- 22 projects in FY 2019
Our portfolio of partners is diverse
For both construction and professional services firms

**Professional services ‘in flight’ value $800 million**
(contracts awarded over $1 million)

- 147 contracts
- 56 organisations

**Construction ‘in flight’ value $8.4 billion**
(contracts awarded over $10 million)

- 61 contracts
- 33 organisations

Roads & Maritime Services
**Major projects performance against cost and time**

NSW Treasury Budget papers – 44 projects ‘open to traffic’ over 4 years

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### Project expenditure vs announced cost

<table>
<thead>
<tr>
<th>Project Completion Financial Year</th>
<th>Announced Cost (NSW Treasury Budget Paper)</th>
<th>Project Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014/15</td>
<td>$1.5 billion</td>
<td>$1.2 billion</td>
</tr>
<tr>
<td>2015/16</td>
<td>$1.5 billion</td>
<td>$1.2 billion</td>
</tr>
<tr>
<td>2016/17</td>
<td>$2.0 billion</td>
<td>$1.8 billion</td>
</tr>
<tr>
<td>2017/18</td>
<td>$3.0 billion</td>
<td>$2.5 billion</td>
</tr>
</tbody>
</table>

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### Project completion vs announced timing

<table>
<thead>
<tr>
<th>Project Completion Financial Year</th>
<th>Announced to Complete (NSW Treasury Budget Paper)</th>
<th>Completed in Announced Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014/15</td>
<td>8 projects</td>
<td>8 projects</td>
</tr>
<tr>
<td>2015/16</td>
<td>9 projects</td>
<td>9 projects</td>
</tr>
<tr>
<td>2016/17</td>
<td>9 projects</td>
<td>7 projects</td>
</tr>
<tr>
<td>2017/18</td>
<td>20 projects</td>
<td>20 projects</td>
</tr>
</tbody>
</table>

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Roads & Maritime Services
You said, we did
In response to your feedback from research carried out in 2015

- New contractor performance system developed
  - More objective
  - Requires discussion at PM level
  - Rollout commenced early 2018
- Investment in project management capability
  - 250+ project managers trained
  - Driving Project Leadership pilot underway
- Procurement efficiency improved
- Increased engagement and partnering with industry
  - Major Projects forum, visibility of forward work program, SafeR forums, regional forums, ‘Shark tank’ and CE forums
- Our ask ……… worker safety

Contractor performance April – June 2018
## Keeping our 10,000 workers safe

Data collected from all partners across all major projects – “SafeR”

<table>
<thead>
<tr>
<th>Project SafeR</th>
<th>SafeR 1</th>
<th>SafeR 2</th>
<th>SafeR 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Period</td>
<td>9 months to end March 2016</td>
<td>15 months to end June 2017</td>
<td>11 months to end May 2018</td>
<td>35 months to end May 2018 (started 1 July 2015)</td>
</tr>
<tr>
<td>Hours worked</td>
<td>10 million</td>
<td>12 million</td>
<td>8.9 million</td>
<td>30.9 million</td>
</tr>
<tr>
<td>Industry partners</td>
<td>19</td>
<td>25</td>
<td>26</td>
<td>32</td>
</tr>
<tr>
<td>Projects</td>
<td>39</td>
<td>54</td>
<td>44</td>
<td>78</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data collected</th>
<th>SafeR 1</th>
<th>SafeR 2</th>
<th>SafeR 3</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTIFR*</td>
<td>0.97</td>
<td>0.66</td>
<td>1.12</td>
<td>0.91</td>
</tr>
<tr>
<td>TRIFR*</td>
<td>8.6</td>
<td>6.8</td>
<td>12.3</td>
<td>9.0</td>
</tr>
<tr>
<td>Hazards and near misses*</td>
<td>144</td>
<td>237</td>
<td>623</td>
<td>318</td>
</tr>
</tbody>
</table>

* Per million hours worked

Excludes Motorways
“SafeR” round 3 data – 9 million hours, 44 projects

Mobile Plant continues to present risks

![Graph showing hazard summary for July 2017 to May 2018 (inclusive) with categories: Hazard, Near Miss, Minor Injury, Medical Treatment, Lost Time.]

- Hazard: 02. Working near Mobile Plant
- Near Miss: 16. Fall/Trip
- Minor Injury: 15. Uncontrolled Objects
- Medical Treatment: 17. Manual Task
- Lost Time: 05. Road Collision
- 09. Exposure to injury
- 12. Failure of vehicle
- 01. Working near traffic
- 14. Contact with Sharp Objects
- 03. Working near utilities

Excludes Motorways
“SafeR” round 3 data – 26 industry partners

WHS lead indicators (hazards and near miss) by industry partner

Frequency rate by hazardous event

July 2017 – May 2018 (inclusive)

Excludes Motorways
Peak construction: keeping our 10,000 workers safe

Industry leaders have given their commitment to share WHS lead indicators across projects and organisations

- Three CEO safety forums held
- Two “SafeR” forums attended by 60+ senior construction and WHS leads
- In partnership with industry, multiple trials underway to improve safety on our sites
- Analysing and sharing data will continue
- **Mobile Plant - Wearable technology trial was recently extended:**
  - The Northern Road 3
  - The Northern Road 4
  - Scone bypass
  - Berry to Bomaderry upgrade
- **SafeR 3 is coming soon**
There are challenges - industry capacity and capability is stretched across all disciplines

<table>
<thead>
<tr>
<th>Job Function</th>
<th>Job Family</th>
<th>Project Management (Particularly tender phase)</th>
<th>Engineering</th>
<th>Support Services</th>
<th>Frontline Supervision</th>
<th>Operators</th>
<th>Civil Sector</th>
<th>Trades Workers</th>
<th>Rail Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Director</td>
<td>Project Director</td>
<td>Project/Site Engineer On-site</td>
<td>Commercial</td>
<td>General Superintendent</td>
<td>Truck Driver</td>
<td>Pipe Layer</td>
<td>Electrical / Mechanical</td>
<td>Rail Electrical</td>
<td></td>
</tr>
<tr>
<td>Operations Manager</td>
<td>Operations Manager</td>
<td>Design</td>
<td>Human Resources</td>
<td>Superintendent</td>
<td>Tunneling Machine Operator</td>
<td>Tunnel Contractor</td>
<td>Carpenter / Joiner</td>
<td>Track</td>
<td></td>
</tr>
<tr>
<td>Construction Manager</td>
<td>Construction Manager</td>
<td>Spatial Systems (Surveys) On-site</td>
<td>Environment &amp; Sustainability</td>
<td>General Foreman</td>
<td>Piling Machine Operator</td>
<td>Scaffold</td>
<td>Boiler Maker</td>
<td>Safety</td>
<td></td>
</tr>
<tr>
<td>Project Manager</td>
<td>Project Manager</td>
<td>Quality</td>
<td>Safety &amp; Wellbeing</td>
<td>General Foreman</td>
<td>Plant Operator – Earth Moving / Load Shifting</td>
<td>General Labourer</td>
<td>Plasterer</td>
<td>EY specifies structural and pre-cast concrete</td>
<td></td>
</tr>
<tr>
<td>Senior Project Engineer</td>
<td>Senior Project Engineer</td>
<td>Planning</td>
<td>Community &amp; Stakeholder Relations</td>
<td>Leading Hand</td>
<td>Crane Operator</td>
<td>Structures</td>
<td>Fitters and Plumbers</td>
<td>EY additionally identifies services relocation and utility network resources, not covered in our industry job family framework</td>
<td></td>
</tr>
<tr>
<td>Drafting Technician</td>
<td>Drafting Technician</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Legend: 
- Shortage identified in job family
- Shortage identified for job function
- Shortage identified for sub function

Adapted from BIS Report- NSW Construction Delivery Assessment & EY Report- Infrastructure & Rail Pipeline Review, 16 June 2017
NSW Government – Construction sector 10 point plan
Released June 2018

- Point 9 – Improve skills and training
  - Work with industry to identify, measure and report on skills gaps
  - Mandate application of the Infrastructure Skills Legacy Program (ISLP) in all major Government construction contracts
  - Reward contractors who exceed thresholds
Infrastructure skills legacy program (ISLP)

- NSW Government initiative in consultation with industry
- Unlocks the potential of the NSW Government record 73.3 billion infrastructure investment to
  - boost the number of skilled construction workers
  - Create fresh pathways to employment across the state
- ISLP’s training and employment targets:
  - Allow existing workers to learn new skills on the job
  - Increase representation of young people, Aboriginal and Torres Strait Islander people and women in construction
  - Ensure workers from surrounding areas are targeted for training and employment to help address existing skills shortages across NSW
Partnership with industry
Training and Employment Hubs – The Northern Road (Stage 3)

THE NORTHERN ROAD EMPLOYMENT AND TRAINING HUB
The Northern Road Employment and Training Hub (TNRIHub) is connecting local jobseekers with training, upskilling, on the job experience and employment. The joint initiative between Roads and Maritime Services, Lendlease Industry, vocational education and training and non-government groups will run until 2020 as part of construction work on The Northern Road upgrade – a component of the $5.6 billion Western Sydney Infrastructure Plan.

TNRIHub is providing “on the job” construction industry training and jobs for the long-term unemployed, young people under the age of 25, women in construction, refugees and Aboriginal and Torres Strait Islanders. So far 32 people from the target groups have been employed on the project with more expected as the project continues. Roads and Maritime, with Industry, will launch three more Employment and Training hubs in 2018 and 2019.

- Partnering with industry
- On the job construction training
- Within project site

ISLP categories
- Refugees
- Aboriginal and Torres Strait Islander
- Women in Construction
- Under 25’s
- Apprentices and trainees
- Apprentices and trainees
- Roads & Maritime Services
Our forward work plan
Major Projects 2023
Our forward work forecast

$21.3 billion across next five years – includes motorways

$10 billion actual spend over the past 3 years
In summary

• The NSW roads infrastructure spend is reaching ‘peak’
• While the ‘wave’ has plateaued, we have 5+ years of sustained activity ahead
• WHS is a non compete zone – we have agreed to share data and learnings
• Together we have achieved much so far….however, industry capacity and capability are a challenge – with no easy fix
• We continue to be transparent and accessible to our partners

… and together we are successfully delivering the largest infrastructure investment in the state’s history
Camilla Drover
Executive Director Motorways
Roads and Maritime Services
About Motorways

Purpose
We manage Sydney’s motorways network end to end
The Motorways division oversees the development, delivery and operations of motorways and tollways with valued partners.

Vision
To create a faster, easier, safer and more reliable motorways network – whether travelling by private vehicle or public transport.

Our network

Our delivery and development projects

Tolling business

Sydney Harbour Bridge

WestConnex

New M4
New M5
M4–M5 Link
Rozelle Interchange and Iron Cove Link
Western Harbour Tunnel and Beaches Link
Sydney Gateway
F6 Extension Stage 1
Future Transport 2056

• A 40 year integrated transport vision for NSW
• Evolution of the 2012 Long Term Transport Master Plan
• Vision for Greater Sydney - a metropolis of three cities, where people can access the jobs, education and services they need within 30 minutes by public or active transport.
Future Transport and Motorways

Our role

- Completing the gaps in the Motorway Network
- Ensuring seamless integration with the arterial network
- Enabling motorists, public transport and freight to cross Sydney, bypassing the CBD, avoiding dozens of traffic lights
- Connecting motorists with transport hubs
- Returning local streets to local communities
- Creating more opportunities for active transport …. to deliver on the Future Transport three cities vision
our existing concession network
NorthConnex: $3 billion

In construction

- Twin tunnel (9km) linking M1 Pacific Motorway at Wahroonga to the Hills M2 Motorway at West Pennant Hills
- 15 minute travel time saving
- 21 sets of traffic lights bypassed on Pennant Hills Road
- Newcastle to Melbourne with no traffic lights
- 5,000 trucks off Pennant Hills Road

Project status

- ProjectCo: NorthConnex Company
- D & C: Lendlease Bouygues Joint Venture
WestConnex: $16.8 billion

In construction

New M4 Tunnel (Stage 1B)
- 5.5 km tunnel
- Extends M4 between Homebush and Haberfield

New M5 (Stage 2)
- Twin 9 km tunnels
- Provides connections to Alexandria, Mascot & Sydney Gateway

M4-M5 Link Tunnels (Stage 3A)
Twin 7.5 km tunnels connecting New M4 & New M5 motorways

Project status
- ProjectCo – Sydney Motorway Corporation
- Stage 1B – CPB, Samsung C&T Corporation, John Holland JV
- Stage 2 – CPB Contractors, Dragados & Samsung JV
- Stage 3A – Lendlease Samsung Bouygues JV
WestConnex: M4 – M5 Link Rozelle Interchange and Iron Cove Link

In procurement

A new underground motorway interchange at Rozelle providing important connectivity to the City West Link and an underground bypass of Victoria Road between Iron Cove Bridge and Anzac Bridge.

Project status
- D&C contract  Awarded end 2018
- Completion  End 2023

Procurement status
- Highly interactive engagement with contractors
- Threshold set at outset and met through interim submissions
- Bid costs of $20m subject to compliant tender
- A first principles approach to risk allocation
- 2 bidders in stage 2 of CCC
Western Harbour Tunnel

- 6.5km tunnel from Rozelle under Sydney Harbour to the Warringah Freeway
- Delivers new crossing of Sydney Harbour and bypass of Sydney CBD

Warringah Freeway Upgrade

- Upgrade between Sydney Harbour Bridge and Naremburn
- Free-flowing continuous bus lane from Miller St to Sydney Harbour Bridge

Beaches Link

- 7.2 km tunnel from Northern Beaches, connecting with Warringah & Gore Hill Freeways
- Improves travel times with new connections to St Leonards and Macquarie Park

Project Status

- Concept design released: Mar 2017
- SEARS received from DPE: Dec 2017
- Proposed Reference Design announced: Jul 2018
- Community consultation closes: Nov 2018
- Construction commences: 2020
- Completion: 2026
F6 Extension Stage 1

In development

- The F6 Extension Stage 1 connects from the New M5 Motorway at Arncliffe to President Avenue at Kogarah
- The connection to the New M5 is 75 metres underground
- Provision for a future extension south

**Project Status**

- Reference design announcement: Dec 2017
- SEARS received: Jan 2018
- Proposed reference design: Jun 2018
- Community consultation ahead of EIS: Jun / Aug 2018
- Market sounding: Jul 2018
- Procurement: 2019
- Completion: 2024
Sydney Gateway

In development

Will provide an alternative route to enhance connections and reduce travel times to Sydney’s ports. It will also provide improved access to all airport terminals and help cater for increased rail freight.

Road (2 projects)
- The Sydney Gateway Motorway provides an alternative route to the domestic and international airport terminals from the motorway network at St Peters Interchange
- Road enhancements will improve access to and from the T2 and T3 domestic terminals, upgrade existing arterial roads and widen Qantas Drive between Lancastrian Drive and Robey Street

Rail
- Duplicate a three-kilometre section of the Port Botany freight rail line to increase capacity and improve service reliability. Delivered by Australian Rail Track Corporation (ARTC).
Other delivery opportunities

Planning
• F6 Extension sections 1 B&C

General
• Network integration for all projects
• Early works opportunities