Pacific Highway upgrade through Wyong town centre

Submissions Report

February 2016

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Roads and Maritime Services

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Executive summary

Roads and Maritime Services proposes to upgrade around 2.4 kilometres of the Pacific Highway between the intersection with Johnson Road, Tuggerah and about 150 metres north of Cutler Drive, Wyong (the proposal).

The proposal would generally involve the following:

- Widening the Pacific Highway between Johnson Road, Tuggerah and just north of Cutler Drive, Wyong to two lanes in each direction with a central median to separate northbound and southbound traffic
- Replacement of the existing Pacific Highway road bridge over the Wyong River with two new road bridges for northbound and southbound traffic
- A shared path along the highway and on-road cycle lanes in both directions between Johnson Road and Cutler Drive
- Reconfiguration of car parking including provision of an upgraded dedicated rail commuter car park east of Wyong railway station
- A pedestrian refuge to assist crossing of the Pacific Highway, and the partial closure of Bakers Lane to vehicles at the highway
- A new pedestrian bridge connecting the highway to the existing railway station pedestrian overbridge, providing a new western entrance to the station
- Upgrade of highway intersections with McPherson Road, Church Street, Rose Street, Anzac Avenue, North Road and Cutler Drive
- Dedicated bus stops along the highway in both directions and relocation of bus layover facilities to the east of the railway station
- Improved disabled parking and taxi spaces east of the railway station located close to access lifts and stairs
- Improvements to River Road, Panonia Road and South Tacoma Road which include pedestrian footpaths, kerbing and guttering
- Intersection adjustments at River Road, Alison Road, Robley Lane and Apex Park
- Replacement of the Rose Street bridge over the rail line with a longer and wider bridge
- Upgrade of Howarth Street intersections at Rose Street and Warner Avenue
- Demolition and removal of the locally heritage listed former Station Master's Cottage and Warner Shops
- Urban design improvements and landscaping throughout the proposal area, including relocation of existing palm trees along the highway where feasible
- Retaining walls of various heights and locations
- Property adjustments.

The proposal would upgrade the Pacific Highway through Wyong town centre to accommodate current and predicted traffic flows while also improving pedestrian and cyclist safety. The proposal would also slightly reduce flooding impacts upstream of the Wyong River bridge in major storm events, by replacing the existing road bridge with new twin bridges.

A review of environmental factors (REF) was carried out to assess the environmental impacts of the proposal. The REF was placed on public display between 27 October and 27 November 2015.

This REF submissions report summarises the issues raised and provides responses to each issue. A total of 43 written submissions were received in response to the public display of the REF. Submissions were mostly neutral towards, or supportive of, the upgrade proposal.

The main issues raised in submissions related to:

- Alternatives and options considered
- Design
- Statutory planning
- Socio-economic
- Traffic and transport
- Hydrology and flooding
- Non-Aboriginal heritage
- Noise and vibration
- Landscape character and visual impact.

Additional seasonal investigations for microbats were carried out after the display of the REF. The Southern Myotis was observed roosting between concrete blocks in the pylons at the northern end of the Wyong River bridge. It is likely this same species is also roosting in the southern end of the bridge.

Potential impacts would be mitigated through the retention or replacement of microbat roosting habitat by preparing a microbat management plan during detailed design. This would investigate roosting habitat options for microbats (particularly the Southern Myotis) and ways of encouraging bats to move from the existing bridges to the new bridge structures.

As a result of comments received during the display, several changes are proposed:

- Changes to cycle facilities around Wyong railway station
- Changes to parking on Howarth Street southern approach to Warner Avenue
- Staging of works on Panonia Road
- Partial closure of Robley Lane to vehicles from the highway.

These would be incorporated into the proposal during the detailed design phase, in consultation with the relevant stakeholders. No additional mitigation measures would be required.

After consideration of the submissions received during the REF display and additional assessment, some changes have been made to the proposal including changes to proposed safeguards and management measures. Should the proposal be approved to proceed, these (updated) management measures would be incorporated into the detailed design and applied during the construction and operation of the proposal.

In summary, the proposal as described in the REF, including refinements documented in this submissions report, meets the proposal objectives, while minimising environmental impacts and appropriately considering community issues. Although the proposal would still result in environmental impacts, on balance the proposal best meets the proposal objectives and is justified.

Contents

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Appendices

1 Introduction and background

1.1 Purpose

This submissions report relates to the review of environmental factors (REF) prepared for the Pacific Highway upgrade through Wyong town centre (the proposal). This report should be read in conjunction with the REF document.

The REF was placed on public display between 27 October and 27 November 2015. Submissions relating to the proposal and the REF were received by Roads and Maritime Services. This submissions report summarises the issues raised and provides responses to each issue (refer to Section 2), identifies new or revised environmental management measures (refer to Section 3) and describes changes to the proposal since the display of the REF (refer to Section 4).

1.2 The proposal

Roads and Maritime proposes to upgrade around 2.4 kilometres of the Pacific Highway between the intersection with Johnson Road, Tuggerah and about 150 metres north of Cutler Drive, Wyong.

The proposal would generally involve the following:

- Widening the Pacific Highway between Johnson Road, Tuggerah and just north of Cutler Drive, Wyong to two lanes in each direction with a central median to separate northbound and southbound traffic
- Replacement of the existing Pacific Highway road bridge over the Wyong River with two new road bridges for northbound and southbound traffic
- A shared path along the highway and on-road cycle lanes in both directions between Johnson Road and Cutler Drive
- Reconfiguration of car parking including provision of an upgraded dedicated rail commuter car park east of Wyong railway station
- A pedestrian refuge to assist crossing of the Pacific Highway, and the partial closure of Bakers Lane to vehicles at the highway
- A new pedestrian bridge connecting the highway to the existing railway station pedestrian overbridge, providing a new western entrance to the station
- Upgrade of highway intersections with McPherson Road, Church Street, Rose Street, Anzac Avenue, North Road and Cutler Drive
- Dedicated bus stops along the highway in both directions and relocation of bus layover facilities to the east of the railway station
- Improved disabled parking and taxi spaces east of the railway station located close to access lifts and stairs
- Improvements to River Road, Panonia Road and South Tacoma Road which include pedestrian footpaths, kerbing and guttering
- Intersection adjustments at River Road, Alison Road, Robley Lane and Apex Park
- Replacement of the Rose Street bridge over the rail line with a longer and wider bridge
- Upgrade of Howarth Street intersections at Rose Street and Warner Avenue
- Demolition and removal of the locally heritage listed former Station Master's Cottage and Warner Shops

- Urban design improvements and landscaping throughout the proposal area, including relocation of existing palm trees along the highway where feasible
- Retaining walls of various heights and locations
- Property adjustments.

The project update provided in **Appendix B** further details the key features of the proposal.

1.3 REF display and consultation

Roads and Maritime prepared a REF to assess the environmental impacts of the proposal. The REF was exhibited between 27 October and 27 November 2015 at two locations, as detailed in Table 1.1. The REF was also placed on the Roads and Maritime website and made available for download.

The exhibition locations and website link were advertised in the:

- Central Coast Express Advocate (Wyong) on Wednesday 28 October and Wednesday 4 November 2015
- Wyong Regional Chronicle on Wednesday 28 October 2015.

A copy of the advertisement is provided in **Appendix A**.

Project updates inviting feedback were distributed to 4950 properties including residences and businesses in the Wyong area and made available to download from the Roads and Maritime website (refer to **Appendix B**).

In addition to the above public exhibition, a written invitation to comment on the REF and a copy of the project update was sent directly to identified stakeholders and potentially noise affected properties.

Table 1.1 REF display locations

Location	Address
Tuggerah Library	Westfield Tuggerah, 50 Wyong Road, Tuggerah
Wyong Shire Council	2 Hely Street, Wyong

A media release announcing the public display and inviting comments from the community was issued on 29 October 2015 and another reminding the community to provide feedback was issued on 12 November 2015 (refer to **Appendix C**).

Drop-in information sessions were held on Thursday 5 November 2015 between 10am–2pm and 4pm–8pm and Saturday 7 November 2015 between 10am–1pm at the Wyong Motor Registry Conference Centre, Corner Hely Street and Anzac Avenue, Wyong.

2 Response to issues

Roads and Maritime received 43 submissions, accepted up until 27 November 2015. **Table 2.1** lists the respondents and each respondent's allocated submission number. The table also indicates where the issues from each submission have been addressed in this report.

Table 2.1 Respondents

Respondent	Submission No.	Section number where issue(s) addressed
Individual	1	2.2, 2.6, 2.7
Red Bus Services	2	2.3.2, 2.3.3, 2.7
Business owner	3	2.5
Business owner	4	2.3.1, 2.5
Individual	5	2.2, 2.7, 2.8
Individual	6	2.5, 2.6
Individual	7	2.2, 2.3.1, 2.6
Individual	8	2.6, 2.10
Individual	9	2.2
Individual	10	2.3.1, 2.10
Individual	11	2.3.1, 2.8
NSW Fire and Rescue	12	2.3.1, 2.3.3
Individual	13	2.3.2, 2.5, 2.6, 2.8
Individual	14	2.2, 2.6
Individual	15	2.10
Individual	16	2.3.1, 2.6
Busways Group Pty Ltd	17	2.6
Individual	18	2.6
Individual	19	2.3.1, 2.6, 2.9
Individual	20	2.3.3, 2.6, 2.8
Individual	21	2.2, 2.3.1, 2.6
Individual	22	2.3.1, 2.3.2, 2.8
Individual	23	2.3.1
Individual	24	2.6
Wyong Chamber of Commerce	25	2.3.1, 2.5, 2.8, 2.10
Business owner	26	2.5
Individual	27	2.2, 2.3.1, 2.6, 2.8
Individual	28	2.3.1, 2.3.2, 2.7, 2.8, 2.10
Community Group	29	2.3.1, 2.5
Individual	30	2.3.1, 2.6

Respondent	Submission No.	Section number where issue(s) addressed
Business owner	31	2.6, 2.10
Individual	32	2.3.1, 2.5
Individual	33	2.3.3
Individual	34	2.5, 2.10
Individual	35	2.5
Community Group	36	2.2, 2.4, 2.6, 2.8
Individual	37	2.5
Individual	38	2.5
Individual	39	2.5
Individual	40	2.5
Individual	41	2.5, 2.6,
Wyong Shire Council	42	2.3.1, 2.3.2, 2.5, 2.6
Individual	43	2.5

2.1 Overview of issues raised

A total of 43 submissions were received in response to the exhibition of the environmental assessment comprising of 32 from the community, five from agencies or organisations, four from local businesses and two from community groups.

Each submission has been examined individually to understand the issues being raised. The issues raised in each submission have been extracted and collated, and corresponding responses to the issues have been provided. Where similar issues have been raised in different submissions, only one response has been provided. The issues raised and Roads and Maritime's response to these issues forms the basis of this chapter.

Sixteen respondents indicated support for the proposal, five respondents stated they were unsupportive and 22 respondents did not specifically state their position on the proposal.

The issues raised in submissions related to nine categories:

- Alternatives and options considered
- Design
- Statutory planning
- Socio-economic
- Traffic and transport
- Hydrology and flooding
- Non-Aboriginal heritage
- Noise and vibration
- Landscape character and visual impact.

2.2 Issue 1 – Alternatives and options considered

Submission numbers

1, 5, 7, 9, 14, 21, 27, 36

Issue description

Respondents raised concerns about the options considered and the selection of the preferred option. The issues are summarised as follows:

1. Would rather corridor options to bypass the town to the east or west, rather than the central option.
2. Felt the preferred alignment option should have included a split carriageway, tunnel or overpass through the town centre rather than a widening to take traffic pressures off the business district.
3. Requested ramps at Alison Road to connect to the M1 Pacific Motorway.
4. Suggested changes to east-west access by reconfiguring either Anzac Avenue or Rose Street to rise over the Pacific Highway and railway and re-join at alternative local streets.
5. Suggested further widening the road corridor to provide an express lane for through traffic so they don't have to stop at intersections and traffic lights.
6. Suggested alternative uses of adjacent local streets. One respondent suggested using River Road as the main access route to the town centre with a new single bridge over Wyong River connecting directly to it. Another respondent requested an additional local road connection over the river, between Gavenlock Road and Hope Street for local traffic.
7. Suggested congestion at Wyong could be addressed through traffic management solutions rather than the proposed widening of the Pacific Highway.

Response

1. The existing highway corridor alignment through Wyong was selected as the best option after three traffic studies demonstrated about 60 per cent of all traffic on the highway has an origin, destination or stop within the Wyong town centre. Section 2.4 and 2.5 of the REF provides details on the options selection process and the reasons for selecting the central corridor option.
2. Assessments carried out indicate the expected growth of demand in the area would not warrant split carriageways, flyovers, tunnels or underpasses. The Minister for Roads confirmed the widen highway option as the preferred option in March 2013 following an independent review and public consultation process completed by Evans and Peck. Section 2.4 and 2.5 of the REF provides details on the options selection and the reasons for widening the existing highway over other options.
3. Ramps connecting the M1 Pacific Motorway with Alison Road have been suggested in the past, however are outside the scope of the proposal. Roads and Maritime has substantial concerns about the implications of any motorway ramps at Alison Road which include:
    - Impacts on the efficient operation of the M1 Pacific Motorway, which forms part of the National Land Transport Network
    - Traffic congestion on Anzac Avenue and Alison Road through the town centre
    - A high volume of additional traffic using Alison Road, a local road, which passes churches, schools and the TAFE campus

- Impacts on Wyong Shire Council plans for Anzac Avenue.

4. The height difference between local roads and the Pacific Highway in addition to clearance heights required to cross the railway make alternative options less feasible than upgrading the existing Rose Street bridge. The proposal improves east-west connectivity by upgrading the existing roads, bridges and intersections while minimising impacts to properties, businesses and heritage buildings.
5. Installation of traffic light express lanes would require a much wider footprint which would impact on both the rail corridor and other buildings in the town centre. Pedestrian crossings would also need to be provided, requiring bypassing traffic to regularly stop for pedestrians.
6. The requests relate to local roads outside the project area which are under the control of Wyong Shire Council and therefore outside the scope of the proposal. River Road is not suitable for primary access to the town centre due to risk of flood closures and would not be consistent with Roads and Maritime's road planning guidelines or with Wyong Shire Council's strategic plans.
7. Traffic and transport modelling undertaken for the proposal has demonstrated an upgrade is warranted and existing and future traffic flows could not be addressed through traffic management solutions alone. Section 2.4 of the REF provides details on the options selection and refinement process. The Traffic and Transport Assessment is provided as Appendix M to the REF.

2.3 Issue 2 – Description of proposal

2.3.1 Design

Submission numbers

4, 7, 10, 11, 12, 16, 19, 21, 22, 23, 25, 27, 28, 29, 30, 32, 42

Issue description

Respondents raised the following issues with aspects of the design:

1. Expressed support for specific elements of the proposal such as the proposed parking arrangements, the provision of four lanes over Rose Street bridge and the roundabout at Warner Avenue.
2. Raised concerns about the pedestrian refuge crossing near Alison Road and the safety issues this may create, particularly for the young and the elderly. Some suggested traffic lights be included at the refuge while others suggested pedestrian fencing to restrict crossing locations, another was concerned the proximity of 'drop off' (kiss and ride) spaces to the refuge may pose a crash risk for pedestrians as vehicles pull out into traffic.
3. A number of respondents suggested the Panonia and River roads intersection should have traffic lights or a roundabout to allow right hand turn movements onto the Pacific Highway. Concerns regarding emergency vehicle access at this intersection were also raised.
4. Widening of a driveway requested for ease of heavy vehicle access into commercial premises.
5. Requested extension of the project area further east on Panonia Road to upgrade Byron Street to improve sight lines at the intersection.
6. Emergency services highlighted provision needs to be made during construction and operation for emergency vehicles to access the Pacific Highway quickly and effectively.

7. Requested clarification of the direction of the left turning movement at Alison Road and the Pacific Highway.
8. Requested clarification the right turn onto South Tacoma Road is included in the design.
9. Questioned the purpose of the T-intersection between North Road and Cutler Drive to understand if it was intended for future links to Ingram Street or Owen Avenue.
10. Queried accuracy of the proposal visualisation on the Roads and Maritime website and requested a higher level of design detail, such as cross sections, to check the design.
11. Suggested the rail pedestrian bridge should be moved south to align with Church Street.
12. Requested the median light poles through the town centre have brackets to hang flags and CCTV cameras, similar to the poles further south.
13. Concerned the route from the proposed expanded commuter car park at Rose Street to the Wyong railway station is dangerous for pedestrians (particularly the young and elderly) as commuters are required to cross two roads. Also suggested the Howarth Street vehicle entrance to the Rose Street commuter car park may be better located at the racecourse end of the car park to separate pedestrians from vehicles entering the car park.
14. Provisions for cyclists were requested such as signage, on-road to off-road ramps, the continuation of shared path over Rose Street bridge and provision of bicycle storage facilities at the station. It was suggested cycle facilities should be located close to the transport interchange to encourage active transport.
15. Concerned about interactions between cyclists and pedestrians along the shared path around the new rail pedestrian bridge, the bus stop and the signalised pedestrian crossings through the town centre, particularly near the station.
16. Queried if the existing wire barrier separation of cycle lanes used between Tuggerah railway station and McPherson Road would be extended further north in this proposal.
17. Requested ramps at both ends of the rail pedestrian bridge (eastern end) in addition to the existing lifts and stairs.
18. Concerned about the geometry of the proposed roundabout at McPherson Road and the Pacific Highway.
19. Queried the likely connection of the proposed shared path to the existing shared path along River Road.
20. Concerned the design may encourage pedestrians to cross the highway between the bus bays south of Church Street rather than at the traffic lights/crossings.
21. Concerned that there are locations that do not guide pedestrians and cyclists to suitable locations for crossing the highway or local roads at the end of pathway connections. This could pose safety issues particularly on the northern side of McPherson Road, South Tacoma Road, River Road and Panonia Road.

Response

1. The supporting comments are noted.
2. Substantial congestion would be created through the town centre during peak times if the pedestrian refuge was signalised. An overhead pedestrian bridge would create additional heritage building and visual amenity impacts that cannot be justified by the pedestrian demand.

The refuge has been provided at the preferred pedestrian crossing location and would be aided by traffic gaps from the signalised Rose Street and Church Street intersections. This type of treatment has worked successfully at similar locations such as Barrenjoey Road, Newport and at multiple locations on the Great Western Highway at Faulconbridge. Opportunities to further improve the refuge design can be explored during detailed design.

3. The location of the rail corridor, available road width, road levels and flooding constraints mean an intersection providing all direction access to the Pacific Highway at River and Panonia roads is not feasible. The revised design provides left in and left out access to the highway and the new roundabout beside the highway would improve access to River Road and Panonia Road. There would be no impact to motorists travelling northbound from Panonia Road or River Road. Motorists travelling southbound would be diverted to Howarth Street and Rose Street to join the highway. Roads and Maritime would continue to engage with emergency services to manage appropriate access for emergency vehicles.
4. The proposal can accommodate the driveway widening at the premises, noting that removal of one parking space on the highway would be required. The change would be made during the next phase of design.
5. Work on local roads past Howarth Street is outside the scope of the proposal and is the responsibility of Wyong Shire Council.
6. The Traffic Management Plans for construction would be required to provide for emergency services access at all times.
7. Alison Road is a one-way road heading west away from highway. Left turn in from the highway is provided but turning right in would not be possible due to the length of the turn bay for the Rose Street intersection. Alternative access is provided via Anzac Avenue, Hely Street and Church Street. Peters Lane and Bakers Lane would also provide access to parking behind the shops on Alison Road. Table 3-3 in the REF details the proposed treatment at all intersections along the proposal.
8. All turning movements are permitted at the new intersection of South Tacoma Road and McPherson Road.
9. This is the relocated access to Apex Park. Roads and Maritime do not plan to link this with local roads in the area.
10. The visualisation was based on an earlier concept design which has since been refined. Indicative cross sections are provided in Section 3 of the REF.
11. The relocation of the rail pedestrian bridge to the south towards Church Street is outside the scope of the proposal but could be considered as part of potential future station redevelopment.
12. The installation of brackets on the light poles was considered in the development of the concept lighting design and would be pursued further in the next phases of the proposal. Opportunities for CCTV would be explored further in the next phases of development in collaboration with Wyong Shire Council, Wyong Region Chamber of Commerce and a specialised security consultant.
13. Access from the Rose Street car park to the railway station has been maximised to the greatest extent possible, and complies with the requirements of the *Disability Discrimination Act 1992*. This would be reviewed further in collaboration with Transport for NSW.

    Entry only was provided at the roundabout to prevent congestion in the area. Relocating the entry would not provide for a turn bay into the car park to accommodate possible queues. The

current design reduces speeds entering the car park and allows for a future boom gate at entry if warranted. A marked pedestrian crossing would be provided across the entrance.

14. The proposal can accommodate the continuation of the shared path over the Rose Street bridge to better connect cyclists with facilities provided at the station. A number of design changes for cyclists have been made at the station (refer to Section 4.1 of this report for additional information). Further opportunities to support active transport would be considered during the next phase of design.
15. The pedestrian and bicycle interactions would be investigated further in detailed design particularly around the rail pedestrian bridge link to the station. It is likely cyclists on the shared path would need to dismount for a short length for the safety of pedestrians entering or exiting the station forecourt at the highway.
16. Bicycle provisions north of Johnson Road would convert to a shared path arrangement with no barrier.
17. This is not part of the scope of this proposal but could be considered by Transport for NSW as part of potential future station redevelopment.
18. The design has been developed to suit the turning paths of B double trucks within current Roads and Maritime design standards. The geometric deflection has been maximised within the constraints of the bridge structure alignment, railway corridor location and vehicle turning requirements. Possible geometric improvements will be investigated during detailed design.
19. Roads and Maritime will work with Wyong Shire Council to integrate the shared path network along River Road.
20. A pedestrian refuge between the bus stops south of Church Street could be considered as part of the next design phase.
21. End of path connections occur at the limit of works, or connect to adjoining pathways where they are already provided. Further consideration can occur in consultation with Wyong Shire Council during detailed design.

2.3.2 Bus facilities

Submission numbers

2, 13, 22, 28, 42

Issue description

Respondents raised the following issues:

1. Requested clarification about the operation of buses in the revised configuration.
2. Questioned the adequacy of the layover arrangements on the eastern side of the station and suggested alternative arrangements.
3. Concerned access to Wyong railway station via the new bus stop arrangements on the eastern side of the station could be problematic.
4. Clarification sought about how buses would be used to replace trains during track work and whether they would be parking on the western side of Howarth Street.
5. Requested no stopping signage on Howarth Street to the south of the Warner Avenue intersection to provide sufficient lane space for buses accessing the eastern side of Wyong railway station.

6. Requested bus stops be upgraded to bus zones on North Road in the vicinity of Aldi supermarket for town route buses accessing the CBD.
7. Requested amenities (such as toilets and meal room) be provided for bus drivers within the layover area as part of the proposal.
8. Requested electronic signage as part of the proposal to advise bus passengers of connecting rail services for enhanced customer experience.
9. Concerned the bus stop at Alison Road completing the 81 or 82 bus services would find it difficult to negotiate a right turn over the bridge from the northbound bus rank and suggested the inclusion of a bus phase traffic signal at the Rose Street intersection for northbound buses to access the layover facility. A respondent also requested a mid-block exit from the eastern facility to re-join Howarth Street, as a shorter route to save time.
10. Requested bus shelters be provided at all bus stops on the Pacific Highway and suitable shelter at the bus/rail interchange.
11. Some respondents questioned why the existing bus interchange is proposed to be removed.
12. Concerned public transport users would need to cross four lanes of traffic at the pedestrian refuge to use the northbound bus, which may deter use of public transport.

Response

1. Buses terminating their service and some northbound and southbound local bus services (Red Bus, Busways and Coastal Liner) would use the eastern bus facility. Highway route buses would use the highway stops near Alison Road. Changes to bus routes and timetables would be coordinated with Transport for NSW and bus operators.
2. The eastern facility was designed to optimise safety for bus drivers, passengers, pedestrians and road users accessing the interchange. The proposal provides three bus stops closer to the railway station and space for up to six buses to layover at the same time. The design fits the narrow width available and completely separates light vehicles from buses and pedestrians which is more suitable than angled bus parking configurations for this space.
3. The proposed widening of the rail corridor has required unavoidable changes to the bus infrastructure at Wyong railway station. The bus layover has been moved to the eastern side of the station to reduce traffic congestion in the town centre and would accommodate routes which are not restricted to the Pacific Highway. Level access would be provided to the station, beside the eastern lift, offering similar walking distance to the existing bus facilities.

   A set down bay would be provided directly outside the lifts on the eastern side of the station specifically for the convenience of the elderly and disabled. Roads and Maritime is working closely with taxi operators to clarify this provision. There would be more spaces for taxis and disabled parking on the eastern side of the station than the current facility.
4. A management strategy is being developed with Transport for NSW and Sydney Trains to address parking for rail replacement buses without the need to remove parking on Howarth Street. To ensure local bus services are not interrupted by planned or emergency rail replacement buses, the rail buses would be corralled in the adjacent light vehicle service lane beside the layover facility. Rail buses would board passengers at the eastern stairs and leave the interchange in the same manner as local bus services do.
5. No stopping signage on Howarth Street to the south of the Warner Avenue intersection would be included during detailed design to improve safety.

6. The storage capacity location and type of bus stops on North Road would be investigated in detailed design and adjusted to suit the changes made by the Aldi development and the proposed highway upgrade.
7. An amenity building for bus drivers taking breaks would be provided on the eastern side of the station to Transport for NSW requirements. The building would include toilets and a separate meal room.
8. New signage at the transport interchange would be developed in accordance with wayfinding guidelines and Transport for NSW directions.
9. The bus strategy developed did not require a bus phase signal at the Rose Street intersection. The 81 and 82 bus services would use Panonia Road and Howarth Street to stop east of the station. The provision of a bus phase signal at the Rose Street intersection was considered but excluded due to pedestrian accessibility requirements and grading constraints to avoid impacts on the heritage listed Grand Hotel.
10. Bus shelters would be provided at all proposed bus stops to meet Wyong Shire Council and Transport for NSW requirements.
11. The changes to bus infrastructure at Wyong railway station are required to preserve a wider rail corridor for future expansion of the railway lines if demand requires.
12. The proposed widening of the rail corridor has required unavoidable changes to bus infrastructure at Wyong railway station. It is acknowledged the walking distances to the station would be longer for some bus services, in particular the northbound highway bus services. Further refinements would be made during the next design phase which may require the closure of Robley Lane to vehicles at the highway to improve pedestrian accessibility at the Rose Street traffic lights. Section 4 of this report describes these potential changes to accommodate all ability access via the Rose Street traffic lights.

2.3.3 Construction activities

Submission numbers

2, 12, 20, 33

Issue description

Respondents raised the following issues:

1. Questioned when construction would commence or expressed a desire for the project to be completed as soon as possible.
2. Concerned about how construction staging for the project would impact bus services and suggested that construction staging needs to accommodate travel paths for buses on Panonia Road, South Tacoma Road and Howarth Street to accommodate the increased bus activity.
3. Questioned whether the station entry would change during construction.
4. Requested that mains water supply along the Pacific Highway be maintained at all times in the event of fires during construction.

Response

1. The timing of construction has not yet been confirmed. Roads and Maritime will continue to prepare for construction, including undertaking acquisition of the required properties.

2. Staging would be considered in greater detail during the next phase of design development. Consultation between bus operators and the construction contractor would ensure adequate bus access is provided at all times.
3. There would be no change to the existing station entry until the pedestrian bridge extension to the highway is completed, when access would be relocated to the new bridge extension. Current staging plans have only one change to facilities and timetables which would occur when they are shifted to final locations.
4. Work would be coordinated to minimise interruptions to supply of water during construction for business, residences and emergency services use. Roads and Maritime and the construction contractor would co-ordinate with Wyong Shire Council's water supply group, to inform the community in advance of any temporary shut downs during work on water mains.

2.4 Issue 3 – Statutory planning

Submission number

36

Issue description

The respondent suggested the proposal should be assessed as an environmental impact statement (EIS) rather than a review of environmental factors (REF) due to the extent of the potential impacts.

Response

The proposal was not identified as State Significant Infrastructure during its development. The REF has examined and taken into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the proposed activity. The REF found that the impacts are not likely to be significant and therefore it is not necessary for an EIS to be prepared for the approval of the Minister for Planning under Part 5.1 of the *Environmental Planning and Assessment Act 1979*.

2.5 Issue 4 – Socio-economic

Submission numbers

3, 4, 6, 13, 25, 26, 29, 32, 34, 35, 37, 38, 39, 40, 41, 42, 43

Issue description

Respondents raised the following issues:

1. Suggested the intent of the proposal was about getting vehicles through the town centre as quickly as possible, which will have a negative impact on businesses in the town centre.
2. Felt the Pacific Highway upgrade would divide the town and rail precincts and believed the upgrade would discourage the development of Wyong Shire Council's Baker Park Master Plan and the Foreshore Master Plan areas.
3. Suggested Howarth Street should be developed into a commercial zone as part of the proposal, with more shops close to bus facilities for bus drivers and passengers.
4. Suggested including in tender documents requirements for contractors to employ an agreed percentage of local workforce to aid the high levels of unemployment in Wyong.

5. Concerned about the proposal removing parking spaces in front of a property on Alison Road, combined with limited parking in adjoining locations, as it will put pressure on tenants and tenancy opportunities. Would like the existing car parking and access to Bakers Lane retained and felt the closure of Bakers Lane to vehicles would further restrict access to alternative car parking.
6. Suggested the median strip should be line marking only so it wouldn't restrict impulse access to retail outlets along the highway.
7. Queried the removal of the Warner Shops and possibility to retain them. Some encouraged the construction of retail outlets on the eastern side of the Pacific Highway over Wyong railway station. A respondent suggested the space over the railway reservation should be developed as a combined retail and car parking area.
8. Concerned about the removal of right turn access into Alison Road and the effect this will have on businesses.
9. Concerned diverting pedestrian traffic from Alison Road to other crossings will shift pedestrians away from the Alison Road shops.
10. Expressed support for socio-economic benefits provided by the proposal, in particular the improvements made to parking in the town centre over previously displayed options.

Response

1. The proposal was developed with the intent to improve traffic flow in Wyong while also maintaining visibility and convenience for passing trade. The socio-economic impact assessment considered the potential impacts on local businesses and found the majority of businesses in the town centre are not likely to be substantially affected by operation of the proposal. The socio-economic impact assessment forms Appendix F of the REF.
2. The highway and railway corridor has traditionally been a barrier through the town centre previously explored by earlier master plans. The proposal has been developed in consultation with Wyong Shire Council to complement the intent of their master planning wherever practical. The longer, wider and higher bridge over the railway at Rose Street in the proposal would provide improved capacity for motorists travelling to and from Baker Park. Wyong Shire Council has recently engaged with the community to update the Baker Park Master Plan in line with the highway upgrade proposal.
3. While commercial development opportunities are outside the scope of the proposal and remain the responsibility of Wyong Shire Council, the design has taken future potential growth into consideration. An amenity building for bus drivers taking breaks would be provided on the eastern side of the station.
4. Employment would be based on merit rather than an agreed percentage of the local workforce. The employment of local labour and resources would be within the statutory requirements of relevant employment legislation and industrial relations legislation, and tendering regulations.
5. The proposal provides 36 parking spaces on the highway between Church Street and Anzac Avenue. This represents a small reduction of parking spaces when compared to the existing 38 space capacity. Many respondents provided positive feedback on the substantial improvement to on-street parking over previous designs. Vehicle access to parking behind businesses on Alison Road would still be available from Peters Lane and the remainder of Bakers Lane.
6. Physical median separation is required to reduce the likelihood of head-on crashes and prevent vehicles from making uncontrolled u-turns on the highway. User behaviours would change over time as users adjust to the changed traffic conditions and parking arrangements.

7. The commercial value of these shops is recognised. During development of the proposal, considerable time and effort was spent examining options to avoid or minimise impacts on these buildings, however changes to the rail corridor influenced the decision to remove the buildings. There is no longer sufficient space to accommodate retail facilities and appropriate vehicle access along the eastern side of the highway. The development of retail premises over the railway is outside the scope of this proposal but could potentially be considered as part of future station redevelopment.
8. Alternative southbound highway access to Alison Road would be available via Anzac Avenue, Hely Street and Church Street. Vehicle access to parking behind businesses on Alison Road would still be available from Peters Lane and the remainder of Bakers Lane. The partial closure to vehicles in Bakers Lane and potentially Robley Lane could present new commercial and development opportunities by encouraging pedestrians into parts of the wider precinct encouraging further growth.
9. The pedestrian refuge is positioned at the end of the rail pedestrian bridge and represents the natural walking path for most pedestrians. While some pedestrians accessing the town centre may use Bakers Lane to access Alison Road via the shopping plaza near Peters Lane, the majority would still use Alison Road. The partial closure to vehicles in Bakers Lane and potentially Robley Lane could present new commercial and development opportunities by encouraging pedestrians into parts of the wider precinct encouraging further growth.
10. Supporting comments are noted.

2.6 Issue 5 – Traffic and transport

Submission numbers

1, 6, 7, 8, 13, 14, 16, 18, 17, 19, 20, 21, 24, 27, 30, 31, 36, 41, 42

Issue description

Respondents raised the following issues:

1. Concerned the number of proposed traffic lights along the highway within a relatively short distance might hinder traffic flow through the town centre. Alternative options were suggested such as roundabouts or providing express lanes for through traffic at intersections with traffic lights.
2. Concerned the proposal would not support additional traffic generated by the Rose Street car park, buses and vehicles using the eastern interchange. A respondent specifically raised concern that the changes will exacerbate congestion and bottlenecks currently experienced at the Grand Motel intersection.
3. Concerned the proposal would not support additional traffic volumes experienced during sporting events at Baker Park, based on the existing congestion and lengthy travel times experienced in the area on weekends.
4. Concerned about the use of the upgraded Rose Street commuter car park as the existing car park is not secure and is vulnerable to vandalism due to its remoteness and underuse. Also concerned about the distance from public transport, current lack of wayfinding for entry/exit points and lack of public visibility for safety.
5. Requested that Rose Street speed limit should be 40km/h and traffic calming installed (such as speed bumps) for the safety of children due to the car park access being opposite the pre-school.

6. Suggested inclusion of a covered awning between the upgraded Rose Street commuter car park and the Wyong railway station for pedestrians.
7. Requested the existing pedestrian crossing on the south side of Church Street be removed as it interrupts traffic travelling south from Church Street.
8. Recommended installation of sensor activated traffic lights at the River Road roundabout access to manage potential queueing between River Road and Pacific Highway.
9. Recommended installation of a roundabout at the north end of Wyong town centre (potentially Cutler Drive) for traffic wishing to change direction, for convenient access to shops.
10. Concerned the removal of the right turn into Alison Road will be inconvenient for traffic accessing Alison Road. Suggested the Rose Street turn bay be shortened or the highway further widened to provide both turn lanes.
11. Concerned the expected travel time savings and safety improvements will not be realised by the proposal until Brittania Drive/Pacific Highway bridge (next to the golf course) is also upgraded.
12. Several submissions indicated support for the traffic and transport aspects of the proposal.

Response

1. The proposal aims to ease traffic congestion by providing additional traffic lanes to meet through traffic and access needs. Traffic modelling carried out demonstrates the proposal would ease congestion through Wyong to 2041, while also providing necessary access to McPherson Road, Church Street, Rose Street, Howarth Street, Anzac Avenue, North Road and Cutler Drive.

   Pedestrian safety would also be improved with crossings at the additional traffic light intersections on the Pacific Highway. Roundabouts are unsuitable in the town centre as they require more space and are less safe for pedestrians.
2. The existing traffic congestion on weekdays from Baker Park over the Rose Street bridge is acknowledged. The current traffic patterns and additional traffic movements generated by the changes around the station have informed the proposal, which includes four lanes over the upgraded Rose Street bridge (two left turn out lanes and one right turn out lane) and a signalised intersection at Rose Street and the Pacific Highway. The traffic and transport assessment demonstrates the intersection has adequate capacity for weekday peak periods, including forecast growth to 2041. The traffic and transport assessment forms Appendix M to the REF.
3. As above, design development has examined existing traffic patterns, including the causes of the traffic congestion on weekends from Baker Park over the Rose Street bridge, to inform the proposal.
4. The existing parking facility at Rose Street is underused and presents an opportunity for expansion to provide the parking spaces required to meet existing and predicted demand, while also improving accessibility and security for commuters. The proposal allows for improved visibility of the car park to the general public and includes provision for lighting and CCTV cameras. Safety was a key consideration in developing the design. A wayfinding strategy would be developed during detailed design and further security analysis undertaken to optimise the design for accessibility and security.
5. A raised pedestrian crossing would be provided near the intersection of Rose and Howarth streets to assist with traffic calming and pedestrian movements from the car park to the station. The existing entry/exit to the car park is unable to be relocated as part of this proposal.

6. Covered areas would be provided where possible along this route and would be further developed in consultation with Transport for NSW.
7. The revised access to Wyong railway station and the removal of the Warner Shops would change pedestrian demand at this intersection. The design of the traffic lights at the Church Street intersection has addressed this issue.
8. Traffic and transport modelling undertaken for the proposal has demonstrated that queueing would not block the intersection on River Road. If required, keep clear markings or signage could be installed to prevent vehicles blocking the roundabout.
9. Site constraints at Cutler Drive prevent the installation of a roundabout as shared path and pedestrian crossing provisions would also be required. The location is also subject to flooding which further prevented consideration of a roundabout north of the town centre.
10. The right turn into Alison Road from the highway was removed as a longer right turn bay is required for the Rose Street intersection. Alternative access would be provided via Anzac Avenue, Hely Street and Church Street. Vehicle access to parking behind businesses on Alison Road would still be available from Peters Lane and the remainder of Bakers Lane
11. Roads and Maritime Services is planning for a future upgrade of the Pacific Highway between Cutler Drive and Amy Close in conjunction with the Warnervale Link Road investigations. The traffic and transport assessment demonstrates the performance of the intersections, including a sensitivity check with the Warnervale Link Road completed. The traffic and transport assessment forms Appendix M to the REF.
12. The supporting comments are noted.

2.7 Issue 6 – Hydrology and flooding

Submission numbers

1, 2, 5, 28

Issue description

Respondents raised the following issues:

1. Did not support the demolition of the existing Wyong River road bridge and offered alternative options, such as constructing the new bridge without any piers into the river.
2. Raised access and safety concerns about Panonia Road under the bridge, River Road and Hope Street during adverse weather and flood conditions. A respondent suggested the east-west crossing could be relocated elsewhere.
3. Requested the design provide electronic advance warning signs during flood closures for buses normally turning from the Pacific Highway into Panonia Road.

Response

1. Section 6.3 of the REF and Section 5.1.4.4 of the hydrology report demonstrated demolition and replacement of the existing road bridge over Wyong River would avoid potential flood level increases caused by the raising of the River Road and Panonia Road intersection, widening of the highway toward the river and the additional piers required in the river. The hydrology report forms Appendix K to the REF.

   The new twin bridges offer greater value for money, would provide the space required for the wider railway corridor, widen the river opening at the bridge abutments to improve flooding and improve road safety on Panonia Road. Refer to Section 2.4 of the REF for further detail.

2. The flooding and accessibility issues on Panonia Road have been noted in the REF. The ground levels in the area do not present any feasible opportunities for alternative crossing locations. Alternative access to Hope Street is available via Church Street, which would have dedicated turn lanes both northbound and southbound on the highway.
3. An emergency flood management strategy would be prepared in consultation with Wyong Shire Council, SES and emergency services to prevent heavy vehicles, including buses, from turning left from the highway during flood closures. Alternative routes to the town centre would be via Church Street, while Baker Park and Howarth Street could be accessed via the Rose Street bridge over the railway.

2.8 Issue 7 – Non-Aboriginal heritage

Submission numbers

5, 11, 13, 20, 22, 25, 27, 28, 36

Issue description

Respondents raised the following issues:

1. Concerned about the effect the loss of the heritage buildings will have on the village atmosphere of Wyong town centre and want to see the heritage character of the town protected. A respondent requested that the Wyong Chamber of Commerce be involved in the development of strategies to keep the heritage look and feel of the town alive.
2. Concerned about the overall loss of heritage items as part of the proposal. Some questioned whether the heritage shops could be relocated rather than demolished. One respondent suggested relocating them onto the vacant block at the corner of Warner Avenue and Howarth Street.
3. Suggested Roads and Maritime should be more proactive in advocating the relocation of the heritage buildings impacted by the proposal and that Roads and Maritime should investigate a partnership between Wyong Shire Council, NSW Government and the Wyong Chamber of Commerce as an alternative to demolishing heritage buildings.
4. Expressed disappointment at the loss of the heritage items while noting it was a necessary part of the upgrade.

Response

1. During development of the proposal, considerable time and effort was spent examining options to avoid or minimise the impact on heritage buildings, however changes to the rail corridor influenced the decision to remove the buildings on the eastern side of the highway. The REF acknowledges the proposal would diminish the heritage values of the Wyong town centre conservation area. A heritage management plan and interpretation strategy would be developed during the next phase of design in collaboration with key stakeholders to achieve an outcome meeting the needs of the community and asset owners. The urban design will be required to respond to the historic character of the town centre and the railway station.
2. As detailed in Section 2.4 of the REF, options to relocate or retain the heritage buildings were examined in detail and found to be unfeasible. The site on the corner of Howarth Street and Warner Avenue is not owned by Roads and Maritime or Wyong Shire Council. An archival recording process and heritage interpretation strategy would be developed to mitigate the

removal of these heritage buildings while urban design will ensure the new public space does not detract from the heritage precinct west of the Pacific Highway.

3. Changes to the rail corridor influenced the decision to remove the buildings with options to relocate or retain the heritage buildings no longer found to be feasible. Roads and Maritime has been proactive throughout the development of the project in attempting to avoid or minimise the impact on these buildings and will continue to engage with the community, Wyong Shire Council and Chamber of Commerce to develop the Heritage Management Plan.
4. The comments of acceptance are noted.

2.9 Issue 8 – Noise and vibration

Submission number

19

Issue description

Respondents raised the following issues:

1. Concerned noise during construction may impact on work and living spaces. Queried whether a pile driver will be required for construction similar to the one used for the Performing Arts Centre.
2. Requested the use of reversing beepers/alarms on construction vehicles be kept to a minimum as it was felt they have no effect anymore.

Response

1. Noise would be an issue at times during construction, particularly with extended construction hours. A pile driver would be required during some phases of construction. A range of mitigation and management measures are outlined in the REF, including limiting noisy work to standard construction hours where possible and minimising noise generated by machinery.
2. Roads and Maritime is committed to the health and safety of workers, the community, transport users and road users. Reversing beepers are a required safety feature on heavy vehicles/machinery. Roads and Maritime would investigate the use of alternatives where a risk assessment allows.

2.10 Issue 9 – Landscape character and visual impact

Submission numbers

8, 10, 15, 25, 26, 28, 31, 34

Issue description

Respondents raised the following issues:

1. Concerned about the visual impact of the proposed Rose Street car park upgrade and suggested trees and shrubbery be planted to screen the views.
2. Requested the removal of trees along River Road and Panonia Road to remove potential safety hazards along the road sides.
3. The retaining wall along the eastern side of the highway at the station may be a prime location for graffiti and vandalism, negatively impacting on Wyong town centre.

4. Requested clarification about the memorial park and the potential relocation of the cone structures used to decorate the town centre at Christmas.
5. Requested limited landscape work and planting of trees to prevent obscuring the frontage of their building.
6. Concerned about removal of trees between McPherson Road and south of Tacoma Road without replacement.
7. Queried the proposed method to relocate the palm trees in the town centre and the number to be relocated.

Response

1. The urban design report forms Appendix N to the REF and includes planting within and around the Rose Street car park to help it fit with the surrounding neighbourhood. An artist's impression of Rose Street is provided in Figure 6.39 in Appendix N. Landscape plans for street plantings would be refined in the next phase of design and discussed with Wyong Shire Council and the community.
2. Trees and vegetation would be retained wherever possible in this area for public amenity and to assist in keeping the river bank stable from river flows and flooding. Safety clear zones have been adopted as part of the design to ensure large trees are set back from traffic lanes.
3. The urban design report which forms Appendix N to the REF considered the potential for graffiti. The finished wall would use textures and planting to discourage graffiti by breaking up large areas of concrete. Further design work will occur in the next stage to reduce the potential for graffiti.
4. The design proposes to relocate and upgrade the Col Smith Memorial Garden, including its features, to the corner of Rose Street and the highway. An artist's impression is provided in Figure 5.41 of Appendix N to the REF.
5. The urban design strategy has been developed and will be further refined with the visibility of shop fronts in mind. Visual exposure will vary depending on location, sight lines and necessary infrastructure.
6. Landscaping throughout the proposal is based on a mixture of native species placed in suitable locations to offset the proposed vegetation impacts. Established vegetation would be retained where possible.
7. The existing Canary Island Palms along the Pacific Highway would be removed during construction under the care and guidance of qualified specialists to protect the palms and assess their health for relocation. All palms capable would be relocated to new positions as a key feature of the proposed design. Qualified specialists would monitor and tend to the trees during and after construction until establishment is complete.

3 Additional assessment

Further assessment has been undertaken since the display of the REF with regard to additional seasonal investigations for microbats.

3.1 Biodiversity

3.1.1 Summary

The REF included a mitigation measure to undertake spring surveys for microbats at the Wyong River bridge prior to demolition.

Spring surveys were conducted in November 2015 to identify the presence of bats during the most suitable season. These surveys added to, and updated, field surveys undertaken by SMEC in March and October 2014 and previous flora and fauna surveys undertaken by Parsons Brinckerhoff and Niche Environment and Heritage in 2013. The technical field note summarising the findings is provided in **Appendix D**.

The key findings are as follows.

- Four species of microbat were identified under the Wyong River bridge using ultrasonic detection. Three of these species are listed as vulnerable under the *Threatened Species Conservation Act 1995*: the Little Bentwing Bat (*Miniopterus australis*), Southern Myotis (*Myotis macropus*) and Eastern False Pipistrelle (*Falsistrellus tasmaniensis*).
- The Southern Myotis was observed roosting between concrete blocks in the pylons at the northern end of the Wyong River bridge. It is likely this same species is also roosting in the southern end of the bridge.
- The Eastern Freetail Bat has been identified within the study area during previous surveys.
- Potential habitat is available within the larger study area for six threatened microbat species; the Little Bentwing Bat, Eastern False Pipistrelle, Eastern Bentwing Bat, Eastern Freetail Bat, Southern Myotis and Greater Broad-nosed Bat.
- Assessments of significance undertaken for the microbats determined that the proposal is unlikely to have a significant impact on the Little Bentwing Bat, Eastern False Pipistrelle, Eastern Bentwing Bat, Eastern Freetail Bat or Greater Broad-nosed Bat and as such, no further assessment is required.
- There is some suitable foraging habitat available for the Southern Myotis within the study area including the surface of the Wyong River. This species was identified foraging within the study area and utilising the road bridge for roosting. The proposal may impact on some foraging habitat during construction and demolition of the existing road bridge. The proposal would require the removal of known roosting habitat for the Southern Myotis in the road bridge over the Wyong River.
- Consideration would be given to modifying the new road bridge to incorporate suitable roosting habitat (e.g. slots in the concrete) into the bridge structure to provide alternate roosting habitat for the Southern Myotis. The proposed construction staging would allow for the new bridge and habitat to be constructed prior to the demolition of the existing road bridge and the associated removal of roosting habitat.
- The findings of the additional investigations were that impacts could be mitigated through the retention or replacement of roosting habitat for microbats. It is recommended that a microbat

management plan be prepared during detailed design to investigate options for including suitable roosting habitat for microbats (particularly the Southern Myotis). This has been successfully accomplished for other projects such as the Pacific Highway upgrade from Warrell Creek to Urunga.

3.1.2 Revised mitigation measures

The mitigation measure to undertake spring surveys for microbats has been removed as these have now been completed.

The following mitigation measures from the REF would be revised as follows.

Original:

- If bats are found, a bat management plan would be developed and implemented prior to commencement of construction, including reassessment of the impact of the proposal on the species present.
- Investigate options for providing microbat roosting habitat in the new bridge structure.

Revised:

- A microbat management plan would be developed and implemented prior to commencement of construction.
- Options for providing microbat roosting habitat would be investigated during detailed design.

4 Changes to the proposal

This section details changes made to the proposal following public display of the REF and concept design.

4.1 Change 1 – Changes to cycle facilities around the station

Description

Following comments raised by a respondent, Roads and Maritime has consulted further with Transport for NSW to confirm the following changes to cyclist provisions at Wyong railway station:

- Continuation of the shared path over the south side of the Rose Street bridge through to the eastern side of the station
- Potential changes to the shared path between Church Street and Alison Road requiring cyclists to dismount or observe greater care where mixing with pedestrians in the station forecourt area
- Separation of the shared path from taxi space and disabled spaces hardstand areas on the eastern side of the station
- Provision of a cycle shed and covered bicycle racks at the eastern side of the station near the existing stairs
- Relocation of the existing Warner Avenue bicycle lockers to a suitable location near the station on the Pacific Highway or within the eastern interchange area.

The changes were made to provide a continuous cycle link to dedicated cycle storage facilities. The shared path alignment was shifted to improve safety by reducing potential conflict locations between transport interchange users. The length of shared path where transport interchange users mix at the station forecourt would also be considered further to improve safety.

Environmental assessment

The changes are considered minor design refinements within the scope of the existing REF. The change would result in an additional structure and sheltered area between the railway tracks and disabled parking that would not change the visual impact.

Revised management and mitigation measures

No revisions are proposed to accommodate this design change.

4.2 Change 2 – Changes to parking on Howarth Street southern approach to Warner Avenue

Description

Following comments raised by bus operators, Roads and Maritime is proposing to restrict parking on the Howarth Street southern approach to Warner Avenue. No parking signs would be installed on the western side of Howarth Street for up to 80 metres and potentially the eastern side of Howarth Street for about 50 metres to provide adequate width for vehicles, including buses, to pass each other without stopping.

Environmental assessment

The changes are considered minor design refinements within the scope of the existing REF. The change would result in removal of about 10 untimed and timed parking spaces from roadsides in

the immediate area. Additional parking is available on both sides of Howarth Street immediately south of the location.

Revised management and mitigation measures

No revisions are proposed to accommodate this design change.

4.3 Change 3 – Staging of works on Panonia Road

Description

The staging of works on Panonia Road would be revised during detailed design and with the successful construction contractor. Careful consideration would be given to any temporary road designs, closures and traffic control measures to ensure bus services are maintained at all times, without compromising the safety and comfort of bus passenger trips in the area.

Environmental assessment

The changes are a clarification only within the scope of the existing REF.

Revised management and mitigation measures

No revisions are proposed to accommodate this design change.

4.4 Change 4 – Partial closure of Robley Lane to vehicles from the highway

Description

The current design does not provide direct suitable access for disabled users of northbound buses wishing to cross the highway at the Rose Street traffic lights.

A steep driveway to connect Robley Lane would require those with access and mobility restrictions to make a substantial deviation around the driveway to reach the Rose Street traffic lights. This would not be compliant with the intent of AS1428 or the *Disability Discrimination Act 1992*.

A continuous flat graded pathway can be provided to the traffic lights to resolve the disabled access issue. However, this would likely lead to the closure of Robley Lane to vehicles at the highway as the levels of the highway are substantially higher than the shopfront footpath at this location.

The design and treatment of Robley Lane would be reconsidered in detailed design due to substantial grade challenges in the area.

Environmental assessment

Further work during detailed design is required to consider the implications and warrants of this potential change. Subject to further detailed design and investigation and consultation with the affected businesses a closure of Robley Lane to vehicles at the highway could be required.

If a closure was warranted as a design change, further assessment (an Addendum REF) would be required to assess the environmental impacts of this proposed change, including but not limited to socio-economic impacts, traffic, visual impact and access.

Revised management and mitigation measures

No revisions are required at this stage.

5 Environmental management

The REF for the Pacific Highway upgrade through Wyong town centre identified the framework for environmental management and mitigation measures that would be adopted to avoid or minimise environmental impacts (Section 7 of the REF).

After consideration of the issues raised in submissions and changes to the proposal, a minor revision to the management and mitigation measures for biodiversity have been made to include the updated findings.

Should the proposal proceed, environmental management would be guided by the framework and measures outlined as follows.

5.1 Environmental management plans

A number of safeguards and management measures have been identified in order to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the proposal. Should the proposal proceed, these management measures would be incorporated into the detailed design and applied during the construction and operation of the proposal.

A Contractor's Environmental Management Plan (CEMP) would be prepared to describe safeguards and management measures identified. This would provide the framework for establishing how and when these measures would be implemented, and who would be responsible for their implementation.

The CEMP and any associated plans would be prepared prior to construction of the proposal and must be reviewed and certified by environment staff, Greater Sydney Program Office, prior to the commencement of any on-site works. The CEMP would be a 'living' document, subject to ongoing change and updated as necessary to respond to specific requirements. The CEMP would be developed in accordance with Roads and Maritime *QA Specification G36 – Environmental Protection (Management System)*, *QA Specification G38 – Soil and Water Management (Soil and Water Plan)* and *QA Specification G40 – Clearing and Grubbing*.

5.2 Summary of safeguards and management measures

Environmental safeguards outlined in this submissions report would be incorporated into the detailed design phase of the proposal and during construction and operation of the proposal, should it proceed. These safeguards would minimise any potential adverse impacts arising from the proposed works on the surrounding environment.

The safeguards and management measures are summarised in Table 5.1. Substantive changes are identified as follows:

- Deleted text is shown as ~~strikethrough~~
- New text is shown as **bold**.

Table 5.1 Summary of site specific environmental safeguards

No.	Impact	Environmental safeguards	Responsibility	Timing
1	General	• All environmental safeguards must be incorporated within the following documents: – Detailed design stage – Contract specifications for the proposal – Contractor's Environmental Management Plan	Project manager	Pre-construction
2	General	• The environmental contract specification G36, G38 and G40 must be forwarded to the Roads and Maritime Services Senior Environmental Officer for review at least 10 working days prior to the tender stage. • A contractual hold point must be maintained until the CEMP is reviewed by the Roads and Maritime Services Senior Environmental Officer.	Project manager	Pre-construction
3	General	• The Roads and Maritime Services Project Manager must notify the Roads and Maritime Services Environmental Officer ~~Hunter Region~~ **Greater Sydney Program Office** at least 5 days prior to work commencing.	Project manager	Pre-construction
4	General	• All businesses and residences likely to be affected by the proposed works must be notified at least 5 working days prior to the commencement of the proposed activities.	Project manager	Pre-construction
5	General	• Environmental awareness training must be provided, by the contractor, to all field personnel and subcontractors.	Contractor	Pre-construction and during construction as required.
6	Construction related disruption	• A Communications Strategy would be prepared for the proposal to detail ongoing communication and notification procedures and processes throughout construction. • The Communications Strategy would include a complaint handing procedure and register and a 24 hour contact number.	Contractor	Construction
7	Construction related disruption	• Affected residents and businesses would be notified of the progress of the works and advised in advance (e.g. by letterbox drop, meetings with individuals) of any anticipated changes in noise emissions or access arrangements prior to each construction stage.	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
8	Construction related disruption	• Where temporary changes to access arrangements for residents and businesses are necessary, the contractor would advise owners and tenants and consult with them in advance with regard to alternative access arrangements. • Construction staging related to the Rose Street bridge would be planned in consultation with the Wyong Race Club and Baker Park management.	Contractor	Construction
9	Property acquisition	• Early and ongoing communication and consultation would be undertaken with property owners, business owners and residents regarding the property acquisition process.	Roads and Maritime	Detailed design
10	Property acquisition	• All property valuations and acquisitions would be carried out in accordance with the Land Acquisition Information Guide (Roads and Maritime Services, 2014) and the *Land Acquisition (Just Terms Compensation) Act 1991.*	Roads and Maritime	Detailed design
11	Construction traffic impacts	• A construction traffic management plan (CTMP) would be prepared prior to construction and would be included in the Construction Environmental Management Plan. • The CTMP would: – Identify the traffic management requirements during construction – Describe the general approach and procedures to be adopted when producing specific traffic control plans – Determine temporary speed restrictions to ensure safe driving environment around work zones – Provide for access to local roads and properties, including the use of temporary turnaround bays where appropriate – Include methods for implementing the traffic management plan and minimising road user delays – Provide for appropriate warning and advisory signposting – Consider other developments in the wider area that may also be under construction, to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic.	Contractor	Detailed design
12	Construction	• For each stage of construction, detailed Traffic Management Plans would be	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
	traffic impacts	developed and implemented. These would be prepared in accordance with the Traffic Control and Worksites, version 4.0 (Roads and Maritime, June 2010) • Provision for emergency services passage through construction zones would be considered in all Traffic Management Plans.		
13	Changes to property access	• Properties impacted during construction (by changes to access or temporary road closures) would be notified prior to the commencement of construction and advised to use alternative routes during the construction period (for local road closures) and consulted regarding temporary access arrangements to their properties.	Contractor	Detailed design Operation
14	Changes to bus stops and services	• Consult with bus operators for relocated or removed bus stops and changed interchange and access arrangements **10 days prior to changes**.	Contractor	Detailed design Pre-construction
15	Pedestrian and cyclist access	• Pedestrian and cyclist access (including crossing facilities) to be maintained where possible and separated from work areas at all times.	Contractor	Construction
16	Pedestrian and cyclist access	• Safe pedestrian access to the Rose Street commuter car park to be provided for all stages of construction.	Contractor	Construction
17	Wayfinding	• Appropriate signage and wayfinding strategy for pedestrian and cyclist access during construction would be developed and implemented. • A signage strategy would be developed to guide road users to the new commuter car park facilities and transport interchange.	Contractor	Construction
18	Cyclist safety	• Cyclists would be considered when implementing temporary traffic arrangements, particularly at night.	Contractor	Construction
19	Short term closure of Rose Street bridge	• Any short term closure of Rose Street bridge would be planned in advance for appropriate times by consultation with the community, Sydney Trains and Wyong Shire Council. • Diversions via Panonia Road and Pollock Avenue would be established during any short term closure to maintain access to Baker Park.	Contractor	Construction
20	Damage to roads from	• Dilapidation surveys of local roads around the proposal would be undertaken before and after construction.	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
	construction traffic	• Damage to local roads beyond standard wear and tear as a result of construction traffic would be repaired.		
21	Increased flooding during construction	• Construction ancillary facilities are to be located above the 20 year ARI flood level unless a contingency plan to manage flooding is prepared, approved by Roads and Maritime and implemented.	Contractor	Construction
22	Temporary blocking of fish passage during construction	• Construction staging and erosion and sediment controls would ensure that fish passage is maintained at all times. • If blockage of fish passage on the Wyong River is required, a permit in accordance with Section 220 of the *Fisheries Management Act 1994* must be obtained.	Contractor	Construction
23	Increased flooding at McPherson Road	• To offset the expected flood level increases, it would be necessary to demolish the existing buildings and lower the terrain at 204-206 and 210 Pacific Highway, Tuggerah. During detailed design the grading levels required to convey flood waters towards the river would be examined further.	Roads and Maritime	Detailed design Construction
24	Impacts on heritage items during construction	• A Non-Aboriginal Heritage Management plan would be prepared and included in the CEMP. This plan would include but not be limited to the following: – A map identifying locations of items or sites within and around the proposal site. – Identification of potential environmental risks/impacts due to the works/activities – Mitigation measures to avoid risk of harm and the interface with work activities on site. – Identification in toolbox talks where management of non-Aboriginal heritage is required such as identification of no go zones and responsibilities under the *Heritage Act 1977*. – Requirement to comply with the *Roads and Maritime Standard Management Procedure: Unexpected Heritage Items* (2015).	Contractor	Construction
25	Unexpected impacts on non-Aboriginal	• Should archaeological material be unexpectedly uncovered during construction, all works are to cease within the vicinity of the material/find and the steps in the *Roads and Maritime Standard Management Procedure: Unexpected Heritage*	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
	heritage values	*Items (2015)* must be followed. Roads and Maritime Environment staff must be contacted immediately.		
26	Impact on Canary Island Palms	• A suitably qualified arborist would be appointed to prepare a management strategy for the translocation of the Canary Island Palms along the Pacific Highway. • The Canary Island Palms management strategy would be submitted to the Roads and Maritime Environmental Officer for approval prior to construction commencing. • Canary Island Palms would be included in the final streetscape design for the Wyong town centre.	Contractor Roads and Maritime	Pre-construction Construction
27	Impact on the heritage milestone	• The heritage milestone on the Pacific Highway would be removed prior to the commencement of construction at that location and stored securely in accordance with Roads and Maritime requirements. • The milestone would be reinstated during the ~~landscaping~~ **landscape works** and finishing works in accordance with the Landscap~~eing~~ and Urban Design Strategy.	Contractor	Construction
28	Demolition of the Warner Shops and former Station Master's Cottage	• Archival photographic recording of the interior and exterior of the Warner Shops and the former Station Master's Cottage and their immediate and broader environment would be undertaken before the demolition work commences. • Archival recording would be undertaken in accordance with *Photographic Recording of Heritage Items Using Film or Digital Capture* (NSW Heritage Office, 2006). • Copies of the archival records would be deposited with the Wyong Shire Council local heritage collection and Sydney Trains heritage office. • Formal notice to Wyong Shire Council and Sydney Trains would be undertaken to advise the intention to demolish local and Section 170 heritage items.	Contractor Roads and Maritime	Construction Detailed design
29	Loss of heritage buildings **and features**	• An interpretation strategy would be developed and implemented to mitigate the loss of the former Station Master's Cottage, Warner Shops and the visual and physical separation of the Wyong Station Group from the Wyong town centre, as well as the original rail bridge over the river. • ~~Design details of the proposed upgrade should be developed in consultation with~~	Roads and Maritime	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		~~designers with experience of design within a heritage context.~~ • Roads and Maritime would continue to consult with Wyong Shire Council and Sydney Trains during detailed design and construction.		
30	Potential for archaeological relics associated with the 1887 rail bridge at Wyong River	• An Archaeological Research design that includes a strategy for managing archaeological relics would be prepared and submitted to the Heritage Council of NSW prior to construction commencing. • A Section 140 Excavation Permit or exception under Section 139(4) of the *Heritage Act 1977* would be obtained from the Heritage Council of NSW.	Contractor	Pre-construction
31	Construction noise and vibration impacts	• A Construction Noise and Vibration Management Plan (CNVMP) would be prepared. The plan would provide details of noise and vibration management measures and procedures to be undertaken during construction to minimise and manage noise impacts on sensitive receivers, including: – Noise and vibration monitoring and reporting requirements – A map showing the locations of all sensitive receivers – Specific mitigation treatments, management methods and procedures to be implemented to control noise and vibration during construction – Construction timetabling to minimise noise impacts including time and duration restrictions, respite periods and frequency – Procedures for notifying residents, business owners, schools and other sensitive receivers of construction activities likely to affect their amenity through noise and vibration – Contingency procedures to be implemented in the event of non-compliances and/or noise complaints.	Contractor	Construction
32	Construction vibration impacts	• A vibration assessment is to be prepared and included in the CNVMP. The vibration assessment is to include: – Assessment of the potential vibration impacts on sensitive receivers due to vibration – Detail which sensitive receivers would have building condition surveys – Outline a monitoring program.	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Where there is a potential for vibration to impact on sensitive receivers: – Potentially impacted residents would be informed of the nature and duration of works and provided contact details for the contractor. – Compliance vibration monitoring would be undertaken and documented in accordance with the CNVMP procedures. In the case that exceedances are detected, the situation would be reviewed in order to identify means to minimise the impacts to residences. – In terms of human comfort criteria, measures may include modifications of construction methods and respite periods. • Noise and vibration generating activities with impulsive, tonal or low frequency characteristics (such as jack hammering, rock breaking, rock hammering, vibratory rolling) should only be carried out: – in continuous blocks, up to but not exceeding three hours each – with a minimum respite period of one hour between each block.		
33	Construction hours	• Where reasonable and feasible, works would be undertaken within *Interim Construction Noise Guideline* (ICNG) recommended working hours • Where works are required to be undertaken outside of recommended working hours, all appropriate approvals would be obtained prior to works, and all affected receivers would be notified of all relevant details relating to the works • Noisy activities that cannot be undertaken during standard construction hours would be scheduled as early as possible during the evening and/or night-time periods. • Any out of hours works would comply with G36 community notification requirements and the mitigation measures specified within the Roads and Maritime Environmental Noise Management Manual – Practice Note VI.	Contractor	Construction
34	Operational noise mitigation	• During the detailed design stage of the proposal, further investigations of all feasible and reasonable mitigation options would be undertaken in the following order of priority: – Road design and traffic management	Roads and Maritime	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		– Quieter pavement surfaces – At-property treatments.		
35	Noise and vibration	• All relevant noise and vibration management measures would be incorporated into site inductions for all employees, contractors and sub-contractors. The environmental component may be covered in toolboxes and should include: – Relevant licences and approval conditions – Permissible hours of work – Location of nearest sensitive receivers – Construction employee parking areas – Designated loading/unloading areas and procedures – Site opening/closing times.	Contractor	Pre-construction and construction
36	Construction noise	• The environmental induction program would include specific noise and vibration issues awareness training including, but not limited to, the following: – Avoiding use of radios during work outside normal hours – Avoiding shouting and slamming doors – Where practical, operating machines at low speed or power and switching off when not being used rather than left idling for prolonged periods – Minimising reversing – Avoiding dropping materials from height and avoiding metal to metal contact on material.	Contractor	Pre-construction, construction
37	Noise and vibration	• All plant and equipment is to be maintained to ensure optimum running conditions, with periodic monitoring.	Contractor	Construction
38	Noise and vibration	• Consider construction compound layout so that primary noise sources are at a maximum distance from sensitive receivers (primarily residential receivers), with solid structures (sheds and containers) placed between sensitive receivers and noise sources (and as close to the noise sources as is practical).	Contractor	Pre-construction and construction
39	Noise and vibration	• Locate compressors, generators, pumps and any other fixed plant as far from residences as possible and behind site structures.	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Alternatives to reversing alarms reversing alarms would be considered for site compound equipment subject to OHS compliance requirements and risk assessments. • Vehicle delivery times would be scheduled where feasible to the recommended construction hours to minimise noise impacts from heavy vehicle movements and deliveries.		
40	Noise and vibration	• Use quieter and less noise/vibration emitting construction methods where feasible and reasonable • Plant used intermittently would be throttled down or shut off when not in use • Simultaneous operation of noisy plant within discernible range of a sensitive receiver is to be limited/avoided where possible • The offset distance between noisy plant and adjacent sensitive receivers is to be maximised where practicable. • Noise-emitting plant to be directed away from sensitive receivers where possible. • Where vibration intensive equipment is used within the minimum working distances identified, determine whether alternative construction methodology or less vibration intensive equipment can be used.	Contractor	Construction
41	Noise and vibration	• Where practicable, any mitigation measures provided to control operational noise impacts would be implemented as early as practicable to also provide a benefit during some of the construction phase.	Contractor	Construction and operation
42	Noise and vibration monitoring	The following approach would be adopted with regard to noise monitoring procedures during the construction works. • Where potential noise impacts are predicted to be 20 to 30 dB(A) above the RBL, the potential construction noise nuisance is considered to be moderate. Noise monitoring would be carried out to confirm predicted noise impacts within two weeks of commencement of construction. Reasonable and feasible noise reduction measures would be investigated, where necessary. • Where potential noise impacts are predicted to be more than 30 dB(A) above the RBL, the potential construction noise nuisance is considered to be high. All reasonable and feasible noise control measures would be implemented prior to	Contractor	Pre-construction and construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		the commencement of construction works. Noise compliance monitoring for all major equipment and activities on the sites would be undertaken prior to their commencement of work on site. Noise levels during construction would be monitored and where exceeded, further noise reduction measures (where reasonable and feasible) would be implemented eg. restrict working hours, use silencing equipment.		
43	Noise and Vibration	• Building condition surveys would be undertaken for buildings within 50 metres of construction works. A copy of the report would be sent to the landholder. • In the case that exceedances are detected for noise and vibration monitoring, the activities would be reviewed in order to identify means to minimise impacts to residents and the appropriate changes made and the NVMP updated accordingly.	Contractor	Pre-construction, construction
44	Property acquisition	• All property acquisition would be undertaken in accordance with the *Land Acquisition (Just Terms) Compensation) Act 1981*.	Roads and Maritime	Pre-construction
45	Temporary commuter parking south of Wyong railway station	• Site of former heritage buildings is only to be used for temporary commuter facilities during Stage 1. • The community consultation strategy is to contain a notification strategy that appropriately addresses the temporary nature of any proposed parking and provides details of the final plans for this area.	Roads and Maritime Construction contractor	Construction
46	Property acquisition and impacts on Council land	• Consultation with Council would be ongoing through detailed design and construction regarding works in Riverside Park and the new open space area on the south bank of the Wyong River.	Roads and Maritime	Pre-construction, Construction
47	Impact on ancillary sites	• All ancillary sites are to be restored to pre-existing conditions or to a condition agreed with the land owner, at the completion of construction.	Construction contractor	Construction
48	Disruption to utility services during construction	• Residents are to be informed prior to any interruptions to utility services that may be experienced as a result of utilities relocations.	Contractor	Pre-construction, construction
49	Relocation of sensitive	• Consultation with Jemena, and other utility providers, would continue through	Roads and Maritime	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
	utilities	detailed design to ensure satisfactory protection of assets is achieved.		
50	General construction impacts on flora and fauna	• Prepare a Construction Flora and Fauna Management Plan, including weed management, and ensure that it is integrated with the landscape plan for the proposal. • Limit of work temporary fencing is to be established. • Pre-clearing processes are to be undertaken in accordance with the Roads and Maritime *Biodiversity Guidelines*: Guide 4 - Clearing of vegetation and removal of bushrock (Roads and Traffic Authority, 2011). • Construction access tracks, compound facilities and construction areas along the road verge are to be located in previously cleared or disturbed areas wherever possible.	Construction contractor	Pre-construction
51	Risk to threatened species habitat	• Implement a Construction Erosion and Sediment Control Plan or Soil and Water Management Plan, in accordance with the Blue Book (Landcom, 2004). • Manage stormwater to ensure that the existing hydrology of wetlands within and adjoining the proposal area is maintained, including periodic drying to prevent colonisation by *Gambusia holbrookii*. • Where possible, habitat trees and hollow bearing trees are to be retained throughout the proposal area. • ~~Undertake spring surveys for microbats in the Wyong River Bridge prior to demolition (during detailed design and pre-clearing).~~ • ~~If bats are found, a~~ **A microbat** management plan would be developed and implemented prior to commencement of construction. ~~including reassessment of the impact of the proposal on the species present~~. • ~~Investigate~~ Options for providing microbat roosting habitat **would be investigated during detailed design**.	Roads and Maritime	Pre-construction
52	Minimise impacts of the proposal on EECs and SEPP 14 wetlands	• Where possible, retain vegetation that contains EECs present in the proposal area and adjacent sites. • Offsetting for impacts on EEC vegetation would be investigated using bio banking agreements in accordance with the Roads and Maritime *Guideline for Biodiversity Offsets* (Roads and Maritime, 2011).	Roads and Maritime Construction contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
53	Site specific environmental induction	• All staff working on site are to undertake a site-specific environmental induction. The induction is to include items such as: – sensitivity of surrounding vegetation (particularly EECs, remnant and riparian vegetation) – site environmental procedures (vegetation management, sediment and erosion control protective fencing and noxious weeds) – what to do in case of emergency (chemical spills, fire or fauna encountered) – key contact in case of environmental incident – details of threatened flora species and risk of myrtle rust.	Construction contractor Roads and Maritime	Pre-construction
54	Minimise risk of establishment and spread of invasive species and disease due to the proposed development activities	• The use of pesticides in weed control is to be minimised to reduce threat to fauna species. • Inspection and maintenance procedures are to be implemented to reduce the carriage of weed material on machinery. • Install no-go zones to control the movement of vehicles, and human traffic, around areas of native vegetation. • All pathogens (eg Chytrid, Myrtle Rust and Phytophthora) are to be managed in accordance with the Roads and Maritime *Biodiversity Guidelines* - Guide 7 (Pathogen Management) and DECC Statement of Intent 1: Infection of native plants by *Phytophthora cinnamomi* (for Phytophthora), DPI Myrtle rust response 2010–11: Preventing spread of Myrtle Rust in bushland and OEH *Interim management plan for Myrtle rust in bushland* (2011). • Declared noxious weeds are to be managed according to requirements under the *Noxious Weeds Act 1993* and Guide 6 (Weed Management) of the Roads and Maritime *Biodiversity Guidelines* (2011).	Construction contractor	Construction
55	Flora and fauna encountered	• If unexpected threatened fauna or flora species are discovered, stop works immediately and follow the Unexpected Threatened Species Finds Procedure in the Roads and Maritime *Biodiversity Guidelines* – Guide 1 (Pre-clearing process). • WIRES is to be consulted if any injured fauna are encountered as outlined in site specific environmental inductions.	Construction contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Fauna handling must be carried out in accordance with the requirements the Roads and Maritime *Biodiversity Guidelines* - Guide 9 (Fauna Handling).		
56	Re-establishment of any native vegetation disturbed or removed by the proposal	• Revegetate or replant disturbed areas progressively to minimise erosion activity. • Revegetation and replanting is to be carried out in accordance with the Roads and Maritime *Biodiversity Guidelines* (Roads and Traffic Authority, 2011).	Construction contractor	Construction and post-construction
57	Impacts on aquatic habitat	• Consideration of operational water quality controls, particularly south of Cutler Drive, would be undertaken during detailed design, in accordance with the *Policy and guidelines for fish habitat conservation and management* (DPI, 2013). • Establish erosion and sediment control measures, including in-stream control structures, prior to works commencing in the vicinity, and retain them until the ground is stable or turbidity levels match adjoining river water. • Temporary limit of work fencing is to be established for riparian vegetation to limit the clearing as much as possible. • Measures to manage fish passage on the Wyong River during construction would be included in the CEMP. • If blockage of fish passage on the Wyong River is required, a permit in accordance with Section 220 of the *Fisheries Management Act 1994* must be obtained. • Progressive revegetation of the riparian zone would incorporate plantings of locally indigenous mature trees, bushes and grasses where possible. • Appropriate bank protection would be installed on the Wyong River underneath the new bridges where revegetation is unlikely to be suitable.	Roads and Maritime Construction contractor	Detailed design Construction
58	Erosion generated by the new bridges over the Wyong River	• Detailed design would consider options to minimise potential erosion and scour impacts associated with the bridge construction and operation.	Detailed design Construction contractor	Detailed design Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
59	Erosion and sedimentation	• A Soil and Water Management Plan (SWMP) would be prepared for the proposal in accordance with the principles and practises detailed in *Managing Urban Stormwater: Soils and Construction (*Landcom, 2004) (the Blue Book). • The SWMP would be developed by a Roads and Maritime registered soil conservationist or a certified practitioner in erosion control (CPESC) in accordance with the principles and practises detailed in *Managing Urban Stormwater: Soils and Construction (*Landcom, 2004) and in consultation with relevant government agencies and Council. • The SWMP would form part of the CEMP and would be supported by a qualified and experienced soil conservationist.	Construction contractor	Pre-construction
60	Erosion and sedimentation	• The SWMP would contain as a minimum the following elements: – Site specific Erosion and Sedimentation Control Plans (ESCPs), including detailed consideration of staging and management at ancillary sites, in accordance with the Blue Book. – Identification of site conditions or construction activities that could potentially result in erosion and associated sediment runoff. – Methods to minimise potential adverse impacts of construction activities on the water quality within surrounding waterways. – Details of measures to minimise any adverse impacts of sedimentation on the surrounding environment. – Details of measures to minimise soil erosion caused by all construction works including clearing, grubbing and earthworks. – Details of measures to make site personnel aware of the requirements of the SWMP by providing information within induction, toolbox and training sessions. – Details of the roles and responsibilities of personnel responsible for implementing the SWMP. – Details of measures for the inspection and maintenance of construction phase water treatment devices and structures.	Construction contractor	Pre-construction
61	Interaction	• Detailed design would consider the presence of ASS and the potential impact on	Detailed design	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
	between ASS and new bridge structures	the new bridge structures over the Wyong River. • The SWMP would include a procedure to manage PASS/ASS in accordance with the *Acid Sulfate Soils Assessment Guidelines* (ASSMAC, 1988).	Construction contractor	Construction
62	Impacts on construction water quality	• Water quality control measures are to be used to prevent any materials (e.g. concrete, grout, sediment etc.) entering drain inlets. • Spills of oil, fuel and chemicals etc. are to be contained and cleaned up immediately in accordance with spill response procedures. • Construction plant is not be washed down or cleaned outside of formal containment structures (e.g. wash bay). • No stockpiles of materials or storage of fuels or chemicals would be located within the 20 year ARI flood zone and where located within the 100 year ARI flood zone they are to be protected by an appropriate secondary control measure. • Environmental incidents, such as pollution spills and unauthorised vegetation clearing, will be reported and managed in accordance with the Roads and Maritime *Environmental Incident Classification and Reporting Procedure*.	Construction contractor	Construction
63	Impacts on operational water quality	• The proposed operational water quality treatment measures would be further refined during detailed design. • All operational water quality treatment designs would be forwarded to the Roads and Maritime Environment Officer for comment and approval prior to the commencement of construction.	Roads and Maritime	Detailed design
64	Disturbance of contaminated land	• A Contaminated Land Management Plan (CLMP) would be developed to comply with the *Contaminated Land Management Act 1997* and relevant EPA guidelines in relation to disturbance or treatment of potentially contaminated land. The CLMP would detail the following: – Contaminated land legislation and guidelines including any relevant licences and approvals to be obtained. – Identification of locations of known or potential contamination and preparation of a map showing these locations. – Procedure for identifying contamination by monitoring for:	Construction contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		▪ Discolouration or staining of soil. ▪ Bare soil patches both on-site, and off-site adjacent to site boundary. ▪ Visible signs of plant stress. ▪ Presence of drums or other waste material. ▪ Presence of stockpiles or fill material. ▪ Soil vapour risk assessments ▪ Odours. – Unexpected Finds Procedure to address the management of potentially contaminated material if encountered during works. – Include measures to identify and manage acid sulphate soils. – Protect the environment by implementing control measures to divert surface runoff away from the contaminated land. – Capture and manage any surface runoff contaminated by exposure to the contaminated land. – Manage the remediation and subsequent validation of the contaminated land, including any certification required. – A process for reviewing and updating the plan. • Additional investigations to confirm potential presence of contamination on proposed ancillary sites would be undertaken prior to construction commencing.		
65	Disturbance of asbestos bearing materials	• The CLMP would include an Asbestos Management Plan, to be developed in accordance with the Roads and Maritime Services *Asbestos Management Plan* (2013). • If previously unidentified asbestos contamination is discovered during construction, work in the affected area would cease immediately, and an investigation must be undertaken and report prepared to determine the nature, extent and degree of the asbestos contamination. Reporting must be in accordance with the relevant EPA and WorkCover Guidelines and include the proposed methodology for the remediation of the asbestos contamination. • Remediation activities must not take place until receipt of the investigation report	Construction contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		by occupational health professional. • Works may only recommence upon receipt of a validation report from a suitably qualified contamination specialist that the remediation activities have been undertaken in accordance with the investigation report and remediation methodology.		
66	Potential soil vapour risk	• An assessment would be undertaken during detailed design to assess soil vapour risk in relation to the proposed construction works occurring between North Road and Anzac Avenue. The assessment would consider disturbance of potentially contaminated soils impacted from underground petroleum storage structures located on the western side of the proposal upgrade.	Roads and Maritime	Detailed design
67	Management of contaminated waste	• Additional assessment is to be undertaken for soils requiring off-site disposal to ensure the correct waste classification is determined. Excavated material that is not suitable for on-site reuse or recycling, such as contaminated material should be transported to a site legally able to accept that material. • A classification system should be used to control the excavation, stockpiling and disposal of all potentially contaminated materials. Soils should be classified (where possible) in-situ prior to excavation or when stockpiled during excavation, depending on available time and room for stockpile areas. Any unexpected finds should follow the same procedures. • If groundwater is encountered during construction, it would be managed and disposed of in accordance with legislation.	Construction contractor	Construction
68	Risk of spills and leaks	• Vehicles and machinery should be properly maintained to minimise the risk of fuel/oil leaks. Routine inspections of all construction vehicles and equipment should be undertaken for evidence of fuel/oil leaks. • All fuels, chemicals and hazardous liquids should be stored within an impervious bunded area in accordance with Australian standards and EPA guidelines. • Any on-site refueling would occur in a designated area with impervious surfaces.	Construction contractor	Construction
69	Introduction of new built elements	• Opportunities for the inclusion of more planting in the large open areas of car parking would be considered during detailed design in order to improve visual amenity, and lighting to ensure user safety.	Roads and Maritime	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Options for the finish of the railway station retaining wall and the Rose Street car park would be investigated during detailed design to achieve an outcome that discourages graffiti, avoids reflective glare and reduces the overall visual impact of the structures. A planting zone would be provided at the base of the wall to provide visual screening. • During detailed design, opportunities to further improve the visual appearance of the bridges over Wyong River would be explored. Road barriers and bridge parapet designs would also be addressed to minimise visual impacts. • The design of the bridges over Wyong River would be further developed during detailed design to consider the integration of the design of the headstocks and piers due to the high visibility from nearby local road. • The walkway and railway station entrance design would be well considered and designed as an architectural landmark aligning with the character of the town centre. • The lighting design along the Pacific Highway and lighting on the proposal in general would be developed in detailed design to consider suitable furniture types and placement. • During detailed design opportunities to minimise the visual impacts from the drainage works in Apex Park would be explored.		
70	Landscape character and visual impact	• A detailed landscape plan would be prepared for the proposal. The landscape plan would build on the findings of the UDLVIA (Jackson Teece, 2015) and would include detailed set out, species and planting guides. • The final landscape plan would include as many mature Canary Island Date Palms as possible within the upgraded town centre. • The final landscape plan would include appropriate measures for the reinstatement of the historic milestone marker.	Construction contractor	Pre-construction
71	Reduction of landscape character and visual amenity	• Landscape screening would be created where feasible; particularly to screen views of the railway, retaining wall structures and boundary fences. • Revegetation by planting or seeding of the median would be undertaken where median widths permit.	Construction contractor	Pre-construction Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Species should be endemic and frangible. • Vegetation clearing along the proposal corridor would be minimised where possible, in particular the mature trees along the Wyong River banks and trees within Riverside Park and Apex Park.		
72	Construction visual impacts	• The visual impact of construction site areas would be minimised through the careful planning and positioning of temporary offices, other plant and material laydown areas. • Specific management of lighting and potential for light spill within the identified construction site compounds. • All construction generated litter/waste would be disposed of at an appropriate waste bin/facility.	Construction contractor	Construction
73	Unexpected finds	• The CEMP would include the responsibility for all construction staff to be observant as to the potential presence of Aboriginal cultural heritage material when working on site. • In the event of an unexpected find of Aboriginal cultural heritage, work would cease in the affected area and *Roads and Maritime Standard Management Procedure - Unexpected Heritage Items* (2015) would be implemented. Roads and Maritime's Environment Manager would be notified immediately.	Construction contractor	Pre-construction, Construction
74	Impacts on local air quality during construction	• Prepare a Construction Air Quality Management Plan (CAQMP) as part of the CEMP. This Plan must show the locations of all potentially affected properties and residences on a map and provide details of air quality control measures to be undertaken during construction, including: – air quality and dust management objectives consistent with OEH guidelines; – potential sources and impacts of dust, identifying all dust sensitive receptors; – an environmental risk assessment to address potential impacts and mitigation measures to minimise dust impacts to sensitive receivers and to the environment; – mitigation measures to be implemented, including measures during weather conditions where high dust episodes are likely (such as strong winds in dry weather);	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		– a monitoring program to assess compliance with the identified objectives; – a progressive stabilisation/ rehabilitation strategy for disturbed surfaces with the aim of minimising exposed surfaces; – contingency plans to be implemented in the event of non-compliances and/or complaints about dust; and – procedures for regularly reviewing the effectiveness of the CAQMP.		
75	Impacts on local air quality during construction	• The CAQMP is to be followed and updated as required for the duration of construction works. • Construction plant and equipment is to be maintained in order to ensure exhaust emissions comply with applicable regulations (POEO Act). Emissions controls used on vehicles and construction equipment would comply with standards listed in Schedule 4 of the *Protection of the Environment Operations (Clean Air) Regulation 2010*. In addition, plant would be operated in a proper and efficient manner. • Controlling truck speed and movements onsite and restrict trucks to designated roadways. • Modifying or stopping construction activities during periods of high wind, if necessary. • Vehicle loads involving loose materials are to be covered when travelling off-site. • Implementing control measures, such as compaction or stabilisation, in order to minimise dust from stockpile sites, work areas and exposed soils. • Regularly inspecting and maintaining erosion control structures to ensure silt does not become a source of dust. • Maintaining all equipment for dust control to keep it in good operating condition. The equipment would be operable at all times with the exception of shutdowns required for maintenance.	Construction contractor	Construction
76	Construction waste	• A Materials Management Plan would be prepared by the construction contractor as part of the CEMP prior to the commencement of relevant site works. The Materials Management Plan is to ensure that wastes are properly managed during construction in a way that it is consistent with the principles of avoidance,	Construction contractor	Pre- construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		reduction, reuse and recycling. • The Materials Management Plan would: – Identify the waste streams that would be generated during construction – Detail for each of the identified waste streams: ▪ its waste classification ▪ how and where the waste is to be reused, recycled, stockpiled or disposed ▪ the receptacles that would be used for storing identified waste materials prior to reuse, recycling, stockpiling or disposal ▪ how, and by whom, the waste would be transported between generation, storage and point of reuse, recycling, stockpiling or disposal (including maintenance of a waste management register) ▪ specify the methods to be used for monitoring the implementation of the Materials Management Plan ▪ comply with the requirements of the PoEO Act for any non-licensed as well as licensed waste activities that involve the generation, storage and/or disposal of waste ▪ identify the need or otherwise for Section 143 notices to be obtained from landowners of sites where waste is to be deposited ▪ comply with any relevant NSW Resource Recovery Exemptions when applying waste to land. • The Resource Management Hierarchy principles of the *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) are to be adopted in the Materials Management Plan, as follows: – unnecessary resource consumption is to be avoided as a priority – generation of excess materials is to be avoided as a priority – resource recovery including the reuse of materials, reprocessing, recycling, and energy recovery would be implemented throughout construction – disposal is only to be undertaken as a last resort. • Reuse opportunities for the proposal would be considered within the Materials		

No.	Impact	Environmental safeguards	Responsibility	Timing
		Management Plan and may include: – re-use of recovered aggregates and excavated road materials in road construction in accordance with Roads and Maritime pavement specifications – weed free topsoil may be stockpiled and reused on batters or in ~~landscaping~~**landscape works** and revegetation works – excavated natural material may be sent offsite to a place that can legally accept this material for reuse or reprocessing. To facilitate future re-use, excavated natural material should not be mixed with any other types of waste – virgin excavated natural material may be sent offsite to a place that can legally accept this material for reuse or reprocessing. To facilitate future re-use, virgin excavated natural material should not be mixed with any other types of waste. • The Materials Management Plan is to include the following as a minimum: – all wastes, including contaminated wastes, would be identified and classified in accordance with OEH's *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes* (DEC, 1997). – excavated material that is not suitable for on-site reuse or recycling would be transported to a site that may legally accept that material for reuse or disposal – green waste that could not be reused during revegetation works would be transported to an appropriate waste depot for recycling. – non-weed species would be mulched for onsite reuse wherever possible, in preference to transportation off-site – putrescible and other waste, such as chemical waste that cannot be recycled, would be regularly collected and disposed of at an appropriate disposal site – other recyclable wastes would be separated and transported to a suitable recycler – contaminated wastes would be disposed of at an appropriate waste facility – should unanticipated contaminated material be found during excavation activities, a procedure would be developed as part of the CEMP to manage		

No.	Impact	Environmental safeguards	Responsibility	Timing
		the contaminated material in terms of rehabilitation requirements, waste classification, transport and disposal requirements. Such a procedure would include, as appropriate, the obtaining of appropriate licences and approvals from OEH prior to disposal of a contaminated waste generated by the proposal, and notification to the operators of the appropriately licensed disposal site – at the end of the construction period, unused fuel, oils and chemicals would be removed from the site – construction waste material would not be left on-site once the works have been completed – rubbish loads being transported from the site for disposal would be covered to prevent the spread of waste – portable, self-contained toilet and washroom facilities would be provided on-site and would be regularly emptied and serviced by the contractor providing them – excavated flexible and concrete pavement would be recycled where possible. – roadside materials (guide posts, guard rails) would be recycled or reused where possible – working areas would be maintained, kept free of rubbish and cleaned up at the end of each working day.		
77	Materials use	• Where reasonable and feasible, procure materials with recycled content or re-use materials for road construction and maintenance such as recycled aggregates in road pavement and surfacing (including crushed concrete, granulated blast furnace slag, glass, slate waste and fly ash). This measure forms part of Roads and Maritime's implementation of the NSW Government's 'Waste Reduction and Purchasing Policy' (WRAPP).	Construction contractor	Construction
78	Construction waste	• The Materials Management Plan would be implemented for all stages of construction. • The Materials Management Plan would be regularly reviewed and revised as necessary.	Construction contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Wastes would be properly managed during construction in a way that it is consistent with the principles of avoidance, reduction, reuse and recycling.		
79	GHG emissions	• Specify construction materials with lower emissions intensity in the detailed design (e.g. recycled steel in place of virgin steel) where engineering and other technical specifications can be met and the alternative is reasonable and feasible.	Designer Contractor	Detailed design Construction
80	GHG emissions	• Plant and equipment would be switched off when not in use. • Vehicles, plant and construction equipment would be appropriately sized for the task and properly maintained so as to achieve optimum fuel efficiency. • Materials would be delivered with full loads and would come from local suppliers, where possible.	Construction contractor	Construction
81	Impact of increased flood events	• Detailed design would take the effect of climate change on the proposal into consideration, including for the drainage design.	Roads and Maritime	Pre-construction
82	GHG emissions	• Design street lighting to optimise lamp wattages and types within compliance limits, minimise waste light and reduce overall scheme energy consumption. • Energy efficiency and related carbon emissions would be considered in the selection of vehicle and plant equipment.	Designer Construction contractor	Detailed Design Pre-construction
83	Cumulative impacts	• Roads and Maritime would undertake ongoing consultation with the Department of Planning and Environment and Wyong Shire Council to coordinate project planning where possible.	Roads and Maritime	Pre-construction Construction
84	Cumulative impacts	• Works would be staged to avoid and minimise impacts along the entire length where possible.	Construction contractor	Construction

5.3 Licensing and approvals

The following licenses, permits, notifications and/or approvals are needed to construct/operate the proposal.

Table 5.2 Summary of licenses and approvals required

Requirement	Timing
An applicable road occupancy licence would be required. A road occupancy licence allows the proponent to use a specified road space at approved times, provided certain conditions are met. The licence applies to the occupation of the 'road space' only and does not imply permission or approval for the actual (physical) works being undertaken.	An applicable road occupancy licence would need to be in place prior to the commencement of construction.
The proposal would meet the requirements for needing 'controlled activity' approval given that there would be works within 40 metres of 'waterfront land'. However, under clause 38 of the Water Management (General) Regulation 2004, Roads and Maritime is exempt from the requirement to obtain a 'controlled activity' approval. Notification of the activity to DPI Water (the former NSW Office of Water) is required.	Notification of the activity must be provided to DPI Water at least 30 days before the activity commences.
If groundwater extraction is required, an aquifer interference approval would be required for the work under Section 91F of the *Water Management Act 2000.*	Prior to construction commencement or during construction as required.
In accordance with Section 199 of the *Fisheries Management Act 1994*, Roads and Maritime is required to give the Minister written notice and must consider any matters raised by the Minister in order to carry out any dredging or reclamation work.	Notification would be given to the Minister and any matters raised by the Minister would be considered within 28 days after the giving of the notice.
If fish passage is to be blocked, a permit would be required under Section 220 of the *Fisheries Management Act 1994* prior to any works commencing.	Prior to construction commencement or during construction as required.
If the requirement to remove seaweed, seagrass, saltmarsh or mangroves is identified, a permit under Section 38 of the *Fisheries Management Act 1994* may be required.	Prior to construction commencement or during construction as required.
Section 139 of the *Heritage Act 1977* requires an excavation permit to disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation would or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed. A permit is also required to disturb or excavate any land on which the person has discovered or exposed a relic.	An application for a Section139 permit would be made prior to construction commencing.
Formal notice to Wyong Shire Council of the intention to demolish items listed on the Wyong LEP would be required.	Prior to construction commencement or during construction as required.
Formal notice to Sydney Trains Heritage Division of the intention to demolish items listed on the Sydney Trains Section 170 register would be required.	Prior to construction commencement or during construction as required.
Under Sections 79-81 of the *Roads Act 1993*, Roads and Maritime must carry out public consultation for a proposed bridge across navigable waters, in accordance with the requirements of the Act.	Concurrent with the public display of the REF.

6 References

Lewis, B.D (2013). Warrell Creek to Urunga: *Microchiropteran Bat Management Strategy*. Report prepared for Roads and Maritime Services by Lewis Ecological Surveys.

SMEC (2015a) *Pacific Highway Upgrade through Wyong town centre Review of Environmental Factors*, report prepared for Roads and Maritime Services October 2015.

SMEC (2015b) *Pacific Highway Upgrade through Wyong town centre Microbat Report,* technical note prepared for Roads and Maritime Services, December 2015.

Appendix A
Newspaper advertisement

Transport
Roads & Maritime
Services

NSW GOVERNMENT

Have your say

Pacific Highway upgrade through Wyong town centre

Roads and Maritime is planning an upgrade of the Pacific Highway through the Wyong town centre to provide two lanes in each direction between Johnson Road at Tuggerah and Cutler Drive at Wyong. The upgrade would improve traffic flow, travel times and safety.

An environmental assessment has been carried out to identify potential impacts of the proposal and mitigation activities.

The concept design and environmental assessment are available to view on the project website or at Wyong Shire Council and Tuggerah Library.

You are invited to attend community drop-in sessions on **Thursday 5 November 2015** between 10am-2pm and 4pm-8pm or **Saturday 7 November 2015** between 10am-1pm at the Roads and Maritime Services Wyong Motor Registry Conference Centre (entry from Anzac Avenue).

We invite you to provide feedback by **Friday 27 November 2015**. Feedback will be considered in finalising the proposal.

Z07018

For more information or to provide feedback please contact Pete Styles on (02) 4379 7008, central.coast.office@rms.nsw.gov.au or visit rms.nsw.gov.au

Appendix B
Project update (October 2015)

Pacific Highway upgrade through Wyong town centre

Concept design and environmental assessment

October 2015

Roads and Maritime Services is planning an upgrade of the Pacific Highway through the Wyong town centre to provide two lanes in each direction between Johnson Road at Tuggerah and Cutler Drive at Wyong.

An environmental assessment has been carried out to identify potential impacts of the proposal and mitigation activities.

Comments from stakeholders and the community are invited by **27 November 2015**. Roads and Maritime will consider feedback in finalising the proposal.

Background

The Pacific Highway through Wyong is currently a single lane in each direction. Previous studies and community consultation carried out by Roads and Maritime has determined any future upgrade would be along the existing Pacific Highway route.

A revised design was displayed for feedback in May 2015 and comments received have been considered in developing the concept design. The NSW Government has allocated $1.5 million this financial year to allow planning for the upgrade to continue.

Benefits

Key benefits of the proposed upgrade include:

- Improved traffic flow and more consistent travel times for motorists
- Improved safety for all road users including cyclists and pedestrians
- Providing opportunities for future revitalisation and growth while maintaining the town's identity
- Compatibility with public transport services
- Improved facilities for pedestrians and cyclists.

The proposal

The proposed upgrade provides the best overall balance between environmental, social and technical considerations.

Key features include:

- Two through lanes in each direction
- Integrating the rail interchange with bus services, taxi services, disabled and short term parking
- All long term commuter parking relocated to the east of the railway station
- Retaining as much on-street parking as possible on the western side of the highway for businesses through Wyong town centre and some on-street parking on the eastern side of the highway
- Upgrading the existing intersection at Church Street and providing new signalised intersections at Rose Street, Anzac Avenue, North Road and Cutler Drive to improve access for vehicles entering or exiting the highway and improve safety for pedestrians crossing the highway
- Replacing the Rose Street rail bridge, improving access to the Baker Park precinct
- Pedestrian access across the highway improved by the partial closure of Bakers Lane
- An off-road shared pathway along the highway connecting to the existing cycleway on Tuggerah Straight
- Relocating and retaining most of the existing palm trees
- Replacing the existing Wyong River road bridge with two new road bridges improving overhead clearance heights for River Road and South Tacoma Road
- A roundabout on the Pacific Highway at McPherson Road.

Key considerations for assessment

The following key areas of potential impact have been identified in the environmental investigations. The environmental assessment describes these impacts and measures to reduce them.

Socio-economic

Commuter car parking would be transferred to the eastern side of Wyong railway station to an expanded commuter car park on Rose Street. A number of properties would require full or partial acquisition to construct the proposed upgrade.

The proposal would have some impacts for businesses in the town centre during construction. As much on street parking as possible would be maintained on the highway to ensure access to businesses during construction.

The environmental assessment found the impact on businesses would be reduced by implementing a range of mitigation measures during construction.

The completed project would benefit local businesses through reducing highway congestion, encouraging active transport and by retaining most of the on street parking through the town centre.

Traffic and transport

Alternative routes have been considered in the design and are described in the environmental assessment. Pedestrian and cycle access would be provided along both sides of the highway to improve safety and encourage active transport options.

During construction there would be some delays impacting on all road users. Roads and Maritime would work with road users to ensure any adverse impact or delay is minimised.

Construction is anticipated to be implemented in separate stages to minimise impacts to traffic, businesses and residents. One lane in each direction would be maintained on the highway and at least one direct connection from the Wyong township to Baker Park would be open at all times.

Operational traffic noise

Operational traffic noise modelling was carried out to compare the current traffic background noise with future predicted noise levels. The results show any increase in operational noise would be a result of predicted traffic growth rather than the proposal.

Specific individual noise treatments would be discussed with relevant property owners, if required.

Construction noise

The proposal includes extended construction hours between 6am and 8pm Monday to Friday and 7am to 5pm Saturday. Some construction activities would generate substantial noise including earthworks, saw cutting and piling activities. Management measures would include limiting noise related work to standard construction hours and minimising noise generated by machinery wherever possible.

Work would be performed outside these hours to fit with planned rail outages which are usually scheduled over long weekends. The demolition and construction of some elements of the Rose Street bridge would be required during these times to ensure the safety of workers and road users. During rail outages work may be carried out continuously for up to 60 hours to ensure the railway reopens for trains to return to regular service.

Based on the construction activities and equipment used, construction noise is expected to impact some nearby residents. Residents who are likely to experience construction noise impacts would be contacted in advance.

A range of proposed mitigation and management measures are outlined in the environmental assessment.

Night work

Night work would be required at times to minimise traffic disruptions and ensure the safety of workers. Night work would be limited to activities of minimal noise impact wherever possible.

Heritage

The proposal would require the demolition of two local heritage listed buildings, the Warner Shops and the former Station Master's Cottage. These buildings can no longer be retained due to the impact of the rail corridor changes and road widening.

The proposal would also require the demolition of the locally heritage listed road bridge over Wyong River.

An interpretation strategy would be developed and implemented to mitigate the removal of the former Station Master's Cottage, Warner Shops, as well as the existing road bridge over the river.

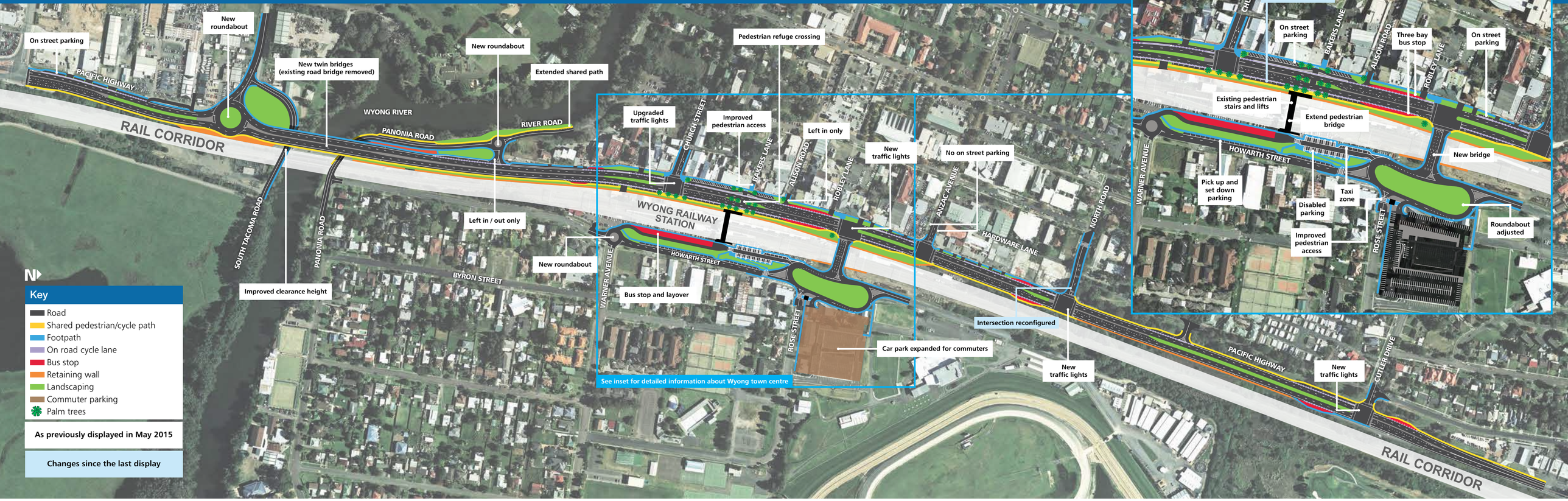
Potential mitigation measures include archival photographic recording and managing vibration levels around other heritage listed items. The Canary Island Date Palms would be relocated as a feature statement on the highway to recognise their local heritage value. A locally listed historic milepost would also be preserved by removing and reinstating it after construction.

Biodiversity

There are potential impacts to native vegetation identified as endangered ecological communities and habitat suitable for threatened fauna and flora. Where possible, impacts on these communities would be minimised by retaining hollow-bearing trees and remnant vegetation in addition to carrying out suitable post construction revegetation. Ancillary sites would be situated in previously affected areas.

The environmental assessment identified there would not likely be any significant impact on flora and fauna if all mitigation measures are adopted. A species impact statement is not required for this proposal.

Pacific Highway upgrade through Wyong town centre concept design



N

Key

- Road
- Shared pedestrian/cycle path
- Footpath
- On road cycle lane
- Bus stop
- Retaining wall
- Landscaping
- Commuter parking
- Palm trees

As previously displayed in May 2015

Changes since the last display

Environmental assessment

Roads and Maritime has carried out an environmental assessment to assess the potential environmental and social impacts of the proposal and identify activities to manage and mitigate these impacts.

The assessment was carried out in consultation with a range of key stakeholders including technical specialists and considered feedback received from the community.

The investigations found the proposal is unlikely to have a significant impact on the environment with the application of a range of environmental mitigation and management measures.

Proposed construction

Construction staging has been planned to maintain one lane of traffic in each direction on the highway at peak travel times. There would also be one direct connection from the township to Bakers Park open at all times, with Rose Street or Panonia Road the most likely options.

There would be no extended closures of the highway through Wyong town centre for motorists during the proposed construction work.

A reduced speed limit would be implemented for traffic through the construction zone. Lane widths may be reduced to accommodate construction and barriers required for worker safety. Short term lane closures would be required but would be restricted to off peak hours.

Key considerations for assessment Continued

Hydrology and flooding

The proposed replacement of the existing road bridge and realignment of the bridge piers would improve potential flood impacts. However, minor flood level increases during major storm events are predicted to occur over a large area of Wyong and Tacoma, which would not impact on infrastructure or residential properties. The proposal includes improving drainage under the highway by installing additional drains near Apex Park.

The proposal is expected to have little impact on the duration of flooding in the Wyong town centre, or the wider catchment. There would be no impact to flooding in the rail corridor as a result of the proposal.

Construction staging, erosion and sediment controls would ensure fish passage is maintained in Wyong River at all times during construction.

Involving the community and stakeholders

Roads and Maritime is working with the community and stakeholders during the planning process to identify issues and minimise potential impacts of the proposed upgrade and construction activities.

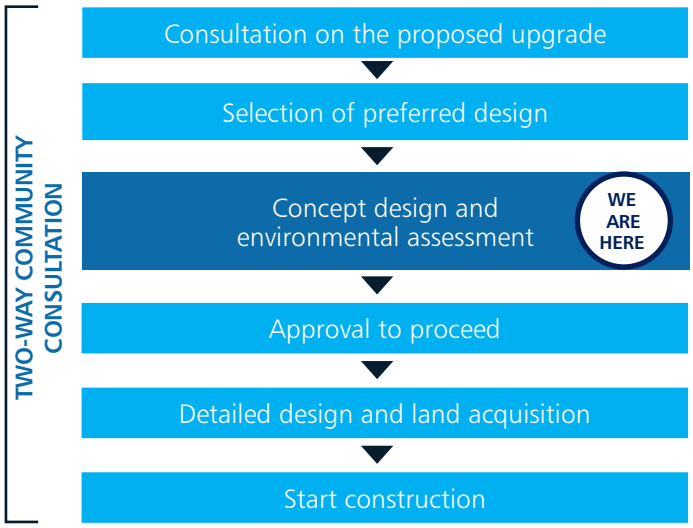
The revised design for the upgrade was displayed for comment in May 2015. The feedback received was considered in preparing the environmental assessment and concept design.

Next steps

Stakeholders and the community are invited to comment on the environmental assessment by **27 November 2015**.

Roads and Maritime will consider the feedback received in finalising the proposal.

The timing of construction is not yet confirmed.



Please send us your feedback by:

Phoning: Pete Styles, Project Manager, on (02) 4379 7008 (during business hours)

Emailing: Central.Coast.Office@rms.nsw.gov.au

Writing to: Roads and Maritime Services
Central Coast Office
Locked Bag 2030
Newcastle NSW 2300

Visit a display

The environmental assessment is now on display. You may collect a project update or view the display until **27 November 2015** at the following locations, Monday to Friday from 9am to 4pm:

- **Tuggerah Library**
  Westfield Tuggerah
  50 Wyong Road, Tuggerah
- **Wyong Shire Council**
  2 Hely Street, Wyong

Drop-in information sessions

Stakeholders and the community are invited to attend drop-in information sessions on **Thursday 5 November 2015** between 10am-2pm and 4pm-8pm or **Saturday 7 November 2015** between 10am-1pm at:

Roads and Maritime Services
Wyong Motor Registry Conference Centre
Corner Hely Street and Anzac Avenue
(entry from Anzac Avenue)
Wyong

Information is also available on the website at **rms.nsw.gov.au/projects**

October 2015
RMS 15.543

Transport Roads & Maritime Services

Appendix C
Media release

Transport Roads & Maritime Services

MEDIA RELEASE

29 OCTOBER 2015

HAVE A SAY ON CONCEPT DESIGN OF PROPOSED PACIFIC HIGHWAY UPGRADE THROUGH WYONG TOWN CENTRE

Roads and Maritime Services is inviting stakeholders and the community to have a say on the concept design and environmental assessment as planning progresses for the proposed upgrade of the Pacific Highway through Wyong town centre.

A Roads and Maritime spokesperson said $1.5 million has been allocated this financial year to continue planning the upgrade to improve traffic flow and provide more consistent travel times for motorists by providing two lanes in each direction.

“Comments received during the recent display of the revised design were considered in refining the concept design,” the Roads and Maritime spokesperson said.

“Roads and Maritime carried out an environmental assessment to assess the potential environmental and social impacts of the proposal and identify activities to manage and mitigate these impacts.

“These investigations found the proposal is not likely to have a significant impact on the environment with environmental mitigation and management measures put in place.

“Roads and Maritime will continue to keep the community and stakeholders informed during the planning process to help identify issues and minimise potential impacts of the proposed upgrade.

“Stakeholders and the community are invited to attend informal drop-in information sessions on Thursday 5 November between 10am and 2pm and 4pm and 8pm or Saturday 7 November between 10am and 1pm at the Wyong motor registry conference centre.

“Feedback on the concept design and environmental assessment is invited by 27 November and will be considered in finalising the proposal.”

Copies of the environmental assessment can be viewed on weekdays from 9am to 4pm at the Tuggerah Library or Wyong Shire Council. Project updates are available for collection at these locations and the Wyong motor registry.

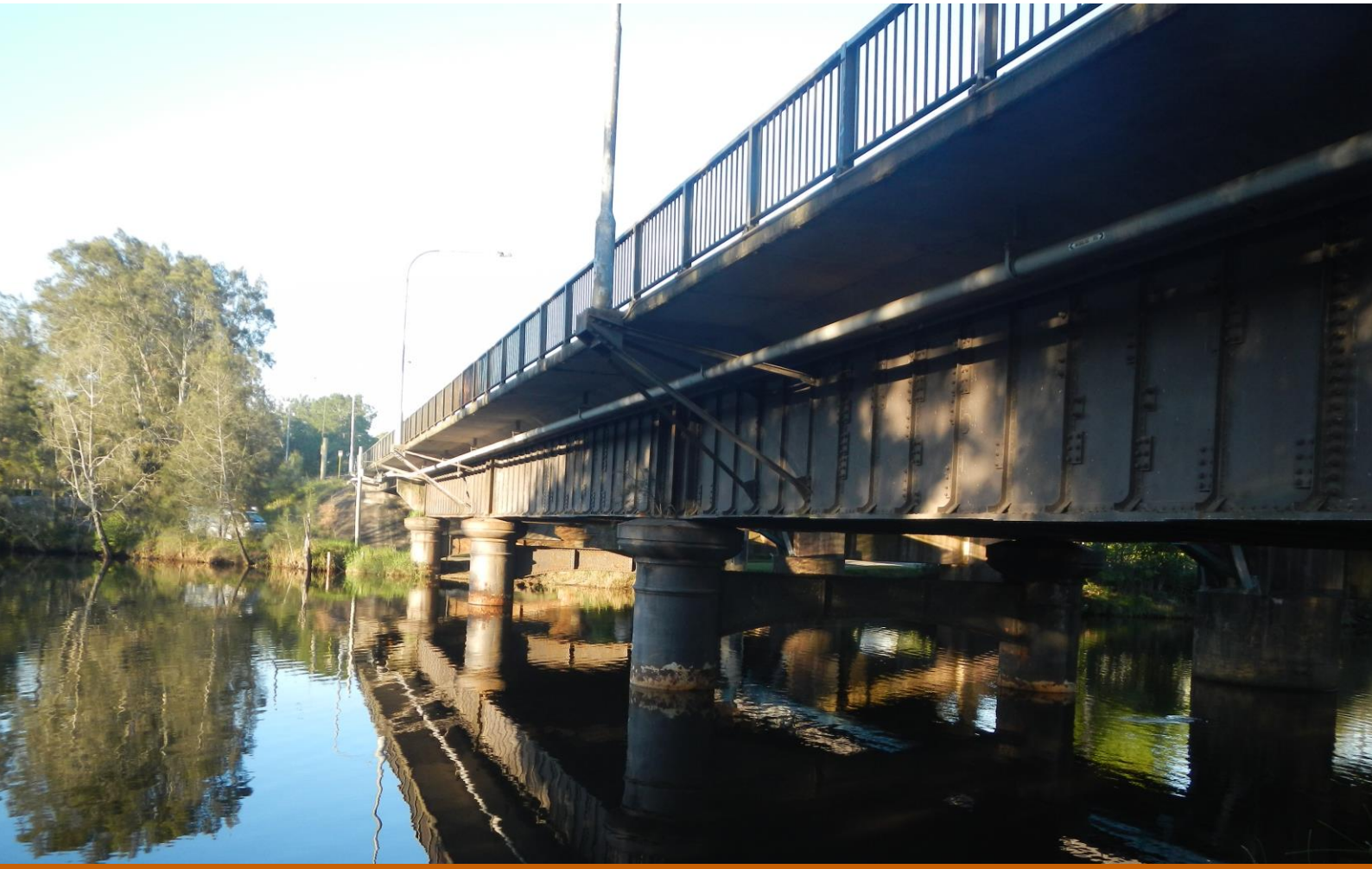
The environmental assessment and concept design are now available for view or download on the Roads and Maritime website at www.rms.nsw.gov.au/projects.

Appendix D
Microbat Report

Microbat Report

Pacific Highway Upgrade through Wyong Town Centre

Prepared for Roads and Maritime Services
December 2015



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ACRONYMS

Acronyms	Definition
cm	Centimetres
DEC	(Former) Department of Environment and Conservation (NSW)
DECC	(Former) Department of Environment Climate & Change (NSW)
DECCW	(Former) Department of Environment Climate Change & Water (NSW)
DoE	Department of the Environment (Commonwealth)
DSEWPaC	(Former) Department of Sustainability, Environment & Water Protection & Conservation (Commonwealth)
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
ha	Hectare
km	Kilometres
LGA	Local Government Area
m	Metres
MNES	Matters of National Environmental Significance
NPWS	National Parks and Wildlife Service (NSW)
NSW	New South Wales
OEH	Office of Environment and Heritage(NSW)
REF	Review of Environmental Factors
RMS	Roads and Maritime Services
SMEC	Snowy Mountains Engineering Corporation
TEC	Threatened Ecological Community
TSC Act	*Threatened Species Conservation Act 1995* (NSW)

1 INTRODUCTION

1.1 Background

Roads and Maritime Services (Roads and Maritime) proposes to upgrade the Pacific Highway through the Wyong Town Centre. The proposal involves widening the existing single lane road to a dual carriageway with two lanes in each direction and a central median.

SMEC prepared a Biodiversity Assessment Report in June 2015. The report included Assessments of Significance for microchiropteran bats ('microbats') based on habitat inspections and results from surveys undertaken by Parsons Brinckerhoff in 2013. During these surveys one threatened microbat species, the Eastern Freetail Bat (*Mormopterus norfolkensis*), was identified. This species is listed as vulnerable under the *Threatened Species Conservation Act 1995* (TSC Act). Another four threatened bat species were considered likely to occur. Consequently, a recommendation of the June 2015 report included additional surveys in spring for microbats that may be utilising the bridge structure that is proposed to be demolished and replaced.

1.2 Study site

The proposal is located in Wyong town centre. It is located within the Wyong Shire Council local government area (LGA). The 'study area' includes the entire alignment from Johnson Road to north of Cutler Drive (Figure 1). Within the study area, the Pacific Highway crosses the Wyong River. The study site for the microbat surveys includes this road bridge over the Wyong River.

1.3 Study purpose

The key aims of this study are to:

- Undertake a review of published documentation and previous surveys relevant to the study area identifying species that may be present
- Conduct a field survey focussed on the Wyong River road bridge and its potential as microbat habitat
- Identify and assess likely impacts to microbats and their habitat around the Wyong River road bridge arising from the proposal
- Update assessments under Part 5 of the EP&A Act for threatened microbat species where required
- Identify measures for managing impacts on microbats during design, construction and operation of the proposal.

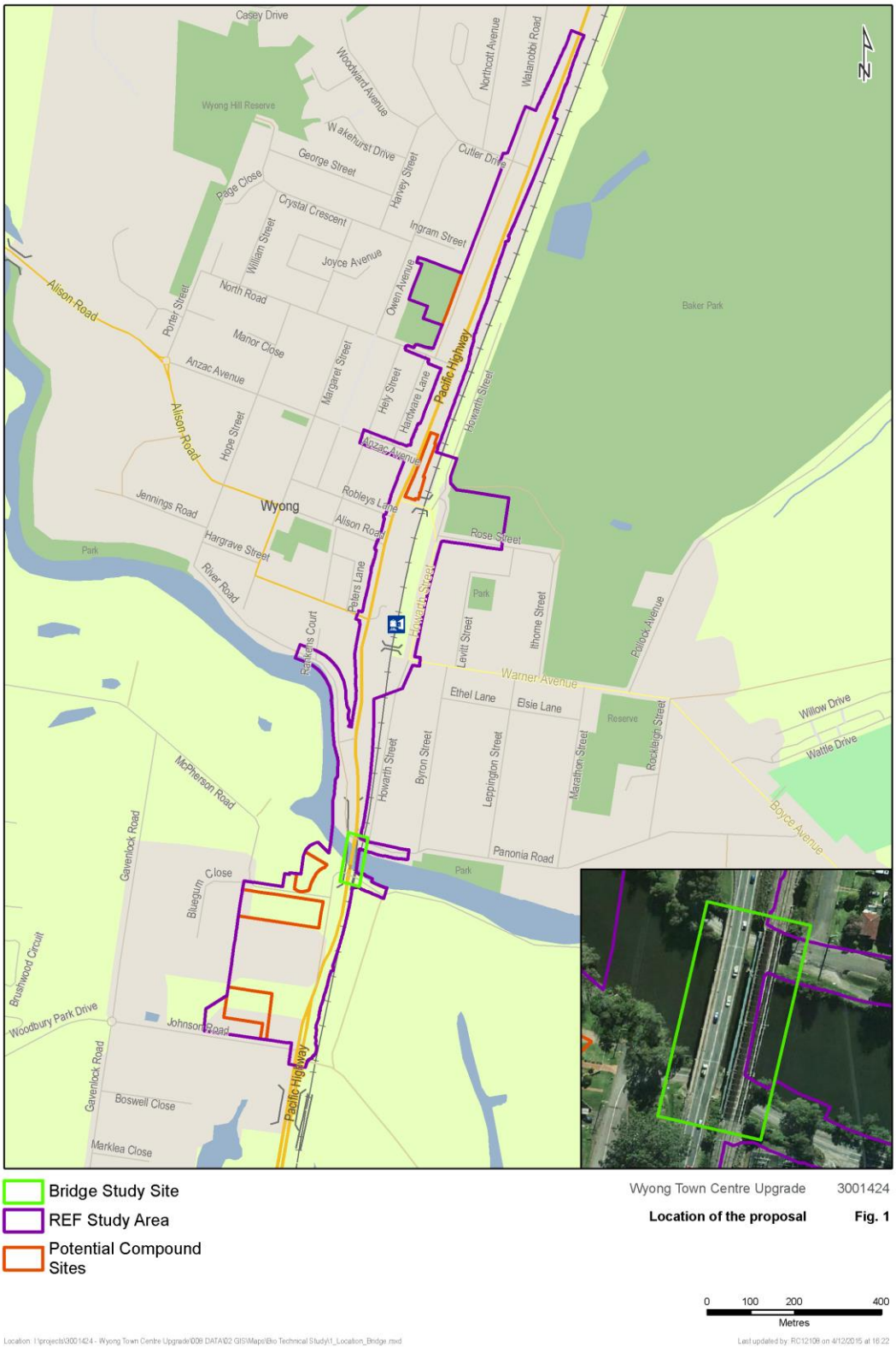

Figure 1: Location of the proposal

2 METHODOLOGY

2.1 Database searches and literature reviews

Desktop research was undertaken prior to the commencement of field surveys and included updating database searches and reviewing relevant literature and previous reports.

The following databases and resources were investigated:

- NSW Office of Environment and Heritage (OEH) Atlas of NSW Wildlife Database, within a 10 kilometre radius of the site (November 2015)
- Commonwealth Protected Matters Report for all MNES documented within 10 kilometres of the site; MNES include threatened species, communities and migratory species which are listed under the EPBC Act (Department of the Environment) (December 2015)
- NSW Office of Environment and Heritage – Threatened species profiles
- *Pacific Highway Upgrade Wyong Town Centre, Wyong: Preliminary Environmental Investigation* (Hills Environmental, 2013)
- *HW 10 Pacific Highway – Wyong Town Centre Ecological Assessment* (Parsons Brinckerhoff, 2013).

Survey methods were developed following a review of the OEH guidelines *Threatened Biodiversity Survey and Assessment: Guidelines for developments and activities* (working draft) (DEC, 2004).

2.2 Field survey

Microbat surveys were undertaken on 16 and 17 November 2015. The survey included the following components:

- Inspection of the existing road and rail bridges over the Wyong River for roosting bats and potential habitat
- Placement of an ultrasonic detector (ANABAT SD1 and ZCAIM, Titley Electronics) under the road bridge on the northern bank of the Wyong River for two nights to detect microbat echolocation calls, as per the *Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004)
- Dusk surveys to observe microbats emerging from the bridge structure to forage.

Weather conditions throughout the surveys were fine, calm and warm and therefore suitable to conduct microbat surveys.

The microbat surveys undertaken in November 2015 added to, and updated, field surveys undertaken by SMEC in March and October 2014 and previous flora and fauna surveys undertaken by Parsons Brinckerhoff and Niche Environment and Heritage in 2013.

It is not considered that the Rose Street bridge over the northern railway line provides suitable habitat so no surveys were conducted in the vicinity of this bridge.

2.3 Analysis

Analysis of microbat calls was undertaken using the AnalookW program and *Bat calls of New South Wales: Region based guide to the echolocation calls of microchiropteran bats* (Pennay *et al*. 2004).

Some microbat species have distinctive echolocation calls that are unlikely to be confused with those of other species. Calls of other bat species overlap in both call frequency and have similar call structures. The degree of confidence or reliability associated with call identifications depends on the quality of the recordings, the activity of the bat at the time of recording and flight direction. Calls are identified to difference degrees of confidence depending on these factors (Pennay *et al*. 2004).

2.4 Limitations

Limitations to the microbat surveys, which may affect survey results, include:

- Inspections of the bridge structure were made from on the ground below the bridge. Some parts of the bridge structure were not visible
- There is some level of uncertainty in the identification of some microbat species from echolocation calls (see Section 2.3)
- Setting harp traps for more accurate identification of microbat species was not feasible due to the lack of suitable habitat and the proximity to a known roost site.

3 RESULTS

3.1 Background information

Database searches identified 22 species of microbat that have been recorded within a 10 kilometre radius of the study area (Appendix A). Previous reports (Parsons Brinckerhoff 2013, SMEC 2014) identified four threatened species with the potential to occur within the Wyong town centre study area:

- *Miniopterus schreibersii oceanensis* (Eastern Bentwing Bat) – vulnerable TSC Act
- *Mormopterus norfolkensis* (Eastern Freetail Bat) – vulnerable TSC Act
- *Myotis macropus* (Southern Myotis) – vulnerable TSC Act
- *Scoteanax rueppellii* (Greater Broad-nosed Bat) – vulnerable TSC Act

Fauna surveys conducted by Parsons Brinckerhoff in 2013 identified the Eastern Freetail Bat within the study area using ultrasonic call detection.

3.2 Survey results

3.2.1 Microbat habitat

The study areas lies within an urbanised part of Wyong Shire. Residential, industrial and commercial properties occupy the majority of the study area. Remnant vegetation exists in recreational areas and roadside landscaping including areas adjacent to the Wyong River bridge. Remnant vegetation and the Wyong River provides suitable foraging habitat for various species of microbat.

The Wyong River road bridge provides some roosting habitat for microbats. Southern Myotis were observed roosting between concrete blocks in the northern pylon of the bridge (see red arrow in Figure 2). Scats were also observed below the same position in the southern pylon of the bridge. It is likely the microbats roosting in the southern pylon are also the Southern Myotis, although in a smaller group as indicated by the amount of scats observed. This habitat is typical of this species (OEH 2015). Microbats appear to tolerate the noise from both the road and rail bridges in addition to vibrations through the bridge from the road surface above. Steel girders across the water do not appear to provide suitable habitat, however, these could not be completely inspected due to restricted access. The outside of the steel girders are readily used by Welcome Swallows (*Hirundo neoxena*) for nesting. No microbats were observed utilising the concrete girders at either end of the bridge for roosting.

No microbats were observed utilising the adjacent rail bridge over Wyong River and the open structure is not expected to provide any suitable habitat.

Figure 2: Microbats in the Wyong bridge

Left - Red arrow indicates the gap between the concrete blocks where the microbats were observed; right – microbats roosting

3.2.2 Ultrasonic call detection

Four species of microbat, including three threatened species, were identified by their calls after passing an ultrasonic detector placed under the Wyong River bridge (Table 1). Call signatures for each species are show in Appendix 3. Greater than 300 passes were recorded for the Southern Myotis as they foraged across the surface of the water. Numerous individuals were observed foraging during dusk surveys. It is likely that the other species that recorded few passes were travelling between other roosting and foraging sites, possibly using the river for navigation.

Table 1: Microbat species identified using ultrasonic call detection

Scientific name	Common Name	TSC Status	EPBC Status	Confidence level
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-	Possible
Miniopterus australis	Little Bentwing Bat	V	-	Probable
Myotis macropus	Southern Myotis	V	-	Confident
Rhinolophus megaphyllus	Eastern Horseshoe Bat	-	-	Confident

Echolocation call identifications have been assigned to three categories with regard to certainty of identification:

Confident Identification - small possibility of confusion of calls with those of other bat species

Probable Identification - some possibility of confusion of calls with those of other bat species

Possible Identification - likely to be confused with calls of other bat species.

4 CONCLUSION

4.1 Overview of key findings

The key findings of this report are as follows.

- Four species of microbat were identified under the Wyong River bridge using ultrasonic detection. Three of these species are listed as vulnerable under the TSC Act: the Little Bentwing Bat (*Miniopterus australis*), Southern Myotis (*Myotis macropus*) and Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)
- The Southern Myotis was observed roosting between concrete blocks in the pylons at the northern end of the Wyong River bridge. It is likely this same species is also roosting in the equivalent space at the southern end of the bridge.
- The Eastern Freetail Bat has been identified within the study area during previous surveys.
- Potential habitat is available within the larger study area for six threatened microbat species; the Little Bentwing Bat, Eastern False Pipistrelle, Eastern Bentwing Bat, Eastern Freetail Bat, Southern Myotis and Greater Broad-nosed Bat.
- Assessments of significance undertaken for the microbats determined that the proposal is unlikely to have a significant impact on the Little Bentwing Bat, Eastern False Pipistrelle, Eastern Bentwing Bat, Eastern Freetail Bat or Greater Broad-nosed Bat and no further assessment is required
- There is some suitable foraging habitat available for the Southern Myotis within the study area including the surface of the Wyong River. This species was identified foraging within the study area and utilising the road bridge for roosting. The proposed works may impact on some foraging habitat during construction and demolition of the existing road bridge. The proposal will require the removal of known roosting habitat for the Southern Myotis in the road bridge over the Wyong River.
- The proposed construction staging would allow for the new bridge and habitat to be constructed prior to the demolition of the existing road bridge, and habitat.
- Prior to commencement of construction a pre-clearance survey would be undertaken to determine if bats are present and, if necessary, to install exclusion measures.

4.2 Recommendations

Impacts can be mitigated through the retention or replacement of roosting habitat for microbats. It is recommended that a microbat management plan be prepared during detailed design to investigate options for including suitable roosting habitat for microbats (particularly the Southern Myotis). Encouraging bats to move from the existing habitat to suitable new roosting habitat has been successfully accomplished for other projects (for example – Warrell Creek to Urunga, Lewis 2013).

Other mitigation measures included in the REF recommended for the overall proposal will benefit all microbat species that occupy the study area including:

- Retention of native vegetation where possible

- Protection and retention of hollow-bearing trees where possible.

The mitigation measures in the REF can be amended as follows:

The mitigation measure to undertake spring surveys for microbats can be removed as these have now been undertaken.

The following mitigation measures from the REF would be revised as follows:

- A microbat management plan would be developed and implemented prior to commencement of construction, including reassessment of the impact of the proposal on the species present.
- Options for providing microbat roosting habitat would be investigated during detailed design.

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APPENDIX A: MICROBAT SPECIES

Table 2: Microbat species identified within a 10 kilometre radius of the study area

Scientific Name	Common Name	TSC Status	EPBC Status	Number of records*
Rhinolophus megaphyllus	Eastern Horseshoe-bat			8
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V		2
Tadarida australis	White-striped Freetail-bat			24
Mormopterus norfolkensis	Eastern Freetail-bat	V		18
Mormopterus ridei	Eastern Free-tailed Bat			14
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	1
Chalinolobus gouldii	Gould's Wattled Bat			44
Chalinolobus morio	Chocolate Wattled Bat			21
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V		17
Kerivoula papuensis	Golden-tipped Bat	V		7
Miniopterus australis	Little Bentwing-bat	V		19
Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	V		42
Myotis macropus	Southern Myotis	V		16
Nyctophilus geoffroyi	Lesser Long-eared Bat			26
Nyctophilus gouldi	Gould's Long-eared Bat			15
Nyctophilus sp.	long-eared bat			5
Scoteanax rueppellii	Greater Broad-nosed Bat	V		26
Scotorepens orion	Eastern Broad-nosed Bat			24
Vespadelus darlingtoni	Large Forest Bat			11
Vespadelus pumilus	Eastern Forest Bat			24
Vespadelus regulus	Southern Forest Bat			4
Vespadelus vulturnus	Little Forest Bat			19

V= vulnerable **based on 10 kilometre radius search centred on the study area*

APPENDIX B: ASSESSMENT OF SIGNIFICANCE

Note: The following Assessments of Significance has been updated from the assessment prepared by SMEC in 2014 to include results from the latest surveys. These assessments relate to the entire study area for the proposal.

Species: *Miniopterus australis* (Little Bentwing Bat), *Falsistrellus tasmaniensis* (Eastern False Pipistrelle), *Miniopterus schreibersii oceanensis* (Eastern Bentwing Bat), *Mormopterus norfolkensis* (Eastern Freetail Bat) and *Scoteanax rueppellii* (Greater Broad-nosed Bat)

The Little Bentwing Bat, Eastern False Pipistrelle, Eastern Bentwing Bat, Eastern Freetail Bat and Greater Broad-nosed Bat are listed as vulnerable under the TSC Act.

Criteria	**(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction**
Response	The Little Bentwing Bat, Eastern False Pipistrelle, Eastern Freetail Bat and Greater Broad-nosed Bat may utilise hollow-bearing trees on site as roosting habitat and forage around the vegetated parts of the study area. No other roosting structures or maternity caves for these species have been identified within the study area. Eastern Bentwing Bats primarily roost in caves and man-made structures so are likely to only utilise the study area for foraging on occasion (OEH 2015). Foraging habitat for each of these species occurs within the study area. Suitable foraging habitat would be retained by the proposal.
Conclusion	The proposed actions are unlikely to have an adverse effect on the life cycle of these species such that a viable local population is placed at risk of extinction. Suitable foraging habitat would be retained on site and no breeding sites would be affected.
Criteria	**(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction**
Response	Not applicable to a threatened species.
Conclusion	Not applicable.
Criteria	**(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:** **(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction** **(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.**
Response	Not applicable to a threatened species.
Conclusion	Not applicable.

Criteria	**(d) in relation to the habitat of a threatened species, population or ecological community:** **(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed**
Response	There would be some loss of potential foraging habitat for the Eastern Bentwing Bat, Eastern False Pipistrelle, Eastern Freetail Bat and Greater Broad-nosed Bat. This habitat occurs as remnant vegetation in a disturbed urban environment.
Conclusion	The actions proposed would result in a limited amount of microbat habitat to be removed.
Criteria	**(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action**
Response	These species are highly mobile, with the Eastern Bentwing-bat capable of dispersing up to 300 km from maternity caves outside breeding season. The area of habitat to be removed is a very small proportion of the home range of the Eastern Bentwing Bat, Eastern False Pipistrelle, Eastern Freetail Bat and Greater Broad-nosed Bat.
Conclusion	It is unlikely any microbat habitat would become fragmented or isolated as a result of the proposed actions due to the high mobility of these species.
Criteria	**(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.**
Response	These species require suitable roosting, breeding and foraging habitat. Foraging habitat is available within the study area. Roosting sites identified in the study area include the Wyong River bridge and hollow-bearing trees.
Conclusion	Given the habitat on site is not adequate to sustain populations of these microbat species it is unlikely the habitat to be modified or removed is important to the long-term survival of any of these microbat species.
Criteria	**(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).**
Response	To date, no critical habitat has been declared for any of these five microbat species.
Conclusion	Not applicable.
Criteria	**(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.**
Response	No recovery plans or threat abatement plans have been prepared for these species. Priority Action Statements have been prepared for threatened microbats. Relevant actions include: • Prepare EIA guidelines which address the retention of hollow bearing trees maintaining diversity of age groups, species diversity, structural diversity. Give priority to largest hollow bearing trees (Eastern Freetail Bat and Greater Broad-nosed Bat).

Conclusion	The proposal would not interfere with any actions identified to recovery the Little Bentwing Bat, Eastern False Pipistrelle, Eastern Bentwing Bat, Eastern Freetail Bat or Greater Broad-nosed Bat. Recommendations for this proposal are consistent with the priority actions and may enhance existing roosting habitat within the study area.
Criteria	**(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.**
Response	The following key threatening process are relevant to the proposal and these five threatened microbats: • Clearing of native vegetation • Loss of hollow-bearing trees
Conclusion	The actions proposed constitute these key threatening process. Mitigation measures have been recommended to minimise the impact of key threatening processes on microbat habitat.

Overall Conclusion

There is some suitable foraging habitat available for the five threatened microbat species within the study area including tree canopies and the surface of the Wyong River. While the proposed works may impact on some potential foraging habitat, the small area of disturbance and the high mobility of the species would ensure there is unlikely to be a significant impact on these species.

Further assessment of the Little Bentwing Bat, Eastern False Pipistrelle, Eastern Bentwing Bat, Eastern Freetail Bat or Greater Broad-nosed Bat is not required.

Species: *Myotis macropus* (Southern Myotis)

The Southern Myotis is listed as vulnerable under the TSC Act.

Criteria	**(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction**
Response	The Southern Myotis roosts in hollows or structures near water and forages on the surface of streams and pools. Foraging habitat for this species occurs within the study area. Suitable foraging habitat would be retained by the proposal. The Southern Myotis was identified roosting between concrete blocks pylons of the Wyong River bridge. No other roosting structures or maternity caves have been identified within the study area.
Conclusion	The proposed actions will result in the removal of a known roosting site for the Southern Myotis. It is unknown whether breeding is occurring at this roosting site. Suitable foraging habitat would be retained on site. The loss of this roosting site may place the location population at risk of extinction if the roosting site cannot be replaced.
Criteria	**(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction**
Response	Not applicable to a threatened species.
Conclusion	Not applicable.
Criteria	**(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:** **(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction** **(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.**
Response	Not applicable to a threatened species.
Conclusion	Not applicable.
Criteria	**(d) in relation to the habitat of a threatened species, population or ecological community:** **(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed**
Response	The proposal would require the removal of the Wyong River bridge that provides roosting habitat for Southern Myotis. Replacement of the road bridge will provide alternate roosting habitat for the Southern Myotis. Vegetation adjacent to Southern Myotis foraging habitat would be removed.

Conclusion	The actions proposed would result in the removal of a known roosting site for the Southern Myotis. Construction of a new bridge will provide alternate roosting habitat.
Criteria	**(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action**
Response	No foraging habitat for Southern Myotis habitat would be fragmented or isolated by the proposal.
Conclusion	It is unlikely any microbat habitat would become fragmented or isolated as a result of the proposed actions due to the high mobility of these species.
Criteria	**(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.**
Response	This species requires suitable roosting, breeding and foraging habitat. Foraging habitat is available within the study area. The only roosting site identified in the study area is the Wyong River bridge. The Wyong River bridge is likely to provide important habitat for the Southern Myotis that was identified roosting in the bridge structure.
Conclusion	Given the habitat on site is not adequate to sustain populations of these microbat species it is unlikely the habitat to be modified or removed is important to the long-term survival of any of these microbat species.
Criteria	**(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).**
Response	To date, no critical habitat has been declared for any of these four microbat species.
Conclusion	Not applicable.
Criteria	**(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.**
Response	No recovery plans or threat abatement plans have been prepared for this species. Priority Action Statements have been prepared for threatened microbats. Relevant actions include: • Promote roosting habitat in new artificial structures within the species range (Southern Myotis)
Conclusion	The proposal would not interfere with any actions identified to recover the Southern Myotis. Recommendations in this report are consistent with the priority actions and may enhance existing roosting habitat within the study area.
Criteria	**(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.**
Response	The following key threatening process are relevant to the proposal and the Southern Myotis: • Clearing of native vegetation • Loss of hollow-bearing trees

Conclusion	The actions proposed constitute these key threatening process. Mitigation measures have been recommended to minimise the impact of key threatening processes on microbat habitat.

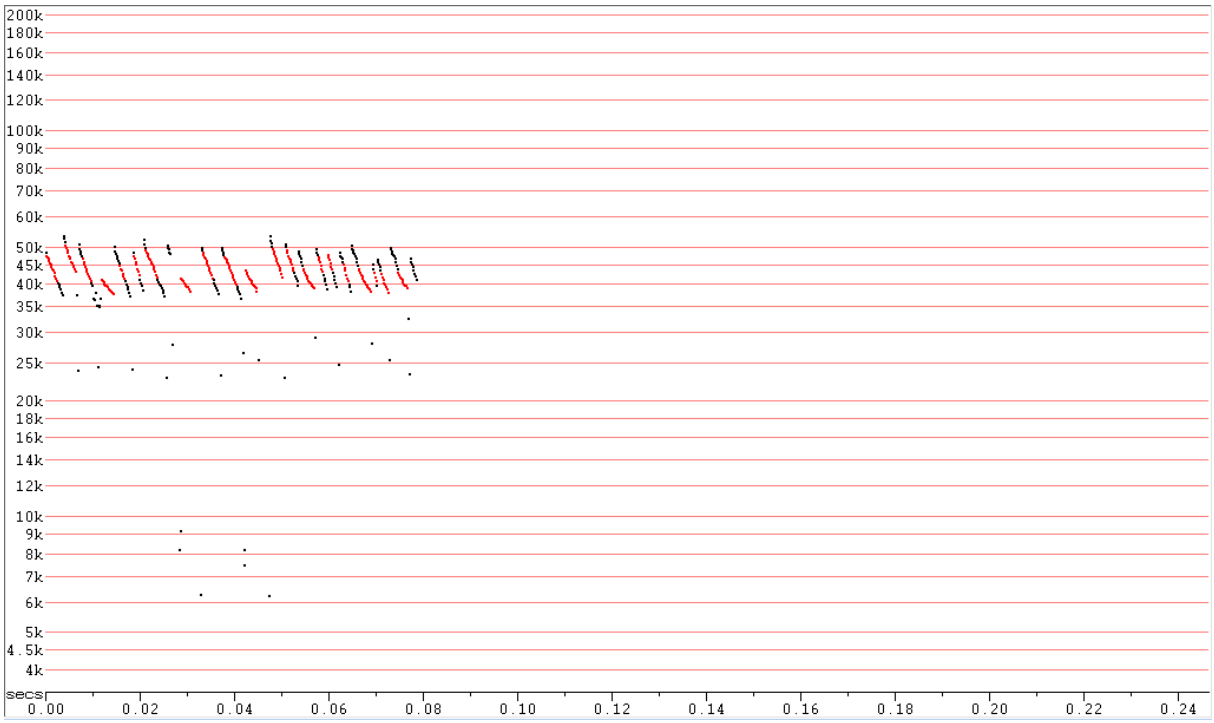
Overall Conclusion

There is some suitable foraging habitat available for the Southern Myotis within the study area including the surface of the Wyong River. This species was identified foraging within the study area and utilising the road bridge for roosting. The proposed works may impact on some foraging habitat during construction and demolition of the existing road bridge. The proposal will require the removal of known roosting habitat for the Southern Myotis in the road bridge over the Wyong River.

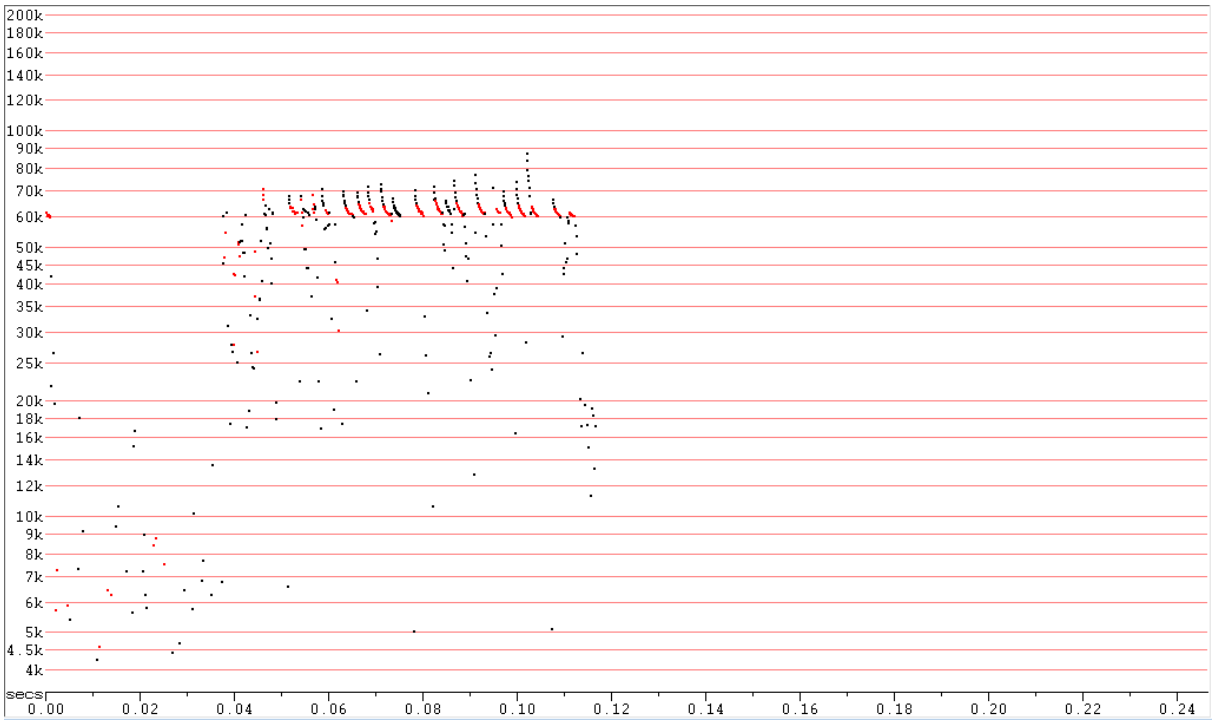
Further assessment of the Southern Myotis is required after assessment of the proposed management measures to incorporate roosting habitat into the new bridge structures over the Wyong River.

APPENDIX C: CALL IDENTIFICATION

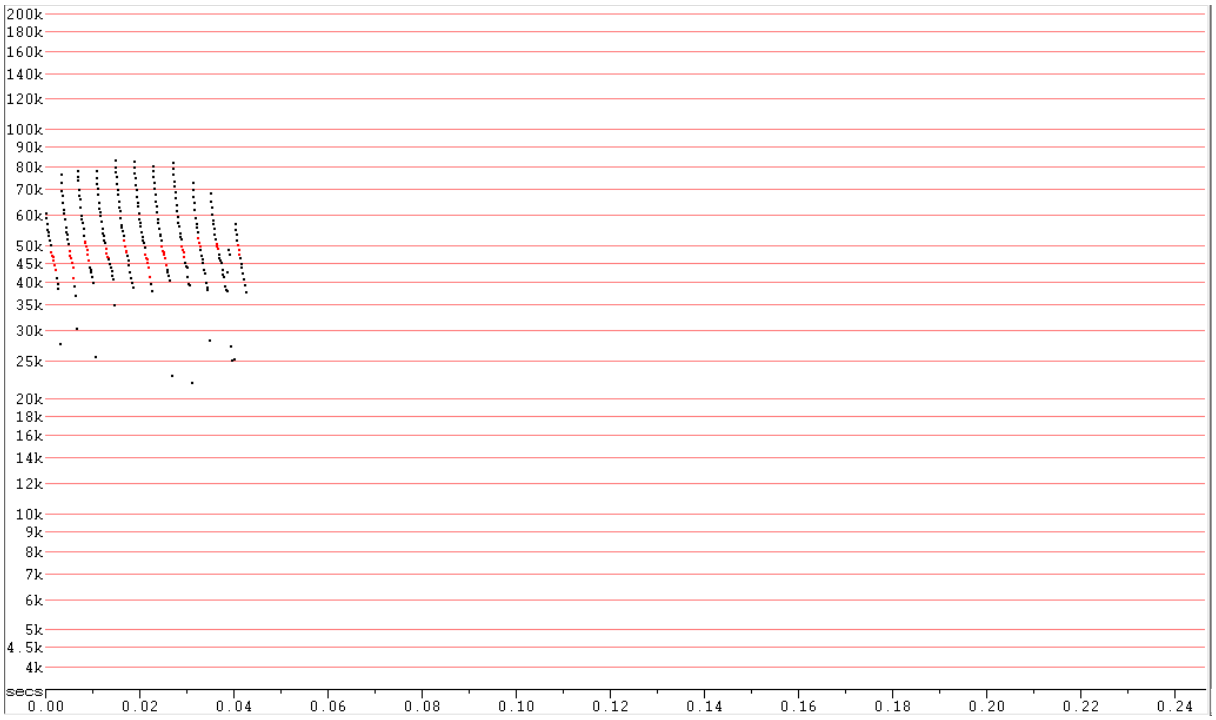
Eastern False Pipistrelle



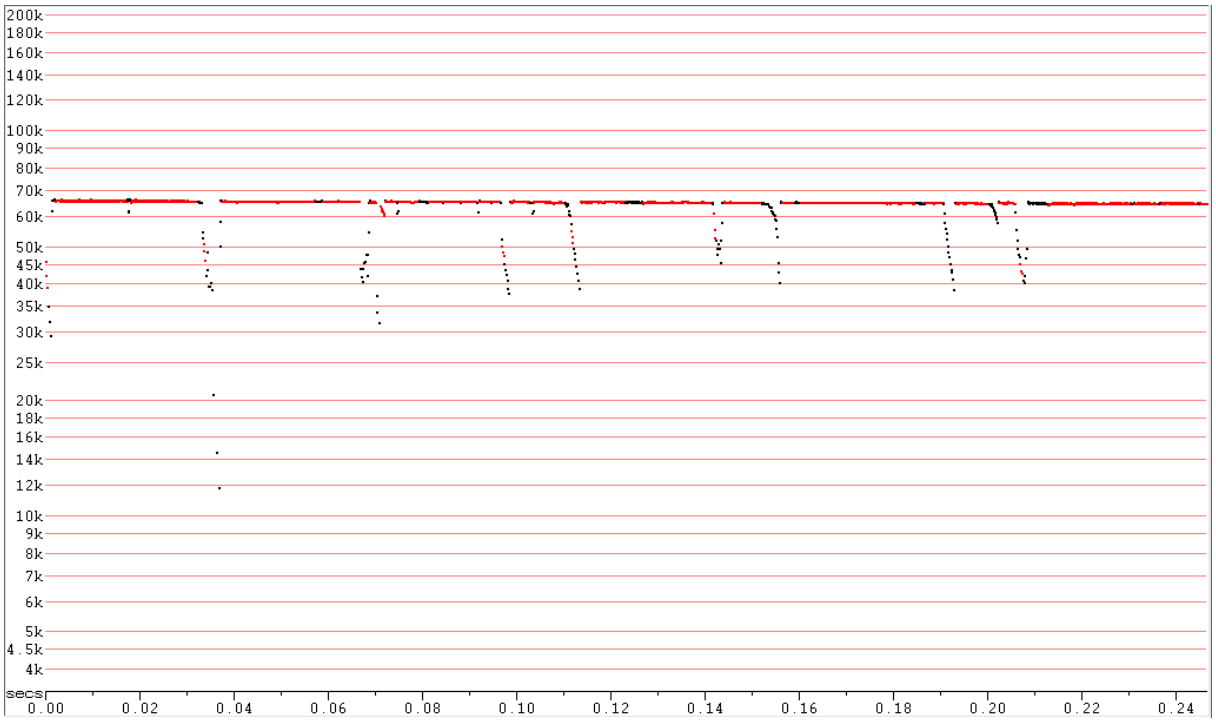
Little Bentwing-bat



Southern Myotis



Eastern Horseshoe-bat



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