

# **Pacific Highway upgrades between Turramurra and Wahroonga**

Community Consultation Report

Roads and Maritime Services | April 2019



## Summary

This report is a summary of the Roads and Maritime Services consultation with the community and key stakeholders on proposed intersection upgrades on the Pacific Highway between Turramurra and Wahroonga. People were invited to have their say about the proposed upgrades to three intersections: Pacific Highway and Finlay Road, Pacific Highway and Fox Valley Road and Pacific Highway at Coonanbarra Road and Redleaf Avenue.

The NSW Government is funding this proposal as part of its \$300 million Urban Roads Pinch Points Program, which aims to ease congestion and improve travel times on Sydney's busiest road corridors.

Each day 60,000 motorists use the Pacific Highway between Turramurra and Wahroonga. Currently motorists experience heavy congestion, slow travel times and delays, particularly during the afternoon peak period. The proposal sought to widen the road to provide three continuous northbound lanes and maintain three continuous southbound lanes along this section of the Pacific Highway.

The proposed upgrades would improve traffic flow and safety for the motorists who use the Pacific Highway each day.

## Proposed upgrades

The proposed upgrades at the three intersections included:

### **Pacific Highway and Finlay Road**

- Widening on the northbound side of Pacific Highway - north and south of Finlay Road - to provide three continuous northbound through lanes.
- Banning the right turn from Pacific Highway southbound into Finlay Road to accommodate three continuous northbound through lanes.
- Banning the right turn from Finlay Road onto Pacific Highway southbound to improve safety.

### **Pacific Highway and Fox Valley Road**

- Widening on the northbound side of Pacific Highway - north and south of Fox Valley Road - to provide three continuous northbound through lanes.
- Maintaining the left turn lane from Pacific Highway northbound into Fox Valley Road to separate through traffic from turning vehicles.
- Extending the right turn lane from Pacific Highway southbound into Fox Valley Road to separate turning vehicles from through traffic.
- Widening the raised median on Pacific Highway northbound - north and south of Fox Valley Road - to improve road curve and lane alignment and for road user safety.
- Banning the right turn from Marshall Avenue onto Pacific Highway southbound to improve safety.
- Providing a 'Do Not Queue Across Intersection' sign on Pacific Highway southbound at Borambil Avenue help traffic flow.

## Pacific Highway at Coonanbarra Road and Redleaf Avenue

- Widening on the northbound side of Pacific Highway - north and south of Redleaf Avenue - to provide three continuous northbound through lanes.
- Banning the right turn from Pacific Highway northbound into Coonanbarra Avenue to improve safety.
- Maintaining the right turn lane from Pacific Highway northbound into Redleaf Avenue to help traffic flow.
- Widening the raised median on Pacific Highway northbound - south of Redleaf Avenue - to improve traffic flow and safety.
- Removing the Redleaf Avenue onto Pacific Highway southbound left turn slip lane to create a safer T-intersection.
- Providing an island for pedestrians on Redleaf Avenue.
- Installing a new drainage network that has the capacity to remove excess water in the area, reducing the likelihood of water spilling over onto the highway, potentially creating dangerous road conditions.

## Consultation

Roads and Maritime initially invited feedback on the proposal from 5 September 2018 to 28 September 2018. Following community concerns about the timing and duration of the consultation the consultation period was extended by one week to end on 5 October 2018.

During the consultation, 94 people provided more than 158 different comments by email, phone and letter as well as via the online consultation map.

See **Tables 2-5** for a summary of feedback received and responses provided.

Key feedback included:

### 1. Overall Pacific Highway intersection upgrades

- Overall proposal justification
- Local road issues
- Environmental impacts
- Pedestrian and cyclist safety
- Traffic and congestion at other points on the network as a result of proposed changes
- Addressing Turramurra Bridge as a pinch point.

### 2. Pacific Highway and Finlay Road

- Pacific Highway access into and from Finlay Road
- Local road access issues from proposed changes to Finlay Road
- Pedestrian and school safety.

### 3. Pacific Highway and Fox Valley Road

- Pacific Highway access into and from Marshall Avenue
- Traffic into Fox Valley Road from Pacific Highway
- Borambil Street access into and from Pacific Highway northbound.

#### 4. Pacific Highway at Coonanbarra Road and Redleaf Avenue

- Pacific Highway access into and from Redleaf Avenue
- Change of access into Coonanbarra Road
- Traffic light location changes on Pacific Highway at Redleaf Avenue.

### Decision

Roads and Maritime would like to thank the community and stakeholders for considering the proposal and to everyone who took the time to provide feedback.

After considering all responses, along with the proposal's aims and design requirements, we have decided to:

- proceed with the proposed upgrades to the intersection of Pacific Highway at Finlay Road
- proceed with the upgrades to the intersection of Pacific Highway at Fox Valley Road with a design change to shorten the dedicated left turn bay into Fox Valley Road from 60 to around 30 metres
- further investigate the proposed upgrades to the intersection of Pacific Highway at Coonanbarra Road and Redleaf Avenue. We will inform the community of the outcome.

Improved traffic flow, safety improvements and travel time savings exist with each intersection upgrade for northbound motorists traveling on the Pacific Highway between Cherry Street and Borambil Street. The new proposal for the intersections at Coonanbarra Road and Redleaf Avenue may result in further time savings.

### Next steps

The Review of Environment Factors (REF) for the two intersection upgrades (Pacific Highway and Finlay Road and Pacific Highway and Fox Valley Road) will be made available on the Roads and Maritime website.

Further detailed engineering design will also be completed in relation to the two intersection upgrades (Pacific Highway and Finlay Road and Pacific Highway and Fox Valley Road).

Following feedback from the community and council in September 2018, we will not be proceeding with the upgrades as proposed for the Pacific Highway, Coonanbarra Road and Redleaf Avenue. We will investigate other options for these intersections and we will keep the community informed of our progress.

A second REF for this intersection will be released online.

We will keep the community informed as these projects progress.

For more information, please contact the Pinch Points Project Team, phone 1800 572 004 or email [pinchpoint@rms.nsw.gov.au](mailto:pinchpoint@rms.nsw.gov.au).

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# 1. Introduction

## 1.1. Background

This NSW Government proposal is part of its \$300 million Urban Roads Pinch Point Program. The program aims to reduce congestion and improve travel times on Sydney's busiest road corridors, particularly during peak periods.

Around 60,000 vehicles a day travel on Pacific Highway between Turramurra and Wahroonga. The intersections of Pacific Highway with Finlay Road, Fox Valley Road and Redleaf Avenue and Coonanbarra Road were identified as pinch points, or bottlenecks, on this busy corridor. These intersections service surrounding residential, commercial and industrial areas, are part of the major arterial road to Sydney's central business district from the north western suburbs and are key to accessing the Central Coast via the M1 Pacific Motorway.

Roads and Maritime proposed to improve traffic flow through the corridor by adding three continuous northbound lanes to this section of road.

The proposal aimed to provide northbound travel time savings particularly in the afternoon peak, better traffic flow through the intersections and provide safer road conditions for motorists travelling along the Pacific Highway.

## 1.2 The proposal

Currently motorists experience heavy congestion, slow travel times and delays when travelling between Turrumurra and Wahroonga, particularly during the afternoon peak period.

To ease congestion, Roads and Maritime proposed to widen the road to provide three continuous northbound lanes and maintain three continuous southbound lanes along this section of the busy highway.

Road widening and other proposed improvements would provide benefits for the 60,000 motorists who use Pacific Highway every day.

### **Proposed work**

Potential upgrades included road widening, adjustments to traffic lanes, medians, traffic lights, footpaths, drainage, utilities and road resurfacing.

Road widening requires strip adjustments to a small number of properties on the northbound side of Pacific Highway between Turrumurra and Wahroonga. We are in contact with all potentially impacted property owners.

Some roadside vegetation will also be impacted by road widening. Roads and Maritime will do everything to minimise this loss.



## Overview of potential Pacific Highway upgrade project locations



Figure 1: Proposed intersection upgrades to Pacific Highway between Turramurra and Wahroonga

### **Proposed upgrade: Pacific Highway and Finlay Road**

- Widening on the northbound side of Pacific Highway - north and south of Finlay Road - to provide three continuous northbound through lanes.
- Banning the right turn from Pacific Highway southbound into Finlay Road to accommodate three continuous northbound through lanes.
- Banning the right turn from Finlay Road onto Pacific Highway southbound to improve safety.
- Installing a new drainage network that has the capacity to remove excess water in the area, reducing the likelihood of water spilling over onto the highway, potentially creating dangerous road conditions.

Roads and Maritime will proceed with the proposed upgrades to the intersection of Pacific Highway at Finlay Road.

Roads and Maritime thanks the community and key stakeholders for providing valuable information and feedback to help us make informed decisions.



## 1. Pacific Highway and Finlay Road



Figure 2: Proposed intersection upgrades at Pacific Highway and Finlay Road

### **Proposed upgrade: Pacific Highway and Fox Valley Road**

- Widening on the northbound side of Pacific Highway - north and south of Fox Valley Road - to provide three continuous northbound through lanes.
- Maintaining the left turn lane from Pacific Highway northbound into Fox Valley Road to separate through traffic from turning vehicles.
- Extending the right turn lane from Pacific Highway southbound into Fox Valley Road to separate turning vehicles from through traffic.
- Widening the raised median on Pacific Highway northbound - north and south of Fox Valley Road - to improve road curve and lane alignment and for road user safety.
- Banning the right turn from Marshall Avenue onto Pacific Highway southbound to improve safety.
- Providing a 'Do Not Queue Across Intersection' sign on Pacific Highway southbound at Borambil Avenue help traffic flow.

Due to feedback received from the community, Roads and Maritime will proceed with the upgrades to the intersection of Pacific Highway at Fox Valley Road with a design change to shorten the dedicated left turn bay into Fox Valley Road from 60 to around 30 metres.

With this change to the intersection design, there will be no physical impacts to the structures or vegetation within private properties on the Pacific Highway south of Marshall Avenue.

Roads and Maritime thanks the community and key stakeholders for providing valuable information and feedback to help us make informed decisions.



## 2. Pacific Highway and Fox Valley Road



Figure 3: Proposed intersection upgrades at Pacific Highway and Fox Valley Road

### **Proposed upgrades at Pacific Highway at Coonanbarra Road and Redleaf Avenue**

- Widening on the northbound side of Pacific Highway - north and south of Redleaf Avenue - to provide three continuous northbound through lanes.
- Banning the right turn from Pacific Highway northbound into Coonanbarra Avenue to improve safety.
- Maintaining the right turn lane from Pacific Highway northbound into Redleaf Avenue to help traffic flow.
- Widening the raised median on Pacific Highway northbound - south of Redleaf Avenue - to improve road curve and lane alignment.
- Removing the Redleaf Avenue onto Pacific Highway southbound left turn slip lane to create a safer T-intersection.
- Providing an island on Redleaf Avenue for pedestrian safety.
- Installing a new drainage network that has the capacity to remove excess water in the area, reducing the likelihood of water spilling over onto the highway, potentially creating dangerous road conditions.

Due to feedback received from council and the community, Roads and Maritime has decided to investigate other solutions for the intersections of the Pacific Highway at Coonanbarra Road and Redleaf Avenue. The proposed upgrades will be further investigated and we will keep the community informed of our progress.

Roads and Maritime thanks the community and key stakeholders for providing valuable information and feedback to help us make informed decisions.



### 3. Pacific Highway at Coonanbarra Road and Redleaf Avenue



Figure 4: Proposed intersection upgrades on Pacific Highway at Coonanbarra Road and Redleaf Avenue

## 2. Consultation approach

### 2.1 Consultation objectives

Roads and Maritime consulted with the community and key stakeholders on the proposal to:

- seek comment, feedback, ideas and suggestions to consider when making a decision
- build a database of interested and concerned community members with whom we can continue to engage during the proposal's development and delivery.

### 2.2 Values

Our values underpin our decisions and behaviours when working with customers, colleagues, stakeholders and partners.

- Customer focus - We place the customer at the centre of everything we do.
- Collaboration - We value each other and create better outcomes by working together.
- Solutions - We deliver sustainable and innovative solutions to NSW's transport needs.
- Integrity - We take responsibility and communicate openly.
- Safety - We prioritise safety for our people and our customers.

### 2.3 How the consultation was done

On 5 September 2018, 3100 community updates inviting feedback on the proposal were distributed to local residents and businesses; see Appendix A and B. Comments could be made via email, post, phone or the online consultation map; see Table 1. Following requests from the community the consultation period was extended by one week to 5 October 2018.

Two public information sessions were held in Turrumurra and Wahroonga. Roads and Maritime also met with the local MP of Ku-ring-gai, Ku-ring-gai Council, a local school and an aged care facility.

Frequently asked questions (FAQs) and a project update were published on the Roads and Maritime project webpage; see Appendix E for the FAQs.



**Table 1: Consultation methods**

<b>Consultation methods</b>	
<b>Tool</b>	<b>Method</b>
<b>Have Your Say community update</b> September/October 2018 see Appendix A	<ul style="list-style-type: none"> <li>• Distributed to 3,100 local resident and businesses in the local area; see Appendix B for distribution area</li> <li>• Copies of the community update sent to key stakeholders, including local council, via email.</li> </ul>
<b>Website</b>	<ul style="list-style-type: none"> <li>• Roads and Maritime webpage updated with the latest information, including FAQs.  <a href="https://rms.nsw.gov.au/projects/sydney-north/pacific-hwy-turramurra-wahroonga/index.html">rms.nsw.gov.au/projects/sydney-north/pacific-hwy-turramurra-wahroonga/index.html</a>.</li> </ul>
<b>Online consultation map</b>	<ul style="list-style-type: none"> <li>• 106 comments; see Appendix D</li> </ul>
<b>Media releases and coverage</b>	<ul style="list-style-type: none"> <li>• Local news article:  <a href="https://monthlychronicle.com.au/2018/09/22/have-a-say-on-pacific-highway-upgrades-between-turramurra-and-wahroonga">monthlychronicle.com.au/2018/09/22/have-a-say-on-pacific-highway-upgrades-between-turramurra-and-wahroonga</a></li> <li>• Local MP Ku-ring-gai:  <a href="https://alisterhenskens.com.au/news/have-say-pacific-highway-upgrades-between-turramurra-and-wahroonga">alisterhenskens.com.au/news/have-say-pacific-highway-upgrades-between-turramurra-and-wahroonga</a></li> </ul>
<b>Social media</b>	<ul style="list-style-type: none"> <li>• Facebook post 13 September 2018, reach 11,640 people</li> <li>• Facebook post 20 September 2018, reach 2,041 people; see Appendix C</li> </ul>
<b>Community information sessions</b>	<ul style="list-style-type: none"> <li>• 13 September 2018, 4-6pm at Turramurra Plaza, Turramurra</li> <li>• 18 September 2018, 4-6pm at corner of Railway Avenue, Wahroonga</li> </ul>
<b>Meetings</b>	Roads and Maritime met with: <ul style="list-style-type: none"> <li>• local school</li> <li>• local Parents and Citizens' association</li> <li>• local aged care facility</li> <li>• local MP</li> <li>• Ku-ring-gai Council.</li> </ul>

## 3. Consultation summary

### 3.1 Overview

Roads and Maritime invited feedback on the proposal to upgrade three Pacific Highway intersections between Turramurra and Wahroonga in September to October 2018.

Ninety-four people – representing local residents, frequent road corridor users, local schools, elected representatives, Ku-ring-gai Council, businesses and community groups - provided 158 comments via the online consultation map, email, phone calls and letters.

Key issues included:

#### 1. Overall Pacific Highway intersection upgrades; see Table 2

- Overall proposal justification
- Local road issues
- Environmental impacts such as air quality, noise and tree impacts
- Pedestrian and cyclist safety
- Traffic and congestion at other locations on the road network as a result of the proposal
- Addressing Turramurra Bridge as a pinch point.

#### 2. Pacific Highway at Finlay Road, Warrawee/Turramurra; see Table 3

- Pacific Highway access into and from Finlay Road.
- Local road access issues from proposed changes to Finlay Road.
- Pedestrian and school safety.

#### 3. Pacific Highway at Fox Valley Road, Wahroonga/Warrawee; see Table 4

- Pacific Highway access into and from Marshall Avenue.
- Traffic into Fox Valley Road from Pacific Highway.
- Borambil Street access into and from the Pacific Highway northbound.

#### 4. Pacific Highway at Coonanbarra Road and Redleaf Avenue, Wahroonga; see Table 5

- Pacific Highway access into and from Redleaf Avenue.
- Change of access into Coonanbarra Road.
- Traffic light location changes on the Pacific Highway at Redleaf Avenue.

Following stakeholder feedback, Roads and Maritime will investigate other options for the Pacific Highway at Coonanbarra Road and Redleaf Avenue intersections. We will inform the community of the outcome.

See Tables 2-5 for more details about the issues raised and Roads and Maritime responses.



### 3.2 Feedback and Roads and Maritime responses

Roads and Maritime provided responses to feedback received about the proposal; see Table 2-5.

This feedback helped inform the decision to:

- proceed with work as designed at the intersection of Pacific Highway at Finlay Road
- update the design and proceed with work at the intersection of Pacific Highway at Fox Valley Road
- update the design and further investigate solutions for the new proposal for the intersections of the Pacific Highway at Coonanbarra Road and Redleaf Avenue.

**Table 2: Feedback summary and Roads and Maritime's responses for overall Pacific Highway upgrade proposal**

Pacific Highway intersection upgrades		
Category	Key issues raised	Roads and Maritime response
Support	Please proceed as soon as possible with the upgrades.	Roads and Maritime would like to thank the community and stakeholders for considering the proposal and to everyone who took the time to provide feedback.
	I am glad that Roads and Maritime is going ahead with these upgrades as they are much needed.	
	We need three continuous northbound lanes on Pacific Highway.	<p>After considering all feedback, along with the proposal's aims and design requirements, we have decided to proceed with the upgrades to Pacific Highway at Finlay Road.</p> <p>Due to feedback received from the community, we will also proceed with the upgrades to the intersection of Pacific Highway at Fox Valley Road with a design change to shorten the dedicated left turn bay into Fox Valley Road from 60 to around 30 metres. With this change to the intersection design, there will now be no physical impacts to the structures or vegetation within private properties on the Pacific Highway south of Marshall Avenue.</p> <p>The proposal is estimated to provide travel time savings in the northbound PM peak. The estimated time savings could reach around 67 seconds in the 2017 PM peak and around 48 in the 2027 PM peak for road users traveling through the intersections on the Pacific Highway at Finlay Road and Fox Valley Road. The combined travel time savings of the 60,000 motorists using this corridor will ease congestion along the Pacific Highway in this area.</p> <p>The proposed upgrades will also improve safety for motorists and the local community.</p> <p>Due to feedback received from council and the community, Roads and Maritime has decided to investigate other solutions for the intersection of the Pacific Highway at Coonanbarra Road and Redleaf Avenue. The proposed upgrades will be further investigated and we will keep the community informed of our progress.</p>

Pacific Highway intersection upgrades		
Category	Key issues raised	Roads and Maritime response
Proposal justification	The proposal will have limited to no benefit to intersection performance.	<p>Currently motorists heading northbound on Pacific Highway between Turrumurra and Wahroonga experience significant delays and queues, especially during morning and afternoon peaks.</p> <p>Congestion is primarily caused by the three northbound lanes merging into two lanes at three locations:</p> <ul style="list-style-type: none"> <li>• Pacific Highway and Finlay Road</li> <li>• Pacific Highway and Fox Valley Road</li> <li>• Pacific Highway at Coonanbarra Road and Redleaf Avenue.</li> </ul> <p>The proposal aims to improve traffic flow benefitting all road users who pass through the intersections at Pacific Highway and Finlay Road and Pacific Highway and Fox Valley Road.</p> <p>Due to feedback received from council and the community, Roads and Maritime has decided to investigate other solutions for the intersection of the Pacific Highway at Coonanbarra Road and Redleaf Avenue. The proposed upgrades will be further investigated. We will inform the community of the outcome.</p>

Pacific Highway intersection upgrades		
Category	Key issues raised	Roads and Maritime response
Proposal justification (Continued)	The current proposal will not fix the “rat run”. Commuters will still speed through local streets to avoid congestion on the Pacific Highway.	<p>When developing the proposal we considered all roads in the local area and all road users.</p> <p>With improve traffic flow and reduced wait times at each intersection, there will be flow on effects to other parts of the road network. With the decreased northbound travel time along the Pacific Highway, road users are less likely to take local streets with the travel time savings.</p>
	Proposed changes will only lead to further traffic directed to affected streets, so don't see how this will relieve the traffic congestion issues.	<p>Enforcement of traffic laws, including motorists disobeying road rules, is the responsibility of the NSW Police Force. Roads and Maritime encourages the public to report speeding, dangerous driving or unsafe behaviour on the road network to the police.</p> <p>Please contact the North Shore Local Area Command on 02 9414 8499 who can determine if targeted enforcement activities are appropriate.</p>
	The proposal does not provide a long term benefit to local residents or motorists passing through Wahroonga to Turramurra.	All road users – motorists, freight, pedestrians and cyclists – and the local community were considered when creating this proposal.

Pacific Highway intersection upgrades		
Category	Key issues raised	Roads and Maritime response
Proposal justification (Continued)	The proposal only lists benefits to drivers, with no benefits listed for residents, pedestrians, cyclists, people who use the park or public transport users.	<p>The Pinch Point Program aims to reduce traffic delays, manage congestion and improve travel times. The proposed upgrades provide a low cost, high benefit solution to congestion on the Pacific Highway.</p> <p>The proposal will create some long term benefits for motorists, bus users and the local community, for example, improving traffic flow through intersections and along the Pacific Highway.</p> <p>With improved traffic flow, local residents will benefit from safer roads conditions, eased congestion and lower carbon emissions.</p> <p>Footpaths and road crossings will be retained or upgraded, benefitting pedestrians. Pedestrians will also benefit from added times to pedestrian crossings. The local park near Fox Valley Road (Curtilage Park) will be reinstated in consultation with council after the project is complete.</p> <p>Public transport (buses) will also benefit from decreased travel times resulting from the proposal.</p> <p>The proposal may cause inconvenience for local residents and road users during construction. However, thousands of motorists will enjoy benefits daily when work is completed.</p> <p>These upgrades will also benefit cyclists. Though no dedicated cycleways are located within the proposal area and the Pacific Highway is not identified as a known cycle route, the proposal will improve general traffic flow encouraging motorists to make less risky moves at each intersection. This change will improve safety for all road users, including cyclists.</p> <p>For more information on cycle ways in your local area, please refer to Roads and Maritime's Cycleway Finder at <a href="https://rms.nsw.gov.au/maps/cycleway_finder">rms.nsw.gov.au/maps/cycleway_finder</a>.</p>

Pacific Highway intersection upgrades		
Category	Key issues raised	Roads and Maritime response
Proposal justification (Continued)	Upgrade the pedestrian footpaths along the affected areas.	All footpaths that will be adjusted as part of this proposal will be widened from 1.2 to 1.5 metres.
	What traffic research was used to determine that the proposed changes would produce a worthwhile benefit and justify investment of funds?	We use traffic modelling based on today's road capacity and traffic volumes, and predictions for the next ten years when developing these proposals. Our modelling also takes into consideration the impacts from surrounding approved projects both current and future. For the proposed upgrades to the Pacific Highway in this location, the impacts of the M1 and NorthConnex were included in our modelling.
	Was the completion of NorthConnex taken into consideration for future congestion on the Pacific Highway?	Traffic modelling showed that the proposal will improve the highway's performance, reduce queue lengths and improve traffic flow at each intersection, benefiting over 60,000 road users who use the highway every day.
Environmental impacts	Will there be any property impacts to residential properties adjacent to the Pacific Highway?	The proposal would directly affect several residential properties along Pacific Highway. Roads and Maritime has worked directly with each affected property owner to minimise these impacts where possible and developed reinstatement plans for each impacted property.
	This proposal will lead to more pollution from increased vehicle movements.	While the proposal improves the northbound capacity of the Pacific Highway between Turrumurra and Wahroonga, it is not anticipated to increase the volume of traffic using this road outside of population growth. As such, the proposal is unlikely to contribute to an increase in vehicle exhaust emissions in the local area.  By improving traffic flow and reduce local congestion, it is anticipated the proposal will have a positive effect on air quality by reducing the number of waiting vehicles.



Pacific Highway intersection upgrades		
Category	Key issues raised	Roads and Maritime response
Environmental impacts (Continued)	Is all of the tree and vegetation removal necessary?	<p>Roads and Maritime aims to minimise vegetation removal where possible, and we considered this when developing the proposal. There will be a loss of trees and vegetation on some private property impacted by the proposed road widening.</p> <p>Replacement planting will be done by Roads and Maritime in consultation with impacted property owners and a landscape architect. We will continually consult with council and the Office of Environment and Heritage (OEH) in the replacement planting and reinstatement strategies for local and State heritage properties impacted by the proposal.</p>
	How does Roads and Maritime decide what trees to replace?	
	Are property aesthetics affected by the proposal?	We are working with property owners to prepare landscaping plans, taking into consideration trees and vegetation as well as other items like retaining walls and fences. Some trees along the street, on public property, will also be removed. Due to potential road safety, maintenance and operational standards, trees on public property impacted by the proposal will not be replaced. We will consult with the local council on these matters.
	Are noise impacts to residents considered?	Yes, Road and Maritime considers noise impacts for all projects; see Appendix F for a fact sheet.
	Will there be any stormwater issues arising from the proposed changes to the work?	<p>A drainage assessment was undertaken during the development of the proposal to determine if any drainage upgrades or changes were required to accommodate the proposed road layout. We will need to upgrade the drainage as part of the intersection upgrades.</p> <p>The proposed drainage upgrades have been designed to accommodate the potential changes in stormwater run-off created from the increased pavement area of the new roadway. This work will meet Roads and Maritime and council standards.</p>

## Pacific Highway intersection upgrades

Category	Key issues raised	Roads and Maritime response
Consultation process	The community consultation period was too close to end of year holidays and not long enough to provide adequate feedback.	<p>Roads and Maritime asked for local community feedback on proposed upgrades to inform the decision making process.</p> <p>Consultation included the distribution of a 'have your say' leaflet to 3100 local residents and businesses, as well as an email to key stakeholders including Ku-ring-gai Council and a local Member of Parliament. Following community requests, the consultation period was extended by one week to Friday 5 October 2018.</p>
	There has been no previous discussion or any information regarding proposed changes with local residents.	<p>Roads and Maritime's Facebook page featured two posts in September 2018, reaching a combined audience of 13,000 people who live around the proposal area or who are road users of the area.</p> <p>The consultation featured in the <i>Monthly Chronicle</i> and a media release was issued by the local Member of Parliament.</p> <p>A project webpage that included an online consultation map and frequently asked questions went live on the Roads and Maritime website.</p> <p>Two community information sessions were held on 13 September 2018 and 18 September 2018 at Turramurra and Wahroonga.</p> <p>For information about the Roads and Maritime consultation process please visit Community engagement page:</p> <p><a href="https://rms.nsw.gov.au/about/what-we-do/community-engagement">rms.nsw.gov.au/about/what-we-do/community-engagement</a>.</p>
	There has been no consultation with Ku-ring-gai Council.	<p>Pacific Highway is a State road under the care and control of Roads and Maritime. Roads and Maritime has consulted with Ku-ring-gai Council on this Urban Roads Pinch Point Program proposal. We will continue to consult with council as this proposal progresses.</p>

Pacific Highway intersection upgrades		
Category	Key issues raised	Roads and Maritime response
Out of Scope	Remove the clearways on Pacific Highway.	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along the Pacific Highway between Turramurra and Wahroonga.</p> <p>Roads and Maritime consulted with the community on the clearway installation between Pymble and Wahroonga in May 2018. The consultation report is available online at:</p>
	Remove all parking on Pacific Highway to help ease traffic flow.	<p><a href="https://rms.nsw.gov.au/documents/projects/sydney-north/pac-hwy-clearway-wahroonga-to-pymble/pac-hwy-clearway-engagement-report-2018-06.pdf">rms.nsw.gov.au/documents/projects/sydney-north/pac-hwy-clearway-wahroonga-to-pymble/pac-hwy-clearway-engagement-report-2018-06.pdf</a>.</p> <p>Matters relating to existing clearways in this location have been addressed in a frequently asked questions document and traffic data summary that are available on the clearways project page:</p> <p><a href="https://rms.nsw.gov.au/projects/sydney-north/pac-hwy-clearway-wahroonga-to-pymble/index.html">rms.nsw.gov.au/projects/sydney-north/pac-hwy-clearway-wahroonga-to-pymble/index.html</a>.</p> <p>The new clearway became operational on 21 July 2018.</p> <p>Much of the kerbside areas within the scope of the proposed upgrades already cannot be used for parking or have restricted parking during peak periods.</p>
	Your proposal will not alleviate the problems of congestion. The major causes of congestion are the pinch points at Turramurra bridge and Pearce's corner.	<p>The purpose of this consultation was to seek feedback on proposed intersection upgrades on the Pacific Highway between Turramurra and Wahroonga.</p> <p>The bridge and intersection at Pearce's Corner and the M1 are not part of this proposal and are considered out of scope for this project.</p>
	Add / remove tidal flow to the Pacific Highway.	The purpose of this consultation was to seek feedback on the

Pacific Highway intersection upgrades		
Category	Key issues raised	Roads and Maritime response
Out of scope (Continued)	Add pavement lights to the Pacific Highway.	<p>proposed intersection upgrades along the Pacific Highway between Turrumurra and Wahroonga.</p> <p>Consideration of tidal flow and pavement lights are not part of this proposal and are considered out of scope for this project.</p>
	Add more bike paths along the Pacific Highway.	<p>The purpose of this consultation was to seek feedback on the proposed Pacific Highway upgrades between Wahroonga and Turrumurra.</p> <p>Improvements to cyclist safety and the installation of cycle paths is a matter for Ku-ring-gai Council. We have referred your request to council for their consideration.</p>
	Will the proposal change the traffic light timings at any of the intersections to assist with traffic flow?	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along the Pacific Highway between Turrumurra and Wahroonga.</p> <p>The traffic lights along the Pacific Highway are managed by the Sydney Coordinated Adaptive Traffic System. They determine the length of time the traffic light is green based on real time traffic flow. Sensors under the road measure the flow and density of traffic approaching the lights in each direction. The length of time the light stays green varies in response to changing traffic conditions. This ensures that the traffic lights are operating at maximum efficiency. Roads with higher traffic demands are given longer green lights to reduce congestion along the network.</p>
	Signalise Rohini Street pedestrian crossing.	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along the Pacific Highway between Turrumurra and Wahroonga.</p> <p>Consideration of the Rohini Street intersection and pedestrian crossing is not part of this proposal and is considered out of scope for this project.</p>

Pacific Highway intersection upgrades		
Category	Key issues raised	Roads and Maritime response
Out of scope (Continued)	Add lollypop men/crossing guards at heavily used pedestrian crossings.	The purpose of this consultation was to seek feedback on the proposed intersection upgrades along the Pacific Highway between Wahroonga and Turrumurra.
	Add Tokyo traffic controls to pedestrian crossings.	<p>Consideration of Tokyo traffic controls, lollypop persons or crossing guards are not part of this proposal and are considered out of scope for this project.</p> <p>Pedestrians are asked to ensure they cross the road in a safe manner. While it might add time to a journey, Roads and Maritime strongly encourage pedestrians to use the nearest traffic lights to cross the Pacific Highway.</p>
	Pymble Bridge is a pinch point that needs to be addressed.	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along the Pacific Highway between Turrumurra and Wahroonga.</p> <p>Pymble Bridge is not part of this proposal and is considered out of scope for this project.</p>
	Add tolls to the Pacific Highway calculated by distance travelled.	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along the Pacific Highway between Turrumurra and Wahroonga.</p> <p>Toll additions are not part of this proposal and are considered out of scope for this project.</p>
	Add underpasses/overpasses along the Pacific Highway.	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along the Pacific Highway between Turrumurra and Wahroonga.</p> <p>Adding underpasses/overpasses is not part of this proposal and is considered out of scope for this project.</p>

Pacific Highway intersection upgrades		
Category	Key issues raised	Roads and Maritime response
Out of scope (Continued)	Install signs to stop the noise impacts from compression brakes.	<p>To predict noise levels after the proposed upgrades were open to traffic, Roads and Maritime undertook noise modelling.</p> <p>Results confirmed there would be a slight increase in noise for a small number of residents living near the road widening area. However, this increase will be to 2 dBA or less ('dBA', is the expression of the relative loudness of sounds in the air as perceived by the human ear). This increase does not meet the threshold for noise mitigation treatment under Roads and Maritime's noise mitigation guidelines.</p> <p>Traffic modelling carried out for the proposal shows that the additional northbound through lane would reduce traffic delays at the intersections at Finlay Road and Fox Valley Road, particularly during the afternoon peak periods. This improvement could reduce the frequency of trucks using brakes.</p> <p>The Pacific Highway is a freight route and complete removal of the noise impacts from trucks is not possible.</p>
Future development suggestions	In regards to turns at traffic lights on green arrows, ensure that there is a separate lane so that vehicles may actually turn when the arrow turns green, without being impeded by vehicles that want to continue straight on.	Thank you for this suggestion. We will pass your input on to Roads and Maritime's Network Safety team.
	<p>Separated lanes needs to be long enough so that:</p> <p>(a) Left-turning traffic is not impeded; and</p> <p>(b) Waiting right-turning traffic does not spill into the lanes going straight on, and thus cause this traffic to bank up.</p>	

Pacific Highway intersection upgrades		
Category	Key issues raised	Roads and Maritime response
Illegal actions or movements taken by other road users	Vehicles speed through local streets because of the congestion.	Improved efficiency on Pacific Highway from the proposed work will result in reduced queue lengths, improved travel times and eased congestion and is likely to have flow on effects to the local road network encouraging road users to stick to main roads.
	Drivers are disobeying turn bans/peak turn bans.	<p>The enforcement of traffic laws including motorists disobeying road rules is the responsibility of the NSW Police Force. Roads and Maritime encourages members of the public to report speeding, dangerous driving or unsafe behaviour on the road network to the police.</p> <p>Please contact the North Shore Local Area Command on 02 9414 8499 who will determine whether targeted enforcement activities are appropriate.</p>

**Table 3: Feedback summary and Roads and Maritime's responses for the Pacific Highway and Finlay Road intersection**

Pacific Highway and Finlay Road intersection		
Category	Key issues raised	Roads and Maritime Response
Support	The right turn from Finlay Road onto the Pacific Highway should have been banned years ago and I fully support that.	Roads and Maritime would like to thank the community and stakeholders for considering the proposal and to everyone who took the time to provide feedback.
	Three lanes go into two lanes just before Finlay Road (heading north). It would make more sense to end that lane at the intersection allowing cars to turn left into Finlay Road without merging into the middle lane just prior.	<p>After considering all feedback, along with the proposal's aims and design requirements, we have decided to proceed with the upgrades to Pacific Highway at Finlay Road.</p> <p>The proposal is estimated to provide travel time savings in the northbound PM peak. The estimated time savings could reach around 67 seconds in the 2017 PM peak and around 48 in the 2027 PM peak for road users traveling through the intersections on the Pacific Highway at Finlay Road and Fox Valley Road.</p> <p>The combined travel time savings of the 60,000 motorists using this corridor will ease congestion along the Pacific Highway in this area.</p> <p>The proposed upgrades will also improve safety for motorists and the local community.</p> <p>Due to feedback received from council and the community, Roads and Maritime has decided to investigate other solutions for the intersection of the Pacific Highway at Coonanbarra Road and Redleaf Avenue. The proposed upgrades will be further investigated and we will keep the community informed of our progress.</p>



Pacific Highway and Finlay Road intersection		
Category	Key issues raised	Roads and Maritime Response
Proposed right turn bans into and from Finlay Road	Retain right turn access into Finlay Road from the Pacific Highway.	Finlay Road primarily services the surrounding residential area and Warrawee Public School community. The crash history data for the Finlay Road intersection in the five-year period between 1 January 2011 and 31 December 2016 shows that there were five reported crashes at this intersection.
	Banning the right turn at peak times makes sense for safety reasons and it is virtually impossible with the amount of traffic anyway, however, this shouldn't mean the turn should be banned at all times.	The introduction of the right turn bans are expected to make this intersection safer by reducing crash rates, particularly for vehicles turning right out of Finlay Road onto the Pacific Highway.
	Allow local residents only to retain access into Finlay Road.	It is not possible or appropriate to restrict road usage for local residents only.
	If Finlay Road access from Pacific Highway southbound is banned, more green light time at the traffic lights will be required at Fox Valley Road right turn due to the overflow.	<p>The traffic lights along the Pacific Highway are managed by the Sydney Coordinated Adaptive Traffic System. They determine the length of time the traffic light is green based on real time traffic flow. Sensors under the road measure the flow and density of traffic approaching the lights in each direction. The length of time the light stays green varies in response to changing traffic conditions. This ensures that the traffic lights are operating at maximum efficiency. Roads with higher traffic demands are given longer green lights to reduce congestion along the network.</p> <p>Traffic modelling has shown that the proposed right turn lane extension into Fox Valley Road will improve traffic flow through the intersection, even with overflow from Finlay Road.</p>
	If Finlay Road access from the Pacific Highway southbound is banned, the right turn lane into Fox Valley Road is not sufficient due to the overflow.	<p>As part of the proposal, the right turn lane into Fox Valley Road will be extended to increase capacity taking into consideration the access closure into Finlay Road.</p> <p>Traffic modelling shows the proposed right turn will improve traffic flow through the intersection, even with the traffic overflow from Finlay Road.</p>

Pacific Highway and Finlay Road intersection		
Category	Key issues raised	Roads and Maritime Response
Proposed right turn bans into and from Finlay Road (Continued)	Support right turn ban into Finlay Road from the Pacific Highway but retain turning lane for Finlay Road access during non-peak times.	This proposal is repurposing the existing right turn bay for the third northbound lane. If we retained the turning lane, we would need to acquire more property, making the proposal unfeasible.
	Keep Pacific Highway access into/from Finlay Road.	The crash history data for the Finlay Road intersection in the five-year period between 1 January 2011 and 31 December 2016 shows that there were five reported crashes at the intersection. The introduction of the right turn bans are expected to make the intersection safer, by reducing crash rates at this intersection, particularly for vehicles turning right out of Finlay Road onto Pacific Highway.
	Support banning right turn into Finlay Road, but do not raise median for access options when needed.	
	Ban right turn out of Finlay Road during peak times.	
	Emergency vehicle access would be impeded if a raised median was built opposite Finlay Road.	<p>An option was considered which allowed traffic to exit from Finlay Road onto the Pacific Highway but disallowed entry into Finlay Road. However this option is unsafe given the amount of traffic on the highway. Allowing this goes against the project objectives of improving northbound through travel along the Pacific Highway between Turramurra and Wahroonga.</p> <p>The proposed raised medians would help ease traffic flow though the network as well as improve safety by blocking unsafe movements into and out of Finlay Road from the Pacific Highway.</p> <p>The proposed raised medians would help ease traffic flow though the network as well as improve safety by blocking unsafe movements into and out of Finlay Road from the Pacific Highway.</p> <p>The proposed medians are mountable so that emergency vehicles can cross them when needed.</p>
Crash barriers	Retain crash barriers in front of Warrawee Public School.	The crash barriers along the perimeter of the Warrawee Public School will be removed during construction. We will replace the barriers when the project is completed.
	Extend the crash barrier to corner of Finlay Road.	
	Install a heavy crash barrier.	

Pacific Highway and Finlay Road intersection		
Category	Key issues raised	Roads and Maritime Response
Warrawee Public School and pedestrian safety	Increasing traffic close to Warrawee Public School will make it more dangerous.	Our proposal is not designed to increase traffic - it is to reduce congestion and improve safety on the Pacific Highway.  Having three continuous lanes will improve traffic flow for motorists, meaning they will be less likely to lane changing, braking suddenly or accelerating and carbon emissions. This will improve safety for the local areas.
	With road widening, traffic will be traveling faster and closer to Warrawee Public School and a pedestrian barrier should be added.	Though the proposal will be creating a third continuous northbound lane, the distance between the outer fence of the school and the lane kerb will remain the same.
Footpaths	Will pedestrian footpaths be made less safe or narrowed by the work?	No, all footpaths impacted by the proposal will be widened from 1.2 to 1.5 metres. By widening the footpath, we increase safety for pedestrians using the footpath.
Impact on residential and Warrawee Public School access without Finlay Road right turn access	School pick-ups and drop-offs will be affected by changing Finlay Road access from the Pacific Highway.	Finlay Road primarily services the surrounding residential area and Warrawee Public School community.
	Lamond Road residential access will be affected by changing Finlay Road access from the Pacific Highway.	The crash history data for the Finlay Road intersection in the five-year period between 1 January 2011 and 31 December 2016 shows there were five reported crashes at the intersection caused by vehicles turning in and out of Finlay Road onto the Pacific Highway southbound. The introduction of the right turn bans are expected to reduce crash rates at this intersection, particularly for vehicles turning right out of Finlay Road onto the Pacific Highway.
	Holmes Street residential access will be affected by changing the Finlay Road access from the Pacific Highway.	
	Change of Finlay Road access will reroute traffic through Fox Valley Road for local residents.	The proposed right turn bans at the Pacific Highway and Finlay Road intersection would see affected motorists reroute via Fox Valley Road or Kissing Point Road.
	Change of Finlay Road access will reroute traffic through Kissing Point Road for local residents.	

Pacific Highway and Finlay Road intersection		
Category	Key issues raised	Roads and Maritime Response
Out of scope	Pedestrians crossing on Blytheswood Avenue are affecting queues on the Pacific Highway.	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along the Pacific Highway between Turramurra and Wahroonga.</p> <p>Blytheswood Avenue is under the care of council and is considered out of scope for this project.</p>
	Remove lights for pedestrian crossing and add a pedestrian bridge.	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along the Pacific Highway between Turramurra and Wahroonga.</p> <p>Building a pedestrian bridge is not a part of this proposal and is considered out of scope for this project.</p>
	Combine traffic lights sequencing at Blytheswood Avenue and Eulbertie Avenue with the pedestrian crossing.	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along the Pacific Highway between Turramurra and Wahroonga.</p> <p>Changing the light configuration is not part of this proposal and is considered out of scope for this project. Roads and Maritime has recently investigated whether a different light configuration would improve traffic flow, however the results of this investigation did not support this change.</p>
	Shift pedestrian crossing lights to Eulbertie Avenue.	
	Speed cameras are needed at each intersection.	<p>The NSW Centre for Road Safety regularly receives requests from the community to have a speed camera installed in their local area.</p> <p>NSW residents can nominate locations for speed cameras. Information from the community, together with crash data and other road safety information will help prioritise future locations for speed cameras in NSW.</p> <p>We encourage you to visit the website: <a href="http://www.saferroadsnsw.gov.au">www.saferroadsnsw.gov.au</a> to formally nominate a location that may be potential site for a speed camera.</p>

Pacific Highway and Finlay Road intersection		
Category	Key issues raised	Roads and Maritime Response
Out of scope (Continued)	Widen the rail bridges at Turramurra and Pymble.	The purpose of this consultation was to seek feedback on the proposed intersection upgrades along the Pacific Highway between Turramurra and Wahroonga.
	Upgrade Telegraph Road.	
	Upgrade Bobbin Head Road.	These roads and bridges are not part of this proposal and are considered out of scope for this project.
	Upgrade the Fullers Road intersection.	
	Provide a grade separated intersection at Mowbray Road.	
	Widen Pacific Highway at Gordon.	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along the Pacific Highway between Turramurra and Wahroonga.</p> <p>Changing speeds at these locations are not part of this proposal and are considered out of scope for this project. Your suggestions have been passed onto Roads and Maritime's Network Safety team.</p>
	Change the speed limit allowed in the left turn lane at the intersection of Pacific Highway, Pennant Hills Road and King Georges Road.	

**Table 4: Feedback summary and Roads and Maritime's responses for the Pacific Highway and Fox Valley Road intersection**

Pacific Highway and Fox Valley Road intersection		
Category	Key issues raised	Roads and Maritime Response
Support	Please upgrade this intersection as soon as possible.	<p>Roads and Maritime would like to thank the community and stakeholders for considering the proposal and to everyone who took the time to provide feedback.</p> <p>Due to feedback received from the community, we will proceed with the upgrades to the intersection of Pacific Highway at Fox Valley Road with a design change to shorten the dedicated left turn bay into Fox Valley Road from 60 to around 30 metres. With this change to the intersection design, there will now be no physical impacts to the structures or vegetation within private properties on the Pacific Highway south of Marshall Avenue.</p> <p>The proposal is estimated to provide travel time savings in the northbound PM peak. The estimated time savings could reach around 67 seconds in the 2017 PM peak and around 48 in the 2027 PM peak for road users traveling through the intersections on the Pacific Highway at Finlay Road and Fox Valley Road.</p> <p>The combined travel time savings of the 60,000 motorists using this corridor will ease congestion along the Pacific Highway in this area.</p> <p>The proposed upgrades will also improve safety for motorists and the local community.</p> <p>Due to feedback received from council and the community, Roads and Maritime has decided to investigate other solutions for the intersection of the Pacific Highway at Coonanbarra Road and Redleaf Avenue. The proposed upgrades will be further investigated and we will keep the community informed of our progress.</p>

Pacific Highway and Fox Valley Road intersection		
Category	Key issues raised	Roads and Maritime Response
Additional westbound left turn lane into Fox Valley Road	Keep this intersection as it is, there is no need for an additional lane.	<p>The dedicated left turn lane from the Pacific Highway into Fox Valley Road allows turning vehicles to safely slow down or stop benefitting traffic flow continuing on the Pacific Highway.</p> <p>Due to feedback received from the community, Roads and Maritime will also proceed with the upgrades to the intersection of Pacific Highway at Fox Valley Road with a design change to shorten the dedicated left turn bay into Fox Valley Road from 60 to around 30 metres.</p> <p>There will now be no physical impacts to the structure or vegetation of private properties on the Pacific Highway south of Marshall Avenue. Benefits to traffic flow and road user safety will still be achieved with the left turn lane length shortened.</p>
	No need for a signalised dedicated left turn because not many pedestrians cross Fox Valley Road and vehicles can turn freely without delay.	<p>The dedicated left turn lane from the Pacific Highway into Fox Valley Road allows turning vehicles to safely slow down or stop benefitting traffic flow continuing on the Pacific Highway.</p> <p>The pedestrian crossing on Fox Valley Road is currently signalised. When the intersection upgrade is complete, we will return the pedestrian crossing as is.</p>

Pacific Highway and Fox Valley Road intersection		
Category	Key issues raised	Roads and Maritime Response
Additional westbound left turn lane into Fox Valley Road (Continued)	Create a left turn slip lane for faster transfer between the Pacific Highway and Fox Valley Road.	<p>Road and Maritime is committed to making sure you stay safe on the road.</p> <p>We considered multiple design options for this corner and have adopted the best design option for road users turning off the Pacific Highway into Fox Valley Road.</p> <p>Part of our decision was based on safety and ensuring that road users will turn the corner at an appropriate speed.</p> <p>If motorists were to enter Fox Valley Road from the Pacific Highway at greater speeds, it would potentially increase the number and the severity of crashes.</p>
	Shave off the south western corner of the intersection for faster transfer between the Pacific Highway and Fox Valley Road.	The proposed corner design will enable motorists turning the corner to see pedestrians and residents on Fox Valley Road, improving safety for local residents.
	Shorten the left turn lane so that Marshall Avenue users can enter without being rear ended.	Due to feedback received from the community, Roads and Maritime will proceed with the upgrades to the intersection of Pacific Highway at Fox Valley Road with a design change to shorten the dedicated left turn bay into Fox Valley Road from 60 to around 30 metres.
	Shorten the left turn lane from the Pacific Highway into Fox Valley Road to start north of Marshall Avenue.	<p>There will be now no physical impacts to the structure or vegetation of private properties on the Pacific Highway south of Marshall Avenue. Benefits to traffic flow and road user safety will still be achieved with the left turn lane length shortened.</p> <p>We reviewed the number of motorists turning left and the turning time allowed while the light is green when we determined the shortened length of the proposed dedicated left turn lane from the Pacific Highway onto Fox Valley Road.</p>



Pacific Highway and Fox Valley Road intersection		
Category	Key issues raised	Roads and Maritime Response
Additional westbound left turn lane into Fox Valley Road (Continued)	Lower the speed limits for vehicles in the new left turn lane.	The 60 kilometres per hour speed limit is considered appropriate for the environment and local areas. Separate speed limits cannot be applied to different lanes. Motorists will be required to slow down in order to turn safely into Fox Valley Road with the signalised turn.
	Add a crash barrier along the Pacific Highway adjacent to the proposed left turn lane.	We have considered this comment and determined that additional safety barriers are not justified at this location.
	Add more time for pedestrians to cross the intersection because there is a northbound extra lane. Given more lanes, more time is needed for pedestrian safety.	The pedestrian crossing time will be adjusted to suit the new crossing length.
Proposed access changes to Marshall Avenue	Do not raise the median on the Pacific Highway.	The existing medians at this intersection are raised. Raised medians play an important role in improving safety along roads by reducing accidents.
	Move traffic lights at Fox Valley Road intersection to include Marshall Avenue.	Placing traffic signals in Marshall Avenue is not justified based on traffic demand and would increase the average delay and travel times along the Pacific Highway.
	Retain “No Queuing” across the intersection for vehicles leaving Marshall Avenue needing to enter the Pacific Highway northbound.	<p>The no-queuing markings are present in order to assist road users exiting Marshall Avenue onto the Pacific Highway southbound.</p> <p>However, when the median is introduced, this move will not be possible making the line marking unnecessary at this location.</p>
	Add signage to alert road users turning left into Fox Valley Road of the access to Marshall Avenue to protect residents from rear end crashes.	<p>The project team will consider the suggestion for signs to alert drivers on the Pacific Highway of the upcoming Marshall Avenue entry.</p> <p>This decision will be made during the detailed design phase of the project. If we do go ahead with the sign, we may need to remove some additional vegetation.</p>

Pacific Highway and Fox Valley Road intersection		
Category	Key issues raised	Roads and Maritime Response
Proposed access changes to Marshall Avenue (Continued)	Keep access in/out of Marshall Avenue from the Pacific Highway.	<p>Marshall Avenue is a cul-de-sac, which services Marshall Avenue residents only.</p> <p>Turning right from Marshall Avenue onto the Pacific Highway southbound is not safe. Roads and Maritime is taking steps to stop such risky behaviour on our roads.</p> <p>The crash history data for the intersection in the five-year period between 1 January 2011 and 31 December 2016 shows that there were eight reported crashes at the intersection. The introduction of a right turn ban is expected to reduce crash rates at this intersection.</p> <p>Based on the traffic counts collected in March 2017, the number of vehicles turning right out of Marshall Avenue onto the Pacific Highway southbound was found to be very small.</p>
	Allow access to the Pacific Highway from Marshall Avenue southbound only.	
	Allow access to Marshall Avenue from the Pacific Highway for local residents only.	
	Allow right turn out of Marshall Avenue onto the Pacific Highway southbound.	
Proposed extended right turn lane into Fox Valley Road	Extend the right turn lane into Fox Valley Road.	As a part of this proposal, Roads and Maritime is proposing to extend this right turn lane. This will allow more motorists wanting to turn right to wait without disrupting traffic flow for road users travelling through the intersection.

Pacific Highway and Fox Valley Road intersection		
Category	Key issues raised	Roads and Maritime Response
Proposed extended right turn lane into Fox Valley Road (Continued)	With a longer right turn lane, more time is needed at the traffic lights for this phase.	<p>The traffic lights along the Pacific Highway are managed by the Sydney Coordinated Adaptive Traffic System. They determine the length of time the traffic light is green based on real time traffic flow. Sensors under the road measure the flow and density of traffic approaching the lights in each direction. The length of time the light stays green varies in response to changing traffic conditions. This ensures that the traffic lights are operating at maximum efficiency. Roads with higher traffic demands are given longer green lights to reduce congestion along the network.</p> <p>Traffic modelling has shown that the proposed extended right turn lane will improve traffic flow through the Fox Valley Road intersection. The modelling also shows that even with the right turns being banned from the Pacific Highway at Finlay Road and Marshall Avenue, the right turn bay onto Fox Valley Road will have the capacity to deal with the overflow.</p>
	If the proposal to close access to Finlay Road from the Pacific Highway is approved, the lane extension will not be enough to accommodate traffic overflow.	Traffic modelling shows that capacity of the extended right turn lane bay into Fox Valley Road will be adequate, even with the removal of the right turn into Finlay Road from the Pacific Highway.
	If Marshall Avenue access from the Pacific Highway is banned, the extended right turn lane into Fox Valley Road will not be enough to accommodate traffic overflow.	Traffic modelling shows the extended right turning from the Pacific Highway onto Fox Valley Road will be adequate even with the removal of the right turn into Marshall Avenue.
	Add a second right turn lane into Fox Valley Road.	To add an additional right turn lane, we would have to widen the road more. This would potentially have greater impacts on heritage, vegetation and private properties on Fox Valley Road and the Pacific Highway. The cost and impact would make the project unfeasible.

Pacific Highway and Fox Valley Road intersection		
Category	Key issues raised	Roads and Maritime Response
Access into and from Borambil Street	Ban entry and exit of Borambil Street from the Pacific Highway northbound.	<p>Roads and Maritime previously consulted with the community about banning the entry and exit to Borambil Street from the Pacific Highway northbound. This suggestion was made to improve traffic flow and road user safety, as nine accidents have occurred there in the past five years.</p> <p>However the community strongly rejected closing this access point. Because of this feedback, we did not include this option in the current proposal.</p> <p>During this period of consultation, the community provided multiple suggestions for accessing Borambil Street. Roads and Maritime has again investigated whether installing traffic lights would be beneficial for the highway and local community in December 2018. The results of the study found installing traffic lights at this location would negate any travel time savings created by the other proposed intersection upgrades.</p> <p>If other changes at this intersection are proposed, Roads and Maritime will inform the community.</p>
	Ban right turns onto the Pacific Highway northbound from Borambil Street.	
	Make AM/PM peak ban into/from the Pacific Highway northbound.	
	Install “keep clear” sign at Borambil Street.	
	Install traffic lights at Borambil Street intersection.	

Pacific Highway and Fox Valley Road intersection		
Category	Key issues raised	Roads and Maritime Response
Heritage properties	Were the proposal's impacts on the School of Practical Philosophy, a State heritage property, considered?	<p>Yes it was. We have and will continue to work directly with the property owners, heritage specialists and the Office of Environment and Heritage (OEH) to minimise the impacts on this property as a result of the proposal.</p> <p>An application was submitted by Roads and Maritime to OEH under Section 60 of the <i>Heritage Act 1977</i> (NSW) to undertake the required excavations and property adjustments to the State heritage item in this location for the proposal if the project proceeds (S60/2018/231 - received 20 November 2018). The application has since been approved on 31 January 2019. A copy of this approval will be provided in the REF.</p> <p>A heritage assessment and landscape character and visual impact assessment were prepared to inform the REF and Section 60 State Heritage application for this property. As part of the heritage assessment, the heritage significance was investigated and assessed to determine the most appropriate management and mitigation strategy with respect to the proposal and its potential impacts.</p> <p>The entire school site is of State heritage significance and contains a brick wall, an internal garden and brick footpath which are of historic value. The eastern boundary wall is currently dilapidated in some areas. Roads and Maritime has agreed to rebuild the wall along this boundary if the project proceeds. Four options of how to do this work were considered. The four options considered had different construction costs, noise and vibration impact but all required removal of the same number of trees within the site. The option recommended will be less noisy and cause less vibration to install.</p>

Heritage properties (Continued)	Were the proposal's impacts on the School of Practical Philosophy, a State heritage property, considered? (Continued)	<p>The location of the boundary wall will change. It will be moved into the property. This means the space between the wall and the historic brick path will decrease allowing for fewer trees to be replanted next to the wall (see FAQs for further information on impacted vegetation and future growth visualisations: <a href="https://rms.nsw.gov.au/projects/sydney-north/pacific-hwy-turramurra-wahroonga/faq.html">rms.nsw.gov.au/projects/sydney-north/pacific-hwy-turramurra-wahroonga/faq.html</a>).</p> <p>Throughout the design process, the impacted owners and occupants of this property have and will continue to be consulted.</p>
Road widening options	What is the reason for widening the road westward and not eastward at the Fox Valley Road intersection?	<p>An assessment was carried out to widen to the east but it was not feasible.</p> <p>When the team considered land to the east of the Pacific Highway, multiple issues arose. The largest stakeholder was identified as the Warrawee Function Centre and Bowling Club. If the road widening were to occur to the east, there would be a large impact into the existing car park and property, significantly affecting the facility. It could possibly result in acquisition of the full property, which would make the project unfeasible due to cost and the loss of a key community asset.</p> <p>There are also a large number of telecommunications and National Broadband Network cables buried on the east side of the road. To remove or even work around these would be disruptive, timely and costly.</p> <p>When the project team considered expansion of the Pacific Highway on the western side they found this option feasible. Some partial property acquisition and adjustments are needed, however, it is much less than compared to what is required for the eastern side of the highway.</p> <p>Roads and Maritime has been consulting with impacted property owners and will continue engaging with them throughout this process.</p>

Out of scope	Add a pedestrian bridge for train station users and Knox College students.	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along the Pacific Highway between Turramurra and Wahroonga.</p> <p>Building a pedestrian footbridge, or subway, under the Pacific Highway is not part of this proposal and is considered out of scope for this project.</p>
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**Table 5: Feedback summary and Roads and Maritime's responses for the Pacific Highway at Coonanbarra Road and Redleaf Avenue intersections**

The feedback below is in response to our initiative proposal for the Pacific Highway at Coonanbarra Road and Redleaf Avenue intersections. Due to feedback from council and the community, Roads and Maritime has decided to investigate other solutions for the intersection of the Pacific Highway at Coonanbarra Road and Redleaf Avenue. The proposed upgrades will be further investigated and we will keep the community informed of our progress.

Pacific Highway at Coonanbarra Road and Redleaf Avenue intersection		
Category	Key issues raised	Roads and Maritime Response
Support	This upgrade is needed.	<p>Roads and Maritime would like to thank the community and stakeholders for considering the proposal and to everyone who took the time to provide feedback.</p> <p>After considering all feedback, along with the proposal's aims and design requirements, we have decided to proceed with the upgrades to Pacific Highway at Finlay Road and Fox Valley Road.</p> <p>The current proposal is estimated to provide travel time savings in the northbound PM peak. The estimated time savings could reach around 67 seconds in the 2017 PM peak and around 48 in the 2027 PM peak for road users traveling through the intersections on the Pacific Highway at Finlay Road and Fox Valley Road.</p> <p>The combined travel time savings of the 60,000 motorists using this corridor will ease congestion along the Pacific Highway in this area.</p> <p>The proposed upgrades will also improve safety for motorists and the local community.</p> <p>Due to feedback received from council and the community, Roads and Maritime has decided to investigate other solutions for the intersection of the Pacific Highway at Coonanbarra Road and Redleaf Avenue. The proposed upgrades will be further investigated and we will keep the community informed of our progress.</p>



Pacific Highway at Coonanbarra Road and Redleaf Avenue intersection		
Category	Key issues raised	Roads and Maritime Response
Install traffic lights the Pacific Highway and Redleaf Avenue intersection	Signalised the intersection to allow for traffic turning right into Redleaf Avenue.	Roads and Maritime would like to thank the community and stakeholders for considering the proposal and to everyone who took the time to provide feedback.
	Move traffic lights at Coonanbarra Road to Redleaf Avenue and make Coonanbarra Road left in left out onto the Pacific Highway.	Roads and Maritime received a lot of feedback from the community and council on our proposal. Your feedback, especially the comments about installing traffic lights at the Redleaf Avenue and Pacific Highway intersection, highlighted community issues that were not fully addressed by the current proposal.
	Move traffic lights at Coonanbarra Road to Redleaf Avenue and make Ada Avenue left out onto the Pacific Highway.	Rather than moving ahead with that proposal, we have listened to you and are now investigating other solutions for this intersection. The proposed upgrades will be further investigated and we will keep the community informed of our progress.
Redleaf Avenue access onto the Pacific Highway	Retain access to the Pacific Highway northbound from Redleaf Avenue.	
	Retain access to the Pacific Highway southbound from Redleaf Avenue.	
	The left turn lane should remain a slip lane because it is easier to access Pacific Highway.	
	The left turn lane should remain a slip lane because congestion will increase on Redleaf Avenue.	
	Keep as slip lane because the proposed intersection arrangement is more dangerous.	

Pacific Highway at Coonanbarra Road and Redleaf Avenue intersection		
Category	Key issues raised	Roads and Maritime Response
Pedestrian refuge/island at Redleaf Avenue	Keep the traffic island as it is.	Roads and Maritime would like to thank the community and stakeholders for considering the proposal and to everyone who took the time to provide feedback.
	No need to change the refuge because it is not regularly used.	
	Most pedestrian traffic occurs north of this refuge.	
Right turn lane into Redleaf Avenue from the Pacific Highway	Extend the right turn lane into Redleaf Avenue to remove queues from the Pacific Highway through traffic.	Roads and Maritime received a lot of feedback from the community and council on our proposal. Your feedback, especially the comments about installing traffic lights at the Redleaf Avenue and Pacific Highway intersection, highlighted community issues that were not fully addressed by the current proposal.  Rather than moving ahead with that proposal, we have listened to you and are now investigating other solutions for this intersection. The proposed upgrades will be further investigated and we will keep the community informed of our progress.
	Extend the right turn lane into Redleaf Avenue for school traffic.	
	Extend turn lane into Redleaf Avenue to make up for added Coonanbarra Road overflow traffic.	
Coonanbarra Road access	Retain right turn from the Pacific Highway northbound into Coonanbarra Road.	
	Removing access to Coonanbarra Road will make the traffic conditions worse in the shopping area.	
	Banning the right turns onto Coonanbarra at this intersection will add to the Redleaf Avenue traffic.	
	Right turn ban at Coonanbarra Road will allow less traffic from the Pacific Highway to enter at Redleaf Avenue.	
	Add a green arrow for traffic from Coonanbarra Road to enter the Pacific Highway southbound.	
	Remove peak right turn bans onto the Pacific Highway northbound from Coonanbarra Road.	

Pacific Highway at Coonanbarra Road and Redleaf Avenue intersection		
Category	Key issues raised	Roads and Maritime Response
Raised median	Do not raise the medians.	The existing medians at this intersection are raised. Raised medians play an important role in improving safety along roads by reducing accidents.
Out of scope	Do not remove the Pacific Highway southbound access from Ada Avenue.	Roads and Maritime is not changing access to the Pacific Highway from Ada Avenue.
	Add a signal protecting Pacific Highway access from Ada Avenue.	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along Pacific Highway between Turrumurra and Wahroonga.</p> <p>Roads and Maritime is currently not considering changing the configuration of traffic lights affecting Ada Avenue.</p>
	Install a roundabout at Coonanbarra Road and Railway Road.	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along Pacific Highway between Turrumurra and Wahroonga.</p> <p>The road beyond the intersection of Coonanbarra Road is a council road and the responsibility of Ku-ring-gai Council. Your comment has been forwarded to council.</p>
	The roundabout at Redleaf Avenue and Railway Avenue negatively affects traffic queuing.	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along Pacific Highway between Turrumurra and Wahroonga.</p> <p>Illoura Avenue, Railway Avenue and Redleaf Avenue are local roads under the care and control of Ku-ring-gai Council.</p> <p>The roundabout remains the responsibility of Ku-ring-gai Council. We have passed on your comment to Ku-ring-gai Council for their consideration.</p>

Pacific Highway at Coonanbarra Road and Redleaf Avenue intersection		
Category	Key issues raised	Roads and Maritime Response
Out of scope (continued)	Build a Coonanbarra Road to Ada Avenue underpass.	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along the Pacific Highway between Turramurra and Wahroonga.</p> <p>Building an underpass under the Pacific Highway is not part of this proposal and is considered out of scope for this project.</p>
	Build a Coonanbarra Road underpass that merges onto the Pacific Highway northbound.	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along the Pacific Highway between Turramurra and Wahroonga.</p> <p>Building an underpass under the Pacific Highway is not part of this proposal and is considered out of scope for this project. Traffic in the shopping area remains the responsibility of Ku-ring-gai Council. We have passed on your comment to council for their consideration.</p>
	Redleaf Avenue has traffic from the shopping village. Consider improvements to fix this problem.	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along the Pacific Highway between Turramurra and Wahroonga.</p>
	Ban parking on Coonanbarra Road.	<p>Building an underpass under the Pacific Highway is not part of this proposal and is considered out of scope for this project. Traffic in the shopping area remains the responsibility of Ku-ring-gai Council. We have passed on your comment to council for their consideration.</p> <p>Ku-ring-gai Council is responsible for parking restrictions on Coonanbarra Road and at near the shopping village. We have passed on your comments to them for their consideration.</p>

Pacific Highway at Coonanbarra Road and Redleaf Avenue intersection		
Category	Key issues raised	Roads and Maritime Response
Out of scope (continued)	Add parking meters to streets near the shopping village areas.	<p>Ku-ring-gai Council is responsible for parking restrictions on Coonanbarra Road and at near the shopping village. We have passed on your comments to them for their consideration. The enforcement of traffic laws including motorists disobeying road rules is the responsibility of the NSW Police Force. Roads and Maritime encourages members of the public to report speeding, dangerous driving or unsafe behaviour on the road network to the police.</p> <p>Please contact the North Shore Local Area Command on 02 9414 8499 who will determine whether targeted enforcement activities may be appropriate.</p>
	Currently traffic wishing to turn right onto the Pacific Highway from Coonanbarra Road travel over the highway and do U-turns in the school driveways at Ada Avenue.	<p>Ku-ring-gai Council is responsible for parking restrictions on Coonanbarra Road and at near the shopping village. We have passed on your comments to them for their consideration. The enforcement of traffic laws including motorists disobeying road rules is the responsibility of the NSW Police Force. Roads and Maritime encourages members of the public to report speeding, dangerous driving or unsafe behaviour on the road network to the police.</p> <p>Please contact the North Shore Local Area Command on 02 9414 8499 who will determine whether targeted enforcement activities may be appropriate.</p>

## 4. Decision

Roads and Maritime would like to thank the community and stakeholders for considering the proposal and everyone who took the time to provide feedback.

After considering all responses, along with the proposal's aims and design requirements, we have decided to:

- proceed with the proposed upgrades to the intersection of Pacific Highway at Finlay Road
- proceed with the proposed upgrades to the intersection of Pacific Highway at Fox Valley Road with a design change to shorten the dedicated left turn bay into Fox Valley Road from 60 to around 30 metres
- further investigate the proposed upgrades to the intersection of Pacific Highway at Coonanbarra Road and Redleaf Avenue. We will inform the community of the outcome.

Improved traffic flow, safety improvements and travel time savings exist with each intersection upgrade for northbound motorists traveling on the Pacific Highway between Cherry Street and Borambil Street. The new proposal for the intersections at Coonanbarra Road and Redleaf Avenue may result in further time savings.

## 5. Next steps

Roads and Maritime will finalise the design and environmental assessment for the intersection upgrades at:

- Pacific Highway at Finlay Road
- Pacific Highway at Fox Valley Road.

The REF, which assesses both of these intersection upgrades combined, will be published on the Roads and Maritime website.

The community will be kept community informed of our progress investigating a new solution for the intersections at the Pacific Highway, Coonanbarra Road and Redleaf Avenue.

For more information please contact the Pinch Points Project Team, phone 1800 572 004 or email [pinchpoint@rms.nsw.gov.au](mailto:pinchpoint@rms.nsw.gov.au).

## 6. Appendices

### Appendix A – ‘Have your say’ letter September 2018



## Pacific Highway upgrades between Turrumurra and Wahoonga

Roads and Maritime Services | September 2018

The NSW Government is investigating Pacific Highway upgrades as part of its \$300 million Urban Roads Pinch Point Program, which aims to reduce congestion and improve travel times on Sydney's busiest corridors.

Roads and Maritime Services is delivering this project to ease congestion, deliver reliable travel times and improve safety for road users on the Pacific Highway between Turrumurra and Wahoonga.



Pacific Highway at Coonanbama Road and Redleaf Avenue, Wahoonga

### Why does Pacific Highway between Turrumurra and Wahoonga need upgrading?

Currently, motorists experience heavy congestion, slow travel times and delays when travelling between Turrumurra and Wahoonga, particularly during the afternoon peak period. We are proposing to widen the road to provide three continuous northbound lanes and maintain three continuous southbound lanes along this section of the busy corridor.

Road widening and other proposed improvements would provide significant benefits for the 60,000 motorists who use the Pacific Highway every day, particularly in the afternoon peak for motorists travelling northbound.

#### Upgrade benefits:

- northbound travel time savings
- improved traffic flow and efficiency at the intersections
- reduced queue lengths and delays at the intersections
- improved road safety along the corridor through removal of right turn movements
- improved pedestrian and road user safety at the intersection of Pacific Highway and Redleaf Avenue by removing the southbound slip lane and providing a pedestrian refuge on Redleaf Avenue
- improved road safety at the intersections of Pacific Highway at Fox Valley Road, and at Coonanbama Road and Redleaf Avenue, by realigning the curve of the road and traffic lanes.

### Proposed upgrade work

Potential upgrades would include road widening, adjustments to traffic lanes, medians, traffic lights, footpaths, drainage, utilities and road resurfacing.

Road widening will require strip adjustments to a small number of properties on the northbound side of Pacific Highway, between Turrumurra and Wahoonga. Roads and Maritime are in contact with all potentially impacted property owners.

Road widening works will also impact roadside vegetation. We will do everything we can to minimise loss of vegetation.

Although we may not have the capacity to fund all potential Pacific Highway upgrades, our decision will be informed by community and stakeholder feedback.

Potential upgrades at each project location could include:

#### Pacific Highway and Finlay Road

- widening on the northbound side of Pacific Highway (north and south of Finlay Road) to provide three continuous northbound through lanes
- banning the right turn from Pacific Highway southbound into Finlay Road to accommodate three continuous northbound through lanes
- banning the right turn from Finlay Road onto Pacific Highway southbound to improve safety.

#### Pacific Highway and Fox Valley Road

- widening on the northbound side of Pacific Highway (north and south of Fox Valley Road) to provide three continuous northbound through lanes
- maintaining the left turn lane from Pacific Highway northbound into Fox Valley Road
- extending the right turn bay from Pacific Highway southbound into Fox Valley Road
- widening the raised median on Pacific Highway northbound (north and south of Fox Valley Road) to improve road curve and lane alignment
- banning the right turn from Marshall Avenue onto Pacific Highway southbound to improve safety
- providing a 'Do Not Queue Across Intersection' sign on Pacific Highway southbound at Bonambi Avenue.

#### Pacific Highway at Coonanbama Road and Redleaf Avenue

- widening on the northbound side of Pacific Highway (north and south of Redleaf Avenue) to provide three continuous northbound through lanes
- banning the right turn from Pacific Highway northbound into Coonanbama Avenue to improve safety
- maintaining the right turn bay from Pacific Highway northbound into Redleaf Avenue
- widening the raised median on Pacific Highway northbound (south of Redleaf Avenue) to improve road curve and lane alignment
- removing the Redleaf Avenue onto Pacific Highway southbound left turn slip lane to create a safer T-intersection
- providing a pedestrian refuge on Redleaf Avenue
- providing a new drainage network.

### What has happened so far?

Roads and Maritime carried out investigation work on Pacific Highway between Ru-ring-gai Avenue, Turrumurra and Coonanbama Avenue, Wahoonga from March to June 2018.

This work identified potential Pacific Highway upgrade projects at:

- Pacific Highway and Finlay Road, Warrumurra/Turrumurra
- Pacific Highway and Fox Valley Road, Wahoonga/Warrumurra
- Pacific Highway at Redleaf Avenue and Coonanbama Road, Wahoonga.

To further inform potential corridor upgrade planning and development we will carry out additional investigation work at the intersections of Pacific Highway and Fox Valley Road and Pacific Highway and Coonanbama Road.

Proposed work includes locating utilities, digging trenches, potholing and cutting and reinstating the road surface and footpath.

We have included a map to show the location of work (area 2 and 3 of overview map).

### Investigation work schedule

We will be on site for **ten day shifts** and **ten night shifts** between **Monday 17 September** and **Friday 30 November 2018**, weather permitting.

Our **day work hours** will be between 7am and 6pm, from **Monday to Friday**. Our **night work hours** will be between 6pm and 5am, from **Sunday to Thursday**. There may be some works on **Saturdays**, between 7am and 1pm, if required.

We will not work on public holidays.

### How will the work affect you?

Our work may be noisy at times but we will do everything we can to minimise its impact, including completing the noisier activities, like saw-cutting concrete, jack-hammering and breaking up concrete, by **midnight**.

### Traffic changes

There will be some temporary traffic changes to ensure the work zone is safe. Lane closures may be in place and will affect travel times. Please keep to speed limits and follow the directions of traffic controllers and signs.

For the latest traffic updates, you can call 132 701, visit [liveattraffic.com](http://liveattraffic.com) or download the Live Traffic NSW App.

If you have feedback or concerns about the investigation work schedule please contact Roads and Maritime on 1800 572 004 or [pinchpoint@rma.nsw.gov.au](mailto:pinchpoint@rma.nsw.gov.au).

### What is happening now?

We are now seeking community feedback on potential Pacific Highway upgrades, between Turrumurra and Wahoonga. We would like to hear from you the proposed upgrades by **Friday 28 September 2018**.

### Talk to our project team

We will be talking to the community about potential Pacific Highway upgrades during the community consultation period.

For information on planned **pop up kiosks** or **community sessions** please visit the project webpage: [rma.nsw.gov.au/projects/hydney-north/pacific-hwy-turrumurra-wahoonga](http://rma.nsw.gov.au/projects/hydney-north/pacific-hwy-turrumurra-wahoonga) or contact the Pinch Point project team on 1800 572 004 or [pinchpoint@rma.nsw.gov.au](mailto:pinchpoint@rma.nsw.gov.au).

Further information on this project, including 'Frequently asked Questions', can also be found on the project webpage.

### Next steps

After the consultation period closes we will carefully review all feedback. A community consultation report will be prepared summarising the feedback received and our responses to matters raised by the community during the consultation period.

This report will be made available on our website.

If you would like to receive the consultation report by email, please sign up on the project web page or contact us directly.

We will continue to keep the community updated as the project progresses.

### What else is Roads and Maritime doing to improve traffic flow on Pacific Highway?

Under the \$300 million Urban Roads Pinch Point Program work is also continuing on improvements at the Pacific Highway, Mone Vale Road and Ryde Road intersection.

Under the \$21 million Clearways Program new weekend and extended weekday clearways have recently been implemented on Pacific Highway between Wahoonga and Pymble, and between Chabwood and Artamon.

For more information please refer to Pinch Point Program or Sydney Clearways Program web pages for the latest information on current projects.

### What is a 'pinch point'?

A pinch point is a traffic congestion point, either at an intersection or on a short length of road, where a traffic bottleneck exists. They cause traffic build-up and travel delays at these spots and on the wider road network.

### Have your say

We invite your feedback on potential Pacific Highway upgrades by **Friday 28 September 2018**.

We will carefully consider all community feedback before deciding how to proceed with each potential Pacific Highway upgrade project. You can provide your comments by:

- 1800 572 004 during business hours
- [pinchpoint@rma.nsw.gov.au](mailto:pinchpoint@rma.nsw.gov.au)
- The Pinch Point Program project team  
Roads and Maritime Services  
PO Box 973, Parramatta NSW 2124
- [rma.nsw.gov.au/projects/hydney-north/pacific-hwy-turrumurra-wahoonga](http://rma.nsw.gov.au/projects/hydney-north/pacific-hwy-turrumurra-wahoonga)

If you need help understanding this information, please contact the Translating and Interpreting Service on 131 450 and ask them to call us on 1800 572 004.



September 2018

RMS 18/090

Pacific Highway and Maritime Services (PMS) is subject to the Privacy and Personal Information Protection Act 1998 (NSW) which requires that we comply with the Information Privacy Principles set out in the IPPI Act. Information in correspondence is collected for the sole purpose of enabling us to deliver the project. The information we collect is not to be disclosed to third parties, nor is it to be published. Otherwise PMS will only disclose your personal information without your consent, if authorised by the law. Your personal information will be held by PMS at 27 Jaggies Street, Parramatta. You have the right to access and correct the information you have provided to us.







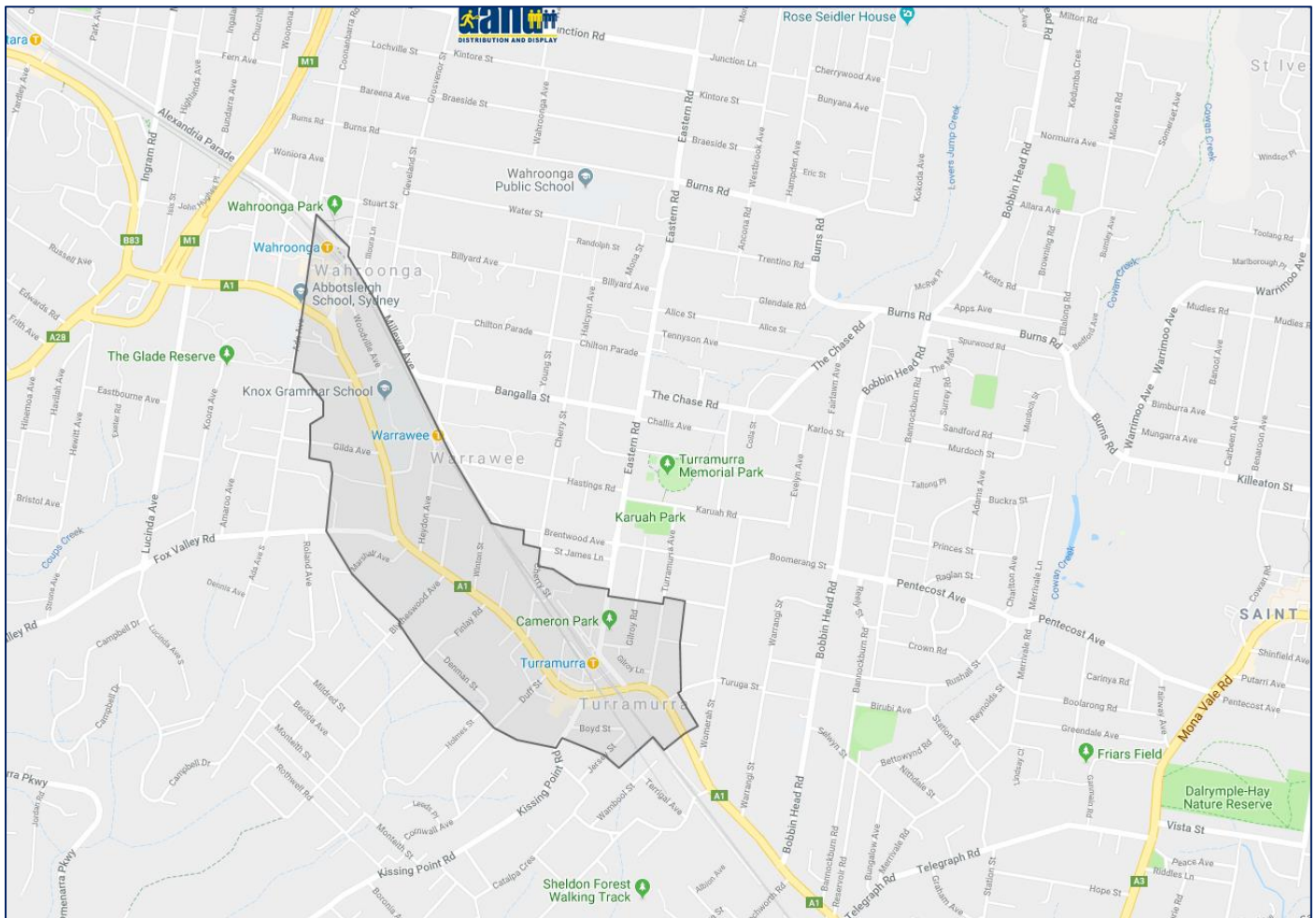
roads and maritime services




Pacific Highway upgrades between Turramurra and Warrawee



## Appendix B – Distribution map September 2018




## Appendix C – Facebook posts September 2018


**NSW Roads**  
Published by CoSchedule App [?] · 13 September ·

Tired of sitting in traffic on the Pacific Highway between Turramurra and Wahroonga? 🚗🚗🚗 We want to fix it!

Find out more on our website and leave your feedback on our interactive map: <https://rms.social/PacHwyPPP>



**11,640**  
People reached

**1,849**  
Engagements

[Boost Post](#)

👍👎🗨️ and 79 others    36 Comments    15 shares

👍 Like    💬 Comment    ➦ Share    🇺🇸

**Performance for your post**

**11,640** People Reached

**169** Reactions, comments & shares

<b>87</b> Like	<b>78</b> On post	<b>9</b> On shares
<b>1</b> Wow	<b>0</b> On post	<b>1</b> On shares
<b>1</b> Sad	<b>1</b> On post	<b>0</b> On shares
<b>6</b> Angry	<b>5</b> On post	<b>1</b> On shares
<b>60</b> Comments	<b>51</b> On Post	<b>9</b> On Shares
<b>16</b> Shares	<b>15</b> On Post	<b>1</b> On Shares


**1,680** Post Clicks

<b>240</b> Photo views	<b>551</b> Link clicks	<b>889</b> Other Clicks
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**NEGATIVE FEEDBACK**


<b>5</b> Hide Post	<b>0</b> Hide All Posts
<b>0</b> Report as Spam	<b>0</b> Unlike Page

Insights activity is reported in the Pacific time zone. Ad activity is reported in the time zone of your ad account.


**NSW Roads**  
Published by CoSchedule App [?] · 20 September ·

Want to have a say on the proposed Pacific Highway upgrades between Turramurra and Wahroonga?

Leave a comment on our interactive map on our website: <https://rms.social/PacHwyPPP>



**2,041**  
People reached

**104**  
Engagements

[Boost Post](#)

👍👎 and 3 others    2 Comments

👍 Like    💬 Comment    ➦ Share    🇺🇸

**Performance for your post**

**2,041** People Reached

**7** Reactions, comments & shares

<b>4</b> Like	<b>4</b> On post	<b>0</b> On shares
<b>1</b> Wow	<b>1</b> On post	<b>0</b> On shares
<b>2</b> Comments	<b>2</b> On Post	<b>0</b> On Shares
<b>0</b> Shares	<b>0</b> On Post	<b>0</b> On Shares

**97** Post Clicks

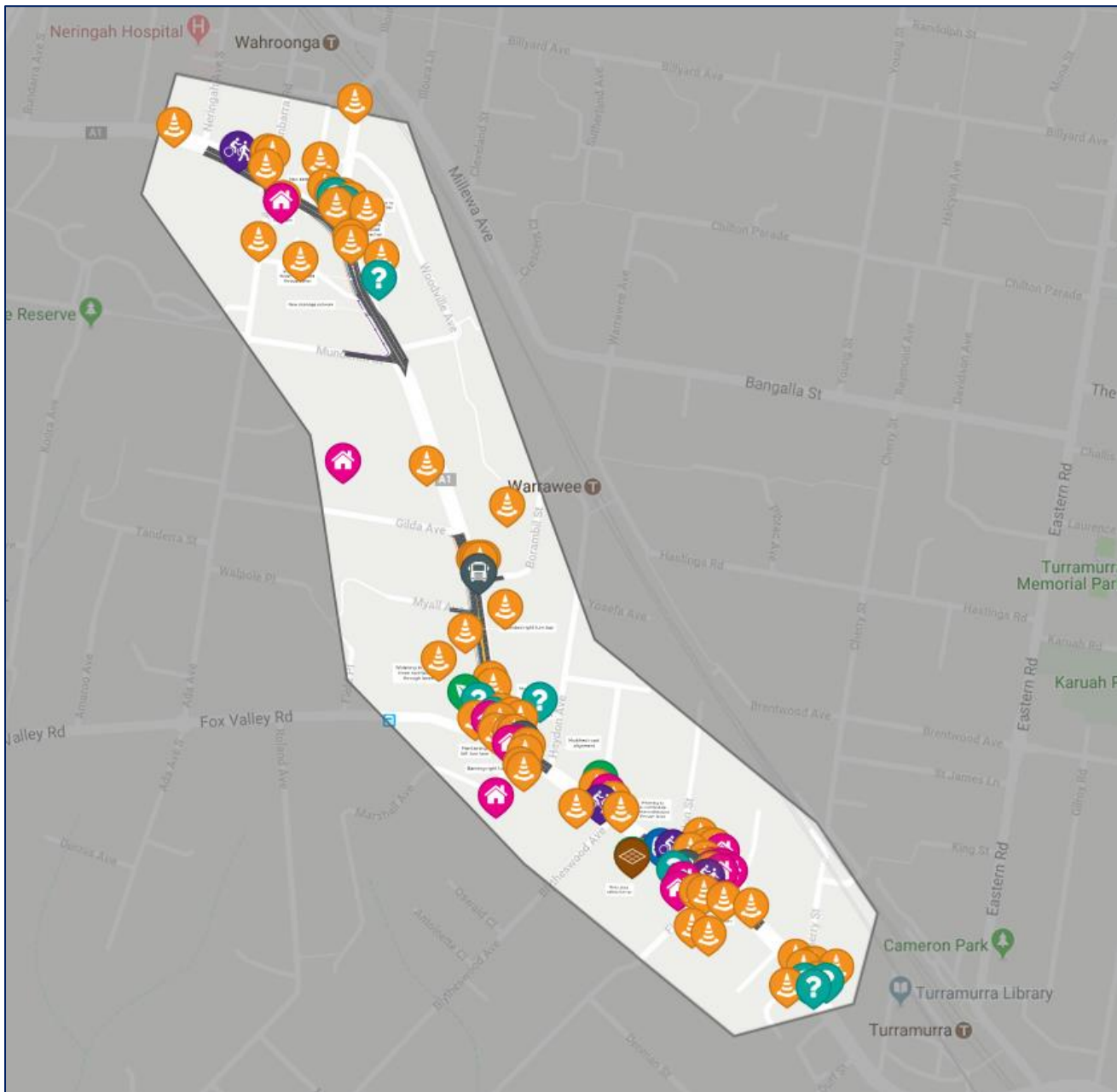
<b>30</b> Photo views	<b>17</b> Link clicks	<b>50</b> Other Clicks
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**NEGATIVE FEEDBACK**

<b>2</b> Hide Post	<b>0</b> Hide All Posts
<b>0</b> Report as Spam	<b>0</b> Unlike Page

Reported stats may be delayed from what appears on posts

## Appendix D – Online consultation (ECCO) map



Enabling Community Consultation Online (ECCO) is an online tool that Roads and Maritime uses to provide communities and stakeholders an opportunity to share feedback and information specific to locations on an online map.

Found at: <https://www.rms.nsw.gov.au/projects/sydney-north/pacific-hwy-turramurra-wahroonga/consultation-map.html>

## Appendix E – Frequently Asked Questions



### Pacific Highway upgrades between Turramurra and Wahroonga

Frequently asked questions - September 2018

The NSW Government is investigating Pacific Highway upgrades as part of its \$300 million Urban Roads Pinch Point Program, which aims to reduce congestion and improve travel times on Sydney's busiest corridors

Roads and Maritime Services is delivering this project to ease congestion, deliver reliable travel times and improve safety for road users on the Pacific Highway between Turramurra and Wahroonga.

#### What is the Pinch Point Program?

The [Pinch Point Program](https://rms.nsw.gov.au/projects/easing-sydneys-congestion/pinch-point-program) provides low cost, high benefit proposals to improve congestion on Sydney's roads today. To find out more about the Pinch Point Program please visit: [rms.nsw.gov.au/projects/easing-sydneys-congestion/pinch-point-program](https://rms.nsw.gov.au/projects/easing-sydneys-congestion/pinch-point-program).

#### What is a pinch point?

A pinch point is a traffic congestion point, either at an intersection or on a short length of road, where a traffic bottleneck exists. They cause traffic build-up and travel delays at these spots and on the wider road network.

#### Why does the Pacific Highway between Turramurra and Wahroonga need upgrading?

Currently, northbound motorists are experiencing heavy congestion, poor travel times and long delays when travelling between Turramurra and Wahroonga, particularly during the afternoon peak period. This situation is worsened by the Pacific Highway northbound lanes dropping from three lanes to two lanes along this section of the corridor.

Roads and Maritime propose to provide more efficient, safer and reliable travel times by widening the road to provide three continuous lanes in the northbound direction whilst maintaining the three existing southbound continuous lanes along this section of the corridor.

Road widening, and other improvements, would provide significant benefits, particularly in the afternoon peak for motorists travelling northbound along the Pacific Highway.

#### What are the key benefits of the proposed Pacific Highway upgrades?

Key benefits include:

- northbound travel time savings
- improved traffic flow and efficiency at the intersections
- reduced queue lengths and delays at the intersections
- improved road safety along the corridor through removal of right turn movements at Finlay Road, Marshall Avenue and Coonanbarra Road
- improved pedestrian and road user safety at the intersection of the Pacific Highway and Redleaf Avenue by removing the southbound left turn slip lane and providing a pedestrian refuge on Redleaf Avenue
- improved road safety at the intersections of the Pacific Highway at Fox Valley Road, and at Coonanbarra Road and Redleaf Avenue, by realigning the curve of the road and traffic lanes.



Pacific Highway upgrade project locations overview map ([link to PDF](#))  
Pacific Highway and Finlay Road map ([link to PDF](#))  
Pacific Highway and Fox Valley Road map ([link to PDF](#))  
Pacific Highway at Coonanbarra Road and Redleaf Avenue map ([link to PDF](#))

### Is the local council aware of the project?

Roads and Maritime is strongly committed to working closely with Ku-ring-gai Council and other stakeholders during all stages of the project. Working with Ku-ring-gai Council ensures we achieve the best outcomes for the Pacific Highway corridor work and the community. We have consulted with Ku-ring-gai Council during planning and will continue to work with Council as the project progresses.

### Would there be any property impacts?

Road widening would require strip adjustments to some properties on the northbound side of the Pacific Highway, between Turramurra and Wahroonga. Roads and Maritime are in contact with all potentially impacted property owners. We will continue to work with potentially impacted property owners as the project progresses.

### What about heritage listed properties?

The road widening works would impact some local and State heritage listed properties along the northbound side of the Pacific Highway.

Roads and Maritime is strongly committed to working closely with Ku-ring-gai Council and the Office of Environment and Heritage (OEH) to reduce the potential impacts on any local or State heritage listed properties that could be impacted by this project. We will work with Ku-ring-gai Council and the OEH during all stages of the project.

### What vegetation would be impacted if the project goes ahead?

Road widening works would primarily impact roadside vegetation and trees on the northbound side of the Pacific Highway. The impacted vegetation and trees would be on public land (within the existing road corridor and council owned land) and private properties where strip adjustments would be required.

Roads and Maritime has developed the proposed design to minimise the loss of vegetation and trees where possible. A Review of Environmental Factors (REF) is being prepared to assess the potential environmental impacts of the proposal (including the removal of roadside vegetation and trees) and outline measures to manage and mitigate these impacts, should the project proceed.

To offset the removal of vegetation and trees, landscape planting plans would be prepared in consultation with the impacted property owners and implemented following construction. Further investigations will be done in the project design phase to determine the extent of landscaping works required to replace any vegetation or trees that would be removed as a result of the potential road upgrades. This work will be done in consultation with impacted property owners, utility providers, relevant state government agencies and Ku-ring-gai Council.

Indicative mitigation planting has been included on visualisations to show suggested replanting options along the potentially impacted areas of the road corridor following construction.

### Would all proposed upgrade works proceed to construction?

The project is currently in design phase. Although we may not have the capacity to fund all proposed Pacific Highway upgrades, our decision will be informed by community and stakeholder feedback.

To further inform potential corridor upgrade planning and development, we will also carry out additional investigation work at the intersections of the Pacific Highway and Fox Valley Road and the Pacific Highway and Coonanbarra Road between September and November 2018.

We will decide how to proceed with potential works once all relevant information has been collated.

The community is advised prior to work commencing on any Roads and Maritime project.

## When would the upgrade work commence?

The project is currently in design phase. Community consultation feedback will inform progression of the project, along with project design requirements. We will decide how to proceed with potential work once all relevant information has been collated.

It is anticipated that any construction work would commence early 2020, and be completed by June 2021.

Further communication will be provided to the community and stakeholders as the project progresses.

## What would be the alternate routes for Finlay Road motorists?

Finlay Road primarily services the surrounding residential area and Warrawee Public School community. Widening the Pacific Highway to provide three continuous northbound lanes at the intersection of the Pacific Highway and Finlay Road would require vehicles turning right into, or out of, Finlay Road to cross three lanes of northbound traffic compared to the current situation with two lanes.

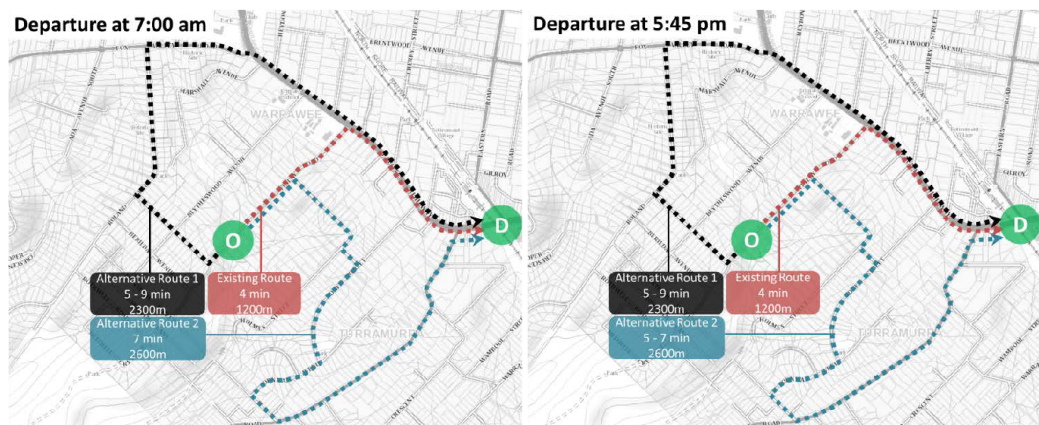
The crash history data for the Finlay Road intersection in the five-year period between 1 January 2011 and 31 December 2016 shows that there were five reported crashes at the intersection. The introduction of the right turn bans are expected to reduce crash rates at this intersection, particularly for vehicles turning right out of Finlay Road onto the Pacific Highway.

Based on traffic counts collected in March 2017, the number of vehicles turning right out of Finlay Road was insignificant (one vehicle per hour in both the AM and PM peaks). In general, these vehicles can currently find a suitable gap to turn within half a minute in both peaks. As a result of traffic growth on the Pacific Highway, delays could potentially increase to two minutes in both peaks in 2027.

Based on the traffic counts collected in March 2017, the highest number of vehicles turning right into Finlay Road was 60 vehicles per hour, during the AM peak. In general, these vehicles can currently find a suitable gap to turn within half a minute in both peaks. As a result of traffic growth on the Pacific Highway, the delays could potentially increase to approximately 40 seconds in both peaks in 2027.

The proposed right turn bans at the Pacific Highway and Finlay Road intersection would see affected motorists reroute via Fox Valley Road or Kissing Point Road. The impacts, in terms of travel distance and time on a typical weekday during the AM and PM peaks, are shown below.

### Right turn ban from Finlay Road onto the Pacific Highway southbound Alternate traffic routes via Fox Valley Road (1) and Kissing Point Road (2)





### Right turn ban from the Pacific Highway southbound into Finlay Road Alternate traffic route via Fox Valley Road (1)



What would be the alternate route for Marshall Avenue motorists onto the Pacific Highway southbound?

Marshall Avenue is a cul-de-sac, which services Marshall Avenue residents only.

The crash history data for the intersection in the five-year period between 1 January 2011 and 31 December 2016 shows that there were 8 reported crashes at the intersection. The introduction of a right turn ban is expected to reduce crash rates at this intersection.

Based on the traffic counts collected in March 2017, the number of vehicles turning right out of Marshall Avenue onto the Pacific Highway southbound was found to be insignificant (three vehicles per hour in the AM peak and two vehicles per hour in the PM peak). In general, these vehicles can find a suitable gap to turn within half a minute in the 2017 AM peak and within 40 seconds in the 2017 PM peak. The delays in the AM peak would remain the same in 2027 while the delays in the PM peak would increase to 47 seconds in 2027.

The proposed right turn ban from Marshall Avenue onto the Pacific Highway southbound would see affected vehicles reroute via Fox Valley Road. The impacts, in terms of travel distance and time on a typical weekday during the AM and PM peaks, are shown below.

### Right turn ban from Marshall Avenue onto the Pacific Highway southbound Alternate traffic route via Fox Valley Road



## What would be the alternate route for Pacific Highway motorists into Coonanbarra Road northbound?

Coonanbarra Road primarily services the surrounding residential and school community.

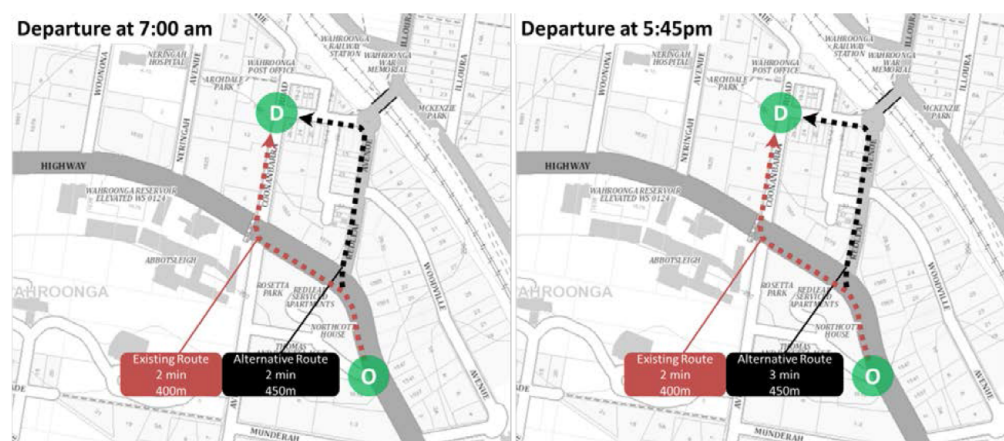
Currently the right turn movement from the Pacific Highway into Coonanbarra Road is an unprotected filter movement and considered unsafe.

Based on the traffic counts collected in March 2017, only a small number of vehicles were turning right into Coonanbarra Road from the Pacific Highway during both peaks (13 vehicles in the AM peak and 16 vehicles in the PM peak).

Banning the right turn movement from the Pacific Highway into Coonanbarra Road would see affected vehicles rerouted via Redleaf Avenue. As a result, this would increase the amount of right-turn movements into Redleaf Avenue by 23 vehicles in the AM peak hour and 15 vehicles in the PM peak hour. This would be a negligible increase given 163 vehicles currently turn into Redleaf Avenue in the AM peak and 155 vehicles in the PM peak.

The impacts, in terms of travel distance and time on a typical weekday during the AM and PM peaks, are shown below.

### Right turn ban from the Pacific Highway northbound into Coonanbarra Road Alternate traffic route via Redleaf Avenue



## Why can't traffic lights be installed instead of banning right hand turns?

The traffic flows on Finlay Road and Marshall Avenue do not meet the minimal warranted requirement for traffic light installation. Based on the [traffic demand warrants a side](#), or minor, road would need to exceed 200 vehicles per hour in one direction for four hours to be considered for traffic light installation.

Based on the traffic counts collected in March 2017, the peak flow on Finlay Road is about 100 vehicles per hour in the westbound direction between 7.45am and 8.45am. Traffic flows are significantly lower at other times of the day.

Based on the traffic counts collected in March 2017, the peak eastbound flow on Marshall Avenue was about 30 vehicles per hour between 9.00am - 10.00am.

Therefore, there is insufficient traffic to consider traffic lights at Finlay Road or Marshall Avenue.

The addition of traffic lights in close proximity to each other increases total number of vehicle stops, and delays, on the traffic network which would remove the benefit of installing the additional lane.

Two sets of traffic lights close together is also a safety hazard where both sets of lights are visible to drivers.

## Why is a left turn from the Pacific Highway northbound into Fox Valley Road needed?

The dedicated left turn lane from the Pacific Highway northbound into Fox Valley Road is an existing traffic condition, which would be maintained under the proposed Pacific Highway and Fox Valley Road upgrade work.

Based on the traffic counts collected in March 2017, the number of vehicles turning left from the Pacific Highway into Fox Valley Road is high during both peaks (about 400 vehicles in the AM and PM peak hour). The existing traffic flow supports the maintenance of the dedicated left turn lane due to the high volume of left turning traffic from the Pacific Highway northbound.

The provision of the northbound left turn lane into Fox Valley Road allows turning vehicles to safely decelerate or stop without impacting the flow of the through traffic providing improved traffic flow on the Pacific Highway. The left turn lane also stores vehicles when the pedestrian crossing is in use.

## How would construction impact me?

There would be noise and traffic and transport related impacts during the construction of these works (refer to further FAQs below for more details).

The project is currently in design phase. Community consultation feedback will inform progression of the project, along with the proposed project's aims and design requirements, before we decide how we will proceed with the potential Pacific Highway upgrades.

Roads and Maritime acknowledges that any planned works may cause inconvenience for a small proportion of local residents, pedestrians and road users during the construction stage.

There would be, however, significant benefits which would be experienced by the thousands of motorists that travel through this section of the Pacific Highway corridor on a daily basis.

## What would be the noise impacts from the upgrade work during construction?

There would be noise impacts during the construction of these works, particularly during night time work.

A Review of Environmental Factors (REF) is being prepared to assess the environmental impacts of the proposal and to outline the measures that must be taken in order to manage and mitigate these impacts. The REF will include consideration of construction noise impacts to surrounding properties and identify suitable mitigation measures to minimise noise impacts from construction activities. These mitigation measures would be based on best practice and Roads and Maritime's Construction Noise and Vibration Guidelines.

As part of the construction planning, the contractor would be required to prepare a Construction Noise and Vibration Management Plan to ensure noise and construction impacts are minimised and managed effectively.

## What would be the traffic and transport related impacts from the upgrade work during construction?

There would be temporary traffic changes, including lane closures and change of speed limits, during construction to ensure the work zone is safe. This may affect travel times. We would work during night time wherever possible to minimise traffic impacts. As part of the construction planning, the contractor would be required to prepare a Traffic Management Plan to ensure traffic impacts are minimised and managed effectively.

Minor temporary pedestrian detours would be in place along sections of the footpath where road widening is proposed on the northbound side of the Pacific Highway. Where detours would be required on the footpath, signage and notifications would be provided to assist with these temporary changes.

Some bus stops on the northbound side of the Pacific Highway may need to be temporarily relocated or closed during construction. These changes would be communicated to the community via notification letters and signs posted at the bus stops. The project team would consult with the relevant transport providers, Ku-ring-gai Council and other stakeholders on any bus and transport changes.

We would keep the community updated on start of construction information including traffic and transport related changes that would result from start of work.

### How would the impacts on residents be managed during construction?

A Review of Environmental Factors (REF) is being prepared which assesses the potential environmental impacts of the proposal (both from construction and operation) and provides measures to manage and reduce these impacts based on best practice, expert advice and feedback from the consultation process.

Should the project proceed, a Construction Environmental Management Plan would be prepared before we start work to manage and mitigate the expected environmental impacts during construction based on the assessment and safeguards provided in the REF.

We would always notify local communities before starting a new section of work and before we do any out-of-hours work.

### Would people living adjacent to the Pacific Highway upgrade work experience more noise after works are completed?

Roads and Maritime undertake noise modelling for all of our projects, to predict noise levels after a project opens to traffic. Noise modelling has been carried out to understand what the future operational noise levels would be (relative to existing noise levels) following the Pacific Highway upgrades.

Noise modelling results have confirmed that there would be a slight increase in operational noise received by adjoining properties directly impacted by the proposal (no more than 2 dBA), however not to a level that would require consideration of noise mitigation treatment under Roads and Maritime's Noise Mitigation Guidelines. A-weighted decibels, abbreviated dBA, is an expression of the relative loudness of sounds in air as perceived by the human ear.

For more information on Roads and Maritime's noise management policies and procedures, please refer to:

<http://www.rms.nsw.gov.au/about/environment/reducing-noise/index.html>

### How can I find out more information on this project?

For more information on this Pinch Point project, please visit the project webpage: [rms.nsw.gov.au/projects/sydney-north/pacific-hwy-turramurra-wahroonga](http://rms.nsw.gov.au/projects/sydney-north/pacific-hwy-turramurra-wahroonga) or contact the Pinch Point project team on 1800 572 004 (during business hours) or [pinchpoint@rms.nsw.gov.au](mailto:pinchpoint@rms.nsw.gov.au).

If you would like to receive community updates by email please advise the project team by email or telephone.

### How do I contact the project team?

The Pinch Point project team can be contacted on 1800 572 004 (during business hours) or [pinchpoint@rms.nsw.gov.au](mailto:pinchpoint@rms.nsw.gov.au).



# Managing construction noise

Roads and Maritime Services | September 2018

We recognise construction noise can be a major annoyance, especially in residential areas. We are committed to mitigating and limiting construction noise impacts, wherever possible.

### What is noise?

We define noise as 'unwanted sound'. Noise is perceived differently from one person to the next and is measured on a scale of units called decibels. We assess noise by averaging the quietest and loudest (actual or predicted) measurements while also considering how the human ear perceives it.

### What is construction noise?

Construction noise is unwanted sound caused by construction works or activities. It is temporary and often changes as construction activities change and work progresses.

Construction activities that have the potential to generate unwanted noise or vibration include:

- Major earthwork activities
- Project vehicle movements
- Reversing alarms and beepers
- Controlled blasting
- Rock hammering and crushing
- Bridge construction
- Installation of piles
- Concrete manufacturing
- Asphaltting and concreting
- Sawcutting and breaking of rock and concrete
- Loading, unloading or moving equipment and construction materials
- Tunneling.

### Construction noise guidelines and criteria

Our assessment and management of construction noise is guided by five key documents:

- *Environmental Planning & Assessment Act 1979 (EP&A Act)*
- *Protection of the Environment Operations Act 1997 (PoEO Act)*
- *Department of Environment and Climate Change NSW Interim Construction Noise Guidelines (2009)*
- *Roads and Maritime Construction Noise and Vibration Guideline (2016)*
- *Australian Standards AS2346 – Guide to noise control on construction, maintenance and demolition site (2010).*

Together, these documents provide noise criteria and guidelines which we use when managing construction noise during the delivery of our projects.

### How we assess construction noise and vibration impact

Potential construction noise issues are considered and assessed during project planning and development.

We carry out background noise measurements and prepare impact assessments that consider the distance from the work area to sensitive receivers. Where noise may exceed guidelines and is likely to adversely impact sensitive receivers, we actively seek management measures to reduce noise and vibration impacts and aim to proactively communicate with and advise potentially affected people.

Large or complex projects are assessed in greater detail than small or short duration projects due to the longer duration of potential noise impacts.



## How do we manage construction noise and vibration?

We prepare a noise and vibration management plan for each project to document how we will work to reduce construction noise and vibration. It includes:

- Identification of potentially impacted stakeholders (residential and business)
- An outline of all construction noise conditions and requirements
- Details of all mitigation measures that will be implemented in areas where the construction noise and vibration impact may exceed guidelines
- Procedures for managing noise and providing respite periods when works at night and early in the morning are required.

## How do we reduce construction noise and vibration impacts?

Mitigation measures adopted to reduce and manage noise and vibration during construction may include:

- Maximising the distance between noisy equipment and residential areas
- Scheduling noisy work at less sensitive time periods (such as during normal daytime work hours where possible)
- Regular maintenance of equipment
- Installing noise control equipment on machinery and tools
- Noise compliance monitoring
- Locating compounds, stockpiles and crushing plants as far as possible away from residential areas
- Use of temporary noise barriers
- Scheduling respite periods for high noise activities, such as rock crushing (such as two hours on, two hours off)
- Installing noise mitigation treatments designed for road traffic noise as early as possible to provide additional relief during construction

- Scheduling noise generating activities outside of school examination periods
- Providing advanced notice of planned noisy work to neighboring communities to help them plan
- Use of multiple explosive charges of the smallest possible size in sequenced detonation rather than single large blasts.

Unfortunately, in some instances, we have limited options available to reduce noise impacts given the type and range of machinery and equipment required to carry out the tasks. Where noise is excessive and prolonged, respite periods will be scheduled to provide some relief to neighbours.

## Out of hours work

Work is carried out during standard construction hours (from 7am to 6pm Monday to Friday and from 8am to 1pm on Saturdays) wherever possible. However, 'out of hours' work, (at night and early in the morning) may also be required where it is necessary to close roads or traffic lanes for major construction activities (such as resurfacing or installing bridges), to ensure the safety of our workers or to minimise impacts to peak period commuter traffic.

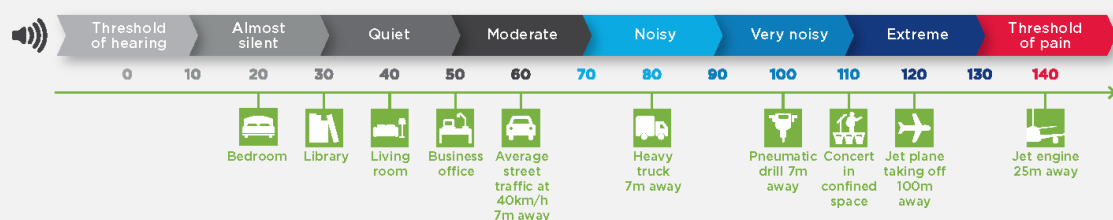
Activities that may occur outside standard hours include, but are not limited to:

- Delivery of large or oversize machinery, prefabricated elements and construction materials
- Bridge work:
  - Lifting and setting of bridge span and beams
  - Demolition of existing bridges
- Utility relocation such as telephone, water, power or sewerage
- Emergency work
- Any work such as grinding and asphaltting requiring full or partial road closures, to minimise impact on road users and allow for safe separation of workers and traffic.



[rms.nsw.gov.au](https://rms.nsw.gov.au)

### Sound levels in decibels (approximate)



September 2018  
RMS 15.221

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[rms.nsw.gov.au/pinchpoints](https://rms.nsw.gov.au/pinchpoints)



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