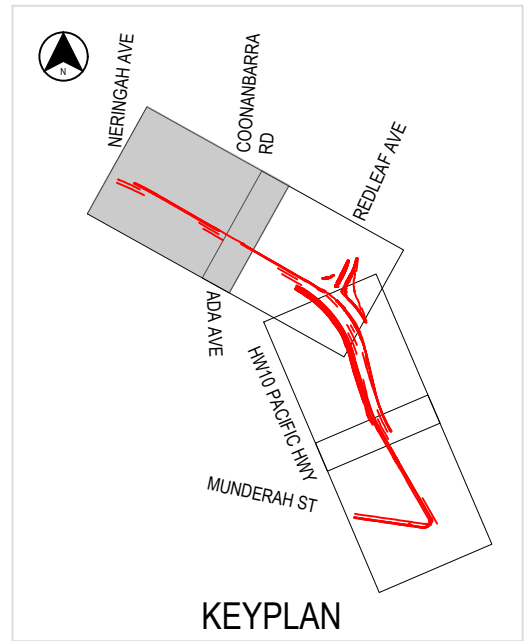


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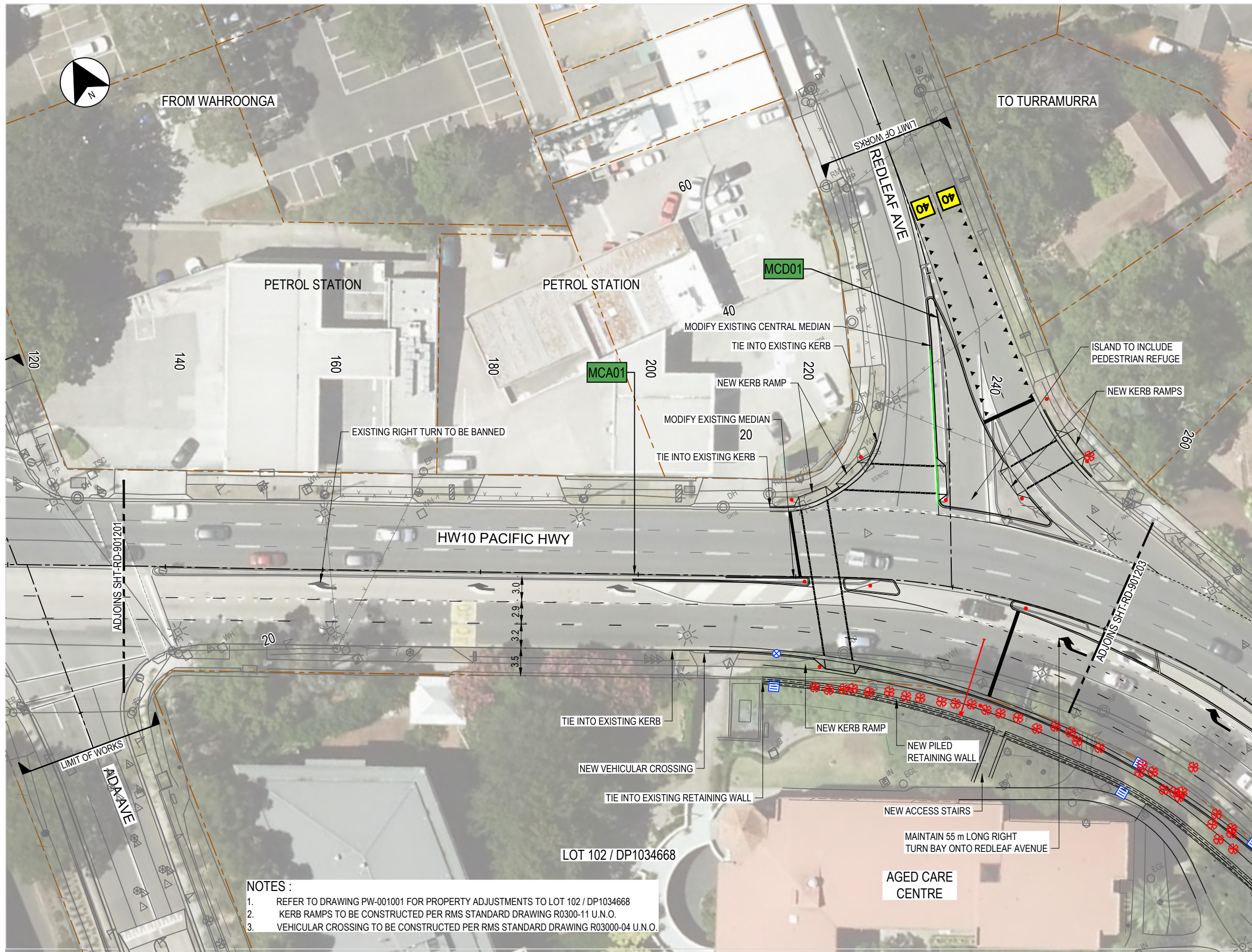
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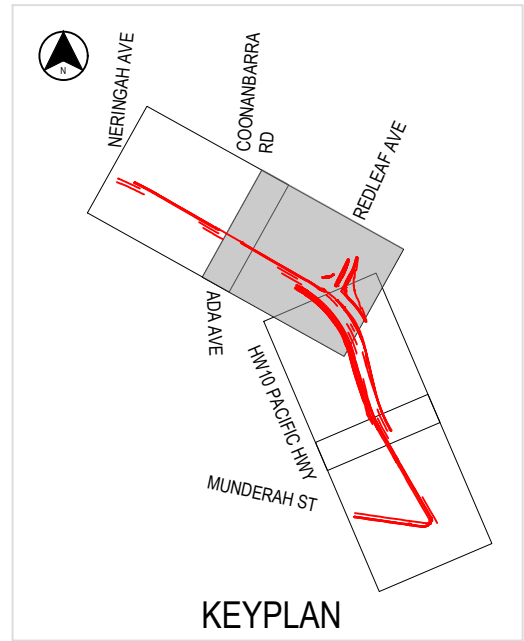
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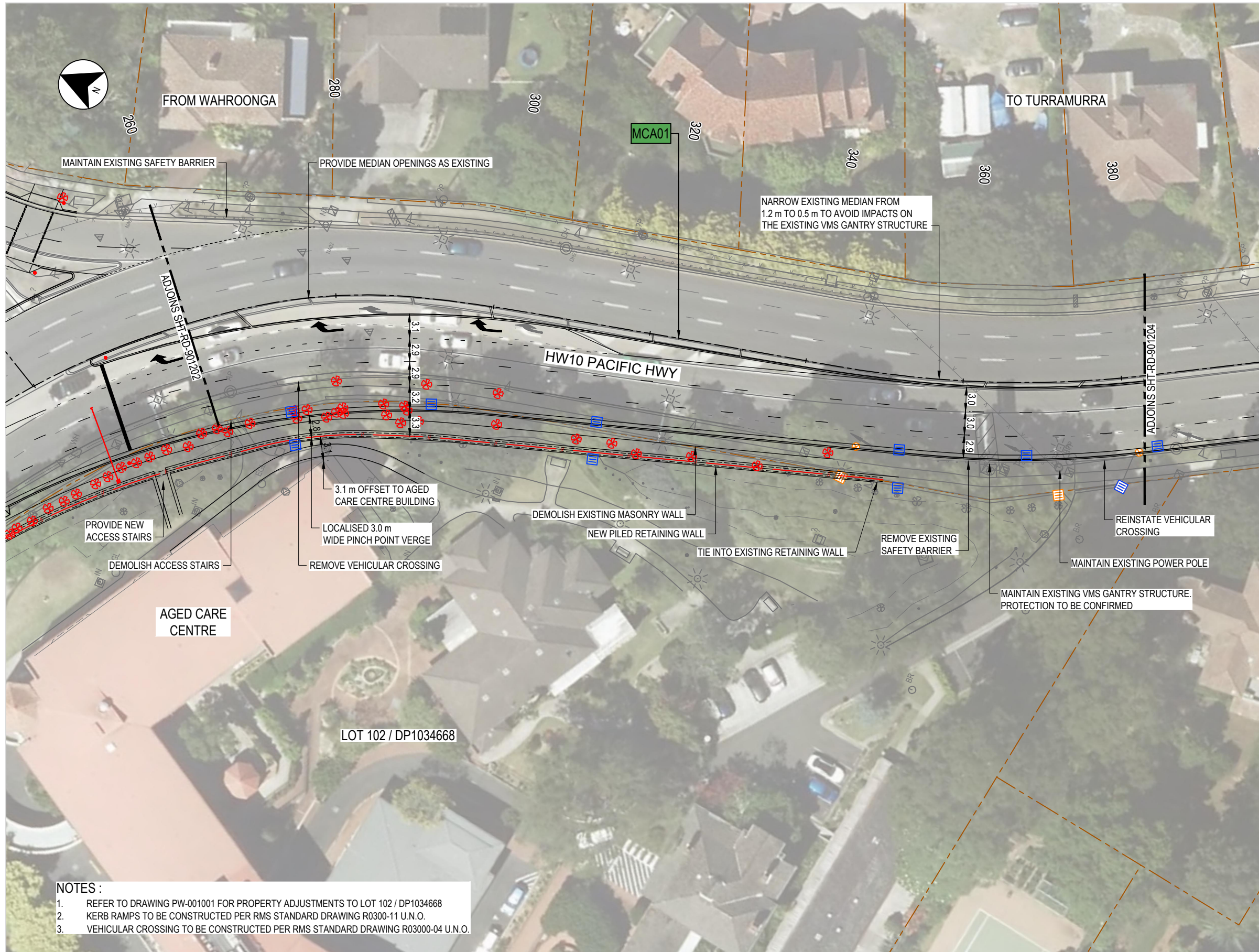
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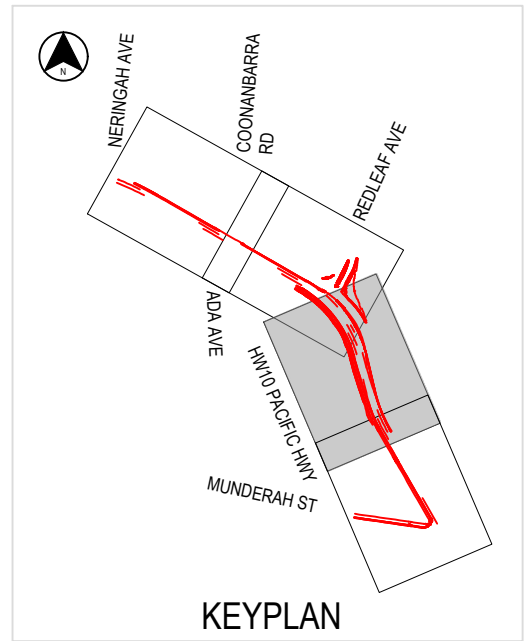
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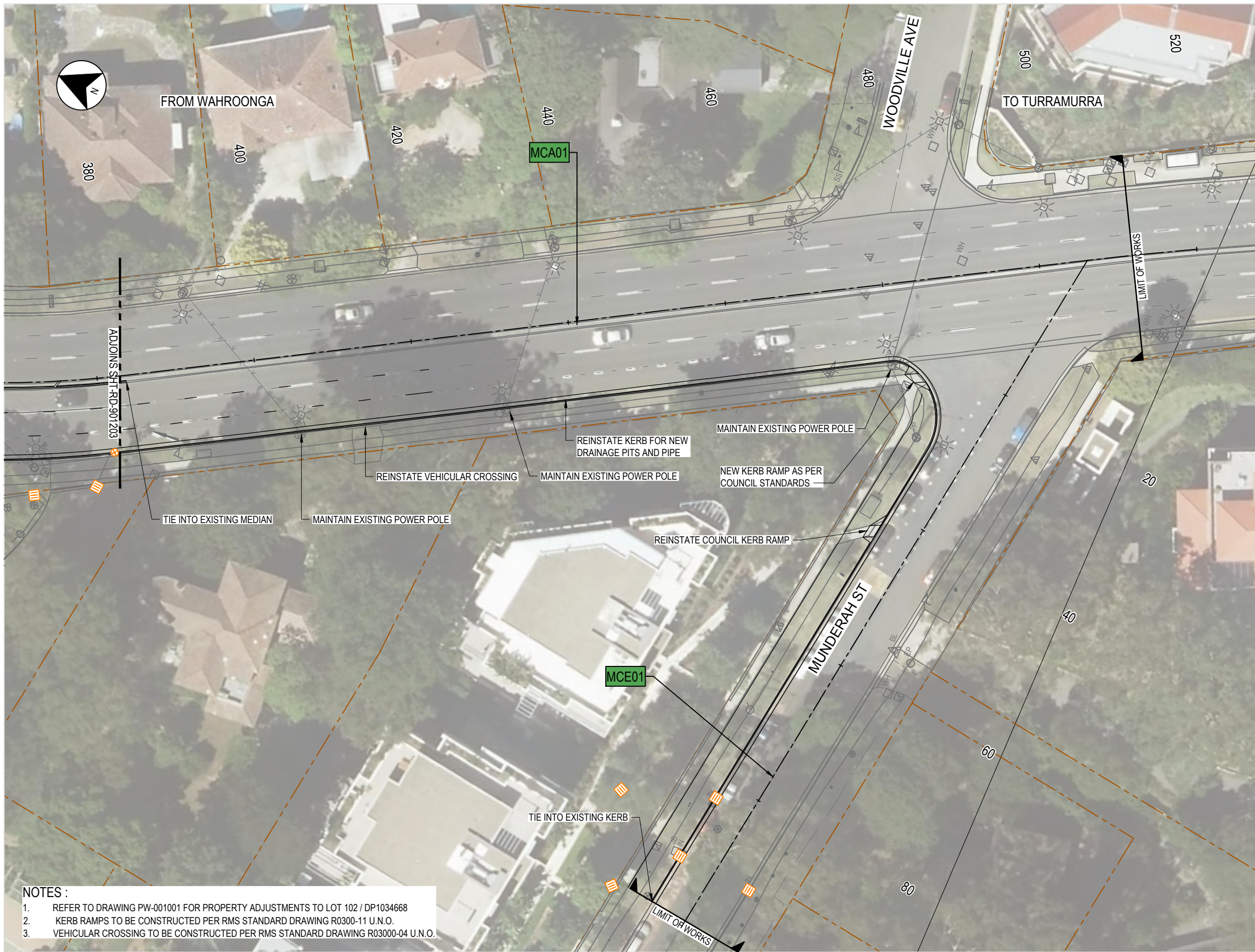
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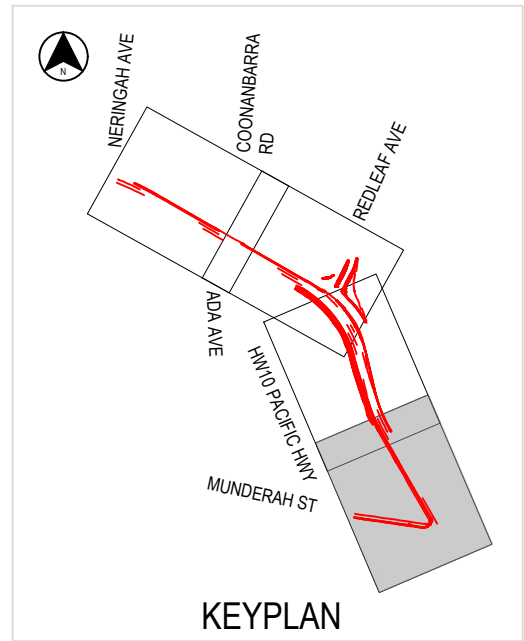
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17 August 2018

Attn: John McKee
General Manager
Ku-ring-gai Council
818 Pacific Highway
Gordon
NSW 2072

Dear John

ISEPP CONSULTATION: PROPOSED POTENTIAL INTERSECTION UPGRADES ON THE PACIFIC HIGHWAY BETWEEN TURRAMURRA AND WAHROONGA

Roads and Maritime Services NSW (Roads and Maritime) is proposing to undertake potential road improvement works to three intersection locations along a section of the Pacific Highway between Turramurra and Wahroonga as shown in Figure 1 and described below from south to north:

1. Pacific Highway at Finlay Road, Warrawee/Turramurra (also referred to as 'Intersection 1' for the purposes of this proposal)
2. Pacific Highway at Fox Valley Road, Wahroonga/Warrawee (also referred to as 'Intersection 2' for the purposes of this proposal)
3. Pacific Highway at Coonanbarra Road and Redleaf Avenue, Wahroonga (also referred to as 'Intersection 3' for the purposes of this proposal)

The proposal would ultimately provide three continuous through lanes northbound on the Pacific Highway between Turramurra and Wahroonga over a length of about two kilometres in this location.

To achieve this, the proposal would require road widening, boundary adjustments and vegetation clearance along the western side of the Pacific Highway at the intersection locations described above (both within the existing road verge and within private properties).

An outline of the proposal by intersection location is provided in Attachment A. The general arrangement drawings for the proposal by intersection location are provided in Attachment B. Tree

Roads and Maritime Services

impact drawings for the road corridor and Curtilage Park are provided in Attachment C. The full extent of vegetation clearance that may be required on directly impacted properties fronting the Pacific Highway is currently being confirmed through topographical surveys, however some potential clearance areas have conservatively been provided (for information only) in Attachment C.

Subject to environmental approvals, the construction works would likely commence in 2020 and occur over a period of approximately 12 months. It is proposed to occupy the property at 1334-1354 Pacific Highway in Turramurra (a locally listed heritage item) for use as a temporary compound site and storage area during construction.

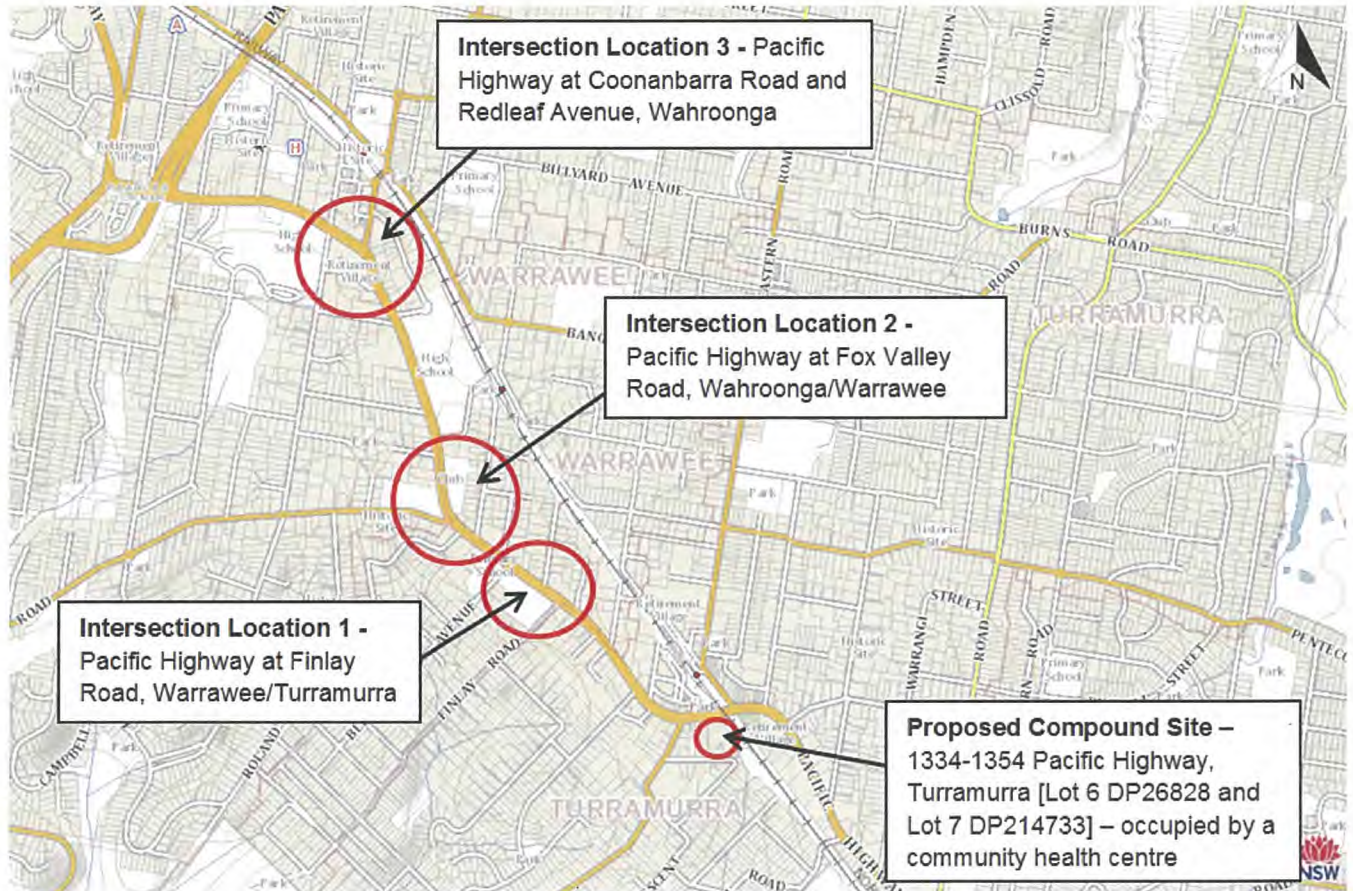


Figure 1 – Locality map of the proposal

Under the State Environmental Planning Policy (Infrastructure) 2007, Roads and Maritime Services is required to consult with Ku-ring-gai Council under clauses 13(1)(a), 13(1)(b), 13(1)(e), 13(1)(f) and 14(1)(a) due to the potential impacts on council infrastructure (stormwater infrastructure, footpaths, parkland), local heritage and local roads.

Clause 13(1)(a) Development with impacts on council-related infrastructure or services: stormwater management services

The proposal involves road widening on the western side of the Pacific Highway within the proposal extent. This would increase the amount of impervious area in the locality and result in additional stormwater infrastructure being required to accommodate the additional stormwater being generated as a result of the proposal. As part of the proposal, stormwater infrastructure is being assessed and addressed at each intersection location to make sure that the proposal would not constrain the future capacity or operation of the stormwater network.

Roads and Maritime Services

Clause 13(1)(b) Development with impacts on council-related infrastructure or services: local roads

The proposal may have the potential to affect local traffic operations on adjacent local roads as result of the following changes:

- The proposed ban of the existing right-turn movement from Finlay Road onto the Pacific Highway (as part of the Intersection 1 works)
- The proposed ban of the existing right-turn movement from the Pacific Highway onto Finlay Road (as part of the Intersection 1 works)
- The proposed ban of the existing right-turn movement from Marshall Avenue onto the Pacific Highway (as part of the Intersection 2 works)
- The proposed ban of the existing right-turn movement from Pacific Highway onto Coonanbarra Road (as part of the Intersection 3 works)

With the proposed right-turn bans at Marshall Avenue/Pacific Highway and Finlay Road/Pacific Highway, both Marshall Avenue and Finlay Road would have a 'left in left out' connection to the Pacific Highway and associated road diversions routes for local road users (refer Attachment D). The ban would address existing issues in this location including delays caused by vehicles waiting to turn right from Marshall Avenue and Finlay Road onto Pacific Highway, and by vehicles waiting to turn right (filter) from Pacific Highway onto Finlay Road. Given the significant amount of traffic carrying on Pacific Highway, these turns are considered unsafe and have caused a total of five direct related accidents at the interactions of Marshall Avenue / Pacific Highway and Finlay Road / Pacific Highway, between July 2011 and June 2016. An assessment of the proposed impacts from the right-turn bans within Intersections 1 and 2 are provided in Attachment D. The assessment concludes that the right-turn restrictions at Marshall Avenue and Finlay Road would result in a safer traffic operation at and adjacent to the intersection and that the impacts of traffic re-routing would be minor.

A separate traffic assessment has been carried out to assess the impacts for the right-turn ban at Intersection 3. The assessment concludes that banning the right-turn movement onto Coonanbarra Road from the Pacific Highway (which is currently a filter movement) 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 hour¹. This would be a negligible increase given 163 vehicles and 155 vehicles currently turn into Redleaf Avenue in the AM peak hour and the PM peak hour respectively.

Clause 13(1)(e) Development with impacts on council-related infrastructure or services: temporary structures and enclosing of public space which may disrupt pedestrian or vehicular traffic

At Intersection Location 2, the proposal would require the temporary enclosure of Curtilage Park at 1536 Pacific Highway, Wahroonga while the construction works are being carried out in this location. This would disrupt pedestrian movements and access temporarily into and out of the park.

Across the proposal area as a whole, sections of the existing footpath network on the western side of the Pacific Highway (and adjoining local roads) would need to be temporarily closed or re-routed during construction to enable the proposed road widening to occur in this location. Any impacted footpaths would be reinstated as part of the works (in agreement with council).

¹ HW10 Pacific Highway at Coonanbarra Road and Redleaf Avenue Intersection Improvements, Wahroonga – Concept Design Report, Roads and Maritime Services – Easing Sydney's Congestion – Pinch Points North, May 2018.

Clause 13(1)(f) Development with impacts on council-related infrastructure or services: excavations that are not minor or inconsequential within and adjacent to local roads and footpaths under council control

Across the proposal area as a whole, excavations are proposed along the western side of the Pacific Highway to enable the proposed road widening to occur. The excavations would require street tree removals and occur within and adjacent to council footpaths and local roads which tie into the proposal area. These areas would be reinstated as part of the works in agreement with council.

Clause 14(1)(a) Development with impacts on local heritage

It has been determined that this proposal may have more than a minor or inconsequential impact upon local heritage items and heritage conservation areas in the vicinity of the proposal listed under the Ku-ring-gai LEP 2015 and Ku-ring-gai LEP (Local Centres) 2012. The list of the local heritage items within the vicinity of the proposal are provided in Table 1 (refer also to Attachment E for location).

Table 1 – List of local heritage items within the vicinity of the proposal (by intersection location) – those in bold would be directly impacted/encroached on by the works

Local Heritage Item / Area	Description	Address	Proposal Location
3490028²	'Hillview Garages and Precinct'	1334-1340 Pacific Highway, Turramurra	Within proposed site compound location
I155	'Hillview'	1334 Pacific Highway, Turramurra	
I156	'Hillview Garages'	1340 Pacific Highway, Turramurra	
C40	Hillview Conservation Area	Block of land bound by Pacific Highway, Kissing Point Road, the Northern Rail Line and Boyd Street	Within and adjoining the proposed site compound location
I157	'Former Commonwealth Bank Building'	1356 Pacific Highway, Turramurra	Adjoining proposed compound site location
I158	'Commercial Buildings'	1358 and 1360 Pacific Highway, Turramurra	Within 10 m of proposed compound site location
I161	'Rohini House gates'	Railway lands (Northern Rail Line)	Within 5 m of proposed compound site location
I132	'Residential Flat Building'	2-4 Boyd Street, Turramurra	Within 10 m of proposed compound site location
I139	'Dwelling house'	8 Kissing Point Road, Turramurra	Within 20 m of proposed compound site location
I160	'Dwelling House'	1458 Pacific Highway, Turramurra	Adjoining and within Intersection Location 1 works
I167	'Residential Flat Building, Milner Royd'	1-3 Lowther Park Avenue, Turramurra	Adjoining Intersection Location 1 works (within 20 m)
C4	'Mahratta Conservation Area'	Block of land on the western side of the Pacific Highway bound by Fox Valley Road, Pacific Highway and Gilda Ave	Adjoining and within Intersection Location 2 works
C2	'Heydon Avenue, Warrawee and Woodville Avenue,	Block of land on eastern side of the Pacific Highway bound by Redleaf	Adjoining and within Intersection Location 2

² Section 170 Heritage Register – Roads and Maritime Services

	Wahroonga Conservation Area'	Avenue, the Northern Railway Line, Pacific Highway and Winton Street	works Adjoining Intersection Location 3 works
1913	'Mahratta' ³	25 Fox Valley Road, Wahroonga	Adjoining and within Intersection Location 2 works
1964	'Mahratta, dwelling house' ⁴ [includes Curtilage Park]	1536 Pacific Highway, Wahroonga	Adjoining and within Intersection Location 2 works
1965	Dwelling House 'Yaamba'	1544 Pacific Highway, Wahroonga	Adjoining and within Intersection Location 2 works
1966	Dwelling House 'Kyeamba'	1548 Pacific Highway, Wahroonga	Adjoining and within Intersection Location 2 works
I1059	'Inglewood' Dwelling House'	1485 Pacific Highway, Wahroonga	Adjoining Intersection Location 2 works (within 10 m)
1968	'Illilliwa Dwelling House'	1564 Pacific Highway, Wahroonga	Adjoining Intersection Location 2 works (within 10 m)
1970	'Dwelling House'	1566 Pacific Highway, Wahroonga	Adjacent to Intersection 2 works (within 20 m)
1976	'Gateposts to the former 'Estha' dwelling house'	1614-1634 Pacific Highway, Wahroonga	Adjoining and within Intersection Location 3 works
1967	'Dwelling House'	1551 Pacific Highway, Wahroonga	Adjoining Intersection Location 3 works (within 5 m)
1969	'Dwelling House'	1565 Pacific Highway, Wahroonga	Adjoining Intersection Location 3 works (within 5 m)
I1008	'Redleaf Dwelling House and Grounds'	28-30 Woodville Avenue, Wahroonga	Adjoining Intersection Location 3 works (within 5 m)
1972	'Sydney Water Reservoir-Wahroonga'	1635 Pacific Highway, Wahroonga	Adjoining Intersection Location 3 works (within 10 m)
1974	'Sydney Water Reservoir-Wahroonga'	1678 Pacific Highway, Wahroonga	Adjoining Intersection Location 3 works (within 10 m)

A local heritage impact assessment report has been prepared (with suggested mitigation options) and is provided in Attachment E.

A Section 60 application is currently being prepared to submit to the Office of Environment and Heritage to obtain approval to undertake works within the Mahratta (School of Philosophy) site which is also a State listed heritage item under the *Heritage Act 1977* (NSW).

It would be appreciated if you could provide any comments about this proposal by **Friday 7 September**

³ Also a State Listed Heritage Item under the *Heritage Act 1977* (NSW) – SHR 708

⁴ Also a State Listed Heritage Item under the *Heritage Act 1977* (NSW) – SHR 708

Roads and Maritime Services

2018. Roads and Maritime Services would be pleased to provide further information if required.

In this regard, **Richard Collins** may be contacted on **0417 801 692** or by email **Richard.Collins@rms.nsw.gov.au**.

Yours faithfully



Richard Collins
Senior Project Manager – Pinch Points North
Easing Sydney's Congestion Program Office

Attachments

Attachment A – Proposal Description

Attachment B – Proposed Design Drawings (General Arrangement Plans)

Attachment C – Proposed Vegetation Clearance Areas

Attachment D – Assessment of Proposed Traffic Diversions (Finlay Road and Marshall Avenue)

Attachment E – Draft Local Heritage SOHI

Roads and Maritime Services



1 July 2019

Attn: John McKee
General Manager
Ku-ring-gai Council
818 Pacific Highway
Gordon
NSW 2072

Dear John

ISEPP CONSULTATION: PROPOSED INTERSECTION UPGRADES ON THE PACIFIC HIGHWAY AT COONANBARRA ROAD AND REDLEAF AVENUE, WAHROONGA

Roads and Maritime Services NSW (Roads and Maritime) is proposing to undertake road upgrade works to the Pacific Highway at Coonanbarra Road and Redleaf Avenue in Wahroonga.

Originally this intersection formed part of a wider project area that included two other intersections in Wahroonga and Turramurra, being:

1. Pacific Highway at Finlay Road, Warrawee/Turramurra (also referred to as 'Intersection 1' under the original scope)
2. Pacific Highway at Fox Valley Road, Wahroonga/Warrawee (also referred to as 'Intersection 2' under the original scope)

Previously the proposal subject to this ISEPP letter (Pacific Highway at Coonanbarra Road and Redleaf Avenue) was referred to as 'Intersection 3' in the ISEPP letter originally issued to Ku-ring-gai Council for all three intersections in August 2018. The location of all three intersections is shown in Figure 1.

It was later decided that the works at Intersection 3 required further investigation and so this intersection was removed from the original scope of works. A separate Review of Environmental Factors (REF) was prepared and approved for Intersections 1 and 2 in April 2019. Council was given an opportunity to comment on the original scope which included all three intersections in August 2018 as part of a formal ISEPP consultation. Comments from Council were received on 5 October 2018 and

Roads and Maritime Services

20 November 2018 and responses from Roads and Maritime are provided in Chapter 5 of the REF for Intersections 1 and 2 which is available on the project website¹. Only issues related to the works at Intersections 1 and 2 were responded to as well as combined project wide issues. The issues raised in relation to the works at Intersection 3 were noted and will be addressed, along with comments received as part of this ISEPP consultation, in the second Project REF being prepared for this intersection.

The proposal along with the approved works at Intersections 1 and 2 would ultimately provide three continuous through lanes northbound on the Pacific Highway between Turramurra and Wahroonga over a length of about two kilometres in this location.

To achieve this, the proposal would require road widening, boundary adjustments and vegetation clearance along the western side of the Pacific Highway between Munderah Street and Coonanbarra Road (both within the existing road verge and within a private property) and signalisation at the intersection of Pacific Highway and Redleaf Avenue.

An outline of the proposal is provided in Attachment A. The general arrangement drawings for the proposal are provided in Attachment B. The full extent of vegetation clearance that conservatively may be required for the proposal is provided in Attachment C.

Subject to environmental approval, the construction works would likely commence in 2020 and occur over a period of approximately 12 to 18 months in conjunction with the construction works for Intersections 1 and 2. It is proposed to occupy the property at 1334-1354 Pacific Highway in Turramurra (a locally listed heritage item) for use as a temporary compound site and storage area during construction (refer to Figure 1), however alternative compound site locations are currently being investigated.

¹ www.rms.work/t2w

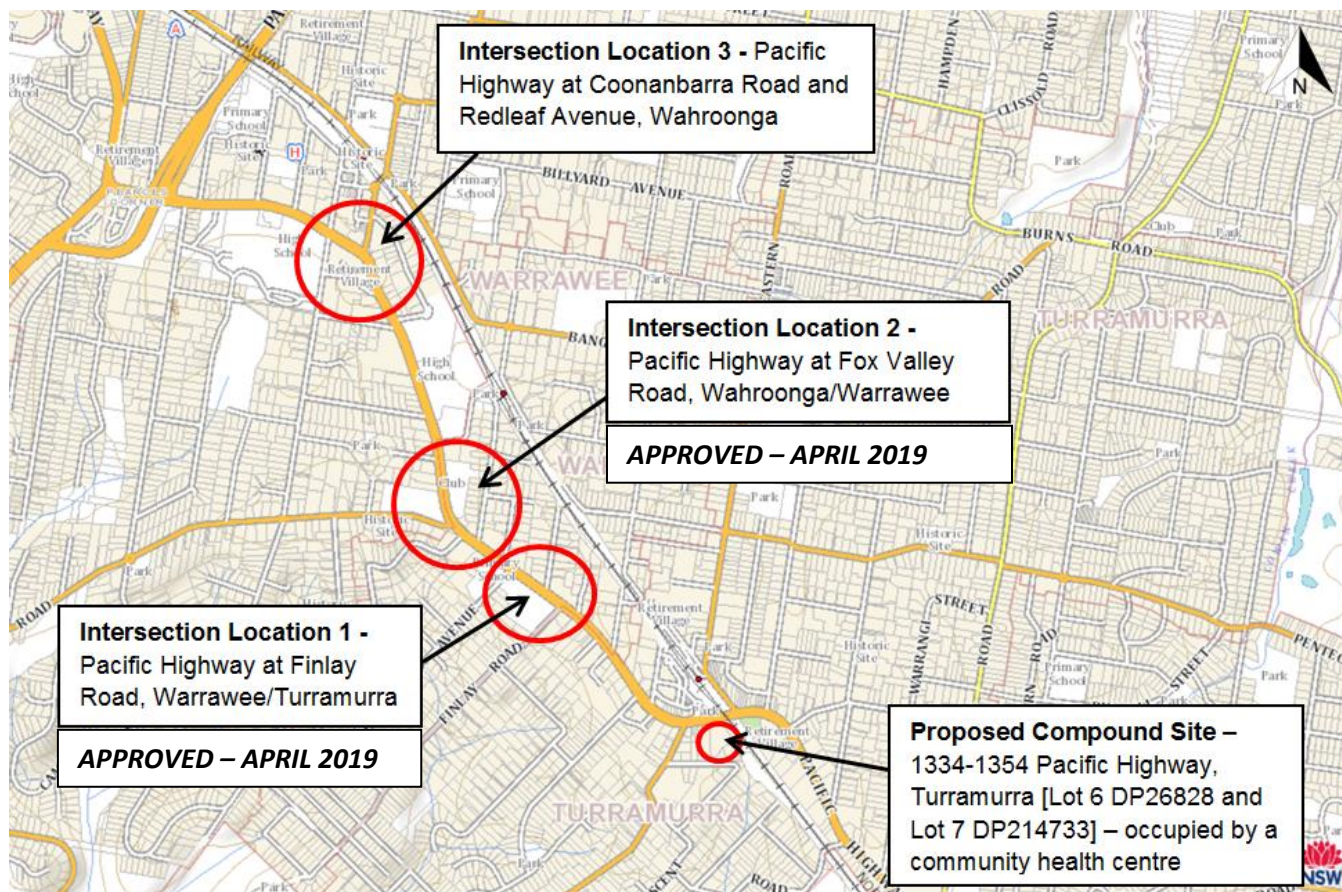


Figure 1 – Locality map of the proposal (note – only Intersection 3 and the Proposed Compound Site are relevant to this ISEPP letter)

Under the State Environmental Planning Policy (Infrastructure) 2007, Roads and Maritime Services is required to consult with Ku-ring-gai Council under clauses 13(1)(a), 13(1)(b), 13(1)(e), 13(1)(f) and 14(1)(a) due to the potential impacts on council infrastructure (stormwater infrastructure, footpaths, parkland), local heritage and local roads.

Clause 13(1)(a) Development with impacts on council-related infrastructure or services: stormwater management services

The proposal involves road widening on the western side of the Pacific Highway within the proposal extent. This would increase the amount of impervious area in the locality and result in additional stormwater infrastructure being required to accommodate the additional stormwater being generated as a result of the proposal. As part of the proposal, stormwater infrastructure is being assessed and addressed to make sure that the proposal would not constrain the future capacity or operation of the stormwater network. It is proposed to undertake stormwater upgrades along the western side of the Pacific Highway and along a section of Munderah Street to accommodate for the additional stormwater likely to be generated by the proposal.

Roads and Maritime Services

Clause 13(1)(b) Development with impacts on council-related infrastructure or services: local roads

The proposal may have the potential to affect local traffic operations on adjacent local roads as result of the following changes:

- The proposed ban of the existing right-turn movement from Redleaf Avenue onto the Pacific Highway northbound
- The proposed ban of the existing right-turn movement from the Pacific Highway northbound onto Coonanbarra Road.

The existing right-turn movement from Redleaf Avenue onto Pacific Highway is proposed to be banned due to traffic safety and efficiency. The right-turn is already banned in the AM (6:30 – 9:30) and PM (3:30 – 6:30) weekday peak. Therefore the proposed right-turn ban would only have impacts to the surrounding network during the weekday off-peak periods and all weekend. A traffic assessment has been carried out to assess the impacts of the right-turn ban from Redleaf Avenue onto Pacific Highway (refer to Attachment D). The assessment assumed that vehicles would instead turn right onto the Pacific Highway from Coonanbarra Road. The assessment concluded that the rerouted vehicles onto Coonanbarra Road are estimated to travel the same distance to that of the existing route from Redleaf Avenue and that the rerouted vehicles are expected to travel an additional of up to approximately 100 seconds. A review of the traffic demand and phase timings at the intersection of Pacific Highway / Coonanbarra Road / Ada Avenue was also undertaken as part of the assessment. The analysis indicated that a couple of seconds of additional green time could be redistributed from Pacific Highway movement to Coonanbarra Road, which would help this right-turn movement cater for additional traffic demand. The rerouted traffic would therefore be manageable if diverted onto Coonanbarra Road.

A separate traffic assessment has been carried out to assess the impacts for the right-turn ban onto Coonanbarra Road from the Pacific Highway. The assessment concluded that banning the right-turn movement onto Coonanbarra Road from the Pacific Highway (which is currently a filter movement) 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 hour². This would be a negligible increase given 163 vehicles and 155 vehicles currently turn into Redleaf Avenue in the AM peak hour and the PM peak hour respectively.

Clause 13(1)(e) Development with impacts on council-related infrastructure or services: temporary structures and enclosing of public space which may disrupt pedestrian or vehicular traffic

Across the proposal area, sections of the existing footpath network on the western side of the Pacific Highway (and adjoining local roads) and northern side of Munderah Street would need to be temporarily closed or re-routed during construction to enable the proposed road widening and stormwater upgrades to occur in this location. Any impacted footpaths would be reinstated as part of the works (in agreement with council).

² HW10 Pacific Highway at Coonanbarra Road and Redleaf Avenue Intersection Improvements, Wahroonga – Concept Design Report, Roads and Maritime Services – Easing Sydney's Congestion – Pinch Points North, May 2018.

Clause 13(1)(f) Development with impacts on council-related infrastructure or services: excavations that are not minor or inconsequential within and adjacent to local roads and footpaths under council control

Across the proposal area, excavations are proposed along the western side of the Pacific Highway to enable the proposed road widening to occur and along the northern side of Munderah Street to undertake the proposed stormwater upgrades. The excavations would require street tree removals and occur within and adjacent to council footpaths and local roads which tie into the proposal area. These areas would be reinstated as part of the works in agreement with council.

Clause 14(1)(a) Development with impacts on local heritage

It has been determined that this proposal may have more than a minor or inconsequential impact upon local heritage items and heritage conservation areas in the vicinity of the proposal listed under the Ku-ring-gai LEP 2015 and Ku-ring-gai LEP (Local Centres) 2012. The list of the local heritage items within the vicinity of the proposal are provided in Table 1 (refer also to Attachment E for location).

Table 1 – List of local heritage items within the vicinity of the proposal – those in bold would be directly impacted/encroached on by the works

Local Heritage Item / Area	Description	Address	Proposal Location
3490028³	'Hillview Garages and Precinct'	1334-1340 Pacific Highway, Turramurra	Within proposed site compound location
I155	'Hillview'	1334 Pacific Highway, Turramurra	
I156	'Hillview Garages'	1340 Pacific Highway, Turramurra	
C40	Hillview Conservation Area	Block of land bound by Pacific Highway, Kissing Point Road, the Northern Rail Line and Boyd Street	Within and adjoining the proposed site compound location
I157	'Former Commonwealth Bank Building'	1356 Pacific Highway, Turramurra	Adjoining proposed compound site location
I158	'Commercial Buildings'	1358 and 1360 Pacific Highway, Turramurra	Within 10 m of proposed compound site location
I161	'Rohini House gates'	Railway lands (Northern Rail Line)	Within 5 m of proposed compound site location
I132	'Residential Flat Building'	2-4 Boyd Street, Turramurra	Within 10 m of proposed compound site location
I139	'Dwelling house'	8 Kissing Point Road, Turramurra	Within 20 m of proposed compound site location
I976	'Gateposts to the former 'Estha' dwelling house'	1614-1634 Pacific Highway, Wahroonga	Adjoining and within Intersection 3 works
I967	'Dwelling House'	1551 Pacific Highway, Wahroonga	Adjoining Intersection 3 works (within 5 m)
I969	'Dwelling House'	1565 Pacific Highway, Wahroonga	Adjoining Intersection 3 works (within 5 m)
I1008	'Redleaf Dwelling House and Grounds'	28-30 Woodville Avenue, Wahroonga	Adjoining Intersection 3 works (within 5 m)
I972	'Sydney Water Reservoir-Wahroonga'	1635 Pacific Highway, Wahroonga	Adjoining Intersection 3 works (within 10 m)
I974	'Sydney Water Reservoir-Wahroonga'	1678 Pacific Highway, Wahroonga	Adjoining Intersection 3 works (within 10 m)

3. Section 170 Heritage Register – Roads and Maritime Services

Roads and Maritime Services

A Statement of Heritage Impacts (SOHI) has been prepared (with suggested mitigation options) and is provided in Attachment E. Note that the SOHI considered the works at all three intersections.

It would be appreciated if you could provide any comments about this proposal by **Monday 22 July 2019**. Roads and Maritime Services would be pleased to provide further information if required.

In this regard, **Ana Perez** may be contacted on **0499 989 505** or by email **Ana.Perez@rms.nsw.gov.au**.

Yours faithfully



Ana Perez
Project Manager (Development) – Pinch Points
Easing Sydney's Congestion Program Office

Attachments

Attachment A – Proposal Description

Attachment B – Proposed Design Drawings (General Arrangement Plans)

Attachment C – Proposed Vegetation Clearance Areas

Attachment D – Assessment of Proposed Traffic Diversions

Attachment E – Local Heritage SOHI

Roads and Maritime Services

Attachment A – Proposal Description

Roads and Maritime Services

Level 8, 10-14 Smith Street, Parramatta NSW 2150]
Locked Bag 928, North Sydney NSW 2059 | www.rms.nsw.gov.au | 13 22 13

Attachment B – Proposed Design Drawings (General Arrangement Plans)

Attachment C – Proposed Vegetation Clearance Areas

Attachment D – Assessment of Proposed Traffic Diversions

Attachment E – Local Heritage SOHI

MEMO

To: Ana Perez – Project Manager ESC Jared Crossley – Design Lead ESC Angus Sturrock – Project Director ESC Maria Doumit – Environmental Officer ESC Sasha Kovacina – Project Manager ESC	Date: 25/07/2019
CC: Andersen Hui – Traffic Lead ESC Ben Midgley – Traffic Modeller ESC	Revision: 9
From: Trung Mai – Traffic Modeller ESC	Page: 11
Subject: Easing Sydney’s Congestion (Pinch Points) – Pacific Highway Intersection Upgrades Wahroonga – Traffic Impact Assessment of Proposed Option	Reference: 04-018-P0021513-MEM-TR-008

1.0 INTRODUCTION

As part of the Pinch Points program under Easing Sydney’s Congestion (ESC), Roads and Maritime Services NSW (Roads and Maritime) propose to upgrade a section of the Pacific Highway in Wahroonga at Coonanbarra Road and Redleaf Avenue. The proposal would provide three continuous through lanes in the northbound direction, north of Munderah Street to the M1 Pacific Motorway and maintain the existing three continuous through lanes in the southbound direction in this location. The proposed upgrades would include road widening as well as adjustments to traffic lanes, medians, traffic lights, footpaths, drainage, utilities and road pavement. Road widening would require strip adjustments to one property in this area on the western (northbound) side of the Pacific Highway.

Originally the proposal formed part of a wider scope of road upgrades along the Pacific Highway that included two other intersections located in Wahroonga, Warrawee and Turramurra:

- Pacific Highway at Finlay Road, Warrawee/Turramurra (referred to as ‘Intersection 1’ for the purpose of the original scope).
- Pacific Highway at Fox Valley Road, Wahroonga/Warrawee (referred to as ‘Intersection 2’ for the purpose of the original scope).

Originally the intersections of Pacific Highway with Coonanbarra Road and Redleaf Avenue were referred to as Intersection 3. The original scope and consultation initially covered proposals at all three intersections, however following the community consultation, Intersections 1 and 2 were progressed and approved separately. The project REF assessing the intersections of Finlay Road (Intersection 1) and Fox Valley Road (Intersection 2) has since been determined in April 2019.

The Proposed Option at Redleaf Avenue and Coonanbarra Road (Intersection 3) along with the approved upgrades at Intersections 1 and 2 would ultimately provide three continuous through lanes in the northbound

direction, while maintaining three continuous through lanes in the southbound direction on Pacific Highway for approximately 1.9 km between Cherry Street and Woonona Avenue.

The results presented in this traffic memo are those at Pacific Highway at Redleaf Avenue and Coonanbarra Road (Intersection 3). However, an assessment of the collective upgrades including the proposed upgrades at Intersection 3 and the approved upgrades at Intersection 1 and 2 is also included, thus assessing cumulative impacts of the scheme. The full results of the approved project on Pacific Highway at Finlay Road (Intersection 1) and at Fox Valley Road (Intersection 2) were presented in a traffic assessment undertaken in March 2019 for this project (*Roads and Maritime, 2019*).

The features of the proposed upgrades at Intersection 3 will henceforth be referred to as the 'Proposed Option' in this memo. Where discussed separately, the intersections of Redleaf Avenue / Pacific Highway and Coonanbarra Road / Pacific Highway will be referred to as Intersection 3a and Intersection 3b, respectively.

1.1 Purpose of this memo

This technical memo discusses the assessment results and predicts the existing and future intersection performance at Redleaf Avenue and Coonanbarra Road with the combined proposals.

The memo also discusses the potential time savings along Pacific Highway within the wider study area from Cherry Street to Woonona Avenue.

The study area of the upgrades covered by this memo (Intersection 3) and the previous approved upgrades (Intersections 1 and 2) are shown in **Figure 1**.

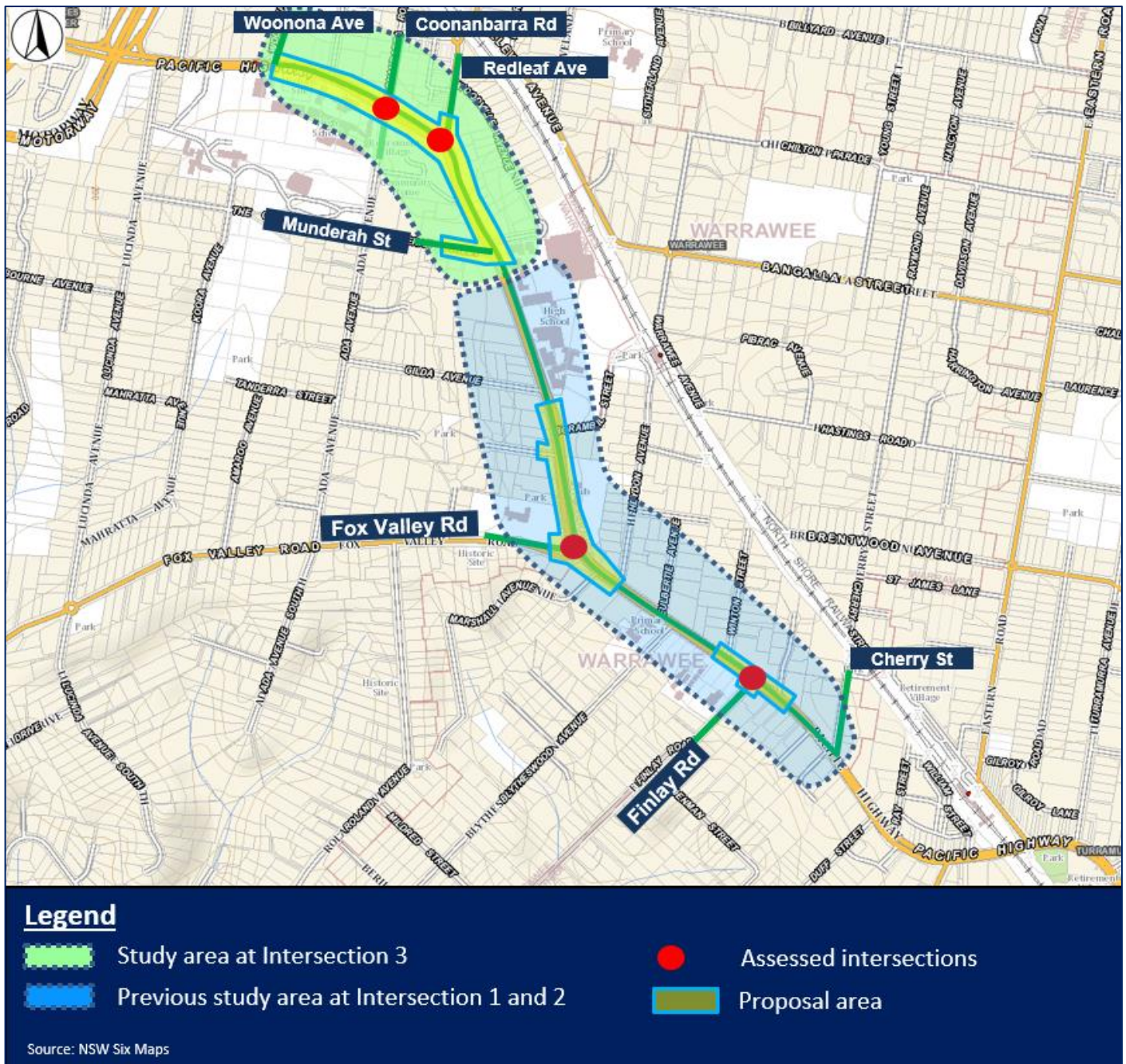


Figure 1: Study area and proposed upgrade road sections on Pacific Highway

2.0 INPUTS AND ASSUMPTIONS

2.1 Model background

A 2017 base model was built initially in VISSIM 9 and subsequently upgraded to version 10 during the design process. Details of the base model specifications and calibration process were documented in the *Pacific Highway Base VISSIM Model – Local Model Validation Report*, prepared by the ESC traffic team and issued in September 2017.

The modelling periods cover the AM peak between 06:00 - 08:00 and PM peak between 16:45 - 18:45.

2.2 2027 demand

The 2027 demand was estimated based on the growth rates informed by the Strategic Travel Model (STM) and were applied to the traffic volumes collected in March 2017. Linear traffic growth was assumed between 2017 and 2027.

The predicted traffic growth at Intersection 3a and 3b (obtained from modelled flows), are summarised in **Table 1**. Traffic growth between 2017 and 2027 at each intersection ranges from 5.8% to 7.1%, with the highest growth estimated at the intersection of Pacific Highway / Coonanbarra Road (Intersection 3b).

Table 1: Summary of traffic growth at Intersection 3 (2017-2027)

Intersection locations subject to Proposed Option	AM			PM		
	2017	2027	Growth	2017	2027	Growth
Intersection 3a: Redleaf Avenue/Pacific Highway	4,650	4,920	5.8%	4,040	4,290	6.2%
Intersection 3b: Coonanbarra Road/Pacific Highway	4,820	5,160	7.1%	4,510	4,830	7.1%

3.0 PROPOSED UPGRADES & SCENARIOS

The Proposed Option is focused at Intersection 3 along Pacific Highway as detailed below. Detailed upgrades at Finlay Road (Intersection 1) and Fox Valley Road (Intersection 2) can be found in the traffic assessment prepared in March 2019 for this project (*Roads and Maritime, 2019*).

Intersection 3a: Redleaf Avenue / Pacific Highway

Approach	Existing Layout	Proposed Option
Pacific Highway NB	Lane 1: through. Lane 2: through. Lane 3: dedicated right (65 m) * Right turn filter	Lane 1: through. Lane 2: through. Lane 3: through. Lane 4: dedicated right (65 m) – signalised.
Redleaf Avenue	Lane 1: left (45 m). Lane 2: right.	Lane 1: left (21 m) – signalised. Lane 2: left – signalised. *Right turn ban.
Pacific Highway SB	Lane 1: left-through. Lane 2: through. Lane 3: through.	Lane 1: left-through. Lane 2: through. Lane 3: through.

Intersection 3b: Coonanbarra Road / Pacific Highway / Ada Avenue

Approach	Existing Layout	Proposed Option
Pacific Highway NB	Lane 1: left-through. Lane 2: through. Lane 3: dedicated right (60 m)	Lane 1: left-through. Lane 2: through. Lane 3: through. *Right turn ban.
Coonanbarra Road	Lane 1: left-through. Lane 2: right-through.	Lane 1: left-through. Lane 2: right-through.
Pacific Highway SB	Lane 1: left-through. Lane 2: through. Lane 3: through	Lane 1: left-through. Lane 2: through. Lane 3: through
Ada Avenue	Lane 1: left-through. Lane 2: right-through.	Lane 1: left-through. Lane 2: right-through.

In general, the Proposed Option aims to provide three continuous northbound lanes on Pacific Highway between Munderah Street and Woonona Avenue and to remove the existing northbound merges along Pacific Highway. Along with the additional lane, two right turn bans are also proposed within the study area as noted below:

- Removing the right turn movement from Redleaf Avenue onto Pacific Highway.
- Removing the right turn movement from Pacific Highway onto Coonanbarra Road.

Figure 2 illustrates the study area, upgraded road sections, locations of the existing lane drops (in the northbound direction) and the proposed right turn bans between Munderah Street and Woonona Avenue.

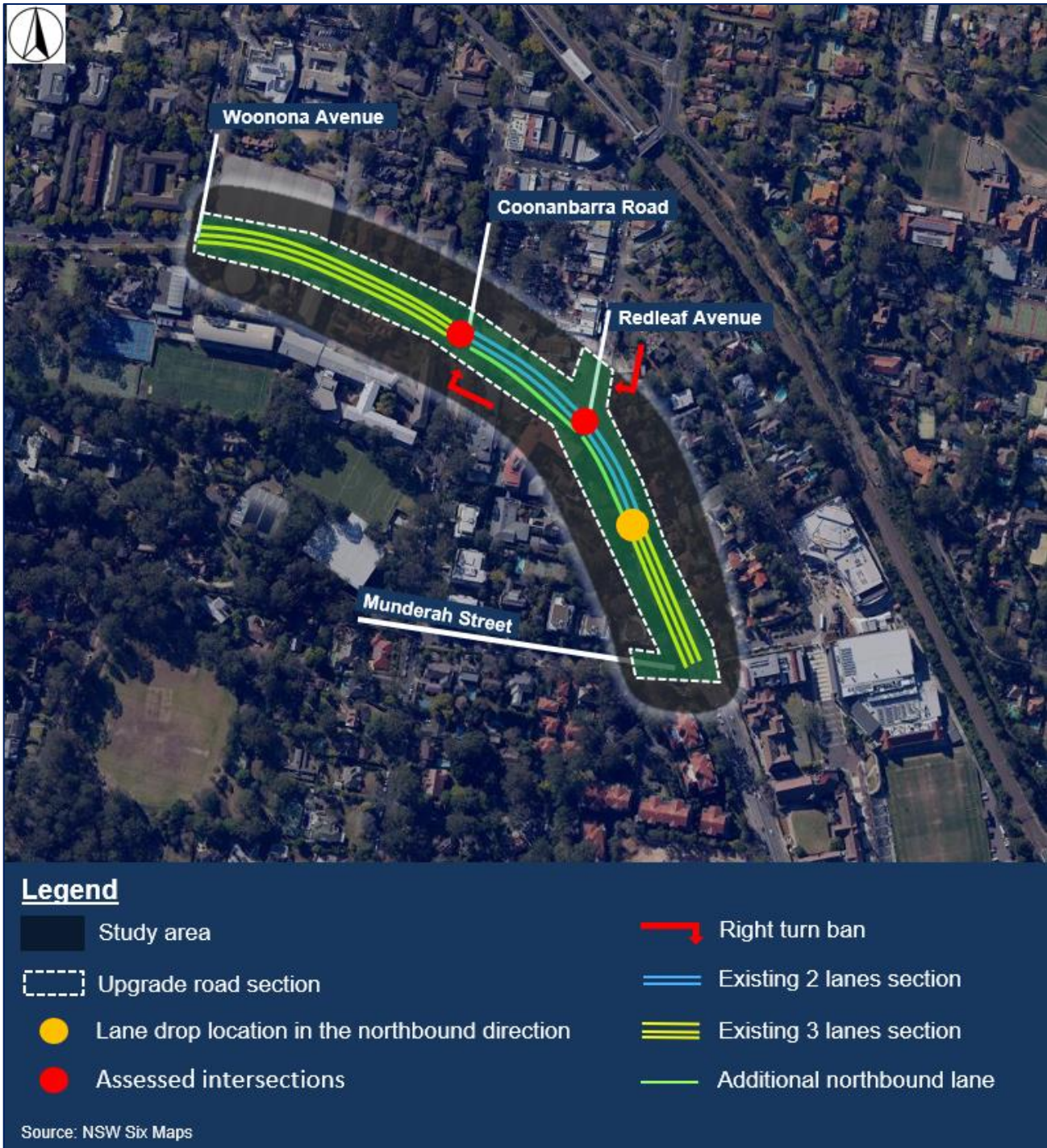


Figure 2: Locations of existing lane drops in the northbound direction and the proposed changes

Table 2 outlines the assessed scenarios.

Table 2: Modelling scenarios

Scenario	Traffic Volumes		Design	
	2017 Volumes	2027 Volumes	Existing Layout	Proposed Option
2017 Base	√		√	
2017 Proposed Option	√			√
2027 Do Nothing		√	√	
2027 Proposed Option		√		√

3.1 PERFORMANCE

Table 3 compares the performance at Intersection 3 between the Base/Do-Nothing and the Proposed Option. The results present a combined impact of the following:

- Proposed intersection upgrades on Pacific Highway at Redleaf Avenue (Intersection 3a) and Coonanbarra Road (Intersection 3b).
- Approved intersection upgrades on Pacific Highway at Finlay Road (Intersection 1) and Fox Valley Road (Intersection 2).
- Proposed right turn bans at Redleaf Avenue and Coonanbarra Road.
- Approved right turn bans at Finlay Road and Marshall Avenue.

The performance comparisons between the Base/Do-Nothing and the approved project at Intersection 1 (Pacific Highway / Finlay Road) and Intersection 2 (Pacific Highway / Fox Valley Road) are documented in the traffic assessment prepared in March 2019 for this project (*Roads and Maritime, 2019*).

Table 3: Existing and future intersection performance – Base/Do-Nothing vs Proposed Option

Intersection performance (Average delay in seconds)			2017				2027			
			Base		Proposed Option		Do-Nothing		Proposed Option	
			Delays	LoS	Delays	LoS	Delays	LoS	Delays	LoS
AM Peak	Intersection 3a: Redleaf Ave/ Pacific Hwy	Pacific Hwy SB	1	A	5	A	6	A	16	B
		Pacific Hwy NB	3	A	7	A	4	A	7	A
	Overall intersection		6	A	10	A	18	B	17	B
	Intersection 3b: Coonanbarra Rd/ Pacific Hwy	Pacific Hwy SB	13	A	13	A	16	B	30	C
		Pacific Hwy NB	11	A	2	A	11	A	2	A
	Overall intersection		20	B	18	B	24	B	32	C
PM Peak	Intersection 3a: Redleaf Ave/ Pacific Hwy	Pacific Hwy SB	1	A	3	A	1	A	3	A
		Pacific Hwy NB	32	C	17	B	45	D	18	B
	Overall intersection		19	B	15	B	26	B	14	A
	Intersection 3b: Coonanbarra Rd/ Pacific Hwy	Pacific Hwy SB	10	A	10	A	10	A	10	A
		Pacific Hwy NB	19	B	10	A	19	B	10	A
	Overall intersection		31	C	29	C	39	C	46	D

Table 4 summarises the key issues identified at Intersection 3 and the potential traffic impacts of the Proposed Option.

Table 4: Summary of existing issues and impacts of the Proposed Option

Existing issues	Impacts of the Proposed Option
Intersection 3a: Pacific Highway at Redleaf Avenue, Wahroonga	
<ul style="list-style-type: none"> ➤ In the northbound direction, the kerbside lane ends approximately 100 m south of the intersection. This is an identified congestion point on the Pacific Highway as vehicles travelling northbound are forced to merge from the kerbside lane onto the middle lane. 	<ul style="list-style-type: none"> ➤ In the 2017 AM peak, this intersection deteriorates due to the increased southbound delays as a result of the additional signal at Redleaf Avenue. In the 2027 AM peak, the intersection is expected to improve slightly after the corridor upgrade because the reduced delays on Redleaf Avenue will offset the increased delays in the southbound direction. ➤ In the PM peak, the additional northbound lane on the Pacific Highway would reduce traffic delays by 15 seconds in 2017 and 27 seconds in 2027, in comparison to the Base / Do-Nothing scenario. The improvement is a result of an additional northbound lane being introduced on Pacific Highway at Redleaf Avenue.
Intersection 3b: Pacific Highway at Coonanbarra Road, Wahroonga	
<ul style="list-style-type: none"> ➤ Vehicles travelling in the northbound direction experience high delay with queuing extended back to Redleaf Avenue, particularly in the PM peak. 	<ul style="list-style-type: none"> ➤ In the 2017 AM and PM peaks, the overall intersection delays are expected to improve by 2 seconds and 3 seconds respectively. This is due to the decreased delays in the northbound direction with the estimated travel time savings of 9 seconds. ➤ In the 2027 AM and PM peaks, despite 9 seconds travel time saving in the northbound direction, the overall intersection delays are expected to deteriorate due to the following: <ul style="list-style-type: none"> - Additional traffic signal at Redleaf Avenue. - Additional traffic reroutes to Coonanbarra Road due to the impact of the proposed right turn ban out of Redleaf Avenue. - Removal of the filter southbound right turn onto Fox Valley Road.

3.2 TRAVEL TIME ANALYSIS

Travel time was extracted between Cherry Street and Woonona Avenue in both directions of Pacific Highway with a view to measure potential benefits of the collective upgrades at Intersection 1, 2 and 3 as illustrated in **Figure 3**.

Table 5 provides a comparison of northbound and southbound travel time between the Base/Do-Nothing and Proposed Option for the collective upgrades at Intersection 1, 2 and 3. These results are then further discussed in 2017 and 2027 in this section.

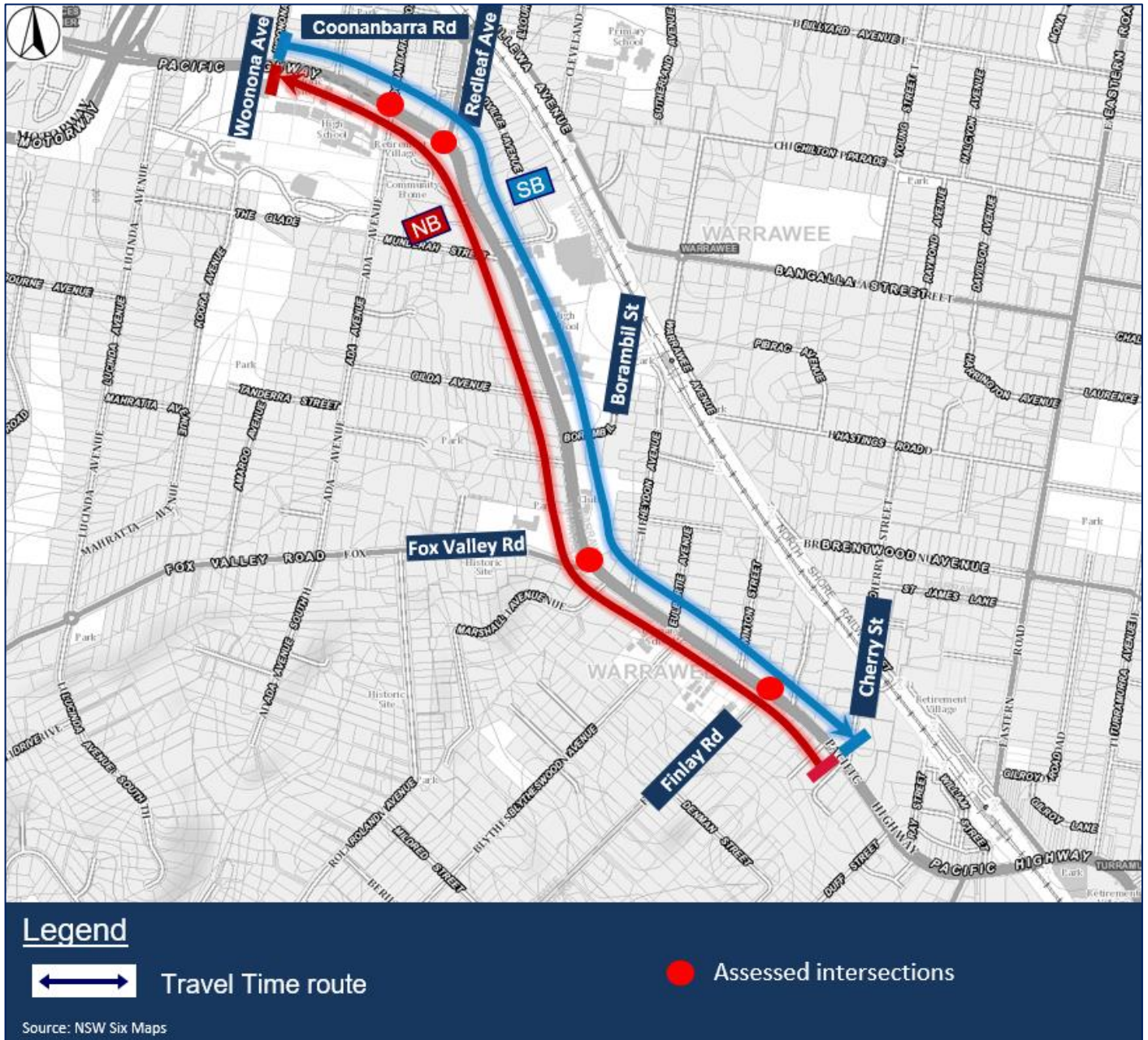


Figure 3: Travel time analysis route

Table 5 Travel time comparison – Base/Do-Nothing vs Proposed Option

Travel Time (mm:ss)		2017			2027		
		Base	Proposed Option	Difference	Do-Nothing	Proposed Option	Difference
AM Peak	NB	02:42	02:33	- 00:09	02:45	02:34	- 00:11
	SB	03:43	03:53	+ 00:10	06:40	07:13	+ 00:33
PM Peak	NB	04:45	03:00	- 01:45	06:26	03:03	- 03:23
	SB	02:58	02:59	+ 00:01	05:07	05:12	+ 00:05

Base vs. Proposed Option – 2017

AM peak

- Minor travel time savings are predicted in the northbound direction between the Base and Proposed Option. This is because the northbound traffic on Pacific Highway is currently operating well (LoS A), so the benefits of upgrades (mainly focusing in the northbound direction in the PM peak) are minimal.
- Vehicles travelling on the southbound direction of Pacific Highway are expected to experience slightly higher travel times due to the additional traffic signal being proposed at Redleaf Avenue.

PM peak

- Vehicles are estimated to save a total of 1 minute and 45 seconds when travelling northbound on Pacific Highway between Cherry Street and Woonona Avenue. This improvement is as a result of the additional northbound lane being introduced on the northbound of Pacific Highway.
- Vehicles would take a similar time when travelling southbound on Pacific Highway between Woonona Avenue and Cherry Street. The minor travel time differences in the southbound direction are considered as a result of the natural variation of travel time, in response to changes in the traffic conditions.

Do-Nothing vs. Proposed Option – 2027

AM peak

- No notable travel time savings are anticipated for vehicles travelling northbound on Pacific Highway between the Do-Nothing and Proposed Option. This is because the northbound traffic on Pacific Highway would continue to operate well (LoS A), so the benefits of upgrades are minimal (11 seconds).
- Vehicles are estimated to experience longer delays (an additional 33 seconds) while travelling southbound through the study corridor. This is due to the removal of the filter turn from Pacific Highway onto Fox Valley Road and the reallocation of signal green time from Pacific Highway onto Fox Valley Road. The green time reallocation (2 seconds for the AM peak and 3 seconds for the PM peak) aims to accommodate the additional traffic diverted onto Fox Valley Road. Southbound vehicles are also required to stop at Redleaf Avenue with the introduction of a new signal. These modifications contributed to the increased southbound travel time.

PM peak

- Vehicles are estimated to save a total of 3 minutes and 23 seconds when travelling northbound on Pacific Highway between Cherry Street and Woonona Avenue. The continuous northbound through lane on the Pacific Highway provides the required capacity for the critical northbound movements, thus providing substantial travel time savings in the PM peak under 2027 conditions.
- Vehicles are expected to experience longer delays (an additional five seconds) while travelling southbound through the study corridor. This is due to the removal of the filter turn from Pacific Highway

onto Fox Valley Road and the reallocation of signal green time from Pacific Highway onto Fox Valley Road. In addition, southbound vehicles are also required to stop at Redleaf Avenue. These modifications contributed to the increased southbound travel time.

4.0 CONCLUSION

Based on the assessment presented in this memo, the following conclusions are provided:

- The Base/Do-Nothing option is not recommended as with no upgrades in place, vehicles would need significantly more time to travel through the study area in the northbound direction, particularly in the future, based on the predicted traffic growth along the study corridor.
- The Proposed Option is recommended. It is estimated to deliver reasonable travel time savings in the northbound direction of Pacific Highway. **Table 5** indicates that the Proposed Option in combination with the approved upgrades at Intersection 1 and Intersection 2, would deliver 1 minute and 45 seconds (in 2017 PM) and 3 minutes and 23 seconds (in 2027 PM) of travel time savings northbound within the upgrade road sections (**Figure 3**).
- With the removal of filtered right turn from Pacific Highway southbound onto Fox Valley Road and the phasing adjustments at the intersection of Fox Valley Road and Pacific Highway, together with an additional traffic signal at Redleaf Avenue, vehicles travelling southbound are estimated to experience longer delays in both peaks in 2027 (**Table 5**).



REFERENCES

Roads and Maritime, 2019, *Easing Sydney's Congestion (Pinch Points) – Pacific Highway Intersection Upgrades between Turrumurra and Wahroonga – Traffic Impact Assessment of Proposed Option*, March 2019 [Document No. 02-018-P0021513-MEM-TR-004], Sydney – Easing Sydney's Congestion Program Office.

Pacific Highway upgrades between Turramurra and Wahroonga

Community Consultation Report

Redleaf Avenue and Coonanbarra Road intersections

Roads and Maritime Services | August 2019

Summary

This is a supplementary report of Roads and Maritime Services consultation with the community and key stakeholders on intersection upgrades on the Pacific Highway between Turramurra and Wahroonga.

The community was 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.

In May 2019, we published a consultation report with the decisions and a Review of Environmental Factors (REF) for the intersections at Finlay Road and Fox Valley Road. This report and REF is available online at rms.work/t2w

We received a lot of feedback from the community on the proposal for the Redleaf Avenue and Coonanbarra Road intersections. We decided to investigate further options before coming back to the community to report on the feedback we received.

This supplementary report outlines the feedback we received, our responses to that feedback and the decisions made after considering all responses, along with the proposal's aims and design requirements.

The NSW Government is funding the proposed intersection upgrades on the Pacific Highway 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 overall 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 upgrades would improve traffic flow and safety for the motorists who use the Pacific Highway each day.

Proposed upgrades

Pacific Highway at Coonanbarra Road and Redleaf Avenue, Wahroonga

The proposed upgrades presented to the community in September/October 2018 included:

- 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 Road 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 to improve safety for all road users.

Consultation

Roads and Maritime initially invited feedback on the proposal from 5 September 2018 to 28 September 2018. The consultation period was further extended by one week until 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.

We received a lot of feedback from the community on the proposal for the Redleaf Avenue and Coonanbarra Road intersections. We decided to investigate further options before coming back to the community to report on the feedback we received. We have updated and presented the new proposed designs for this intersection to key stakeholders including local schools and Ku-Ring-Gai Council.

See **Tables 2** and **Table 3** for a summary of feedback received and responses provided.

Key feedback for the intersections of the Pacific Highway at Coonanbarra Road and Redleaf Avenue, Wahroonga included:

- Pacific Highway access into and from Redleaf Avenue
- Pacific Highway access into and from Coonanbarra Road
- traffic light addition on Pacific Highway at Redleaf Avenue
- congestion on local roads surrounding the Wahroonga Village Shops.

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 proposal with changes including the following:

- adding traffic lights to the Redleaf Avenue intersection to improve motorist safety
- adding pedestrian crossings to the Redleaf Avenue intersection to improve pedestrian access and safety
- adding a left turn lane from Redleaf Avenue to the Pacific Highway to improve traffic flow and safety
- extending the peak hour right turn ban to a full-time ban onto the Pacific Highway from Redleaf Avenue to improve traffic flow.

See Section 4 and Figure 4 for the updated design for this intersection.

Next steps

The REF for the intersection upgrades of the Pacific Highway at Redleaf Avenue and Coonanbarra Road will be made available on the Roads and Maritime website.

Further detailed engineering design will also be completed for all three intersection upgrades (Pacific Highway at Finlay Road, Fox Valley Road, Redleaf Avenue and Coonanbarra Road).

We will keep the community informed as these projects progress.

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1. Introduction

This is a supplementary report of 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.

In May 2019, we published a consultation report with the decisions for the intersections at Finlay Road and Fox Valley Road.

In our consultation with the community, we received a lot of feedback from the community on the proposal for the Redleaf Avenue and Coonanbarra Road intersections. We decided to investigate further options before coming back to the community to report on the feedback we received.

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 creating 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 Pacific 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 the 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: Pacific Highway upgrade locations between Turramurra and Wahroonga at Finlay Road, Fox Valley Road, Redleaf Avenue and Coonanbarra Road

Proposed upgrades at Pacific Highway at Coonanbarra Road and Redleaf Avenue

The proposed upgrades presented to the community during the Have Your Say community update in late 2018 included:

- 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 Road 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 to improve road user safety.

Refer to Figure 2 for further details.

Due to feedback received from Ku-ring-gai Council and the community, Roads and Maritime decided to investigate other solutions for the intersections of the Pacific Highway at Coonanbarra Road and Redleaf Avenue. After investigating further, we have redesigned the intersection to include feedback from the community; see Section 4 and Figure 4 of the upgraded design of this intersection.

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 2: Proposed intersection upgrades on Pacific Highway at Coonanbarra Road and Redleaf Avenue, Wahroonga

The above design was presented to the community during the Have Your Say community update in late 2018; see Section 4 and Figure 4 for the new design for this intersection.

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, we distributed 3100 community updates to local residents and businesses, inviting feedback on the proposal; see Appendices 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 Member for Ku-ring-gai, Ku-ring-gai Council, local schools 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.

Consultation methods	
Tool	Method
Have Your Say community update September/October 2018 see Appendix A	<ul style="list-style-type: none"> • Distributed to 3100 residences and businesses in the local area; see Appendix B for distribution area • Copies of the community update sent to key stakeholders, including local council, via email
Website	<ul style="list-style-type: none"> • Roads and Maritime webpage updated with the latest information, including FAQs; for full FAQ list visit rms.nsw.gov.au/projects/sydney-north/pacific-hwy-turramurra-wahroonga/index.html
Online consultation map	<ul style="list-style-type: none"> • 106 comments; see Appendix D
Media releases and coverage	<ul style="list-style-type: none"> • Local news article: monthlychronicle.com.au/2018/09/22/have-a-say-on-pacific-highway-upgrades-between-turramurra-and-wahroonga • Local MP Ku-ring-gai: alisterhenskens.com.au/news/have-say-pacific-highway-upgrades-between-turramurra-and-wahroonga
Social media	<ul style="list-style-type: none"> • Facebook post 13 September 2018, reach 11,640 people • Facebook post 20 September 2018, reach 2,041 people; see Appendix C
Community information sessions	<ul style="list-style-type: none"> • 13 September 2018, 4-6pm at Turramurra Plaza, Turramurra • 18 September 2018, 4-6pm at corner of Railway Avenue, Wahroonga
Meetings	Roads and Maritime met with: <ul style="list-style-type: none"> • local school • local Parents and Citizens' association • local aged care facility • Member for Ku-ring-gai • Ku-ring-gai Council.

Table 1: Consultation methods

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 and October 2018.

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

Key issues included:

Overall Pacific Highway upgrades between Turramurra and Wahroonga

- 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.

Pacific Highway at Coonanbarra Road and Redleaf Avenue, Wahroonga

- 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.

See Table 2 and Table 3 for more details about issues raised and Roads and Maritime responses.

In April 2019, we published the consultation report for the intersections of the Pacific Highway at Finlay Road and Fox Valley Road.

To view this report and learn about the decisions and why we made them, please visit rms.nsw.gov.au/documents/projects/sydney-north/pacific-hwy-turramurra-wahroonga/pacific-hwy-turramurra-wahroonga-consultation-report-april-2019.pdf

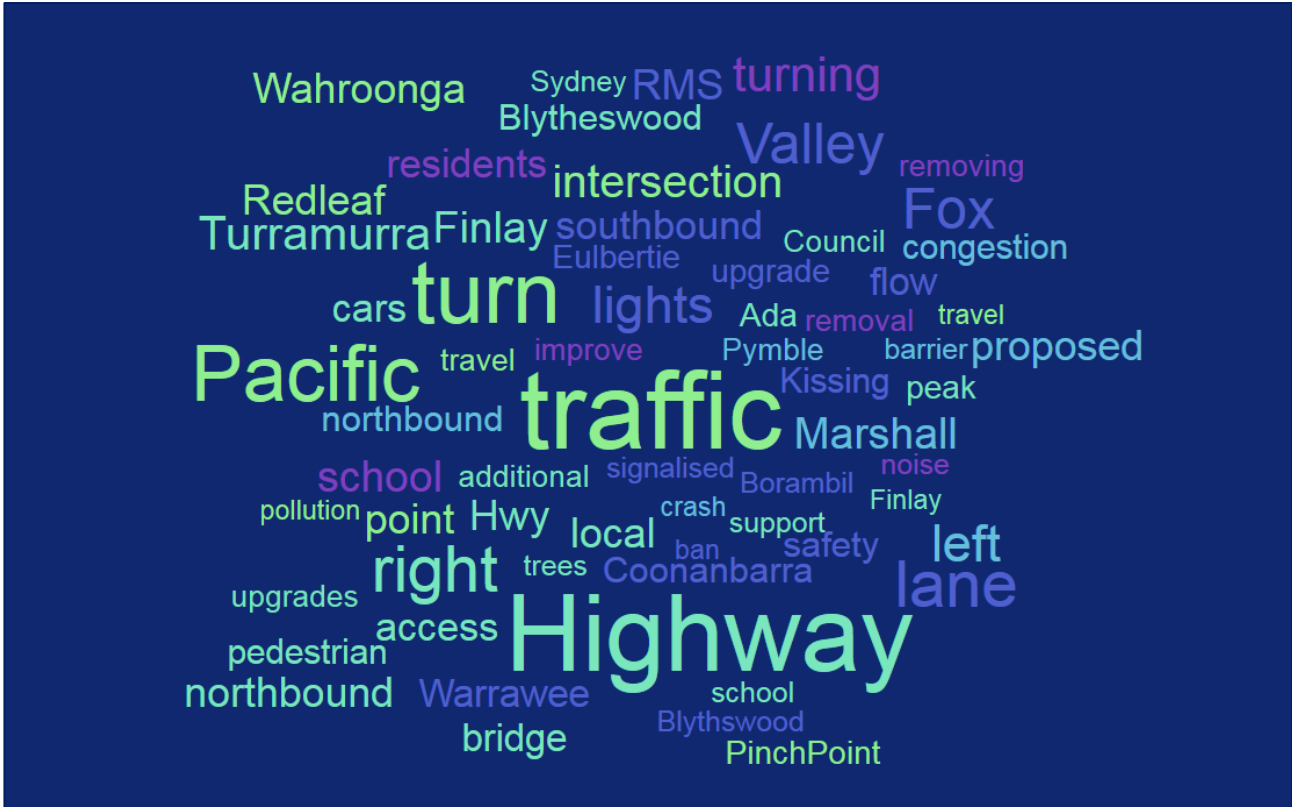


Figure 3: Word cloud of the most common issues raised during the consultation period

3.2 Feedback and Roads and Maritime responses

Roads and Maritime has now responded to the feedback we received about the proposal for the intersection upgrades at Pacific Highway at Redleaf Avenue and Coonanbarra Road in Wahroonga; see Table 2 and Table 3. We have also included our response to feedback on the overall Pacific Highway intersection upgrades.

This feedback helped inform the decision to further investigate options for the intersections of the Pacific Highway at Coonanbarra Road and Redleaf Avenue. The updated design is provided in Section 4.

Pacific Highway intersection upgrades – Feedback summary and Roads and Maritime’s responses for overall Pacific Highway 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.	After considering all feedback, along with the proposal's aims and design requirements, we decided to proceed with the upgrades to Pacific Highway at Finlay Road.
	We need three continuous northbound lanes on Pacific Highway.	<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>These combined upgrades are estimated to provide significant travel time savings in the northbound PM peak. The estimated time savings could reach up to three minutes and 23 seconds in the 2027 PM peak for road users traveling northbound on the Pacific Highway between Wahrenonga and Turramurra.</p> <p>The proposed upgrades will also improve safety for motorists and the local community.</p> <p>Due to feedback received from the community, we have updated the design of the proposed upgrades to the intersection of the Pacific Highway at Coonanbarra Road and Redleaf Avenue and will move forward with this new proposal.</p>

Pacific Highway intersection upgrades – Feedback summary and Roads and Maritime’s responses for overall Pacific Highway 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"> • Pacific Highway and Finlay Road • Pacific Highway and Fox Valley Road • Pacific Highway at Coonanbarra Road and Redleaf Avenue. <p>The proposal aims to improve traffic flow benefitting all road users who pass through the intersections of the Pacific Highway at Finlay Road, Fox Valley Road, Redleaf Avenue and Coonanbarra Road.</p> <p>These combined upgrades are estimated to provide significant travel time savings in the northbound PM peak. The estimated time savings could reach up to three minutes and 23 seconds in the 2027 PM peak for road users traveling northbound on the Pacific Highway between Wahroonga and Turrumurra.</p> <p>Due to feedback received from the community, we have updated the design of the proposed upgrades of the intersection of Pacific Highway at Coonanbarra Road and Redleaf Avenue (see Section 4) and will move forward with this new proposal.</p>
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 improved 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</p>

Pacific Highway intersection upgrades – Feedback summary and Roads and Maritime’s responses for overall Pacific Highway upgrades

Category	Key issues raised	Roads and Maritime response
	<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>	<p>the travel time savings.</p> <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>
	<p>The proposal does not provide a long term benefit to local residents or motorists passing through Wahroonga to Turrumurra.</p>	<p>All road users – motorists, freight, pedestrians and cyclists – and the local community were considered when creating this proposal. The Pinch Point Program aims to reduce traffic delays, manage</p>

Pacific Highway intersection upgrades – Feedback summary and Roads and Maritime’s responses for overall Pacific Highway 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>congestion and improve travel times. The proposed upgrades provide a low cost, high benefit solution to congestion on the Pacific Highway.</p> <p>The upgrades 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 and new pedestrian crossings at the new signalised intersection at Redleaf Avenue.</p> <p>Public transport (buses) will also benefit from decreased travel times resulting from the proposal.</p> <p>The upgrades 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 cycle ways 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 rms.nsw.gov.au/maps/cycleway_finder</p>
Proposal justification (Continued)	Upgrade the pedestrian footpaths along the affected areas.	All footpaths that will be adjusted as part of the upgrades will be widened from 1.2 to 1.5 metres.

Pacific Highway intersection upgrades – Feedback summary and Roads and Maritime’s responses for overall Pacific Highway upgrades

Category	Key issues raised	Roads and Maritime response
	<p>What traffic research was used to determine that the proposed changes would produce a worthwhile benefit and justify investment of funds?</p> <p>Was the completion of NorthConnex taken into consideration for future congestion on the Pacific Highway?</p>	<p>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 Pacific Motorway and NorthConnex were included in our modelling.</p> <p>Traffic modelling showed that the proposal will improve the highway’s performance, reduce queue lengths and improve traffic flow at each intersection, benefitting over 60,000 road users who use the highway every day.</p>
Environmental impacts	<p>Will there be any property impacts to residential properties adjacent to the Pacific Highway?</p> <p>This proposal will lead to more pollution from increased vehicle movements.</p>	<p>The upgrades 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.</p> <p>While the upgrades improve the northbound capacity of the Pacific Highway between Turramurra and Wahroonga, it is not anticipated to increase the volume of traffic using this road outside of population growth. As such, the upgrades are unlikely to contribute to an increase in vehicle exhaust emissions in the local area.</p> <p>By improving traffic flow and reducing local congestion, it is anticipated the upgrades will have a positive effect on air quality by reducing the number of waiting motorists and the repeated need to brake and accelerate.</p>

Pacific Highway intersection upgrades – Feedback summary and Roads and Maritime’s responses for overall Pacific Highway upgrades

Category	Key issues raised	Roads and Maritime response
Environmental impacts (Continued)	Is all of the tree and vegetation removal necessary?	Roads and Maritime aims to minimise vegetation removal where possible. We considered the need to remove vegetation when developing the intersection upgrades. There will be a loss of trees and vegetation on some private property impacted by the road widening.
	How does Roads and Maritime decide what trees to replace?	Replacement planting will be done by Roads and Maritime in consultation with impacted property owners and a landscape architect. We will 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 upgrades.
	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 and on public property will also be removed. Due to potential road safety, maintenance and operational standards, trees on public property impacted by the upgrades will not be replaced. We will consult with the Ku-ring-gai 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?	A drainage assessment was undertaken during the development of the intersection upgrades 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. The proposed drainage upgrades have been designed to cover the potential changes in stormwater run-off created from the increased pavement of the new roadway. This work will meet Roads and Maritime and council standards.

Pacific Highway intersection upgrades – Feedback summary and Roads and Maritime’s responses for overall Pacific Highway upgrades

Category	Key issues raised	Roads and Maritime response
Consultation process	<p>The community consultation period was too close to end of year holidays and not long enough to provide adequate feedback.</p> <p>There has been no previous discussion or any information regarding proposed changes with local residents.</p>	<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 the Ku-ring-gai Council and the local Member of Parliament. Following community requests, the consultation period was extended by one week to Friday 5 October 2018.</p> <p>Roads and Maritime’s Facebook page featured two posts in September 2018 on the consultation, 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 Member for Ku-ring-gai.</p> <p>A project webpage that included an online consultation map and frequently asked questions was published 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>Following the design change for the intersection of the Pacific Highway at Redleaf Avenue and Coonanbarra Road, we met with the local council and schools to discuss further.</p> <p>For information about the Roads and Maritime consultation process please visit Community engagement page at rms.nsw.gov.au/about/what-we-do/community-engagement</p>

Pacific Highway intersection upgrades – Feedback summary and Roads and Maritime’s responses for overall Pacific Highway upgrades

Category	Key issues raised	Roads and Maritime response
	There has been no consultation with Ku-ring-gai Council.	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 road upgrade. We will continue to consult with council as this proposal progresses.
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>rms.nsw.gov.au/documents/projects/sydney-north/pac-hwy-clearway-wahroonga-to-pymble/pac-hwy-clearway-engagement-report-2018-06.pdf</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>rms.nsw.gov.au/projects/sydney-north/pac-hwy-clearway-wahroonga-to-pymble/index.html</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>

Pacific Highway intersection upgrades – Feedback summary and Roads and Maritime’s responses for overall Pacific Highway upgrades

Category	Key issues raised	Roads and Maritime response
	<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>	<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 the upgrade and are considered out of scope for this project.</p>
	<p>Add / remove tidal flow to the Pacific Highway.</p>	<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>Consideration of tidal flow is not part of the upgrades and is considered out of scope for this project.</p>
<p>Out of scope (Continued)</p>	<p>Add pavement lights to the Pacific Highway.</p>	<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>Consideration of pavement lights is not part of the upgrades and is considered out of scope for this project.</p>
	<p>Add more bike paths along the Pacific Highway.</p>	<p>The purpose of this consultation was to seek feedback on the proposed Pacific Highway upgrades between Wahroonga and Turramurra.</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>

Pacific Highway intersection upgrades – Feedback summary and Roads and Maritime’s responses for overall Pacific Highway upgrades

Category	Key issues raised	Roads and Maritime response
	<p>Will the proposal change the traffic light timings at any of the intersections to assist with traffic flow?</p>	<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>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. The new traffic lights at Redleaf Avenue will coordinate with this system.</p>
	<p>Put traffic lights on the Rohini Street pedestrian crossing.</p>	<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>Consideration of the Rohini Street intersection and pedestrian crossing is not part of the upgrade and is considered out of scope for this project.</p>
<p>Out of scope (Continued)</p>	<p>Add lollypop men/crossing guards at heavily used pedestrian crossings.</p>	<p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along the Pacific Highway between Wahroonga and Turramurra.</p>
	<p>Add Tokyo traffic controls to pedestrian crossings.</p>	<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. Roads and Maritime strongly encourages pedestrians to use the traffic lights to cross the Pacific Highway at all times.</p>

Pacific Highway intersection upgrades – Feedback summary and Roads and Maritime’s responses for overall Pacific Highway upgrades

Category	Key issues raised	Roads and Maritime response
	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 Turramurra and Wahroonga.</p> <p>Pymble Bridge is not part of this upgrade 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 Turramurra and Wahroonga.</p> <p>Toll additions are not part of this upgrade 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 Turramurra and Wahroonga.</p> <p>Adding underpasses/overpasses is not part of this upgrade and is considered out of scope for this project.</p>

Pacific Highway intersection upgrades – Feedback summary and Roads and Maritime’s responses for overall Pacific Highway 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 upgrades shows that the additional northbound through lane on the Pacific Highway would reduce traffic delays at the upgraded intersections, 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	<p>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.</p> <p>Separated lanes needs to be long enough so that:</p> <ul style="list-style-type: none"> (a) Left-turning traffic is not impeded; and (b) Waiting right-turning traffic does not spill into the lanes going straight on, and thus cause this traffic to bank up. 	Thank you for this suggestion. We will pass your input on to Roads and Maritime's Network Safety team.

Pacific Highway intersection upgrades – Feedback summary and Roads and Maritime’s responses for overall Pacific Highway 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 upgrades 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 2: Feedback summary and Roads and Maritime’s responses for overall Pacific Highway upgrades

Pacific Highway at Coonanbarra Road and Redleaf Avenue intersections		
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 responses, along with the proposal's aims and design requirements, we have updated the design of the proposed upgrades to the intersection of the Pacific Highway at Coonanbarra Road and Redleaf Avenue and will move forward with this design; see Section 4 and Figure 4 for the new designs for the intersections.</p> <p>The combined upgrades are estimated to provide significant travel time savings in the northbound PM peak. The estimated time savings could reach up to 3 minutes and 23 seconds in 2027 PM peak for road users traveling northbound on the Pacific Highway between Wahroonga and Turramurra. This will ease congestion along the Pacific Highway in this area and benefit all who use the highway.</p> <p>The proposed upgrades will also improve safety for motorists and the local community.</p>
Install traffic lights the Pacific Highway and Redleaf Avenue intersection	Put traffic lights at the intersection to allow for traffic turning right into Redleaf Avenue.	We have listened to community feedback, and have amended the proposal to include traffic lights at the intersection of the Pacific Highway and Redleaf Avenue. The traffic lights will include a right turn arrow for motorists on the Pacific Highway to access Redleaf Avenue.
	Move traffic lights at Coonanbarra Road to Redleaf Avenue and make Coonanbarra Road left in left out onto the Pacific Highway.	

Pacific Highway at Coonanbarra Road and Redleaf Avenue intersections		
Category	Key issues raised	Roads and Maritime Response
	<p>Move traffic lights at Coonanbarra Road to Redleaf Avenue and make Ada Avenue left out onto the Pacific Highway.</p>	<p>Removing the traffic lights at Coonanbarra Road would cut off access to residences and schools on the western side of the Pacific Highway from the Wahroonga Town Centre on the eastern side. This change would require all traffic currently crossing the Pacific Highway to turn onto the highway before being able to cross. This would negatively impact traffic travelling along the Pacific Highway. It would also reduce the local community's access.</p> <p>The added traffic lights at Redleaf Avenue will be coordinated with the lights at Coonanbarra Road and Ada Avenue so that traffic delays are minimised.</p> <p>We investigated changes to Ada Avenue as a part of this work, but the impact to private properties and the need for utility relocations means this is unfeasible.</p>

Pacific Highway at Coonanbarra Road and Redleaf Avenue intersections

Category	Key issues raised	Roads and Maritime Response
Redleaf Avenue access onto the Pacific Highway northbound	Retain access to the Pacific Highway northbound from Redleaf Avenue.	<p>We have listened to community feedback and have amended the proposal to include traffic lights at the intersection of Pacific Highway and Redleaf Avenue. The traffic lights will include a right turn arrow to assist motorists on the Pacific Highway accessing Redleaf Avenue.</p> <p>We are banning all right turns from Redleaf Avenue onto the Pacific Highway. The right turn access from Coonanbarra Road onto the Pacific Highway will be retained as it is (during off peak times and weekends) as part of this proposal.</p> <p>Traffic count investigations showed 25 per cent of motorists turning right onto the Pacific Highway during permitted times exited from Redleaf Avenue and 75 per cent from Coonanbarra Road.</p> <p>We investigated the impacts on motorists of banning all right turns from Redleaf Avenue onto the Pacific Highway. We found:</p> <ul style="list-style-type: none"> • motorists rerouted to Coonanbarra Road are estimated to travel the same distance compared to the current Redleaf Avenue option • rerouted motorists are estimated to travel up to 100 seconds more than the current Redleaf Avenue option. <p>Based on these investigations, we are proposing removing access to the Pacific Highway northbound from Redleaf Avenue.</p>
Redleaf Avenue access onto the Pacific Highway southbound	<p>Retain access to the Pacific Highway southbound from Redleaf Avenue.</p> <p>The left turn lane should remain a slip lane because it is easier to access Pacific Highway.</p> <p>The left turn lane should remain a slip lane because congestion will increase on Redleaf Avenue.</p>	<p>We have listened to community feedback and have amended the proposal to include traffic lights at the intersection of Pacific Highway and Redleaf Avenue. The traffic lights will include a right turn arrow for motorists on the Pacific Highway wanting to turn onto Redleaf Avenue.</p> <p>The current slip lane arrangement from Redleaf Avenue onto the Pacific Highway does not meet current standards and is not</p>

Pacific Highway at Coonanbarra Road and Redleaf Avenue intersections		
Category	Key issues raised	Roads and Maritime Response
	Keep as slip lane because the proposed intersection arrangement is more dangerous.	<p>considered safe, particularly for drivers not familiar with the intersection.</p> <p>To improve safety we will install traffic lights at this intersection.</p> <p>We are also proposing to build second left turn lane from Redleaf Avenue onto the Pacific Highway that will help maintain traffic flow for motorists.</p>
Pedestrian refuge/island at Redleaf Avenue	Keep the traffic island as it is.	<p>We have listened to community feedback and have amended the proposal to include traffic lights at the intersection of the Pacific Highway and Redleaf Avenue to improve safety for motorists crossing the highway. We are also upgrading ramps at the intersection to make them accessible for all and including signals for pedestrians crossing the Pacific Highway and Redleaf Avenue for improved pedestrian safety.</p> <p>We understand that most pedestrians use the zebra crossing located about 120 metres away from the intersection on Redleaf Avenue. It is Roads and Maritime policy for any intersection improvement to include a crossing for pedestrians to safely cross busy roads.</p>
	No need to change the refuge because it is not regularly used.	
	Most pedestrian traffic occurs north of this refuge.	

Pacific Highway at Coonanbarra Road and Redleaf Avenue intersections		
Category	Key issues raised	Roads and Maritime Response
Right turn lane into Redleaf Avenue from the Pacific Highway	Extend the right turn lane into Redleaf Avenue to remove vehicles from blocking Pacific Highway through traffic.	<p>We listened to community feedback and investigated extending the right turn lane into Redleaf Avenue from the Pacific Highway. To extend the right turn lane on the Pacific Highway into Redleaf Avenue, we would need to acquire more property which would make the project unfeasible.</p> <p>The traffic modelling has shown the existing right turn bay is sufficient for the projected traffic 95 per cent of the time. This modelling considered additional vehicles that will use the intersection after all right turns are banned from the Pacific Highway onto Coonanbarra Road.</p>
	Extend the right turn lane into Redleaf Avenue for school traffic.	
	Extend right 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.	<p>As a part of this intersection upgrade we are banning all right turns into Coonanbarra Road from the Pacific Highway.</p> <p>Turning right from the Pacific Highway onto Coonanbarra Road is not safe. Roads and Maritime is taking steps to stop such risky behaviours on our roads.</p> <p>According to traffic counts in March 2017, only a small number of</p>
	Removing access to Coonanbarra Road will make the traffic conditions worse in the shopping area.	
	Banning the right turns onto Coonanbarra Road at this intersection will add to the Redleaf Avenue traffic.	

Pacific Highway at Coonanbarra Road and Redleaf Avenue intersections

Category	Key issues raised	Roads and Maritime Response
	<p>Right turn ban at Coonanbarra Road will allow less traffic from the Pacific Highway to enter at Redleaf Avenue.</p> <p>Add a green arrow for traffic from Coonanbarra Road to enter the Pacific Highway southbound.</p> <p>Remove peak right turn bans onto the Pacific Highway northbound from Coonanbarra Road.</p>	<p>vehicles turned right into Coonanbarra Road from the Pacific Highway during AM and PM peaks (23 vehicles/hour in the AM peak and 15 vehicles/hour in the PM peak).</p> <p>Motorists will still be able to turn right at Redleaf Avenue, after right turns into Coonanbarra Road are banned. This will not result in a large increase in the number of vehicles turning right from the Pacific Highway into Redleaf Avenue.</p> <p>The traffic modelling has shown the existing right turn bay is sufficient for the projected traffic 95 per cent of the time. This modelling considered additional vehicles that will use the intersection after all right turns are banned from the Pacific Highway onto Coonanbarra Road.</p> <p>Removing the peak time right turn ban from Coonanbarra Road would impact the traffic flow, causing delays for motorists on the Pacific Highway. It goes against the aims of the proposal and instead we will be banning all right hand turns from the Pacific Highway into Coonanbarra Road.</p>
Raised median	Do not raise the medians.	There are already raised medians at these intersections. We are increasing the size of the existing medians here to improve traffic flow and safety.
Out of scope	<p>Do not remove the Pacific Highway southbound access from Ada Avenue.</p> <p>Add a signal protecting the Pacific Highway access from Ada Avenue.</p>	<p>Roads and Maritime is not changing access to the Pacific Highway from Ada Avenue.</p> <p>The purpose of this consultation was to seek feedback on the proposed intersection upgrades along Pacific Highway between Turramurra and Wahroonga.</p> <p>Roads and Maritime is currently not considering changing the configuration of traffic lights affecting Ada Avenue.</p>

Pacific Highway at Coonanbarra Road and Redleaf Avenue intersections		
Category	Key issues raised	Roads and Maritime Response
	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 Turramurra 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 Ku-ring-gai Council for consideration.</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 Turramurra and Wahroonga.</p> <p>Illoura Avenue, Railway Avenue and Redleaf Avenue are local roads under the care 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>
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. We have passed on your suggestion to the appropriate team in Roads and Maritime for consideration in the future.</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. We have passed on your suggestion to the appropriate team in Roads and Maritime for consideration in the future.</p>

Pacific Highway at Coonanbarra Road and Redleaf Avenue intersections

Category	Key issues raised	Roads and Maritime Response
	<p>Redleaf Avenue has traffic from the shopping village. Consider improvements to fix this problem.</p>	<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>The current slip lane arrangement from Redleaf Avenue onto the Pacific Highway does not meet current standards and is not considered safe, particularly for drivers not familiar with the intersection.</p> <p>To improve safety we will install traffic lights at this intersection.</p> <p>We are also proposing to build second left turn lane from Redleaf Avenue onto the Pacific Highway that will help maintain traffic flow for motorists.</p>
	<p>Ban parking on Coonanbarra Road.</p>	<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>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>
<p>Out of scope (continued)</p>	<p>Add parking meters to streets near the shopping village areas.</p>	<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>Ku-ring-gai Council is responsible for parking restrictions on local roads near the shopping village. We have passed on your comments to them for their consideration.</p>

Pacific Highway at Coonanbarra Road and Redleaf Avenue intersections		
Category	Key issues raised	Roads and Maritime Response
	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>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>

Table 3: Feedback summary and Roads and Maritime’s responses for the Pacific Highway at Coonanbarra Road and Redleaf Avenue intersections

4. Decision

Roads and Maritime would like to thank the community and stakeholders for considering the Pacific Highway proposal at Coonanbarra Road and Redleaf Avenue intersections and everyone who took the time to provide feedback.

After considering all responses, along with the proposal's aims and design requirements, we have updated the design for the intersection of the Pacific Highway at Coonanbarra Road and Redleaf Avenue and will progress with this updated design. The new design includes:

- widening on the northbound side of the Pacific Highway - north and south of Redleaf Avenue - to provide three continuous northbound through lanes
- adding traffic signals at the Pacific Highway and Redleaf Avenue intersection to improve motorist safety
- maintaining the right turn lane from the Pacific Highway northbound onto Redleaf Avenue to help traffic flow
- banning the right turn from the Pacific Highway northbound into Coonanbarra Road to improve safety and traffic flow
- extending the peak hour right turn ban to a full time ban from Redleaf Avenue onto the Pacific Highway
- widening the raised median on the Pacific Highway northbound - south of Redleaf Avenue - to improve road curve and lane alignment
- adding a second southbound turning lane from Redleaf Avenue onto the Pacific Highway to improve traffic flow and safety
- providing a signalised pedestrian island on Redleaf Avenue for pedestrian safety.
- adding two pedestrian crossings at the intersection of the Pacific Highway and Redleaf Avenue for pedestrian safety
- installing a new drainage network that has the capacity to remove surface water run-off from the widened road in the area, reducing the likelihood of excess surface water spilling over onto the Highway, potentially creating dangerous road conditions.

View the upgraded design in Figure 4 below.

Pacific Highway at Coonanbarra Road and Redleaf Avenue

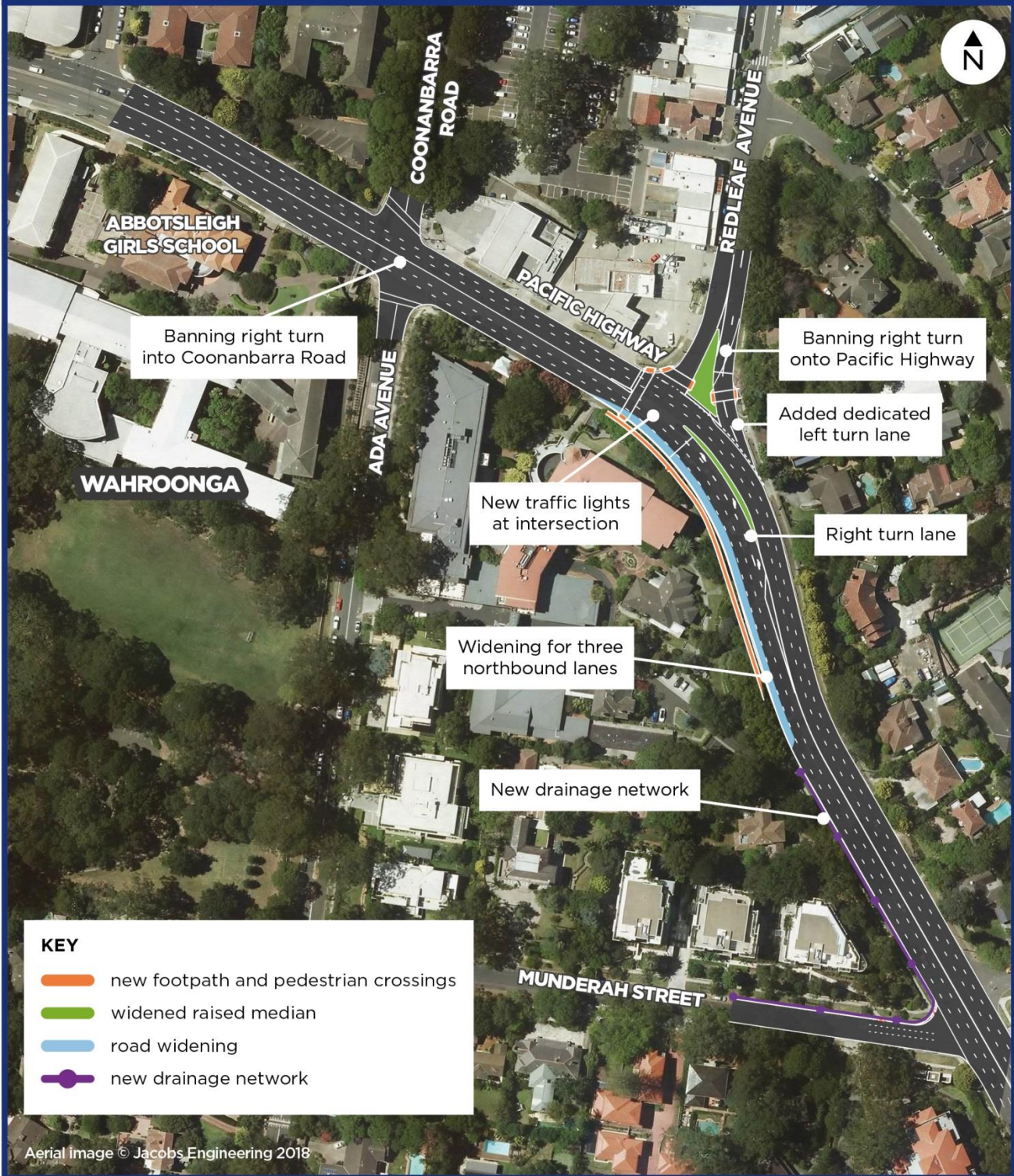


Figure 4: Upgraded design of intersections of Pacific Highway at Coonanbarra Road and Redleaf Avenue, Wahroonga

5. Next steps

Roads and Maritime will continue to finalise the design and environmental assessment for the intersection upgrades of the Pacific Highway at Redleaf Avenue and Coonanbarra Road.

The REF for this project will be published on the Roads and Maritime website at rms.work/t2w

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

6. Appendices

Appendix A – ‘Have your say’ letter September 2018



Pacific Highway upgrades between Turrumurra and Wahroonga

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 Wahroonga.



Pacific Highway at Coonanbarra Road and Redleaf Avenue, Wahroonga

Why does Pacific Highway between Turrumurra and Wahroonga need upgrading?

Currently, motorists experience heavy congestion, slow travel times and delays when travelling between Turrumurra and Wahroonga, 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 Coonanbarra 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 Wahroonga. 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 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 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-gal Avenue, Turrumurra and Coonanbarra Avenue, Wahroonga from March to June 2018.

This work identified potential Pacific Highway upgrade projects at:

- Pacific Highway and Finlay Road, Warriewee/Turrumurra
- Pacific Highway and Fox Valley Road, Wahroonga/Warriewee
- Pacific Highway at Redleaf Avenue and Coonanbarra Road, Wahroonga.

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 Coonanbarra 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 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@rms.nsw.gov.au.

What is happening now?

We are now seeking community feedback on potential Pacific Highway upgrades, between Turrumurra and Wahroonga. 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: rms.nsw.gov.au/projects/sydney-north/pacific-hwy-turrumurra-wahroonga or contact the Pinch Point project team on 1800 572 004 or pinchpoint@rms.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, More 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 Wahroonga and Pymble, and between Chateauwood and Artarmon.

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@rms.nsw.gov.au

The Pinch Point Program project team
Roads and Maritime Services
PO Box 973, Parramatta NSW 2124

rms.nsw.gov.au/projects/sydney-north/pacific-hwy-turrumurra-wahroonga

If you need help understanding this information, please contact the Translating and Interpreting Service on 133 450 and ask them to call us on 1800 572 004.



September 2018

RMS 18/180

Pacific Highway and Maritime Services ("RMS") is subject to the Freedom of Information (Information Protection Act 2009) ("IP Act") which requires that we comply with the Information Privacy Principles set out in the IP Act. Information or correspondence is released for the sole purpose of meeting the delivery of the project. Information or correspondence, may be published in subsequent documents unless a clear indication is given in the correspondence that all or part of that information is not to be published. Other than RMS we will only disclose your personal information, without your consent, if authorised by the law. Your personal information will be held by RMS at 27 Jaggan Street, Parramatta. The feedback rights to access and correct the information you have provided is not a contract.





Three northbound lanes

Easing congestion

Improving safety

Improving traffic flow

Improving safety

Improving road alignment

roads and maritime services



Improving traffic flow

Improving road alignment

Improving safety

Improving traffic flow

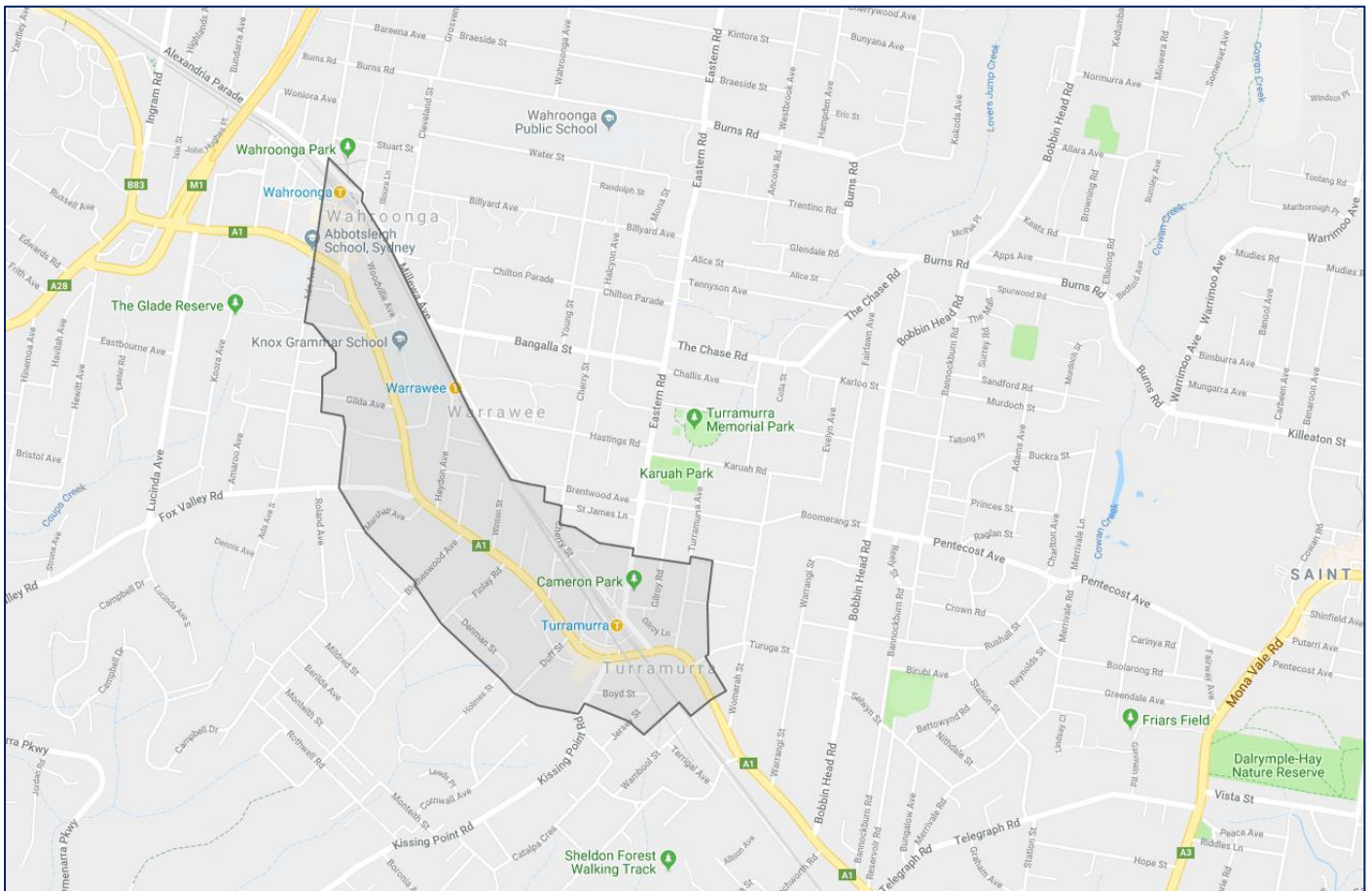
Improving safety

Improving road alignment

pacific-highway-upgrades-between-turramurra-and-wahroonga

Found at: rms.nsw.gov.au/documents/projects/sydney-north/pacific-hwy-turramurra-wahroonga/pacific-hwy-turramurra-wahroonga-project-update-september-2018.pdf

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

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

1,680 Post Clicks

240 Photo views	551 Link clicks	889 Other Clicks
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NEGATIVE FEEDBACK


5 Hide Post	0 Hide All Posts
0 Report as Spam	0 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

4 Like	4 On post	0 On shares
1 Wow	1 On post	0 On shares
2 Comments	2 On Post	0 On Shares
0 Shares	0 On Post	0 On Shares

97 Post Clicks

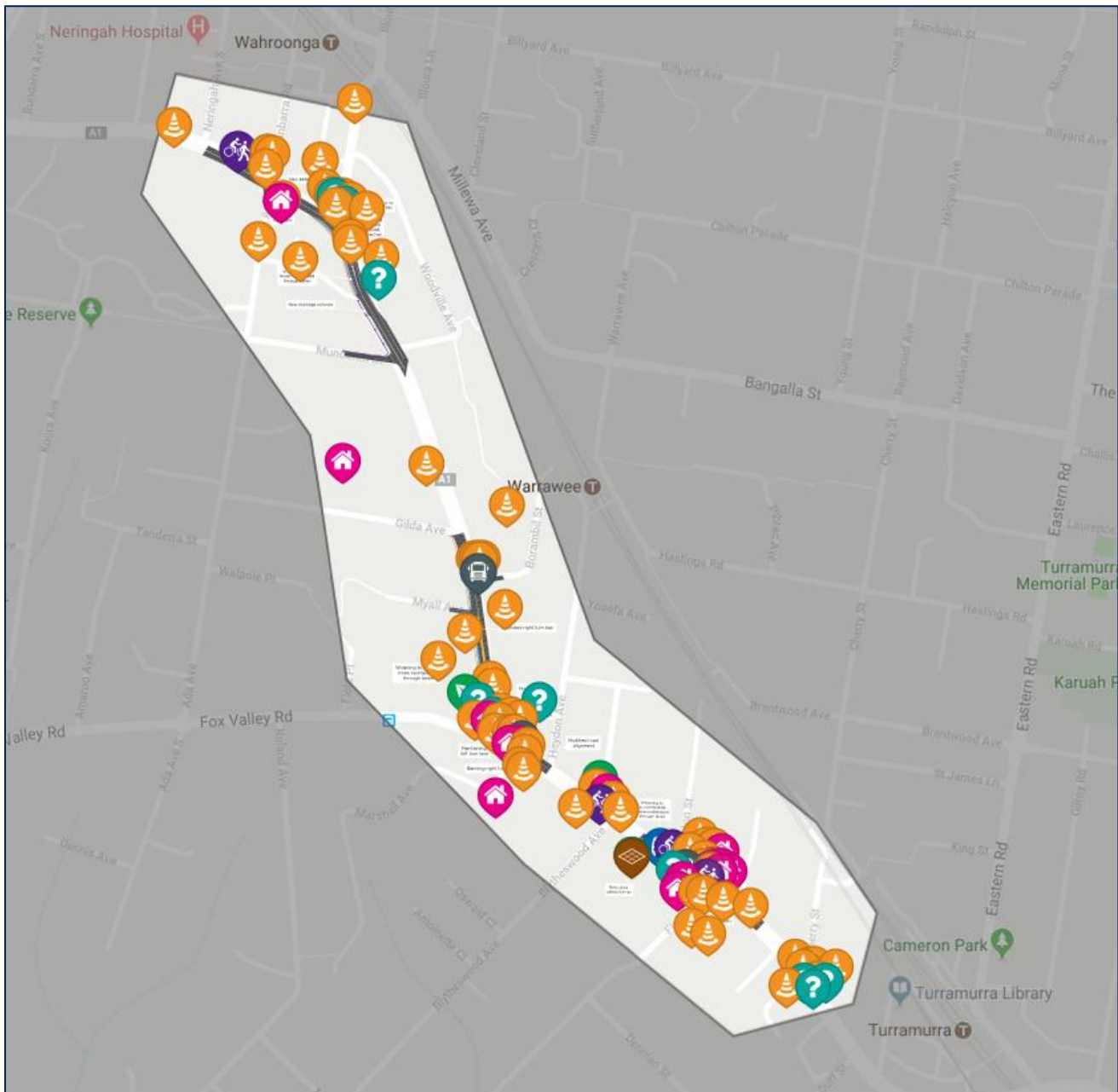
30 Photo views	17 Link clicks	50 Other Clicks
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NEGATIVE FEEDBACK

2 Hide Post	0 Hide All Posts
0 Report as Spam	0 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: rms.nsw.gov.au/projects/sydney-north/pacific-hwy-turramurra-wahroonga/consultation-map.html



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.

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.

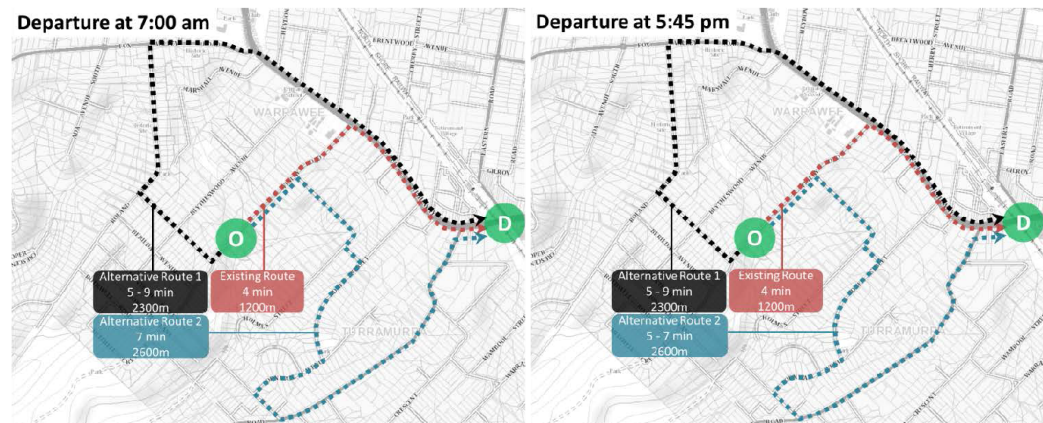
The crash history data for the Finlay Road intersection in the five-year period between 1 January 2011 and 31 December 2016 shows that there were five reported crashes at the intersection. The introduction of the right turn bans are expected to reduce crash rates at this intersection, particularly for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

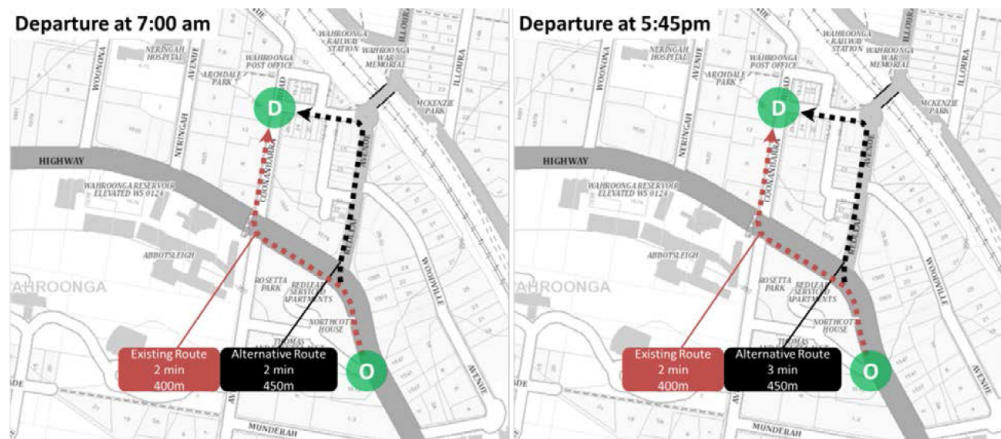
Currently the right turn movement from the Pacific Highway into Coonanbarra Road is an unprotected filter movement and considered unsafe.

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 or contact the Pinch Point project team on 1800 572 004 (during business hours) or 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.



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

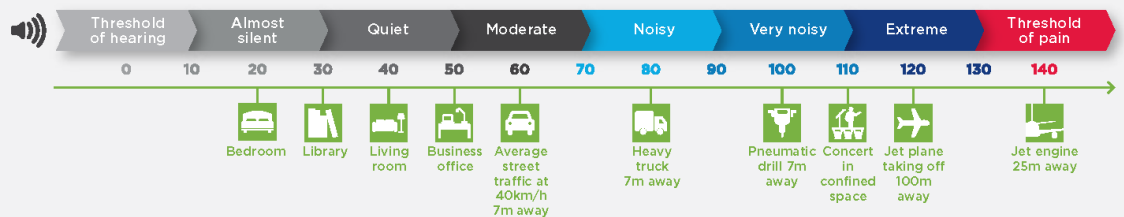
Work is carried out during standard construction hours (from 7am to 6pm Monday to Friday and from 8am to 1pm on Saturdays) wherever possible. However, 'out of hours' work, (at night and early in the morning) may also be required where it is necessary to close roads or traffic lanes for major construction 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.



Sound levels in decibels (approximate)



September 2018
RMS 15.221

Privacy Roads and Maritime Services ("RMS") is subject to the Privacy and Personal Information Protection Act 1998 ("PIIP Act") which requires that we comply with the Information Privacy Principles set out in the PIIP Act. All information in correspondence is collected for the sole purpose of assisting in the delivery this project. The information received, including names and addresses of respondents, may be published in subsequent documents unless a clear indication is given in the correspondence that all or part of that information is not to be published. Otherwise RMS will only disclose your personal information, without your consent, if authorised by the law. Your personal information will be held by RMS at 266 King St Newcastle NSW 2300. You have the right to access and correct the information if you believe that it is incorrect.

Pacific Highway upgrades between Turrumurra and Wahroonga

Community Consultation Report

Roads and Maritime Services | April 2019





rms.nsw.gov.au/pinchpoints



1800 572 004



Customer feedback
Roads and Maritime
Locked Bag 928
North Sydney NSW 2059

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June 2019

Pacific Highway upgrades between Turrumurra and Wahroonga



Pacific Highway and Redleaf Avenue, Wahroonga: Three southbound lanes and two northbound lanes with a dedicated right turning lane

The NSW Government is working to ease congestion, increase safety and improve travel times on the Pacific Highway between Turrumurra and Wahroonga as part of its \$300 million Urban Roads Pinch Points Program.

Each day 60,000 motorists use the Pacific Highway between Turrumurra and Wahroonga. Currently motorists experience heavy congestion, slow travel times and delays, particularly during afternoon peak.

Roads and Maritime Services asked the community to provide feedback on our proposal to widen the Pacific Highway to three continuous northbound lanes, while maintaining three continuous southbound lanes at the following Pacific Highway intersections:

- Finlay Road
- Fox Valley Road
- Coonanbarra Road and Redleaf Avenue

Community consultation

Nearly 100 people representing local residents, frequent road users, local schools, , Ku-ring-gai Council, businesses and community groups provided 158 comments via the online consultation map, email, phone calls and letters.

We have responded to all feedback raised by the community in a consultation report, which is available on our website at [rms.work/t2w](https://rms.nsw.gov.au/work/t2w).

rms.nsw.gov.au

What was the feedback?

Key matters raised by the community included:

- 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
- local road access issues from proposed changes
- traffic light location changes on Pacific Highway at Redleaf Avenue
- Pacific Highway access into and from Finlay Road, Marshall Avenue, Borambil Street, Redleaf Avenue, Fox Valley Road and Coonanbarra Road.

We thank everyone for considering the proposal and for the time spent to give us feedback.

What is the decision?

Following feedback from the community and council in September 2018, and considering 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 metres to around 30 metres
- further investigate other options and propose an updated solution for the intersection of Pacific Highway at Coonanbarra Road and Redleaf Avenue. We will keep the community informed of our progress.

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. A new proposal for the intersections at Coonanbarra Road and Redleaf Avenue may result in further time savings.

What happens next?

The consultation report and the Review of Environment Factors (REF) for the two Pacific Highway intersection upgrades (Finlay Road and Fox Valley Road) are available on our website, rms.work/t2w.

We will carry out further detailed engineering design on the two intersection upgrades (Pacific Highway and Finlay Road and Pacific Highway and Fox Valley Road).

The community will be kept informed of our progress investigating a new solution for the intersections on the Pacific Highway at Coonanbarra Road and Redleaf Avenue. A second REF for this intersection will be released later this year.

We will keep the community informed as these projects progress.

Contact us

If you have any further questions, please contact our project manager, Sasha Kovacina, on 1800 572 004 or pinchpoints@rms.nsw.gov.au. For more information on our projects, visit rms.nsw.gov.au.



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.

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1800 572 004



Customer feedback
Roads and Maritime
Locked Bag 928
North Sydney NSW 2059

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