



**Transport**  
Roads & Maritime  
Services

# **Upgrading the Pacific Highway Oxley Highway to Kempsey**

## Refined Concept Design Submissions Report

March 2014

## Executive Summary

The Oxley Highway to Kempsey (OH2K) project involves an upgrade of about 37 kilometres of the Pacific Highway to four-lane divided highway from north of the Oxley Highway interchange to south of Kempsey. Planning for the project is jointly funded by the Australian and New South Wales governments.

Between November 2012 and January 2013 the refined concept design for OH2K was exhibited for public comment. During the exhibition period a community update and project flyer were distributed to residents and interested parties registered on the project database and staffed displays were held on 13 and 15 December 2012. The refined concept design was also available on the Roads and Maritime website.

This report includes an overview of issues raised and responses to submissions received about the refined concept design. The public comment period closed on 18 January 2013, however, submissions were accepted until 25 February for inclusion in this report. Fifteen written submissions were received from local residents, a business, local council, recreational user groups and special interest groups. In addition, community feedback provided during staffed displays, telephone calls and a flooding workshop have been recorded and reviewed as a part of this report.

Key issues raised about the refined concept design include: changes to access; timing for construction; highway standard and staging (motorway or arterial); increased travel distance and travel time; noise and flooding impacts.

In response to issues raised Roads and Maritime has made adjustments to the refined concept design. These adjustments include:

- Modifying the Yarrabee interchange to enable the Kempsey Sporting Car Club to utilise the existing section of Hill Climb Road during racing events
- Providing a new local bus interchange near Blackmans Point. The facility would consist of a section of widened shoulder and a turnaround facility located on the eastern service road connection to Blackmans Point Service Road. This will allow bus services to depart from the existing highway or the upgraded highway and pull into the eastern service road to allow children to change buses.

Possible adjustments to the refined concept design, subject to further investigation, may include:

- Provision of a pedestrian underpass near Wharf Road to provide access to the school bus stops
- Provision of a u-turn facility on the northbound carriageway between Yarrabee Road and Haydons Wharf Road to reduce travel distances to local areas in this section of the highway
- Provision of a shared pedestrian / cycle path across the old Maria River Bridge to Old Coast Road to allow cyclists to use the existing Pacific Highway between Kundabung and Kempsey.

The displayed refined concept designs are illustrated in the [Community Update refined concept design November 2012](#), located on Roads and Maritime project website at [www.rms.nsw.gov.au](http://www.rms.nsw.gov.au)

## Table of Contents

1	Introduction and background .....	3
1.1	Purpose of the report .....	3
1.2	Project overview .....	3
1.3	Refinements to the concept design .....	4
2	Exhibition of refined concept design .....	6
3	Submissions received .....	7
3.1	Submission overview .....	7
3.2	Respondents and submissions .....	7
4	Responses to issues .....	8
4.1	Support for the project.....	10
4.2	Service / local roads .....	10
4.3	Property access .....	11
4.4	Interchanges .....	12
4.5	Bus stop access .....	12
4.6	Noise impact .....	12
4.7	Social impact.....	13
4.8	Flooding .....	14
4.9	Business impact .....	14
4.10	Outside project scope .....	14
5	Community feedback received during public comment period .....	16
6	Community feedback received during Wilson River Flooding workshop .....	20
6.1	The refined concept design .....	21
6.2	Flood model .....	22
6.3	Existing Highway .....	25
6.4	Construction of the project .....	26
7	What happens next? .....	27

# 1 Introduction and background

## 1.1 Purpose of the report

This report identifies and responds to the issues raised during the public exhibition period of the refined concept design for the OH2K project. This report provides the following information:

- Refinements to the concept design as displayed in the *Oxley Highway to Kempsey Pacific Highway Upgrade Environmental Assessment* (the Environmental Assessment) (Section 1)
- Details of the community involvement activities carried out during the public exhibition period (Section 2)
- Overview of the submissions received during the public exhibition period (Section 3)
- Identification and response to issues raised in the submissions received during the public exhibition period (Section 4)
- A summary of community issues raised for consideration during the exhibition period consultation activities (Section 5)
- A summary of community feedback from the Wilson River floodplain workshop (Section 6).

## 1.2 Project overview

Roads and Maritime Services is continuing to upgrade the Pacific Highway to dual carriageway between the Oxley Highway and Kempsey. Planning for this project is jointly funded by the Federal and New South Wales Governments. The project involves an upgrade of about 37 kilometres of the Pacific Highway to four-lane divided highway from north of the Oxley Highway interchange to south of Kempsey.

The Environmental Assessment was displayed for community comment in September 2010 and approved by the NSW Minister for Planning and Infrastructure in February 2012.

The Australian Government Department of the Environment (formally the Department of Sustainability, Environment, Water, Population and Communities) issued conditional approval under the *Environment Protection and Biodiversity Conservation Act 1999* in January 2014.

The OH2K upgrade is proposed to be constructed in three delivery packages:

- Sancrox early works package. Early works include building a bridge over the Pacific Highway about 600 metres south of the existing Sancrox Road intersection and building the associated local service roads to improve access to the Sancrox Road industrial precinct
- Oxley Highway to Kundabung (OH2Ku). This project is about 23 kilometres long and starts just north of the Oxley Highway interchange and finishes north of Barrys Creek, near Kundabung
- Kundabung to Kempsey (K2K). This section is about 14 kilometres long and starts north of Barrys Creek, near Kundabung, and finishes at the southern end of the Kempsey Bypass project.

The design for the OH2K project is a combination of arterial (Class A) and motorway (Class M) standard highway. Specifically, the highway would be upgraded to:

- Motorway standard between Oxley Highway and Haydons Wharf Road. No direct access to the upgraded highway is provided between interchanges and service road access to the highway is limited to ramps at interchanges in motorway standard section

- Arterial standard between Haydons Wharf Road and south Kempsey. A number of interchanges are proposed however, property access and local roads could still intersect with the upgraded highway as left in / left out only. The concept design includes provision for the upgrade of this section to a full motorway standard in the future when warranted by increased traffic volumes, and subject to funding availability.

### **Project status**

SMEC Pty Ltd and Hyder Pty Ltd joint venture were awarded a contract to review the concept design for the OH2K project and prepare the detailed design for the K2K section and Sancrox early works package.

The concept design is being further refined to incorporate issues identified in community submissions as well as ongoing environmental and engineering studies. This refined concept design will be developed into the detailed design to build the project.

Other project activities being carried out include:

- Finalising the detailed design of the K2K and Sancrox early works package
- Geotechnical investigations and detailed ground survey
- Continuing environmental studies and property acquisition
- Flooding workshops with interested community members to discuss flood immunity across the Wilson River floodplain.

### **Timing and staging of construction works**

Tenders have closed for the Sancrox early works package with the contract awarded to Ferrovial Agroman (Australia) Pty Ltd on 11 February 2014. Work is expected to start in early to mid 2014, subject to environmental approvals being obtained.

Roads and Maritime has invited tenderers for the design and construction of the Oxley Highway to Kundabung (OH2Ku) section. Lend Lease was announced as the preferred tenderer in January 2014 and as the successful tenderer in March 2014.

Roads and Maritime called for tenders for the construction of the Kundabung to Kempsey (K2K) section in July 2013. Tenders have closed and the successful supplier is expected to be announced in late March 2014, with work to start in mid to late 2014, subject to environmental approvals.

## **1.3 Refinements to the concept design**

Refinements to the concept design were exhibited between November 2012 and January 2013 for community comment. Key refinements proposed include:

- Provision of an elevated roundabout at the Blackmans Point interchange to reduce the project footprint and cost, while still meeting performance requirements
- Lowering of the alignment through Cairncross State Forest to reduce the need to import construction material
- Improving the flood immunity of the highway across the Wilson River floodplain. The concept design in the Environmental Assessment provided flood immunity, and access to the upgraded highway, during a 1:20 year flood event. The refined design provides for flood immunity during a 1:100 year flood event
- Adjusting the alignment slightly to the west across the Wilson River floodplain to minimise heritage concerns and improve geotechnical conditions

- Provision of bridges, rather than culverts at the Barrys Creek crossing to improve fauna connectivity
- Combining the intersection of Mobbs Drive and Mingaletta Road into one access point to improve safety
- Refined configuration of the interchange at Kundabung Road and Smiths Creek. Additional land acquisition has allowed a more efficient interchange configuration with on / off ramps connecting to Kundabung Road adjacent to the overbridge. Access to Smiths Creek Road will be via the interchange and Rodeo Drive
- Adjustment of the road alignment at Rodeo Drive to minimise impact on properties on the western side of the upgrade and facilitate the new interchange configuration at Kundabung Road and Smiths Creek
- Moving the alignment east at Pipers Creek to minimise impact on the known habitat of an endangered frog species. The western service road will cross Pipers Creek on the existing highway bridge
- Closure of the existing heavy vehicle inspection bay at Kundabung and provision of a new southbound inspection bay about 1.5 kilometres south of Middle Gate Road
- Closure of the western service road on either side of Maria River in the arterial class arrangement, as the heritage listed Maria River Bridge has been assessed as unsuitable for service road traffic. Access to Old Coast Road south of the Maria River will be via a u-turn facility. Access to the western service road north of Maria River will be via the Kempsey bypass southern interchange
- Removal of the eastern access road between Kemps Road and the Kempsey bypass southern interchange. This would change access to Kemps Road in the future motorway standard. An overbridge will provide access to the western service road. This provides a better value for money solution and reduces the impact on vegetation
- Retaining the existing southbound carriageway bridge at Stumpy Creek as a cost saving measure
- Refined u-turn facilities to improve safety and provide flexibility to access local properties
- Adjustments to some private property accesses.

## 2 Exhibition of refined concept design

Consultation with stakeholders was carried out between November 2012 and January 2013 to assist Roads and Maritime in finalising the refined concept design. During the exhibition period a range of consultation activities were carried out to engage stakeholders on the refined concept design and encourage participation in the exhibition process.

Consultation activities included:

- Distribution of a community update to over 300 households in the immediate area of the OH2K upgrade route. The community update explained the refined concept design, provided details of the exhibition period and invited comment on the refined concept design
- Distribution of a project flyer to about 10,500 households in the wider community, explaining the refined concept design and providing details about the exhibition of the refined concept design
- Staffed displays at the Telegraph Point School of Arts on:
  - Thursday, 13 December 2012 – 9am to 6pm
  - Saturday, 15 December 2012 – 9am to 3pm
- Meetings with affected landholders, business owners and local stakeholder groups
- Meetings with representatives from Kempsey and Port Macquarie-Hastings councils
- Display of the refined concept design at seven locations:
  - Roads and Maritime Pacific Highway Office, Grafton
  - Roads and Maritime Motor Registry Office, Wauchope
  - Roads and Maritime Motor Registry Office, Port Macquarie
  - Roads and Maritime Motor Registry Office, West Kempsey
  - Kempsey Shire Council Chambers, West Kempsey
  - Port Macquarie-Hastings Council, Port Macquarie
  - Telegraph Point Post Office, Telegraph Point
- Information available for download or viewing on the project website
- The toll free project information line and email for the project
- Advertising in local newspapers.

Comments provided via the toll free project information line; or by community members who attended staffed displays, were recorded and their issues addressed in Section 5 of this report. Comments made by community representatives who attended the Wilson River floodplain workshop were recorded and their issues addressed in Section 6 of this report.

### **3 Submissions received**

#### **3.1 Submission overview**

The refined concept design was exhibited for comment between 26 November 2012 and 18 January 2013. Roads and Maritime continued to accept submissions until 25 February 2013. Submissions were accepted by:

- Email to the OH2K project e-mail address: [oh2kinfo@shjv.com.au](mailto:oh2kinfo@shjv.com.au)
- Post to PO Box 1052 North Sydney, NSW, 2059 or the Project Manager at Locked Bag 2030, Newcastle, NSW 2300
- In person (written submissions provided to the project team at staffed displays).

#### **3.2 Respondents and submissions**

Roads and Maritime received fifteen written submissions in response to the exhibition of the refined concept design. This included:

- Eleven submissions from private individuals. One individual made more than one submission
- One submission from a local community group (Kempsey Sporting Car Club)
- One submission from local government (Kempsey Shire Council)
- One submission from a business operator.

Each submission received was examined to identify key issues, which were then grouped by category. Where similar issues have been raised in different submissions only one response has been provided.

## 4 Responses to issues

The majority of submissions received raised multiple issues for consideration. Table 1 summarises the issues raised, the submission(s) in which they were raised and the section of the report in which the response is provided.

**Table 1 - Issues presented in submissions**

Issue	Submission	Where addressed
<i>Support for the project</i>		
1. The respondent commented that the OH2K project was “a great project that will benefit all from a small Community as Telegraph Point to the Nation”.	6	4.1 (1)
2. The respondent stated that the refined Kundabung interchange was a lot better than the original design.	13	4.1 (1)
<i>Service / local roads</i>		
1. The respondent suggested using the existing Pacific Highway as an alternative to the proposed service road in Kundabung. As Rodeo Drive and Ravenswood Road would need improvements to before being used as service roads.	8	4.2 (1)
2. The respondent suggested service roads between Mingaletta Road and Kundabung Road be constructed to improve safety for children using the school bus and access for emergency services.	13	4.2 (2)
3. The respondent indicated concern that there appeared to be a loss of access from Old Coast Road to the northbound service road and Kempsey, and asked for an explanation of the access.	9	4.3 (3)
4. The respondent suggested the service road between Kundabung Motel and south Kempsey interchange be routed via Old Coast Road, to provide an alternative route during times of heavy traffic or incidents on the highway.	9	4.2 (4)
5. Kempsey Shire Council raised concerns about the handover of the existing timber Stumpy Creek Bridge following the completion of the upgrade.	15	4.2 (5)
6. The respondent asked if sections of the existing Pacific Highway, to be handed to Council as part of the new service road network, would be repaired prior to handover.	6	4.2 (6)
7. The respondent inquired if the old Maria River Bridge could be utilised by cyclists and pedestrians to maintain an off-highway connection from Kempsey to Kundabung.	10, 14	4.2 (7)
8. The respondent asked Roads and Maritime to consider cyclists when designing the sections of the main carriageway that do not have adjacent service roads.	10, 14	4.2 (7)
<i>Property access</i>		
1. The respondent indicated concern about access to Cairncross Waste Management Facility and the signposting of the facility.	3	4.3 (1)
2. The respondent requested the Kempsey Road overbridge and new Maria River Bridge be built sooner to reduce travel distance when travelling south from his home.	12	4.3 (2)
<i>Interchanges</i>		

Issue	Submission	Where addressed
1. The respondent considers the Blackmans Point Road interchange to be confusing and suggests it needs to be well signposted.	3	4.4 (1)
<i>Bus stop access</i>		
1. The respondent raised concerns about the safety of parents and children using school bus stops if the service roads were not constructed as part of the first stage.	13	4.5 (1)
<i>Noise impact</i>		
1. The respondent is concerned about noise impact during construction and operation, specifically, traffic using the completed upgrade. The respondent asked for noise mitigation to be installed as soon as possible and prior to construction commencing.	7	4.6 (1)
<i>Social impact</i>		
1. The respondent noted the existing Driver Reviver stop at Sancrox would be impacted by the project and asked if an alternative location has been considered.	6	4.7 (1)
2. The respondent indicated concern about potential impact on Stoney Park (holiday park and water sports complex) and asked that water-skiers continue to be informed about the work and associated impacts.	6	4.7 (2)
3. The respondent expressed concerns about the potential impact the new Wilson River Bridge may have on water-skiers using the river.	11	4.7 (2)
<i>Flooding</i>		
1. The respondent advised the culvert under the existing highway, south of the Wilson River, is higher than surrounding land. The respondent feels this is contributing to flooding impacts on local residents and the Telegraph Point Primary School.	6	4.8 (1)
2. The respondent noted the new alignment across the Wilson River floodplain had not been included in the <i>Draft Hastings River Floodplain Risk Management Study (Oct 2011)</i>	6	4.8 (2)
<i>Business impact</i>		
1. The respondent is concerned about potential loss of trade following the opening of the upgrade and asked if they were eligible for compensation and directional signage.	4	4.9 (1)
2. The Kempsey Sporting Car Club raised concerns about the impact of the OH2K project on the club's ability to hold major events.	5	4.9 (2)
<i>Outside project scope</i>		
1. The respondent expressed a preference for additional funds to be spent on upgrading the rail network instead of this project.	1	4.10 (1)
2. The respondent expressed concerns about the delay caused by current roadwork activities between Kempsey and Port Macquarie and the number of speed zones creating frustration for motorists.	2	4.10 (2)

Responses to issues raised in submissions received are presented below.

## **4.1 Support for the project**

- (1) The support for the project is acknowledged and appreciated.

## **4.2 Service / local roads**

- (1) The OH2K project includes a network of service and access roads. Development of the service and access road network considered the need for local community members to maintain access to local facilities, and access to the Pacific Highway for travel to major centres north and south of the area. Several options for providing a service road network were considered during the development of the OH2K project.

The use of the existing Pacific Highway as a service road on the western side of the alignment in the Kundabung area is not feasible as it would require moving the main carriageway to the east, which would result in additional property acquisition and agricultural impacts.

Roads and Maritime confirms some of the existing local roads forming part of the service road network may require upgrading, the extent of which would be determined during detailed design. Incorporating existing sections of Rodeo Drive and Ravenswood Road into the service and access road network in the Kundabung area takes advantage of existing public road corridors, improves connectivity between Rodeo Drive and Ravenswood Road, minimises property acquisition and provides the best value for money solution.

Roads and Maritime acknowledges there would be an increase in local traffic using this section of Rodeo Drive when it is opened as part of the proposed service road network. Roads and Maritime suggests following the completion of the OH2K project traffic volumes on bypassed sections of the existing Pacific Highway would be lower and result in less wear and tear on the road pavement.

Rodeo Drive is identified as a proposed service road in the *Preferred Route Option Report* (2006). The use of Rodeo Drive as a service road is also described in more detail in the *Oxley Highway to Kempsey Highway Access Strategy* published by the RTA in October 2007 and the Environmental Assessment (2010).

- (2) Roads and Maritime notes the request to construct the service road network between Mingaletta Road and Kundabung Road. As discussed in the Environmental Assessment (2010), the decision to stage the construction of the OH2K project has included consideration of traffic volumes, funding models, Pacific Highway upgrade priorities and other engineering issues. The section between Haydons Wharf Road and Kempsey would be built to arterial road standard and upgraded to motorway standard in the future when warranted by increased traffic volumes, subject to funding availability.

Roads and Maritime reviewed the local road network and consulted emergency service organisations and Busways during the development of the refined concept design and considers the proposed service road network and upgraded highway provide appropriate access for local bus services, emergency services and local property owners. Specifically, to improve safety for road users the arterial standard includes construction of dual carriageway with rationalised at-grade intersections, a service road connection on the western side of the highway between Kundabung Road and Old Coast Road and adjustments to the at grade intersections at Mingaletta, Upper Smiths Creek and Wharf Roads.

- (3) Roads and Maritime confirms the refined concept design includes an adjustment to access in the Old Coast Road area. This adjustment has been necessary as the

heritage-listed Maria River Bridge has been assessed as unsuitable for service road traffic. Roads and Maritime has contacted property owners along Old Coast Road to advise them of the change in the revised concept design and met with a group of local residents on 4 March 2013 to outline the access arrangements under the refined concept design and discuss opportunities to further refine design in this area.

Residents along Old Coast Road will continue to have access to the upgraded Pacific Highway via the proposed service road (existing Pacific Highway), and Kempsey via the upgraded highway.

- (4) The existing Pacific Highway will be retained for use as a service road connection between the northern end of Ravenswood Road and the upgraded highway near the Old Coast Road intersection. The refined concept design includes emergency crossover facilities to allow traffic to be diverted onto a single carriageway should an incident or major repair works require the closure of one of the carriageways. These facilities are regularly spaced along the length of the project and will reduce the need to divert highway traffic onto the service roads following incidents.
- (5) Roads and Maritime has consulted Kempsey Shire Council and Port Macquarie-Hastings Council about the handover and maintenance of assets. Roads and Maritime has a number of policies and guidelines to assess the level of contribution to councils in the handover of assets. These guidelines have been successfully used on previous highway upgrade projects.

Reclassification of the road network needs to take place to reflect changes in road function, land use, economic activity, population and the construction of new roads. The effective classification of roads and assets ensures roads are funded and managed according to how they are used.

Consultation with Kempsey Shire Council will continue to address issues with ongoing maintenance of assets such as Stumpy Creek Bridge.

- (6) Roads and Maritime is negotiating the handover of any newly constructed service and access roads and bypassed sections of the existing highway with Port Macquarie-Hastings Council and Kempsey Shire Council. These negotiations will deal with issues such as; the status of the roads to be handed over, future funding issues associated with asset handover and works required as part of the handover process.
- (7) Roads and Maritime will investigate the opportunity to use the old Maria River Bridge as a cyclist and pedestrian connection between the western service roads, north and south of the Maria River.

Roads and Maritime confirms there will be no provision for pedestrian use of the main carriageway due to safety reasons. Cyclists would be permitted to use the 2.5 metre shoulders of the OH2K project. Signposting and crossing points would be provided for cyclists at the interchange and traffic arrangement ramps. However, cyclists are encouraged to use the service road network, which would offer a safer cycling environment due to lower vehicle speeds and traffic volumes.

Pedestrian footways would be provided across the main carriageways at the Sancrox Road overbridge (about 600 metres south of Sancrox Road) and the Kundabung Road overbridge. In addition, there would be opportunities for pedestrians to cross the upgraded highway at other overbridges and vehicular underpasses. However, no specific provision has been made due to anticipated low volumes of pedestrian traffic.

### **4.3 Property access**

- (1) Roads and Maritime confirms access to the Cairncross Waste Management Facility will be from the existing Pacific Highway via the Blackmans Point Road interchange. The traffic movement paths at this interchange have been refined to reduce the potential for

confusion by motorists. Appropriate sign posting of the facility would be incorporated into the upgrade to assist residents in locating the facility.

- (2) Roads and Maritime confirms the old Maria River Bridge has been found to be unsuitable for vehicle traffic and would need to be replaced to complete the proposed service road connection across the Maria River. As a result, the service road across the Maria River will not be built in the first stage of construction. The refined concept design includes adjustments to access in the area of Old Coast Road and Kemps Road to allow access to and from the main carriageways until a new service road bridge can be constructed in the future.

Roads and Maritime acknowledges the refined design would increase travel distances for some residents in the area between the Maria River and Stumpy Creek. Roads and Maritime is investigating adjusting the design to include a left in access to the service road north of the Maria River to reduce travel distances for residents. A new service road bridge across the Maria River as well as an overbridge connecting Kemps Road to the service road would be constructed when this section is upgraded to motorway standard.

#### **4.4 Interchanges**

- (1) The Blackmans Point Road interchange is designed to accommodate multiple traffic movement paths. It maintains good connectivity between Port Macquarie, Telegraph Point and Blackmans Point for local traffic, while also serving as the northern access to Port Macquarie from the upgraded Pacific Highway. The proposed interchange would function in a similar way to the existing interchange at the Pacific and Oxley highways. Appropriate sign posting would be provided to assist motorists using the interchange.

#### **4.5 Bus stop access**

- (1) Roads and Maritime acknowledges the concerns of the respondent. As discussed in section 18.3.2 of the Environmental Assessment (2010) there is no provision for bus stops along the upgraded main highway. Roads and Maritime has consulted with local school bus operators to ensure bus services and school bus stops meet the requirements of the local community and bus operators.

The local bus services would use stops on local roads accessed by left in / left out movements for setting down and picking up passengers. The refined concept design developed for the arterial standard includes areas on local roads near intersections with widened verges to allow busses to stop. These stopping locations improve the safety for the bus operator and passengers when compared to the existing arrangements as it will prevent right turn movements by buses across high speed highway traffic and they are in areas of lower traffic volumes than either the existing or upgraded highway.

A School Bus Route Strategy has been developed in consultation with Busways to identify appropriate locations and facilities required for school bus stops and ensure appropriate access for parents transporting children to and from the bus stops. In addition, a bus interchange will be provided along the connection between Blackmans Point Road interchange and Blackmans Point Road to assist local bus operators manage school bus operations. Roads and Maritime appreciates the cooperation provided by Busways during the development of the project.

#### **4.6 Noise impact**

- (1) Roads and Maritime notes the request for early installation of noise mitigation measures and confirms Roads and Maritime is committed to installing mitigation measures at

residences identified in the noise assessment, carried out during the preparation of the Environmental Assessment, as soon as practicable. In addition, Roads and Maritime is in the process of engaging environmental specialists to assess the potential noise impacts of the project. Landowners of properties identified to receive noise mitigation will be contacted to discuss specific mitigation and determine installation timeframes. Roads and Maritime will review the general traffic noise as part of the project and will endeavour to implement the required mitigation at the earliest possible opportunity. Roads and Maritime would undertake further noise monitoring within 12 months of the project's completion to determine; how accurate the noise predictions were, how affective any adopted noise reduction measures are, and if there is a need for additional measures.

## **4.7 Social impact**

- (1) Roads and Maritime understands the importance of Driver Reviver stops along the Pacific Highway. The potential impact on the Sancrox Driver Reviver stop was identified during the development of the Environmental Assessment. Alternative locations have been considered in consultation with Driver Reviver representatives. It is agreed the Driver Reviver stop will remain near its current location with some adjustments required as part of the Sancrox Road traffic arrangement. Roads and Maritime has committed to improve the site parking and vehicle movement paths as part of these adjustments.

Access to the Driver Reviver stop will be maintained during construction of the Sancrox early works project and additional sign posting will be provided to direct highway motorists to the Driver Reviver stop. Roads and Maritime will continue to liaise with Driver Reviver representatives during construction.

- (2) Roads and Maritime confirm the refined concept design, in the area of the Wilson River crossing, has not changed from the concept design included in the Environmental Assessment (2010).

Roads and Maritime is committed to working with recreational water-skiing groups and the Maritime Division to identify ways to resolve the potential impact of OH2K project on water-skiing activities.

The Maritime Division of Roads and Maritime was consulted to identify constraints to water-skiing on the Wilson River during construction and operation of the OH2K project and a Roads and Maritime representative met with local recreational water-skiers and business operators to further clarify issues associated with water-skiing on the Wilson River. Key issues identified included: bridge span widths; signposting of the bridge and river channels; posted speed limits; and obstruction of the river during bridge construction.

Roads and Maritime understands proposed bridge span widths discussed in the Environmental Assessment (2010) may restrict water-skiing under the bridge. The concept design for bridges spanning the Wilson and Hastings rivers has not changed as part of the refined concept design. Roads and Maritime notes recreational water-skiing on the Wilson and Hastings rivers, was not identified as an issue during the development and display of the concept design and Environmental Assessment.

Roads and Maritime confirms navigation aids and signage would be erected on and near the bridge to assist waterway users to identify channels and clearance constraints, including bridge span widths.

Roads and Maritime is not aware of any current plans to implement speed restrictions on the Wilson River between the existing Telegraph Point Bridge and proposed new bridge across the river.

Roads and Maritime advises the construction contractor will be required to advertise and list any navigational impacts, which may occur due to construction activities before work

starts. It is expected the construction area would have safety measures and navigation markers (lit at night) would be used to indicate the preferred channel.

## **4.8 Flooding**

- (1) Roads and Maritime notes feedback provided about the floodway culvert under the existing Pacific Highway. The refined concept design does not include work on the existing drainage system. However, Roads and Maritime will inform local asset managers about concerns related to existing flood way culverts south of Telegraph Point and ask the condition and functionality of the culverts be investigated.
- (2) Roads and Maritime note advice regarding the *Draft Hastings River Floodplain Risk Management Study (Worley Parsons, 2011)*. Roads and Maritime understands this study was prepared for Port Macquarie–Hastings Council as part of Council’s ongoing floodplain management program and advise comments regarding the content of the study should be provided to Council. Council were consulted during the development and refinement of the concept design for the OH2K project and Roads and Maritime will continue to provide Council with details of flood modelling carried out for the Pacific Highway upgrade works.

## **4.9 Business impact**

- (1) Roads and Maritime advises the refined concept design does not change the business’ level of highway access from that described in the Environmental Assessment (2010). Roads and Maritime reconfirm that directly affected business owners will be consulted throughout the detailed design and construction phases to ensure the proposed upgrade minimises impacts on business operations. In addition, negotiations will be carried out with directly affected business owners in regards to alternative access arrangements. Where part of the property is to be acquired, the acquisition of land will be in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991*.

Roads and Maritime advises signposting arrangements need to be consistent with the Roads and Maritime signposting policy. As such, signage would focus on key destinations and localities. The provision of signage for local business is determined by business operating hours and in consultation with the business owner. A Roads and Maritime review of the business’ operating hours identified hours fall below those required for the installation of signage on the highway. Roads and Maritime representatives have met with the business owner to discuss opportunities to maintain temporary signage for a limited duration following the opening of the upgrade.

- (2) Roads and Maritime met representatives of the Kempsey Sporting Car Club to present an adjusted design for the Yarrabee Road interchange. The modified interchange reduces the impact on the Hill Climb track facility and allows the club hold major events. This has been incorporated into the refined concept design.

## **4.10 Outside project scope**

The following responses were provided to issues seen to be outside the scope of the project.

- (1) The *AusLink Sydney to Brisbane Corridor Strategy 2007* considers the transport and freight efficiencies of the Pacific Highway, North Coast rail line and New England Highway to be integral parts of the Sydney to Brisbane transport corridor.

This study identifies the Pacific Highway as the key transport mode in this region and highlights the Main Northern Railway is unlikely to meet future inter-regional transport needs, even if major rail infrastructure upgrades were to occur.

Any decision on the upgrading of the rail network, as well as the timing and availability of funding for such works falls outside the scope of the Oxley Highway to Kempsey Pacific Highway upgrade project.

- (2) Roads and Maritime notes the respondent concerns regarding increased travel time between Kempsey and Port Macquarie as a result of current Pacific Highway maintenance activities. Roads and Maritime acknowledge reduced speed zones would result in a minor increase to travel times along the highway; however reduced speed zones are used to ensure the safety of road users and construction workers.

## 5 Community feedback received during public comment period

Roads and Maritime notes the comments and feedback of stakeholders who attended staffed displays of the refined concept design in December 2012, and feedback via the OH2K project information telephone line during the display period. A summary of the issues raised during the display period and Roads and Maritime responses are provided below.

### Issue and Response

- i) A stakeholder identified the potential for soft soils near the proposed Blackmans Point Road interchange.

Roads and Maritime recently completed a comprehensive geotechnical investigation to assist the design team during the detailed design phase. The existing geotechnical information indicates soft soils would not be an issue near the site for the proposed Blackmans Point Road interchange.

- ii) Two stakeholders raised concerns about accessing areas north of the Blackmans Point Road interchange and asked about signposting at the interchange.

Roads and Maritime will consult with Port–Macquarie Hastings Council and Kempsey Shire Council regarding appropriate signage on the service roads and local roads affected by the OH2K project. Signage will focus on key destinations or localities and would be consistent with Roads and Maritime signposting policy.

- iii) One stakeholder asked Roads and Maritime to consider installing south facing ramps at the Haydons Wharf Road half interchange.

The refined concept design does not include south facing ramps on the Haydons Wharf Road half intersection. An option to construct a full interchange at Haydons Wharf Road was assessed by Roads and Maritime during the development of the concept design, displayed with the Environmental Assessment in 2010. Roads and Maritime concluded south facing ramps were not required as access to Telegraph Point could be efficiently provided via the Blackmans Point Road interchange and the existing Pacific Highway.

- iv) A stakeholder provided information about local flooding impacts from Cooperabung Creek and suggested flooding from the creek may restrict access for residents along the proposed eastern access road from Haydons Wharf Road.

Roads and Maritime appreciates the information and confirms measures to reduce the potential impact on flow paths and patterns have been incorporated into the design of the OH2K project. Any adjustments required to surface water drainage systems, particularly in the area of Haydons Wharf Road (east of the new Pacific Highway), would be designed to prevent additional flooding impact in the area.

- v) One landowner asked if a spring fed dam on the property would be impacted by the concept design.

NSW planning approval for the OH2K project requires Roads and Maritime engage a groundwater specialist to prepare a groundwater model for the OH2K project area. To assist in preparing the model the specialist has, with the permission of landowners, carried out a survey of private bores and springs along the length of the project. This groundwater model will provide a base for Roads and Maritime to determine if there are impacts on nearby groundwater sources. The landowner has been invited to participate in the private bore and spring survey.

- vi) Several stakeholders enquired about the re-grading at Cooperabung Hill.

Roads and Maritime confirms the OH2K project lowers the existing road by about seven metres through Cooperabung Hill. No changes have been made to the grade of the proposed alignment between the approved Environmental Assessment and the refined concept design.

- vii) A Cooperabung Close resident advised a B-double u-turn facility is required between Haydons Wharf Road and Yarrabee Road to enable property access.

Roads and Maritime reviewed options for including a u-turn facility in the section between Haydons Wharf Road half interchange and the Yarrabee Road traffic arrangement. The review concluded that due to substandard sight distance across Cooperabung Hill and the environmental constraints of Cooperabung Creek and Cooperabung Creek Nature Reserve a u-turn facility cannot be safely provided.

In this section of upgraded highway, areas suitable for B-double turning movements include the Haydons Wharf Road half interchange and the Yarrabee Road traffic arrangement.

- viii) One stakeholder requested full turning movements be allowed to access Upper Smiths Creek Road and Wharf Road in the arterial stage, and an alternative interchange constructed at this location at a later motorway stage.

Roads and Maritime confirms the arterial standard stage does not include provision for right turn movements at Upper Smiths Creek Road and Wharf Road; this is to improve the safety for road users. Left in / left out access includes measures to ensure the safety of vehicles entering and exiting the upgraded highway from the local roads such as deceleration and acceleration lanes.

Roads and Maritime advises the refined concept design does not provide an interchange at this location as part of the arterial or motorway standard. However, the motorway standard does include an overbridge to allow local residents on the eastern side of the upgrade to access the proposed western service road, with access to the main carriageways via the interchanges at Kundabung and Haydons Wharf Road. This has not changed since the display of the concept design with the Environmental Assessment in 2010.

- ix) Five stakeholders raised concerns about the distance between u-turn facilities and Kundabung interchange in relation to Upper Smiths Creek Road and Wharf Road including the additional travel time required to access school bus stops and properties.

U-turn facilities incorporated into the refined concept design have been revised to improve safety and provide flexibility to local property access. Distances between u-turn facilities and interchanges fall within design guidelines prepared for the upgrade of the Pacific Highway. U-turn facilities and interchange locations are generally consistent with

the locations contained in the concept design displayed with the Environmental Assessment in 2010.

Roads and Maritime acknowledges travel distances will increase for some residents after the right turn access to the highway at Upper Smiths Creek Road and Wharf Road is removed as part of the arterial standard. However, these access changes will improve the safety of residents accessing the highway. In addition, the upgrade has been designed for vehicles to travel at speeds up to 110kmh, which improves traffic flow and efficiency. As such, Roads and Maritime considers the increase in travel time and distance resulting from the loss of direct highway access would be mitigated by the improved safety and standard of the highway.

- x) A stakeholder requested left in / left out access at Wharfs Road and Upper Smiths Creek Road to maintain direct access to Pacific Highway.

The refined concept design includes provision for left in / left out vehicle movements at both Wharf Road and Upper Smiths Creek Road. Preventing right hand turns at these locations improves the safety of motorists by preventing vehicle movements across high speed, highway traffic. This has not changed since the display of the concept design with the Environmental Assessment in 2010.

- xi) A stakeholder suggested the left in / left out arrangement proposed at Upper Smiths Creek Road could be unsafe.

Roads and Maritime notes the comments from the stakeholder and suggests the proposed left in / left out traffic movement will improve the safety for road users entering and leaving the local road. The proposed arrangement includes deceleration and acceleration lanes into and out of Upper Smith Creek Road and would remove the need for residents to make right turn movements across high speed highway traffic.

- xii) A stakeholder requested the Wharf Road overbridge be constructed as part of the first stage of the project to allow access across the upgraded highway.

The request regarding the overbridge is noted. Roads and Maritime is required to ensure the best use of available funds and considers construction to arterial standard, as a first stage for this section of the OH2K project, would improve road safety and reduce incidents when compared to the existing highway. This staging option provides capability to upgrade this section to motorway standard when the need arises, an overbridge would be built at that time. The staging of the construction to arterial standard at this location has not changed since the display of the concept design with the Environmental Assessment in 2010.

- xiii) Three stakeholders raised concerns about the safety of children and parents using the proposed school bus stops.

The safety of all road users, including parents and children using school bus system is of paramount importance to Roads and Maritime. Section 4.5 of this report provides a detailed response to this issue.

- xiv) Several stakeholders raised concerns about potential changes to flood levels on the Wilson River floodplain and in the Telegraph Point (South) area.

Please refer to Section 6 for a detailed response to this issue.

- xv) Several stakeholders raised concerns about road traffic noise impacts on residences and farming activities from the operation of the highway.

The traffic noise assessment included in section 16 of the Environmental Assessment (2010), was prepared in accordance with the requirements of the DECCW guideline *Environmental Criteria for Road Traffic Noise* (ECRTN) and Roads and Maritime *Environmental Noise Management Manual* (ENMM). The traffic noise assessment identified sensitive noise receivers where the traffic noise levels are likely to exceed the ECRTN goals. The assessment also identified receivers already affected by road traffic noise as well as newly affected receivers.

Roads and Maritime acknowledges as a result of the OH2K project some residents will experience traffic noise at higher levels than previously experienced and some residents will experience traffic noise from a different direction. However, there are also a large number of residents who will experience a reduction in traffic noise levels as a result of the OH2K project.

Roads and Maritime is committed to implementing reasonable and feasible noise mitigation measures to manage the impacts of traffic noise as discussed in section 16.6.4 of the Environmental Assessment (2010). These measures would be further discussed with Environment Protection Authority (formally DECCW) and relevant landowners during the detailed design phase.

- xvi) One landowner was concerned about the extent of the fauna fencing near the property on the northern end of the project.

The refined concept design includes provision for fauna fencing along the western edge of the service road between the Maria River and Stumpy Creek. There are openings for property accesses, including the landowner's property.

- xvii) A landowner asked about provision for the collection of household waste and recycling bins.

It is noted currently some household waste and recycling bins are placed on the edge of the existing Pacific Highway for collection. Roads and Maritime confirms provision for the collection of waste and recycling bins has been made on service roads or access roads for most of these residences. There would be adjustments to the bin collection locations for some residents to suit the revised traffic arrangements and those residents will be notified accordingly. It is anticipated no disruption will be caused to service collections by the OH2K project.

- xviii) A number of stakeholders raised concerned about the potential impact of construction activities on the local road network and access during construction.

Roads and Maritime confirms construction contractors will be required to carry out pre-construction surveys of all local roads likely to carry construction traffic. Contractors will be required to ensure the local road network is maintained and damage to local roads, as result of construction activities is repaired.

Construction phase traffic impacts on local roads would be managed through a Construction Traffic Management Plan, which would be prepared in consultation with local councils. This plan would be implemented by the construction contractor to ensure the safe and efficient movement of construction traffic while minimising impacts on local traffic. Local residents and council officers would be consulted and advised of any temporary traffic diversions or changes to existing access routes needed during the construction period. Traffic diversions would also be advertised in local media before the changes being made and identified on site by the use of clear sign posting.

- xix) A stakeholder raised concerns about a reduced speed limit on the service road between Port Macquarie and Telegraph Point increasing commuting time.

Roads and Maritime notes the concerns of the stakeholder and advises the local community and the relevant local council would be consulted before adopting a speed limit for the service roads.

## 6 Community feedback received during Wilson River Flooding workshop

As part of the concept design refinement the flood immunity of embankment across the Wilson River was increased from 1:20 year flood event to a 1:100 year flood event and flooding impacts were reviewed.

During the exhibition of the refined concept design in December 2012 Roads and Maritime asked for nominees to attend a workshop to discuss the proposed change to the flood immunity of the embankment across the Wilson River floodplain. During the display period and at the staffed display several nominations were received from local community members.

The flooding workshop was held on 31 August 2013 at the Telegraph Point Community Hall. The workshop was attended by seven community members, several project team members and a specialist hydrologist. During the workshop a number of issues and concerns were raised regarding existing and future flooding events across the Wilson River floodplain. This section of the report provides a summary of the presentation and issues and concerns raised by community workshop participants.

The workshop was structured to allow Roads and Maritime to provide the community representatives with:

- An update of the status of the OH2K project, including an outline of the activities carried out for the review of design associated with the three packages of works
- A summary of the refined concept design displayed in December 2012, including the increased flood immunity of the embankment across the Wilson River floodplain
- Details of the proposed changes to the embankment across the Wilson River floodplain
- Definitions of key terms used in flood assessment and modelling
- A summary of the additional flood modelling carried out to assess the potential impact of design refinements
- Details of the differences in predicted flood impacts on the floodplain between the concept design displayed with the Environmental Assessment (2010) and the refined concept design (2012)
- Opportunities to discuss any concerns or issues with the proposed refinements
- Opportunities to provide information to assist the project team complete the concept design review before moving to the detailed design stage of the project
- The proposed delivery strategy for the OH2K project and the flooding performance criteria given to the tenderers for the Oxley Highway to Kundabung design and construct project.

The project team noted issues raised during the workshop and where possible provided responses to community representatives at the workshop. The project team committed to providing responses to issues, which required additional investigation or information as part of this report. A summary of the issues identified during the workshop along with the Roads and Maritime response is provided below.

## 6.1 The refined concept design

- i) What are the key changes to the design of the Wilson River Bridge and the floodplain structures in comparison to the design in the Environment Assessment?

The concept design presented with the Environmental Assessment included an embankment across the Wilson River floodplain designed for 1:20 year flood immunity. This relates to an embankment height of about 2.5 metres above ground level, at the highest location, across the floodplain. The potential impact of changes to the flood behaviour as result of this embankment being built across the floodplain were assessed as part of the Environmental Assessment, considering issues such as impacts on residents, the community, the environment and constructability of the project.

During the concept design refinement the flood immunity of the proposed upgrade was reviewed to see if there was an opportunity to improve flood immunity of the upgraded highway across the Wilson River floodplain. The proposed increase to 1:100 year ARI flood immunity would make this section of the upgrade consistent with recently constructed projects north and south of OH2K project. To achieve this increased flood immunity the embankment has been raised by about 800 millimetres in the refined concept design, displayed in December 2012 and presented to the flooding workshop in August 2013.

The potential changes to flood behaviour of the refined concept design were modelled using the same flood model developed for the Environmental Assessment. This allowed the project team to identify any differences in potential flood impacts between the two designs. Modelling results indicate:

- Little difference in the afflux levels predicted for the refined design relative to the afflux predicted in the Environmental Assessment design. Afflux levels predicted to range between 10 and 20 millimetres
- No additional buildings would be flooded as a result of the refined concept design. However, some properties that already experience flooding may experience an increase of less than 10 millimetres in flood levels
- A minor difference in the velocities predicted for the refined design relative to the velocities predicted in the Environmental Assessment
- Time of inundation predicted for the refined design is consistent with the Environmental Assessment.

Roads and Maritime consider the proposed increased flood immunity to 1:100 year across the Wilson River floodplain would generate no notable change in potential flooding impacts to those presented in the Environmental Assessment.

- ii) Some community representatives were concerned there would not be enough openings to allow flood water to pass through the embankment.

Roads and Maritime appreciate the concerns of community representatives and confirms the refined concept design includes four major floodway openings, three multi-cell drainage culverts and the main bridge crossing the Wilson River, which provide a combined floodway opening of about 1,040 metres. Flood modelling carried out predicts these openings are sufficient to ensure the refined concept design meets the project design criteria.

- iii) Some community representatives asked why a bridge like the Kempsey bypass bridge could not be built across the Wilson River floodplain.

Several options were investigated by Roads and Maritime for crossing the Wilson River floodplain during the development of the original concept design, displayed with the Environmental Assessment in 2010.

Roads and Maritime advise the flooding characteristics of the Wilson River and the engineering constraints on the Wilson River floodplain are different to those encountered on the Macleay River and floodplain, where the Kempsey bypass bridge was built. In addition, the height of the embankment across the Wilson River floodplain is significantly lower than the embankment originally proposed across the Macleay River floodplain.

The higher embankment across the Macleay floodplain coupled with very soft soils resulted in higher cost estimate for soft ground treatments and construction of an embankment. The higher cost of the embankment across the Macleay floodplain meant the cost difference between the embankment and bridging option coupled with the savings achieved by opening the bypass to traffic earlier made the construction of the bridge for the Kempsey bypass feasible. A similar bridging option across the Wilson floodplain is three to four times greater in cost than the option contained in the refined concept design and is in turn not feasible.

- iv) Community representatives conveyed concerns from the local community there may be more flooding impacts caused by the new highway and asked why the route did not go through the hills to the west away from the floodplain?

Roads and Maritime confirms the preferred route was selected following a comprehensive assessment of options to upgrade the Pacific Highway between Port Macquarie and Kempsey. The current selected route is the best option following assessments of the relevant environmental, social and engineering constraints. The details of the route selection process can be found in the *Oxley Highway to Kempsey Preferred Route Report (2006)*, the *Oxley Highway to Kempsey Highway Access Strategy (2007)* and the *Oxley Highway to Kempsey Environmental Assessment (2010)*.

## 6.2 Flood model

- i) There were several questions about the flood model design and how it related to actual flood behaviour in the river system and Wilson River floodplain. This included:
- Were the flows from the Macleay River into the Maria River included in the model?
  - Has the impact of the flow from the Maria River causing the Wilson River to back up been included in the model?
  - Does the model show flooding coming overland around The Hatch?

Roads and Maritime confirms the model boundary extends to the Maria River as it forms part of the Wilson river catchment. The specialist hydrologist is aware some flow can come across from the Macleay River into the Maria River when the Macleay River catchment is full. Roads and Maritime also confirms the model includes the flows from the Maria River. The change in behaviour of the floodwaters associated with this flow entering in to the Wilson River is noted. The model also considers the effect of storm surge from heavy seas at the mouth of the Hastings River.

During the presentation, the hydrologist explained the model confirms observations from community representatives in relation to the behaviour of floods on the Wilson and Hastings rivers. It was noted there can be two peaks in a flood on the Wilson River, depending on the extent of rainfall across the catchment. The first peak is associated with run off from the Wilson River catchment causing the Wilson River to flood. The

second occurs as a result of the backup of water from the Hastings River impeding the flow of water from the Wilson River catchment. The velocities during the second peak are usually lower than those during the first peak.

To assess and identify areas of the Wilson River floodplain where preferred flow paths occur during a flood event several surveys were undertaken. As part of the Hastings River Flood Study, detailed Airborne Laser Survey (ALS) was collected for the floodplain. One of the key benefits associated with ALS data is the ability to accurately define overland flood runners and relic channels. This assists in the identification and assessment of areas across the floodplain where preferential flow paths occur during flood, in addition to the main river channel.

The ALS data collected for the study has been processed and incorporated into the flood model. The processed survey data highlights the overland connectivity between the junction of the Wilson and Maria River and the area further south referred to as the Hatch. The processed flood modelling results reflect this connectivity. It is noted the behaviour of floodwaters during an actual event will vary depending on the relative timing and magnitude of water inflows into the Hastings, Wilson and Maria Rivers, as well as the downstream ocean tidal path.

- ii) One community representative commented he understood the water level was up to 3.8 metres above the existing road during the 1966 flood event. The representative offered to provide a copy of flood records from 1963 and 1968 flood events to Roads and Maritime.

Roads and Maritime confirms available historical data has been used to calibrate the flood model to ensure the model reflects “real world” flood events. This provides Roads and Maritime with confidence in the modelling carried out to assess the potential impact of the refined concept design.

Since the workshop a comparison has been undertaken between the data provided by the community representative and available flood marks for the 1963 and 1968 events reported in *Figure 18* of the *Hastings River Flood Study (2006)*. There is good alignment between the majority of the records provided by the representative and those reported in the study.

The only location where a significant difference exists is in the channel of the Wilson River during the 1963 event. In this event the resident reports a flood level about 0.5 metres higher than documented in the 2006 study. There are a number of reasons that could explain the difference. The most likely reason being the localised variation in flood level occurs in the vicinity of bridges. A flood level reported immediately downstream of the bridge structure has the potential to vary significantly from reported level immediately upstream.

While no flood marks were reported for a 1966 event in the Hastings River flood study, there are a number of flood marks available for the 1968 event, which is generally recognised as the flood record for the river system in the vicinity of the existing Pacific Highway

Roads and Maritime understands from flood records the flood level near the alignment of the existing Pacific highway at Pembroke Street was approximately 3.8 metres Australian Height Datum (AHD) during the 1968 event. This event can be considered in the order of a 100-year flood event. This aligns with both the records provided in the Hastings River Flood Study and those reported by the community representative. Roads and Maritime understand the existing highway is typically a minimum of 4.5 metres AHD. Overall, the existing highway has adequate immunity during a large flood event.

Roads and Maritime thank the community representative for providing a copy of the information. This information has been provided to the specialist hydrologist for technical review and consideration during the review of the flood modelling for detailed design.

- iii) Community representative raised concerns the local knowledge being shared at the workshop would not be considered in the refined concept design.

Roads and Maritime confirm the information provided during the exhibition of the refined concept design and the Wilson River floodplain workshop will be reviewed by the project team to determine if any adjustments are required.

The successful tenderer will also be provided with details of the issues raised during the workshop and advised of any adjustments that need to be made to the design during the preparation of the detailed design.

- iv) One community representative asked for additional explanation of how the flood model works and raised concerns about the accuracy of the afflux results?

The flood modelling for the highway upgrade has been undertaken using the RMA-2 flood modelling software. The surveyed terrain data of the river channel and adjoining floodplain is represented in the hydraulic flood model. Simulated inflows are then applied to the model and the model is used to predict flood characteristics including depths and velocities for the given conditions.

A separate hydrologic model (separate software package) is used to derive the inflows into the hydraulic model. The hydrologic model is used to convert catchment rainfall into run-off.

The hydrologic and hydraulic models have been used to reproduce a number of historic storm events. There is agreement between the data recorded for those events and the results reported by the model. This process, which is referred to as calibration, provides confidence the model is able to adequately reproduce the flood characteristics of the river system.

In terms of calibrating the afflux levels through the bridge structure, the results of the modelling have been verified against other independent methods. These methods have in turn been sourced from recorded data. The model has been found to reproduce the results for afflux through these structures that are in alignment with recorded data.

An important factor to note is at the peak of the flood in the Wilson River, flood levels are typically controlled by “backwater” flooding from the Hastings River and not as a consequence of large flows down the Wilson River system. This is a significant factor in defining and understanding the small afflux values reported for the highway upgrade.

- v) One community representative asked for what is meant by extreme flood event?

An extreme flood event is considered rare and defines the largest flood that can possibly occur in a given river system. It is used to inform consideration of emergency management and also the design of critical infrastructure. A number of different methods are available to predict the extreme flood event.

- vi) Community representative asked whether Roads and Maritime knew what levels were reached by flood events over the last four years

Roads and Maritime is aware of a number of significant flood events have occurred in the previous five years in the Wilson River Valley. This includes the flood of record in February 2009 recorded on the Wilson River gauge at Avenel. The 2009 event was in the order of a 20 to 30-year flood event. Although survey of the peak flood level was not reported, photographs provided to the Roads and Maritime indicate the peak of the flood around the existing Pacific Highway at Pembroke Street would be have been in the order of 3.2 metres AHD, similar to the 20-year flood event.

- vii) Community representatives were concerned about potential for damming between the new highway and the existing highway.

The hydrologist explained the potential for damming is limited due to the following reasons:

- The majority of flow movement continues to occur along the main Wilson River channel
- Large flood relief structures have been provided which are adequately sized to drain the floodplain during an event
- To a certain extent, the existing highway already acts a buffer, which controls the characteristics of in flow to the lower floodplain.

- viii) A community representative suggested the proposed bridge across the Wilson River be moved further up the embankment on the northern side of the river to prevent water from Maria River swirling into the Wilson River and damaging bridge foundations.

Roads and Maritime advise the northern abutment for the Wilson River Bridge is proposed to be constructed on top of the ridge on the bank of the Wilson River. This ridge is about 12 metres above the normal water level in the river and well above the level of the river during a flood event. The northern abutment should not be impacted by flood waters or create an impediment to river flow in high water events.

### **6.3 Existing Highway**

- i) During the workshop several community representatives raised concerns about flooding upstream of the existing Pacific Highway. The issues raised by the community representatives during the discussion about this issue included:

- Advice the drainage structures installed under the existing highway do not appear to line up with the natural drainage lines and culverts installed under Mooney Street (the old Pacific Highway), Telegraph Point. This results in different flood levels either side of the highway and the water ponding between Mooney Street and existing Pacific Highway
- Concerns a culvert under the existing Pacific Highway may be broken and creating a blockage restricting flows under the highway. A local resident observed a failure of the pavement, on top of the culvert, has required repair to the road surface on several occasions
- One community representative explained a blocked culvert is creating a swamp like area to the west of Mooney Street due to the water not draining properly
- A community representative advised he had observed the water levels during flood events near the existing highway. The levels on the western side appeared to be higher than those on the eastern side of the highway. The representative was concerned this is the result of a partially blocked culvert under the highway
- The community representatives expressed concerns about how the existing Pacific Highway would be maintained and the blocked culverts repaired
- A community representative provided Roads and Maritime with a marked up drawing and photographs showing a 2009 flooding event and the water levels reached at Mooney Street.

Roads and Maritime notes the advice provided by the local community representatives regarding issues surrounding the existing Pacific Highway and appreciates their concerns about the ongoing maintenance of the highway. Roads and Maritime confirms members of the project team will contact the Roads and Maritime District Works Manager at Port Macquarie and ask him to investigate the condition of the culverts in the existing highway.

Roads and Maritime confirm following the completion of the project the existing Pacific Highway will form part of the local service road network and would be handed to council. Roads and Maritime would negotiate the handover of the bypassed section of the existing highway with Port Macquarie–Hastings Council during the detailed design and construction phases of the project. These negotiations would deal with issues such as the status of the road to be handed over to council, future funding associated with the handover and works required as part of the handover process.

Roads and Maritime thanks the community for providing the information about the local flooding issues and photographs of the local flood events.

- ii) A community representative advised Roads and Maritime water can pool across a low lying area on the existing Pacific Highway to the south of the Bill Hill Road intersection during flooding events.

Roads and Maritime notes this advice and confirms the project team are aware of the drainage line identified in the discussions as well as other drainage lines in this area and the Cairncross State Forest. Roads and Maritime confirms there are several large culverts included in the refined concept design within the Cairncross State Forest area to allow movement of water through the alignment in these drainage lines.

## **6.4 Construction of the project**

- i) Community representatives asked for further information on how the project would be constructed.

Roads and Maritime confirm the project is proposed to be constructed as three projects:

- Sancrox early works – construct only project
- Oxley Highway to Kundabung – design and construct project
- Kundabung to Kempsey – construct only project.

The detailed design for the Sancrox early works and Kundabung to Kempsey projects is nearing completion.

Work is planned to start on the Sancrox early works project in early to mid-2014, subject to approval from the Australian Government Department of the Environment.

Tenders have been called for the Kundabung to Kempsey project and Roads and Maritime plans to announce the successful tenderer in late March 2014 following review of the tenders.

The Wilson River floodplain lies within the Oxley Highway to Kundabung project. Roads and Maritime has announced Lend Lease as the successful tenderer. Feedback from the display of the refined concept design and the Wilson River floodplain workshop has been used to assist Roads and Maritime in providing instruction to tenderers during the preparation of their tenders.

Roads and Maritime has directed tenderers to ensure detailed concept designs presented meet specific flood related criteria for the Wilson River floodplain. Tenderers have been provided a copy of the flood model used by Roads and Maritime during the development of the concept design and refined concept design to ensure consistency during the development of the detailed design.

The flood related criteria specified by Roads and Maritime are:

- An afflux of up to 20 millimetres is permitted between the existing and proposed highway. No additional buildings would be affected by this afflux
- Flow velocity of up to 1.1 metres per second is permitted downstream of bridge and culvert structures, when measured at the project boundary. The predicted flow velocity is below the threshold required to cause scour
- An increase of up to two hours is permitted in time of inundation. This change in time of inundation will have no effect on the potential for pastured areas to survive.

Roads and Maritime advises the successful tenderer will also be required to identify appropriate measures to mitigate and manage flood related impacts on the Wilson River floodplain as specified in the NSW Department of Planning and Infrastructure conditions of approval.

ii) Where is the project sourcing fill material?

An objective of Pacific Highway projects is to try and re-use as much material from within a project as possible. Geotechnical investigations recently completed along the alignment have been used to calculate an earthworks balance (process of assessing the compaction required of materials to ensure an appropriate level on which road construction can begin) for the refined concept design and proposed refinements have been included to try and improve the earthworks balance.

Some of the fill for the floodplain crossing could be sourced from cuts along the alignment in the Cairncross State Forest or from the Cooperabung Hill. Roads and Maritime understands there may be shortfall of material for the project. As such, the successful tenderers would need to identify off-site sources for any additional material required, which may include local quarries.

iii) Why doesn't the project just build six lanes now?

Roads and Maritime advise earthworks for the main carriageway of the OH2K project would be constructed to allow for a four-lane dual carriageway (two lanes in each direction) with a wide median to allow for the future upgrade to six lanes.

The project would be upgraded to six lanes when warranted by increased traffic volumes. Current traffic volumes on this section of the highway between Port Macquarie and Kempsey do not require six lanes. Further information on project staging can be found in the Environmental Assessment (2010).

iv) Representatives asked how long it would take to build the project

Roads and Maritime estimate the three projects should be completed in about two to three years, once work starts.

## 7 What happens next?

Information provided to the Roads and Maritime during the exhibition of the refined concept design and the Wilson River floodplain workshop will be reviewed by the project team to determine if adjustments are required.

Roads and Maritime will provide the NSW Department of Planning and Infrastructure (DoPI) a copy of the Environmental Assessment Consistency Report and the Refined Concept Submissions Report for their information.

Roads and Maritime will ensure the design developed by the successful tenderer for Oxley Highway to Kundabung meets the flood management criteria and incorporates any measures identified during the review of the refined concept design.

Roads and Maritime will continue to consult with the community throughout detailed design and construction phases of the three projects.

