



Australian Government

**BUILDING OUR FUTURE**



Aerial view of the new Pacific Highway alignment, north of Deep Creek Road, Nambucca Heads to Urunga project (November 2015)

# Pacific Highway upgrade

Six month report card **July to December 2015**

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# Overview



Sancrox overbridge looking east (December 2015)

**This report provides a progress update on the Pacific Highway upgrade program to 31 December 2015.**

The Pacific Highway connects Sydney and Brisbane, and is a major contributor to Australia's economic activity. The road is a vital piece of the nation's infrastructure and is a key link in the National Land Transport Network.

The Australian and New South Wales governments have committed to completing the Pacific Highway upgrade by 2020.

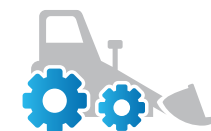
An upgraded Pacific Highway must continue to service the needs of the travelling public and achieve transport efficiencies, while also ensuring ecological sustainability and meeting the needs of the coastal communities that live along the highway.

## Roads and Maritime continued to make excellent progress across the highway upgrade program from July to December 2015:

- The majority of the Tintenbar to Ewingsdale project opened to traffic in December, including the twin St Helena tunnels. Remaining work is expected to be complete early 2016, weather permitting
- Major work started on sections 1 and 2 of the Woolgoolga to Ballina upgrade
- 26 kilometres of the 155 kilometre Woolgoolga to Ballina project is four lane divided highway
- Good progress is being made to prepare the remaining sections of the Woolgoolga to Ballina upgrade for major construction. Soft soil work has started for two out of the four waves at Farlows Lane to Chatsworth Road and Whytes Lane to Pimlico
- Work is well underway on the 105 kilometres of the upgrade between Port Macquarie and Coffs Harbour, with the Sancrox interchange opened to traffic in November.



about **62%** of highway length now four lane divided road

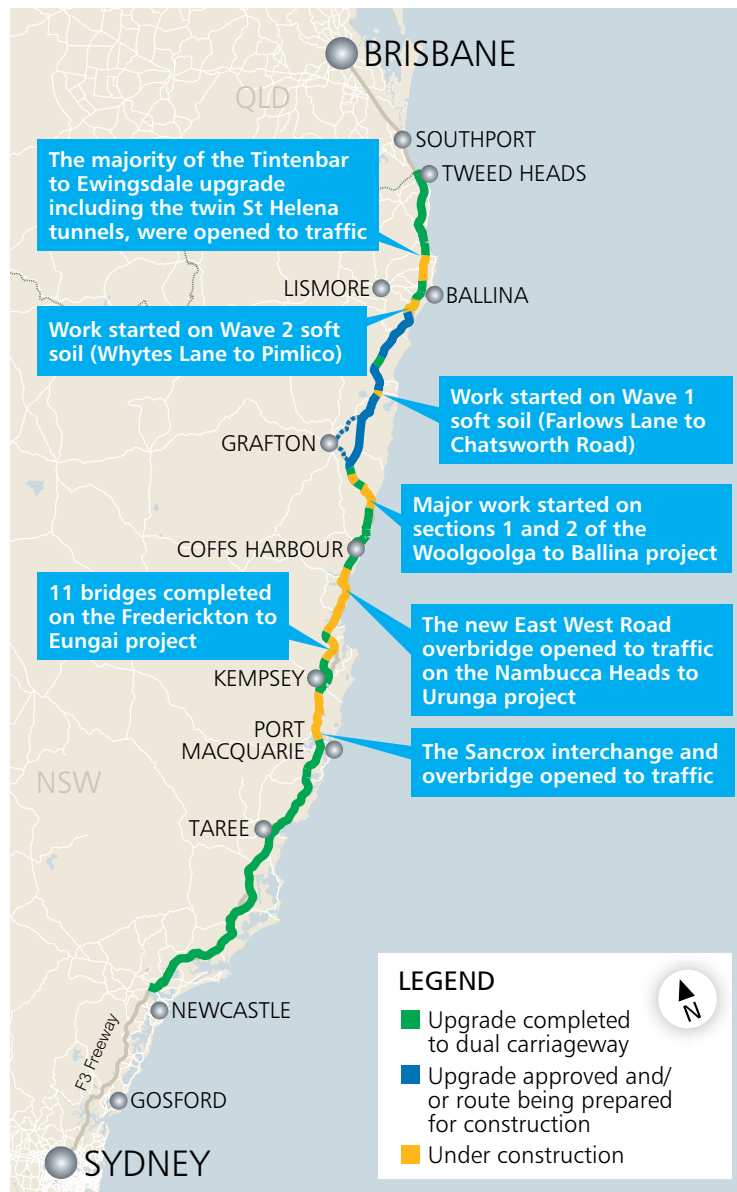


**145 km** of highway being built



Twin St Helena tunnels open to traffic on the Tintenbar to Ewingsdale project (December 2015)

# Current status



**As of 31 December 2015, 408 kilometres of the Pacific Highway upgrade are four lane divided road. The remaining 145 kilometres of the highway still to be upgraded to four lane divided road is being built and will be complete in 2020.**

## Key project milestones achieved during the past six months:

- ✓ The Sancrox interchange and overbridge opened to traffic as part of early work for the Oxley Highway to Kempsey upgrade
- ✓ The new East West Road overbridge opened to traffic on the Nambucca Heads to Urunga project
- ✓ Major work activity started for Wave 1 soft soil (Farlows Lane to Chatsworth Road) and Wave 2 soft soil (Whytes Lane to Pimlico) on the Woolgoolga to Ballina project
- ✓ The majority of the Tintenbar to Ewingsdale upgrade including the twin St Helena tunnels, were opened to traffic.



Girder installation on the Wilson River bridge, Oxley Highway to Kundabung project (December 2015)

# Upgrade outcomes

## Where are we now?

At 31 December 2015:

**408 kilometres** are four lane divided highway – about 62 per cent

**145 kilometres** are being built.

**The remaining sections** of two lane highway are being prepared for major work.

An average of 3400 people per month worked on the Pacific Highway upgrade from July to December 2015.

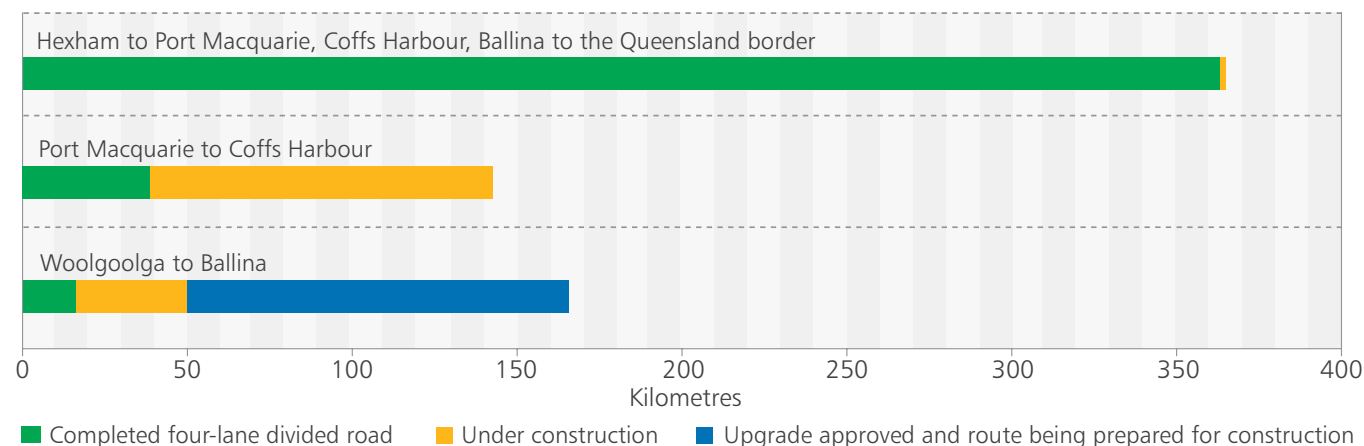
The peak employment period is expected to be during 2016 and 2017 when about 4000 workers are estimated to be employed as a result of the Pacific Highway upgrade.

Roads and Maritime Services and its contractors, wherever possible, use local products and services for infrastructure construction projects.

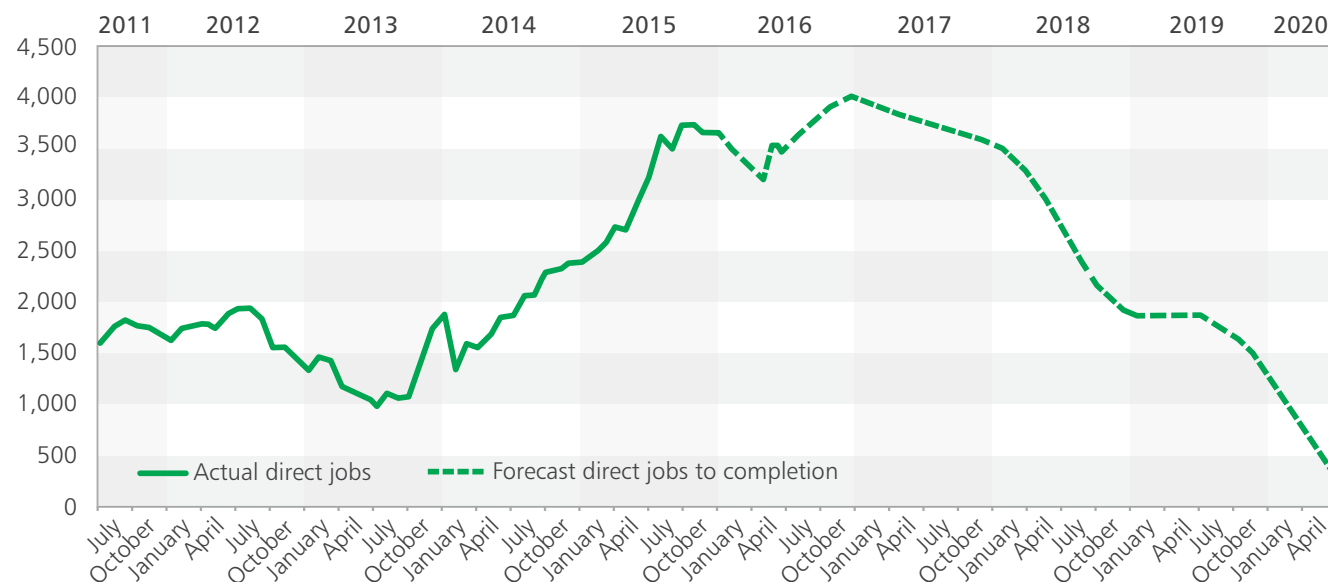
The graph to the right shows actual and predicted direct jobs. Future predictions have been estimated on the basis of 1.98 direct jobs per million dollars budgeted each year and future cash flows. It is anticipated that the number of indirect jobs would be three times the number of direct jobs. This graph is likely to change over time to suit packaging and procurement based on the schedule of work.

The Pacific Highway upgrade has plans in place for all of its construction projects, to encourage Aboriginal employment opportunities, including apprenticeship and traineeship programs. For the last six months of 2015 about 12 per cent of people employed on the Pacific Highway upgrade were Aboriginal.

## Four-lane divided road status



## Direct jobs created by the Pacific Highway upgrade

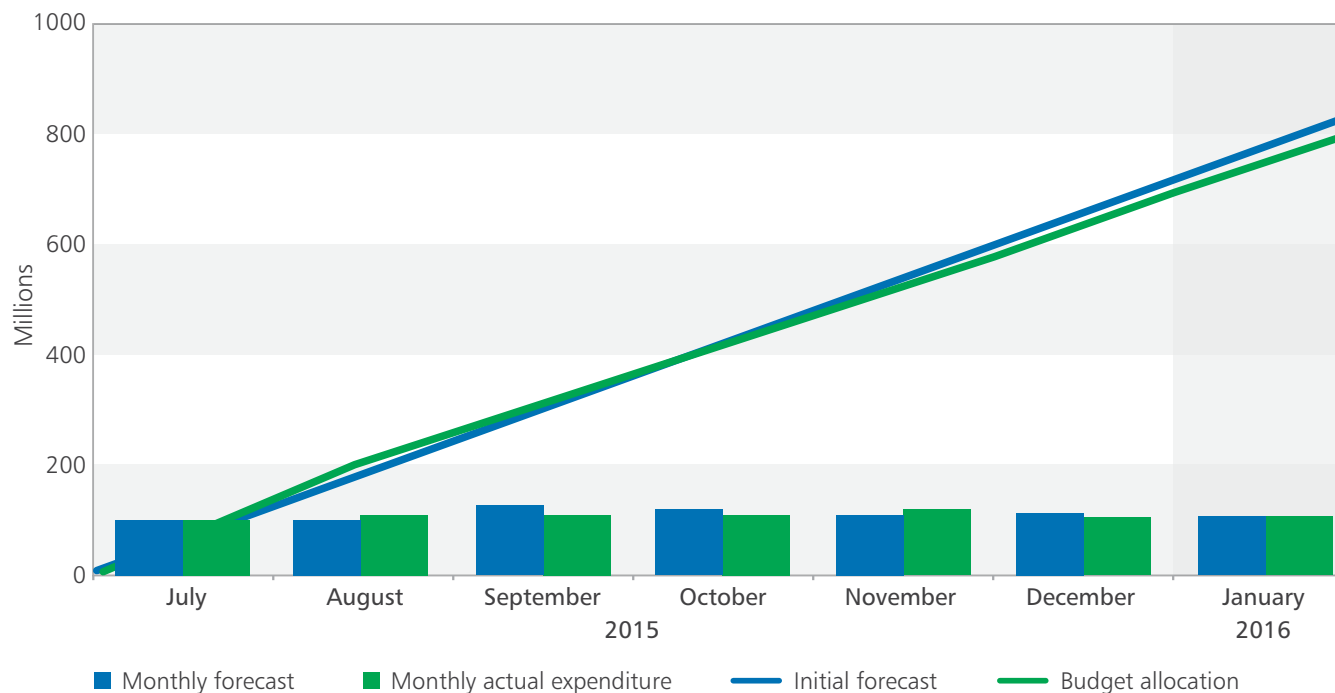


# Upgrade outcomes

## Expenditure update

The total expenditure for the upgrade program for the period July to December 2015 was \$610 million (see graph below). The graph also shows monthly expenditure against forecasts and generally there has been a close match between the two.

**Pacific Highway Program expenditure by month – July to December 2015**



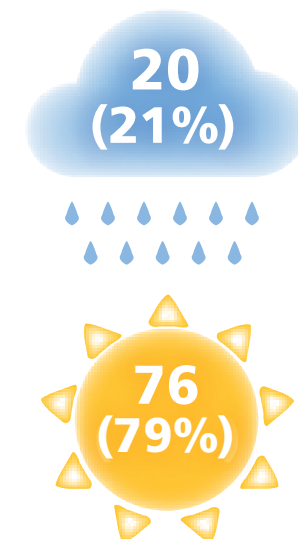
## Wet weather

There was less wet weather in the period July to December 2015, than in the preceding six months.

The Warrell Creek to Nambucca Head's project was the most adversely affected by rain, with over 40 per cent of available working days lost to wet weather in the past six months.

## Average work days – July to December 2015

From 96 available working days



\*Based on average number of work days across all projects under construction.

# Upgrade outcomes

## Crashes

Since the start of the Pacific Highway upgrade, the number of fatal crashes continue to trend downwards. Fatal crashes have halved, down from more than 40 each year to about 20 in recent years. In 2015, 23 people died in 18 fatal crashes. This is comparable with the previous five year average of 19 crashes and 23 fatalities.

## Travel time

Since the start of the Pacific Highway upgrade program in the mid-1990s, travel time between Hexham and the Queensland border has been tracked.

In 2015, Google travel time data was used instead of the manual method used in the past, getting rid of any work health and safety risks previously associated with collecting the data. Google travel time data is relatively easy to collect, analyse,

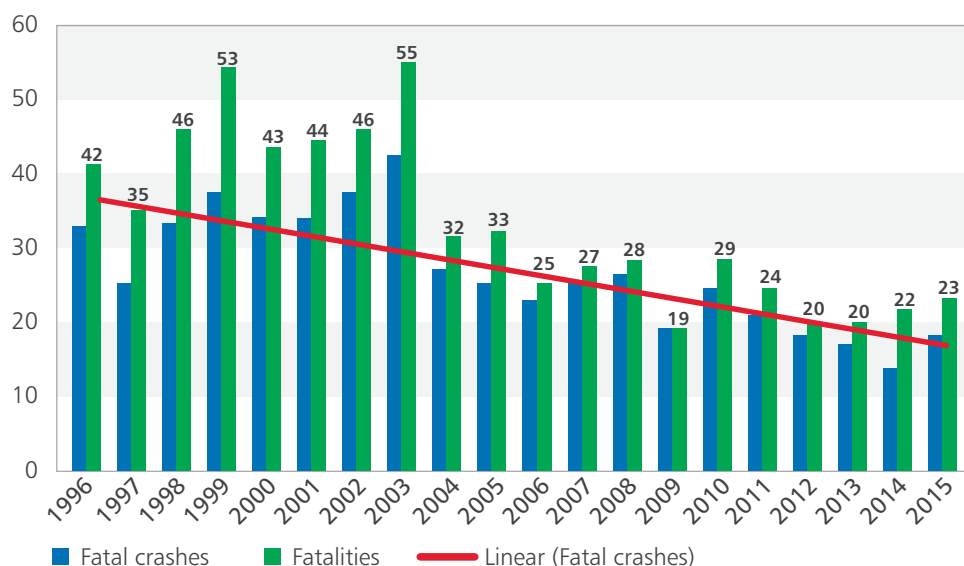
and is reliable. It is based on speed readings collected from large numbers of individual speed readings along a particular route.

Annual travel time surveys are conducted at the end of each year using the same start and end points to ensure the results can be accurately compared.

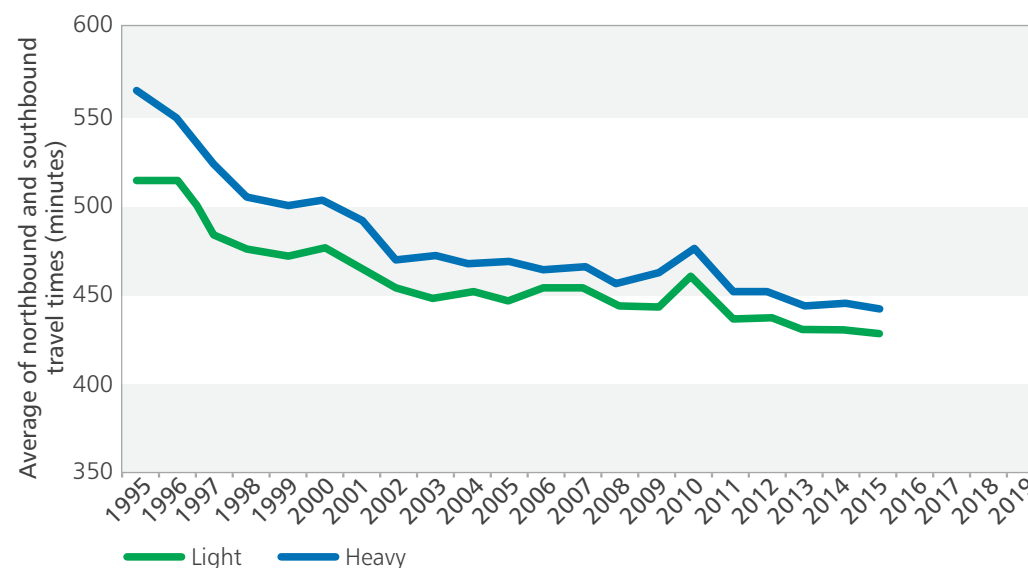
There has been a slight increase in travel time since last year. There are about 36 additional kilometres under construction as well as changes to various speed zones within construction limits.

It should be noted that travel time on the Pacific Highway is not only based on the amount of traffic on the highway, but can be affected by new speed limits in place on particular sections of the highway, completed since travel time surveys began in 1995.

**Fatal crashes and fatalities each year**



**Travel time trends on the Pacific Highway, Hexham to Queensland border (adjusted for work site delays)**





# Community

A snap shot of community consultation carried out for the Pacific Highway upgrade in the past six months:



Over 10,600 face to face meetings



Distributed 534 separate letters to over 37,000 householders/people interested in the project



Managed about 200 media releases, inquiries and community events, including site tours and opening events.

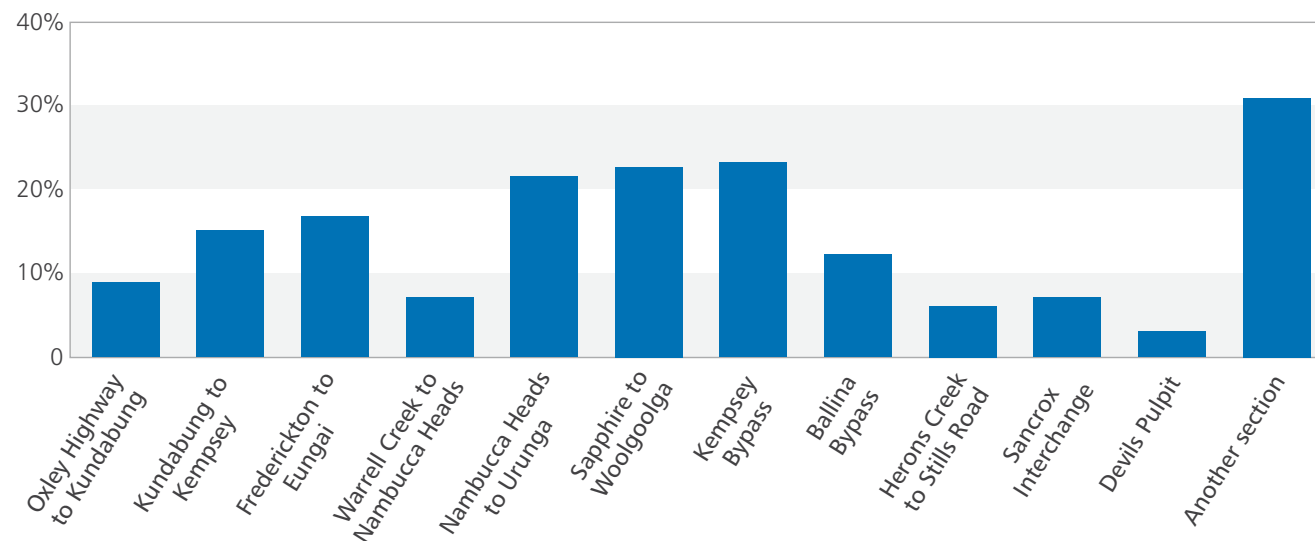
## Pacific Highway Upgrade Construction Workforce Survey

### Port Macquarie to Coffs Harbour

Roads and Maritime surveyed the construction workforce on the Pacific Highway upgrade between Coffs Harbour and Port Macquarie, to get a better understanding of the number of local and relocated workers, where they live, and the services they use in local communities while they work on the program. The survey report will inform and guide planning for the Woolgoolga to Ballina upgrade project and other major projects.

A total of 993 people responded to the construction workforce survey.

Number of workers who have worked on another section of the upgrade



### Key research findings based on 993 survey respondents:

- More than half are aged between 20 and 39 years
- About 72 per cent will work on the upgrade for one to three years
- About 65 per cent rent their accommodation
- About half of workers who relocated to work on the Pacific Highway upgrade between Coffs Harbour and Port Macquarie, have worked on other sections of the upgrade
- About 43 per cent who relocated to work on the upgrade, had a family or partner relocate with them
- About 41 per cent of workers who relocated to the area to work on the project, have joined a sporting team or club in the local community
- About 30 per cent are thinking of permanently relocating to the area they are working in.

The research has shown that the construction workforce on the Pacific Highway upgrade is made up of local workers, people who have worked on other sections of the upgrade and people who have relocated to work on the project. As shown in the figure above, more than half of respondents have previously worked on another section of the Pacific Highway upgrade and then relocated to work on another section.

This suggests that the workforce on the Woolgoolga to Ballina section of the Pacific Highway upgrade will



not be entirely made up of relocated or temporary workers, but rather a workforce including local people, people who have relocated from other sections of the highway upgrade and workers who will relocate to work on the upgrade for the first time.

Survey findings suggest that people working on the Port Macquarie to Coffs Harbour section of the Pacific Highway are a long-term, skilled workforce who have worked on other sections of the Highway upgrade, and as such provide valuable transferrable skills to build other parts of the highway.

As the construction workforce live across a large geographical area including a number of local communities, there is no evidence to suggest that any one health or education service is being impacted through increased numbers using the service.

The research has shown that people who have relocated to the area to work on the Pacific Highway upgrade, make an effort to integrate into local communities by joining local clubs or sports teams; and contribute to the local economy.

#### **Frederickton to Eungai community bus tour**

When the Frederickton to Eungai Pacific Highway upgrade opens to traffic in 2016, for most motorists it will be their first look at the new alignment since work began in August 2013.

Unlike many projects across the Pacific Highway upgrade much of the Frederickton to Eungai project is being built well away from the existing road alignment, meaning the bulk of the work has been carried out away from the public's gaze.

But in September, a group of local residents with a keen interest in the project had the rare opportunity to see the new alignment up close.

The project team invited community information session attendees on a bus tour of the alignment.

Demand was such that two bus tours were required, with about 60 residents taking up the opportunity.

Members of the project team were on the bus for each tour to talk about key features of the project and answer questions from guests.

The tour included stops at a number of locations along the project, including the Frederickton concrete batch plant, the new rest areas at Clybucca and the Kemps Access overbridge.

Feedback from those who attended was overwhelmingly positive.



Looking north along main alignment from Barraganyatti Hut Road (December 2015)

# Finishing the job

Completing a four lane divided highway between Hexham and the Queensland border remains an important issue for local communities and is a priority for the Australian and NSW governments, both of which are committed to having the upgrade completed by 2020. There is now a four lane divided highway between Hexham and Port Macquarie and Urunga and Woolgoolga, on the mid north coast.

Major work has started on the first two sections of the 155 kilometre Woolgoolga to Ballina upgrade – the 14 kilometre Woolgoolga to Halfway Creek section and the 12 kilometre Halfway Creek to Glenugie section.

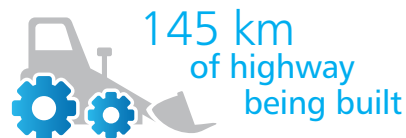
Major work activity has also started for Waves 1 and 2 soft soil work on the Woolgoolga to Ballina project.

Work is continuing on a number of other key activities between Woolgoolga and Ballina, including planning work, land acquisitions, preliminary investigations, early soil settlement and preconstruction work on critical sections.

The Frederickton to Eungai and Nambucca Heads to Urunga projects remain on track to open to traffic in 2016.

Major work is well underway on the 20 kilometre Warrell Creek to Nambucca Heads upgrade and all projects within the 37 kilometre Oxley Highway to Kempsey upgrade. These sections will be completed during 2017, weather permitting.

Work is continuing to ensure a four lane divided highway will be completed between Ballina and the Queensland border in early 2016.



## Key project milestones – how are we travelling?

### Did we do what we said we would between July and December 2015?

#### Open to traffic:

- ✓ The majority of the 17 kilometre Tintenbar to Ewingsdale upgrade including the twin St Helena tunnels, were opened to traffic. Remaining finishing work is expected to be complete early 2016, weather permitting.

- ✓ The Sancroix interchange early work project opened to traffic
- ✓ The new East West Road overbridge opened to traffic on the Nambucca Heads to Urunga project.

#### Achieve major work progress:

- ✓ Completed the new Kalang River Bridge and re-opened the Kalang River to marine traffic on the Nambucca Heads to Urunga project
- ✓ Started building bridges at various locations across the Woolgoolga to Halfway Creek project; including Sherwood Creek Road, Kangaroo Trail Road, Corindi Creek, Corindi floodplain and Cassons Creek
- ✓ Completed the Pacific Highway main alignment bridges on the Frederickton to Eungai project, at Collombatti Creek, Seven Hills Road and Johnsons Creek
- ✓ Completed the new northbound on-ramp at Ewingsdale interchange on the Tintenbar to Ewingsdale project
- ✓ Started building the bridge over the Nambucca River on the Warrell Creek to Nambucca Heads project
- ✓ Clearing and grubbing work completed north of the Nambucca River on the Warrell Creek to Nambucca Heads project
- ✓ Waves 1 and 2 soft soil work started on the Woolgoolga to Ballina project
- ✓ Started building bridges at Halfway Creek and Wells Crossing on the Halfway Creek to Glenugie project
- ✓ Completed finishing work and switched traffic onto the new Bruxner Highway alignment on the Pimlico to Teven project

- ✓ Completed work to build Duck Creek Bridge and Emigrant Creek Bridge on the Pimlico to Teven project
- ✗ Work to build the Pipers Creek twin bridges on the Kundabung to Kempsey project was about 50 per cent complete as at 31 December 2015.

### **Planning for major work on the Woolgoolga to Ballina project:**

- ✓ Construction Environmental Management Plan (CEMP) for Glenugie to Ballina (sections 3 to 11) approved by the Department of Planning and Environment
- ✓ Awarded the four detailed design contracts for sections 3 (Glenugie to Tyndale) to 11 (Pimlico to Teven).

### **In the next six months (January – June 2016) we will:**

#### **Achieve major work progress:**

- Complete finishing work for the Tintenbar to Ewingsdale project
- Complete the Frederickton to Eungai project and open to traffic
- Complete the Pimlico to Teven project and open to traffic
- Complete all 37 bridges on the Nambucca Heads to Urunga project
- Complete work to build the Pipers Creek twin bridges on the Kundabung to Kempsey project
- Blackmans Point interchange bridges and roundabout will be complete on the Oxley Highway to Kundabung project

- Complete work to build Stumpy Creek bridge, Smiths Creek bridge southbound and Pipers Creek bridge on the Kundabung to Kempsey project
- Complete work to construct the Kundabung overbridge and open to traffic
- Open the intersection of Albert Drive and the existing Pacific Highway on the Warrell Creek to Nambucca Heads project
- Complete Eggins Drive stage 1 work, including opening the Sherwood Creek Road and overpass to traffic on the Woolgoolga to Halfway Creek project
- Complete work to construct bridges at Halfway Creek on the Halfway Creek to Glenugie project.

### **Planning for major work on the Woolgoolga to Ballina project:**

- Award tenders for soft soil treatment work packages for Wave 3 at Shark Creek to Maclean and Wave 4 at Tuckombil Canal
- Tender, evaluate and award Wave 5A, 5B and 5C early foundation treatments
- Obtain Environment Protection Licence for sections 3 (Glenugie to Tyndale) to 11 (Pimlico to Teven)
- Award contract to design and build the new bridge over the Clarence River at Harwood.



**Opening event for the twin St Helena tunnels, Tintenbar to Ewingsdale project (December 2015)**



# Workplace health and safety

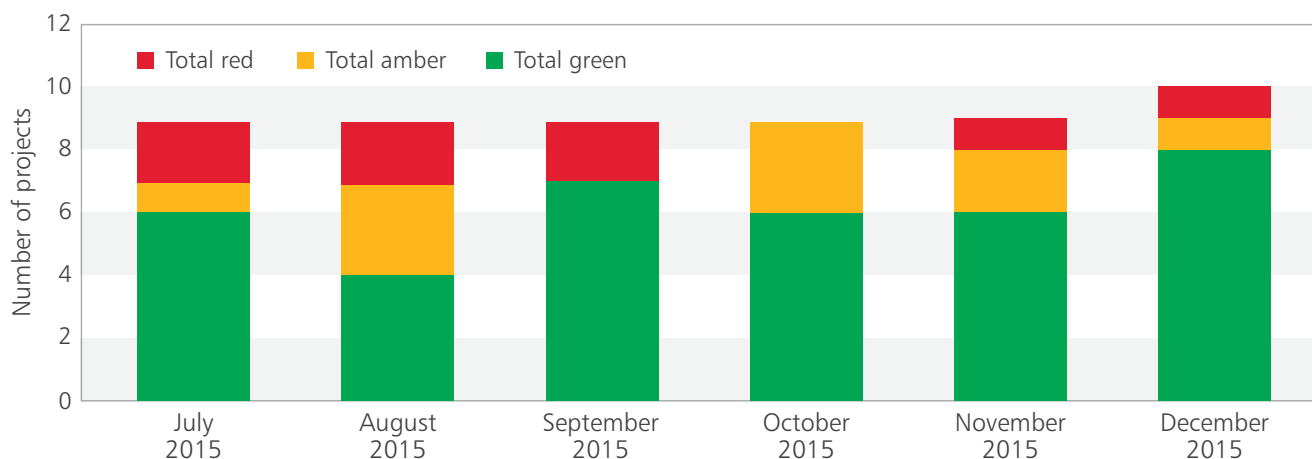
**Safety is a core value for Roads and Maritime. We are focused on the safety of all road users, including motorists and our workers.**

As the agency responsible for enabling safe and efficient journeys throughout NSW, Roads and Maritime has a moral, legal and shared duty to ensure the health and safety of all our workers and others who may be affected by our activities. We consult and collaborate with our industry partners to eliminate risks and put safety first across the Pacific Highway upgrade.

Between July and December 2015, the project teams have:

- ✓ worked more than 5.40 million hours
- ✓ identified and fixed over 3500 hazards

## Work health and safety traffic light status July - December 2015 (comparing lead and lag indicators)



✓ Carried out more than 6500 health and safety inspections.

## Managing risk and sharing knowledge

Incidents involving large machinery and equipment continue to pose the biggest safety risk for all Pacific Highway project sites. Although 32 per cent (figure 1) of incidents reported between July and December involved large machinery and equipment, slips, trips and falls were the most prevalent source of reported injuries on project sites, accounting for 35 per cent (figure 2) of all reported injuries.

At our workplace health and safety workshop in December, our industry partners presented lessons learned and discussed engineering solutions implemented on Pacific Highway upgrade projects.

Figure 1: Reported incidents by category July to December 2015

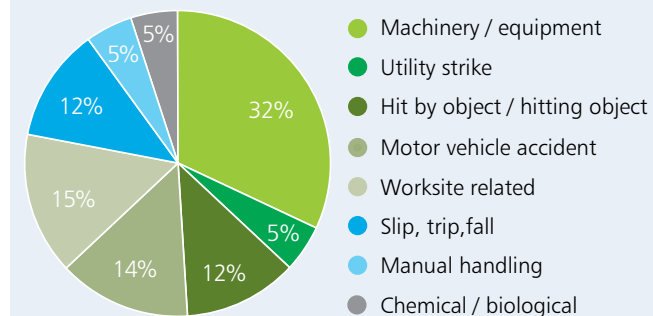
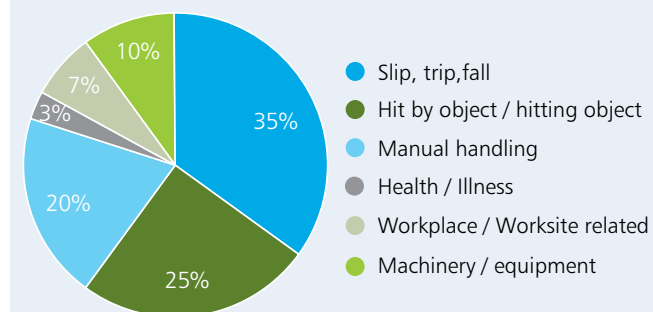


Figure 2: Reported injuries July to December 2015





# Safety initiatives on the Pacific Highway upgrade

## Project: Oxley Highway to Kundabung Contractor: Lend Lease

During construction of pile casings, a hazard was identified for workers welding the pile casings. The standard process requires manual welding around the casing to finish the join of two 19 metre sections of casing. Lend Lease worked with subcontractors to implement a process whereby a roller and fixed welding unit were used to rotate the pile casing and complete the weld mechanically.

Safety outcomes from this engineering solution:

- ✓ Significantly minimised the risk of welding and manual handling injuries such as crane incidents
- ✓ Workers can now weld pile casings from a single seated position, with the casing rotating at a controlled rate, reducing worker exposure to weld flash.



Roller and fixed welding unit in operation to weld pile casings



View of pile casing in place for welding with the new roller and fixed welding unit

## Project: Pimlico to Teven (Stage 2) Contractor: CPB Contractors (formerly Leighton Contractors)

Machinery coming into contact with infrastructure and live electrical services is a major risk to worker safety on site. Usually, machine operators are guided by workers 'spotting' or observing and guiding their movements in machinery on site. This manual observation can be difficult, time consuming and has risks linked with human error.

CPB Contractors worked with a supplier to install an electronic solution to minimise the risk of machinery coming into contact with infrastructure or electrical

services. Controls are now in machines so that limits can be set electronically, including warning alarms and a cut out in case the machine passes set limits.

Safety outcomes from this engineering solution:

- ✓ Drainage can be installed under powerlines, with the electronic control in place to stop contact with powerlines
- ✓ Restricts the movement of excavators laying pipes so that they do not come into contact with nearby workers
- ✓ Installation of scour and abutment rock with a known tested engineering control in place to stop contact with the finished structure.



Excavator in operation using electronic control to limit movements

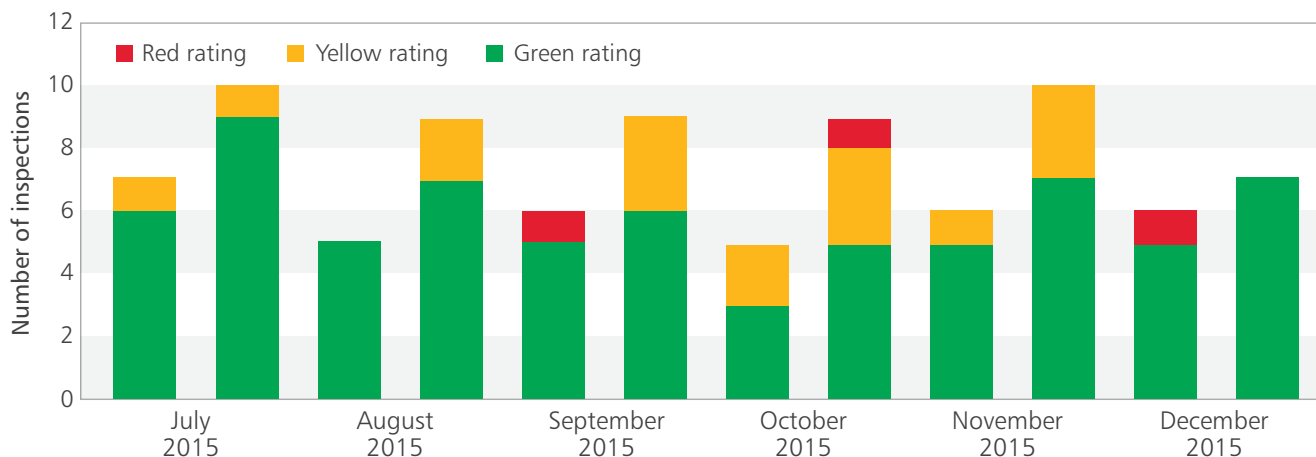
# Environment

## Environmental work completed, July - December 2015:

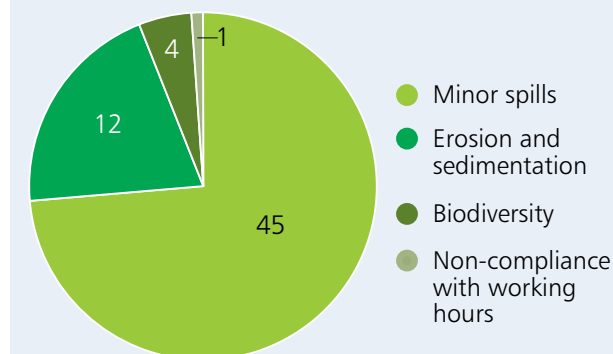
- ✓ Completed and submitted 38 assessments, plans and reports to the NSW Department of Planning and the Environment (DP&E) and the Environment Protection Authority (EPA). 13 of these reports were also submitted to the Federal Department of the Environment (DoE)
- ✓ Achieved Construction Environment Management Plan approval (CEMP) for the Glenugie to Ballina section of the Woolgoolga to Ballina upgrade; the Woolgoolga to Ballina upgrade now has approved CEMPs for the entire 155 kilometre length of the project
- ✓ Completed threatened flora translocation for Woolgoolga to Ballina soft soil early work, Woolgoolga to Halfway Creek and Halfway Creek to Glenugie

- ✓ Expert workshop held in Sydney on the development of a base population viability model for the Ballina koala population; the Ballina Koala Plan is expected to be submitted for approval early 2016
- ✓ Completed baseline koala population surveys for the Broadwater koala population
- ✓ DP&E approved the Emu Management Plan for the Woolgoolga to Ballina upgrade
- ✓ Provided tree root balls from clearing work on the Woolgoolga to Ballina project, to the National Parks and Wildlife Service (NPWS) for use on the Everlasting Swamp Rehabilitation project
- ✓ Provided tree root balls from clearing work on the Oxley Highway to Kundabung project, for river bank restoration projects
- ✓ Spotted tail quoll started using the new fauna underpass structure on the Glenugie upgrade project

## Environmental inspections July - December 2015



## Environmental incidents recorded July - December 2015



- ✓ Completed investigation and salvage work for the heritage site at Ravenswood Road on the Oxley Highway to Kempsey Upgrade
- ✓ Work to complete deck pours on the Wilson River bridge was done using an innovative solar powered water recycling capture and pump system.

## Environmental work in progress, July - December 2015:

- Started work to trial a variety of innovative mulch and topsoil treatments, monitoring weekly to determine best methods for accelerating the composting process
- Started work to construct breeding ponds for the threatened Green-thighed frog on the Oxley Highway to Kempsey Upgrade, following successful trialing on other Pacific Highway Upgrade projects.

## Grey Headed Flying Fox Management

### Warrell Creek to Nambucca Heads project

The Grey Headed Flying Fox Management Plan (GHFFMP) was approved by the NSW Minister for the Environment in 2014 and the Federal Department of the Environment in January 2015. The management plan includes:

- ✓ Flagging and fencing of environmentally sensitive areas where GHFF can be found
- ✓ Daily pre-dawn inspections for GHFF
- ✓ Tool box talks regarding no go or environmentally sensitive areas
- ✓ Monthly counts for GHFF in and around the project site.

Pacifico's project ecologist inspects the project site for GHFF before dawn every day, to make sure that work is safe to start.

- ✓ Since May 2015, no GHFF have been spotted in the 300 metre zone
- ✓ In the past year, no GHFF Fox have been spotted in the 500 metre zone or in environmentally sensitive areas.

## Topsoil reuse and weed control trial

### Pimlico to Teven (Stage 2)

Topsoil stripped during construction work, is a valuable natural resource which should be reused on a project, where possible. Topsoil can contain large amounts of weeds, meaning that it cannot be reused on a project without introducing weeds to that landscape.

The Pimlico to Teven project team considered a number of treatments to reduce the amount of weeds in the soil, and selected Bioweed herbicide to trial.

During the trial period of one calendar year, the application of Bioweed herbicide proved successful in controlling the germination of weeds within the landscape soil. Revegetation areas have remained almost completely weed free across all areas where the herbicide has been applied and soils left undisturbed.

This innovation comes with a number of advantages:

- ✓ Natural resource of soil is reused on the project
- ✓ The Bioweed treatment used is an organic plant extract



Grass grown on reused soil, treated to control weeds

- ✓ Waste soil does not need to be transported off site
- ✓ Soil does not need to be sourced elsewhere and delivered to site
- ✓ Reduces cost and the number of trucks on the road
- ✓ Removes the risk of new varieties of weed being introduced into the landscape via imported soil.

## Reusing trees for river restoration programs

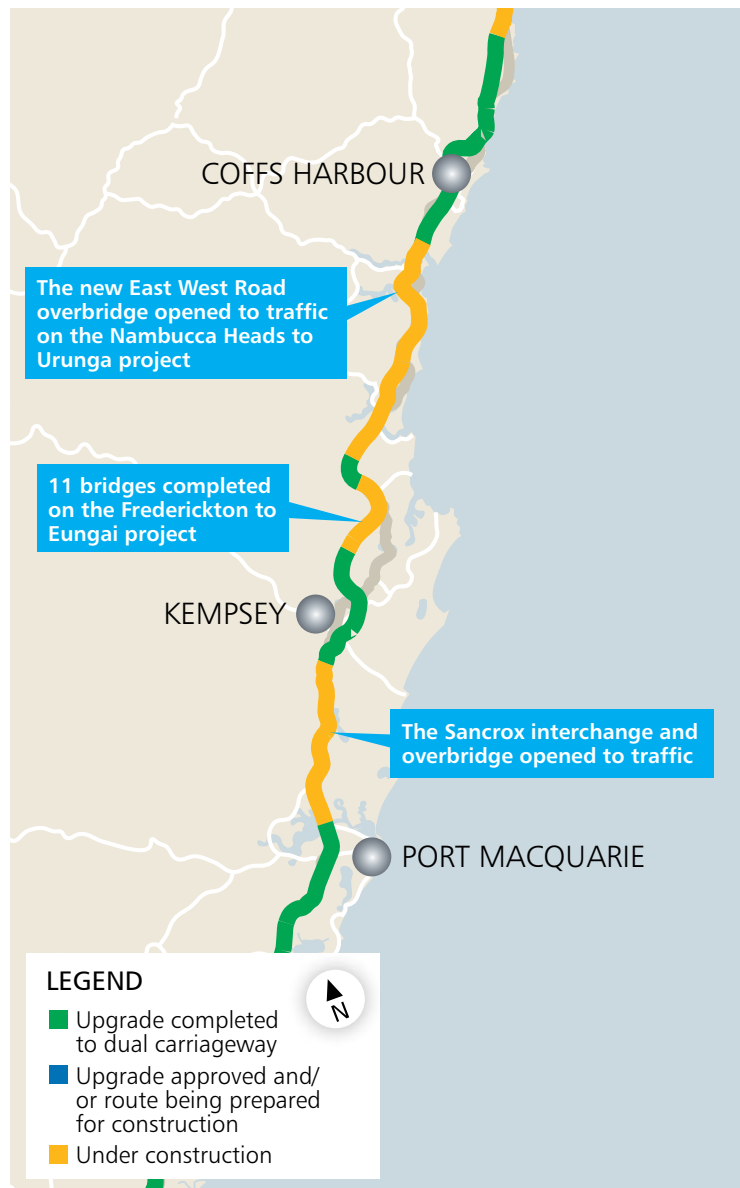
Roads and maritime avoids removing trees as much as possible when upgrading the Pacific Highway. Some tree and vegetation clearing is required to build the new the new road, and are re-used. Trees and vegetation that are removed from the landscape are re-used as much as possible throughout the Highway upgrade. Millable timbers are provided to the NSW Forestry Corporation and mulch is reused for landscaping on the new highway.

Tree root balls from cleared trees have been provided to the Department of Primary Industries (Fishing & Aquaculture) for use in river restoration programs:

- ✓ Restoration work provides fish shelter in and amongst the timber structures
- ✓ in the future, seedlings will grow into large shady trees that help to create a connected riverine corridor for land based animals
- ✓ tree root balls stabilise the river bank, reducing erosion during floods
- ✓ they also provide a future supply of large woody debris for instream fauna.



# Port Macquarie to Coffs Harbour overview



**Between July and December 2015 the remaining 105 kilometres of the Pacific Highway still to be upgraded to four lane divided road between Port Macquarie and Coffs Harbour was being built. The Sancrox interchange early work project opened to traffic on 30 November 2015.**

The summaries on the following pages outline progress in completing this section of the Pacific Highway upgrade, including key building activities.



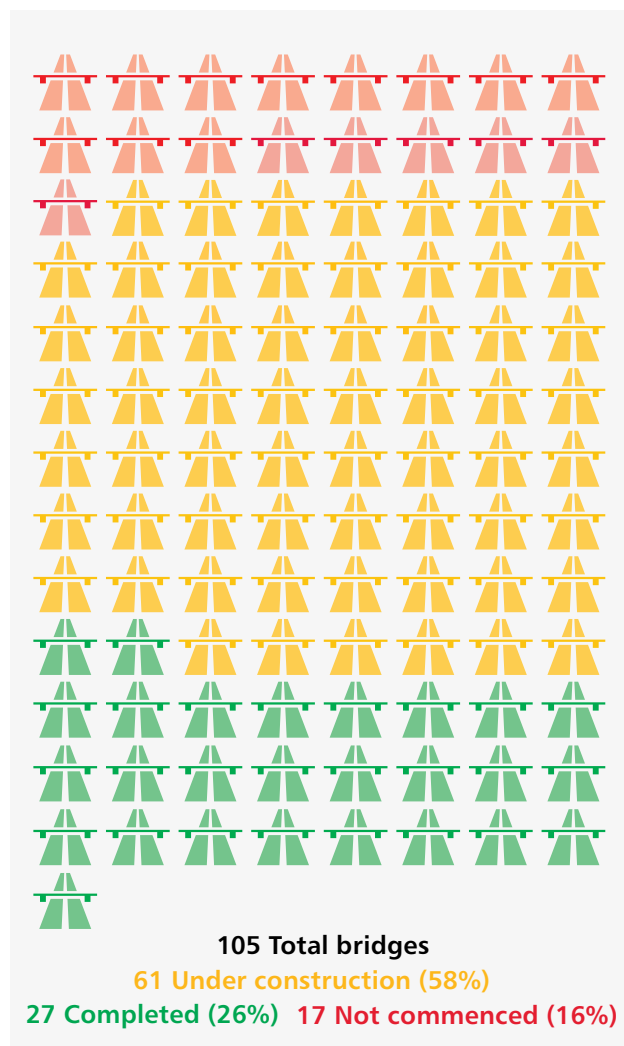
The new East West Road overbridge, Nambucca Heads to Urunga project (December 2015)



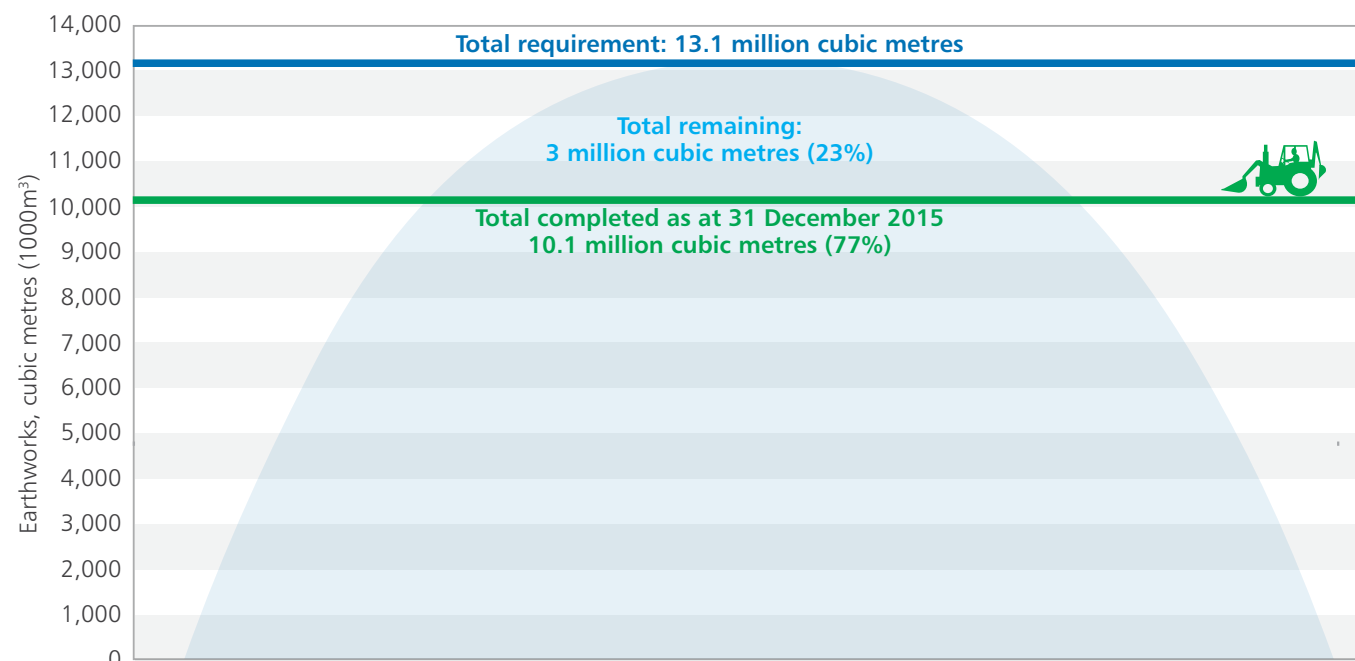
Placing precast bridge planks on a Wilson River floodplain bridge, Oxley Highway to Kundabung project (December 2015)



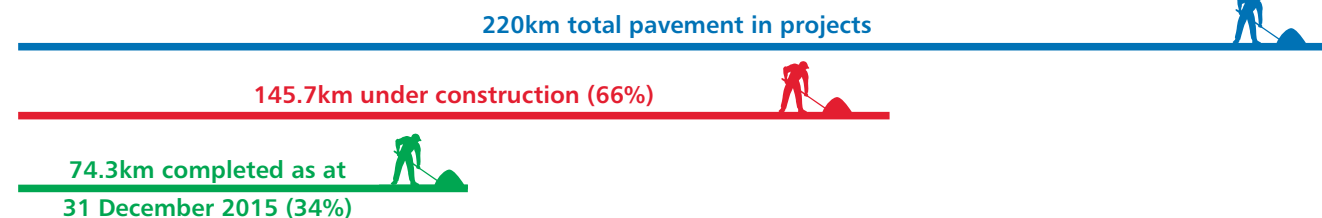
## Bridges



## Earthworks



## Road surface (road carriageway kilometres)



# Projects being built

## Oxley Highway to Kundabung

**Contractors:** Lend Lease

**Form of contract:** Design and build

**Average workers on site during the past six months:** 617 workers per month

**Average pieces of large machinery on site during the past six months:** 143 pieces of machinery per month

**Start date of major construction:** October 2014

**Completion date:** 2017 (weather permitting)

**Project value:** \$820 million



**The Oxley Highway to Kundabung project is the southern section of the Oxley Highway to Kempsey upgrade, which was approved by the NSW Minister for Planning and Infrastructure in 2012 and the Federal Department of the Environment in January 2014.**

The project is jointly funded by the Australian and NSW governments. It involves building 23 kilometres of four lane divided road, including bridges over the Hastings and Wilson rivers.

**26.5 days were lost to wet weather in the past six months.** ☁️

**July to December 2015, work progress:** 🚧

- ✓ Bridge piling work was about 90 per cent complete on the bridges over Hastings River and Wilson River
- ✓ Clearing work was nearing completion with about 90 per cent completed
- ✓ Installation of drainage and fauna culverts was about 90 per cent complete
- ✓ Bulk earthwork continued across the project and was about 90 per cent complete (by volume)
- ✓ Building of precast concrete bridge girders continued off-site at Macksville, with over 200 precast bridge girders delivered to site for construction
- ✓ Controlled blasting in the Cooperabung Range cuttings continued. Each blast yielded about 10,000-13,000 cubic metres of rock. About 90 per cent of stage one controlled blasting is complete.

**January – June 2016, expected work progress:** Weather permitting

- Stage one of the controlled blasting program in Cooperabung Range will be complete
- Stage one of bulk earthwork will be complete
- Mainline concrete paving will start
- Girder placement on the Wilson Bridge and other floodplain bridges will be complete
- All piling, piers and headstocks on the Hastings River Bridge will be completed. Erection of precast girders due to start
- Blackmans Point interchange bridges and roundabout will be complete
- Noise treatments on affected residences will continue.

### Community issues 🧑🧑

Assessments underway for residences close to the project that are affected by operational noise. Noise treatments have started on the initial group of residences.

### Environmental issues 🌿

Nil.

🧑🧑 on average  
**617 workers**  
on site per month

🚧 on average  
**143 pieces of large machinery**  
on site per month





Aerial view of work in progress to build the new bridge over the Hastings River (November 2015)

# Projects open to traffic

## Sancrox Interchange

**Contractors:** Ferrovia Agroman

**Form of contract:** Build only

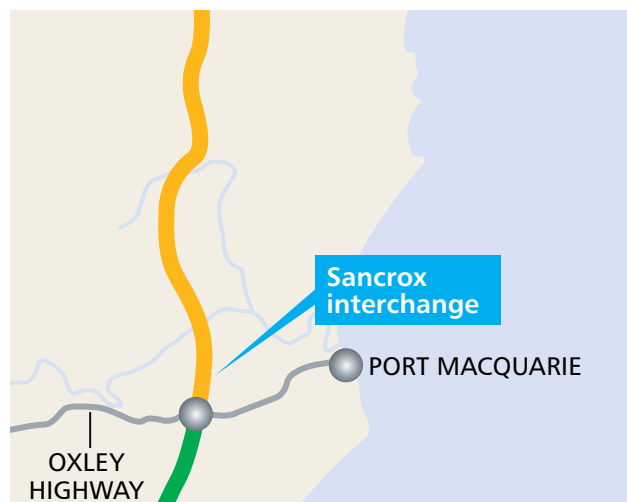
**Average workers on site during the past six months:** 121 workers per month

**Average pieces of large machinery on site during the past six months:** 17 pieces of machinery per month

**Start date of major construction:** August 2014

**Completion date:** Opened to traffic November 2015

**Project value:** Forms part of the Oxley Highway to Kempsey upgrade



**The Sancrox interchange was completed as part of early work for the Oxley Highway to Kempsey upgrade.**

It included building local service roads and a bridge over the Pacific Highway about 600 metres south of the existing Sancrox Road intersection.

**21.5 days were lost to wet weather in the past six months.** ☁️

**July to December 2015, work progress:** 🚧

The Sancrox interchange opened to traffic on 30 November 2015

- ✓ The Sancrox overbridge was opened to traffic, with the following work completed in the past six months:
  - concrete deck pours
  - completed concrete roundabouts and road pavements
  - onsite concrete barrier pours.
- ✓ All roads opened to traffic including Sancrox Road and Fernbank Creek Road
- ✓ Made significant progress on finishing work, with about half of all asphalt placed and spray seal about 92 percent complete

- ✓ Completed all earthwork on the project
- ✓ Completed stormwater and subsurface drainage work
- ✓ Completed kerb, guttering and footpath placement
- ✓ Completed installation of road furniture including road signs, guardrail, and completed line marking.

**January – June 2016, expected work progress:** Weather permitting

As the project has now opened to traffic, only some finishing work remains to be completed after the curing period has ended. Finishing work including final asphalt road surfacing, is scheduled to be complete in April 2016, weather permitting.

**Community issues** 👤

Nil.

**Environmental issues** 🌿

Nil.

👤👤 on average  
**121 workers**  
on site per month

🚧 on average  
**17 pieces of large machinery**  
on site per month





Aerial view of the Sancrox interchange on the Oxley Highway to Kempsey upgrade (November 2015)



# Projects being built

## Kundabung to Kempsey

**Contractors:** McConnell Dowell-OHL joint venture

**Form of contract:** Build only

**Average workers on site during the past six months:** 274 workers per month

**Average pieces of large machinery on site during the past six months:** 104 pieces of machinery per month

**Start date of major construction:** November 2014

**Completion date:** 2017 (weather permitting)

**Project value:** \$230 million



**The Kundabung to Kempsey project is the northern section of the Oxley Highway to Kempsey upgrade, which was approved by the NSW Minister for Planning and Infrastructure in 2012 and the Federal Department of the Environment in January 2014.**

The project is jointly funded by the Australian and NSW governments. It involves building 14 kilometres of four lane divided road, including a new interchange at Kundabung and two new rest areas.

**30 days were lost to wet weather in the past six months.**

**July to December 2015, work progress:**

- ✓ Completed work to build a concrete batch plant at the main site compound
- ✓ Completed clearing across the project
- ✓ Excavation work and placement of fill material continued, with about 75 per cent of work completed
- ✓ About half of all box and pipe drainage culverts were installed
- ✓ Completed placement of select material between Mobbs Drive and
- ✓ Wharf Road and north of Kemps Road
- ✓ Continued work to construct Stumpy Creek bridge, Smiths Creek bridge southbound and Pipers Creek bridge, with about 50 per cent of work completed
- ✓ Work was nearing completion to construct the Kundabung interchange and the new Kundabung overbridge, with 90 per cent of work complete

✓ Work continued to construct two new rest areas near Barrys Creek

✓ Concrete paving work started from Barrys Creek to north of Mingaletta Road.

**January – June 2016, expected work progress:** Weather permitting

- Complete work to construct Stumpy Creek bridge, Smiths Creek bridge southbound and Pipers Creek bridge
- Complete work to construct the Kundabung overbridge and open to traffic
- Stage 1 of the new southbound carriageway is scheduled to open to traffic in June, weather permitting.

**Community issues**

A community information session was held in December regarding a preferred option to address:

- Access to the new highway from local roads
- Issues related to arrangements for bus stops.

Community responses are currently being evaluated as part of work to select a preferred solution.

**Environmental issues**

Nil.

on average  
**274 workers**  
on site per month

on average  
**104 pieces of large machinery**  
on site per month





Aerial view looking south from the Kundabung Road area (November 2015)

# Projects being built

## Frederickton to Eungai

**Contractors:** CPB Contractors (formerly Leighton Contractors)

**Form of contract:** Design and build

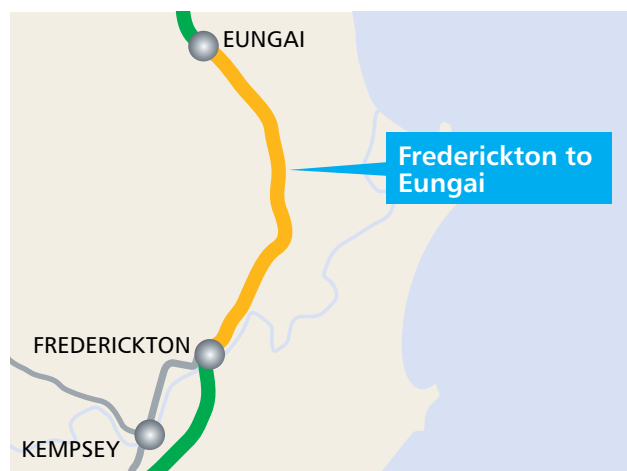
**Average workers on site during the past six months:** 335 workers per month

**Average pieces of large machinery on site during the past six months:** 175 pieces of machinery per month

**Start date of major construction:** August 2013

**Expected completion date:** Mid 2016 (weather permitting)

**Project value:** \$675 million



**The Frederickton to Eungai project is the second stage of the Kempsey to Eungai upgrade, which was approved in 2008. The Kempsey bypass was the first stage and opened to traffic in March 2013.**

The project is jointly funded by the Australian and NSW governments. It will provide about 26.5 kilometres of four lane divided road from the completed Kempsey bypass to Eungai Rail.

**30 days were lost to wet weather in the past six months.**

**July to December 2015, work progress:**

- ✓ Concrete paving continued at various locations across the project. About 86 per cent of the total amount of 213,000 cubic metres of concrete had been placed (by volume)
- ✓ Bridge work continued, with 11 of 20 bridges completed on the project, including the Collombatti flood plain bridges
- ✓ Completed all cross drainage structures; and installation of longitudinal drainage was nearing completion at 99 per cent complete
- ✓ Work to build the two new rest areas at Clybucca, including the erection of steel structures and roadwork, was about 65 per cent complete
- ✓ Installation of boundary and animal fencing continued

✓ Landscaping and topsoiling work continued across the project

✓ Continued verge production and placement work, with about 50 per cent complete.

**January – June 2016, expected work progress:** Weather permitting

- Concrete paving is scheduled to be completed by the end of February 2016
- All of the 20 new bridges are expected to be completed by March 2016
- All landscaping, fencing and finishing works on the new main highway alignment is expected to be completed by April 2016
- The project will be opened to traffic ahead of schedule, currently expected in May 2016.

**Community issues**

Nil.

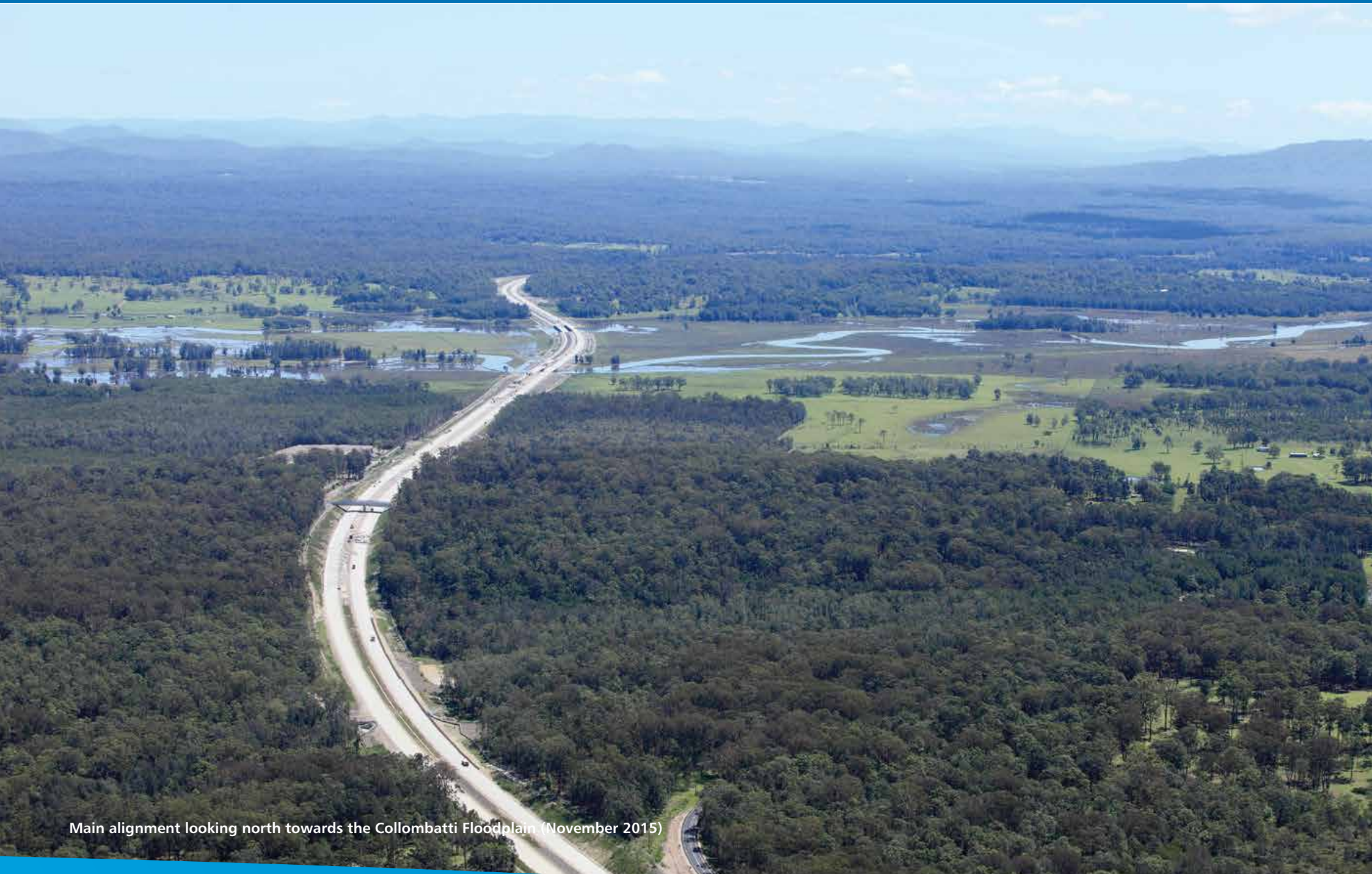
**Environmental issues**

Nil.

on average  
**335 workers**  
on site per month

on average  
**175 pieces of large machinery**  
on site per month





Main alignment looking north towards the Collombatti Floodplain (November 2015)

# Projects being built

## Warrell Creek to Nambucca Heads

**Contractors:** Acciona Ferrovial joint venture

**Form of contract:** Design and build

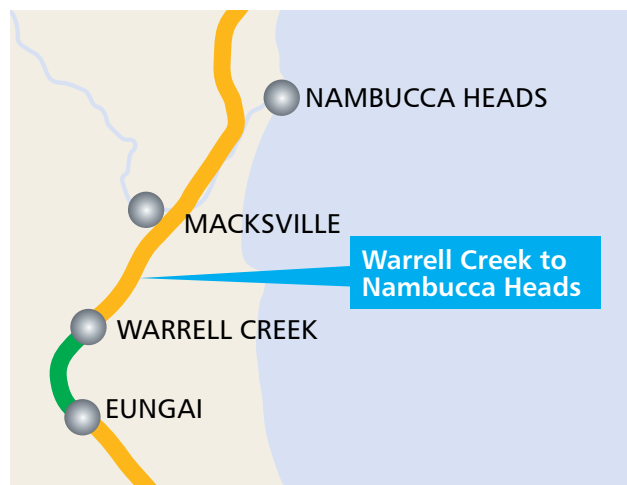
**Average workers on site during the past six months:** 555

**Average pieces of large machinery on site during the past six months:** 283

**Start date of major construction:** December 2014

**Expected completion date:** Late 2017 (weather permitting)

**Project value:** \$830 million



The Warrell Creek to Nambucca Heads project is the second stage of the Warrell Creek to Urunga upgrade, which was approved by the NSW Minister for Planning and Infrastructure in 2011. The Federal Department of the Environment approved this upgrade in December 2014.

**41 days were lost to wet weather in the past six months.**

**July to December 2015, work progress:**

- ✓ Detailed design refinements continued
- ✓ Earthwork continued across the project with about 50 per cent of earthwork completed
- ✓ Started work to build 6 out of the 15 bridges on the project, including the bridge over the Nambucca River
- ✓ Completed clearing and grubbing work across the project
- ✓ Completed controlled blasting south of Bald Hill Road and near Donnellyville
- ✓ Drainage installation, including box culverts, continued across the project
- ✓ Completed the first stage of work to build the new Albert Drive/Pacific Highway intersection
- ✓ Established the Northern site compound, including a concrete precast facility
- ✓ Produced about 11 per cent of concrete bridge girders to be used on the project
- ✓ Announced the preferred option for north facing ramps at North Macksville.

**January – June 2016, expected work progress: Weather permitting**

- Full opening of intersection of Albert Drive and existing Pacific Highway to traffic
- Completion of piling activities for the Nambucca River Bridge
- Commencement of construction of other structures, including Warrell Creek Bridge and Underpass of North Coast Railway Line
- Cross drainage structures and fauna culverts to continue
- Earthworks continuing north and south of Nambucca River

**Community issues**

- Development of north facing ramps at North Macksville
- Construction impacts such as noise and dust

**Environmental issues**

- The Roads and Maritime and Pacifico project team is working through issues related to noise, dust and vibration on adjacent properties.

on average **555** workers on site during the past six months

on average **283** pieces of large machinery on site during the past six months





Aerial view of bridge piling in the Nambucca River (November 2015)



# Projects being built

## Nambucca Heads to Urunga

**Contractors:** Lend Lease

**Form of contract:** Design and build

**Average workers on site during the past six months:** 801 workers per month

**Average pieces of large machinery on site during the past six months:** 206 pieces of machinery per month

**Start date of major construction:** November 2013

**Expected completion date:** Second half 2016 (weather permitting)

**Project value:** \$780 million



**The Nambucca Heads to Urunga project is the first stage of the Warrell Creek to Urunga upgrade, which was approved by the NSW Minister for Planning and Infrastructure in 2011. The Federal Minister for the Environment approved this upgrade in November 2013.**

The project is jointly funded by the Australian and NSW governments. It will provide about 22 kilometres of four lane divided road from Nambucca Heads to the existing Waterfall Way interchange at Raleigh.

**21.5 days were lost to wet weather in the past six months.**

**July to December 2015, work progress:**

- ✓ Completed the new Kalang River bridge and re-opened the Kalang River to river users
- ✓ The new East West Road overbridge opened to traffic and work was completed to remove Deep Creek Road crossing
- ✓ Bridge work continued, with 15 of 37 bridges completed on the project
- ✓ Concrete paving continued at various locations across the project, with mainline paving 55 per cent complete
- ✓ Earthwork was nearing completion with 99 per cent of work completed
- ✓ Started landscaping work, with about 10 per cent of work completed so far

- ✓ Installation of animal fencing and top soiling of slopes continued across the project
- ✓ The Pacific Highway returned to 80km/h through the Ballards Road intersection.

**January – June 2016, expected work progress: Weather permitting**

Pacific Highway traffic will be temporarily diverted onto the new bridge over Cow Creek

- Traffic will be switched onto the Nambucca interchange overbridge and the Boggy Creek Road crossing will be removed
- Work will be started to install road signs and start line marking
- Complete all 37 bridges on the project
- Complete concrete paving work across the project.

**Community issues**

- Bus routes requiring adjustment due to local road changes

**Environmental issues**

- Dealing with large quantities of mulch and topsoil.

on average  
**801 workers**  
on site per month

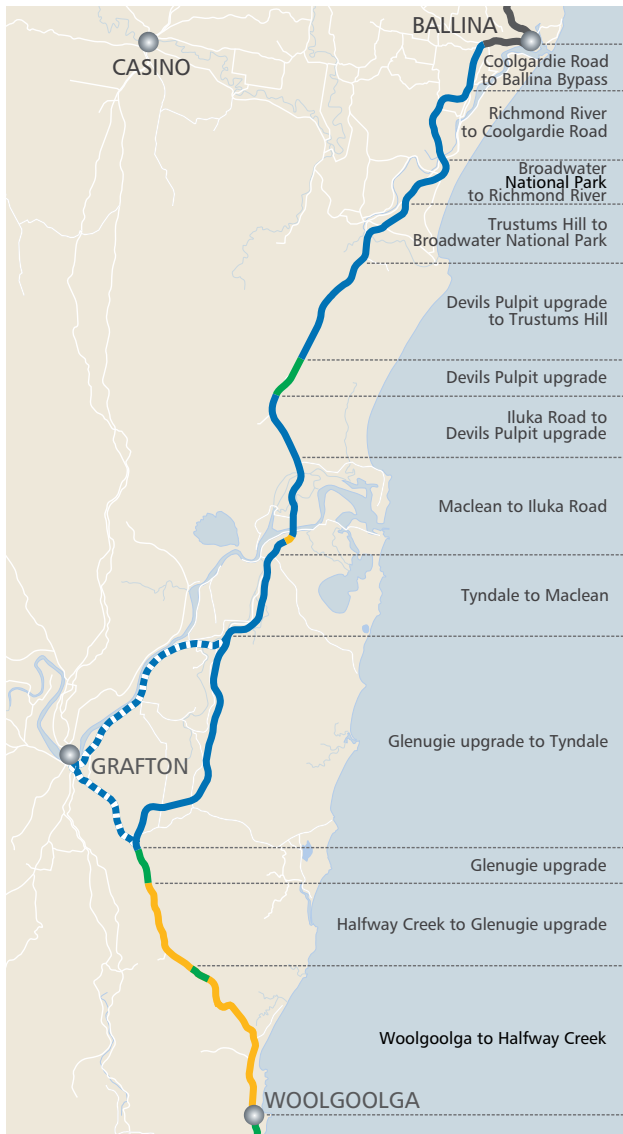
on average  
**206 pieces of large machinery**  
on site per month



Aerial view of the Nambucca Heads to Urunga project (November 2015)



# Woolgoolga to Ballina overview



The 155 kilometre upgrade between Woolgoolga and Ballina is Australia's largest regional infrastructure project and the last highway link between Hexham and the Queensland border to be upgraded to four lanes.

Roads and Maritime has selected Pacific Complete from the private sector as the delivery partner for the Woolgoolga to Ballina Pacific Highway upgrade.

The project was approved by the NSW Minister for Planning in June 2014 and the Federal Minister for the Environment in August 2014; and is jointly funded by the Australian and NSW governments.

## Key features of the Woolgoolga to Ballina upgrade:

- 155 kilometres of dual carriageway
- \$4.356 billion announced cost
- 127 bridges to be built
- 14.2 million cubic metres of earthworks
- Nine interchanges
- Five towns/villages bypassed
- Seven soft soil sites.

## July to December 2015, work progress:

### Major work

- ✓ Major work activity started for Wave 1 soft soil work (Farlows Lane to Chatsworth Road) and Wave 2 soft soil work (Whytes Lane to Pimlico):
  - Placed about 100,000 tonnes of drainage rock
  - Started installing wick drains across both projects
  - Started excavation work and placing fill material on stability embankments
  - Preparing for early geotechnical work.

### Contracts

- ✓ Started evaluating tenders received for soft soil treatment work packages for Wave 3 at Shark Creek to Maclean and Wave 4 at Tuckombil Canal
- ✓ Started evaluating tenders received for early geotechnical work across the project
- ✓ Closed tender and started assessing documents for the Harwood Bridge package.

### Design

- ✓ Awarded contract for early works intersection design
- ✓ Awarded the four detailed design contracts for sections 3 (Glenugie to Tyndale) to 11 (Pimlico to Teven).

### Environment

- ✓ Biodiversity off-set Strategy approved by Federal Department of the Environment



- ✓ Construction Environmental Management Plan (CEMP) for Glenugie to Ballina (sections 3 to 11) approved by the Department of Planning and Environment
- ✓ Received approval for the Emu Management Plan
- ✓ Submitted the Ballina Koala Management Plan to the Independent Reviewer
- ✓ Started developing a strategy for koala habitat revegetation work
- ✓ Salvaging Aboriginal artefacts continued across the project.

**January – June 2016, expected work progress: Weather permitting**

**Contracts**

- Award tenders for soft soil treatment work packages for Wave 3 at Shark Creek to Maclean and Wave 4 at Tuckombil Canal
- Tender, evaluate and award Wave 5A, 5B and 5C early foundation treatment work packages
- Tender, evaluate and award several work packages across the Woolgoolga to Ballina project including utility relocation, Geotechnical Instrumentation Monitoring, Nest Boxes and site wide environmental packages
- Tender, evaluate and award site wide survey packages.

**Design**

- Finalise early works intersection designs
- Start early works construction
- Detailed designs will be about 85 per cent complete

**Environment**

- Obtain Environment Protection Licence for Sections 3 (Glenugie to Tyndale) to 11 (Pimlico to Teven)

- Complete procurement of environmental services required during the construction phase for Sections 3 to 11
- RMS to finalise and obtain approval of remaining management plans (e.g. Koala Management Plans) from state and federal agencies.



Aerial view of Wave 1 soft soil work on the Woolgoolga to Ballina project (December 2015)

# Projects being built

## Woolgoolga to Halfway Creek

**Contractors:** OHL and York joint venture

**Form of contract:** Build only

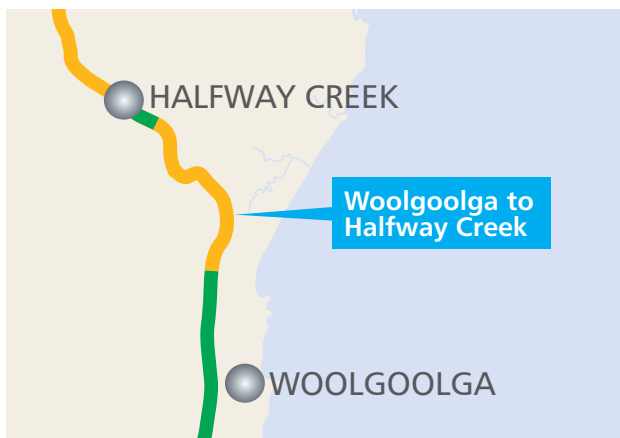
**Average workers on site during the past six months:** 172 workers per month

**Average pieces of large machinery on site during the past six months:** 87 pieces of machinery per month

**Start date of major construction:** June 2015

**Expected completion date:** 2017 (weather permitting)

**Project value:** Forms part of the Woolgoolga to Ballina upgrade



**The Woolgoolga to Halfway Creek project – the first section of the overall Woolgoolga to Ballina upgrade – will link the Sapphire to Woolgoolga project in the south and the existing Halfway Creek upgrade in the north, providing about 14 kilometres of divided road.**

The project is jointly funded by the Australian and NSW governments. The key features of the Woolgoolga to Halfway Creek upgrade include a 300 metre long twin bridge over the Corindi River floodplain to allow flood waters to pass under the highway and bridges over the highway at Sherwood Creek Road and Kangaroo Trail Road for local road access.

**25 days were lost to wet weather in the past six months.**

**July to December 2015, work progress:**

- ✓ Completed and released the operational noise report
- ✓ Completed piling for all bridges on the project
- ✓ Completed U-turn bays on the Grays Road and Rediger Close intersection
- ✓ Completed clearing and grubbing work across the project
- ✓ Bulk earthwork continued with about 40 per cent complete. On average, about 17,000 cubic metres (by volume) of earthwork is completed each day
- ✓ Installed bridge beams at Sherwood Creek Road overpass and Kangaroo Trail Road overpass
- ✓ Bridge beams delivered to site for the Corindi Creek bridges

- ✓ Completed work to relocate all utilities
- ✓ Work continued to install cross drainage structures across the project.

**January – June 2016, expected work progress:** Weather permitting

- Complete Eggins Drive stage 1 work, including opening the Sherwood Creek Road and overpass to traffic
- Complete Kangaroo Trail Road and open to traffic
- Open Corindi Creek bridge to construction traffic
- Switch highway traffic at Range Road onto the temporary diversion
- Open McPhillips access road to local traffic and move highway traffic onto the temporary widening

**Community issues**

- Operational Noise Management Report sent to affected residents.

**Environmental issues**

Nil.

on average  
**172 workers**  
on site per month

on average  
**87 pieces of large machinery**  
on site per month





Aerial view of Corindi Floodplain looking south (November 2015)



# Projects being built

## Halfway Creek to Glenugie

**Contractors:** Civil Mining & Construction

**Form of contract:** Build only

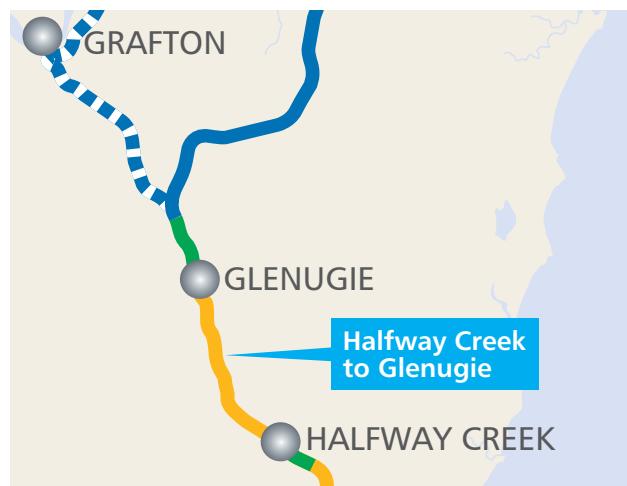
**Average workers on site during the past six months:** 130 workers per month

**Average pieces of large machinery on site during the past six months:** 42 pieces of machinery per month

**Start date of major construction:** June 2015

**Expected completion date:** 2017 (weather permitting)

**Project value:** Forms part of the Woolgoolga to Ballina upgrade



**The Halfway Creek to Glenugie project – the second section of the overall Woolgoolga to Ballina upgrade – will link the completed Halfway Creek upgrade in the south and the existing Glenugie upgrade in the north, providing about 12 kilometres of new road.**

The project is jointly funded by the Australian and NSW governments. Key features of the Halfway Creek to Glenugie section include twin bridges over Halfway Creek and Wells Crossing Creek, as well as a wide median to assist animals crossing at Newfoundland State Forest.

**30 days were lost to wet weather in the past six months.**

**July to December 2015, work progress:**

- ✓ Completed piling for all bridges on the project, including bridges at Halfway Creek and Wells Crossing
- ✓ Completed work to construct all precast bridge girders
- ✓ Work continued to build the highway realignment at Halfway Creek and Wells Crossing for upcoming traffic switches
- ✓ Completed clearing and grubbing work across the project
- ✓ Continued bulk earthwork, with about 30 per cent completed
- ✓ Continued work to install drainage, with about 15 per cent completed

- ✓ Started controlled blasting at Franklins Road on the northern end of the project
- ✓ Completed work to build the concrete batch plant facility.

**January – June 2016, expected work progress:** Weather permitting

- Commission the new concrete batch plant facility
- Switch traffic onto temporary diversions near Kungala Road and Luthers Road
- Continue bulk earthwork and drainage work
- Start concrete paving work
- Complete work to construct bridges at Halfway Creek.

**Community issues**

Nil.

**Environmental issues**

Nil.

on average **130 workers** on site per month

on average **42 pieces of large machinery** on site per month





Earthwork, looking north from Lemon Tree Road (December 2015)



# Projects being built

## Pimlico to Teven (Stage 2)

**Contractors:** CPB Contractors (formerly Leightons)

**Form of contract:** Build only

**Average workers on site during the past six months:** 73 workers per month

**Average pieces of large machinery on site during the past six months:** Seven pieces of machinery per month

**Start date of major construction:** November 2013

**Expected completion date:** Mid 2016 (weather permitting)

**Project value:** Forms part of the Woolgoolga to Ballina upgrade



**The Pimlico to Teven project will upgrade about two kilometres of the Pacific Highway between Pimlico Road and Teven Road. This enabling work will facilitate the next phase of the highway upgrade, which is part of the overall Woolgoolga to Ballina project.**

This project is jointly funded by the Australian and NSW governments. The Pimlico to Teven project involves building bridges over Duck and Emigrant creeks and more than one kilometre of new road on the Bruxner Highway. The project is being carried out in three stages. Stage one was completed by the Ballina Bypass Alliance.

### Stage two is now under construction.

Stage three, which provides a four lane divided road, will be completed as part of the overall Woolgoolga to Ballina upgrade.

**Nine days were lost to wet weather in the past six months.** ☁️

### July to December 2015, work progress:

- ✓ Switched traffic on to the new Bruxner Highway alignment
- ✓ Completed concrete injected column ground treatment on the Pacific Highway. A total of 41,500 metres of concrete injected columns have been installed on the project
- ✓ Completed work to construct Duck Creek Bridge and Emigrant Creek Bridge

- ✓ Settlement period for the wick drain treatment area south of Duck Creek was completed
- ✓ Removed surcharge fill material and completed pavement construction on the Pacific Highway south of Duck Creek
- ✓ Started work to construct the new Pimlico Road.

### January – June 2016, expected work progress: Weather permitting

- Complete the final area of soft soil treatment work on the project
- Construct an embankment for the future south bound carriageway. This embankment will remain in place for the next stage of works
- Complete the pavement north of Duck Creek
- Complete finishing work and switch traffic in three locations.

### Community issues

Nil.

### Environmental issues

Nil.

 on average **73** workers on site per month

 on average **7** pieces of large machinery on site per month





Aerial view of the Pimlico to Teven project (November 2015)



# Ballina to the Queensland border - projects being built

## Tintenbar to Ewingsdale

**Contractors:** Lend Lease

**Form of contract:** Design and build

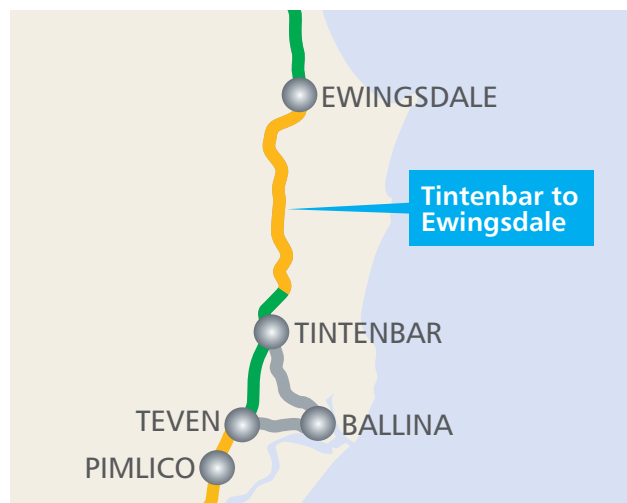
**Average workers on site during the past six months:** 168 workers per month

**Average pieces of large machinery on site during the past six months:** 128 pieces of machinery per month

**Start date of major construction:** September 2012

**Expected completion date:** Early 2016 (weather permitting)

**Project value:** \$862 million.



**The Tintenbar to Ewingsdale project was approved on 29 January 2010. The project is jointly funded by the Australian and NSW governments. It will provide 17 kilometres of four lane divided road from the northern end of the Ballina bypass at Ross Lane to the existing Ewingsdale interchange.**

The majority of the Tintenbar to Ewingsdale project opened to traffic in December 2015, including the twin St Helena tunnels. Remaining work is expected to be complete early 2016, weather permitting.

**25.5 days were lost to wet weather in the past six months.** ☁️

**July to December 2015, work progress:** 🏗️

- ✓ The majority of the upgrade including the twin St Helena tunnels, were opened to traffic
- ✓ Completed electrical and mechanical fit out in the twin St Helena tunnels
- ✓ Completed environmental rehabilitation work under the new bridges
- ✓ Opened new local access roads to traffic
- ✓ Completed finishing work including landscaping, safety barriers, headlight screen painting and signage installation
- ✓ Completed work to remove the bridge over Bangalow Road
- ✓ Diverted Pacific Highway traffic through the new roundabout at Bangalow

- ✓ Work started to remove and relocate parts of the site compound, laydown and stockpile locations in preparation for finishing the upgrade.

**January – June 2016, expected work progress: Weather permitting**

- Complete tie in work at Ewingsdale and Ross Lane interchanges
- Complete the noise mound at Clover Hill
- Rehabilitate local roads used as part of the project.

**Community issues** 👤

- Released the final signage plan for the project
- Continued working on property adjustments
- Out of hours work towards project opening to traffic

**Environmental issues** 🌿

Nil.

👷👷 on average  
**168 workers**  
on site per month

🚧 on average  
**128 pieces of large machinery**  
on site per month





Aerial view of the Tintenbar to Ewingsdale project (November 2015)



