

Nepean River Bridge

May 2016

The NSW Government is building a new pedestrian and cyclist bridge over the Nepean River to connect Penrith and Emu Plains.

The new bridge will provide a safe crossing for pedestrians and cyclists over the Nepean River and improve connections to existing and future shared paths, including the Great River Walk.

The project was approved in November 2014, and in December 2014 Roads and Maritime Services started early site preparation work which involved the demolition of the remaining derelict building on the Log Cabin site at Memorial Avenue, Penrith.

Over the past 15 months, we have carried out the detailed design of the bridge and invited construction tenders to build the bridge. Roads and Maritime has contracted Seymour Whyte Constructions Pty Ltd to build the bridge.

Construction work to build the bridge is due to start in mid-late 2016 and is expected to take about two years to complete, weather permitting.



Benefits

The new bridge will:

- Provide a safe pedestrian and cyclist connection between Penrith City Centre and Emu Plains
- Be a destination and create opportunities for people to engage with the river
- Optimise views of the Nepean River and Victoria Bridge
- Respect the historic setting and place of the area
- Minimise impacts on rowers and other river users by providing a large main span over the river
- Provide a crossing that is flood free, comfortable and safe to use.

Key features

- The main span of the bridge is a large triangular steel truss providing a slender and unique design
- Three canopies will be incorporated along the bridge to provide shade for people including at the terrace, mid span balcony and towards the eastern abutment
- There is only one pier within the river to minimise impact on the rowing community and other river users
- The ochre colour for the structure is influenced by the surrounding natural and built environment.

Relocation of overhead power lines

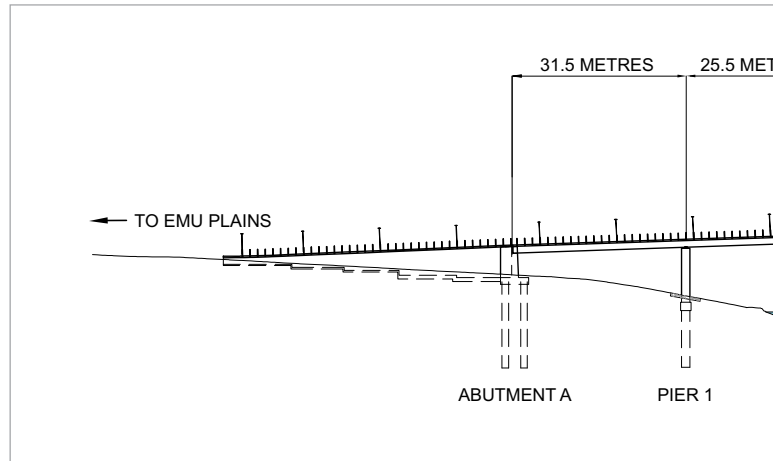
The existing Endeavour Energy overhead high voltage electrical lines crossing the river will need to be relocated further downstream as part of the work.

Detailed information on the relocation is included in an addendum Review of Environmental Factors which is available on the project website:

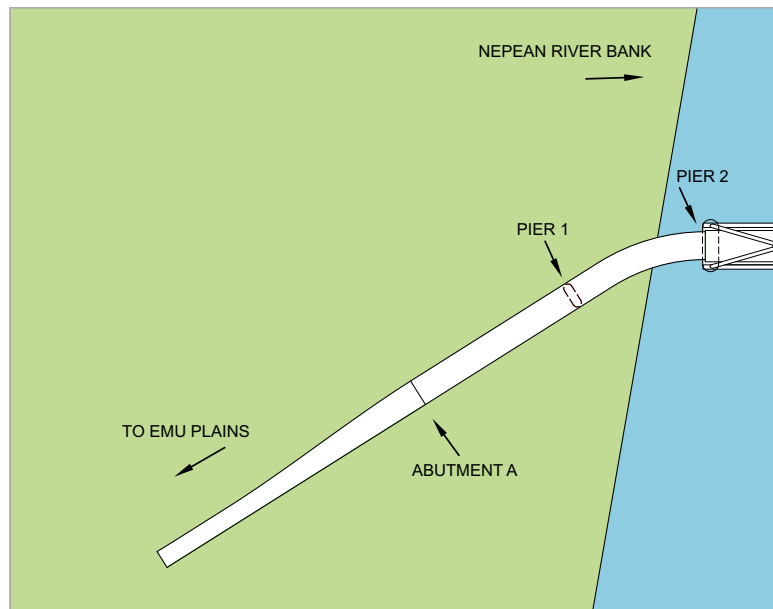
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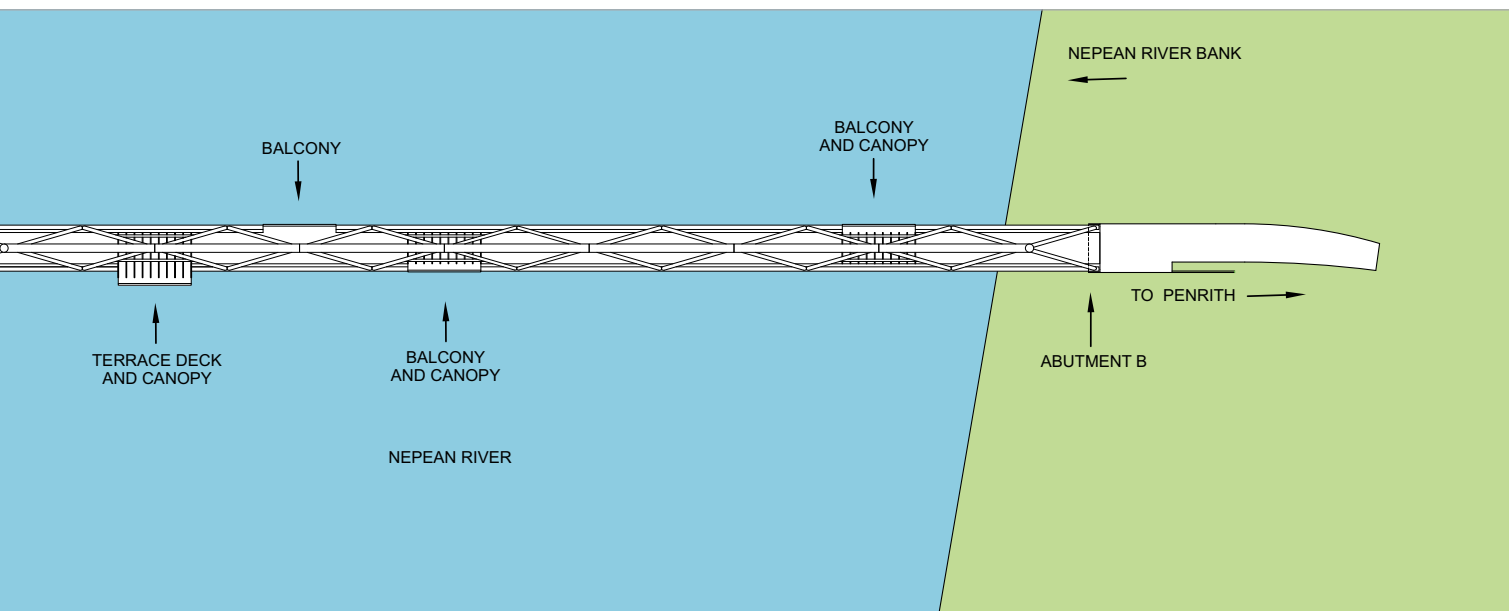
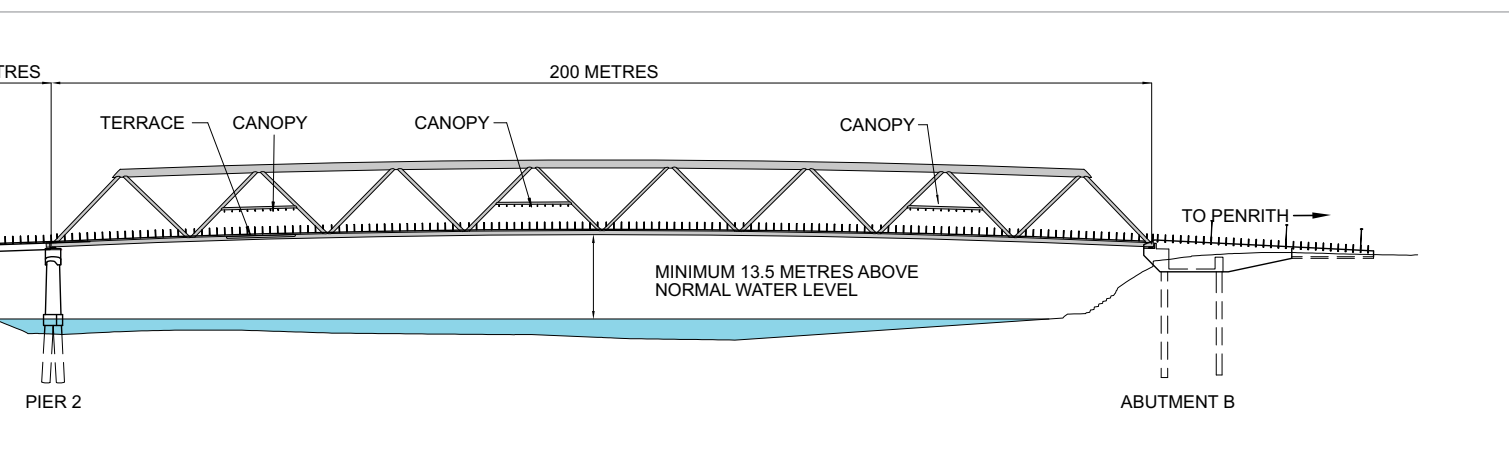
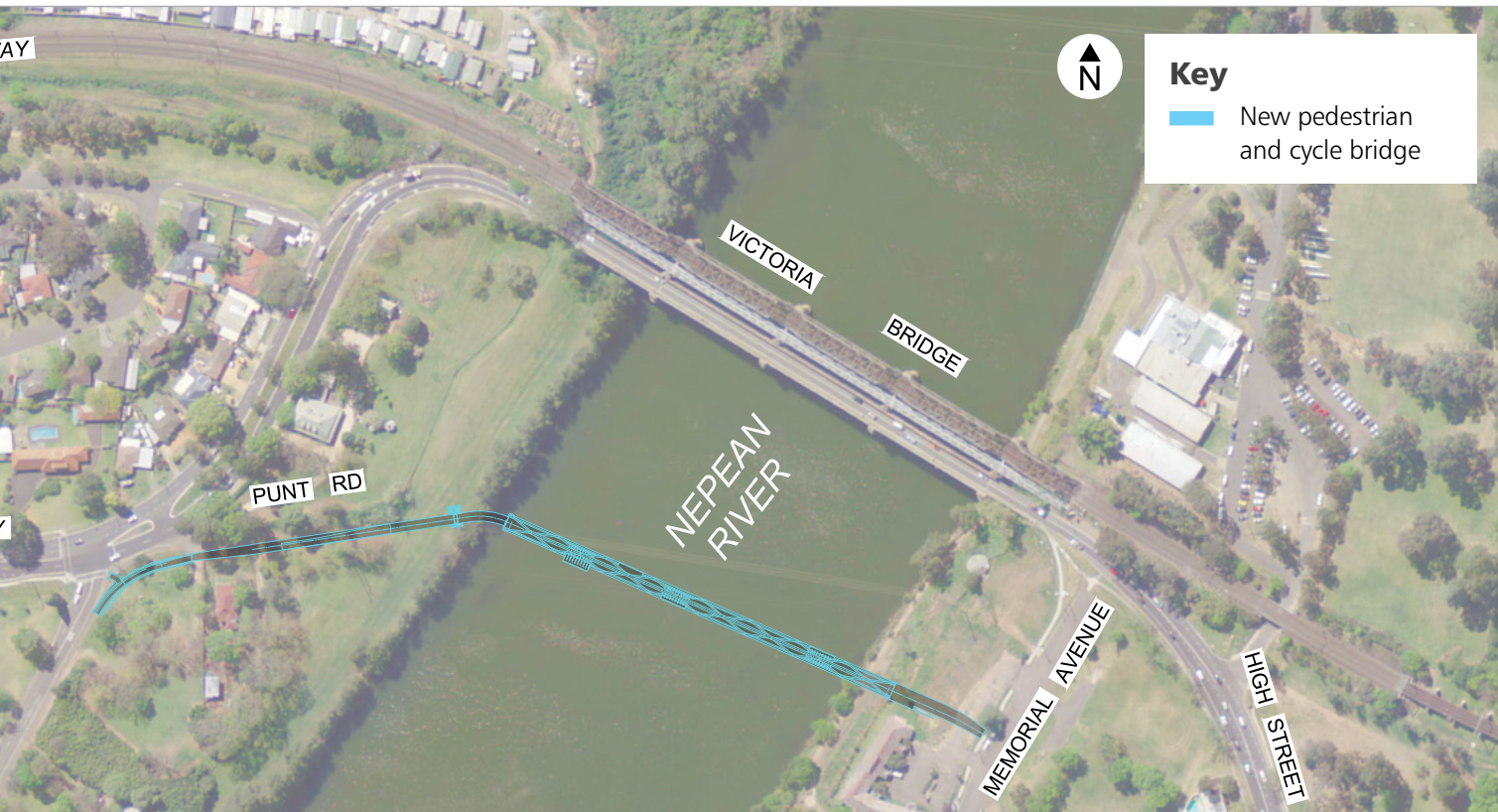
Nepean River Bridge location map



Nepean River Bridge elevation



Nepean River Bridge plan



Changes during detailed design of the bridge

A curved design was considered during the concept design and environmental assessment phase of the project. During the detailed design phase of the project, the design of the bridge has been revised and now incorporates a straight triangular truss with a gentle vertical curve. The straight truss bridge option will still provide a large span, generous width and unique structure that will be an attractive landmark for the area.

The straight option significantly reduces the cost and will provide:

- A more efficient structural design which reduces the amount of steel needed by 20 per cent
- Less complex fabrication with less welding and more similar pieces of steel
- A simplified construction methodology because it will reduce bridge self-weight loads
- A reduction in risks during the construction of the bridge
- Environmental benefits by reducing the energy required to build the structure as a smaller amount of steel would be needed and this in turn reduces the carbon footprint.

The estimated cost of the bridge design was originally prepared in 2012 at strategic stage and was based on a preliminary concept design. As the design was developed the complexity of the project became better understood, and the estimated cost of the bridge is now \$49 million.

The key factors that contributed significantly to a higher than previous cost estimate were the complex nature of the long span structure and associated construction methodology, as well as the relocation of overhead high voltage electrical lines crossing the river.

The new straight truss bridge option has helped to keep the overall cost down.



Nepean River Bridge straight design



Nepean River Bridge curved design



Nepean River Bridge straight design

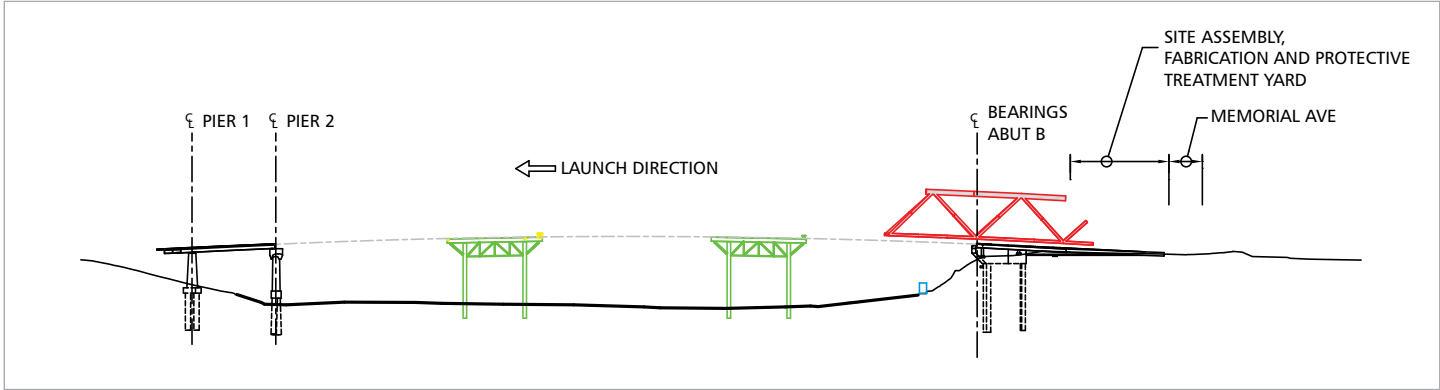


Nepean River Bridge curved design

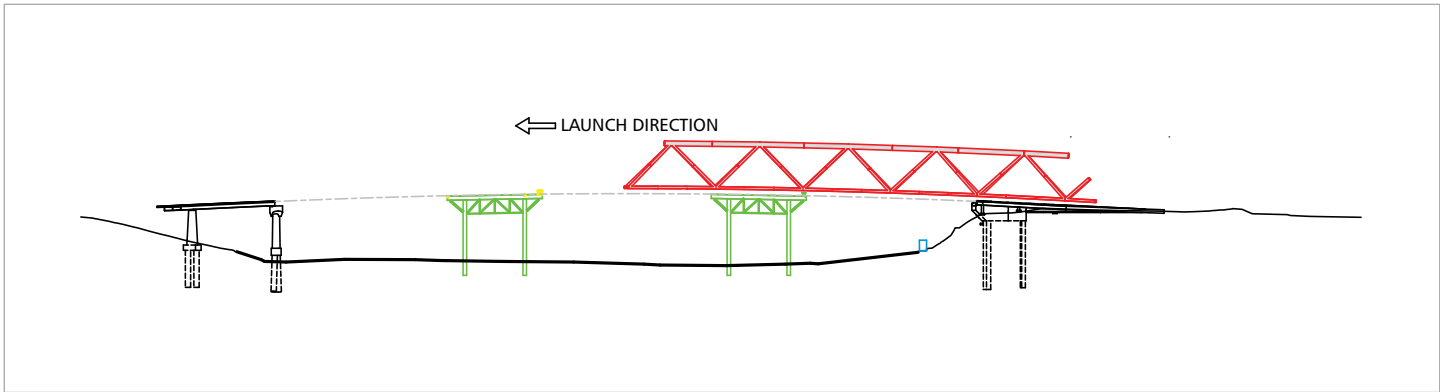
Construction methodology

We have chosen a construction methodology that is safe and minimises disruption to river users and the local community. This methodology is seen as cost effective when compared against other potential construction methodologies. The bridge will be assembled on site on the eastern side of the river and will be progressively moved across to the western side. Temporary piers will be installed while the bridge is being moved to its final position. We have included elevation drawings to show the construction methodology.

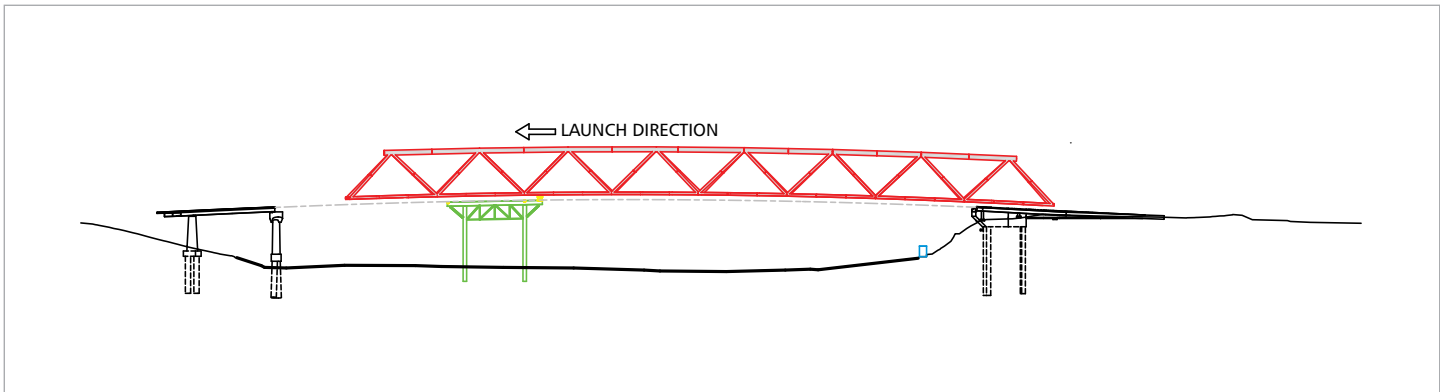
Key	
—	Movement of truss in stages
—	Temporary piers
—	Temporary pedestrian hoarding over Great River Walk



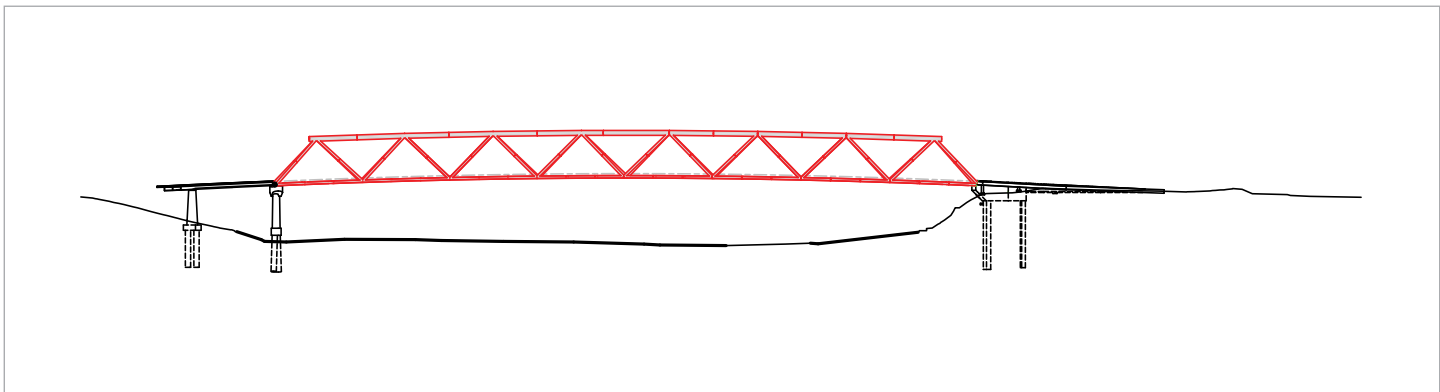
Stage 1



Stage 2



Stage 3



Stage 4

Fast facts

- Main span length – 200 metres
- Overall bridge deck length – 257 metres
- Overall length of shared path – 455 metres
- Truss width – 8 metres
- Truss height – 13.5 metres
- Number of support structures – two abutments and two piers
- Steel tonnage of truss – 485 tonnes
- Steel tonnage of deck – 155 tonnes.

Australian shared path bridge comparisons

Once built, the Nepean River Bridge will have the largest main span for a shared path bridge in Australia. Similar shared path bridges in Australia include:

- Goodwill Bridge over Brisbane River in Queensland – Longest main span: 102 metres, length: 450 metres
- Kurilpa Bridge over Brisbane River in Queensland – Longest main span: 128 metres, length: 470 metres
- Pedestrian bridge over Swan River in Western Australia – Longest main span: 160 metres, length: 400 metres.

Background

Community members campaigned for a safer crossing over the Nepean River for pedestrians and cyclists as the current path on Victoria Bridge has no barrier between the narrow footpath and road traffic.

During the strategic stage and concept development, a clip on shared path as well as a stand-alone pedestrian and cyclist bridge directly next to Victoria Bridge on the southern side were investigated. A structural feasibility study was completed in 2010, which determined the Victoria Bridge would not have sufficient structural capacity to accommodate a clip on shared path structure. An adjoining bridge next to Victoria Bridge would adversely affect flooding and impact on the heritage structure.

The final location of the bridge was pushed further south away from Victoria Bridge to avoid hazards and other local constraints. These included heritage, access to and around property and the submarine high pressure gas mains on the

southern side of the bridge which supplies Blue Mountains residents with gas.

In mid-2012 a number of community information sessions were held to assess the best location for a new crossing of the river. Six crossing locations were ranked against key criteria identified during the community consultation workshops including safety, function, cost and community. The location south of Victoria Bridge was considered the most safe and appropriate. The preferred bridge design and location was chosen following extensive community consultation, as it best addressed environmental, engineering and community constraints.

What happens next?

Construction is expected to start in mid-late 2016 and the new bridge should be open by mid 2018, weather permitting. Roads and Maritime will continue to keep the community informed about this project.

Further information

For further information about the project, please contact the Nepean River Bridge project team on:



1800 733 084



nepeanbridge@rms.nsw.gov.au



Nepean River Bridge Project,
Roads and Maritime Services,
PO Box 973, Parramatta NSW 2124



www.rms.nsw.gov.au/projects/sydney-west/

You can also email the project team and ask to be added to the stakeholder list to ensure you receive up-to-date information about the project.



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