Transport for NSW

M1 Pacific Motorway extension to Raymond Terrace

Submissions Report

June 2022

Australian Government

BUILDING OUR FUTURE

NSW GOVERNMENT

M1 Pacific Motorway extension to Raymond Terrace

Submissions report

Awabakal, Guringai, Wonnarua and Worimi Country

June 2022

Acknowledgement of Country

Transport for NSW acknowledges the Awabakal, Guringai, Wonnarua and Worimi Traditional Custodians of the land on which the M1 Pacific Motorway Extension to Raymond Terrace project is proposed.

We pay our respects to Awabakal, Guringai, Wonnarua and Worimi Elders past and present and celebrate the diversity of Aboriginal people and their ongoing culture and connections to the lands and waters of NSW.

Many of the transport routes we use today – from rail lines, to roads, to water crossings – follow the traditional Songlines, trade routes and ceremonial paths in Country that our nation's First Peoples followed for tens of thousands of years.

Transport for NSW is committed to honouring Aboriginal peoples' cultural and spiritual connections to the land, waters and seas and their rich contribution to society.

Contents

Tables

Figures

Appendices

Summary

Transport for NSW (Transport) proposes to construct the M1 Pacific Motorway extension to Raymond Terrace (the project). The project is located on Awabakal, Guringai, Wonnarua and Worimi land.

The project is subject to assessment under Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and approval by the Minister for Planning.

The project also requires approval by the Commonwealth Minister for the Environment under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The project would be assessed under the "Bilateral agreement made under Section 45 of the EPBC Act relating to environmental assessment between Commonwealth of Australia and the State of New South Wales" (Bilateral Agreement) (2015). This agreement accredits the assessment process under Division 5.2 of the EP&A Act. The project was referred (EPBC Reference 2018/8288) to the Australian Government Department of Agriculture, Water and the Environment (DoAWE) on 2 November 2019 and declared a controlled action requiring approval on 14 January 2019.

Transport prepared an environmental impact statement (EIS) to assess the potential impacts of the project. The Department of Planning, Industry and Environment placed the environmental impact statement on public exhibition from 28 July 2021 to 24 August 2021.

This submissions report identifies and responds to the issues raised during the public exhibition of the EIS and identifies some project refinements and updates to environmental management measures for the project.

Overview of issues and responses

During the exhibition period, a total of 58 submissions were received for the project. Of the 58 submissions, 37 were from the community, 10 were from special interest groups and businesses, eight from government agencies and three from local councils. No form letters were received as part of the submissions.

Of the submissions received, 46 per cent (27 out of 58) nominated support for the project with 14 per cent (8 out of 58) identifying an objection to the project.

A summary of the key issues raised by the community, special interest groups and businesses includes:

- Project design and development – support for the identified alignment and traffic benefits it would bring, suggestion of alternate alignments and design elements
- Biodiversity – concern regarding the project's impact on local wildlife, habitats, fauna movement corridors and in particular koalas
- Traffic and Transport – the project would have benefits for the local road network, has future expansion of the Port of Newcastle been taken into consideration in the assessment, and what are the access arrangements for the emerging Black Hill precinct
- Land use and property – residents seeking clarification of property access impacts during construction and/or operation, concern regarding property access impacts and identification of the need for compensation for land acquisition
- Noise and vibration – residents concern regarding construction noise impacts and ongoing operational noise, particularly heavy vehicles at night
- Consultation – requests for further consultation regarding the project and requests for ongoing consultation in relation to local cycleway connections
- Support for the project, generally through improved traffic conditions including road safety.

Where a submission has raised an issue that requires clarification or additional information, this has been provided in this submissions report, including a number of supplementary technical reports. For example, biodiversity impacts have been re-calculated based on alterations to the construction footprint including avoiding koala habitat where possible, with a revised Biodiversity Assessment Report and Biodiversity Offset Strategy included as Appendix E of this report.

A summary of the key issues raised by government agencies and local councils includes:

- Biodiversity – identification of potential offsetting opportunities, request for further detail of survey effort and assessment methodology, and koala impacts
- Surface water and groundwater quality – potential for interception and discharge of groundwater, need for enhanced control measures where groundwater may be intercepted and request for further details on proposed groundwater monitoring
- Project design – need for connectivity with future cycleways and request for ongoing consultation regarding final design plans and waterway crossings
- Hydrology and flooding – requests for further details on flooding assessment methodology and impacts
- Noise and vibration – request for further details on noise monitoring, construction working hours and construction impacts and mitigation
- Traffic and transport – request for details on haulage routes and assumed traffic generation from the Black Hill precinct used in modelling
- Support for the project and the benefits that it would deliver to the road network, connections between Port Stephens and the Hunter, and its strategic importance to the region

This report and various appendices provide clarifications and additional assessment as required for biodiversity, hydrology and flooding, noise and vibration, traffic and transport and surface water and groundwater quality.

Transport acknowledges and is committed to the need for continued consultation regarding the project.

Proposed refinements

Transport identified a number of refinements to the project described in the EIS. The design and construction refinements are in response to:

- ongoing review of the concept design and construction methodology
- identification of opportunities to reduce environmental impact
- consultation with landowners and government agencies
- in response to issues raised during exhibition of the EIS.

The key design refinements include:

- extension of the southbound M1 Pacific Motorway merge lane at Black Hill
- creation of multi-utility corridors at Tarro and Tomago, and extension of utilities on John Renshaw Drive and the Pacific Highway/New England Highway
- improved safety and connectivity for cyclists
- changes to drainage design at Heatherbrae and lining of water quality basins that intercept groundwater.

The key construction refinements include:

- changes to the size and location of ancillary facilities and site access to improve constructability and reduce environmental impacts

- change to earthworks management to provide for more efficient materials handling and additional opportunities for beneficial reuse of materials
- staging the construction and opening of the project.

Project boundary refinements have been made to both the construction and operational footprints to reduce property and biodiversity impacts as well as to incorporate design changes, utility adjustments and refinements to ancillary facilities.

Additional impact assessment

A number of additional assessments were carried out to address issues raised in submissions, consultation with government stakeholders, and to assess the potential for impacts from the project refinements. The following additional assessments were carried out:

- Traffic and transport – refer to supplementary report at Appendix C
- Noise and vibration - refer to supplementary report at Appendix D
- Biodiversity – refer to revised Biodiversity Assessment Report at Appendix E
- Hydrology and flooding – refer to supplementary report at Appendix F and Appendix G
- Surface and groundwater quality – refer to supplementary report at Appendix H
- Aboriginal heritage - refer to additional assessment at Appendix I
- Non-Aboriginal heritage - refer to additional assessment at Appendix I
- Soils and contamination - refer to supplementary report at Appendix J.

In summary there were generally only minor changes to the impacts identified in the EIS for the assessments identified above. A brief description of impacts that vary from those identified in the EIS is presented below:

- Traffic and transport – refinements to the cycleway strategy would improve safety and connectivity for cyclists; design for a Northern (Heatherbrae Bypass) package of works was assessed that would permit early opening of this section of the project.
- Noise and vibration – refinement to the southbound M1 merge lane at Black Hill resulted in some additional sensitive receivers being eligible for noise mitigation
- Biodiversity – reduction in construction footprint; increased biodiversity offset obligation for koala habitat and *Diuris arenaria*
- Hydrology and flooding – reduction in flood impacts such as afflux and duration of inundation; improved understanding of building flood impacts
- Surface and groundwater quality – improvements to water quality outcomes
- Soils and contamination - improved understanding of potential contamination risk with additional geotechnical investigation and testing
- Aboriginal heritage – assessment of additional areas of disturbed road shoulder outside the previous study area to accommodate utility relocations identified no additional impacts; refinement to drainage design near Windyers Creek would form part of salvage works which would be slightly extended in this area.
- Non-Aboriginal heritage - assessment of additional areas of disturbed road shoulder outside the previous study area to accommodate utility relocations identified no additional impacts.

Justification

The project would help integrate the needs of the Hunter region's road network with those of the broader National Land Transport Network. By providing one of the last major upgrades required to

complete a free-flowing dual carriageway route between Sydney and Brisbane, the project would improve traffic efficiency and congestion caused by the interaction of high volumes of national, interstate, regional and local traffic on the currently constrained road network.

Taking into consideration the issues raised in the submissions and the minor project refinements initiated by Transport, the justification for the project does not materially change from what was presented in the EIS. Many of the submissions received simply required clarification of aspects already identified and considered in the EIS. Some submissions required additional assessment and presentation of further information but did not result in any substantial change to the project. Several of the project refinements were a result of further consultation with landowners and asset managers to better accommodate their requirements.

In line with the EIS, the revised project justification considered the objects of the EP&A Act and the principles of ecologically sustainable development as a framework in which to evaluate the project. Taking into consideration the submissions received and the responses provided, as well as the project refinements, the project is justified in terms of the social and economic benefits it would bring with environmental impacts to be managed and mitigated.

Next steps

This submissions report is available on the Department of Planning and Environment's major project portal. The Department of Planning and Environment will consider this submissions report during its assessment of the project.

The Planning Secretary will prepare an environmental assessment report. The Minister for Planning will then decide whether to approve the project and if approved, outline any conditions that would apply.

If approved, Transport would continue to consult with community members, government agencies and other stakeholders during the detailed design and construction phases of the project.

1 Introduction and background

1.1 Introduction

Transport for NSW (Transport) proposes to construct the M1 Pacific Motorway extension to Raymond Terrace (the project). The project is located on Awabakal, Guringai, Wonnarua and Worimi land.

The project is subject to assessment under Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and approval by the Minister for Planning.

The project also requires approval by the Commonwealth Minister for the Environment under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The project will be assessed under the "Bilateral agreement made under Section 45 of the EPBC Act relating to environmental assessment between Commonwealth of Australia and the State of New South Wales" (Bilateral Agreement) (2015). This agreement accredits the assessment process under Division 5.2 of the EP&A Act. The project was referred (EPBC Reference 2018/8288) to the Australian Government Department of Agriculture, Water and the Environment (DoAWE) on 2 November 2019 and declared a controlled action requiring approval on 14 January 2019.

The project would complete one of the last remaining major upgrades required to provide high standard dual carriageway road conditions which would facilitate significant interstate freight movements between NSW, Victoria and Queensland. Additionally, the project would support freight servicing the Hunter Valley mining industry, the Port of Newcastle, and interstate movements, resulting in local, regional and national economic benefits.

Transport prepared an environmental impact statement (EIS) to assess the potential impacts of the project. The Department of Planning, Industry and Environment (DPIE) placed the EIS on public exhibition from 28 July 2021 to 24 August 2021.

This submissions report identifies and responds to the issues raised during the public exhibition of the EIS and identifies some project refinements and updates to environmental management measures for the project. This report has been prepared with regard to the Department of Planning, Infrastructure and Environment State Significant Infrastructure Guidelines – preparing a submissions report.

1.2 The project

The project would connect the existing M1 Pacific Motorway at Black Hill and the Pacific Highway at Raymond Terrace within the City of Newcastle and Port Stephens Council local government areas (LGAs). The project location is shown in **Figure 1-1**.

The project would include the following key features (see **Figure 1-2**):

- A 15 kilometre motorway comprised of a four lane divided road (two lanes in each direction)
- Motorway access from the existing road network via four new interchanges at:
  - Black Hill: connection to the M1 Pacific Motorway
  - Tarro: connection and upgrade (six lanes) to the New England Highway between John Renshaw Drive and the existing Tarro interchange at Anderson Drive
  - Tomago: connection to the Pacific Highway and Old Punt Road
  - Raymond Terrace: connection to the Pacific Highway.
- A 2.6 kilometre viaduct over the Hunter River flood plain including new bridge crossings over the Hunter River, the Main North Rail Line, and the New England Highway
- Bridge structures over local waterways at Tarro and Raymond Terrace, and an overpass for Masonite Road in Heatherbrae
- Connections and modifications to the adjoining local road network
- Traffic management facilities and features

- Roadside furniture including safety barriers, signage, fauna fencing and crossings and street lighting
- Adjustment of waterways, including Purgatory Creek at Tarro and a tributary of Viney Creek
- Environmental management measures including surface water quality control measures
- Adjustment, protection and/or relocation of existing utilities
- Walking and cycling considerations, allowing for existing and proposed cycleway route access
- Permanent and temporary property adjustments and property access refinements
- Construction activities, including establishment and use of temporary ancillary facilities, temporary access tracks, haul roads, batching plants, temporary wharves, soil treatment and environmental controls.

A more detailed description of the project is provided in Chapter 5 of the EIS. Refinements since exhibition of the EIS are outlined in **Section 5.2** and an updated project description including those refinements is provided in **Appendix A** of this report.

The timing of the opening of the M1 Pacific Motorway extension to Raymond Terrace is subject to planning approval and the completion of detailed design but is expected to be completed by 2028.

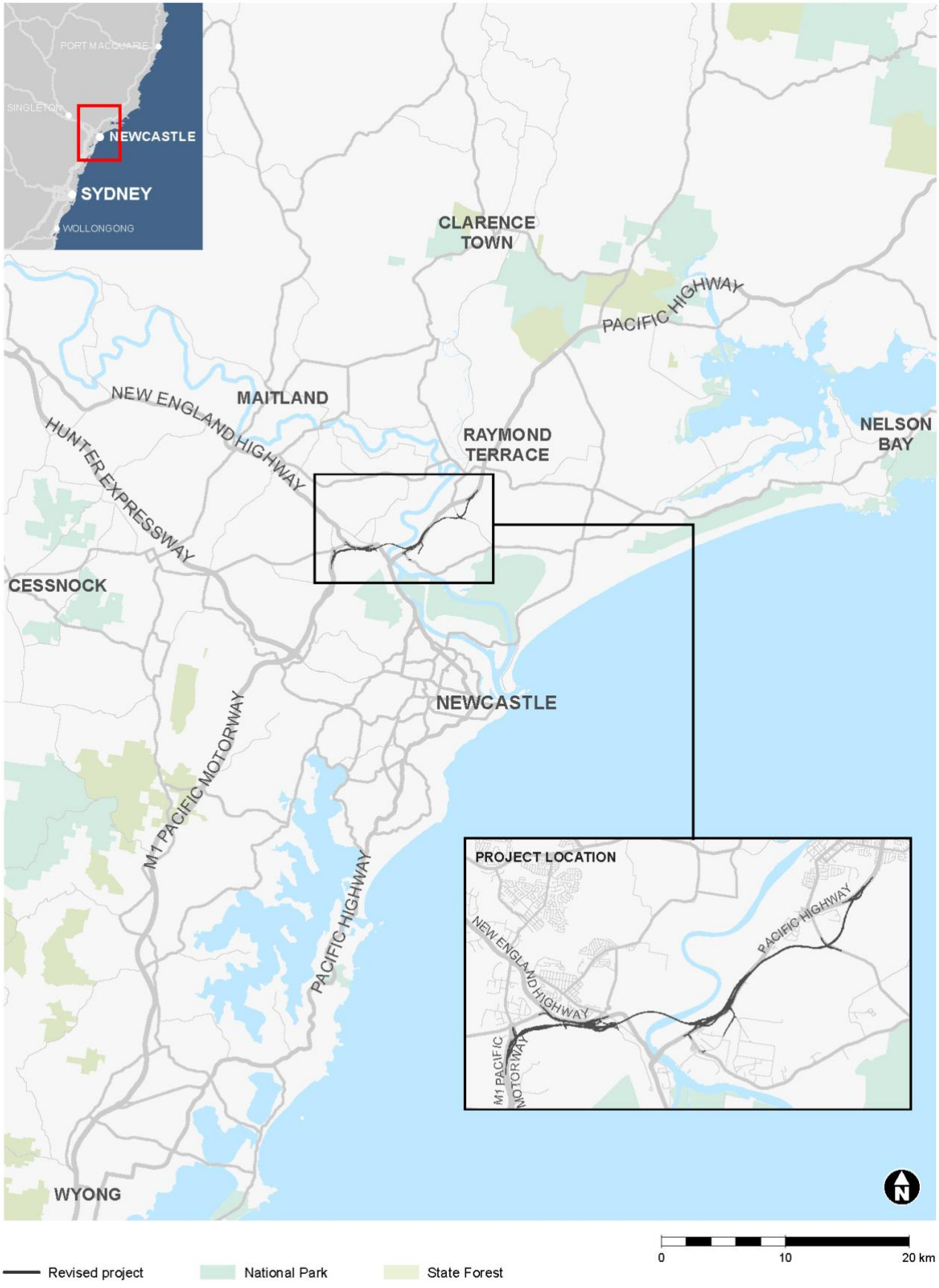
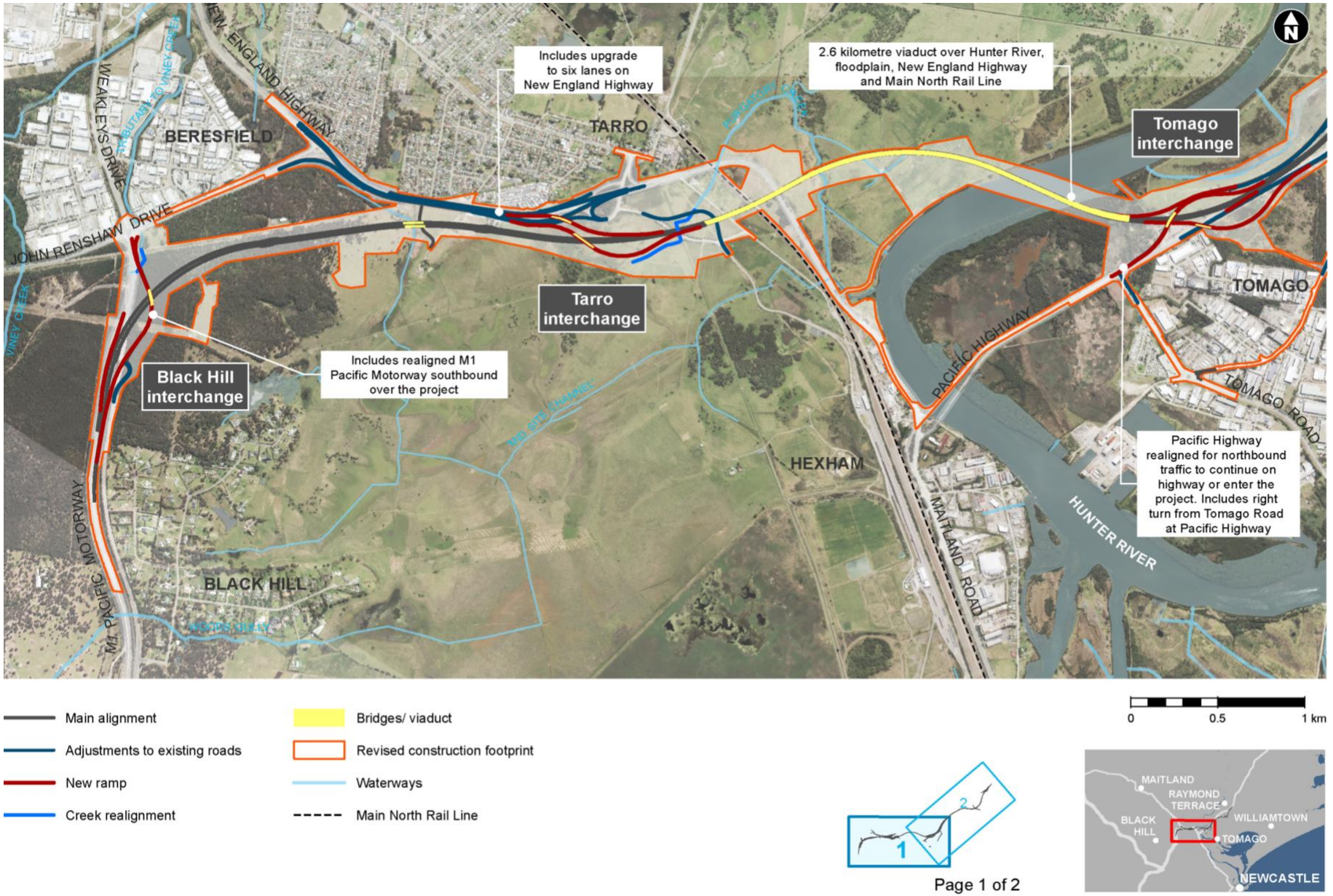
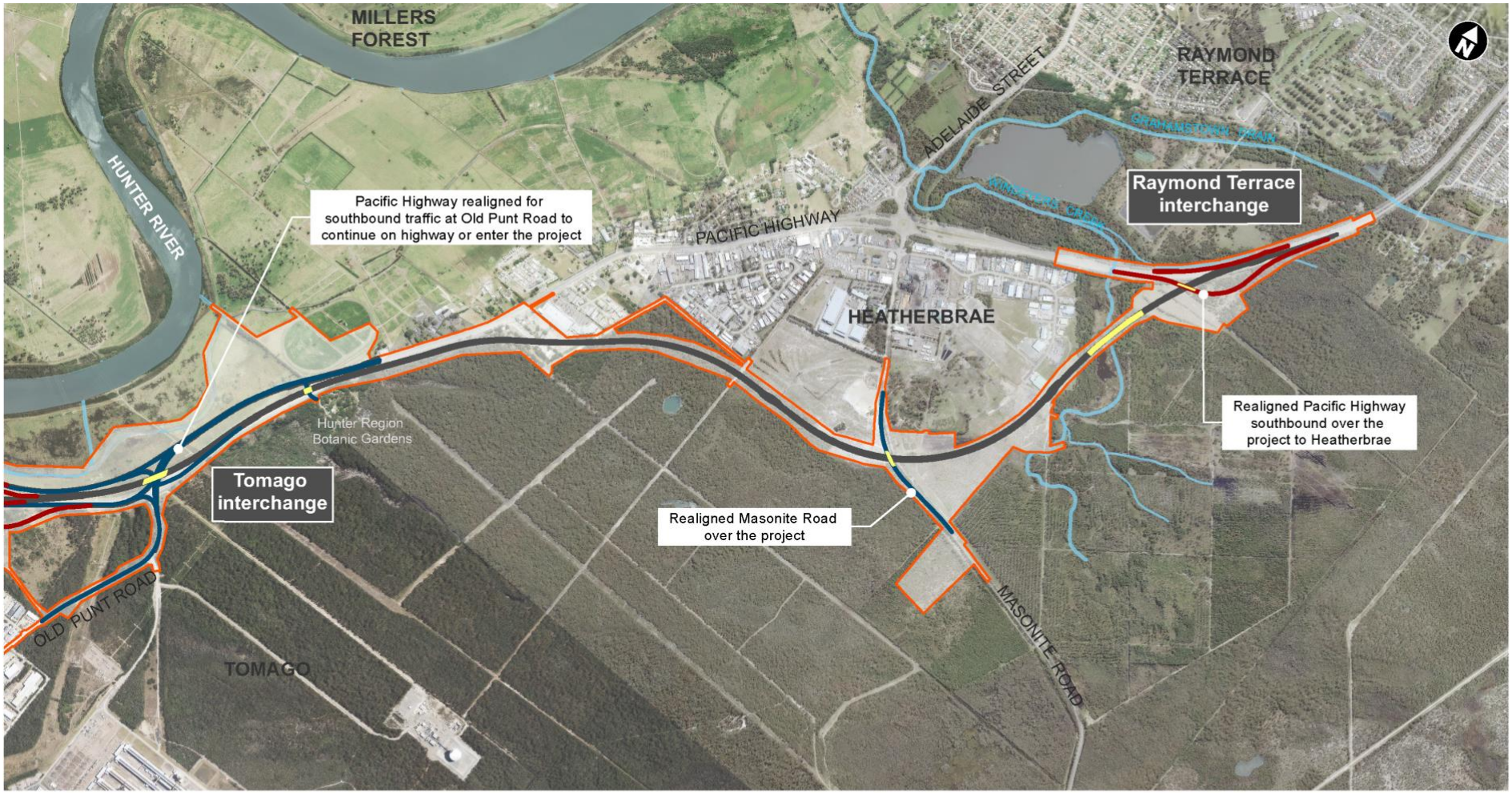


Figure 1-1 Project location



Page 1 of 2

Figure 1-2 Project key features


MILLERS FOREST
HUNTER RIVER
RAYMOND TERRACE
ADELAIDE STREET
GRAHAMSTOWN DRAIN
KIMBERLEY CREEK
Raymond Terrace interchange
Pacific Highway realigned for southbound traffic at Old Punt Road to continue on highway or enter the project
PACIFIC HIGHWAY
HEATHERBRAE
Realigned Pacific Highway southbound over the project to Heatherbrae
Hunter Region Botanic Gardens
Tomago interchange
Realigned Masonite Road over the project
OLD PUNT ROAD
MASONITE ROAD
TOMAGO
Main alignment
Adjustments to existing roads
New ramp
Bridges/ viaduct
Revised construction footprint
Waterways
0
0.5
1 km
1
2
MAITLAND
RAYMOND TERRACE
BLACK HILL
WILLIAMTOWN
TOMAGO
NEWCASTLE

Page 2 of 2

1.3 Purpose and structure of this submissions report

This submissions report identifies the issues raised during exhibition of the EIS and provides responses to those issues. It includes information regarding additional studies carried out since the exhibition of EIS, identifies refinements, updated environmental management measures in response to the submissions and provides an updated justification of the project.

This submissions report has the following structure:

Chapter	Description
Chapter 1	**Introduction and background (this chapter)** Includes a summary of the project, its statutory context and the assessment undertaken to date.
Chapter 2	**Stakeholder and community engagement** Outlines the stakeholder engagement process for the EIS for the M1 Pacific Motorway extension to Raymond Terrace.
Chapter 3	**Approval framework** Provides an overview of the statutory context and processes including stakeholder engagement and further consultation.
Chapter 4	**Analysis of submissions** Analyses the submissions received during public exhibition of the EIS.
Chapter 5	**Actions taken since exhibition** Summarises the actions taken by Transport since the public exhibition of the EIS.
Chapter 6	**Response to government submissions** Provides a detailed summary of issues raised in the submissions and Transport's response.
Chapter 7	**Response to community submissions** Provides a detailed summary of issues raised in the submissions and Transport's response.
Chapter 8	**Revised environmental management measures** Presents a summary of the revised environmental management measures for the project developed in response to issues raised during public exhibition of the environmental impact statement or as a result of additional assessment or project refinement.
Chapter 9	**Updated project justification** Includes an updated justification of the M1 Pacific Motorway extension to Raymond Terrace project as a whole following the public consultation process and analysis of the issues raised in submissions.
Appendix A	**Revised Project Description**
Appendix B	**Submissions register** Includes a register of submissions provided feedback during the consultation stage. It identifies where issues raised have been addressed in the submission report.
Appendix C	**Supplementary Report - Traffic and Transport**

Chapter	Description
Appendix D	Supplementary Report - Noise and Vibration
Appendix E	Revised Biodiversity Assessment Report
Appendix F	Supplementary Report - Flooding and Hydrology
Appendix G	Additional Flood Assessment for Hunter and Williams Rivers
Appendix H	Supplementary Report - Surface Water and Groundwater Quality
Appendix I	Additional Assessment for Aboriginal Cultural Heritage and Non-Aboriginal Heritage
Appendix J	Supplementary Report - Soils and Contamination
Appendix K	Revised environmental management measures

2 Stakeholder and community engagement

2.1 Exhibition activities

The EIS was exhibited by the DPIE for 28 days from 28 July 2021 to 24 August 2021. The start of exhibition was advertised in the Port Stephens Examiner on Thursday 29 July 2021, the Maitland Mercury on Friday 30 July 2021 and the Newcastle Herald on Saturday 31 July 2021.

In accordance with NSW Government COVID-19 protocols, hardcopies of the EIS were not provided for review by members of the public. Digital copies of the EIS were available at the DPIE website https://www.planningportal.nsw.gov.au/major-projects/project/10471 and via Transport's EIS engagement web portal https://caportal.com.au/tfnsw/m1rt. The project webpage (nswroads.work/m12rt) was also updated to provide more information to the public.

Transport prepared a 12 page project update booklet, a four page postcard, 'how to make a submission' fact sheet and published detailed frequently asked questions and responses to complement the overarching digital engagement strategy for the project. The digital engagement strategy included development of an EIS interactive web portal, providing all documents on the project webpage as well as social media posts (NSW Roads Facebook) advising of the EIS exhibition and submission process. A total of three social media posts ran during the public exhibition:

- Post 1 active 29 July to 4 August
- Post 2 active 5 to 12 August
- Post 3 active 17 to 23 August.

Stakeholders could access the interactive web portal to make a submission, view artist impressions including before and after images, experience drive through videos, and review EIS chapters explaining key findings of the EIS.

Letters and copies of the project update, postcard and submissions fact sheet were sent to a total of 15 identified directly affected landowners on 28 July 2021 advising them of the EIS exhibition period and the process to make a submission should they choose to do so.

The postcard was also distributed to around 16,500 residences in surrounding suburbs (Medowie, Nelsons Plains, Raymond Terrace, Heatherbrae, Millers Forest, Berry Park, Chisholm, Thornton, Woodberry, Lenaghan, Hexham, Tomago, Tarro, Beresfield and Black Hill).

Postcards were also made available at:

- Hexham Bowling Club
- Beresfield Bowling Club
- Raymond Terrace Bowling Club
- Raymond Terrace post office
- Thornton post office
- Beresfield post office.

The postcards included information on how to view the EIS and make a submission, details of upcoming community information sessions and where to go for further information.

Emails were sent to 1500 members of the community and stakeholder database on 28 July 2021, as well as via freight distribution lists and to cyclist groups coordinated by Transport.

The project obtained wide media coverage during the start of exhibition including NBN news, local newspapers and radio stations.

Stakeholder engagement undertaken during the exhibition period included:

- Briefings with government agencies - DPIE, NSW Environment Protection Authority (EPA)
- Briefings with directly affected property owners, as requested
- Briefings with key stakeholders, as requested.

Due to COVID-19 restrictions preventing in-person meetings, three virtual information sessions (refer to **Table 2-1**) were held to allow members of the community to learn more about the EIS and ask the project team questions via MS Teams.

The sessions were advertised in the Port Stephens Examiner on Thursday 5 August 2021, the Maitland Mercury on Friday 6 August 2021 and the Newcastle Herald on Saturday 7 August 2021. The advertisements directed people to the project webpage and interactive web portal (via a QR code) for links to join the virtual sessions. An email was sent to about 1500 people from the community and stakeholder database advising of the information sessions, as well as 120 people who had registered interest in attending the information sessions through the interactive web portal. The email contained the dates, times and links to join the information sessions. The second social post (5 to 12 August 2021) also advertised the information sessions and directed people to the interactive web portal for the links to join the sessions.

The sessions included a brief presentation to provide project background, followed by a question-and-answer session. The presentation included information about the project and showed the overview animation. During each session, the team also walked participants through the interactive web portal and outlined the assessment process and outcomes.

There was a total of 40 attendees across the three sessions. The following materials were made available during the information sessions:

- The environmental impact statement and technical papers
- EIS web portal - https://caportal.com.au/tfnsw/m1rt
- Community Updates and supporting key project documents.

Table 2-1 Information sessions/staffed displays held

Venue	Address	Date and time
Virtual information session	Held via MS Teams	Wednesday 11 August 2021 6.00pm – 7.00pm
Virtual information session	Held via MS Teams	Thursday 12 August 2021 12.30pm - 1.30pm
Virtual information session	Held via MS Teams	Friday 13 August 2021 10.00am – 11.00am

2.2 Further consultation

This submissions report is publicly available on the Department of Planning and Environment's major projects website https://www.planningportal.nsw.gov.au/major-projects/projects.

If approved, Transport would continue to consult with stakeholders during the planning and delivery of the project. Chapter 6 (Consultation) of the EIS provides a description of the consultation activities that would be carried out during construction of the project.

3 Approval framework

3.1 Statutory overview

The project is State Significant Infrastructure (SSI) under Section 5.12 of the EP&A Act and does not require consent under Part 4 of the EP&A Act. The project is also declared to be critical State Significant Infrastructure (CSSI) under Section 5.13 of the EP&A Act, by virtue of clause 16 and Schedule 5, clause 1(a) of State Environmental Planning Policy (State and Regional Development) (SEPP) 2011. The project is, therefore, subject to assessment under Division 5.2 of the EP&A Act and requires the approval of the Minister for Planning under Section 5.14 of the EP&A Act. In accordance with the requirements of the EP&A Act, an EIS was prepared to assess the potential impacts of the project. The EIS was submitted to DPIE on 11 July 2021.

The EIS was placed on public exhibition from 28 July 2021 to 24 August 2021. In accordance with Section 5.17(6)(a) of the *Environmental Planning and Assessment Act, 1979*, the Planning Secretary of the DPIE has required that Transport submit a response to the issues raised in submissions to the EIS.

Following exhibition of the EIS, Transport has identified a number of refinements to the project to improve the design, environmental outcomes, project staging, earthworks management and utilities adjustments. The refinements include:

- Design refinements
- Refinements to construction methodology and earthworks management
- Changes to utility relocations
- Project boundary refinements
- Staged project opening
- Identification of low impact works
- Identification of early works.

The DPIE will consider this submissions report during its assessment of the M1 Pacific Motorway extension to Raymond Terrace. The Planning Secretary will prepare an environmental assessment report in accordance with clause 5.18 of the *Environmental Planning and Assessment Act 1979*. The Minister for Planning will then decide whether or not to approve the project and identify any conditions of approval that would apply. If approved, Transport would continue to consult with community members, government agencies and other stakeholders during the detailed design and construction phases of the project.

3.2 Approval process overview

The approval process under Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979* is illustrated in **Figure 3-1**. Further information on the assessment process is available on the DPIE's major projects webpage.

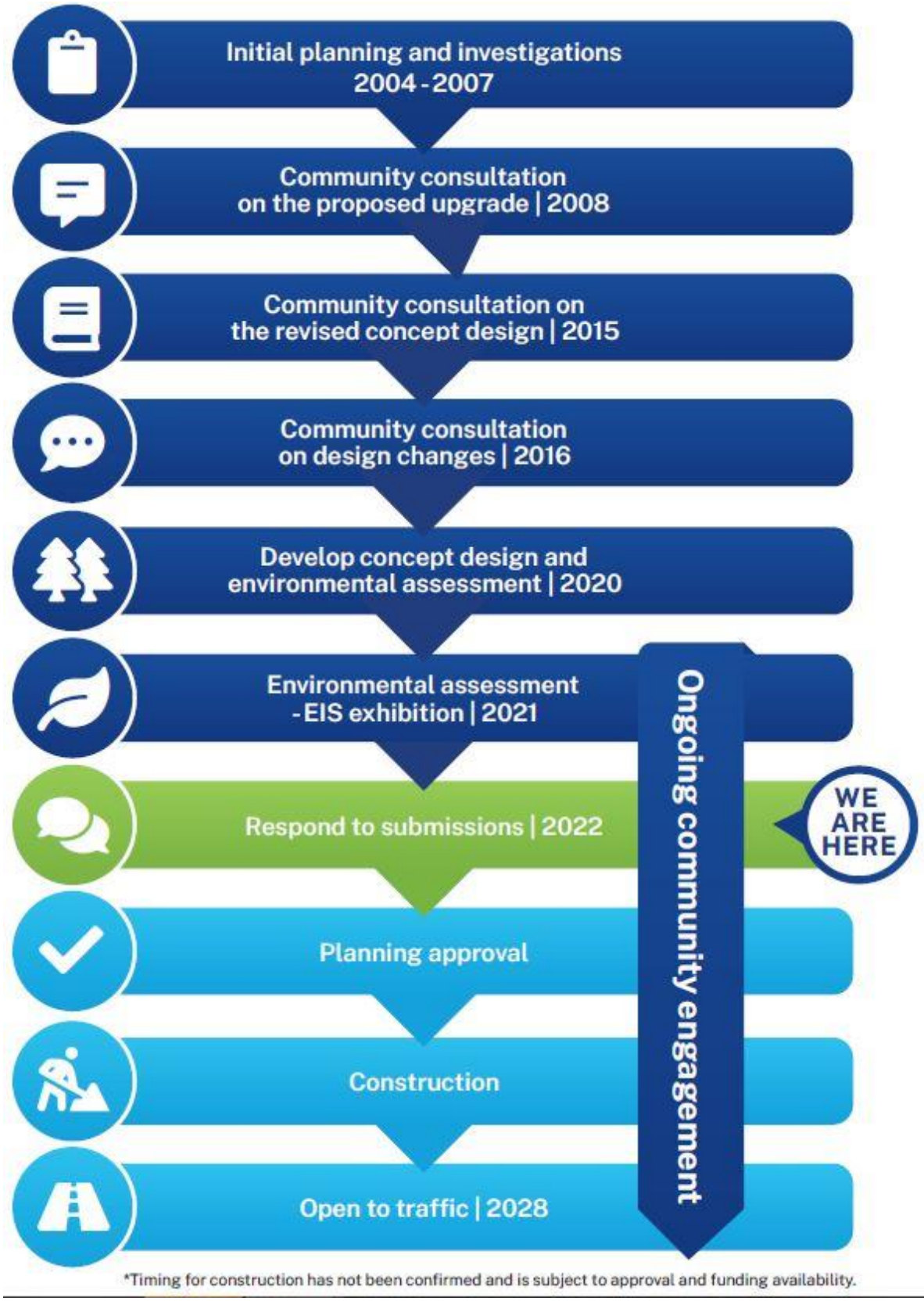


Figure 3-1 Approval process under Part 5, Division 5.2 of the EP&A Act and the EPBC Act

4 Analysis of submissions

4.1 Overview

The Planning Secretary received 58 submissions during the exhibition of the M1 Pacific Motorway extension to Raymond Terrace project and provided copies of the submissions to Transport.

The submissions received during the exhibition period were from the following:

- Eight from State government agencies
- Three from local councils
- 10 from organisations (including special interest groups and businesses)
- 37 from members of the community.

Of the submissions received, 46 per cent (27 out of 58) nominated support for the project with 14 per cent (8 out of 58) identifying an objection to the project. No form letters were received as part of the submissions.

Each submission has been examined individually to analyse how the submission relates to groups, people and stakeholders in the community and to understand the issues raised and how they may be interrelated to the community and stakeholders. Refer to **Section 4.2** for detail on this analysis.

The issues raised in each submission have been collated into categories, and corresponding responses to the issues have been provided. Refer to **Chapter 6** and **Chapter 7** of this submissions report for the responses to the submissions.

A submissions register is in **Appendix B** of this report. The register identifies the submitter's number and where in this report the issue/s raised in their submissions are addressed.

4.2 Analysis of submitters and issues raised

An overview of the types of issues raised by the various people, groups and stakeholders that provided submissions is presented in the sections below.

4.2.1 State government agencies and local councils

Chapter 6 outlines the submissions received from government agencies and local councils. A summary of the key issues raised include:

- Biodiversity – identification of potential offsetting opportunities, request for further detail of survey effort and assessment methodology, and koala impacts
- Surface water and groundwater quality – potential for interception and discharge of groundwater, need for enhanced erosion and sediment control measures where groundwater may be intercepted and request for further details on proposed groundwater monitoring
- Project design – need for connectivity with proposed cycleways and request for ongoing consultation regarding final design plans and waterway crossings
- Hydrology and flooding – requests for further details on flooding assessment methodology and impacts
- Noise and vibration – request for further details on noise monitoring, construction working hours and construction impacts and mitigation
- Traffic and transport – request for details on haulage routes and assumed traffic generation from the Black Hill precinct used in modelling
- Support for the project and the benefits that it would deliver to the road network, connections between Port Stephens and the Hunter, and its strategic importance to the region.

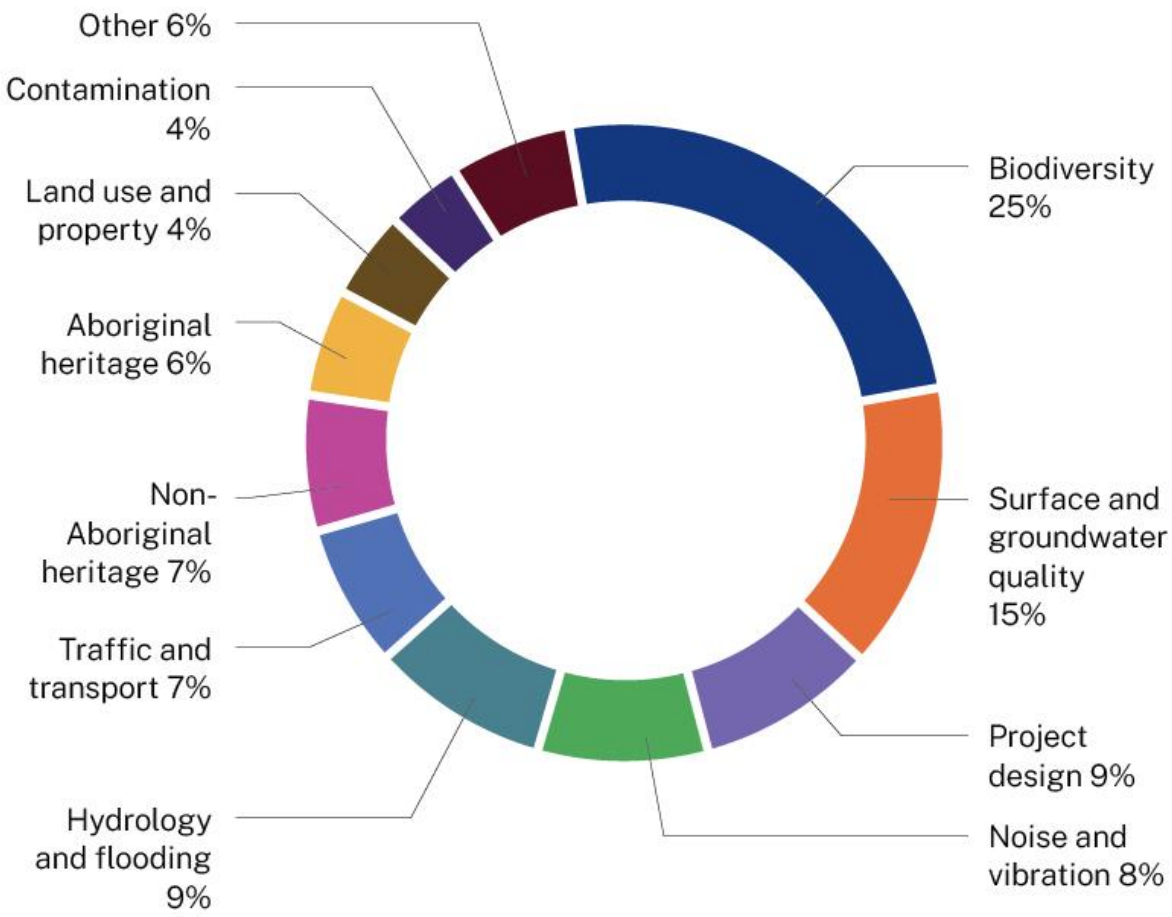
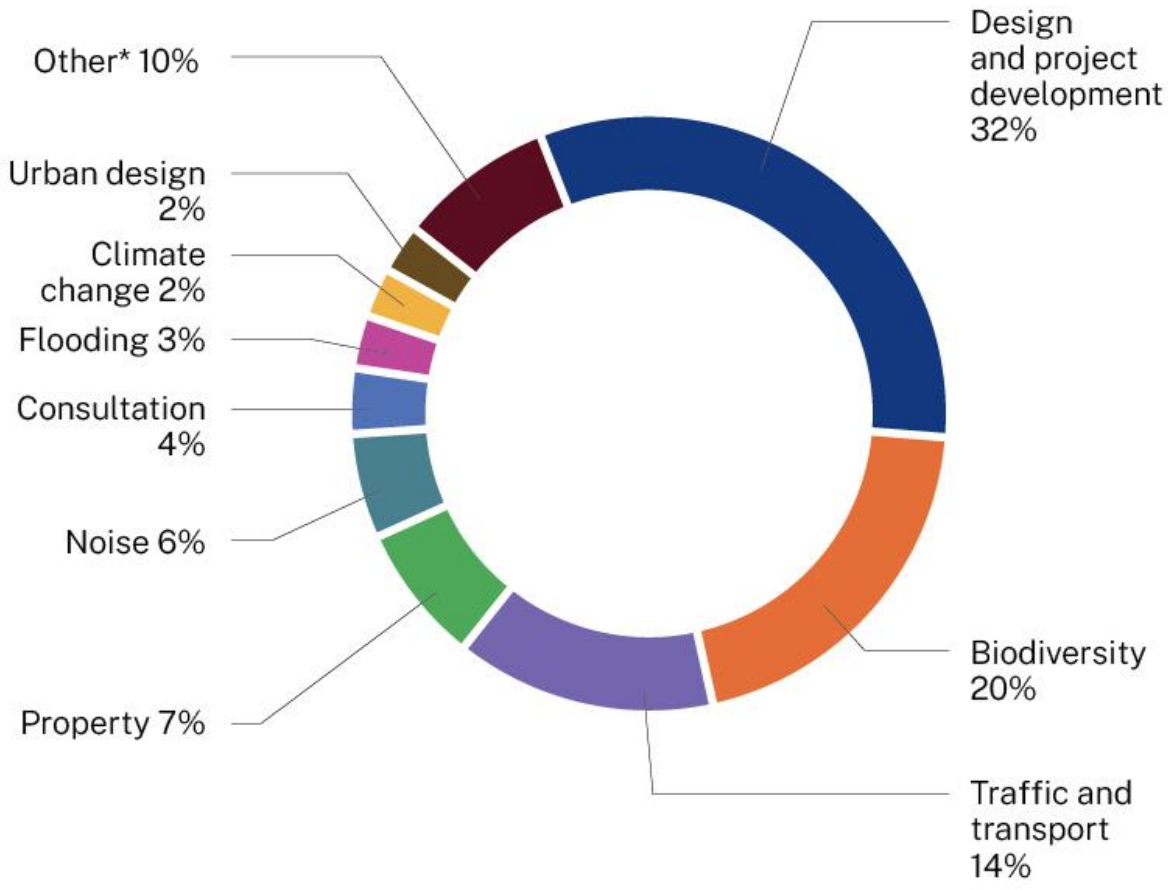


Figure 4-1 Issues raised by state government agencies and local councils

4.2.2 Community, special interest groups and businesses

Chapter 7 documents the submissions received from members of the community, special interest groups and businesses. A summary of the key issues raised include:

- Project design and development – support for the identified alignment and traffic benefits it will bring, suggestion of alternate alignments and design elements
- Biodiversity – concern regarding the project's impact on local wildlife, habitats, fauna movement corridors and in particular koalas
- Traffic and Transport – the project will have benefits for the local road network, has future expansion of Newcastle Port been taken into consideration in the assessment, and what are the access arrangements for the emerging Black Hill precinct
- Land use and property – people seeking clarification of property access impacts during construction and/or operation, concern regarding property access impacts and identification of the need for compensation for land acquisition
- Noise and vibration – residents concern regarding construction noise impacts and ongoing operational noise, particularly heavy vehicles at night
- Consultation – requests for further consultation regarding the project and requests for ongoing consultation about local cycleway connections
- Support for the project, generally through improved traffic conditions including road safety.



* Other includes Construction, Cumulative impacts, Aboriginal heritage, Soils and contamination, Air quality, Assessment process, Project alternatives, Socio-economic, Surface and groundwater quality.

Figure 4-2 Issues raised by the community, special interest groups and businesses

5 Actions taken since exhibition

5.1 Stakeholder engagement

Since EIS exhibition Transport has consulted with state agencies, local councils and landowners. The purpose of the consultation has been to further discuss issues raised in submissions, to clarify aspects of the assessments undertaken and to discuss lease/acquisition arrangements and some refinements to project boundaries. In addition to landowners, Transport has met or held discussions with the following stakeholders:

- NSW Environment Protection Authority (EPA)
- DPIE - Water
- DPIE – Biodiversity Conservation Division
- City of Newcastle Council
- Port Stephens Council
- Hunter Local Land Services
- Transport for NSW - Maritime
- Utility authorities.

An outcome of the discussions with stakeholders, along with ongoing review of the concept design, was the identification of several project refinements. These refinements are identified in **Section 5.2**. Additional assessment was undertaken for any aspects of the project refinements not previously assessed in the EIS as well as to address submissions and/or additional information requested by agencies. An outline of the scope of the additional assessments carried out is provided in **Section 5.4**.

5.2 Project refinements

Transport has refined a number of aspects of the project since exhibition of the EIS. These refinements are a result of ongoing review of the concept design and construction methodology, identification of opportunities to reduce environmental impact, consultation with landowners and government agencies, and in response to issues raised during exhibition of the EIS. The project refinements are described in the following sections.

Figure 5-1 shows the location of the project refinements that are documented in this section.

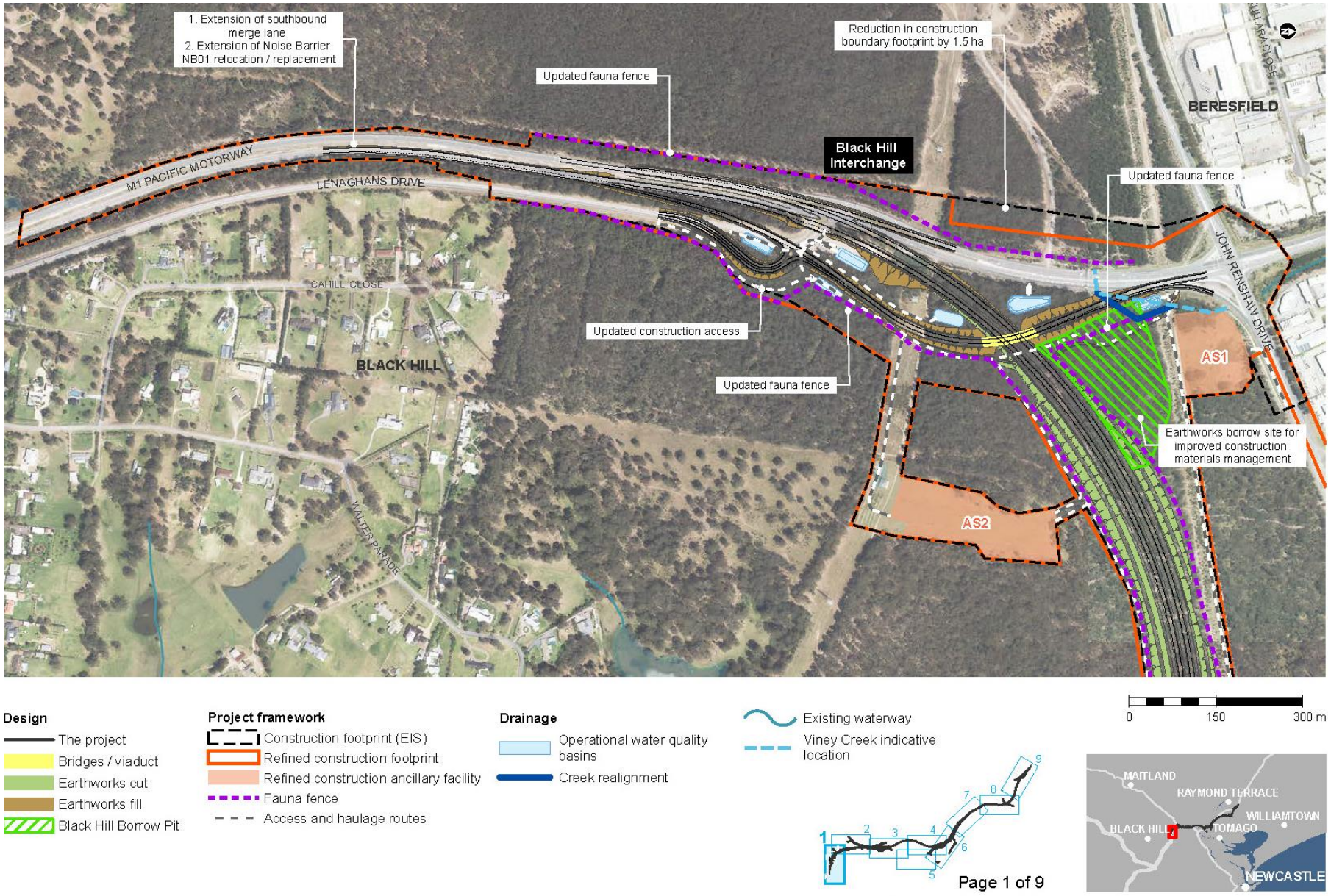
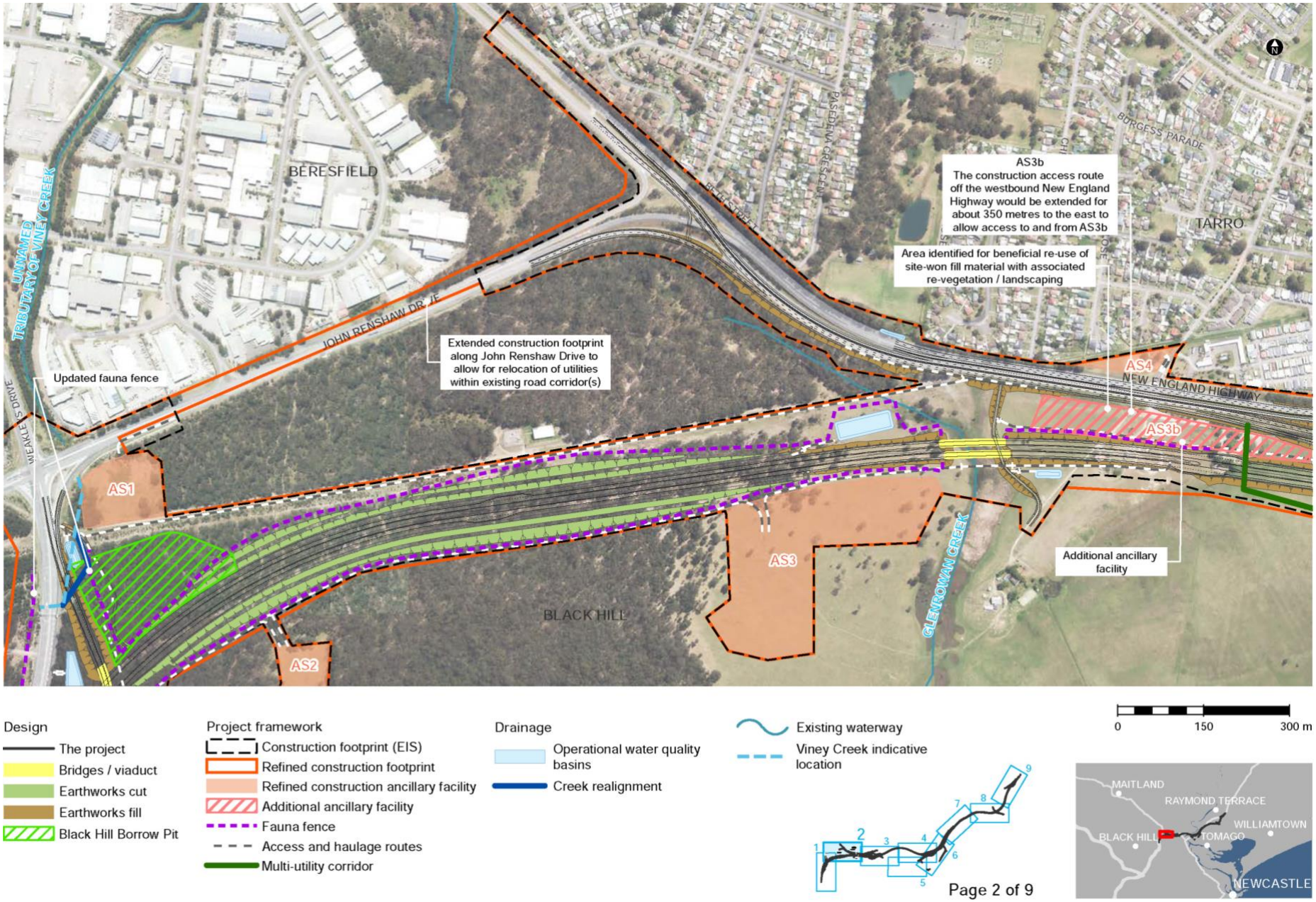
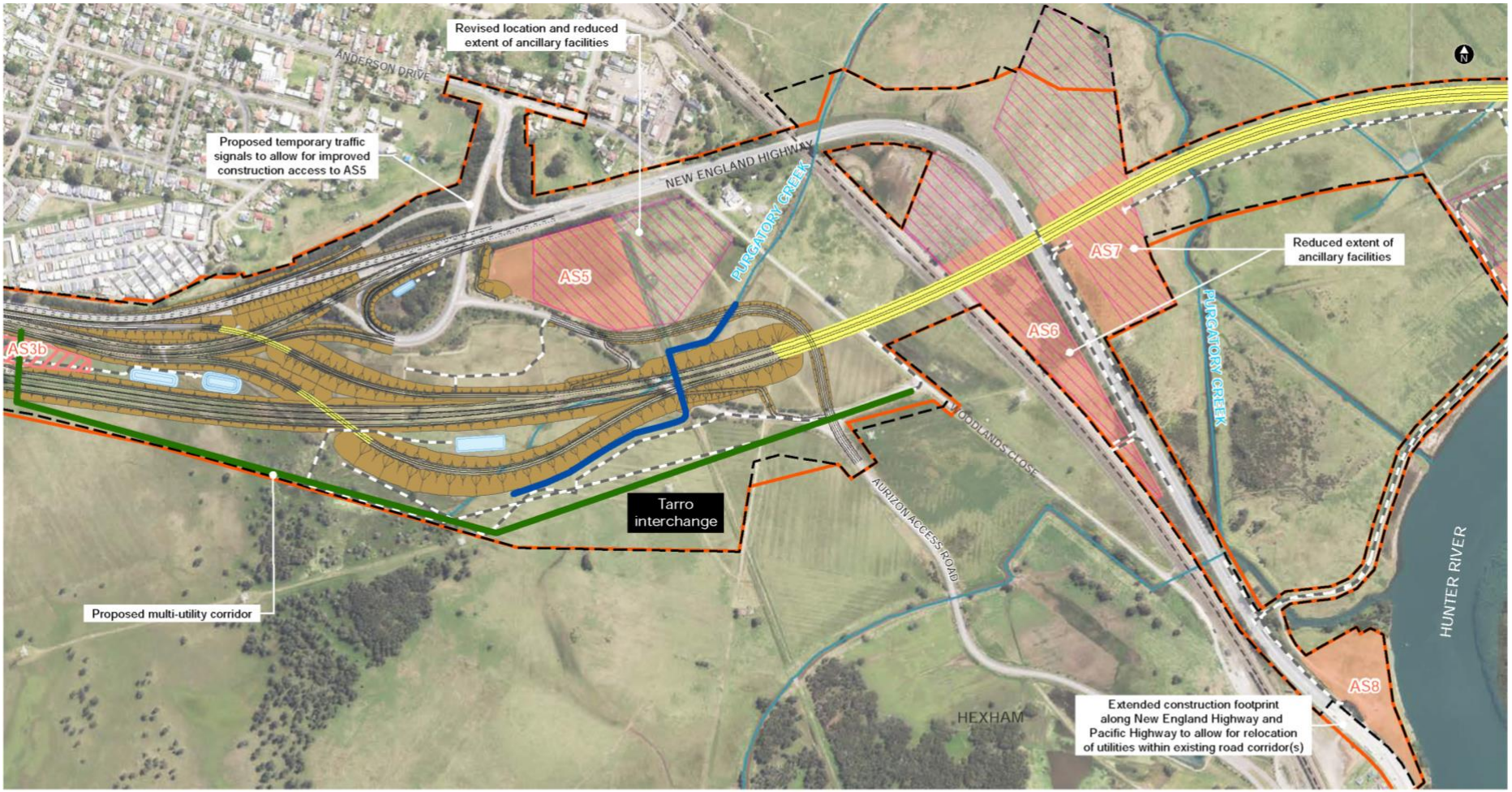


Figure 5-1 Project refinements


BERESFIELD
BLACK HILL
TARRO
UNNAMED TRIBUTARY OF VINEY CREEK
JOHN RENSHAW DRIVE
PASEDINA CRESCENT
BURGESS PARADE
NEW ENGLAND HIGHWAY
WEATHERLY DRIVE
CLENTOWAN CREEK
AS1
AS2
AS3
AS3b
AS4
AS3b
The construction access route off the westbound New England Highway would be extended for about 350 metres to the east to allow access to and from AS3b
Area identified for beneficial re-use of site-won fill material with associated re-vegetation / landscaping
Extended construction footprint along John Renshaw Drive to allow for relocation of utilities within existing road corridor(s)
Updated fauna fence
Additional ancillary facility
Design
The project
Bridges / viaduct
Earthworks cut
Earthworks fill
Black Hill Borrow Pit
Project framework
Construction footprint (EIS)
Refined construction footprint
Refined construction ancillary facility
Additional ancillary facility
Fauna fence
Access and haulage routes
Multi-utility corridor
Drainage
Operational water quality basins
Creek realignment
Existing waterway
Viney Creek indicative location
0
150
300 m
MAITLAND
RAYMOND TERRACE
WILLIAMTOWN
BLACK HILL
TOMAGO
NEWCASTLE
Page 2 of 9

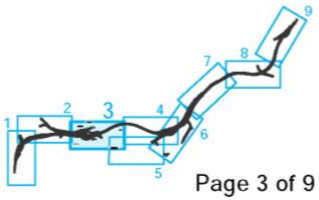


Design
- The project
- Bridges / viaduct
- Earthworks cut
- Earthworks fill

Project framework
- Construction footprint (EIS)
- Refined construction footprint
- Refined construction ancillary facility
- Additional ancillary facility
- EIS construction ancillary facility
- Access and haulage routes
- Multi-utility corridor

Drainage
- Operational water quality basins
- Creek realignment
- Existing waterway

0 150 300 m



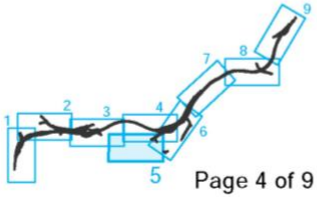
Page 3 of 9

Design
- The project
- Earthworks cut
- Earthworks fill

Project framework
- Construction footprint (EIS)
- Refined construction footprint
- Refined construction ancillary facility
- EIS construction ancillary facility
- Multi-utility corridor

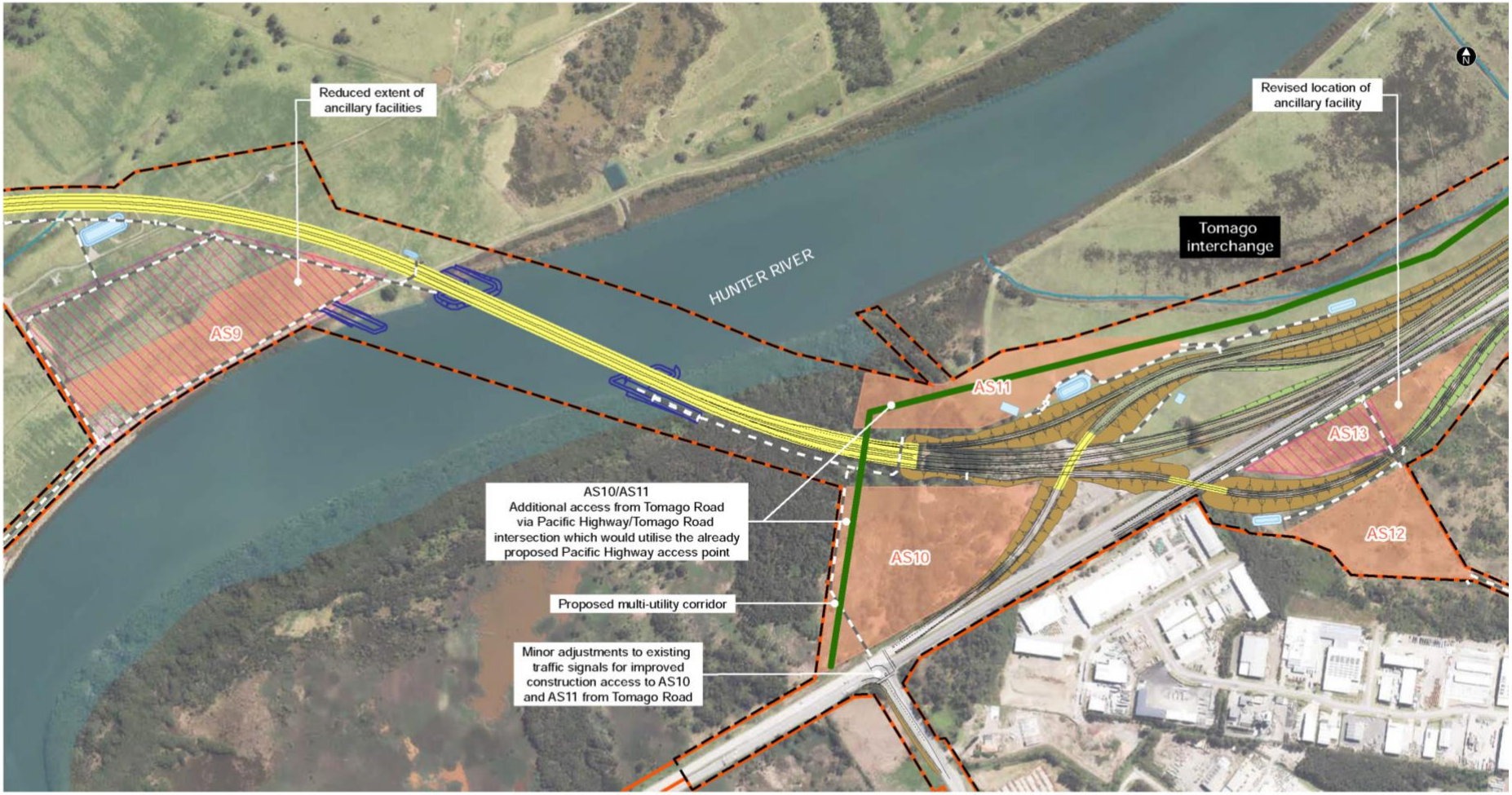
Existing waterway

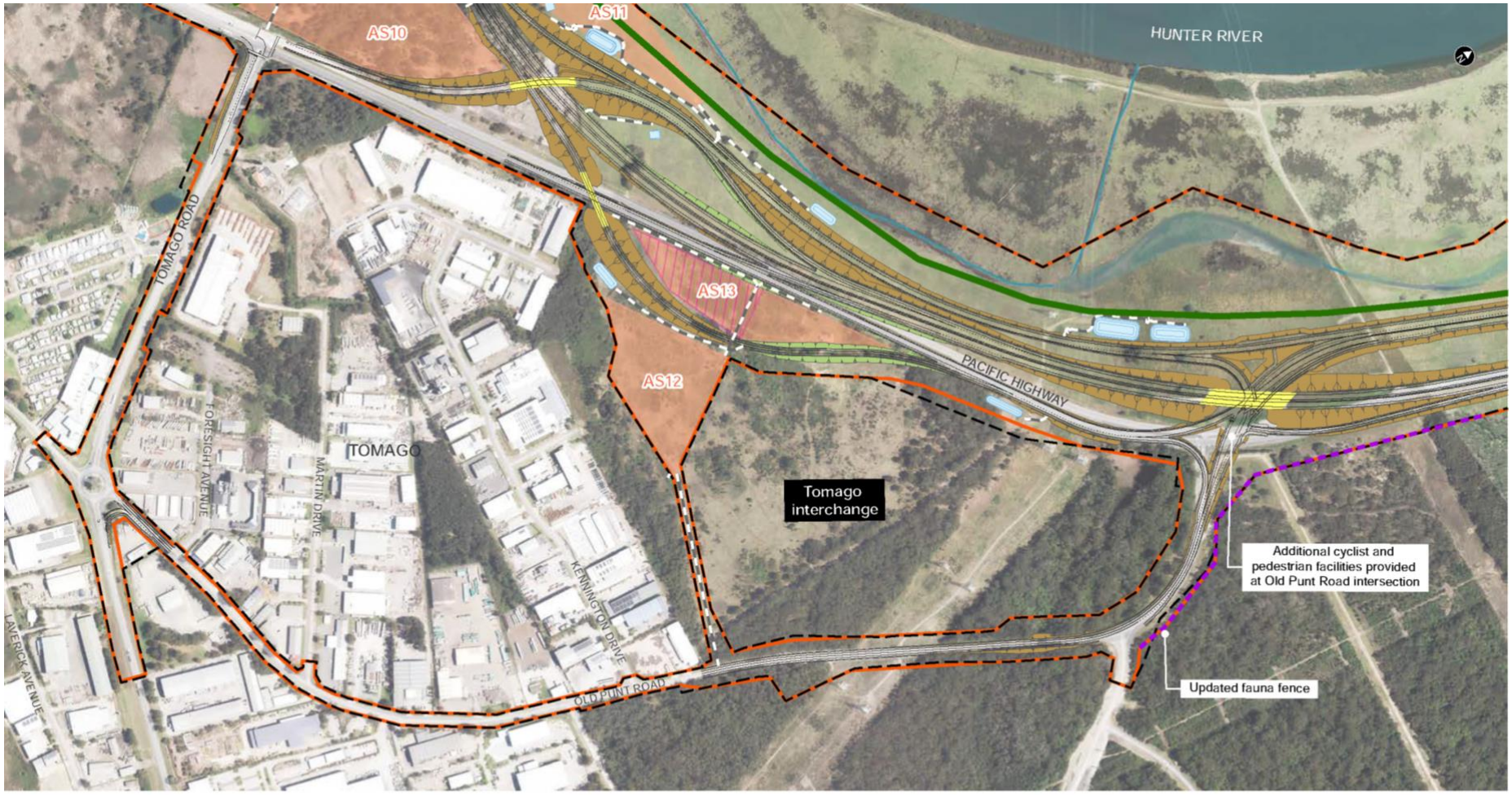
0 150 300 m



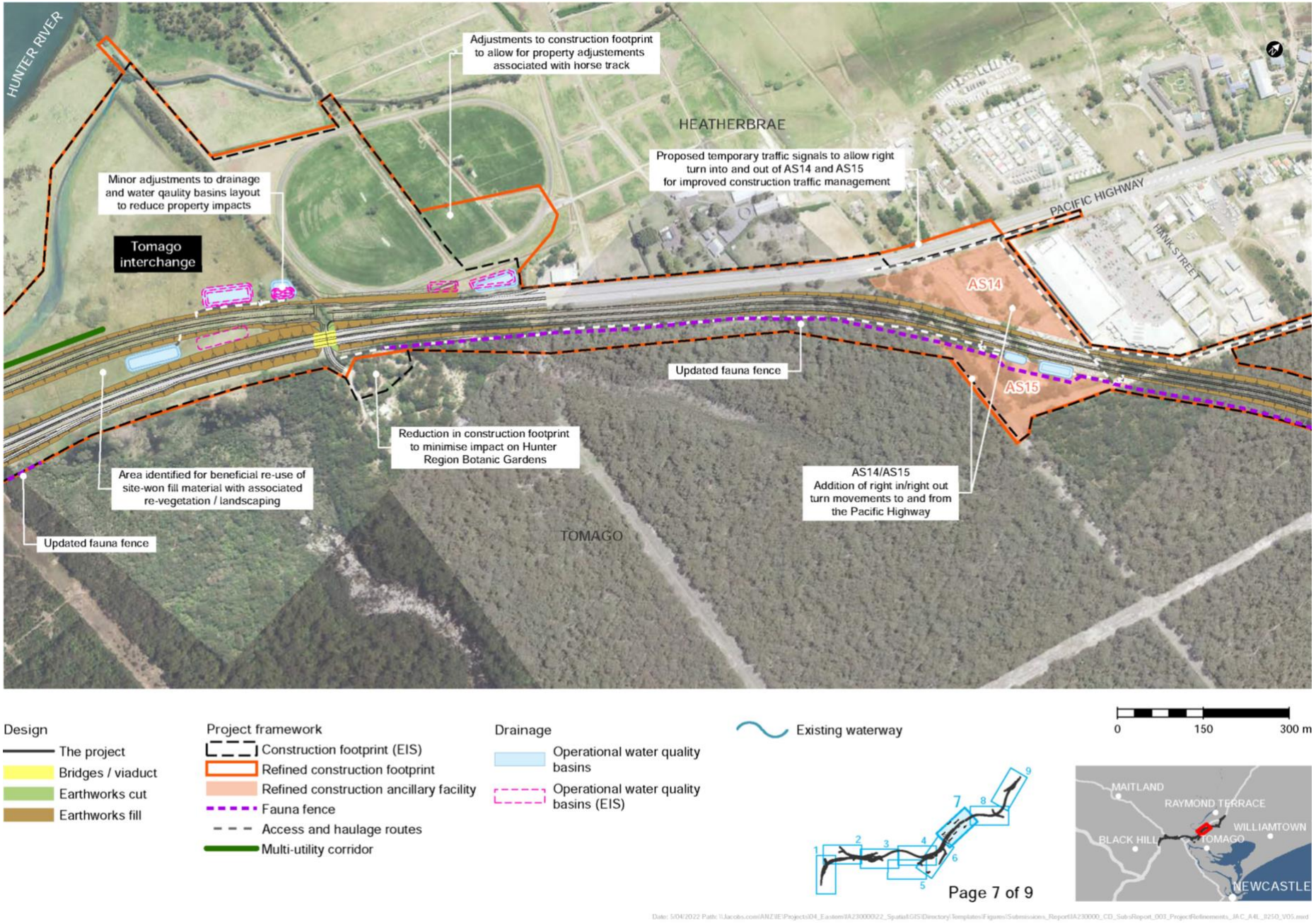
Page 4 of 9

Date: 5/04/2022 Path: \\Jacobs.com\ANZIE\Projects\04_Eastern\IA230000\22_Spatial\GIS\Directory\Templates\Figures\Submissions_Report\IA230000_CD_SubsReport_003_ProjectRefinements_IAC_A4L_8250_V05.mxd

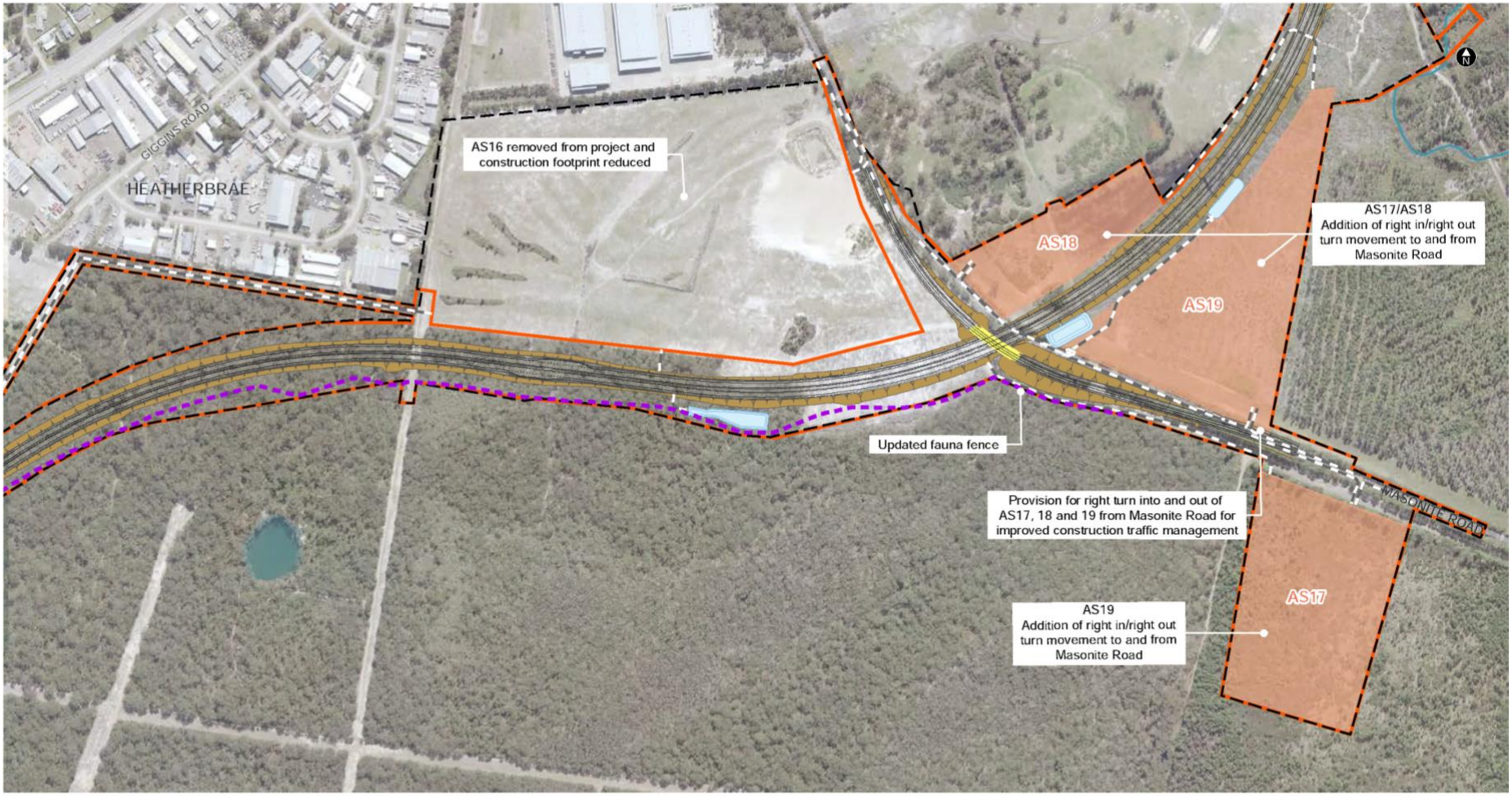

Reduced extent of ancillary facilities
Revised location of ancillary facility
Tomago interchange
HUNTER RIVER
AS9
AS11
AS13
AS10/AS11
Additional access from Tomago Road via Pacific Highway/Tomago Road intersection which would utilise the already proposed Pacific Highway access point
AS10
AS12
Proposed multi-utility corridor
Minor adjustments to existing traffic signals for improved construction access to AS10 and AS11 from Tomago Road
N
Design
The project
Bridges / viaduct
Earthworks cut
Earthworks fill
Project framework
Construction footprint (EIS)
Refined construction footprint
Refined construction ancillary facility
Temporary wharves and piling platforms
EIS construction ancillary facility
Access and haulage routes
Multi-utility corridor
Drainage
Operational water quality basins
Existing waterway
0
150
300 m
1
2
3
4
5
6
7
8
9
Page 5 of 9
MAITLAND
RAYMOND TERRACE
WILLIAMTOWN
BLACK HILL
TOMAGO
NEWCASTLE


AS10
AS11
HUNTER RIVER
TOMAGO ROAD
AS13
AS12
PACIFIC HIGHWAY
FORESIGHT AVENUE
MARTIN DRIVE
TOMAGO
Tomago interchange
KENNINGTON DRIVE
LAVERICK AVENUE
OLD PUNT ROAD
Additional cyclist and pedestrian facilities provided at Old Punt Road intersection
Updated fauna fence
Design
The project
Bridges / viaduct
Earthworks cut
Earthworks fill
Project framework
Construction footprint (EIS)
Refined construction footprint
Refined construction ancillary facility
EIS construction ancillary facility
Fauna fence
Access and haulage routes
Multi-utility corridor
Drainage
Operational water quality basins
Existing waterway
0
150
300 m
1
2
3
4
5
6
7
8
9
MAITLAND
RAYMOND TERRACE
WILLIAMTOWN
BLACK HILL
TOMAGO
NEWCASTLE

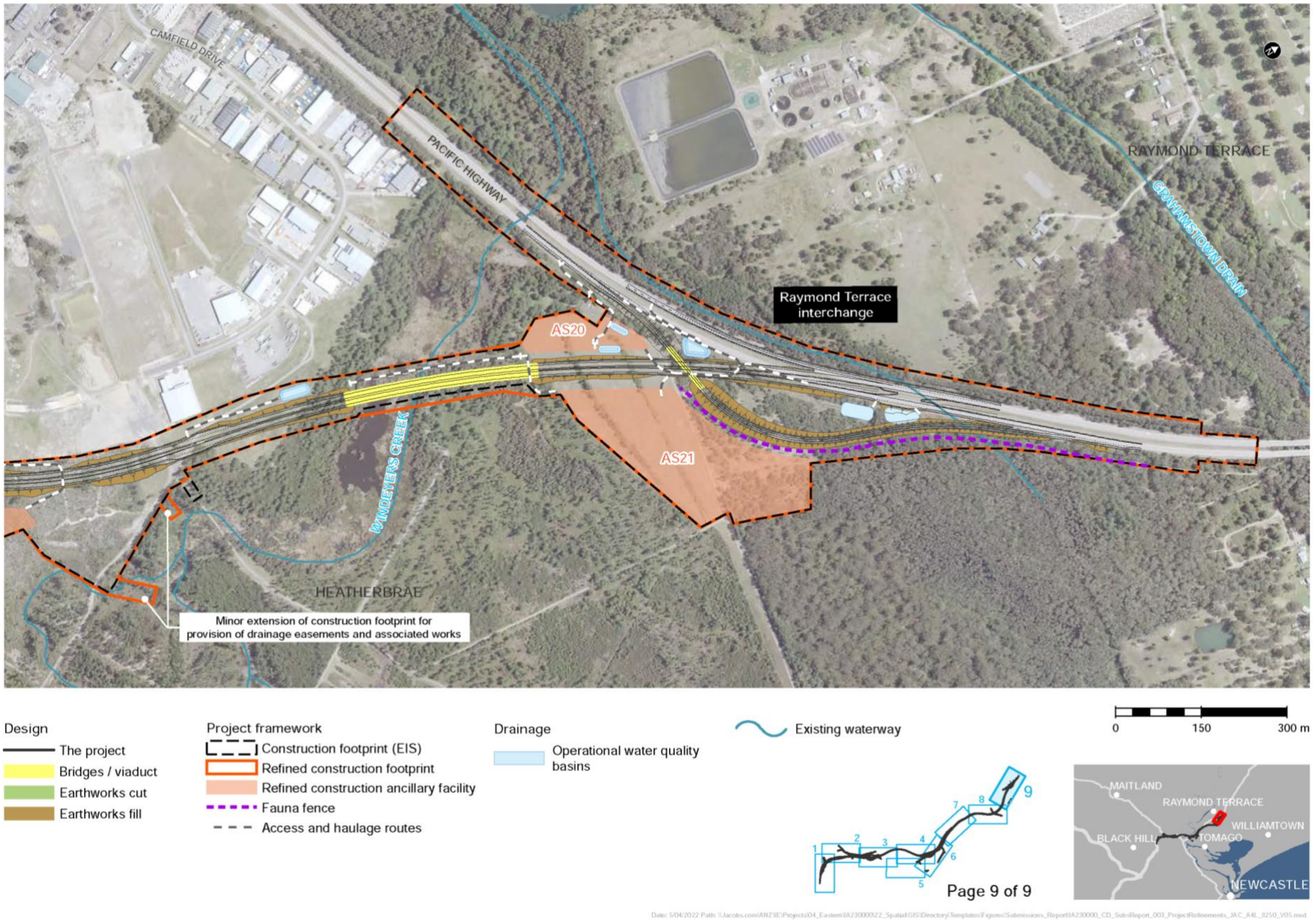
Page 6 of 9


HUNTER RIVER
Adjustments to construction footprint to allow for property adjustements associated with horse track
HEATHERBRAE
Proposed temporary traffic signals to allow right turn into and out of AS14 and AS15 for improved construction traffic management
Minor adjustments to drainage and water qaulity basins layout to reduce property impacts
Tomago interchange
PACIFIC HIGHWAY
HANK STREET
AS14
AS15
Updated fauna fence
Reduction in construction footprint to minimise impact on Hunter Region Botanic Gardens
Area identified for beneficial re-use of site-won fill material with associated re-vegetation / landscaping
AS14/AS15 Addition of right in/right out turn movements to and from the Pacific Highway
Updated fauna fence
TOMAGO
Design
The project
Bridges / viaduct
Earthworks cut
Earthworks fill
Project framework
Construction footprint (EIS)
Refined construction footprint
Refined construction ancillary facility
Fauna fence
Access and haulage routes
Multi-utility corridor
Drainage
Operational water quality basins
Operational water quality basins (EIS)
Existing waterway
0
150
300 m
1
2
3
4
5
6
7
8
9
MAITLAND
RAYMOND TERRACE
WILLIAMTOWN
BLACK HILL
TOMAGO
NEWCASTLE

Page 7 of 9


GIGGINS ROAD
HEATHERBRAE
AS16 removed from project and construction footprint reduced
AS18
AS19
AS17/AS18
Addition of right in/right out turn movement to and from Masonite Road
Updated fauna fence
Provision for right turn into and out of AS17, 18 and 19 from Masonite Road for improved construction traffic management
MASONITE ROAD
AS17
AS19
Addition of right in/right out turn movement to and from Masonite Road
N
Design
The project
Bridges / viaduct
Earthworks cut
Earthworks fill
Project framework
Construction footprint (EIS)
Refined construction footprint
Refined construction ancillary facility
Fauna fence
Access and haulage routes
Drainage
Operational water quality basins
Existing waterway
0
150
300 m
1
2
3
4
5
6
7
8
9
MAITLAND
RAYMOND TERRACE
WILLIAMTOWN
BLACK HILL
TOMAGO
NEWCASTLE

Page 8 of 9


CAMFIELD DRIVE
PACIFIC HIGHWAY
RAYMOND TERRACE
GRAHAMSTOWN DRAIN
Raymond Terrace interchange
AS20
AS21
WINDEYERS CREEK
HEATHERBRAE
Minor extension of construction footprint for provision of drainage easements and associated works
Design
The project
Bridges / viaduct
Earthworks cut
Earthworks fill
Project framework
Construction footprint (EIS)
Refined construction footprint
Refined construction ancillary facility
Fauna fence
Access and haulage routes
Drainage
Operational water quality basins
Existing waterway
0
150
300 m
1
2
3
4
5
6
7
8
9
Page 9 of 9
MAITLAND
RAYMOND TERRACE
WILLIAMTOWN
BLACK HILL
TOMAGO
NEWCASTLE

5.2.1 Design refinements

Southbound M1 Pacific Motorway merge

The southbound M1 Pacific Motorway merge lane for traffic from the John Renshaw Drive/Weakleys Drive intersection has been extended by about 200 metres to allow for improved merging (refer to **Figure 5-1**). The merge lane extension includes minor widening to the existing M1 Pacific Motorway southbound carriageway and relocation/replacement of the existing adjacent noise wall at this location.

Justification for refinement

To improve safety for southbound merging traffic flows in accordance with NSW road design guidelines.

Utilities strategy

Refinements to the utilities strategy include:

- Grouping of utilities at Tarro and Tomago into 12 metre wide multi-utility corridors:
    - Tarro (refer to **Figure 5-1**) - the multi utility corridor would be about 1.9 kilometres long and generally aligned east-west along the southern side of the main alignment and Tarro interchange. This would require a small increase to the construction boundary at this location.
    - Tomago (refer to **Figure 5-1**) - the multi utility corridor would be about two kilometres long and generally aligned east-west on the northern side of the Tomago interchange and then north-south to the intersection of the Pacific Highway and Tomago Road.
- Extension of utility adjustments along the northern side of John Renshaw Drive between Weakleys Drive and New England Highway at Black Hill (refer to **Figure 5-1**) This requires an extension of the construction boundary identified in the EIS
- Extension of utility adjustments along the Pacific Highway south of Tomago Road at Tomago and along the New England Highway at Hexham (refer to **Figure 5-1**). This requires an extension of the construction boundary identified in the EIS
- Minor changes to specific utilities protection and relocation measures identified in the EIS. These minor changes are presented in Section 5.3.15 in of the updated project description (**Appendix A**).

Justification for refinement

Transport has advanced the design and discussions with utility providers and identified refinements to the utility management strategy to meet the project and utility provider needs.

Cycleway strategy

The cycleway strategy has been refined to improve safety and connectivity for cyclists. A summary of the refinements includes:

- At the Tarro interchange, a new road culvert would be extended adjacent to the realigned Aurizon access road, to futureproof for the future Shortland to Tarro Cycleway (Newcastle City Council)
- At the Tomago interchange, additional cyclist provisions are provided between the M1 Pacific Motorway southbound exit and southbound entry ramps. Cyclists would be encouraged to exit the M1 Pacific Motorway via the southbound exit ramp to Old Punt Road, cross at the Old Punt Road Signalised intersection and then use southbound Pacific Highway entry ramp to re-join the M1 Pacific Motorway, thereby avoiding merge and diverge crossings on the Motorway
- Removal of shared user path on new Masonite Road bridge at Heatherbrae due to a change in the bridge design and negligible pedestrian demand, with cyclists able to instead utilise the shoulder.

The updated cycleway strategy is shown in Figure 5-4 of the Supplementary Traffic and Transport Report (**Appendix C**).

Justification for refinement

Transport has advanced the design and incorporated recommendations from Council comments made in submissions.

Drainage design at Heatherbrae

The drainage design refinements at Heatherbrae are shown in **Figure 5-1**and are described below:

- Western side of the realigned Pacific Highway (chainage 9300 to 9400) – a permanent basin would be relocated about 275 metres to the south and drainage works would be extended by about 50 metres to the Hunter River flood gate
- Eastern side of the main alignment (chainage 13000 and 13200) - provision of tail out drainage lines to Windeyers Creek.

Justification for refinement

The water quality basin and drainage work refinements on the western side of the realigned Pacific Highway are proposed to minimise property impacts following consultation with the property owner.

A drainage design review identified that the drainage lines on the eastern side of the main alignment needed to be extended to effectively connect to Windeyers Creek.

Water quality basins

All temporary sediment basins and permanent water quality control basins that intercept groundwater would be lined with impermeable material. The lining of basins is to prevent mixing between surface water and groundwater.

Justification for refinement

EPA submission raised concern regarding basins intercepting groundwater and then potentially discharging into surface water with the possibility of water quality impacts.

Staged project opening

Transport has identified the opportunity for potential staged opening of the project, being the early opening of the Heatherbrae bypass section. Transport would deliver the project with two major construction contractors via Southern (Black Hill to Tomago) and Northern (Heatherbrae bypass) packages of work. The Northern section would likely have a shorter construction duration and could potentially be opened to traffic before the Southern section. A temporary intersection at the tie in point for the Northern section has been designed to accommodate the potential staged opening of the project.

Justification for refinement

Review of the project construction schedule has identified the opportunity for earlier opening of Heatherbrae bypass. Detailed traffic modelling has been included in Supplementary Traffic and Transport Report (**Appendix C**), outlining the minimal and manageable impact of early opening of the Heatherbrae Bypass on the road network.

5.2.2 Construction refinements

Ancillary facilities and site access

Refinements to ancillary facilities and site access were made for two key reasons including:

- Environmental management (reduced flood and biodiversity impacts)
- Improved construction management.

All refinements to ancillary facilities are within the construction footprint identified in the EIS with several sites reduced in size resulting in a decrease in the construction footprint. The ancillary facility and site access refinements are described below.

Environmental management

Refinements to ancillary facilities are identified in **Table 5-1** and **Figure 5-1**.

Table 5-1 Ancillary facility refinements

Ancillary facility	Refinement	Reason
AS-5	Size reduced by 39.9% to 2.79 ha	Reduced flooding impact
AS-6	Size reduced by 31.7% to 3.14 ha	Reduced flooding impact
AS-7	Size reduced by 50.8% to 3.33 ha	Reduced flooding impact
AS-9	Size reduced by 57.9% to 3.75 ha	Reduced flooding impact
AS-16	Removed (100% at 25 ha)	Landowner consultation and reduced biodiversity impacts

Some minor changes to the ground level of ancillary facilities AS-5, AS-6, AS-7 and AS-9 have been made to achieve flood immunity in a 5% AEP event. At AS-9 some ground levels would be lowered to avoid being higher than the existing adjacent levee.

Refinements have also been made to the height of access tracks to assist in reducing flood impacts during construction and operation. Temporary construction access tracks would be limited to 1.45 metres above existing ground to achieve flood immunity in a 20% AEP flood event. Access tracks that would remain post construction for maintenance access would typically be 0.5 metres above existing ground.

Justification for refinement

To reduce flooding and biodiversity impacts associated with ancillary facilities and access tracks.

Construction management

Refinements to ancillary facilities and construction access are described below and shown in **Figure 5-1**:

- Ancillary facilities:
    - addition of AS-3b (four hectares) for logistical support for major ancillary site AS3.
    - increase in size of ancillary facility AS-13 from 1.3 hectares to 2.3 hectares.
- Construction access:
    - AS-3/3b:
        - the access point off Lenaghans Drive would be relocated following construction of the re-aligned section of Lenaghans Drive. The access point would be relocated about 60 metres to the southeast of the access point identified in the EIS
        - the construction access route off the westbound New England Highway would be extended for about 350 metres to the east to allow access to AS3b.
    - AS-10/11 – additional access from Tomago Road via the Pacific Highway/Tomago Road intersection. The additional site access would utilise the already proposed Pacific Highway access point as identified in the EIS
    - AS-14/15 – addition of right in/right out turn movements from the Pacific Highway to the already identified left in/left turn movements at this access point
    - AS-17/18/19 - addition of right in/right out turn movements from Masonite Road to the already identified left in/left turn movements at these access points.

Justification for refinement

A construction methodology review identified opportunities for more efficient construction management.

The overall reduction in the construction footprint is 3.5 per cent or 16.1 hectares.

Earthworks Management

Refinements to earthworks management have been made to provide for more efficient materials handling and additional opportunities for beneficial reuse of materials. The proposed refinements are entirely within the construction footprint identified in the EIS and are described below:

- Earthworks borrow site
    - An earthworks borrow site would be established at Black Hill on the northern side of the Black Hill interchange between the main alignment and ancillary facility AS1 (refer to **Figure 5-1**). The earthworks borrow site would be used to source select material for earthworks along the length of the project. The borrow site would be back filled with material that is unsuitable to be used for earthworks so that the final landform would be similar to the existing landform. Alternatively, the site would be developed in such a way that it is incorporated into the adjacent main carriageway cut batter and integrates into the road earthworks profile.
- Additional fill disposal sites have been identified (refer to **Figure 5-1**). These are:
    - the earthworks borrow site at Black Hill
    - at Tarro between the New England Highway and main alignment
    - at Tomago between the Pacific Highway and main alignment.

Justification for refinement

To allow more efficient materials handling and further opportunities for beneficial reuse of materials on site during construction.

5.2.3 Project boundary refinements

Project boundary refinements have been made to both the construction and operational footprints to reduce property and biodiversity impacts as well as to incorporate design changes, utility adjustments and refinements to ancillary facilities as described in **Section 5.2.1** and **Section 5.2.2**. All project boundary refinements have been incorporated into the final construction and operational footprints presented in **Appendix A**.

In addition to the types of project boundary refinements identified above, several boundary refinements have been made in response to consultation with landowners regarding property impacts as well as a submission from DPIE-BCD relating to koala habitat impacts at Black Hill. Details of these project boundary refinements are provided below.

Black Hill

The construction footprint has been reduced by 1.5 hectares on the western side of the existing M1 Pacific Motorway at Black Hill (refer to **Figure 5-1**). This area forms part of the road reserve and consists of native vegetation that provides koala habitat. This boundary refinement reduces the project impact on koala habitat and has been in response to the DPIE - BCD submission.

Tomago

The construction and operational project boundaries have been reduced on the southern side of the main alignment south of Old Punt Road (refer to **Figure 5-1**). The minor boundary reduction at this location was made following consultation with the landowner AGL. The boundary refinement reduces property impacts on AGL land and ensures adequate provision for both the project and AGL's approved gas fired power plant project.

Heatherbrae

Boundary adjustments have been made in the Heatherbrae area of the project after consultation with the Hunter Region Botanic Gardens representatives and the owners of the existing horse training facility on the western side of the Pacific Highway.

The construction boundary on the western side of the main alignment at Heatherbrae has been extended to incorporate part of the horse training track located next to the project to allow for realignment and adjustments to be made to the horse training track (refer to **Figure 5-1**). There would also be a minor reduction of the operational project boundary next to the horse training track.

On the eastern side of main alignment at the entrance to the Hunter Region Botanic Gardens, both the construction and operational boundaries have been reduced. The reduction of the project footprint, particularly during construction, was a result of discussions between Transport and the landowner to minimise property impacts at this location.

5.2.4 Construction staging

Construction of the project is expected to begin in 2023 and end in 2028. Section 5.4.15 of the EIS noted that project staging would be investigated further as the project progressed toward construction. Since submission of the EIS, further development of the project has refined opportunities to deliver the project in stages. Indicative staging has been outlined in the following sub-sections. Any further refinement and finalisation of stages would be documented in a Staging Report provided to the Secretary for Planning following an approval for the project.

Low impact work and early work

Low impact work and early work are stages that would take place prior to main construction work. Activities undertaken during these stages typically support detailed design or allow for the efficient implementation of the main work once it has commenced. The types of activities likely to occur during the low impact work and early work stages may include, but not be limited to:

- Property acquisition and adjustments, including property access changes
- Detailed investigations and survey work including geotechnical investigative drilling, excavations, archaeological investigations and salvage, and environmental monitoring
- Road dilapidation and building condition surveys
- Site establishment work, fencing and signage
- Temporary traffic management arrangements including construction of access roads
- Installation of environmental controls including temporary or permanent fencing, erosion and sediment control mitigation measures, and habitat connectivity measures
- Construction of temporary drainage controls including temporary creek crossings
- Adjustment, relocation and protection of public utilities and services
- At-property acoustic treatments
- Pre-loading of soft soils
- Contaminated site remediation e.g. RZM site at Tomago, removal of pre-existing waste and weed control
- Native seed collection, revegetation and landscaping work
- Establishment and operation of ancillary facilities to support work.

Main construction work

Main construction work would be undertaken as two distinct stages. This would include delivery of the 10 kilometre southern stage (Blackhill to Tomago) and the five kilometre northern stage (Heatherbrae bypass). The construction time of the northern stage would be shorter in duration and may be completed before the southern stage. Early completion of the northern stage may allow this stage to open before the southern stage.

5.3 Revised project description

A revised project description has been prepared to provide a single point of reference describing the project and capturing all project refinements made since EIS exhibition. The revised project description is presented in **Appendix A** and closely follows the structure and content of Chapter 5 (Project description) of the EIS. All figures accompanying the project description have been revised and updated to capture the project refinements identified in **Section 5.2** above.

In response to the project refinements, a number of minor boundary adjustments have been made to both the construction and operational boundaries. The boundary adjustments have been made to incorporate the design refinements, utility adjustments and refinements to ancillary facilities. Boundary adjustments were also identified to reduce property and biodiversity impacts. The final construction and operational footprints are provided in **Appendix A**.

5.4 Additional Assessment

A number of additional assessments have been carried out since the exhibition of the EIS. The need for additional assessments was determined through review of the project refinements, issues raised in submissions and following ongoing consultation with government stakeholders. The following additional assessments have been undertaken since EIS exhibition:

- Traffic and transport – refer to supplementary report at **Appendix C**
- Noise and vibration - refer to supplementary report at **Appendix D**
- Biodiversity – refer to revised Biodiversity Assessment Report at **Appendix E**
- Hydrology and flooding – refer to supplementary report at **Appendix F** and **Appendix G**
- Surface and groundwater quality – refer to supplementary report at **Appendix H**
- Aboriginal heritage - refer to additional assessment at **Appendix I**
- Non-Aboriginal heritage - refer to additional assessment at **Appendix I**
- Contamination - refer to supplementary report at **Appendix J**.

An overview of the scope of additional assessments is provided in the following sections.

5.4.1 Traffic and transport

The *M1 Pacific Motorway extension to Raymond Terrace Traffic and Transport Working Paper* (Jacobs 2021) was prepared in support of the EIS for the project. The working paper provides an assessment of the traffic and transport related impacts and benefits that would result from the construction and operation of the project. The supplementary traffic and transport report has been prepared to assess the potential impacts of the project refinements developed since exhibition of the EIS and described in **Section 5.2**.

The key considerations of the supplementary report were:

- Assessment of proposed staged opening of the project, with the northern end of the project (Heatherbrae Bypass) potentially opening earlier than the remainder of the project.
- Additional assessment of refinements to construction ancillary facilities and access arrangements
- Updated description and refinements to the cycleway strategy.

5.4.2 Noise and vibration

The *M1 Pacific Motorway extension to Raymond Terrace Noise and Vibration Working Paper* (Jacobs 2021) was prepared in support of the EIS for the project. The working paper provides an assessment of the noise and vibration related impacts that would result from the construction and operation of the project. The supplementary noise and vibration report has been prepared to

respond to issues raised by government agencies and in submissions as well as assess the potential impacts of the project refinements.

The key considerations of the supplementary report were:

- Providing additional information and description of the noise survey and monitoring carried out to support the noise assessment in response to issues raised by EPA and DPIE
- Assessment of changed construction operations, including a reduction in the proposed work times and improved definition of work activities of the project
- Updated noise assessment of areas impacted by project refinements at Black Hill and Tomago.

5.4.3 Biodiversity

The *M1 Pacific Motorway extension to Raymond Terrace Biodiversity Assessment Report* (Jacobs 2021) was prepared in support of the EIS for the project. The Biodiversity Assessment Report (BAR) provides an assessment of the biodiversity impacts that would result from the construction and operation of the project. An update of the BAR has been prepared to assess the project refinements and respond to agency comments and submissions.

The key issues addressed and revised in the BAR include:

- Assessment of the project refinements to capture project impact changes
- Koala impacts in the Black Hill area addressing issues raised by DPIE-BCD
- Recalculating biodiversity impacts of the project including increases and decreases to construction and operational footprints to determine biodiversity offsetting obligations
- Removal of AS16 to reduce orchid impact
- Provision of more detailed survey effort/information to inform DPIE-BCD.

5.4.4 Hydrology and flooding

The *M1 Pacific Motorway extension to Raymond Terrace Hydrology and Flooding Working Paper* (Jacobs 2021) was prepared in support of the EIS for the project. The working paper provides an assessment of the hydrology and flooding related impacts from the construction and operation of the project. The supplementary hydrology and flooding report has been prepared to assess the potential impacts of the project refinements developed since exhibition of the EIS and address issues raised by government agencies.

The key considerations of the supplementary report were:

- Refining the construction and operational flooding impacts
- Providing more detail on existing property and building impacts
- Refined assessment, justification of the flood impacts and the associated mitigation.

Additionally, the flood extents of the model in the EIS and the supplementary report were challenged as the afflux conditions on the edge of the modelled area where above the assessment criteria (10 millimetres) recommended for the assessment. This resulted in additional modelling being undertaken to determine the project impacts in the upper reaches of the Hunter and Williams River beyond the extent of the existing *Williamtown – Salt Ash Floodplain Risk Management Study and Plan modelled* area used for the project. This assessment was undertaken and is provided in **Appendix G**. The outcome of this investigation was that there were no new above floor flooding upstream in either catchments in the 1% AEP, as a result of the project.

5.4.5 Surface and groundwater quality

The *M1 Pacific Motorway extension to Raymond Terrace Surface Water and Groundwater Working Paper* (Jacobs 2021) was prepared in support of the EIS for the project. The working paper provides an assessment of the surface water and groundwater impacts from the construction and operation of the project. The supplementary surface water and groundwater report has been

prepared to assess the potential impacts of the project refinements developed since exhibition of the EIS, provide additional water quality data and address issues raised by government agencies.

The key considerations of the supplementary report were:

- Updating the water quality assessment with additional water sampling data
- Assessment of the project refinements to capture project impact changes
- Revising the management of groundwater use/reuse/management during construction
- Providing further assessment of surface water runoff to all receiving waterways via additional water quality discharge and mixing zone assessments.

5.4.6 Aboriginal heritage

The *M1 Pacific Motorway extension to Raymond Terrace Aboriginal Cultural Heritage Assessment Report* (Jacobs 2021) was prepared in support of the EIS for the project. The report provides an assessment of the Aboriginal heritage impacts that would result from the construction and operation of the project.

To assess the potential impact of seven minor project refinements that would be located outside of the original (EIS) project construction footprint, an additional assessment has been carried out.

The key considerations of the additional assessment were:

- Any additional assessments were to be completed in accordance with the agreed assessment methodology described in the EIS
- The disturbed nature of the existing environment at the seven additional areas located directly adjacent to the EIS study area
- The potential for changes to results reported in the Aboriginal Cultural Heritage Assessment Report (ACHAR).

The assessment methodology established in consultation with project Registered Aboriginal Parties and contained in the publicly exhibited EIS requires a staged assessment to be completed for areas within the construction footprint. Due to the presence of nearby artefacts or landforms that suggest a higher potential for cultural heritage to be present, additional assessment was completed for the additional areas and is presented in **Appendix I**.

In accordance with the ACHAR methodology, a desktop assessment (Stage 1) was completed by Transport Cultural Heritage Officer and included a review of the existing ACHAR, AHIMS Register and Native Title Register (completed in March and June 2022).

The Stage 1 desktop assessment highlighted that the additional sites described in **Appendix I** are disturbed and present limited opportunity for the presence of artefacts or contextual information. As a result, the additional areas do not change the cultural heritage artefacts or values that have not been previously described in the ACHAR (in the EIS). Therefore, the additional areas did not require assessment beyond Stage 1 to adequately understand the potential for the presence of cultural heritage artefacts. The Stage 1 assessment also suggested that the additional areas are generally consistent with the study area discussed in the ACHAR and would not require further investigations prior to the implementation of the agreed mitigation measures presented in the ACHAR. In response to the residual risk of two of the additional areas at Windeyers Creek being located within or adjacent to the site described in the ACHAR as *Heatherbrae / M12RT 3* a revised environmental management measure (AH03) has been included in **Appendix K** to address these refinements.

5.4.7 Non-Aboriginal heritage

The *M1 Pacific Motorway extension to Raymond Terrace Non-Aboriginal Heritage Working Paper* (Jacobs 2021) was prepared in support of the EIS for the project. The report provides an assessment of the non-Aboriginal heritage impacts that would result from the construction and operation of the project. To assess the potential impact of five project refinements that would be

located outside of the original project construction footprint, an additional assessment has been carried out.

The key considerations of the additional assessment were:

- All five locations are within the non-Aboriginal heritage study area of the EIS working paper
- Database searches were renewed
- Heritage assessment results were reviewed for the adjacent Transport project covering the location of one of the relevant project refinements.

5.4.8 Soils and contamination

The *M1 Pacific Motorway extension to Raymond Terrace Soils and Contamination Working Paper* (Jacobs 2021) was prepared in support of the EIS for the project. The working paper provides an assessment of the soil and contamination impacts from the construction and operation of the project. The supplementary soils and contamination report has been prepared to provide additional data and review the contamination risk.

The key considerations of the supplementary report were:

- Reporting on the newly available soil and contamination sampling results obtained as part of Transport's detailed geotechnical program
- Reviewing and updating the assessment of potential contamination risk across the project area based on the new geotechnical sampling information.

5.4.9 Assessment outcome summary

A summary of the key assessment outcomes for each of the project refinements, along with any proposed changes to mitigation measures, is presented in **Table 5-2**.

Table 5-2 Key assessment outcomes for project refinements

Refinement	Relevant assessment(s)	Assessment outcomes	Additional mitigation proposed
Design refinements			
Southbound M1 Pacific Motorway merge	• Noise and vibration	Some additional sensitive receivers were identified for additional noise mitigation. The existing noise barrier would be reinstated a short distance to the east of the current location. Further detail is provided in the Supplementary Noise and Vibration Report in **Appendix D**.	No changes to the existing noise and vibration environmental management measures are required.
Utilities strategy	• Biodiversity • Aboriginal heritage • Non-Aboriginal heritage • Noise and vibration	New areas of threatened ecological communities would be impacted from the additional areas required for utility adjustments at John Renshaw Drive, Black Hill and Pacific Highway/New England Highway, Hexham. However, there would be no change to the type and magnitude of impacts identified in the EIS. Further detail is provided in the revised BAR in **Appendix E**. No additional impacts to Aboriginal and Non-Aboriginal heritage. There would be a minor reduction in construction noise impacts due to the refined utilities strategy. The number of noise catchment areas predicted to have clearly audible, moderately intrusive and highly intrusive construction noise during utility work over the day, evening and night-time periods has reduced.	No changes to the existing biodiversity, Aboriginal heritage and non-Aboriginal heritage environmental management measures are required.
Cycleway Strategy	• Traffic and transport	Improved safety and connectivity for cyclists. Allowance for improved integration with proposed future cycleways which would enhance the region's cycling connectivity.	No changes to the existing traffic and transport environmental management measures are required.
Drainage design at Heatherbrae	Not applicable	The minor drainage design changes do not require additional assessment and do not change any impacts to those identified in the Surface Water and Groundwater Quality Working Paper (Appendix K of the EIS).	No changes to the existing surface water and groundwater quality environmental management measures are required.

Refinement	Relevant assessment(s)	Assessment outcomes	Additional mitigation proposed
Water quality basins	• Surface water and groundwater quality	The refinement to line all temporary sediment basins and permanent water quality basins at risk of intercepting groundwater would minimise the risk of groundwater with elevated salinity and other physical and chemical properties from being discharged to surface water. It would also minimise the risk of surface water collected in basins infiltrating into the groundwater. Further detail is provided in the Supplementary Surface Water and Groundwater Report in **Appendix H**.	Yes. Additional mitigation in relation to lining of all temporary sediment and permanent water quality basins that intercept groundwater.
Construction refinements			
Ancillary facilities and site access	• Traffic and transport • Flooding and hydrology • Biodiversity • Noise and vibration	Generally, traffic impacts are expected to remain relatively consistent with those identified in the EIS. The introduction of traffic signals for two ancillary facility access points would prioritise through traffic (public) with some delays to the relatively small volume of construction traffic. Further detail is provided in the Supplementary Traffic and Transport Report in **Appendix C**. Flooding and hydrology – design refinements have been included for the project to further minimise any flooding impacts and reduce properties impacted. Further detail is provided in the Supplementary Flooding and Hydrology Report in **Appendix F**. Biodiversity – ancillary sites have been reduced in size with a major site removed. Further detail is provided in the BAR in **Appendix E**. There would be a minor reduction in construction noise impacts due to the ancillary facility refinements. The number of noise catchment areas predicted to have clearly audible and/or moderately intrusive construction	No changes to the existing traffic and transport and noise and vibration environmental management measures are required. Transport has included improved definition of proposed mitigation treatments for flood impacted properties.

Refinement	Relevant assessment(s)	Assessment outcomes	Additional mitigation proposed
		noise during ancillary facility operation over the day, evening and night-time periods has reduced.	
Earthworks management	Not applicable	The refinements to earthworks management would allow for more efficient handling of materials with all associated construction impacts restricted to the construction footprint with no key changes from impacts identified in the EIS.	No change to existing environmental management measures required.
Project boundary refinements			
Construction footprint	• Biodiversity • Aboriginal heritage • Non-Aboriginal heritage	Refinements to ancillary sites has reduced the construction boundary across the project area. Refinements to the drainage design near Windeyers Creek includes an areas outside of the previous Aboriginal heritage study area. The additional areas at Windeyers Creek would form part of the salvage works and site walkover by registered Aboriginal parties to be undertaken prior to construction. Searches of non-Aboriginal heritage databases included: Local Environment Plan listings (City of Newcastle and Port Stephens), State Heritage Inventory, National Heritage List, Commonwealth Heritage List and World Heritage List. There are no listed non-Aboriginal heritage items in the additional areas of the proposed construction footprint. One locally listed heritage item, the Oak factory (LEP Instrument No. I178), is adjacent to the revised construction footprint at the New England Highway. No disturbance of the heritage item or curtilage is required during construction. There would be no non-Aboriginal heritage impacts in addition to those identified in the EIS.	Yes. Additional mitigation in relation to surface collection and salvage of Aboriginal heritage site near Windeyers Creek.
Operational footprint	Not applicable	Minor changes to the operational boundary have resulted from consultation with landowners and some design refinements. The minor changes do not influence	No change to existing environmental management measures required.

Refinement	Relevant assessment(s)	Assessment outcomes	Additional mitigation proposed
		any other environmental aspects that would result in a change to the impacts identified in the EIS. The updated operational project boundary is shown in **Appendix A**.	
Construction staging			
Staged project opening	• Traffic and transport	Two design options were considered for a Northern (Heatherbrae Bypass) package of works that would permit early opening of this section of the project. Both options were assessed as similar in terms of network performance, travel times, intersection performance and queuing. Option 1 was identified as the preferred design due to marginally quicker travel times and better constructability. An assessment comparing the un-staged project performance against the staged project performance identified that across the wider study area the travel time and intersection performance benefits of the un-staged project are not fully realised under the Heatherbrae Bypass staging option. The overall results for operational traffic indicate that delivery of the Heatherbrae Bypass as the first stage of a project is feasible.	No changes to the existing traffic and transport environmental management measures are required.

6 Response to government submissions

This chapter summarises the issues raised and provides responses. Refer to **Appendix B** for the register of submissions including the reference numbers and where the issues raised are addressed in this report.

6.1 Support for the project

Submission number

41, 46

Issue description

- The project has great strategic importance for the region. Maitland City Council advises that the proposed route and construction are supported for the following reasons:
    - The project will remove a significant bottleneck, especially during holiday times, that directs traffic into the LGA as holiday makers attempt to avoid the Hexham Bridge and associated delays.
    - Delays along the Hexham Straight are common during peak hours and removing intra and inter-state traffic from this stretch of road will help mitigate this.
    - Will reinforce the strategic importance of the Thornton Industrial Precinct.
    - Is located in a logical location that minimises overall impacts.
    - Provides a strong connection point to the Maitland local road network, strengthening the link of the LGA to the M1 Pacific Motorway corridor, providing additional opportunities for employment and housing opportunities within the LGA.
- Port Stephens Council supports the significant benefits the project will deliver to the road network and connections between Port Stephens and the Hunter.

Response

Support for the project is acknowledged.

6.2 Project design

6.2.1 Cycleways

Submission number

55

Issue description

- The M1 Pacific Motorway extension to Raymond Terrace project and the Lower Hunter Freight Corridor will require City of Newcastle Council to review route options for its Shortland to Tarro cycleway project. City of Newcastle advised of the need for ongoing consultation with Transport in relation to the Shortland to Tarro cycleway project
- There is strong community preference for separation of cycling facilities from motorised traffic. As far as practicable it is advised that the Shortland to Tarro cycleway connection at Tarro should address this
- City of Newcastle advises of the need for continued consultation regarding the Shortland to Tarro cycleway and M1 Pacific Motorway extension to Raymond Terrace project road corridor.

Response

The future cycleway planning of the Shortland to Tarro project is being carried out by City of Newcastle Council. Transport has held discussions with council on the future cycleway plans

through the project area. Adequate provision is available for the future cycleway under the viaduct of the M1 Pacific Motorway extension to Raymond Terrace project.

Appendix G (Traffic and transport) of the EIS discusses in detail the proposed cycleway provisions being provided as part of the project. Section 5.2.6 of Appendix G of the EIS demonstrates all proposed safe cycleway connections proposed at junctions on the existing road network and how it is intended to safely link with the project.

Updates to the cycleway provisions proposed by the project have been included in the Supplementary Traffic and Transport Report (**Appendix C**).

Submission number

55

Issue description

- In relation to City of Newcastle's Shortland to Tarro cycleway project, it is advised the M1 Pacific motorway extension to Raymond Terrace project be modified to:
    - Lengthen the culvert over Purgatory Creek by two lengths minimum (4.8 metres)
    - Align the Aurizon Access Road to allow the cycleway to pass under the M1 Pacific motorway extension to Raymond Terrace project on the east side of the diverted road.

Response

Transport and City of Newcastle have consulted on the provisions for the future Shortland to Tarro cycleway project proposed by Council.

Additional design features have been included in the M1 Pacific motorway extension to Raymond Terrace project design to allow for a connection through the project area, including the widening of the culvert under Aurizon Access Road for future cycleway provision.

6.2.2 Waterway adjustments

Submission number

58

Issue description

It is advised that the realignment of Purgatory Creek should mimic natural stream design by incorporating natural hydrological function and not include 90 degree sharp meanders. The watercourse reconstruction should tie into upstream and downstream sections of the watercourse and not limit any connectivity in the area and those works should be carried out in accordance with Natural Resources Access Regulator (NRAR) guidelines.

Response

Chapter 5 (Project description) of the EIS describes and discusses the proposed change to Purgatory Creek required for the project. Section 5.3.10 of the EIS shows the current concept design and notes that the existing condition of Purgatory Creek at Tarro has been substantially modified by artificial incision and stabilisation, removal of native riparian vegetation and floodgate management.

The watercourse reconstruction starts very close to the upper limit of Purgatory Creek with the design allowing for a connection to the downstream section of Purgatory Creek. The sections shown as 90 degree turns in the creek are connections to culverts passing under the main alignment of the motorway. This is required to efficiently pass under the project. The proposed 90 degree turns limit, as far as practicable, the connectivity loss along the adjusted creekline.

In relation to managing the potential impact, Transport has identified environmental management measures for activities in riparian zones (B07) in accordance with Transport procedures, and other mitigation measures generally consistent with the requirements of the NRAR guidelines.

6.2.3 Hunter Valley Flood Mitigation Scheme

Submission number

58

Issue description

The Hunter Valley Flood Mitigation Scheme advises of "in principle" consent under section 256 (1) (a) and (b) of the *Water Management Act 2000* for the project. It is advised that post approval, the final design plans be provided to the Hunter Valley Flood Mitigation Scheme for assessment and to allow formal consent under section 256 of the *Water Management Act 2000*. The final design plans will need to provide details of:

- Location of piers relative to the Hunter Valley Flood Mitigation Scheme assets, ideally the bridge piers should not be located on any levees
- Scour protection must be provided around piers in close proximity to the levee to minimise erosion during flood events
- A revised flood model of the final design is to be provided identifying the hydraulic impacts for the design events exceeding the 10% AEP.

Response

Transport would provide the final design plans and revised flood model to the Hunter Valley Flood Mitigation Scheme prior to construction and obtain any necessary permits / approvals.

6.2.4 Stormwater discharge

Submission number

55

Issue description

City of Newcastle Council advises of the need for certain requirements regarding stormwater discharge to the City of Newcastle network or land be included as conditions of approval. These are:

- There must be a minimum level of stormwater treatment in accordance with City of Newcastle's *Stormwater and Water Efficiency for Development* Technical Manual
- Adequate scour protection / energy dissipation at all outlets
- Stormwater outlets must be accessible for maintenance ease
- No increase in quantity / peak stormwater flows to City of Newcastle network

Response

The design of the project has minimal connectivity to existing City of Newcastle drainage assets around John Renshaw Drive and the New England Highway at Tarro. The majority of drainage flows from existing land uses towards the project and the flood plain, minimising the interaction with existing drainage in the area.

Transport would provide appropriate upgrades to manage drainage from the project and the catchment. As detail design progresses, where any substantial impacts are identified on Council drainage assets, Transport would further consult with Council.

It is not anticipated at this stage that there would be substantial impacts to Council's existing drainage infrastructure.

6.2.5 Stormwater discharge from viaduct

Submission number

45

Issue description

Advised that all stormwater discharge from the viaducts be delivered directly to major creeks, existing drains and the river rather than be discharged to any saltmarsh or future potential saltmarsh areas.

Response

Stormwater runoff generated from the viaduct structure would be conveyed via a pit and pipe drainage system to permanent water quality basins adjacent to the structure. These permanent water quality basins direct discharges to new open channels that outlet into either the Hunter River or Purgatory Creek. Uncontained flows from the surface drainage system would not be directed to existing or future saltmarsh areas.

6.2.6 Waterway crossings

Submission number

45

Issue description

DPI Fisheries advises of the need for liaison with Transport regarding the design of permanent and temporary creek crossings.

Response

Transport is committed to liaising further with DPI Fisheries where construction is occurring for creek crossings. Transport accordingly has updated B07 to include consultation with DPI Fisheries for fish habitat conservation and management.

6.3 Construction

6.3.1 Ancillary facilities

Submission number

55

Issue description

Newcastle City Council advises of the need for a condition of approval for ancillary facilities adjacent to City of Newcastle land (Lot 122 DP1235373) to be ecologically restored post construction. It is advised that restoration to include Australian Standard AS4434 Mulch and high-density native vegetation planting (six tube stock per metre squared) for minimum 20 metre buffer around City of Newcastle land.

Response

The ancillary facilities (AS2 and AS3) adjacent to City of Newcastle land (Lot 122 DP1235373) are predominantly cleared with limited ecological value. For these reasons they were selected as ancillary facility sites. Transport is committed to rehabilitating land used temporarily for construction as identified in Chapter 24 of the EIS (Summary of environmental management measures). This includes:

- LU03: Land subject to temporary use will be rehabilitated as soon as practicable to an appropriate condition, taking into consideration the location, land use characteristics, area and adjacent land uses. This will be carried out in consultation with the landowner.

- B05: Revegetation will be carried out in accordance with 'Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects' (RTA 2011) (Guide 3: Re-establishment of native vegetation) and the Landscape Plan prepared for the project.

The City of Newcastle lot is outside the project construction footprint and would not be subject to approved work. Therefore, the provision of a 20 metres planting buffer beyond the construction footprint as a mitigation measure performed by Transport is not proposed.

Submission number

55

Issue description

The project includes the establishment and operation of concrete and asphalt batching plants within the ancillary facilities for the project. The EIS does not provide details of the locations of these facilities.

Response

The EIS includes information on the potential locations of concrete and asphalt batching plants in Section 5.4.3 Construction Ancillary Facilities. Table 5-12 of the EIS identifies which ancillary sites may be used for concrete or asphalt batch plants.

As stated in the EIS: "Asphalt and concrete required for the construction of the project would be obtained from local suppliers as far as practicable. However, existing suppliers may be unable to meet the production rates required where large quantities are required at high production rates for the project. As such, it is likely that one or more on-site asphalt and concrete batching plants would be required to form asphalt and concrete required for the project."

Should a batch plant be located within the ancillary site, it would be within the bounds of the area shown in the revised Construction Footprint plans (**Appendix A**). The need for batch plants within the construction footprint would be determined by the main contractor during construction.

6.3.2 Waterway crossings

Submission number

45

Issue description

DPI Fisheries advises that they have no objections to the construction methodologies described in the EIS for the bridge and viaduct and the temporary and permanent creek crossings.

Response

Support for the waterway crossings is acknowledged.

6.3.3 Cranes and tall structures

Submission number

55

Issue description

Part of the project is located within the protected air space of Newcastle Airport. It is advised that if it is proposed to erect a structure or use a mobile crane having a height exceeding 30 metres above ground level, it will be necessary to obtain the prior approval of the Air Base Command Post of RAAF Base Williamtown in accordance with the 'The Operation of Cranes and Tall Structures in the Vicinity of Newcastle Airport' (Department of Defence, 2013). It is advised that this be a condition of consent if the project is approved.

Response

The highest point above ground level on the project would be the viaduct. At its highest point the viaduct roadway would be about 14 metres above the ground surface. The construction methodology proposed includes lifting girders into place during viaduct construction. It is not anticipated that the lifting of these girders would exceed 30 metres above ground level. However, if detailed construction planning identifies the need for plant or equipment use above this height, Transport and its construction partners would obtain any necessary airspace approvals. Revised environmental mitigation measures HS03 has been included in **Appendix K**.

6.4 Consultation

Submission number

57

Issue description

Hunter Water Corporation advises that they have been involved in ongoing discussions with Transport since the project's inception.

Response

Chapter 6 (Consultation) of the EIS discusses in detail the extensive consultation that has been implemented for the project to date. This has included community updates, media releases, public displays and community feedback periods to support the preferred route, concept design development and environmental assessment. Transport has implemented a Community and Stakeholder Engagement Plan (CSEP) throughout the life of the project. The CSEP has been progressively updated throughout the project to capture developments in the consultation process over time. Specific and targeted consultation has been undertaken with landowners (including utility asset owners) of property directly impacted by the project and landowners whose access may need to be altered as a result of the project.

As identified in Section 6.4 of the EIS, Transport is committed to ongoing consultation with the community and stakeholders regarding future project developments.

6.5 Traffic and transport

6.5.1 Haulage routes

Submission number

41

Issue description

Maitland City Council advises of the need for further information on use of local roads within Maitland LGA for haulage of raw materials. It is advised that no detail is given as to where construction materials are to be sourced from and recent Environmental Impact Statements for quarries located in proximity to the LGA boundary have raised significant concerns over the impact of heavy vehicle movements through residential areas and the impact on the local road network.

Response

The majority of construction traffic movements would occur within the construction footprint, away from existing roads with construction traffic on the existing road network expected to be mainly from transportation of fill and delivery of pre-cast elements and materials. Section 7.4.1 and Figure 5-25 of the EIS (Construction Traffic) detail the proposed project haulage routes to connect to the road network. Where possible, heavy vehicle movements would primarily use state roads including the M1 Pacific Motorway, Pacific Highway and New England Highway. Other roads that may be used during construction include:

- Medowie Road

- Masonite Road
- Old Punt Road
- Anderson Drive
- Aurizon Access Road
- Woodlands Close
- Woodbury Road
- Adelaide Street
- Seaham Road.

The greatest potential for project construction traffic to impact the local road network is at ancillary facility access points. Based on the existing traffic volumes on roads within the study area (refer to Table 7-4 of the EIS), the low number of peak hour construction traffic movements (on average 132 heavy vehicles and 147 light vehicles) and that the majority of the ancillary facilities are accessed via dedicated left in/left out arrangements, minimal delays and queuing to the surrounding network are anticipated as a result of construction traffic accessing ancillary facilities.

The source of all material to be used in project construction is not definitively known at this point as it would be dependent on the successful construction contractors and any commercial arrangements with suppliers. Since exhibition of the EIS, Transport has made a number of construction refinements including a proposal to establish an earthworks borrow site at Black Hill on the northern side of the Black Hill interchange between the main alignment and ancillary facility AS1 (refer to **Figure 5-1**). The earthworks borrow site would be used to source site won fill for earthworks along the length of the project. The use of this borrow site would reduce demand for imported fill from other locations that might result in local road use. Notwithstanding, any material sourced beyond the footprint of the project would be from lawful sources subject to NSW planning laws and in some cases environmental protection licence requirements.

To address the potential impacts to the local road network, the EIS has committed to completing road dilapidation reports prior to any impacts on local roads. (Refer to TT07).

6.5.2 Local road classification

Submission number

46, 55

Issue description

- Old Punt Road and Masonite Road will be realigned and become key access points to the Pacific Highway. Port Stephens Council advises that Transport should be encouraged to change the classification of these local roads to State roads. This would allow council funds dedicated to the upkeep of these roads to be reallocated to vital local projects such as works in Heatherbrae and Raymond Terrace to assist in the economic transition resulting from the project
- City of Newcastle requested ongoing consultation in relation to the ownership and status of the Aurizon Access Road.

Response

The Project includes a minor adjustment to Masonite Road to ensure that the new motorway does not prevent access during construction or operation. The project is not expected to change the traffic profile or form/function of this road. As such, no change to the classification of this road is considered necessary and is outside of the scope of the project.

The project is expected to result in an increase in traffic along Old Punt Road with construction including minor upgrade work to facilitate tie-in at the Tomago Interchange. Transport would

continue to consult with Port Stephens Council about the appropriate road classification of Old Punt Road.

The Aurizon Access Road is currently a private road that Transport is realigning and reconstructing through the project area. Noting these changes, Transport would continue liaising with both Aurizon and Council regarding the future status of Aurizon Access Road.

6.5.3 Traffic generation from Black Hill precinct

Submission number

55

Issue description

- The EIS identifies the Emerging Black Hill Precinct as a major traffic generating development in the region that would account for about 11 per cent of all trips in the study area by 2038 and 12 per cent by 2048.
- City of Newcastle Council advises they are concerned that Transport may not have incorporated in the assessment the most recent modelling data and analysis for the Emerging Black Hill Precinct as provided in *Traffic Analysis Report – Black Hill Traffic Modelling* (SMEC 2020) prepared for Transport.
- In Appendix G (Traffic and Transport Working Paper) of the EIS it is unclear if growth rate assumptions and trips generated from the Black Hill development are for one hour or three hour peak periods and do not seem to match the numbers in the SMEC 2020 report.
- It is advised that Transport should provide the assumptions made regarding gross floor area (GFA) and trip generation rates for the Emerging Black Hill Precinct to confirm the EIS has utilised the most recent and reliable data in the traffic study.
- The EIS identifies that the Project generally improves overall performance of the road network. However, it is advised that given the high traffic generation of the Emerging Black Hill Precinct, the performance of the M1 Pacific Motorway/Weakleys Drive/John Renshaw Drive intersection reaches an unsatisfactory level of performance by 2038. Similarly, there would be unsatisfactory performance of the Black Hill Interchange southbound merge leading from Weakleys Drive onto the M1 Pacific Motorway.
- There is an opportunity to achieve the objectives of the M1 Pacific Motorway extension to Raymond Terrace project while also supporting the future of the Emerging Black Hill Precinct. However, it is advised that concern is raised that a southern access to the Precinct gained from Black Hill Road may not be viable due to private land ownership between the precinct and potential southern access point, placing at risk the future of the precinct.
- The EIS suggests that there could be other equivalent southern access options, however, it is advised that it is not apparent what these options may be or how they could be achieved
- In June 2021 City of Newcastle Council, with the support of Transport, approved an indicative road and lot layout to guide development of the eastern part (Lot 30 DP870411) of the Emerging Black Hill Precinct. On the recommendation of Transport, allowance has been made for a potential southern connection across the eastern site boundary to the M1 Motorway that would not rely on other private landholdings or upgrading/closure of Black Hill Road. As the Emerging Black Hill Precinct has now progressed, including approval of the first development application on the site, it is advised that Transport needs to acknowledge and ensure the future southern connection can be provided.
- Council advises that Transport should investigate in more detail access to the Emerging Black Hill Precinct as part of both the M1 Pacific Motorway extension project and LHFC project and confirm the preferred option for southern access ramps and access connecting to the Emerging Black Hill Precinct. While the construction of access ramps / access may not fall within the project's briefs, the inclusion of such within the project's design stage could ensure that a viable access is achievable and integrated between the projects.

Response

Transport has thoroughly assessed the potential traffic and transport impacts of the M1 Pacific Motorway extension project to the Emerging Black Hill Precinct. Chapter 7 (Traffic and transport) and Appendix G (Traffic and Transport Working Paper) of the EIS assesses in detail the future traffic growth assumed over the next 20-30 years on the road network. This includes the impact of the potential developments in the Emerging Black Hill Precinct.

The assessment and consideration of potential traffic impacts has been a fundamental component of the project development. The traffic modelling carried out for the project has subsequently been used for further assessments such as the SMEC (2020) report prepared for Transport. The background growth rates and future traffic from the Black Hill Emerging Precinct has been applied consistently in the various assessments carried out.

The growth rate assumptions identified in Appendix G (Traffic and Transport Working Paper) of the EIS are applied to the complete traffic modelling and assessment.

Design, assessment and approval process for developments proposed in the Emerging Black Hill Precinct is the responsibility of the proponents and the relevant planning authority (Council or the NSW Department of Planning and Environment).

Appendix B (Traffic and Transport Options Testing Report) of the Traffic and Transport Working Paper includes detailed assessment of sensitivity testing scenarios of the impacts predicted from the Black Hill Emerging Precinct. Scenario 1 was testing the performance of the road network if an alternate southern access was provided into the Emerging Black Hill Precinct. The project is not seeking approval or endorsement of a southern access point to the Emerging Black Hill Precinct but simply demonstrating the performance of the project and the adjoining road network should an alternate southern access be provided to the Precinct.

The future provision of a southern access point to the Emerging Black Hill Precinct is outside of the scope of this project approval. It would be a matter for Transport, councils (City of Newcastle and Cessnock) and other relevant stakeholders to resolve as the demand will be driven by the Precinct development.

6.5.4 Traffic impacts on City of Newcastle roads

Submission number

55

Issue description

- While temporary short-term traffic diversions will likely be required during construction, it is advised that significant traffic is not to be diverted along local roads (e.g. eastbound traffic: (start) M1 west - Quarter Sessions Road, Anderson Drive, M1 east (end))
- It is advised that diversions of motorway traffic for construction activity are to use roads / tracks provided within the motorway land corridor.

Response

Transport commits to not diverting traffic to Quarter Sessions Road during construction from the New England Highway.

Quarter Sessions Road would be used to access proposed Ancillary Site 4, with traffic able to enter and exit towards the New England Highway.

Additionally, Transport has included further construction traffic management measures at the New England Highway interchange at Tarro to minimise construction traffic accessing Anderson Drive through Tarro and Beresfield. The proposed treatment of signalising the eastbound exit ramp would enable construction traffic to enter the project site via the interchange. Refer to **Appendix C** for further information on the operation of the proposed works at this location.

The existing road network surrounding the project would be used during construction to manage traffic and provide access to the project as listed in the EIS Traffic and Transport assessment.

Submission number

55

Issue description

It is advised that Transport should investigate the radius of the curve (bend) at the entrance of Lenaghans Drive from the M1 Pacific Motorway extension to Raymond Terrace project. A larger radius could be more desirable with a longer taper or deceleration lane from the M1Pacific Motorway extension to Raymond Terrace to Lenaghans Drive.

Response

The design of Lenaghans Drive has been carried out in accordance with the relevant road design guides and Australian Standards. A larger radius curve and longer taper would increase the area of impact on native vegetation at this location. No design change is proposed at this location.

6.6 Noise and vibration

6.6.1 Noise monitoring data

Submission number

43

Issue description

- EPA advises that further justification of the adequacy of noise monitoring (or additional information) presented in the Noise and Vibration Working Paper (Appendix H of the EIS) is needed. As a significant amount of data has been excluded due to inclement weather or extraneous noise, the suitability of the identified background noise levels to establish reliable noise management levels could be questioned
- It is not clear if the requirements for establishing background noise levels identified in the Noise Policy for Industry (NPfI) have been satisfied
- Similarly, it is advised that further justification is needed that the 2016 road traffic noise monitoring provides sufficient amount of data to enable a representative calculation of the traffic noise descriptors.

Response

Periods of unattended noise monitoring affected by extraneous noise, wind (greater than five metres per second) or rain were excluded from the recorded data in accordance with the NSW Noise Policy for Industry (NPfI) (EPA, 2017). A further review of the weather data used in determining extraneous meteorological conditions revealed that the wind data was adjusted using superseded correction factors to account for the height difference between the Bureau of Meteorology (BOM) weather station and the microphone location. Updated correction factors were used to re-analyse the wind data. It is also noted that Section B1.3 of the NPfI allows for weather affected data to be included if it can be ascertained that the affected samples are not within the expected ‘quieter’ times of an assessment period (day/evening/night), that is the lowest 10th percentile background noise level. Once the previously excluded data was integrated and the data set was re-analysed, all monitoring locations had at least seven valid days of data as required by the NPfI.

Similarly, the traffic noise levels measured at the monitoring locations were reviewed and periods affected by adverse weather conditions were excluded. It is noted that more than seven consecutive days of traffic noise monitoring was conducted at each of the monitoring locations. A review of the processed traffic noise data (i.e. after excluding for adverse weather and/or extraneous noise events) indicated that traffic noise was a feature at the monitoring locations and traffic noise levels during the excluded periods were typically similar to the corresponding non-excluded periods on other days. Therefore, the final traffic noise levels presented in the M1 Pacific

Motorway extension to Raymond Terrace project Noise and Vibration Working Paper (Transport for NSW, 2021b) are considered valid.

Notwithstanding, Transport would undertake further monitoring prior to construction to validate Rating Background Levels (RBLs). Accordingly, a revised environmental management measure has been included in **Chapter 8** to reflect this commitment (NV10).

6.6.2 Traffic noise monitoring

Submission number

43

Issue description

- The Noise Impact Assessment (NIA) has referenced noise monitoring and traffic count data from 2016 to validate the traffic noise model. The NIA explains that this is because during 2020 the COVID-19 Public Health Orders impacted traffic flows so that any data collected during this period may not be representative.
- Chapter 4.4 of the NIA represents the monitoring from 2016 as “existing road traffic noise levels.” However, it is advised that the noise levels presented are 5 years old and therefore may not be representative of existing levels during typical traffic flows.
- It is advised that there is a need to clarify the purpose of the 2016 traffic noise monitoring, such as to validate the noise model and if this can be considered representative of contemporary traffic noise levels during normal conditions (i.e. in the absence of Public Health Orders that impact traffic flows).

Response

The traffic noise levels obtained from the 2016 noise monitoring results were used for noise model validation purposes only and, given that traffic counting surveys were conducted concurrently with the noise monitoring, the noise model validation process and outcomes are valid.

As outlined in the Section 3.4.1 of the Noise and Vibration Working Paper (Appendix H of the EIS), the COVID-19 pandemic has dramatically impacted traffic volumes, making it impossible to collect more recent traffic noise data that would be representative of “typical” pre-pandemic periods.

In relation to the road fleet and land use in the area, the traffic volumes on the road are generally consistent and progressively growing over time across the network. The noise assessment has subsequently used the future traffic growth from the traffic modelling, to determine traffic noise impacts from the proposed year of opening (2028) and 10 years after opening (2038), in accordance with the requirements of the NSW *Road Noise Policy* (RNP – Department of Environment, Climate Change and Water 2011).

The impacts of growth through the project area are generally as a result of broader land use growth throughout the Hunter Region when considering the location of the project in the broader road network. To date, there have been no major land use changes in the project area that would materially change the traffic growth rates seen over time or the heavy vehicle fleet seen across the project area road network. Similarly, there have been no major developments that would result in changes to background noise levels, and generally the noise environment is still dominated by traffic noise and/or general industrial noise in each NCA.

6.6.3 Attended noise monitoring

Submission number

43

Issue description

- It is advised that the use of attended measurements in the NIA should be clarified, including the methods used to establish RBLs for NCAs where unattended monitoring was not conducted,

justification and demonstration that they are representative, or if this is not possible, additional information (such as additional monitoring data) should be provided

- It is advised that further detail of the "correlation" used and how it is relevant and appropriate to "correlate" attended measurements with unattended locations which in some cases appear to be in significantly different noise environments is needed. For example, L04A and L05A have been compared with the unattended location L04. Locations L04A and L05A are located in suburban settings well removed from the New England Highway, whereas L04 is located adjacent to the Highway and therefore appears to be in a completely different noise environment.
- It is advised that the attended monitoring does not appear to have been adequately reported in the NIA. There is no information on the date, time, location, duration, descriptors etc. All attended monitoring relied upon in the NIA should be reported in full, using the reporting requirements of the *Noise Policy for Industry* (EPA 2017)
- It is advised that justification is needed for the selective use of short-term monitoring in some NCAs and not others and provide commentary on if and how the short-term monitoring is appropriate, and representative of repeatable background noise levels in these areas.
- It is advised that it is not clear why some areas had short term monitoring and others long term monitoring. Some sensitive land uses (residential areas) had attended monitoring whereas other commercial and industrial land use areas had unattended monitoring. The EPA considers that it would be more appropriate to use long term monitoring at more sensitive areas as this is where impacts are more likely to occur.

Response

Where long term unattended noise monitoring was not available due to access, security and/or extraneous noise issues, short term attended noise measurements were conducted concurrently with the long-term noise monitoring. Short term attended measurement locations were strategically grouped with corresponding long term monitoring locations where the ambient noise environments had similar characteristics between the two locations (e.g. traffic noise contribution from the same road source). Furthermore, the short-term measurement locations were chosen to allow for noise catchment areas (NCAs) to be further divided into sub-NCAs for assessment purposes.

Details of the attended monitoring carried out is presented in **Table 6-1** below and section 2.1.1 of the supplementary noise and vibration report at **Appendix D**.

Table 6-1 Summary of measured noise levels at short term attended locations

ID	Address	Date	Time	Measured noise levels, dB(A)	
				L_{A90}	L_{Aeq}
L01A	24 Walter Parade, Black Hill	7/06/2018	1:15pm – 1:30pm	42	46
		7/06/2018	11:00pm – 11:15pm	47	50
L04A	22 Lenox Street, Beresfield	7/06/2018	2:00pm – 2:15pm	43	53
		7/06/2018	11:45pm – 12:00am	44	46
L05A	49 Beresford Avenue, Beresfield	7/06/2018	2:30pm – 2:45pm	47	59
		8/06/2018	12:00am – 12:15am	41	51
L10A	15 Brown Street, Raymond Terrace	7/06/2018	3:30pm – 3:45pm	50	55
		8/06/2018	12:15am – 12:30am	41	50
L12	53 Martens	7/06/2018	3:45pm – 4:00pm	49	55

ID	Address	Date	Time	Measured noise levels, dB(A)	
				L_{A90}	L_{Aeq}
	Avenue, Raymond Terrace	8/06/2018	12:30am – 12:45am	43	50

To determine a correlation, measured short-term results were compared to the concurrent results of the corresponding long-term monitoring to determine a correlation between two measurement locations. This procedure was used to establish the equivalent noise levels over the long-term monitoring period at short-term monitoring locations. Section 2.1.1 of the supplementary noise and vibration report attached at **Appendix D** provides a worked example.

6.6.4 Morning and evening shoulder periods

Submission number

43

Issue description

- It has been advised that there has not been sufficient justification for the nominated morning and evening shoulder periods and the identified background noise levels (Table 4-3 of the Noise and Vibration Working Paper (Appendix H of the EIS) The EPA does not support this approach and would seek to recommend standard definitions of day, evening and night periods
- It is advised that it is not clear how the calculation of the background noise levels has been altered to fit in with the proposed extended construction hours
- It is advised that it appears that morning and evening shoulder periods have been applied to all NCAs, without justification that this is appropriate
- It is advised that clarification is needed of the time periods and methods used to calculate the background noise levels and a detailed justification is required for each NCA that it is appropriate to alter the time periods using information that fulfills the requirements of the *Noise Policy for Industry* (EPA 2017).

Response

In response to the EPA submission, Transport has revised the proposed extended construction work hours (refer to **Section 6.6.5** below) that were identified in the EIS. Based on the updated extended construction work hours, no noisy construction activities would occur during the previously nominated shoulder periods. Therefore, the rating background levels for the previously nominated shoulder periods are no longer relevant to the updated construction noise impact assessment (refer to Section 3.3 of the Supplementary Noise and Vibration Report).

6.6.5 Construction working hours

Submission number

43

Issue description

- The EPA advises that it does not support the proposed extension to construction working hours
- It is advised that the justification provided in the NIA is not sufficient, is not supported by the predicted impacts in the NIA and is not consistent with the ICNG
- It is advised that a mechanism for flexibility in working hours already exists in the EPA's typical infrastructure licence conditions
- The EPA advises that the EPA's typical approach to large infrastructure projects for working hours and work outside of standard hours be applied to this project

- The EPA advises that Table 3-25 of the Noise and Vibration Working Paper (Appendix H of the EIS) be revised so that is clear and consistent with which activities are proposed to be undertaken during which time periods.

Response

In response to the EPA's submission, Transport has reviewed the need for extended construction work hours. Transport has reduced the proposed extended construction hours from those nominated in the EIS. Transport now proposes an extra hour at the start of each day from Monday to Saturday and an extra four hours at the end of Saturday. The extended construction work hours are shown in **Table 6-2** and would apply across the project.

Table 6-2 Extended construction work hours

Day	Start time	Finish time	Construction activities during extended hours
Monday to Friday	6.00am	6.00pm	• 6am to 7am: construction activities (e.g. toolbox meetings, preparation of equipment) that do not result in noise levels above the relevant construction noise management level at the nearest affected residential receiver • 7am to 6pm: general construction activities
Saturday	7.00am	5.00pm	General construction activities
Sunday and public holidays	No extended hours proposed		Nil

The ICNG recognises there are some situations where construction work may need to be carried out outside of the recommended standard construction hours. This includes public infrastructure works that shorten the length of the project and are supported by the affected community.

As identified in the Supplementary Noise and Vibration Report (**Appendix D**), construction noise during the extra four hours at the end of Saturday (i.e. daytime out-of-hours) is predicted to have similar impacts to those during standard working hours. Construction noise during the extended hours are typically less than the noise management level (NML) or just noticeable (i.e. <5dB above NML) for most construction activities and at NCAs where receivers are well removed from the construction works.

To justify the extended working hours, the following aspects have been considered:

- An overall construction period reduction of three to six months
- The health and safety of the public and construction crews during construction
- Minimisation of disruption to traffic flows during the day
- Ability for workers to arrive on site and carry out safety inductions and inspections prior to general construction activities commencing at 7am
- Majority of construction work would be away from sensitive receivers.

In addition, the benefits of extended working hours would include the following:

- Reducing the volume of traffic on roads during peak hours due to construction staff and construction vehicles travelling to and from the construction site outside of peak traffic periods
- Less disruption to sensitive receivers, the community, local business, motorists, pedestrians and cyclists as work would be completed earlier compared to utilising only standard construction hours
- Enabling greater flexibility in project scheduling. This would enable the contractor to make allowances for adverse weather and potential flooding events.

The proposed extended construction hours would apply to normal construction activities. If required, blasting would only be carried out during the recommended ICNG standard construction hours.

6.6.6 Construction noise impact assessment

Submission number

43

Issue description

- The NIA presents construction impacts as “peak” and “typical.” In some cases, the difference between the peak and typical noise levels is 3 dB or less and this makes it unclear of how the community should interpret the predicted impact. For example, the predicted noise level in NIA Appendix C for typical clearing, grubbing and demolition works in NCA04A is 87 dBA and its peak is 89 dBA. Table 3-25 of the Noise and Vibration Working Paper states that this work will continue for 21 months. The NIA has not put forward any mitigation measures to control these significantly high noise levels, only a process by which they may be managed post-approval. It’s not clear if when this level of noise does occur, what measures could be applied to this activity and location and how effective they may be.
- It is advised that Transport should explain how to interpret these predictions and the mitigation proposed for levels that are predicted to be above the noise management levels and what residual impact may be expected after mitigation.

Response

The use of ‘Peak’ and ‘Typical’ to describe the construction impacts for the various scenarios was explained in Section 5.2 of the Noise and Vibration Working Paper (Appendix H of the EIS) as follows:

> *worst-case activities only occur for part of the work period and for assessment purposes have been categorised as ‘peak impact’. For the period where noise intensive work is not occurring and the activities are typical for the work period, it has been categorised as ‘typical impact’*

A peak impact represents a worst-case situation where all plant and equipment associated with the work scenario are operating concurrently. As all plant and equipment would not operate concurrently and continuously throughout the duration of the work scenario, a situation where the plant and equipment likely to be used most of the time represents a typical impact.

For example, during construction works for the relocation of utilities, equipment may include jackhammers, concrete saws, excavators, dump trucks, concrete trucks, delivery trucks, handheld tools, backhoe and/or light vehicles. A peak impact would be due to all these plant and equipment operating concurrently. However, this would not be a common occurrence and typically only some of these plant items (e.g. jackhammer, excavator, dump truck and concrete truck) are assumed to be operating at the same time, allowing for the assessment of typical impacts. In some situations, the difference between a peak impact and a typical impact may be due to only one plant item, resulting in the difference in noise between the two to be minimal.

Construction noise mitigation is discussed in **Section 6.6.7** below.

6.6.7 Construction noise and vibration mitigation

Submission number

43

Issue description

- It is advised that the construction noise and vibration assessment is not considered adequate due to the lack of information relating to the management of construction noise and vibration
- It is advised that the assessment only provides a basic outline of some of the processes that are used to manage construction noise, however has provided no indication of what type of

measures, their likelihood of being adopted, the potential effectiveness, outcome or residual impacts as a result of the proposed management strategy

- It is advised that the NIA does not appear to satisfy the following Secretary's environmental assessment requirements (SEARs) (Items 3.2 (d), (e) and (f)):
    - (d) demonstrate how potential impacts have been avoided (through design, or construction or operation methodologies);
    - (e) detail how likely impacts that have not been avoided through design will be minimised, and the predicted effectiveness of these measures (against performance criteria where relevant); and
    - (f) detail how any residual impacts will be managed or offset, and the approach and the predicted effectiveness of these measures.
- It is advised that it is not clear how the community can make an informed comment on the EIS with regard to how construction noise will be managed, the level of impact they can expect, nor when (for example night works) and where they can expect to be impacted.
- It is advised that the NIA provided no indication of the level of community engagement conducted to date and proposed to inform and feedback the community's views on construction noise management.

Response

Noise mitigation measures would be implemented for the project in accordance with the *Construction Noise and Vibration Guideline* (CNVG) (Roads and Maritime Services, 2016). Appendix B of the CNVG presents the standard noise and vibration mitigation measures that may be implemented for the various construction work scenarios. These measures are reproduced in Table 2-15 of **Appendix D** (Supplementary Noise and Vibration Report). The specific measures to be implemented for the various construction scenarios would be determined during the detailed design phase as part of developing site-specific construction noise and vibration impact statements (CNVIS). The process for developing CNVIS and the suite of specific mitigation measures would form part of the Construction Noise and Vibration Management Plan (CNVMP). CNVISs provide a detailed assessment of the potential impacts and define the site-specific environmental management measures to be used to control construction noise and vibration impacts. Predicted impacts would also be validated through a routine monitoring program and an adaptive management approach applied where measured levels are found not to be consistent with predictions eg application of further mitigation.

Following the implementation of all reasonable and feasible mitigation measures, it is not always possible for the noise impacts to achieve the recommended NMLs or vibration criteria for all impacted receivers. Where this is the case, Appendix C of the CNVG provides details of additional mitigation measures that would be implemented to manage the noise and vibration impacts from the project.

A range of specific noise mitigation measures would be considered for the proposed construction works. These include noise screens, construction programming, limiting the timing of noise intensive works and early installation of operational traffic noise mitigation. Further detail on what these measures involve is presented in Section 2.3.4 of **Appendix D** (Supplementary Noise and Vibration Report). **Table 6-3** provides a summary of which NCAs would experience noticeable benefits from the specific noise mitigation measures.

Table 6-3 NCAs benefitting from specific noise mitigation measures

NCA	Specific noise mitigation measures considered			
	Noise screens	Construction programming	Limiting timing of noise intensive works	Early installation of operational noise mitigation[1]
NCA01A	✓	✓	✓	✓
NCA01B	✓	✓	✓	-
NCA03	✓	-	✓	-
NCA04A	✓	✓	✓	✓
NCA04B	✓	✓	✓	✓
NCA05A	✓	✓	✓	✓
NCA05B	✓	-	✓	✓
NCA06	✓	-	✓	-
NCA07	✓	✓	✓	✓
NCA08	✓	-	✓	-
NCA09	✓	✓	✓	✓
NCA012	✓	✓	✓	✓
NCA013	✓	✓	✓	✓
NCA014A	✓	✓	✓	✓
NCA014B	✓	-	✓	✓
NCA014C	✓	-	✓	-

Notes: 1. Operational noise mitigation measures include noise barriers and/or at-property treatment

Chapter 6 (Consultation) of the EIS and **Section 2** of this report provide details of the consultation with the community that has been undertaken for the project. A draft Community Consultation Framework is presented in Appendix E of the EIS.

Consultation with the community was carried out at the following project stages: route selection, concept design, environment assessment and public display of the EIS. Consultation with the community is ongoing and would continue during the construction stages. As detailed in Section 6.4.2 of the EIS, consultation with the community during construction (including detailed design) would focus on providing updates on activities and program, responding to enquiries and concerns in a timely manner, and minimising potential impacts. To manage complaints, a dedicated community relations team would handle and investigate complaints during delivery of the project. Procedures for managing complaints are detailed in Section 6.4.2 of the EIS.

6.6.8 Maximum operational road noise levels

Submission number

43

Issue description

Section 6.4 of the Noise and Vibration Working Paper (Appendix H of the EIS) provides an assessment of maximum noise level events for operational road traffic. It states: “With the implementation of noise mitigation measures, overall traffic noise levels would reduce, including L_{Amax} noise levels.” However, it is advised that no further information is provided on which measures, in which location or an indication of how much levels or the number of events may be reduced.

The EPA advises that the location, type and effect of mitigation measures for operational road traffic noise should be clarified for maximum noise levels.

Response

Section 6.3 of the Noise and Vibration Working Paper (Appendix H of the EIS) presents the noise mitigation options considered for L_{Aeq} traffic noise impacts, which would also provide mitigation benefits in reducing L_{Amax} noise levels.

The mitigation options presented, in order of preference, include:

- Road design
- Quieter pavement surfaces
- Noise barriers
- At-property treatment.

The project is typically located in semi-rural areas such as Black Hill, where there are a minimal number of residential receivers impacted. In more populated areas like Tarro, most residential receivers are currently highly impacted by traffic and/or rail noise.

Compared to the existing roads, the design of the project would lead to flat road grades and free flowing traffic at constant motorway speeds. As a result, occurrences of trucks accelerating and/or decelerating would be greatly reduced, which in turn reduces maximum noise level events.

Furthermore, the project has been designed to move traffic further away from noise sensitive residential receivers. This is the case for the areas of Tarro, Tomago and Heatherbrae. By moving the traffic (noise source) away from the sensitive receivers, noise levels including L_{Amax} levels would reduce. Also, with traffic using the new motorway, traffic volumes on the existing roads (i.e. New England Highway and Pacific Highway) would reduce and the number of maximum noise level events would also reduce. As a rule of thumb, where the distance between a noise source and receiver is doubled, a 3 dB(A) reduction in traffic noise would be experienced at the noise sensitive receiver.

Maximum noise levels experienced at sensitive residential receivers would typically be due to truck engines and truck exhausts during pass-by events. As a result, the use of quieter pavements would provide minimal benefits for L_{Amax} noise levels. However, the implementation of noise barriers would reduce L_{Amax} noise levels at the sensitive receivers, more so if line of sight to the noise source (i.e. truck engine and/or exhaust stack) is broken, which would typically provide a minimum of 5 dB(A) noise reduction at the sensitive receiver.

Table 6-5 of the Noise and Vibration Working Paper (Appendix H of the EIS) presents details of the *Noise Mitigation Guideline* (Roads and Maritime Services 2015) noise barrier analysis to determine if the three noise barriers considered are reasonable and feasible options. From the table, the two barriers along the northern side of the New England Highway (NB.02 and NB.03) used to protect the residential receivers in the Tarro area are at heights of between 3.8 and 4 metres. Based on the height of truck exhaust stack outlets being typically 3.6 metres above the ground, the two barriers nominated would break line of sight between the noise source and the receivers. Therefore, the proposed noise barriers would provide maximum noise level reductions to the sensitive receivers in the Tarro area.

Where noise barriers are not reasonable and feasible or the proposed noise barriers do not provide enough noise benefits to reduce L_{Aeq} traffic noise levels, sensitive receivers have been identified for at-property treatment. At-property treatment would aid in further reducing noise impacts to internal areas of residential buildings. As a results, internal L_{Amax} noise levels within residential dwellings would also reduce.

6.7 Biodiversity

6.7.1 Flora survey effort

Submission number

56

Issue description

- Concern that some threatened flora species have not been surveyed at their optimal time in accordance with the DPIE's Threatened Species Data Collection (TSDC) database. It is advised that any variation from the database should be justified
- It is advised that there appears to be no reference in the BAR (i.e. under survey methodology) to the ancillary survey requirements for many of the species which have the potential to be present on site
- It is advised that further details be provided on the targeted survey and survey effort for the following species: *Acacia bynoeana, Asperula asthenes, Callistemon linearifolius,* Corybas dowlingii, *Cryptostylis hunteriana, Diuris arenaria, Diuris praecox, Grevillea parviflora subsp. Parviflora, Maundia triglochinoides* and *Rutidosis heterogama*.
- It is advised that survey effort should be graphically shown separately for each species on maps or figures and indicate the Plant Community Types and habitat surveyed / targeted.

Response

Survey for threatened flora species has been undertaken at optimal time in accordance with the Threatened Species Profile Database (TSPD) in place at the time of survey. Details on the survey timing, effort and ancillary requirements for the relevant flora species, as well as graphical presentation of survey effort, are presented in Table 4-5, Table 4-6 and Figure 4-1 of the revised BAR (refer to **Appendix E**).

6.7.2 *Diuris arenaria* population at Heatherbrae

Submission number

46, 56

Issue description

- It is advised that further justification is required as to why the Biodiversity Assessment Report (BAR) only assesses impacts to 161 *Diuris arenaria* plants at Heatherbrae as opposed to the entire 721 plants subject to the project footprint. It should include additional information on the approved development application (DA) for the industrial site that is referred to.
- The BAR relies on the previously approved industrial subdivision at Heatherbrae (Kinross Estate) for its assessment of impacts on *Diuris arenaria*, and subsequent exclusion from offsetting. It is advised that impacts to *Diuris arenaria* were not assessed as part of the subdivision approval. As such, it is advised that all impacts to *Diuris arenaria* individuals and habitat within the construction footprint must be assessed and offset in the project's BAR.

Response

The area described in the BAR as approved for industrial development was originally planned as an ancillary site. This site has since been removed from the construction boundary. A revised impact assessment on *Diuris arenaria* has been carried out and accounts for the removal of this ancillary site (AS16) from the project, and a revised construction footprint from what was assessed in the 2021 EIS. This impact has been determined using the 2016 survey data and would result in loss of about 206 plants. This has resulted in a revised offset of 15,862 BBAM credits.

6.7.3 Threatened species assessment

Submission number

46, 56

Issue description

- It is advised that the following threatened fauna species require further justification for their exclusion from the list of candidate species, or they need to be assessed in accordance with the BioBanking Assessment Methodology (OEH 2014):
    - barking owl
    - black-tailed godwit
    - eastern grass owl
    - gang-gang cockatoo
    - terek sandpiper
    - turquoise parrot.
- Port Stephens Council advised that the exclusion of Eastern Grass Owl (*Tyto longimembris*) be revised as an ecosystem credit species. The species has known habitat associations with PCTs identified within the project footprint and has been recently recorded in Tomago.

Response

Further review and consideration of bionet records and the known habitat in the project area has resulted in each of the suggested species being revised in the BAR with a 'moderate' likelihood of occurring. A new version of the BBAM calculator and ecosystem credit calculation has been carried out and presented in section 4.1 of the revised BAR (refer to **Appendix E**).

Submission number

56

Issue description

It is advised that in accordance with the BioBanking Assessment Methodology (OEH 2014) species polygons for 'species credit' species must be provided in the BAR.

Response

Species polygons have been prepared and presented in Chapter 8 of the revised BAR (refer to **Appendix E**). These figures relate to Australasian Bittern, Black Bittern, Koala, and Wallum Froglet and Mahonys Toadlet.

6.7.4 Koala impacts

Submission number

56

Issue description

BCD advises that further assessment of koalas in the western part of the development is required. The accredited assessor should reassess the impacts of the project on the koala population in the Black Hill / Beresfield part of the development footprint or provide further justification as to why this area is not considered to be suitable koala habitat.

Response

Further assessment of koalas has been carried out and presented in Chapter 8 of the revised BAR (refer **Appendix E**).

6.7.5 Impact to Hunter Water Corporation biodiversity stewardship site

Submission number

56

Issue description

It is advised that further clarification is required: (i) on why the small area (0.6 hectares) of BioBanking Agreement No. 173. (Hunter Water Corporation / Hunter Region Botanic Garden) cannot be avoided, and (ii) on how it will be suitably offset in the Biodiversity Offset Strategy.

Response

The area adjacent to the Hunter Water Corporation site is very constrained by the landscape features of the flood plain to the west and the operational assets of the Pacific Highway and several large utilities and a contaminated site. The design of the project has been developed using a multicriteria design framework that seeks to minimise impacts where feasible and interact with the existing road network and comply with design guidelines. The project as described in the EIS has undergone design refinements to minimise the extent of works required adjacent to the Hunter Water Corporation biobanking site, however, the identified footprint could not be further reduced to avoid impacts altogether.

Consultation with the owner and operator of the Biodiversity Stewardship Site with regard to impacts and offset opportunities has been carried out over a number of years.

Impacts to biodiversity and the stewardship site would be offset in accordance with the NSW Biodiversity Offsets Policy for Major Projects, NSW *Land Acquisition (Just Terms Compensation) Act 1991* and relevant Transport procedures.

6.7.6 Biodiversity offsetting options

Submission number

42

Issue description

To offset aquatic habitat impacts, Hunter Local Land Services advises that its preference is for remediation works including ecological restoration, improved tidal flows, floodplain management and establishment of a climate change adaptation corridor on key floodplain properties purchased as part of the project. Hunter Local Land Services has extensive relevant expertise and advises it would welcome the opportunity to work with other agencies and specialists to investigate the feasibility of improving water flow and connectivity for better water quality, fish habitat, biodiversity, flood management and water quality in the floodplain section of the corridor to avoid and mitigate impacts of the project and identify restoration actions for offset lands.

Response

Transport notes and acknowledges the submission from Hunter Local Land Services. Transport would continue to consult with Hunter Local Land Services and other agencies to explore rehabilitation and offset opportunities on Transport land. Impacts to biodiversity would be offset in accordance with the NSW Biodiversity Offsets Policy for Major Projects, the Biodiversity Offset Strategy and relevant Transport procedures.

Submission number

57

Issue description

Hunter Water Corporation advises its landholdings in the vicinity of the project could be considered by Transport as potential Biodiversity Stewardship Sites to assist in fulfilling the project's biodiversity credit requirements. Transport could also consider alternate examples of offset options including the future protection and/or rehabilitation of important wetland habitat on the Hunter

estuary floodplain and the restoration of koala habitat in the derelict pine plantation on land at Heatherbrae that is located to the east of the project.

Response

Impacts to biodiversity would be offset in accordance with the NSW Biodiversity Offsets Policy for Major Projects and relevant Transport procedures. Consultation with relevant credit holders would continue to identify suitable outcomes.

6.7.7 Biodiversity offsetting for koalas

Submission number

46

Issue description

Port Stephens Council advises the project to consider undertaking preferred Koala feed tree replacement planting to offset the removal of preferred Koala feed trees or prioritising securing biodiversity offsets for koalas within the Port Stephens local government area to ensure no net loss to local Koala habitat in Port Stephens.

Response

The BAR (Appendix I of the EIS) includes the Biodiversity Offset Strategy (BOS) for the project. Both have been revised and are attached at **Appendix E** to this report. As identified in the BOS, impacts to biodiversity would be offset in accordance with the NSW Biodiversity Offsets Policy for Major Projects and relevant Transport procedures. Transport would retain land that is within the operational road corridor (only) and would not be suitable for Koala feed trees plantings due to risk of vehicle strike.

6.7.8 Biodiversity offsetting for marine vegetation

Submission number

45

Issue description

- It is advised that the biodiversity offset arrangement have correctly noted that the offset for mangroves does not sit within the BAM process, however the saltmarsh communities listed under the *Biodiversity Conservation Act 2016* (BC Act) do fall under the BAM offsets.
- The EIS identifies the need for environmental offsets for impacts on marine vegetation.
- It is advised that DPI Fisheries and Transport NSW have an agreement in place in relation to offsetting impacts from road and bridge construction in the Hunter region. The land at Lot 51 DP 739336 (between the existing highway and the Hunter River), purchased by Transport several years ago, has been identified as suitable land for offsetting and environmental restoration. Some work has already been carried out due to the impacts from the construction of Tourle Street Bridge.
- DPI Fisheries advises that they would be happy to assist Transport NSW, with the assistance of LLS and ESS, to develop a suitable offset and restoration strategy for restoring tidal flows to this land to rehabilitate the remaining salt marsh area and encourage the restoration of a gradational wetland.
- DPI Fisheries advises they would also support any proposals by LLS or EES Group in relation to the restoration of tidal flows on the western side of the river.
- DPI Fisheries advises it has no objections to the construction methodologies described in the document for the bridge and viaduct and the temporary and permanent creek crossings.

Response

The calculation of offset requirements for saline vegetation communities as identified in the BAR is correct. It is noted that the project's biodiversity assessment is facilitated under Clause 28 of the Biodiversity Conservation (Savings and Transitional) Regulation 2016 which permits the proponent to submit the application in accordance with the former planning provisions. This approach was approved by DPIE on 13 November 2017. As such, the former provisions of the TSC Act remain in force for this assessment, rather than the BC Act. Accordingly, the assessment addressed the Framework for Biodiversity Assessment (FBA), which omitted saline vegetation types (mangrove and saltmarsh) from requiring offset credits. We acknowledge that this situation subsequently changed with the commencement of the BC Act, however this change does not apply to the project EIS.

Transport acknowledges the DPI Fisheries submission noting the marine vegetation offsets requirements described in the EIS and the restoration of Transport owned lands. Impacts to biodiversity would be offset in accordance with the NSW Biodiversity Offsets Policy for Major Projects and relevant Transport procedures.

Transport would continue to consult with all relevant agencies on opportunities for the restoration of Transport land.

6.7.9 Classification of endangered ecological community at Tomago

Submission number

46

Issue description

It is advised that the BAR may have incorrectly identified the endangered ecological community (EEC) at the south-east corner of the intersection of the Pacific Highway and Old Punt Road. This EEC was previously identified as River-flat Eucalypt Forest and may be the only representation of this EEC in this locality. Impacts to this EEC should be avoided or minimised.

Response

The area of vegetation adjacent to the south-east corner of old Punt Road and Pacific Highway is floristically unique and the BAR acknowledges the difficulty associated with classifying the small area of vegetation in this location to Plant Community Type (PCT) level. This is largely due to the presence of Flooded Gum (*Eucalyptus grandis*) which is at the southern limit of its distribution in the study area. It is likely that historically there were larger areas of floodplain eucalypt forest in the location, however the assessment has classified this PCT as a swamp forest (PCT 1724) due to the low-lying landscape position, presence of deep standing water and dominance of paperbarks and other species associated with PCT 1724. In making this decision a number of sources were reviewed, including Bell and Driscol (2006), regional vegetation mapping for the lower hunter, and previous surveys done for the Tomago switch yard and the Hunter Power Project EIS.

The BAR acknowledges that the vegetation mapping report by Bell and Driscoll (2006) describes a very small remnant of Flooded Gum Forest at this location. These authors do not classify the vegetation in accordance with the Bionet Vegetation Classification database, nor other regional vegetation mapping projects and did not collect any floristic data at this location. The floristic data collected during the EIS surveys did not align with the Flooded Gum PCTs described in the lower hunter area and therefore the PCT was assigned to the closest PCT description in the database on the basis of the plant species confirmed at the site and the landscape position. Following the review and assessment of plot data (plot 49) it was decided to retain the classification as PCT 1724. Justification is provided in Section 3.2.8 of the BAR to explain the decision process. PCT 1724 is also listed as a TEC under the BC Act and importantly, the project design avoids any direct impacts to the vegetation at the location, which would remain in-situ.

6.7.10 Impacts on coastal zone management and estuary management

Submission number

41

Issue description

It is advised that further consideration is needed on the potential impacts on coastal zone management and estuary management.

Response

The EIS contains various sections that discuss core issues raised in the Hunter Estuary Coastal Zone Management Plan (2017) such as surface and groundwater quality, biodiversity and flooding and hydrology. The alignment of the project was selected to avoid contiguous areas of mapped coastal wetland and the final design (incorporating the viaduct) was selected to minimise ongoing direct interface with the coastal zone. The EIS has demonstrated that following the implementation of the mitigation measures, impacts to coastal zone values are unlikely to be significant. No further consideration or assessment has been carried out.

6.7.11 Hydrological impacts on wetlands

Submission number

55

Issue description

The NSW Riverflow objective (Table 10-11 of EIS) 'Mimic natural drying in temporary waterways and wetlands' applies to this project. It is advised that there are no details in relation to any quantitative analysis on drying hydrology and potential impacts on receiving wetlands. Application of water quality targets alone – without hydrology targets – is not best practice.

Response

The NSW River Flow Objectives largely maintain or minimise impacts to the current flow regime. Potential changes to the frequency, duration and seasonality of flow events in the receiving environment have been assessed as minor relative to the current flow regime, which is already degraded by proximity to existing road corridors and urban areas. Considering this, potential impacts are addressed by:

- Frequency – the current frequency of inflows to receiving waterways is dominated by rainfall derived runoff. The discharge volumes resulting from the project are small in comparison to existing stream flows and drainage pathways and would have minor impact on current runoff volumes and flow magnitudes. Any discharge during the project would occur during or following naturally occurring flow events, minimising changes to frequency of runoff into the wetlands and maintaining periods of low baseflow or drying periods.
- Duration - receiving waterways / wetlands within the project alignment are either permanently wet (tidally influenced) or would have minimal change as the project would not retain large amounts of water (relative to existing catchment volumes) for long periods of time (i.e. detention basins dewater in five days during construction phase, based on 38.9ML storage volume)
- Seasonality – seasonality would not change as the project has no planned surface water extractions, damming of waterways and is not storing water for extensive periods or removing large qualities of water (relative to existing catchment volumes). Any discharge of stormwater would occur during or following naturally occurring flow events.

Further, the Hunter River estuary has medium sensitivity to reduced freshwater inflows (at low flow) and the project has limited connectivity to surface water, with connectivity only being actively managed for groundwater sources. The project lies within the following water sources and water sharing plans:

- Newcastle Water Source of the Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009 (NSW Government, 2009) (applicable for groundwater and surface water)
- Draft Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2022 (applicable for groundwater and surface water)
- Sydney Basin–North Coast Groundwater Source of the Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016 (NSW Government, 2016a) (applicable for groundwater)
- Tomago Groundwater Source of the Water Sharing Plan for the North Coast Coastal Sands Groundwater Sources 2016 (NSW Government, 2016b) (applicable for groundwater).

Based on the above, the water sharing plans are focussed on groundwater management and there are no quantified environmental flow requirements within the surface water areas of the project (i.e. area is outside the management zones of the Hunter River Water Sharing Plan).

Submission number

55

Issue description

It is advised that all hydrological design targets must be consistent with Transport's 2017 guideline *Applying water sensitive urban design principles to NSW transport projects* and the NSW Government's *Risk-based Framework for Considering Waterway Health Outcomes*. City of Newcastle's *WSUD Above wetlands* targets within Newcastle Development Control Plan 2012 may also provide a useful reference point for such targets. This in turn is based on regional studies such as: https://www.hccrems.com.au/product/wsud-for-catchments-above-wetlands/.

Response

The proposed water quality mitigation measures which consist of a series of water quality basins, vegetated swales and biofiltration basins are consistent with the Transport Water Sensitive Urban Design principles. They also meet the water quality design criteria for the project by reducing annual average pollutant loads for Total Suspended Solids, Total Phosphorus and Total Nitrogen. The quoted HCCREMS document states that for wetlands downstream of urban areas, stormwater should be treated so that there is a load reduction of 80 per cent for TSS and 45 per cent for Total Nitrogen and Total Phosphorus. The Project meets these pollutant load reduction values.

The HCCREMS document also states that the 50 percentiles for wet weather flows should not exceed 0.06 mg/L for Total Phosphorus and 1.0 mg/L for Total Nitrogen. The project meets the Total Nitrogen value but not the Total Phosphorus value. Given the receiving waters are saline, this result is considered acceptable as nitrogen has more impact in saline water contributing towards eutrophication and algal blooms and phosphorus has greater implications in freshwater receiving environments but is less important in saline environments. Therefore, the project's proposed water treatment for nutrient pollutants Nitrogen and Phosphorus upstream of wetlands is considered acceptable.

Submission number

55

Issue description

City of Newcastle Council advises that Transport provide advice from a wetland ecologist to support the following claim in the EIS (Chapter 10.6.4 of the EIS, page 10-106) in relation to sensitive receiving environments:

> *Hunter River Wetland: Wetland areas in local catchments upstream of the project and within the HRBG may be affected by modified cross drainage arrangements. The proposed culverts under the upgraded highway are designed to be 0.2 metres higher than the existing culverts under the current highway. This may translate to increased permanent water levels in the wetlands of 0.2 metres. However, this is not expected to have any material impact on the wetland community.*

It is also advised that a map should be prepared that clearly outlines where these effects are anticipated and what measures will be put in place to address the issues.

Response

In the EIS design, the culvert inverts were raised by 200 millimetres for the culvert at chainage 9020 and 166 millimetres for the culvert at chainage 9380 compared to the existing in an attempt to improve the culvert longitudinal grades. This measure would minimise the potential risk of culvert blockage and is considered to be an appropriate design measure for functioning of the culverts as well as for constructability. In the detail design, the culvert inlet channels would be regraded to the new culvert location within the extent of project boundary to allow flow from the existing channels that contain the wetlands.

The proposed culvert inverts (1.1mAHD and 1.25mAHD) are significantly below the upstream ground levels at approximately 1.7mAHD (similar to the existing culverts). Since the existing surrounding ground is significantly higher than the culverts, the control of the wetland water levels lies above the culverts in the wetland or channel bed. The culverts would drain at all times when runoff occurs and there would not be an increase (or a decrease) in water levels in the upstream wetlands. As the culverts would be upgraded, inlet channel works would be provided at detail design but the upstream levels in the wetland that currently support the wetland water levels would remain.

From a biodiversity perspective, Section 8.5.1 of the BAR notes that at this location:

“The area potentially impacted by this change in design is currently a wetland community (sedge spp, typha spp, paperbark spp) that is subject to rainfall dependent changes in water level and possibly changes in groundwater levels (although not an obligate groundwater dependant ecosystem). The potential changes to water levels due to operational drainage upgrades would generally reflect the existing variations in the hydrological regime and is unlikely to significantly impact on this aquatic environment.”

The above statement is still believed to be accurate and noting there would no longer be an anticipated increase to water level at this location, it is considered that no further assessment is required.

Submission number

55

Issue description

It is advised that there is a need to include details that identify and address impacts anticipated in the coastal wetlands on City of Newcastle's land adjoining Purgatory Creek.

Response

Flood level increases at the Coastal Wetlands surrounding Purgatory Creek are less than 0.02 metres, while the change in the duration of inundation is less than one per cent (up to 30 minutes). As such, potential changes to water levels due to operational drainage upgrades would generally reflect the existing variations in the hydrological regime and is unlikely to have a significant impact on the wetlands.

6.7.12 Protection of biodiversity on City of Newcastle land

Submission number

55

Issue description

City of Newcastle Council advises of the need for a series of conditions of approval in relation to protection of biodiversity values on City of Newcastle land (Lots 121 & 122 DP 1235373). The suggested conditions include preparation of an Arboricultural Impact Assessment and Tree Protection Plan for trees outside of the construction footprint on Council land and aspects related to lighting of ancillary facilities during construction.

Response

Transport notes the proximity of these lots to the project, but they are beyond the proposed impact as they are located outside the construction footprint.

Transport has committed to a range of mitigation and management measures for biodiversity (refer to **Section 8**) that would limit direct impacts and prevent indirect impacts to surrounding lands such as bushland owned by City of Newcastle.

There is a specific measure related to minimising the use of artificial lighting during construction and directing lighting away from vegetated areas. The specific proposed measures identified by City of Newcastle Council are not considered necessary as the measures identified in the EIS would achieve the desired outcome of managing direct and indirect biodiversity impacts.

6.7.13 City of Newcastle land at Black Hill interchange

Submission number

55

Issue description

City of Newcastle Council advises of the following in relation to a parcel of land (Lot 122 DP1235373) owned by Council at Black Hill:

- Conditions of approval aimed at ensuring there would be no changes to the hydrological regime of a Coastal Management SEPP wetland to the south of the project
- The biodiversity impacts of all projects in the area should be considered as one to ensure the overall effectiveness of proposed mitigation measures
- The residual portion of Transport land should remain as bushland to best match the ecological, topographical, forested condition of the Council land and E2- Environmental Conservation zone wetland it supports.

Response

The current project design does not indicate any change to the hydrological regime of the wetland area noted by Council. Drainage from the project avoids any flow paths directly entering this area.

Transport acknowledges the future Lower Hunter Freight Corridor (LHFC) proposal, but this is a separate project subject to future application and approval. Biodiversity impacts and subsequent mitigation must be provided for the M1 Pacific Motorway extension to Raymond Terrace project and any additional mitigation required in future to support the LHFC would be considered as part of that project.

Residual project land would be managed in accordance with Transport's Land Divestment Procedure and other relevant NSW government requirements. As part of the M1 Pacific Motorway extension to Raymond Terrace project, the land outside of the construction footprint would not be impacted and remain in its existing state.

6.8 Hydrology and flooding

6.8.1 Flooding impacts from the Project

Submission number

55, 56

Issue description

Newcastle City Council and Biodiversity Conservation Division of Department of Planning, Industry and Environment, advises that further clarification on the assessment criteria, impacted lots within their Local Government Area, and measures to be implemented to address any identified impacts.

Response

The project design has been developed to minimise potential flooding impacts to property. Following the EIS, the project design was refined with the objective of further reducing flood impacts.

Many of the design refinements which are relevant to the hydrology and flooding assessment were made in response to the public submissions and clarifications. The flood impacts have been revised based on the refined project design.

Detailed information on flood impacts, including depth of flooding, additional flooding caused by the project (afflux), and inundation time have been further assessed and are documented in the Supplementary Hydrology and Flooding Report (**Appendix F**).

The updated assessment includes improved information on key points of interest across the project area and detailed property impact information is included in Appendix E and Appendix F of the supplementary report.

The assessment criteria has been presented in the supplementary report to a lower level (10 millimetres) to enable further understanding of potential impacts.

The updated information on the proposed mitigation treatment and measures for impacted properties in the construction and operation phases of the project is included in Sections 5.5 and 6.5 of the supplementary report. These measures demonstrate the management measures proposed to be implemented and give due regard to the existing impacts across the Hunter River flood plain. This has also resulted in some minor updates to the related environmental management measures as included in Table 7.1 of the supplementary report.

6.8.2 Flood assessment methodology and impacts

Submission number

56

Issue description

Biodiversity Conservation Division of Department of Planning, Industry and Environment, advises that further information be provided on the following:

- Methodology used to generate local catchment inflows at Purgatory Creek and Viney Creek.
- Independent verification reviews of the flood modelling.
- Description of the changes made to the Williamtown Salt Ash FRMS, BMT, 2017 hydraulic and hydrological models.
- Methodology used to determine tidal influence on flooding within the study area.

It was also recommended that the TUFLOW HPC hydraulic model grid mesh is refined around urbanised areas and key hydraulic features using the quadtree mesh.

Response

Hydrologic modelling methodology

In addition to the methodology described in the EIS, clarifications on the flood assessment methodology for hydrologic and hydraulic modelling and climate change analysis are provided in Section 3 of the Supplementary Hydrology and Flooding Report (**Appendix F**).

Flood modelling for the project was undertaken based on a TUFLOW hydraulic model originally developed for the *Williamtown – Salt Ash Floodplain Risk Management Study and Plan* for Port Stephens Council (BMT WBM, 2015). The hydrologic inputs used in the Port Stephens Council TUFLOW model required updating since the focus of the model was on flooding in the Williamtown and Salt Ash areas, there was coarse representation of hydrologic inputs in other areas.

The two main regions that affect the project are Hexham Swamp and the area between Tomago and Heatherbrae, and the hydrologic modelling for these areas is based on models originally prepared for other studies:

- XP-RAFTS hydrologic model for Hexham Swamp catchment, including the section of Purgatory Creek south of New England Highway. This modelling was initially undertaken for the *Hexham Relief Roads and Hexham Train Support Facility Environmental Impact Statement flood assessments for ARTC and Aurizon* (BMT WBM 2012a, BMT WBM 2013)
- XP-RAFTS hydrologic model for Williamtown and Salt Ash floodplain areas, draining to Fullerton Cove and to Tilligerry Creek. This modelling was initially undertaken for the Williamtown – Salt Ash Flood Study and Floodplain Risk Management Study for Port Stephens Council (BMT WBM 2012b, BMT WBM 2015).

The updates made to the local catchment hydrologic modelling are summarized below:

- Hexham Swamp catchment XP-RAFTS hydrologic model was discretised and extended to include catchment and floodplain areas to the north and upstream of the project, including Viney Creek. Sub-catchments were split and better aligned with topographic features and the project alignment to improve the estimation of inflows
- No changes made to Williamtown – Salt Ash local catchment XP-RAFTS hydrologic modelling
- New local catchment XP-RAFTS hydrologic model was developed for Tomago – Heatherbrae area to cover gap in the hydrologic modelling extent in this area.

The original modelled sub-catchments and updated model sub-catchments are shown on **Figure 6-1**. Sub-catchment delineation, areas and slopes were determined from LiDAR topographic data.

The parameters adopted for the Tomago – Heatherbrae catchments were the same as the Williamtown – Salt Ash model, since the catchments are adjacent to each other. The Hexham sub-catchments were based on those sub-catchments delineated for a previous study (BMT WBM, 2013) and the parameters used in that study were also adopted for this study.

Inflows from the updated XP-RAFTS model were input into the TUFLOW hydraulic flood model as total or local inflow hydrographs, as appropriate.

Hydraulic modelling methodology – Model updates

The TUFLOW hydraulic model used in the project flood impact assessment was originally developed for the *Williamtown – Salt Ash Floodplain Risk Management Study and Plan* for Port Stephens Council (BMT WBM, 2015).

Updates to the Port Stephens Council TUFLOW model included small adjustments to a number of topographic features and the inclusion of new structures in the vicinity of the alignment. These additional structures include culverts in Hexham Swamp (sourced from BMT WBM, 2013), floodgates along the Hunter River (sourced from the Office of Environment and Heritage; now DPIE), culverts along the existing New England Highway and Pacific Highway (sourced from Roads and Maritime), culverts crossing the Main Northern Railway Line (sourced from Australian Rail Track Corporation), and a number of other culverts in the vicinity of the alignment (sourced from site visit inspections). The TUFLOW model was run with the TUFLOW Highly Parallelised Computation scheme to reduce model run time.

The development of the model for the project was carried out with an independent review initially undertaken by an independent third party.

Hydraulic modelling methodology – Ocean and tide levels

The TUFLOW hydraulic model represents the Lower Hunter River from Milles Forest down to and including the ocean outlet. The model was developed for the *Williamtown – Salt Ash Flood Study* and *Williamtown – Salt Ash Floodplain Risk Management Study and Plan* for Port Stephens Council (BMT WBM 2012b, BMT WBM 2015).

As described in BMT WBM (2012b), the time series used for the downstream boundary at Newcastle Harbour is tidally varying with a peak level of 0.85m AHD. This is the same boundary used for previous flood modelling for the *Williams River Flood Study* (BMT WBM, 2009) and for the Lower Hunter River model (*Upgrading of Lower Hunter River Flood Model at Hexham*, DHI, 2008). A design storm surge condition has been applied on top of the tidal boundary to provide a 50% AEP peak level. The surge has a duration of 40 hours, as adopted in the Williams River Flood Study and is similar to that recommended by Appendix A of the Draft Flood Risk Management Guide (DECCW, 2009). The combined tide and surge boundary has a peak level of 1.17 metres AHD.

Given that the previous flood modelling of the Hunter River incorporating these ocean tidal boundary conditions has been adopted by Port Stephens Council and Newcastle City Council, these modelling assumptions were retained for the project flood modelling and assessment with no modifications to the method.

Hydraulic modelling methodology – Model resolution at urban areas

The recommendation that the TUFLOW model be refined around urbanised areas due to the coarse resolution of the TUFLOW flood model around finer-scale terrain features of the project is only a potential minor issue around Tarro. No other locations in the updated modelling indicate the need for such a refined approach.

An environmental mitigation measure is included which would consider more detailed assessment of flooding impacts around Tarro in order to more accurately quantify the impacts to properties during detailed design should these issues be present with the further refined assessment.

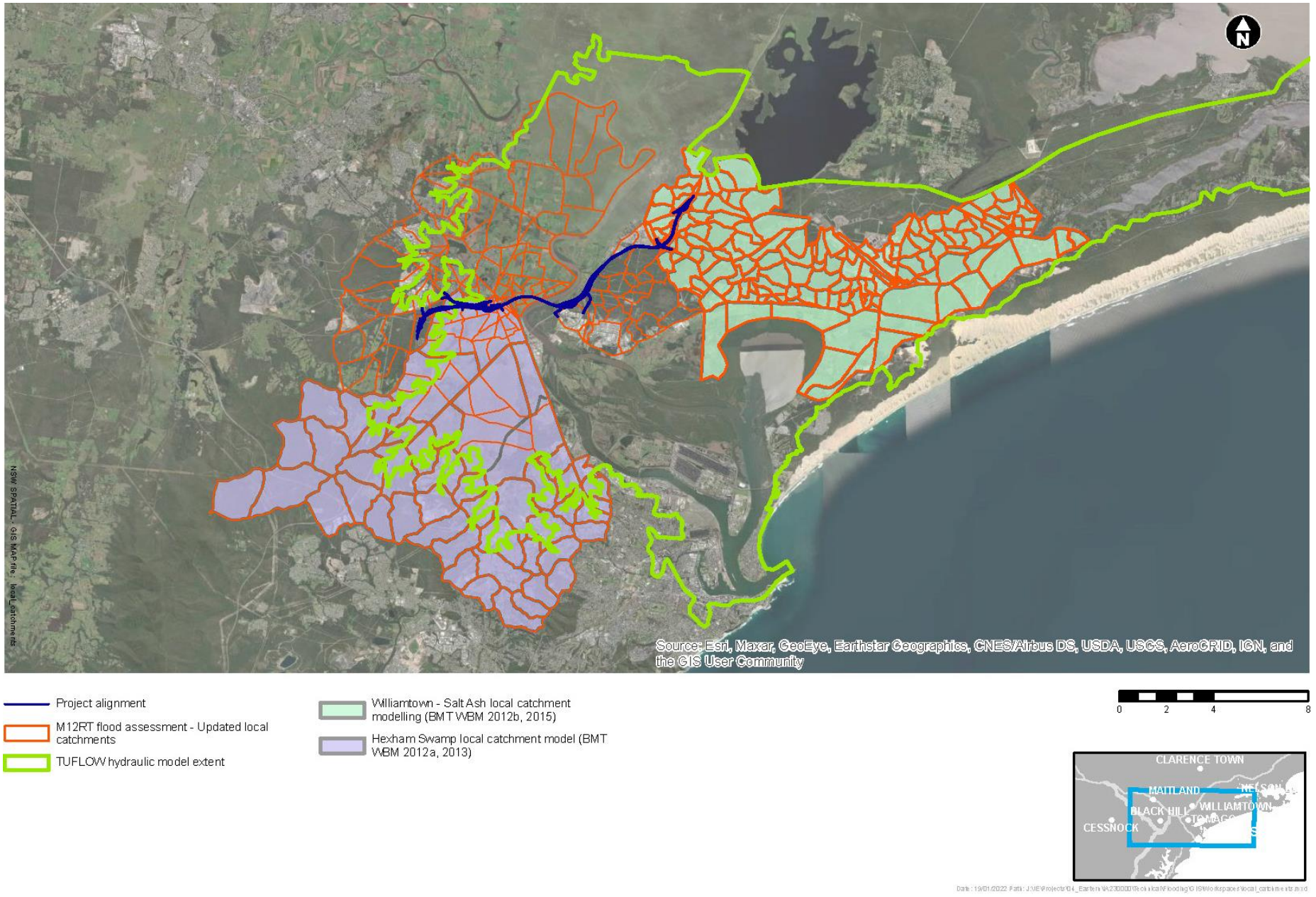


Figure 6-1 Update of Local Catchment Hydrologic Modelling

6.8.3 Climate Change Impacts

Submission number

41, 56

Issue description

- Maitland City Council has queried if the flood study undertaken considers the potential impacts of sea level rises, particularly upstream of the viaduct.
- Biodiversity Conservation Division of Department of Planning, Industry and Environment (DPE-BCD), also queried the appropriateness of the methodology used to assess climate change flood impacts.

Response

The flood modelling undertaken in the EIS does assess future climate change and sea level rise impacts on flooding, which extend upstream of the viaduct to the model boundary at Millers Forest.

The project flooding assessment has been undertaken in accordance with the climate change assessment approach which has been prescribed in the SEARs for the project. It is understood from subsequent discussions with BCD representatives that the climate change assessment was considered potentially conservative but acceptable.

6.9 Surface water and groundwater quality

6.9.1 Erosion and sediment control measures

Submission number

45, 55, 58

Issue description

- It is advised that best practice management systems for sediment and erosion control and acid sulphate soil should be in place during all construction works. Recommends approach adopted on Pacific Highway projects.
- It is advised that erosion and sediment control plans for ancillary compounds adjacent to Environmental Land Parcel CN 1235373/122 include measures to prevent concentrated or overland surface water flows to the site.
- It is advised that there should be a commitment to remediate any disturbance to the banks and adjacent floodplain of the Hunter River resulting from construction, both during and following the construction phase in any area of land under the control of Transport. Mitigation of any local alterations of flood velocities or scour potential and associated risk should be captured in a management plan.

Response

Transport is committed to the adoption of best practice management systems to avoid or minimise potential impacts from erosion and sedimentation, and the interception of acid sulfate soils. Chapter 16 and Appendix P of the EIS identify potential impacts from the project and provides a suite of mitigation measures that would be implemented to avoid or minimise those potential impacts. Measures include, but are not limited to, preparation and implementation of a construction soils and water management plan and acid sulfate soils management plan prepared with reference to the Managing Urban Stormwater – Soils and Construction, Volume 1 (“Blue Book”), and the Acid Sulfate Soil Manual, respectively. Both plans would be subject to agency consultation and approval by the Department of Planning and Environment. As part of a hierarchy of erosion and sediment controls, Transport have also designed and nominated locations for a series of construction sediment basins to protect water quality. The locations of these are shown in Appendix G of the supplementary surface water and groundwater quality report.

While the request to prevent concentrated or overland flows to Land Parcel CN 1235373/122 is acknowledged, localised topography does not allow for surface water to be prevented from entering this property. However, as noted above, Transport have committed to implementing erosion and sediment controls developed with direction from industry best practice guidelines (i.e. the Blue Book) to avoid wherever possible, or minimise impacts from surface water flows from the project.

Transport have also committed to monitoring for downstream geomorphological impacts during construction and for a period of 12 months following completion of the project. Monitoring would look for evidence of initiation of erosion and scour and, if required, appropriate remediation measures would be implemented. Management measures that respond to the level of risk from concentrated flows, potential for scour and ongoing monitoring would be incorporated in the project construction soil and water management plan (refer management measures FH07, FH08 and WQ01).

6.9.2 Groundwater monitoring

Submission number

43, 58

Issue description

- It is advised that the proponent should clarify if 24 months of data has been used for the project assessment and modelling that is recommended in the NSW Aquifer Interference Policy (2012)
- It is advised that groundwater monitoring should continue prior to construction to provide up to date baseline data to support applications for water supply work and use approvals where required
- It is advised that the proponent should detail Trigger Action Response Plans (TARPs) in the water monitoring program for the project
- It is advised that a construction soil and water management plan, complete with a groundwater monitoring program, should be prepared prior to construction and provided to the EPA.

Response

While it is noted that 24 months of continuous groundwater monitoring data has not been collected, the suite of data that Transport has used for the assessment has been obtained between 2017 and 2021 via project specific and third party wells is comprehensive and considered adequate to characterise the groundwater quality across the project area. The results of groundwater quality monitoring are presented in Appendix G and summarised in section 4.7 of the EIS Appendix K Surface Water and Groundwater Quality Working Paper.

Transport would prepare and implement a groundwater monitoring program prior to construction. The program would incorporate pre-construction, construction and operational monitoring requirements that would supplement data collected as part of the EIS. It would also include details of monitoring locations and nominated TARP sites. EIS environmental mitigation measures WQ01 and WQ06 have been revised to incorporate these commitments and are attached at **Appendix K** to this report.

6.9.3 Tomago Sandbeds drinking water catchment

Submission number

43, 57

Issue description

- Hunter Water Corporation advised that they were satisfied the proposed motorway drainage design for the section that traverses the Tomago Sandbeds aquifer would comply with its requirement for development in the drinking water catchment to have a neutral or beneficial impact during construction and operation.

- It is advised that further information regarding criteria for selecting basin to be lined and the design to prevent seepage or groundwater ingress into or from the basins should be provided.

Response

Transport notes the comments and acknowledges the action taken to date by both parties to develop the project in compliance with relevant guidelines and legislation for development in the Tomago Sandbeds aquifer drinking water catchment.

Transport has also revised EIS environmental mitigation measure WQ04 to include a commitment to provide the final basin lining designs to Hunter Water Corporation where located in the drinking water catchment. This would occur prior to the commencement of construction. Revised environmental management measures are attached at **Appendix K** to this report.

Section 6.9.4 provides further detail on the criteria used to determine which basins would be lined and how the risk of seepage or groundwater ingress would be minimised.

6.9.4 Intercepted groundwater and water reuse

Submission number

43

Issue description

- Groundwater sampling shows elevated pollutant concentrations including electrical conductivity and metals, and it is advised that potential impacts from the discharge of groundwater related pollutants have not been assessed
- Questioned the criteria in the EIS used for determining whether basins would be lined or not
- Advised that additional or alternative measures including enhanced erosion and sediment controls should be considered to avoid discharges of intercepted groundwater to surface water.
- It is advised that where there is risk of intercepting groundwater, alternatives to unlined basins should be considered such as lined basins, elongated swales and infiltration measures.
- It is advised that practical alternatives to dewatering excavations to surface water, such as re-infiltration and pumping between storages to optimise reuse should be considered
- If discharges of groundwater to surface water with non-trivial pollutant levels it is advised that a water pollution impact assessment should be prepared
- It is advised that further detail on proposed reuse or other measures to avoid uncontaminated sediment basin discharges should be provided.

Response

Since submission of the EIS, there have been a number of project refinements. One refinement is to line all temporary sediment basins and permanent water quality basins at risk of intercepting groundwater. The temporary and permanent basins proposed for lined are listed in Table 4-1 and Table 5-1 respectively, of the supplementary surface water and groundwater quality report attached at **Appendix K**. Appendix G and Appendix H of the supplementary report also shows the location these basins.

By lining all basins at risk of intercepting groundwater there would be a minimal risk of saline groundwater being discharged and surface water collected in basins infiltrating into the groundwater. In addition, by lining basins and avoiding risks associated with the mixing of surface water and groundwater there would be more opportunity to reuse water collected in basins. Reuse options are documented in Section 3.1.1 of the supplementary report and include:

- Application across exposed surfaces including access tracks, haul routes and stockpiles for dust suppression
- Placement on the formation during earthworks to achieve compaction compliance with road design standards

- Application to stockpiles or imported material to condition during earthworks prior to placement
- Temporary storage for reuse in landscaping and ongoing maintenance work
- Application to open areas within the project footprint not required for construction to facilitate evaporation and infiltration.

Similarly, intercepted groundwater encountered during excavation or soft soil loading would be contained on site and assessed for reuse. Options for reuse, subject to physical and chemical properties, would be similar to those for surface water, but also include re-infiltation where possible. Any discharge of groundwater from site attributable to construction work would be subject to assessment, testing and demonstrated compliance with approved surface water discharge requirements.

Transport would continue to investigate all feasible and reasonable opportunities during construction to reuse surface water and groundwater.

6.9.5 Water pollution impact assessment for basin discharges

Submission number

43

Issue description

- It is recommended that a revised water pollution impact assessment consistent with ANZG, 2018 for proposed sediment basin discharges be provided.
- It is advised that the “simple dilution assessment” for sediment basin discharges to the Hunter River presented in the EIS may not reliably predict water quality outcomes and that a near field mixing zone assessment would be more appropriate.
- It is advised that the EIS does not predict the waterway pollutant concentrations resulting from proposed discharges to waterways other than the Hunter River and does not assess the impact of discharges of other pollutants from groundwater interception.
- Clarification sought regarding the adopted Total Suspended Solids (TSS) value of 50mg/L for basin discharges and whether this reflected site characteristic and treatment performance
- Observation that turbidity correlations derived from waterways for basin discharges may not reflect stormwater collected in each basin as waterways have much larger catchments and influences
- It is advised that turbidity correlations in some instances were from a limited number of samples.

Response

An updated water quality discharge assessment including discharge mixing zone/dilution assessment for all receiving waterways is included in Section 3.2.1 of the supplementary surface water and groundwater quality report. The discharge assessment modelled sediment basins discharging water with a TSS of 50mg/L as per the design criteria in the Blue Book. It also involved developing an excel based tool that used a mixing equation to calculate the water quality in the waterways from basin discharges. Unlike the EIS, this assessment took into consideration the velocity of the waterway, and the depth and distance that mixing would occur. Appendix E of the supplementary report provides a detailed methodology of the assessment with results presented in Section 3.2.

An updated linear regression analysis for TSS and turbidity was undertaken from additional waterway samples collected since submission of the EIS. The updated analysis was used to convert the MUSIC modelling results for TSS to turbidity for inclusion in the water quality discharge assessment. Further information on the linear regression analysis is provided in Appendix F of the supplementary report.

As noted in section 6.9.4, all temporary sediment and permanent water quality basins that are at risk of intercepting groundwater are now proposed to be lined. For this reason, the uncontrolled discharge of groundwater through surface water basins would no longer be expected.

6.9.6 Dredging of the Hunter River

Submission number

43

Issue description

It is advised that further detail on proposed dredging and associated mitigation measures to allow barge access for construction of the viaduct be provided.

Response

Construction of the overwater viaduct elements would require dredging of a limited area of the Hunter River riverbed within the construction footprint to allow shallow water access for barges during construction. It is anticipated that dredging via excavator on the project would be over an area of about 1,500 square metres, generate up to about 2000 cubic metres of spoil and require up to five days of in-water work.

It is proposed to install silt curtains to the full water column depth during dredging operations apart from a small portion of the water column immediately above the streambed. Further to installation of silt curtains around the dredging areas, a shallow silt curtain may also be installed next to ecologically sensitive areas to provide additional protection. Dredging material would be transported to an ancillary facility for assessment, treatment and potential reuse on site, off site reuse under a relevant resource recovery exemption / order, or disposed off-site to a licensed facility.

Transport is committed to appropriately managing dredging operations and would prepare a Dredge Management Plan (DMP) prior to the commencement of any dredging. The DMP would include:

- Sampling to classify material that would be intercepted by the dredging activities
- Dredging management objectives
- Dredging management implementation including contamination management and contingency measures
- Dredging mitigation including:
  - Dredging operations would be completed within a double silt curtain to contain disturbed sediments
  - No overflow would be permitted from transport barges taking material for unloading and land disposal
  - Work would be completed under a full-time supervision and inspection regime.

Further detail on the proposed dredging operation and mitigation measures can be found in section 3.2.2 of the supplementary surface water and groundwater quality report attached at **Appendix H**.

6.10 Aboriginal cultural heritage

Submission number

51

Issue description

- Heritage NSW has reviewed the EIS and Aboriginal Cultural Heritage Assessment Report (ACHAR) and advises that sufficient survey and assessment has been undertaken of the project area. Aboriginal archaeological test excavations have been undertaken as required.

- Heritage NSW advises of their supports the environmental management measures outlined Section 9 (on pages 70-73) of the ACHAR.
- It is advised that the EIS and any Construction Environmental Management Plan (CEMP) prepared for the project should incorporate an unanticipated finds procedure for Aboriginal objects to ensure the environmental management measures outlined in the ACHAR are included
- It is advised that an Aboriginal Cultural Heritage Awareness Training induction should be developed in conjunction with Registered Aboriginal Parties and an appropriately qualified archaeologist. All contractors should participate in this induction before commencing work on site.

Response

Transport notes and acknowledges that there has been suitable survey effort and appropriate assessment and test excavation. Support for the environmental management measures is acknowledged.

Section 9 of the Aboriginal Cultural Heritage Assessment Report (Appendix L of the EIS) provides mitigation measure and commitments including:

- Development of an Unexpected Heritage Finds Procedure as part of the CEMP.
- Provision of cultural heritage training for contractors. The Registered Aboriginal Parties would be invited to participate in the development of a Aboriginal Cultural Heritage Awareness Training induction.

Submission number

55

Issue description

- Twenty-six Aboriginal sites will be impacted by the project within the Newcastle LGA. It is advised that this is not a satisfactory outcome. It is advised that opportunities to reduce adverse impacts to areas of known sensitivity should be further investigated.
- The ACHAR provides management measures for Aboriginal cultural heritage impacted by the project. It is advised that these management measures are to be included as conditions of consent if the project is approved.
- It is advised that all staff, contractors and sub-contractors should be made aware of local heritage items, Aboriginal cultural heritage matters, unexpected finds procedures and their statutory obligations for heritage as part of a heritage site induction.

Response

As identified in Chapter 4 (Project development and alternatives) of the EIS, the project development process included a multicriteria assessment considering all relevant factors which included Aboriginal cultural heritage. The project alignment and design were developed to reduce the impacts to Aboriginal cultural heritage as far as practicable. The Aboriginal Cultural Heritage Assessment Report was completed in consultation with the Registered Aboriginal Parties, included interviews with recognised knowledge holders, and provides a comprehensive assessment that has furthered cultural knowledge of the area.

If the project is approved, Transport would implement the Aboriginal cultural heritage management measures identified in the ACHAR. This includes cultural heritage training for contractors to ensure awareness of the statutory obligations in relation Aboriginal cultural heritage and all management measures identified in the ACHAR.

6.11 Socio-economic

Submission number

46

Issue description

The EIS takes into consideration the project's socio-economic impacts on Heatherbrae and a new northbound exit ramp at Heatherbrae was added after community concern about the lack of direct access and the effect of this on local businesses. It is advised that there is an opportunity for Transport to assist further by providing public open space and facilities in Heatherbrae and signage to clearly identify Raymond Terrace and Heatherbrae as a service centre. Heatherbrae and Raymond Terrace contain established businesses that cater for the service needs of motorists using the main road network, such as take away food, vehicle servicing, fuel stations and overnight accommodation. It is advised that impacts on these businesses should be considered and mitigated by ensuring adequate signage and facilities are provided to attract motorists to continue to use these service centres.

Response

Chapter 13 (Socio-economic) of the EIS discusses the potential impacts of the project on businesses, including those at Heatherbrae, with acknowledgement of both positive and negative impacts during construction and operation.

Transport's role is to lead the development of a safe, efficient and integrated transport system. The specific project objectives also relate to the road network and provision of access to facilitate economic growth. The provision of open space and associated facilities for communities alongside the project is not part of the role or responsibility of Transport for this project.

Transport recognises the need to provide signage advising motorists of the direction / location of Heatherbrae and Raymond Terrace and the availability of services at these locations. As described in Section 5.3.11 of Chapter 5 (Project description) of the EIS, signs would be installed along the project to inform motorists of road rules and regulations and to provide information on direction of travel, posted speed limit and parking restrictions. The exact details of what signage would be installed was not determined at the EIS current concept design stage of the project, however, the project signage would be in accordance with Transport's signage policy.

6.12 Land use and property

6.12.1 Emerging Black Hill Precinct

Submission number

55

Issue description

It is advised that Transport be requested to give greater consideration to the future integration of the project and the Emerging Black Hill Precinct. Appendix G (Traffic and Transport Working Paper) to the EIS identifies that the Black Hill Precinct is not yet approved. This is not correct as a portion of the overall anticipated development for the Emerging Black Hill Precinct has recently been approved by City of Newcastle following endorsement of the Staging Plan and Indicative Lot Layout. It is advised that the EIS should be updated to acknowledge that the precinct has already commenced and reconsider if the anticipated timing of delivery of the Precinct may need to be bought forward in the assessment considerations.

Response

Transport has thoroughly assessed the potential traffic and transport impacts of the M1 Pacific Motorway extension to Raymond Terrace project to the Emerging Black Hill Precinct. Chapter 7 (Traffic and transport) and Appendix G (Traffic and Transport Working Paper) of the EIS assesses

in detail the future traffic growth assumed over the next 20-30 years on the road network. This includes the impact of the potential developments in the Emerging Black Hill Precinct.

As discussed in Section 4.10.1 of Appendix G (Traffic and Transport Working Paper) of the EIS, assessment of future growth from the Emerging Black Hill Precinct has been considered in the project's traffic growth forecasts, with 25 per cent of the development assumed to be completed upon opening of the project in 2028, with further growth assumed in future years. Chapter 23 (Cumulative impacts) further notes the potential construction overlap between the project and Emerging Black Hill Precinct projects.

Transport considers that the scenarios considered in the traffic and transport assessment are appropriate and representative of the potential future impacts of the Emerging Black Hill Precinct.

6.12.2 Access to City of Newcastle Land

Submission number

55

Issue description

City of Newcastle Council advises that the following requirements be included as a condition of consent should the project be approved:

- Ecological restoration of any informal tracks into City of Newcastle Council land
- Installation of fencing, gates and tall rock fences to reduce unwanted access, in particular 4WD and trail bike access, from adjacent Transport corridors onto City of Newcastle land.

Response

Chapter 15 and Appendix O of the EIS presents the landscape concept including measures to restore and revegetate areas within the construction footprint which are impacted by construction. These measures would apply to City of Newcastle land that would be leased during construction.

Construction ancillary facilities would be fenced and appropriately signposted and secured to prevent informal access. This would prevent the creation of any additional points of informal access to City of Newcastle land from those that may already exist. This would prevent any informal access tracks on City of Newcastle land being created as a result of the project. As such, the suggested condition regarding ecological restoration of access tracks on City of Newcastle land is not considered appropriate.

The project design includes fencing along the length of the alignment to restrict illegal access between private land and the motorway. Figure 5-1 of **Appendix A** illustrates the approximate location of all fencing for the project. Transport would consult directly with all property owners adjacent and impacted by the project about the type of boundary fencing to be erected.

Submission number

55

Issue description

It is advised that a figure in the EIS incorrectly identifies two parcels of land owned by City of Newcastle Council as 'freehold' rather than 'local government authority'. This includes a parcel of land at Tarro that is identified in the EIS as a proposed construction ancillary facility. City of Newcastle Council currently leases this parcel of land to Optus under a 20-year lease. It is advised that this matter will need to be resolved.

Response

Figure 14-2 of the EIS has been updated to correct the anomaly regarding City of Newcastle Council land at Black Hill and Tarro. The amended figure is presented in **Appendix A** (revised project description).

As identified in Section 14.4.1 (Land use and property) of the EIS, Transport would seek a licence agreement with City of Newcastle Council to lease land at Black Hill and Tarro for the purpose ancillary facilities during construction of the project.

Transport would contact City of Newcastle Council directly to discuss the feasibility of entering into a licence at Tarro noting that City of Newcastle Council land at this location is encumbered by an existing 20-year lease to Optus. If a licence at this location is not possible, Transport would remove the site from the EIS and seek an alternative ancillary facility location in the vicinity of Tarro.

6.12.3 Hunter Water Corporation property and assets

Submission number

57

Issue description

- It is advised that the project will impact numerous Hunter Water Corporation properties associated with water and wastewater assets and the Tomago Sandbeds, as generally described in Chapter 14 (Land use and property) of the EIS
- It is acknowledged that the nature of the project would result in numerous land acquisitions and changes to existing property arrangements. It is advised that Hunter Water Corporation and Transport have discussed the respective changes to property and we are confident that we can continue to work constructively with Transport to ensure the project is delivered in accordance with the plans described in the EIS.

Response

Consultation with Hunter Water Corporation regarding property has sought to provide for the project with minimal impact to Hunter Water Corporation land and assets.

Section 14.4.1 (Land use and property) of the EIS identifies the property acquisition and lease requirements for operation and construction of the project, including Hunter Water Corporation properties.

Due to project refinements developed since EIS exhibition, such as changes to the size of ancillary facilities and design improvements, there have been some associated project boundary changes. Table 14-3 of the EIS quantifying the land areas for lease and acquisition has been updated to take into account the project refinements. The revised Table 14-3 from the EIS is presented in **Appendix A**. It should be noted that there may be some further change to property impacts during the detailed design phase.

Transport would continue to consult with Hunter Water Corporation regarding property leasing and acquisition.

Submission number

57

Issue description

The project's impacts to water and sewer assets and access would be significant at some locations and relatively minor at others. These impacts are manageable through a combination of asset protection and/or relocation where required, and provision of alternate access arrangements. It is advised that this has been discussed with Transport and incorporated into the project design. Hunter Water Corporation and Transport have an existing agreement for the management of assets impacted by road infrastructure works and further arrangements for the management of assets impacted by this project will be the subject of ongoing consultation with Transport during the detailed design and construction phases.

Response

Section 14.4.5 of the EIS identifies the potential impact to Hunter Water Corporation assets. Further consultation with Hunter Water Corporation would be carried out during the detailed design phase of the project to determine the best outcome in terms of asset protection or relocation.

6.13 Soils and contamination

Submission number

43

Issue description

- It is advised that the EIS has not addressed the SEARs as the nature and extent of contamination across the site has not been fully assessed.
- It is advised that a NSW EPA accredited site auditor be engaged for the entire project footprint and throughout the duration of works for this project to ensure that any work required in relation to contamination is appropriately managed.
- Provision of additional management plans and interim audit documents.

Response

Transport has completed extensive detailed site investigations that included sampling and assessment of surface water, ground water, Hunter River sediment and terrestrial soils.

Targeted investigations of areas of potential contamination concern that have a high inferred risk rating in the Supplementary Soils and Contamination Report were completed to report on the nature and extent of the contamination.

The results from the detailed site investigations show that the isolated locations that contamination pose a low and acceptable risk to ecological and human health. Groundwater extracted during construction shall be re-infiltrated in source area on site.

A NSW EPA accredited Site Auditor would be engaged for the entire extent and duration of the works. The Site Auditor would advise on procedures or processes for the management of contaminated material found during work (including unexpected finds). Where requirements for notification under the *Contaminated Land Management Act 1997* are triggered, the auditor would certify any necessary remediation or subsequent validation reporting.

Additional management plans that are associated with the identification, management and reporting of contamination on site would be provided to EPA as part of the CEMP following approval of the project.

6.14 Non-Aboriginal heritage

6.14.1 Assessment and management of non-Aboriginal heritage

Submission number

19

Issue description

- It is advised that the EIS sufficiently addresses the SEARS concerning historical archaeology
- The project has aimed to avoid and minimise impacts to heritage items within the study area. It is advised that this approach is supported by Heritage NSW
- Heritage NSW advises they support the approach to manage impacts to heritage items

Response

Transport notes and acknowledges the comments from Heritage NSW.

6.14.2 Unexpected finds

Submission number

19

Issue description

- Heritage NSW advises that any sub-surface investigations that may be carried out as a result of an unexpected find during construction be supervised by a suitably qualified archaeologist.
- If the project is approved, it is advised that an Unexpected Finds condition should be included to manage historical archaeology as 'relics' have statutory protection under section 146 of the *Heritage Act 1977* and their discovery requires the Heritage Council of NSW to be notified.

Response

The Non-Aboriginal Heritage Working Paper (Appendix Q of the EIS) includes management measure NA01 (Non-Aboriginal Heritage Management Plan). NA01 requires the implementation of the *TfNSW Unexpected Heritage Items* procedure. This procedure includes the use of a suitably qualified archaeologist to investigate and report on unexpected finds, and to provide statutory notifications.

6.14.3 Conditions for management of historical archaeology

Submission number

19

Issue description

The following conditions are advised if the project is approved:

- A site-specific Archaeological Research Design and Excavation Methodology (ARDEM) be prepared by a suitably qualified historical archaeologist for any archaeological investigation(s) required to be undertaken
- Archaeological investigation(s) to be undertaken by a suitably qualified Excavation Director(s)
- A final report prepared to publication standard for archaeological investigation(s) within twelve (12) months of the completion of the archaeological activity(s), with an electronic copy to be submitted to Heritage NSW.

Response

The recommendation by Heritage NSW is noted and acknowledged by Transport.

6.14.4 Local council consultation

Submission number

19

Issue description

It is advised that as the project site contains local heritage items, and other local items are in the vicinity, advice should be sought from the relevant local council(s).

Response

The Non-Aboriginal Heritage Working Paper (Appendix Q of the EIS) includes management measure NA01 (Non-Aboriginal Heritage Management Plan). Transport would consult with the relevant agencies on the development of the plan.

6.14.5 Impacts to local heritage items

Submission number

55

Issue description

- The project directly impacts or is in the vicinity of eight heritage items listed on Schedule 5 of the Newcastle Local Environmental Plan 2012 with the EIS assessment identifying impacts ranging from minor to negligible.
- Direct physical impact to heritage items was identified as unlikely, however, concern is raised that the setting of these items will be irreversibly impacted both during construction and operation by infrastructure such as noise walls. It is advised that impacts to settings have not been adequately addressed in the assessment.
- Where noise walls are required adjacent to the curtilage of heritage items, it is advised that these should be designed in consultation with a heritage architect to minimise visual and amenity impacts where possible.
- A number of heritage items are eligible for architectural noise treatment. There is no information provided on what form that treatment would take or any adverse impact that may result. It is advised that details of a sympathetic architectural noise treatment should be resolved in consultation with a heritage architect.

Response

The EIS seeks to achieve an acceptable balance of impacts, mitigations and cumulative impacts. Noise walls are required to address the current and potential impacts to the local community and are the most feasible mitigation for the propagation of noise from the project. The design of the noise walls would be consistent with other similar structures in the surrounding road network to maintain a consistent approach to visual amenity. Transport may seek heritage interpretation on noise wall design where feasible.

Heritage listed items subject to architectural noise treatment would be developed in consultation with a suitably qualified heritage professional.

Submission number

55

Issue description

- The Non-Aboriginal Heritage Working Paper (Appendix Q of the EIS) recommends archival photographic record of a section of the Glenrowan Homestead site. It is advised that this recommendation should extend to all heritage items where the current rural setting is to be significantly changed.

Response

The setting of the identified heritage items may be impacted by project. However, the impact has been assessed as being consistent with the land use of the development corridor. The EIS contains a photographic record of the heritage items that further supports the existing material in Council's records of the listing of the item. No additional photo archiving is proposed for impacts to setting.

Submission number

55

Issue description

It is advised that a Construction Heritage Management Plan should be prepared prior to commencement of any works. The plan should include actions to avoid, minimise and manage impacts to heritage items during construction of the project, and procedures to manage

unexpected archaeological finds. It is advised that this matter could be addressed by an appropriate condition on the approval for the project.

Response

The Non-Aboriginal Heritage Working Paper (Appendix Q of the EIS) in the EIS included NA01 that commits to the development of a Non-Aboriginal Heritage Management Plan.

6.15 Safety and Risk

6.15.1 Bushfire

Submission number

55

Issue description

City of Newcastle Council recommends the following requirement is included as a condition of consent if the project is approved:

- Ensure co-location of any required fire trails within existing easements and cleared land, particularly power easements, as determined by the bushfire risk assessment of operational phase.

Response

The project does not include the requirement for any clearing for bush fire protection or clearing for vehicular access tracks for bush fire fighting purposes. The project does involve some changes to adjacent landowners' access and easement arrangements and Transport agrees with the principal of co-locating access and easements where possible to minimise impacts such as clearing of vegetation. Transport has and would continue to consult with landowners adjacent to the project in relation to final access and easement arrangements. Transport would encourage all landowners to co-locate access and easements wherever possible.

The suggested condition of approval is not considered necessary as the project does not include fire trails.

6.16 Cumulative impacts

Submission number

55

Issue description

City of Newcastle Council noted in addition to the M1 Pacific Motorway extension project, Transport is also exhibiting the Lower Hunter Freight Corridor project. Given that the preferred alignment of the LHFC project is now known, it is advised that the EIS should consider this.

It is advised and considered critical that the three strategically significant projects including the M1 extension to Raymond Terrace, LHFC and the Emerging Black Hill Precinct integrate and leverage off the other rather than pose barriers to success.

Council also advises that it has raised issue with the potential impacts proposed as part of the LHFC on Council land.

Response

Chapter 23 (Cumulative impacts) of the EIS discusses the interaction with future projects including the LHFC project.

Transport has thoroughly assessed the potential traffic and transport impacts of the M1 Pacific Motorway extension project to the Emerging Black Hill Precinct. Chapter 7 (Traffic and transport) and Appendix G (Traffic and Transport Working Paper) of the EIS assesses in detail the future

traffic growth assumed over the next 20-30 years on the road network. This includes the impact of the potential developments in the Emerging Black Hill Precinct.

Transport considers that the scenarios considered in the traffic and transport assessment are appropriate and representative of the potential future impacts of the Emerging Black Hill Precinct.

The Motorway extension does not prohibit the future development of the LHFC project and design features have been included, where the project interact to allow for the future project.

The detailed impacts from the LHFC are an issue for future development and assessment as part of that project. It is understood that Council has been consulted and would continue to be consulted about future impacts caused by LHFC as that project develops in the future.

7 Response to community, special interest groups and business submissions

This chapter summarises the issues raised and provides responses. Refer to Appendix B for the register of submissions including the reference numbers and where the issues raised are addressed in this report.

7.1 Support for the project

7.1.1 General support

Submission number

1, 3, 15, 18, 20, 25, 26, 29, 30, 35, 37, 47, 49

Issue description

General support for the project.

Response

Support for the project is acknowledged and noted.

7.1.2 Support for the traffic benefits of the project

Submission number

2, 4, 6, 7, 10, 11, 12, 16, 17, 21, 22

Issue description

Support for the project for the traffic benefits it will bring including:

- Reduced traffic congestion
- Improved traffic flow
- Reduced travel time
- Reduced holiday period traffic
- Less accidents
- Improved safety
- Less traffic on local roads during holiday periods.

Response

Support for the traffic benefits that the project would provide is acknowledged and noted.

7.2 Objection to the project

The issues identified in this section are those where a general statement of objection to the project was made. Where a more specific issue was identified as an objection, for example ‘noise impacts’, the issue is addressed in the relevant subject area, for example ‘noise’.

Submission number

8, 48

Issue description

- Objection as the risks outweigh the benefits
- Objection to the project in its current form

Response

The objection to the project is acknowledged and noted. Chapters 7 to 23 of the EIS identify and assess the potential impacts of the project to the environment and community. Although many potential impacts have been avoided or minimised through design, project development and refinements since exhibition of the EIS, some residual impacts are still applicable. Key impacts caused by the project include biodiversity and noise. However, a range of mitigation measures would be implemented to minimise these and many other environmental impacts and ensure that the project complies with relevant policy and guidelines.

The project need and justification are presented in Sections 3.2 and 26.1 of the EIS, respectively. A detailed analysis of alternatives to the project is also presented in Section 4.1 of the EIS. It is considered that the risks and benefits of the project as well as potential alternatives have been thoroughly identified and evaluated. The project as presented in the EIS, with some refinements identified in **Section 5.2** of this report, has been evaluated as appropriate, justified and in the public interest as the negative impacts are outweighed by the long-term benefits of improved road safety, travel times and overall road network benefits for all road users. The project is also important to realising the completion of the motorway section of the national land transport network.

7.3 Assessment process

Submission number

52

Issue description

Essential criteria for the approval of new transport infrastructure projects should include:

- Design to avoid biodiversity loss, prevent increased fragmentation of natural areas and no net loss of biodiversity within the local area
- Biodiversity offsets to be secured prior to approval
- Achievement of zero net carbon emissions during construction through offsets, and a positive carbon emission balance following commissioning and over the lifetime of the project.

Response

Chapter 4 (Project development and alternatives) of the EIS discusses in detail the project development process, including the evaluation and decisions made to minimise impacts to biodiversity. Overall, the project development process has ensured that the project would best meet the project objectives, while minimising social, economic and natural environment impacts and provide value for money.

As the project is classified as Critical State Significant Infrastructure (CSSI) it requires approval from the Minister for Planning. The Planning Secretary would provide an assessment report to the Minister for Planning providing advice in relation to the approval or otherwise of the project as well as the conditions that would apply to any approval. As a state government agency Transport is required to comply with relevant legislation, plans and policies that may apply to its projects and operations, however, it does not determine the approval criteria that apply to new transport infrastructure projects.

7.4 Project development

7.4.1 Project alternatives

Submission number

9

Issue description

A business at Heatherbrae requests that either the project not go ahead or at a minimum be directly connected to the businesses on the Pacific Highway. A project alternative is suggested, being the upgrade of the existing Pacific Highway.

Response

Chapter 4 of the EIS describes the project alternatives and route options that were considered during the development of the project and explains how and why the project was selected as the preferred option. Transport considered a range of project alternatives including do nothing and do minimum, where traffic would remain on the existing road network with no or minimal upgrades. The project (motorway connection between Black Hill and Raymond Terrace) was the only option which met all the required objectives, with no other options fully satisfying any of the key objectives.

Transport also considered a range of route options for the motorway connection between Black Hill and Raymond Terrace, including an option for retaining traffic through the existing Pacific Highway corridor at Motto Farm / Heatherbrae (referred to as Alignment A3). A route options report was prepared and placed on public display between October and December 2005, and a preferred route options report was subsequently released in August 2006 which identified the project as the preferred route. Alignment A3 was considered, however, it was assessed as resulting in significantly greater property, socio-economic, noise and safety impacts compared to other options. As a result, it was not selected as the preferred option.

Overall, the project was selected as the preferred option because the alignment best met the project objectives, had less environmental impacts, provided better opportunities to connect to the regional road network and had the best allowance for future urban development/regional growth.

The project design has key interchanges included that would allow traffic to continue to access Heatherbrae and Beresfield as key stopping points, and the reduction in traffic on the local road network would improve amenity and access for both local and regional customers. Facilities (eg rest areas) are not proposed as part of the project making the areas of Heatherbrae and Beresfield attractive locations to stop. Advisory signage would also be provided at and on the approaches to key interchanges to inform road users of towns / facilities accessible from the interchanges.

Chapter 13 and Appendix M of the EIS provides an assessment of socio-economic impacts of the project which may occur during construction and operation, including an assessment of potential business impacts at Heatherbrae. It is acknowledged that the project may result in a reduction to passing trade for some businesses located at Heatherbrae. However, as noted above, the design of the project has been developed to maximise connectivity between the proposed motorway and the existing road network, including the Pacific Highway to and from Heatherbrae. The project includes interchanges at Tomago and Raymond Terrace that allow traffic to exit the motorway and use the Pacific Highway. The removal of existing congestion points at Black Hill, Tarro, Hexham, Tomago and Heatherbrae is expected to result in a significant improvement to local amenity at Heatherbrae due to reduced traffic volumes, making it easier and more attractive for people to walk, cycle and drive.

Transport has carried out business surveys as part of the EIS, with some businesses identifying that the distance from Sydney (about 2 hours) resulted in Heatherbrae and Beresfield being considered important stopping points for motorists travelling along the highway, particularly during holiday periods.

Submission number

25

Issue description

The project should revert to the previously displayed off ramp option at Tomago interchange, via Tomago Road and the electricity easement, rather than the proposed design as presented in the EIS which utilises Old Punt Road.

Response

As discussed in Section 4.5 of Chapter 4 (Project development and alternatives) of the EIS, the Tomago Link Road was removed from the project as it would result in major impacts to adjoining land uses and would also result in impacts to threatened ecological communities. The preferred design as presented in the EIS uses Old Punt Road to connect to Tomago and more broadly to Tomago Road / Cabbage Tree Road. This design would result in less impacts to both land use and threatened ecological communities.

Submission number

40

Issue description

- The route would seem to be a very expensive solution to a simple problem.
- The project is too big and expensive. A tunnel under the Hunter River and Hexham Swamp from Brandy Hill [*Black Hill*] to Raymond Terrace would be better and probably less expensive. There would need to be appropriate exits for fuel - petrol, EV chargers and hydrogen.

Response

Chapter 3 (Strategic justification and project need) of the EIS outlines in detail the existing road network conditions and performance that demonstrate the need for the project and the benefits that would result at the local, regional and national level. Chapter 4 (Project development and alternatives) of the EIS discusses in detail the value management process carried out for the project. Overall, the project development process has ensured that the project best meets the project objectives and minimises social, economic and natural environment impacts while providing value for money.

A 15 kilometre tunnel with entry and exits between Black Hill and Raymond Terrace would be substantially more expensive than the proposed project and therefore highly unlikely to be feasible.

Submission number

39

Issue description

Does development of the project rule out a second new crossing of the Hunter River at Sandgate via Ash Island? This is important information for local urban planners, transport planners and natural resource managers.

Response

Chapter 4 (Project development and alternatives) of the EIS discusses in detail the alternatives and different options identified and evaluated during the development stage of the project. As Ash Island is to the south of the area of investigation for the project, the potential for a crossing at this location was not part of considerations for this project. Potential future projects related to the Newcastle Inner City Bypass have not been considered as part of investigations for this project.

Submission number

48

Issue description

The needs of the motorists do not seem to have been considered because most of the daily traffic is forced into the area when other optional routes should have been developed.

Traffic congestion concern in the area comes from holiday motorists during peak holiday times. Normally congestion only occurs at peak traffic times or as a result of an incident that disrupts normal traffic flow. The proposed Pacific Highway improvements as part of Transport's Hexham Straight project should alleviate most of the congestion. A duplicate bridge upstream to carry northbound traffic and a conversion of the existing bridge to southbound traffic only should provide an adequate solution.

Response

Chapter 3 (Strategic justification and project need) of the EIS discusses in detail the existing issues and constraints of the road network in the local area and the targeted objectives of the project. Section 3.3 of the EIS identifies the project objectives which clearly indicate a focus on achieving improved outcomes for motorists. The three objectives related to motorists that the project would facilitate are:

- Improve travel time and road network efficiency for freight and commuters on the National Land Transport Network at the key strategic junction of the M1 Pacific Motorway, the New England Highway and the Pacific Highway
- Provide improved long term route reliability along the M1 Pacific Motorway corridor, particularly in relation to congestion reduction, flood immunity and high demand holiday peak travel
- Improve road safety for all road users.

Detailed options and alternatives to the project have been investigated throughout the project development stage and are presented in Chapter 4 (Project development and alternatives) of the EIS.

The suggested option of only upgrading Hexham Straight, converting the existing Hexham Bridge to southbound only and providing a new northbound bridge would not provide adequate capacity on the road network now and in the future. The traffic assessment included in the EIS has demonstrated the need for the project to allow the road network to operate more effectively in the future.

Submission number

37

Issue description

There is an urgent need to disperse traffic in the area and provide alternate road options to the project that would better meet the needs of road users. Suggestions include:

- A major roadway from Maitland to Kurri Kurri and on to Cessnock and to the Central Coast
- A "Novocastrian Highway" from Nelsons Bay to Swansea South utilising an upgraded Inner City Bypass. This could be a dual carriageway with 100kph speed rating
- A major upgrade of the Link Road by making it an eastbound extension of the Hunter Expressway to the Inner City Bypass at Jesmond.

Response

Transport is responsible for the development of safe, integrated and efficient transport systems for the people of NSW across all modes of transport - roads, rail, ferries, light rail and point to point (taxis, hire car, ride share or other vehicles of 12 seat capacity or less). There is an identified need for the proposed project that would have benefits at the local, regional and national transport levels. The potential future projects identified in the submission are outside of the scope for the M1

Pacific Motorway extension to Raymond Terrace project. Chapter 4 (Project development and alternatives) of the EIS discusses in detail the alternatives and the different options evaluated as part of identifying the preferred route for this project. Completion of this project would not prevent delivery of the other proposals outlined by the respondent should they be proposed in the future.

Submission number

34

Issue description

The project design has changed from a previous version such that the alignment and an access road are now closer to a residence at Hexham. The resident has previously requested that Transport locate the project further away from their residence.

Response

A range of factors were considered and have influenced the project design throughout the project development and consultation phases of the project. Chapter 4 (Project development and alternatives) of the EIS discusses in detail the design changes incorporated into the project during development.

As described in Section 4.5 of the EIS, the project was realigned to address concerns identified from consultation with existing residents near the New England Highway, between Purgatory Creek and the M1 Pacific Motorway extension to Raymond Terrace by relocating the alignment further away.

7.4.2 Support for the alignment

Submission number

39, 49

Issue description

- The project will have benefits for traffic flow and safety by creating a dual carriageway, removing heavy vehicles from local roads and reducing peak time delays.
- The project route reduces the impact of a large infrastructure development on the natural and built environment by following existing road alignments and property boundaries, avoiding natural areas and not intersecting settlements. The long bridge over the Hunter River and adjoining wetlands reduces impacts on ecosystems and water flows.
- Endorsement of efforts to avoid and minimise environmental and social impacts such as optimising the fit with existing and proposed regional developments and utilising already cleared land adjacent to existing developments
- The project should eliminate the need to build an extension from the end of the Newcastle Inner-city Bypass at Sandgate, across Ash Island to the Pacific Highway at Tomago.

Response

Support for the traffic benefits of the project and the alignment evaluation process to minimise environmental impacts is acknowledged and noted.

7.4.3 Interaction with other projects

Submission number

37, 40

Issue description

- Major changes to rail services in the area are likely, including:
  - The establishment of a Very Fast Train service along the East Coast
  - The establishment of a Lower Hunter Freight Rail Bypass of Newcastle

- The double stacking of the rail freight route from the Port of Newcastle west to Narrabri
- The expansion of passenger train services.

- It would be economically unsound and very poor planning if the M1 project was to impede these rail projects by creating a series of concrete 'fences'
- The project should not impede freight and passenger rail networks from Newcastle northwest to Inland Rail at Narrabri and west to Maitland and other regional towns.

Response

Chapter 5 (Project description) of the EIS discusses in detail the integration of the project with existing rail facilities. Section 5.2.1 identifies key road design criteria, including a minimum vertical clearance over the existing Main North Rail Line of 7.1 metres. This adequately caters for any future "double stacking" of rail freight and means there would be no impediment to the freight and passenger rail network in the future.

Chapter 23 (Cumulative impacts) of the EIS discusses the interaction with future projects such as the Lower Hunter Freight Corridor (LHFC) project. The M1 project design has been developed to allow for future design of the LHFC by increasing the height of the viaduct across the flood plain to enable the Lower Hunter Freight Corridor options to be constructed under the M1 Pacific Motorway extension to Raymond Terrace project.

In relation to high speed rail, the Australian Government (Department of Infrastructure, Transport, Regional Development and Communications) has available information on a high speed rail passenger network connecting Melbourne to Brisbane through Sydney, Canberra and other regional centres along the east coast that was investigated between 2010 and 2013. The information available does not indicate that the potential high speed rail connection would be located such that there would be any interaction with the project.

There has been no feedback or submissions from rail authorities raising any issues or potential impediments to future rail projects in the local area.

7.4.4 Implementation of controls and mitigation

Submission number

49

Issue description

Concern that proposed design features, mitigation measures and construction controls included in the EIS may not be implemented as part of cost saving measures in the post approval stage.

Response

If the project is approved, all the identified design features, mitigation measures and construction controls identified in the EIS form part of the approval and must be implemented by Transport. There have been some refinements to the project since submission of the EIS which are presented in **Section 5.2** of this report. These refinements provide for a further reduction of environmental and community impacts, such as changes to ancillary facilities. In the detailed design process there may be some further refinements or design changes. However, any changes that would increase impacts on the environment or community would need to be assessed and approved by DPE – Planning and Assessment.

7.5 Project design

7.5.1 Suggested design changes

Submission number

18

Issue description

- The connection between the New England Highway eastbound and M1 Pacific Motorway extension to Raymond Terrace northbound is excessive and could be replaced by direct connection from the existing M1 motorway southbound to the M1 Pacific Motorway extension to Raymond Terrace project northbound. Northbound traffic on John Renshaw Drive could then turn right at the traffic lights and enter the M1 Pacific Motorway extension to Raymond Terrace project northbound. Travellers from New England Highway eastbound could continue using the New England Highway to cross over the Hunter River via the existing northbound bridge and join the M1 Pacific Motorway extension to Raymond Terrace project at the Tomago on-ramp. Without this, the existing New England Highway/Maitland Road will be underutilised, except for Maitland-Newcastle commuters.
- The project could incorporate a connection from the New England Highway southbound (from Maitland) to the M1 motorway southbound. This is currently available via Weakleys Drive but is likely under-utilised. With the suggested deletion of the bridge connecting New England Highway eastbound and M1 Pacific Motorway extension to Raymond Terrace project northbound noted above, a connection could be made from Anderson Drive to M1 Pacific Motorway extension to Raymond Terrace project southbound, reducing traffic through Weakleys Drive and therefore the John Renshaw/Weakleys Drive Intersection. It would also provide direct access to M1 Pacific Motorway extension to Raymond Terrace project/M1 motorway southbound from Beresfield/Woodbury, further reducing traffic at that intersection.

Response

Chapter 4 (Project development and alternatives) of the EIS discusses in detail the design options considered during development of the project. Section 4.2.2 of the EIS identifies that the 2010 preferred route had a full interchange located at Black Hill and no connections to the New England Highway at Tarro. This is a similar concept to the design suggestions raised in the submission.

A review of the 2010 design identified a lack of functionality and connectivity. If the design as presented in the EIS was altered to remove the on ramp from the New England Highway at Tarro and connect it at Black Hill, then all traffic from the west wishing to travel on the Motorway would need to access it from Black Hill. The adjoining roads of John Renshaw Drive and Weakleys Drive already exhibit high traffic demand and congestion which is expected to increase as future traffic growth continues. Forcing more traffic to the Black Hill interchange would further increase traffic congestion in this area.

The suggested Anderson Drive connection to M1 Pacific Motorway extension to Raymond Terrace project southbound is not feasible as it would require a bridge over the project's northbound carriageway at this location which would be very close to the bridge for the project's southbound to New England Highway westbound connection. This would also negate the suggested advantage of removing the bridge connecting New England Highway eastbound and project northbound.

Submission number

37, 48

Issue description

- The proposed roadway must provide a seamless 110km/h freeway structure that is free from crunch points and speed reduction zones.
- The proposed route is not a straight line. This builds inefficiency into the roadway forcing people to travel slower, use more fuel and impede traffic flow.

- The roadway is very inefficient due to excessive curves.
- The route should be simplified by:
    - Using one or more tunnels to allow the roadway to operate below the surface
    - Straightening the route
    - Reducing the number of off /on ramps
    - Reducing the need for expensive flyovers
    - Redirecting traffic from the area.

Response

The main alignment would be a 110km/h motorway which has been designed in accordance with the relevant road design guidelines and Australian Standards.

As described in Chapter 4 (Project development and alternatives) of the EIS, the project alignment has been determined after evaluation of alternatives, development of options, extensive consultation with community and stakeholders and selection of the preferred option. A simple straight-line alignment would not be adequate to provide the best fit for the multiple constraints that need to be considered. The provision of interchanges, on/off ramps and flyovers has been determined through the project development process and allows for the functionality and connectivity required to meet the project objectives and community and stakeholder expectations.

Chapter 3 (Strategic justification and project need) of the EIS explains the need for the project which is related to existing traffic constraints and predicted future traffic growth for the area. Redirecting traffic from the area is not a feasible solution as the existing road network forms part of the National Land Transport Network and redirecting traffic would only create traffic problems elsewhere and does not cater for future growth.

Submission number

37

Issue description

How will the new roadway handle new and emerging vehicles and vehicle guidance systems. Electronic vehicles, hydrogen power, driverless technologies and a range of other technologies will be common by the time the project is operational.

Response

The project design is generally consistent with existing major roads in the area including the existing section of the M1 Pacific Motorway. The project would not represent any different road conditions for future technology compared to the adjoining existing road network.

Submission number

37

Issue description

- The project must provide for electric vehicle charging and refuelling facilities for hydrogen, petrol and diesel. Rest stops and refreshment facilities for motorists are also critical. The Heatherbrae area is a convenient and logical location between Taree and the Twin Servos at Jilliby.
- There is considerable commercial and tourism infrastructure established in the Heatherbrae / Raymond Terrace area. Assess to and use of these services must be provided for and encouraged.

Response

The project has been designed to allow for accessibility along its length including the provision of interchanges at Black Hill, Tarro, Tomago and Raymond Terrace which allow for motorists to

access the facilities within these areas including Heatherbrae. The project would include signage to inform motorists of the available service facilities at these locations.

A lack of access to services in Heatherbrae was raised during consultation on the preferred alignment in October 2015. The project design was subsequently changed to address this as documented in Section 4.4 of the EIS.

7.5.2 Cycleways

Submission number

12, 49

Issue description

- The project design should make allowance for the future shared pathway on the old pipeline corridor across Hexham Swamp - part of Richmond Vale Rail Trail.
- The direct point of connection between the M1 extension and Richmond Vale Rail Trail is at Tarro. This is a complex area with the intersection of several transport routes and modes and careful consideration is required to determine the optimal connection configuration at this location.
- Opportunities for connection to existing and proposed future cycleways and trails are a very important consideration
- For the M1 extension and Richmond Vale Rail Trail connection point at Tarro, additional strategies and facilities are required to meet the requirements of cyclists of all levels of experience.

Response

The future cycleway planning of the Shortland to Tarro project is being carried out by City of Newcastle Council. Transport has held discussions with Council on the future cycleway plans through the project area. Adequate provision is available for the future cycleway under the project's viaduct.

Appendix G (Traffic and Transport Working Paper) of the EIS discusses in detail the proposed cycleway provisions being provided as part of the project. Section 5.2.6 of Appendix G of the EIS demonstrates all proposed safe cycleway connections proposed at junctions on the existing road network and how it is intended to safely link with the project.

Updates to the cycleway provisions proposed by the project have been included in the Supplementary Traffic and Transport Report (**Appendix C**).

Submission number

47

Issue description

Development of the M1 Pacific Motorway extension to Raymond Terrace project may provide better cycleway connections for the Black Hill, Beresford, Tarro and Heatherbrae communities.

Response

No dedicated cycle paths are included as part of the project. However, cyclists would be able to use the 2.5 to three metre wide shoulders on the motorway and two to 2.5 metre wide shoulders on ramps. Section 5.2.6 of Appendix G (Traffic and Transport Working Paper) of the EIS discusses in detail the proposed cycleway provisions being provided as part of the project including safe crossing points to allow cyclists to move from one point of the road network to another. This would improve cycle connections for local communities.

Updates to the cycleway provisions proposed by the project have been included in the Supplementary Traffic and Transport Report (**Appendix C**).

Submission number

49

Issue description

It will be advantageous to have approved plans for the M1 extension and the Lower Hunter Freight Corridor to facilitate refinement and finalisation of other local projects such as the Richmond Vale Rail Trail.

Response

The project description presented in this EIS represents the project concept design. There is flexibility in the concept design to allow for some refinement during detailed design, for example to respond to submissions or further reduce environmental impacts. If approved, the final design may vary slightly from the plans / description presented in the EIS.

Transport would continue to consult with relevant stakeholders regarding the proposed cycleway projects that interact with the project.

Updates to the cycleway provisions proposed by the project have been included in the Supplementary Traffic and Transport Report (**Appendix C**).

Submission number

47

Issue description

There is opportunity to incorporate a parking area / turn around bay at Tarro using part of the Aurizon access road (once realigned) to provide for users of the Richmond Vale Rail Trail with mobility restrictions.

Response

Transport is responsible for the M1 Pacific Motorway extension to Raymond Terrace project and has consulted and would continue to consult with City of Newcastle Council regarding the best alignment and outcome for the intersection of the project and the Shortland to Tarro section of the Richmond Vale Rail Trail. Provision of facilities that support the cycleway, such as the suggested parking / turn around area, would be a decision made by City of Newcastle Council.

Submission number

12

Issue description

The project design should incorporate separated shared pathway (pedestrians / cyclists) for Hunter River / New England Highway crossing (the viaduct).

Response

Chapter 5 (Project description) of the EIS discusses in detail the design and provision for cyclists and pedestrians as part of the project. As identified in Section 5.3.16 of the EIS, the land uses surrounding the project generate a low volume of pedestrians with limited pedestrian infrastructure located along the existing road corridor. There is no provision for dedicated pedestrian or cyclist infrastructure along the main alignment, however, cycling opportunities would be provided using the wide road shoulders of the main alignment.

Updates to the cycleway provisions proposed by the project have been included in the Supplementary Traffic and Transport Report (**Appendix C**).

Submission number

47

Issue description

The EIS identifies cycling connections along the project in Figure 5.13 of Appendix G (Traffic and Transport Working Paper). It is difficult to determine from this information whether these pathways actually provide sufficient and workable linkages between parts of the road network. It is requested that Transport continue to consult with Newcastle Cycleways Movement Inc., and other local cycling groups, to confirm the utility of these connections.

Response

Transport has consulted with local Councils and cycling stakeholders to develop the cycleway strategy and the infrastructure to be provided as part of the project. This consultation has resulted in some further refinements to the cycleway strategy as shown in the Supplementary Traffic and Transport Report (**Appendix C**).

7.5.3 Interaction with other projects

Submission number

32

Issue description

The project will impact the approved Newcastle Power Station Project (SSI-9837). It is requested that Transport commit to continue liaising with AGL to ensure both state significant projects can be delivered in this constrained area.

Response

Transport is committed to continued liaison with AGL in relation to the Newcastle Power Station project. Chapter 4 (Project development and alternatives) of the EIS discusses in detail the design options considered during development of the project with Section 4.5 identifying the changes that Transport made to the project design to facilitate development of AGL's Newcastle Power Station project.

Submission number

32

Issue description

The project will impact on Newcastle Gas Storage Facility assets including pipeline No.42 as identified in Section 5.5 of Appendix N (Land Use and Property Working Paper) of the EIS. It is requested that Transport commit to continue liaising with AGL to provide project updates, confirm how regulatory approvals will be managed and commit to coving all costs associated with approvals, design and construction for re-instatement of Newcastle Gas Storage Facility assets.

Response

Transport has liaised and is committed to continuing liaison with AGL in relation to the Newcastle Power Station proposal and AGL assets. Changes to AGL assets required as part of the project would be managed by Transport. Transport would cover all costs associated with approvals, design and construction for assets impacted by the project (ie relocation of impacted pipelines). All approval conditions for the Newcastle Power Station in relation to existing and future assets would remain the responsibility of AGL.

Submission number

32

Issue description

The project will impact emergency egress / access via Old Punt Road for AGL's Newcastle Gas Storage Facility. AGL also require access via Old Punt Road for pipeline inspections. It is requested that Transport seek AGL agreement for any changes to access routes and commit to cover all costs associated with approval, design and construction of re-instatement / modification to AGL assets.

Response

Chapter 14 (Land use and property) of the EIS discusses in detail the property impacts of the project. Section 14.4.1 shows the land proposed to be acquired by the project to enable construction on land currently owned by AGL (Figure 14-6, Map 5 of 8, Property ID 19). The land to be acquired would enable construction of the project and the reinstatement of AGL's access. Any asset adjustments required for the project would be at Transport's cost (ie to maintain/provide suitable access routes), with the exception of any changes for existing and future assets included in the approval for the Newcastle Power Station project. These changes would remain the responsibility of AGL.

Submission number

1,14

Issue description

- The EIS does not refer to the Lower Hunter Freight Corridor Rail project and how the design of the M1 extension would interact with the rail project to minimise any conflict between the two projects. It would be beneficial to have the Lower Hunter Freight Corridor identified on the EIS figures to show how the train line passes under the M1 and the affect it has on any plans.
- Transport should look to integrate the design of the project and the Newcastle Rail Freight Corridor to minimise disruption to the M1 motorway during construction of the rail line.

Response

Chapter 23 (Cumulative impacts) of the EIS discusses the interaction with future projects including the Lower Hunter Freight Corridor project.

The Motorway extension does not prohibit the future development of the Lower Hunter Freight Corridor project and design features have been included, where the project interacts to allow for the future project.

7.5.4 Connection to Masonite Road Heatherbrae

Submission number

5

Issue description

There should be on and off ramps (both northbound and southbound) at Masonite Road for travellers going to and from Port Stephens.

Response

The key road connections to Port Stephens from the project area are via Tomago Road / Cabbage Tree Road and Richardson Road. These roads are classified State roads and are the major routes to the east of the project with Richardson Road being several kilometres north of the project.

Chapter 4 (Project development and alternatives) of the EIS discusses in detail the design options considered during development of the project. These options included several interchanges that connected directly to Tomago Road, but due to constraints in the area such as flooding, these options were not considered feasible. The closest connection to Tomago Road is via Old Punt

Road. Noting the existing major employment area and the importance of Old Punt Road in providing connectivity to the immediate Tomago area, the best option for an interchange is considered to be at Old Punt Road. Old Punt Road would be upgraded as part of the interchange works at Tomago.

The limitations to having an interchange at Masonite Road include impacts on sensitive ecological areas, including koala habitat, the Tomago Sands drinking water catchment and future development planned for the area next to Masonite Road.

7.5.5 Truck stops

Submission number

54

Issue description

Have truck stops and rest areas been considered along this new section of road so that drivers don't have to exit and then enter the road again.

Response

The project design does not include truck stops. There are existing truck stops at Beresfield, close to the southern end of the project, and at Twelve Mile Creek 15 kilometres from the northern end of the project. In operation, truck drivers would be able to use the Beresfield truck stop / service centre on John Renshaw Drive by exiting the motorway at the Black Hill interchange when heading north or the Tarro Interchange when heading south. The Medowie truck stop / rest area is located on the Pacific Highway with direct access off the Pacific Highway for trucks heading north.

7.5.6 Final design plans

Submission number

47

Issue description

It is advantageous for the Richmond Vale Rail Trail project to have approved finalised plans for the M1 extension and Lower Hunter Freight Corridor projects. It is also critical that all proposed design features, mitigation measures and construction controls identified for the M1 extension are implemented and not excluded for cost cutting purposes in the future.

Response

The project design as exhibited as part of the EIS is the concept design and would proceed to a detailed design process that would potentially refine some aspects of the project design. The mitigation measures identified in the EIS and refined in this report are Transport's commitment to protect environment and community values and would form part of the conditions of approval if the project is approved.

7.6 Construction

7.6.1 Ancillary facilities

Submission number

29

Issue description

There is no need for an additional concrete pre-cast yard in the Hunter region to service this project. There are existing concrete pre-cast operators at Buchanan, Teralba, Rutherford and Tomago that could service the project needs. The EIS has not included any economic analysis to determine the viability of an additional concrete pre-cast yard or to identify economic impacts, such as job losses, to existing operators if a new yard is established. The project description should be

amended to state that during the tender process, the construction contractor would determine the need for precast facilities, considering value for money, availability and proximity of alternate facilities to service the project, including the site at Buchanan.

Response

Several options for potential casting yards have been assessed for the project within the construction footprint. The assessment does not exclude the potential use of existing facilities external to the project site. As noted in the EIS (Section 5.4.6 Bridge Work) “The majority of the bridges would likely be constructed using the precast construction techniques, where superstructure elements would be precast and placed on bridge supports. Generally, precast elements of the bridges would be prepared off-site at dedicated casting yards and transported to the project site by road. However, as noted in Table 5-12, there is the potential for on-site precast yards at project ancillary facilities. The precast element would be stored at the manufacturer’s site and at relevant construction ancillary facilities where required.”

Additionally, the EIS (Section 5.4.3 Construction Ancillary Facilities) states “The need for precast facilities would be determined by the construction contractor and would depend on the bridge construction method adopted, value for money and the availability and proximity of alternative precast facilities.”

7.6.2 Project staging

Submission number

47

Issue description

The sooner the project is completed the better for everyone. Ideally, construction would occur simultaneously on both sides of the Hunter River. Alternatively, the Black Hill Interchange to Tomago Interchange section could be prioritised, which would help to alleviate the existing bottlenecks sooner that occur between the end of the M1 motorway in Black Hill and Hexham.

From a Richmond Vale Rail Trail perspective, it would be advantageous to undertake preparatory work around the Tarro interchange in advance of the main M1 extension upgrades.

Response

It has been determined that the most efficient project construction arrangement would be via two packages of work under construction concurrently. The two packages of work for the project would be:

- Northern package - Black Hill to Tomago
- Southern package - Heatherbrae Bypass.

The only potential staging that could occur would be the early opening of the Heatherbrae Bypass section prior to completion of the Black Hill to Tomago section due to the anticipated shorter timeframe for delivery of the shorter, less complex northern section. The early opening would provide motorists access to this improved northern section of the project while completing the remainder. An assessment of the traffic impacts of this staged opening is included in **Appendix C** (Supplementary Traffic and Transport Report).

7.6.3 Construction impacts

Submission number

34

Issue description

Resident expressing concern regarding impacts during construction phase.

Response

Chapter 24 (Environmental management measures) of the EIS identifies the comprehensive range of management and mitigation measures that would be implemented for the project during the construction phase to manage amenity for nearby residents and the broader community.

The environmental management measures have been updated in considering submissions and comments from the community and stakeholder and are included in **Appendix K**.

7.7 Consultation

Submission number

23, 31, 34, 40, 47

Issue description

- A landowner stated that they have not been included in correspondence with NSW Planning and feel that they will be greatly impacted by the project
- A landowner stated that the project should be delayed until there is appropriate consultation with all directly affected landowners
- Transport needs to hold genuine consultation with all affected communities and stakeholders, and set up a community consultation panel
- Transport should undertake ongoing consultation with Newcastle Cycleways Movement Inc. and other local cycling groups to confirm the suitability of the proposed cycleway connections.
- Transport should undertake ongoing consultation with stakeholders regarding the Richmond Vale Rail Trail and the broader cycleways network

Response

Chapter 6 (Consultation) of the EIS discusses in detail the extensive consultation that has been implemented for the project to date. This has included community updates, media releases, public displays and community feedback periods to support the preferred route, concept design development and environmental assessment. Transport has implemented a Community and Stakeholder Engagement Plan (CSEP) that would continue throughout the life of the project. The CSEP has been progressively updated throughout the project to capture developments in the consultation process over time. Specific and targeted consultation has been undertaken with landowners of property directly impacted by the project (including utility asset owners) and landowners whose access may need to be altered because of the project.

As identified in Section 6.4 of the EIS, Transport is committed to ongoing consultation with the community and stakeholders regarding future project developments.

7.8 Traffic and transport

7.8.1 Black Hill precinct

Submission number

47, 49

Issue description

Access for future industrial developments in the Black Hill precinct is identified as being from John Renshaw Drive. This is consistent with Cessnock Council's Development Control Plan for this area which prohibits any access between Black Hill Road and the IN2 zoned estate within Cessnock LGA. The local community seeks assurance from Transport that access for these developments will not be from the south via the M1 motorway as this would severely compromise the amenity of this quiet semi-rural community.

Response

Chapter 7 (Traffic and transport) and Appendix G (Traffic and Transport Working Paper) of the EIS assesses in detail the future traffic growth assumed over the next 20-30 years on the road network. This includes potential development from the Black Hill precinct. Appendix B (Traffic and Transport Options Testing Report) of the Traffic and Transport Working Paper includes detailed sensitivity testing of the impacts predicted from the Black Hill precinct. Scenario 1 involved testing the performance of the road network if an alternate southern access was provided into the precinct. The project is not seeking endorsement or approval to this option but simply demonstrating the performance of the project and the adjoining road network should an alternate southern entry / exit be provided to the Black Hill precinct.

The developments proposed in the Black Hill precinct would be assessed separately by the relevant planning authority (Council or DPE). Any future provision of a southern access point to the Black Hill precinct would be considered separately to this project approval by the relevant stakeholders (Transport, Council, DPE) in response to the particular circumstances and obligations of the proposed precinct developments.

7.8.2 Hexham Straight project

Submission number

37

Issue description

The proposed works to upgrade the roadway in the Hexham area will change the dynamics of the current traffic flow in the east west direction along Maitland Road and environs.

Response

Chapter 3 (Strategic justification and project need) of the EIS discusses in detail the existing constraints of the regional road network. The project and the proposed Hexham Straight project both contribute to alleviating the identified road network constraints. The Hexham Straight project is proposed to provide additional traffic capacity (ie. increasing from four lanes to six lanes) which would have the effect of improving travel conditions along this part of the road network.

7.8.3 Traffic growth

Submission number

37, 40, 48

Issue description

- The Port of Newcastle is proposing a major container terminal handling two million containers or more. This could generate in the order of five million heavy truck movements in the absence of major additional rail facilities. There is no evidence that this sort of major shift in freight has been considered in the M1 Hexham proposal.
- Need to allow for significant growth in truck and B-Double container traffic if Port of Newcastle constructs its container terminal at 2,000,000 containers per annum
- The future freight movements of the port and industry does not seem to have been addressed.

Response

Chapter 7 (Traffic and transport) of the EIS discusses in detail the future traffic growth assumed over the next 20 to 30 years for the road network. Future traffic growth has been assessed with consideration of future population and employment growth aligned with the Hunter Regional Plan 2036 (DPE 2016) and Greater Newcastle Metropolitan Plan 2036 (DPE 2018), which outlines the future land use vision for the Hunter and Greater Newcastle areas.

Submission number

39

Issue description

The project will have the undesired effect of attracting more people to travel by car, increasing traffic on connecting and distributor routes, create new traffic bottlenecks and increasing exhaust pollution.

Response

The project would result in a more efficient road system allowing vehicles to travel freely at a constant speed eliminating frequent stop / start movements. Therefore, the project would allow for more fuel efficiency per kilometre travelled which would help reduce exhaust pollution. The project may result in a small number of additional vehicular trips compared to if the project was not built. However, the potential impact on congestion and exhaust pollution would be minimal and outweighed by the benefits provided by the project to traffic conditions and vehicle emissions.

7.8.4 Future traffic capacity

Submission number

53

Issue description

The project will only provide two lanes in each direction which will not provide for future demand. The project should provide three lanes in each direction to future proof the project.

Response

Chapter 7 (Traffic and transport) of the EIS assesses in detail the future traffic growth over the next 20 to 30 years on the road network and the predicted level of service the project provides over that time. Section 7.5 demonstrates that based on the traffic modelling carried out the traffic volumes are predicted to be a maximum of 3,400 vehicles per hour in the peak and 30,000 vehicles per day in 2048. Four lanes of traffic (two in both directions) would adequately cater for this future demand in motorway conditions.

7.8.5 Peak traffic

Submission number

37

Issue description

The peak congestion times relate to holiday traffic loads when holiday traffic gridlock occurs.

However peak demand relates to normal daily activity.

Response

Chapter 7 Traffic and Transport of the EIS discusses existing and future peak daily morning (8am - 9am) and evening (5pm - 6pm) traffic volumes, including projected time improvements for key routes after the project is operational. Although holiday congestion occurs across the existing network, peak daily traffic volumes have been used in the EIS traffic and transport assessment to more accurately demonstrate existing and projected traffic conditions and network efficiency impacts. The daily peak traffic data is a better indicator of peak congestion network impacts than sporadic holiday traffic data.

7.8.6 Local road network benefits

Submission number

49

Issue description

The project will benefit NSW and regional communities. Of equal importance, reducing traffic volumes and congestion on local roads will improve the lives of local communities, enhancing day-to-day access to a broad range of resources and facilities. Hopefully as claimed, the project will also improve the overall safety and efficiency of the road network.

Response

As identified in Chapter 3 (Strategic justification and project need) of the EIS, improving road safety for all road users is one of the overall project objectives. The traffic and transport assessment described in Chapter 7 (Traffic and transport) of the EIS identifies numerous road network efficiencies that would result from the project.

7.8.7 Construction traffic efficiencies

Submission number

1

Issue description

Transport for NSW should look to integrate the project with elements of the proposed Newcastle Rail Freight Bypass to allow efficiencies during construction such as delivery of materials to the southern side of the Hunter River via rail. This would dramatically reduce truck congestion on the local road network during construction.

Response

The Lower Hunter Freight Corridor project is at a much earlier stage in the project development process compared to the M1 Pacific Motorway extension to Raymond Terrace project. The two projects are likely to have different construction periods especially at the large-scale materials delivery stage that would be required for the M1 Pacific Motorway extension to Raymond Terrace project. Therefore, potential efficiencies are unlikely to be feasible.

7.9 Noise and vibration

7.9.1 Operational noise impacts

Submission number

20

Issue description

- The EIS has not considered that trucks cause more noise than cars. Near the New England Highway at Beresfield and Tarro it is noticeable that trucks make considerably more noise than cars, especially at night.
- The project needs to reduce noise impacts for residents, not just those within 100 metres, but also those up to 500 metres or more from the project.

Response

Section 3.6 of the Noise and Vibration Working Paper (Appendix H of the EIS) discusses the noise modelling methodology and the use of a method developed by the United Kingdom Department of Environment entitled *Calculation of Road Traffic Noise* (1988) known as the 'CoRTN88 method'.

The traffic noise model prepared for the project utilised the CoRTN88 method to predict traffic noise levels for free-flowing traffic, including cars and trucks, and incorporated an addition to the model to enable accurate prediction of noise from high truck exhausts. The noise modelling

included the prediction and assessment of operational traffic noise impacts for receivers up to 600 metres either side of the project roads.

In preparing the traffic noise model, traffic surveys were conducted concurrently with noise monitoring. In addition, traffic classification counts to confirm the breakdown of cars and trucks were also carried out. This enabled the noise model to be validated to confirm that the prediction of traffic noise from cars and trucks at the sensitive receivers was accurately represented.

Submission number

34

Issue description

A resident enquired as to what noise reduction measures would be installed to reduce operational noise at their residence at Hexham.

Response

Predicted noise levels at properties and potentially eligible property identified for at-dwelling noise mitigation are included in the Supplementary Noise and Vibration Report (**Appendix D**). As identified in **Section 5.2.4**, the acoustic treatment of buildings has been identified as low impact works and would be prioritised where possible to be carried out before the start of main construction works, or at least within the most affected areas.

7.9.2 Construction noise impacts

Submission number

23

Issue description

Resident is concerned that they will be impacted by construction noise.

Response

As identified in Section 3.2 of the Noise and Vibration Working Paper (Appendix H of the EIS), the study area for the construction noise and vibration assessment was defined as 940 metres either side of the construction footprint. This was identified as the distance from the construction work where construction noise would not adversely impact sensitive receivers. The property referenced in this submission is located further than 940 metres from the closest point of the construction footprint and is not anticipated to experience construction noise impacts. Regardless of the distance from the construction footprint, there are a range of standard, additional and specific construction noise mitigation and management measures that would be adopted for the project. Details of these mitigation and management measures are provided in Section 2.3.4 of the Supplementary Noise and Vibration Report (refer to **Appendix D**).

7.9.3 Noise impacts at Black Hill

Submission number

24, 27, 28

Issue description

- Black Hill is a mostly rural and semi-rural suburb comprised of farmland, native bush land, floodplain, agricultural and low-density Environmental Living-zoned residential areas consisting of quiet acreages.
- Existing traffic is very audible at all hours of the day and night and has a detrimental effect on the otherwise peaceful homes.
- The project, while necessary, is likely to impact Black Hill residents heavily during the lengthy construction period, and when completed.

- The existing noise walls on the M1 Pacific Motorway at Black Hill are insufficient at reducing noise and represent a bushfire risk.
- The project would bring the high-volume national highway and its connections even closer to established homes and farms and significantly increase noise.
- The peace and quiet of the area are incompatible with the construction and existence of a nearby dual carriageway freeway.
- The existing timber noise walls should be replaced with larger concrete walls and extended to run continuously along the southern side of the freeway from the Tarro interchange to the cut-in as the road begins to curve left (southbound) and becomes lower than the surrounding elevated landform.
- Project landscaping should focus on protecting visual and acoustic amenity for residents rather than provision of views for motorists.
- Planted vegetation could be used to shield noise.
- The noise wall on the eastern side of the M1 Pacific Motorway should be reinstated along the entire eastern side of the existing freeway from the Lenaghans Drive turnoff to the Black Hill overpass.

Response

A detailed assessment of both construction and operational noise has been carried out for the project as described in the Noise and Vibration Working Paper (Appendix G of the EIS). Construction noise was predicted for receivers within 940 metres either side of the project's construction footprint. Noise sensitive receivers at Black Hill are located in Noise Catchment Areas (NCAs) NCA01A and NCA01b, as per Figure 4-1 of the Noise and Vibration Working Paper (Appendix G of the EIS).

As described in the Supplementary Noise and Vibration Report (**Appendix D**) the construction noise impacts to residential receivers have been updated based on revised calculation of the rating background levels and noise management levels (NMLs). There are no predicted exceedances of the NMLs in these areas during the daytime, daytime out-of-hours or evening periods. Some night work is expected to be required within the existing M1 Pacific Motorway corridor to allow for work to be carried out safely where it is close to traffic. During night periods, there are anticipated to be minor exceedances of the NMLs during certain construction activities. As identified in Table 3-5 of the Supplementary Noise and Vibration Report, night-time noise levels would be noticeable (<5 dB above the NML) for the following construction activities: site-establishment, ancillary facility operation, batch plant operation, asphalt paving, bridge work, roadside furniture and finishing work, traffic management, and cross drainage works. Night-time noise levels would be clearly audible (5 dB to 15 dB above the NML) for the following construction activities: peak site establishment activities (NCA01A only), peak utility works and typical utility works (NCA01A only).

Mitigation measures in accordance with the Construction Noise and Vibration Guideline (CNVG) (Roads and Maritime Services, 2016), would be implemented for the project to reduce the impact of construction noise. Further details are provided in **Section 6.6.7**.

When considering operational noise, the *NSW Road Noise Policy* (Department of Environment, Climate Change and Water 2011) includes a 'Relative Increase Criteria' (RIC). The RIC are primarily intended to protect existing quiet areas from excessive changes in amenity due to traffic noise from a road project, which applies to the existing rural residential receivers in Black Hill. The EIS assessment identified that eight receiver buildings in NCA01A and none in NCA01B require consideration of noise mitigation. Furthermore, the noise management guideline (Roads and Maritime Services 2015,(NMG)) provides guidance in determining reasonable and feasible noise mitigation measures for receivers predicted to exceed the traffic noise criteria stipulated in the RNP, including the RIC.

Section 6.3 of the Noise and Vibration Working Paper (Appendix H of the EIS) presents the reasonable and feasible noise mitigation outcomes determined in accordance with the NMG, which

takes into consideration the existing rural-residential setting for receivers within the Black Hill area. The reasonable and feasible noise mitigation measures that would be implemented for the project would be refined and finalised during the detailed design phase of the project. Where possible, the final noise mitigation measures would be implemented in the early stages of the construction of the project and prioritised in areas predicted to be most affected. This would further assist in reducing construction noise impacts.

Noise mitigation in the form of noise barriers were considered and the final recommended noise barriers were presented in Section 6.3.2 of the Noise and Vibration Working Paper (Appendix H of the EIS). In addition to the noise barriers recommended in the EIS working paper, this Submissions Report has further investigated increasing the height of the noise barrier at Black Hill to the west of NCA01A and NCA01B. This is the existing noise barrier that would be subject to a minor relocation to accommodate the design change for the extension of the southbound entry ramp merge lane onto the M1 Pacific Motorway southbound carriageway.

The submissions from residents at Black Hill suggest that there would be visual and noise benefits from establishing noise walls at various locations adjacent to the project. For noise walls to be considered a suitable mitigation option they must provide certain benefits. Although in some sections of the project noise barriers would provide visual benefits, it was determined that the required minimum noise benefits could not be achieved, and the implementation of a noise barrier was not considered reasonable.

Existing noise barriers located along the M1 Pacific Motorway which are outside the project extent would not be considered under the project's design; rather, these barriers would fall under the NSW Noise Abatement Program. It is noted that thick vegetation would provide minimal or no noise benefits, only visual benefits. Also, acoustically there are no benefits in using concrete versus timber as noise wall materials as both materials would shield / block the noise sufficiently and any noise experienced at a receiver would be noise travelling / diffracted over the noise wall.

7.9.4 Timing of noise mitigation

Submission number

47, 49

Issue description

The 'highly noise affected residential receivers' during the construction phase are mainly located on the northern side of the New England Highway at Tarro. Other public locations that could be noise affected include Tarro Public School and the Hunter Region Botanic Gardens. Many of the same properties will also be impacted during operation of the project. Existing and proposed noise barriers predominantly reduce noise impacts on the Black Hill, Beresfield and Tarro communities. These barriers should be installed as soon as possible, monitored, and refined over time, with additional noise mitigation measures offered to impacted residences and non-residential properties, if required.

Response

Transport is committed to the installation of operational noise management measures such as noise barriers and acoustic treatment of buildings as early as possible to provide noise mitigation benefits during construction. As identified in **Section 5.2.4**, the acoustic treatment of buildings has been identified as low impact works and would be prioritised where possible to be carried out before the start of main construction works, or at least within the most affected areas.

Installation of permanent noise walls would be carried out as early as possible within the main construction phase to allow the noise mitigation benefits to be realised for the greatest length of time within the construction phase.

7.10 Biodiversity

7.10.1 Biodiversity impacts

Submission number

8, 23, 52

Issue description

- Construction of the project will have significant detrimental impact to surrounding ecosystems and native habitat, and permanent and irreversible destruction to native endangered flora and fauna.
- Concern the project will impact flora and fauna as land around the project is environmentally fragile.
- In an already substantially cleared and fragmented natural landscape, a further 174 hectares of natural habitats and vegetation types will be cleared, including 136 hectares of threatened ecological community representing a significant impact. Opportunities to further reduce this impact should be investigated.
- The biodiversity assessment and report has been undertaken appropriately and appears to provide a reasonable assessment of biodiversity impacts. It should be noted that the proposal will contribute to increasing regional habitat fragmentation and biodiversity loss, including significant impacts on some threatened species and wetland areas.
- Biodiversity impacts are locally significant as the project is adding to cumulative impacts that have fragmented local ecological communities, cleared native bushland, filled and drained local wetlands, and reduced native animal populations.

Response

The Biodiversity Assessment Report (BAR), Appendix I of the EIS, includes a comprehensive assessment of the potential biodiversity impacts of the project. The EIS identifies the types of biodiversity impacts that would result from the project, predominantly during the construction phase and identifies a range of mitigation measures to be implemented. A core outcome of the assessment in the BAR is that the project is unlikely to have a significant impact on biodiversity. Biodiversity impacts would be offset in accordance with the *NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014) and relevant Transport procedures. These offsets have been revised in the updated BAR attached at **Appendix E** of this report.

Chapter 4 (Project development and alternatives) of the EIS details the extensive route and alignment options that were investigated before selecting the preferred route which was determined to best meet the range of engineering, environmental, social, land-use and economic considerations. This included minimising as far as practical impacts to biodiversity, threatened species and wetland areas. The detailed design process would allow for some further consideration of minimising impacts to biodiversity. However, the key avoidance measures have already been applied in selecting the project alignment.

Potential impacts to sensitive flood plain environments including wetland areas and threatened ecological communities and habitats have been minimised by the design of a viaduct structure. The viaduct largely avoids direct impacts on the floodplain compared to other structures such as earth embankments.

7.10.2 Biodiversity offsets

Submission number

35, 36, 38

Issue description

- Project is supported but more needs to be done to protect and enhance native wildlife habitat including the koala for which 50 hectares will be removed. Land in the immediate area should

be acquired and protected particularly areas providing wildlife corridors to the east of the project and linking habitat closer to the centre of Raymond Terrace. Offsets on remote land are not an adequate substitute.

- There will need to be other land parcels additional to those suggested in this submission (Lot 14 DP 846612, Lots 14 &15 DP 840996 and Lot 42 DP853008) to satisfactorily compensate for the project.
- There are potential biodiversity offset sites east of the Pacific Highway and at Elizabeth Street, Raymond Terrace.
- Transport owned land (zoned RU2 Rural Landscape) next to the project at Raymond Terrace should have a conservation plan to protect its habitat value. To the east this land joins Tilligerry State Conservation Area which is inhabited by koalas and contains their preferred food trees and is recognised as a significant regional biodiversity corridor. The northwest corner of the Transport land leads to a main fauna underpass for the Pacific Highway where it crosses the Grahamstown Canal. This underpass connects primary koala habitat on both the west and east sides of the proposed M1 extension.
- Land for sale at Elizabeth Avenue contains preferred koala habitat and is strategically located for corridor value.
- If the corridor associated with the existing Transport properties are not protected, then a major link to and from Tilligerry State Conservation Area will be lost.
- The preservation of native vegetation on existing Transport properties along with securing suitable additional land will ensure koalas have a corridor into Raymond Terrace.
- The koala corridor is vital to the Raymond Terrace community. There is a long history of volunteers planting koala food trees along Grahamstown Drain, in Elizabeth Reserve and Boomerang Park.
- The measures identified in this submission will be much more likely to adequately compensate for impacts on the local koala population than biodiversity offsets in distant locations.
- Land conserved for koala habitat will also serve as a biobanking site for flora species impacted by the project.

Response

The Biodiversity Assessment Report (BAR), Appendix I of the EIS (and as revised in this report, refer **Appendix E**), includes a comprehensive assessment of the potential biodiversity impacts of the project as well as the Biodiversity Offset Strategy (BOS). Impacts to biodiversity would be offset in accordance with the *NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014) and Transport procedures.

A number of factors influence the suitability of land for biodiversity offsetting, such as the number of credits potentially generated and whether a landowner is interested in the establishment of a biodiversity stewardship site on their land. Transport has undertaken preliminary desktop assessments of its land parcels near the project with preliminary results indicating that some parcels of land are likely to be suitable. However, further assessment is required and it is likely that additional offsets would be needed necessitating consideration of land more remote from the project.

Submission number

39, 49, 52

Issue description

- The EIS provides a comprehensive inventory of the impact of the project and the “biodiversity credits” required as offsets.

- Almost none of the potential offset sites identified are available contiguous to or in proximity to the project site, with most in the Upper Hunter and Karuah-Manning regions, and some as far away as the Southern Highlands.
- There are opportunities to find suitable 2:1 like-for-like offsets that add to conservation lands around the Hunter estuary (Hunter Wetlands National Park, Wetlands Centre, Ash Island and Fullerton Cove), the Stockton to Watagans green corridor (including the Tank Paddock, Blue Gum Hills Regional Park, Stockrington Valley), and in the estuarine and bushland areas of Port Stephens and Lake Macquarie LGAs. Transport should seek expressions of interest from local councils and public authorities to identify potential local offset sites.
- Payment to the Biodiversity Conservation Fund in lieu of offsets should not form part of the project.
- Biodiversity offsets should be secured in advance of project commencement to ensure that there is no lag between the time of impact and the provision of compensatory measures.
- Biodiversity offsets for the project should translate into environmental improvements in the local area, such as additions or enhancements to existing conservation areas, or improvements within Hunter Wetlands National Park.

Response

The Biodiversity Assessment Report (BAR), Appendix I of the EIS, includes the Biodiversity Offset Strategy (BOS) (and as revised in this report, refer **Appendix E**). As identified in the BOS, impacts to biodiversity would be offset in accordance with the *NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014) and relevant Transport procedures. Transport has undertaken some preliminary investigations as to what offsetting options may be available and identified that part of the credit requirement could be satisfied from a combination of like-for-like and allowable trade credits available for purchase on the open market. Other options to satisfy the credit obligation include potential stewardship sites including local sites owned by Transport and others.

Options such as payment to the Biodiversity Conservation Fund may need to form part of the solution to satisfying the projects offsetting obligations as is allowable in accordance with the *NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014).

Submission number

36

Issue description

A significant land holding already owned by Transport already compensates for biodiversity impacts associated with the current Raymond Terrace bypass (so should not be used as compensation for this project).

Response

None of the Transport owned land in the area surrounding the project has been used as a biodiversity offset to compensate for the Raymond Terrace bypass. As identified in the Biodiversity Offset Strategy (BOS) (contained within Appendix I of the EIS (and as revised in this report, refer **Appendix E**)) there are several parcels of land owned by Transport that would be considered further as possible biodiversity stewardship sites to partially satisfy the project's biodiversity offset obligation.

7.10.3 Impact to koalas and koala habitat

Submission number

35, 36, 38, 50

Issue description

- Support for project but more needed to protect local koala population and enhance koala habitat

- To compensate for remove of 50 hectares of koala habitat, land in the immediate area should be acquired and protected with particular emphasis on wildlife movement corridors that allow movement to the east of the project and that link to habitat close to Raymond Terrace.
- There is no indication that any koala habitat will be secured that will directly compensate for the loss, in the immediate area, and help to ensure the survival of the local koala population.
- The maintenance of a sustainable koala population in the local area should be a key objective of the project.
- Transport should secure suitable land in the immediate vicinity of the project near Raymond Terrace as protected koala habitat and corridor to compensate for project impacts.
- The Biodiversity Assessment Report concluded 'that the project is not expected to significantly impact the movements of koalas and no targeted connectivity measures are required for koalas.' However, local knowledge would suggest that koalas may move away from the proposed Motorway. Therefore, this submission outlines strategies to counteract the project's potential impact on koalas in the Heatherbrae and Raymond Terrace areas.
- The project does not provide adequate wildlife corridors, protection of existing habitat and food trees for koalas in the area. There is no specialised provision for safe passage across the highway or appropriate fencing in areas of known koala movement.
- Without mature food trees, habitat, safe corridors, fencing and highway crossings, koalas could easily be wiped out by major bush fires, floods and even droughts.
- Transport owned land next to the Pacific Highway at Raymond Terrace has been identified as containing supplementary koala habitat, habitat linking areas, the threatened food tree *Eucalyptus parramettensis* and links to Tilligerry State Conservation Area. This land should be conserved at all costs.
- The Australian Koala Foundation Habitat 2021 identifies a main fauna underpass on the Pacific Highway at Grahamstown Canal Bridge with connects to primary Koala habitat on the west and east side of the proposed M1 extension. If two properties on either side aren't purchased and conserved, then the major link to and from Tilligerry State Conservation area will be lost.
- Koala / fauna fencing, safe road crossing / passes and escape structures to prevent road kill and escape from predators is of vital importance around the fauna corridor that has primary and secondary koala habitat at Masonite Road, Heatherbrae.

Response

As described in Chapter 4 (Project development and alternatives) of the EIS, a key consideration when selecting the project alignment was minimising and avoiding environmental impacts. For biodiversity this involved avoiding impacts to remnant vegetation and minimising fragmentation of habitat, including koala habitat, by aligning the project closely to existing infrastructure and land use. It was not feasible to completely avoid all impact to koala habitat.

The Biodiversity Assessment Report (Appendix I of the EIS, and as revised in the report, refer to **Appendix E**) prepared for the project concluded that the project would have minimal impact on landscape connectivity for ground-dwelling fauna, and therefore dedicated underpass crossing structures were not proposed. The assessment also found that the viaduct proposed across the Hunter River and adjacent floodplain would allow the movement of fauna either side of the corridor and would retain habitat connectivity of a large scale. Bridges proposed at Black Hill and Windeyers Creek would also provide for incidental movements by fauna across the project and would be combined with fauna exclusion fencing to aid fauna movements and minimise vehicle strike.

The unavoidable impacts to koala habitat, and other threatened species and communities, would be offset in accordance with the *NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014) and relevant Transport procedures. Transport has started investigations of Transport owned land in the areas next to the project to determine the potential for these sites to be used as biodiversity offset sites to compensate for the loss of habitat for koalas and other species and communities. As

identified in the Biodiversity Offset Strategy (BOS) (contained within Appendix I of the EIS (and as revised in this report, refer **Appendix E**)) these investigations are at the preliminary stage and of the 13 sites investigated to date, eight sites have been identified as having potential for future development as biodiversity stewardship sites subject to further field based investigations.

Submission number

36

Issue description

To compensate for impacts to koalas, it is proposed to use biodiversity offsets, but these are all in areas many kilometres away from the subject site, or in the case of two parcels of land acquired by Transport for NSW are in unspecified locations. The locations of the land acquired by Transport for NSW should be disclosed and its biodiversity value stated, however, this approach is unacceptable in any case.

Response

As detailed in the Biodiversity Offset Strategy (BOS) (contained within Appendix I of the EIS (and as revised in this report, refer **Appendix E**)) there are several options available to satisfy the project's offset requirement in accordance with the *NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014). Investigations as to which option or combination of options is best for the project is still to be determined. As described in the BOS, thirteen parcels of land in proximity to the project and owned by Transport have undergone preliminary investigation with eight parcels of land identified as having potential to be suitable for offsetting and to be subject to further investigation.

Transport owned land around the project is identified in Figure 14-2 of Chapter 14 (Land use and property) of the EIS. As investigations of the biodiversity value of the transport land has only been desktop to date the biodiversity value cannot accurately be determined and has not been stated.

Submission number

38

Issue description

The EIS identifies removal of 51 hectares of koala habitat and isolation of 5.3 hectares of habitat resulting in a total impact of 56.3 hectares of koala habitat. The 'koala habitat assessment tool' (DoE 2013) which was applied as part of the *Environmental Protection and Biodiversity and Conservation Act 1999* assessment identified that based on the habitat present and previous records in the local area, the construction footprint has 'habitat critical to the survival of the koala' in the Tomago and Heatherbrae areas.

The Biodiversity Assessment Report (Appendix I of the EIS) concluded that the loss of koala habitat was 'minor' given the extent of core koala habitat throughout the Port Stephens Local Government Area. This estimate is calculated from the amount of habitat identified in the Port Stephens Comprehensive Koala Plan of Management 2002 (EIS p 345. [Appendix D in Appendix I]). This Comprehensive Koala Plan of Management has not been updated to reflect the critical loss of core koala habitat from land clearing and bush fires in Port Stephens over the past twenty years. Hence this assessment over-estimates available habitat and minimises the loss of habitat that this project will create. The Threatened Species Scientific Committee reviewed the Port Stephens Koala Population in 2018. It gave the opinion that this population 'is facing a very high risk of extinction in NSW in the near future…'. (NSW Threatened Species Scientific Committee, 2018). Therefore, this population is highly vulnerable to any threats, including loss of vegetation.

Response

The 'koala habitat assessment tool' is part of the *EPBC Act referral guidelines for the vulnerable koala* (DoE 2013). The tool is primarily used to aid the decision as to whether a project needs to be referred to the Australian Government under the provisions of the *Environment Protection and Biodiversity Conservation Act 1999*. The M1 Pacific Motorway extension to Raymond Terrace project was referred to the Australian Government in 2019. Following this, a more detailed

assessment in accordance with the Matters of National Environmental Significance (MNES) Significant impact guidelines 1.1 (DoE 2013) was undertaken.

The BAR (Appendix I of the EIS (and as revised in this report, refer **Appendix E**)) includes a comprehensive assessment of the project's biodiversity impacts and identifies mitigation measures. The assessment was based on the regional information available at the time of writing the report. The design of the project was developed to provide the motorway asset with the least impact to biodiversity and hence was located so as to not materially increase fragmentation of existing high quality and contiguous habitat. The proposed motorway alignment directly adjacent to the Heatherbrae industrial area best achieves the minimisation of impact on koala habitat.

Submission number

38

Issue description

NSW Scientific Committee is of the 'opinion that the Port Stephens Population faces a very high risk of extinction in the near future' (NSW Threatened Species Scientific Committee, 2018). Therefore, every strategy that has the potential to protect koalas from the impact of this project must be employed.

Response

Strategies to minimise impact to koalas and koala habitat have been considered and integrated into the M1 Pacific Motorway extension to Raymond Terrace project throughout the development process. Chapter 4 (Project development and alternatives) of the EIS describes the route selection process and how the project was aligned closely to existing infrastructure on the edge of a large forested area to minimise impact and fragmentation of habitat. If the project is approved, a number of environmental management measures would be implemented during construction to minimise the risk of impact to koalas. In operation the selected locations of fauna fencing would prevent koalas from entering the motorway.

As some impact to koala habitat is unavoidable, these impacts would be offset in accordance with the *NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014) and relevant Transport procedures.

7.10.4 Birds

Submission number

33

Issue description

The Tarro and Hexham areas have magnificent birdlife. I believe that the overdue and welcome project and birdlife can coexist.

Response

Submission acknowledged and noted.

7.10.5 Fauna crossings / underpasses and fencing

Submission number

35, 36, 38, 50

Issue description

- More fauna fencing and more fauna crossings are desirable
- At the northern end of the proposed extension, there is only one new overhead fauna crossing – well south of Masonite Road, and a major gap in the proposed fauna fencing north of Masonite Road until a short length along the eastern side of the new slip road.

- The construction footprint from Tomago to the Hunter Botanical Gardens at Heatherbrae is adjacent to an identified fauna corridor (EIS, Appendix I, pp28-30 Figure 2-3). This corridor moves away from the M1 towards the north-east to where it is traversed by Masonite Road and includes sections of both primary and secondary koala habitat. Road construction noise and road traffic can startle nearby animals and cause a physiological stress response. Consequently, animals may move away from the noise-effected area, either temporarily or permanently. Therefore, the disturbance caused by the M1 may result in animals migrating to the northeast, where they will need to cross Masonite Road. A fauna protection fence should be installed from the proposed Masonite Bridge site to the far side of the fauna corridor. Escape structures such as log posts could be installed along the road and near any fauna crossing to help koalas avoid predators.
- A fauna crossing should be constructed where the fauna corridor crosses Masonite Road on the east side of Heatherbrae. A fauna crossing will improve connectivity and give koalas on both sides of the road more opportunities to access koala habitat in the corridor. It will also save wildlife from vehicles strikes.
- It is of vital importance that koala / fauna fencing, safe road crossing / passes and escape structures are provided at Masonite Road near a fauna corridor providing primary and secondary koala habitat.

Response

As the project has been identified as having minimal impact on landscape connectivity for ground-dwelling fauna, dedicated underpass crossing structures are not proposed. The viaduct proposed across the Hunter River and adjacent floodplain would allow the movement of fauna either side of the corridor and retains habitat connectivity of a large scale. Bridges proposed at Black Hill and Windeyers Creek would also provide for incidental movements by fauna across the project and would be combined with fauna exclusion fencing to aid fauna movements and minimise vehicle strike.

Fauna fencing has been revised to extend in various locations to deter Koalas from getting onto the motorway, including north of the project at Heatherbrae and along Masonite Road, to mitigate risk of collision for transient and dispersing koalas.

Submission number

38

Issue description

At Windeyers Creek bridge it is unclear if there is a margin of dry land on both sides under the bridge that wildlife can safely walk through during high tide and times of flood. It has been noted that koalas prefer to walk on the ground when it is dry. If the banks of the creek leading to the fauna underpass are wet, then koalas will need elevated structures such as wildlife furniture to traverse the fauna crossing. It is vital that this fauna crossing is established as part of the project.

Response

Page 201 of the BAR states 'It is evident from the position of the project in the landscape, being located adjoining existing roads and industrial areas that the project is expected to have minimal impact on the movements of koalas. The loss of habitat is considered of low impact to the broader Port Stephens Koala population. Specific management measures for the Koala are described in Chapter 9 and include prevention of mortalities on the new road through fauna fencing in key areas'.

The road alignment and connection with the existing Raymond Terrace Bypass is complex at this point and it would be difficult to effectively allow Koalas to underpass the carriageways and at the same time exclude them from getting onto the carriageways.

Feed Trees on the western side of the current Raymond Terrace Bypass are more safely accessed by Koalas from the Grahamstown Drain vegetation corridor than by underpasses under the motorway and bypass at Windeyers Creek.

Windeyers Creek is not tidal. However, this section at Windeyers Creek is subject to flooding and the underpass is flooded, so Koalas would be unlikely to use the area for fauna connectivity. The preference for the project is, using fauna fencing alignment, to push Koalas towards the Grahamstown Drain underpass where it is safer for them to cross the alignment.

Submission number

49

Issue description

The use of fauna crossing structures is applauded. However, it is surprising to see a proposed connection across the M1 in Black Hill (EIS Figure 5-1, Page 5-7) that would effectively direct fauna into the Emerging Black Hill Precinct (containing two industrial estates).

Response

Transport is required to assess the impacts of our project. To date, while the Emerging Black Hill Precinct has had partial approval, there has been no total approval or major commencement of works. Accordingly, Transport is required to identify the biodiversity offsets required connecting to this area in its current state.

7.11 Hydrology and flooding

7.11.1 Flooding impacts from the Project

Submission number

23, 34

Issue description

Concerns about increased flooding and duration caused by the project, and the impacts of drainage from the project.

Response

The project design has been developed to minimise potential flooding impacts to property. Following the EIS, the project design was refined with the objective of further reducing flood impacts.

Many of the design refinements which are relevant to the hydrology and flooding assessment were made in response to the public submissions and clarifications. The flood impacts have been revised based on the refined project design.

Detailed information on flood impacts, including depth of flooding, additional flooding caused by the project (afflux), and inundation time have been further assessed and are documented in the Supplementary Hydrology and Flooding Assessment Report (**Appendix F**).

The supplementary report includes improved information on key points of interest across the project area. Section 5.3.1 in **Appendix F** contains key flooding impact information at these select locations.

In general, the existing drainage patterns and catchment areas would be maintained and runoff would drain to the existing discharge points and waterways as per the existing case.

Notwithstanding, Transport has updated environmental management measure FH02 for the detailed design to further consider improvements that states: “Improving the drainage capacity of existing drainage channels and culverts along Purgatory Creek for servicing frequent rainfall storm events. Consultation with affected property owners would be undertaken in relation to drainage capacity upgrades and physical works”.

Submission number

31

Issue description

Aurizon raised concerns regarding flood impacts to the Hexham Train Support Facility (TSF) and requested further ongoing consultation with Transport on the assessment and mitigation of impacts.

Response

The project design has been developed to minimise potential flooding impacts to property. Following the EIS, the project design was refined with the objective of further reducing flood impacts.

Many of the design refinements which are relevant to the hydrology and flooding assessment were made in response to the public submissions and clarifications. The flood impacts have been revised based on the refined project design.

Detailed information on flood impacts, including depth of flooding, additional flooding caused by the project (afflux), and inundation time have been further assessed and are documented in the Supplementary Hydrology and Flooding Assessment Report (**Appendix F**).

The supplementary report includes improved information on key points of interest across the project area. Section 5.3.1 in **Appendix F** contains key flooding impact information at these select locations.

At point of interest 3, in reference to the Aurizon TSF, the refined assessment shows that during both construction and operation, minimal change is anticipated to occur at the Aurizon TSF.

Zero afflux is predicted in the 10% AEP event and an afflux of 0.02 m is predicted in the 5% AEP event.

In the 5% and 1% AEP events the change in duration of inundation from existing case is less than +/- 2%, or up to one hour in change of duration. These impacts at the Hexham TSF are less than those presented in the EIS and are below the adopted assessment criteria for flood impacts resulting from the project.

Additionally, as per Transport's commitment in environmental management measure FH03, further consultation would occur with Aurizon on the identified impacts to the TSF.

7.11.2 Purgatory Creek

Submission number

34

Issue description

Issue raised relating to the apparent impacts to Purgatory Creek by the proposed road embankment at the Tarro Interchange, with concerns about the resulting reduction in drainage of the floodplain.

Response

The project design realigns drainage flow paths where needed, including Purgatory Creek, to ensure the drainage lines are not blocked by the road embankment and other parts of the project. This would involve drainage channels which flow around the embankment and culverts to go through the embankments where required to ensure that stormwater runoff does not pond around the embankment. The existing drainage culverts under the railway and the New England Highway would not be modified.

Noting the above design, it is not anticipated that any reduction in drainage capacity from Purgatory Creek in this location of the flood plain.

7.11.3 Flood immunity of the project

Submission number

39

Issue description

Issues raised regarding the flood immunity of the proposed roadway. Specifically, it was identified that some parts of the carriageway and connecting ramps would be inundated by the 1% AEP flood when exacerbated in future by predicted increases in rainfall intensity in the catchment and the effects of sea level rise in the tidal estuary due to climate change. The submission suggested that a minimum flood immunity of 1% AEP, or greater to a 0.5% AEP, be adopted.

Response

The Hydrology and Flooding Working Paper in the EIS states the design objective of a 5% AEP flood immunity from Hunter River flooding for the proposed motorway main carriageway, with the underside of all bridges above the 1% AEP flood plus 0.5 metres freeboard. It should be noted that it is not an objective of the project to “flood-proof” the highway, that is, to make it flood-free for all flood events up to the Probable Maximum Flood, as this would require significant raising of the design road levels which is unfeasible and have a much greater environmental impact.

The flood assessment presented in the EIS Hydrology and Flooding Working Paper demonstrates that the concept design for the project achieves a 1% AEP flood immunity for the large majority of the main carriageway based on these design objectives, and this outcome is maintained with the refined project design.

As the EIS Hydrology and Flooding Working Paper identifies that the flood immunity of the existing Pacific Highway and New England Highway along the project alignment is only immune to about the 10% AEP event. The flood immunity achieved by the project design represents a substantial improvement in flood immunity and trafficability of this transport route in balance with the consideration of all other potential environmental impacts.

7.12 Surface water and groundwater quality

Submission number

8

Issue description

Construction of the M1 Pacific Motorway extension is a highly damaging project which will have long-ranging damage to waterways.

Response

The Surface Water and Groundwater Quality Working Paper (Appendix K) in the EIS included a comprehensive assessment of the project’s potential impacts to surface water and groundwater quality. The EIS described temporary impacts during construction and long-term impacts during operation. Following the implementation of the proposed mitigation measures, the project was assessed as unlikely to have a significant impact to surface water or groundwater.

A fundamental strategy to minimise risks to waterways during construction and operation would be the installation of temporary construction sediment basins and permanent water quality basins. During construction temporary sediment basins are an important part of a suite of measures used to intercept surface water flows from work areas and facilitate treatment prior to release. Treatment in these circumstances would be in accordance with water quality conditions set in an environmental protection licence issued by the NSW Environmental Protection Authority. During operation permanent water quality basins are designed to detain water for a sufficient period to allow suspended material to settle in the basin. They also provide capacify for litter and debris from the roadway to be captured and removed during maintenance. In key sensitive locations along the

project permanent water quality basins have also been designed to provide between 20,000 and 30,000 litres of spill containment capacity.

The EIS outlined an approach where temporary and permanent basins within the Tomago Sandbeds Catchment Area would be lined. Transport has since made further refinements to this approach and has committed to lining all temporary and permanent basins that would intercept groundwater. This approach seeks to minimise opportunities for the mixing of surface water and groundwater resources in addition to those already occurring independent of the project.

7.13 Aboriginal cultural heritage

7.13.1 General project impacts

Submission number

8

Issue description

The construction of the M1 Pacific Motorway is a highly damaging project which will further desecrate sites of Aboriginal significance.

Response

The Aboriginal Cultural Heritage Assessment Report (Appendix L of the EIS) included a comprehensive assessment of the potential impacts to Aboriginal cultural heritage. The report includes consultation with the Aboriginal community and interviews with knowledge holders that discussed the impacts of the project. Further investigations in the form of archaeological excavations and salvage works were accepted by the community to better understand the archaeology of the site and mitigate the identified impacts. The archaeological salvage works would occur after project approval, if given, and before commencement of construction.

7.13.2 Private property impacts

Submission number

32

Issue description

The project will impact aboriginal heritage sites on land owned by AGL. As Transport will impact the heritage sites prior to approved AGL works, the cultural heritage salvage must be comprehensively undertaken by Transport in consultation with AGL. Noting the proposed timing of construction for the project, Transport must not rely on AGL to address the Aboriginal heritage salvage works.

Response

The Aboriginal Cultural Heritage Assessment Report (Appendix L of the EIS) contains mitigation measures that include a salvage program to better understand the archaeological condition within the proposed construction footprint. Transport would complete the program within the project footprint prior to construction in consultation with AGL.

7.14 Socio-economic

7.14.1 Heatherbrae industrial precinct

Submission number

9

Issue description

- The project would bypass a large number of long established businesses on the Pacific Highway in the Heatherbrae industrial precinct. The proposed alignment makes no attempt to

connect to these businesses, therefore there will be a significant reduction in vehicular traffic. If businesses become unprofitable this would mean job losses for members in the community, potentially numbered in the thousands.

- Businesses in Heatherbrae have provided jobs and serviced the community for many years and to see them bypassed and disregarded is disappointing.
- The Heatherbrae industrial area will almost certainly cease to be a hub of activity and retail spending with travellers through the area unlikely to seek out this precinct.

Response

The need for the project and the limitations of the existing road network which is part of the National Land Transport Network (NLTN) are described in Chapter 3 (Strategic Justification and Project Need) of the EIS. Transport has listened to feedback from businesses and the community during the consultation process. Transport revised the project design to incorporate northbound off ramps to better connect Heatherbrae to the new section of motorway. The project would incorporate signage advising the travelling public of the access route to Heatherbrae. This would facilitate continued use of the industrial area and services available at Heatherbrae.

Chapter 13 (Socio-Economic) of the EIS discusses in detail the potential impacts of the project to the local community and businesses. This includes both positive and negative impacts that may arise from the construction and operation of the project with specific discussion of businesses in Beresfield and Heatherbrae in Section 13.4. The construction phase may have a positive effect on some local businesses through increased trade in response to day-to-day needs of construction workers and supply of goods and services to construction. During operation, potential impacts on businesses in Heatherbrae would mainly result from diverting traffic from the Pacific Highway along the new M1 Pacific Motorway, bypassing the town. The interchanges along the project would allow motorists travelling in both directions to easily exit the motorway to access existing businesses and services.

While Heatherbrae would continue to service motorists using the M1 Pacific Motorway, it is expected that this area would transition into a key destination for bulky goods within the Hunter Region, consistent with the Raymond Terrace and Heatherbrae Strategy 2015-2031 (Port Stephens Council 2015). Increased commercial development in Heatherbrae and the residential growth proposed for surrounding areas has the potential to offset potential loss of trade experienced by some local business owners due to the project. Increased commercial development would also likely result in businesses becoming less reliant on passing trade.

7.14.2 Health and socio-economic outcomes for the community

Submission number

8

Issue description

Project will result in negative health and socioeconomic outcomes for the surrounding communities.

Response

Key issues that can potentially impact human health include noise and air quality. Chapters 8 and 18 of the EIS address the potential impacts of noise and air quality respectively and identify the proposed mitigation measures to address impacts. All air quality parameters are below the relevant guidelines that protect human health. Where noise impacts from operation of the project are predicted to be above the relevant criteria, Transport would implement mitigation measures such that sensitive receivers comply with the relevant criteria.

Chapter 13 (Socio-Economic) of the EIS discusses in detail the likely range of potential socio-economic impacts and communities affected by the project. The significance of potential socio-economic impacts associated with the construction and operation of the project was evaluated based on levels of sensitivity of receptors and the magnitude of the proposed work. During

construction, potentially negative impacts would be appropriately managed with the implementation of management measures relating to noise, vibration, air quality and traffic. Potential negative impacts associated with operation have generally been managed through route selection, impact avoidance and the implementation of design features such as connections to the local road network. Some impacts that cannot be completely avoided and may have residual socio-economic impacts generally relate to acquisition of commercial land, changed access to some social infrastructure and changes to local amenity or environmental values.

7.15 Land use and property

7.15.1 Lease and acquisition of land

Submission number

32

Issue description

Construction of the project would require Transport to utilise some land owned by AGL. AGL requests compensation for the use of its land during construction.

Response

Transport's property and acquisition team would negotiate lease terms with AGL for properties identified for potential lease throughout construction.

Submission number

44

Issue description

A Tomago landowner expressed concerned about adverse impact from loss of road access to their property due to required land acquisition for the operational project footprint. Suggested property value will be impacted if there is loss of road access. Request for reassessment of the project operational footprint requirements.

Response

Further consultation has occurred with the landowner and refinement of the concept design as presented in the EIS (refer to **Section 5.2** of this report) has occurred. There may be some further changes to the design presented in the EIS as part of the detailed design process. The operational project footprint near the Tomago property has been revised reducing the area to be acquired and allowing road access to be retained.

In all instances where acquisition or lease arrangement are entered into for the project which results in an impact to access, Transport would make arranges in consultation with the property owner to maintain existing arrangement or provide alternative access (refer revised environmental management measures TT01 and TT02 in **Appendix K**).

Submission number

47

Issue description

There is an opportunity for Transport and City of Newcastle Council to work together in relation to required property acquisitions for the M1 Pacific Motorway extension project, Lower Hunter Freight Corridor and the Richmond Vale Rail Trail Tarro connection. These developments are clearly in the public interest and will benefit generations of Hunter residents well into the future.

Response

Chapter 14 (Land use and property) of the EIS discusses in detail the properties directly impacted by the project that are able to be acquired by Transport. Only those properties directly impacted by the project are able to be acquired. As described in EIS Chapter 23 (Cumulative impact), the

Richmond Vale Rail Trail and Lower Hunter Freight Corridor projects have been considered in the project design, however both projects are considered to be in the 'planning' stages, whereas the M1 Pacific Motorway extension to Raymond Terrace project is at a more advanced stage in the property acquisition and project development process. It is not possible to align the project property acquisition and project approvals with the Richmond Vale Rail Trail and Lower Hunter Freight Corridor property acquisition. The project team would continue to consult with the Richmond Vale Rail Trail and the Lower Hunter Freight Corridor project teams throughout development of the project to seek potential opportunities for coordinated property acquisition where feasible.

7.15.2 Property access

Submission number

13

Issue description

Request for clarification of potential construction footprint impacts to Muree Golf Club land.

Response

The construction footprint does not impact any land owned by Muree Golf Club. The construction footprint boundary is limited to the road corridor next to the Muree Golf Club land.

Submission number

31

Issue description

Project construction is likely to have significant access impacts to Aurizon's Train Servicing Facility, specifically in relation to access off Anderson Drive. Delay or prevention of access to the facility would likely have significant flow on effects to the operational efficiency of the Train Servicing Facility and Aurizon's wider NSW operations. Consistent with project environmental management measure TT02 and TT03, as detailed in Chapter 24 of the EIS, Aurizon requests that access to the Train Servicing Facility during construction of the project is prioritised for Aurizon employee's, contractors or deliveries. Additional consultation is requested regarding how this will be implemented.

Response

Access would be maintained to all properties and businesses during construction and operation, as detailed in Chapter 14 (Land use and property) of the EIS. Transport acknowledges that access to the Train Servicing Facility is important for Aurizon's operation and commits to consulting during detailed design and construction in order to minimise any delays caused by construction.

Submission number

34

Issue description

A landowner has concern that their property access will be compromised with restrictions during construction and no access once the project is built. Landowner wants assurance that access will not be impacted by the project.

Response

The landowner did not provide details in their submission of the location of their land. However, Transport understands that the property is accessed via the Aurizon access road at Tarro.

Access would be maintained to all properties during construction and operation, as detailed in Chapter 14 of the EIS and the environmental mitigation measure TT02. During construction, traffic management measures would be in place and may result in some delays for short periods. However, a Traffic and Transport Management Plan would be prepared to help control and mitigate any delays to traffic during construction, including the provision of alternative access arrangements developed in consultation with affected property owners.

Submission number

23

Issue description

Landowner at Tarro is concerned that their access on and off the New England Highway will be lost as a result of the project. The landowner stated that they were not able to identify the access arrangements near their property from the plans/figures in the EIS. The landowner also stated that they were unable to speak to a member of the project team in person due to lockdown.

Response

Figure 5-1 of the EIS presents the design and key features of the project, including changes to access. The design of the project ensures that all existing accesses off the New England Highway to properties and local roads would be maintained, including at Tarro.

7.15.3 Public access to Hunter River

Submission number

12

Issue description

Can the road corridor underneath the viaduct be opened for public access to the Hunter River? Public access to the banks of the Hunter River is at a premium as the land along most of its course is in private ownership and any opportunity for public access would be welcomed.

Response

The land next to the Hunter River beneath the viaduct would be acquired for the project. However, once complete, the project would be classified as a motorway owned by Transport with no direct access from surrounding properties in accordance with the provisions of the *Roads Act 1993*.

7.16 Urban design, landscape and visual amenity

7.16.1 Visual amenity at Black Hill

Submission number

24

Issue description

- The project, while necessary and beneficial, is likely to impact residents heavily during construction and operation significantly increasing visual impacts for residents that chose Black Hill for its low-density rural setting.
- Figure 5-18 of the EIS is an indicative drawing of the Tarro section which identifies low vegetation in the median and next to the carriageway to preserve views across the floodplain for motorists. A more important priority should be maintaining visual amenity for residents with views towards the new motorway. A sketch was provided with suggested screening vegetation on the southern side of the proposed motorway in the Tarro section.
- Strategically planted thick vegetation buffers would minimise the visual impact of traffic on the surrounding rural and residential land.

Response

Chapter 15 (Urban design, landscape and visual amenity) of the EIS discusses in detail the assessment undertaken to determine potential visual impacts during construction and operation of the project including within the identified Black Hill landscape character zone (LCZ). The Black Hill LCZ was identified as having moderate sensitivity. Landscape sensitivity is the inherent and intrinsic sensitivity of the landscape and the degree to which it can accommodate change. Viewpoint 3 as identified in Figure 15-7 of the EIS is the most representative viewpoint for the rural

residential dwellings at Black Hill. This viewpoint was identified as having high sensitivity due to the open rural outlook over pastures and wetlands of the Hunter River floodplain.

The visual assessment identified that the construction-related landscape character impacts would vary across the construction footprint depending on the activities being carried out at the time. Overall, the Black Hill LCZ was assessed as likely to have moderate impacts that would, where possible, be managed through appropriate siting of infrastructure and materials, finishes of sheds and hoardings, and management of traffic in the study area. Viewpoint 3 was assessed as having a high to moderate visual impact during construction. This is considered a worst-case scenario as the type and intensity of construction activities would vary throughout the duration of construction. A range of mitigation measures were identified in Section 15.6 of the EIS.

In operation, the Black Hill LCZ was assessed as having moderate impact due to an increased amount of road-related infrastructure in the area, clearing of remnant bushland and changes to the natural landform to accommodate the project's geometric requirements. Viewpoint 3 was also assessed as having moderate impact as the project would be at least about 1.3 kilometres from this viewpoint, only a minor portion of the view would change and the change would be difficult to discern in detail.

One key urban design objective of the urban design and landscape character and visual assessment (refer Appendix O of the EIS) has been to "provide a landscaped motorway that integrates with the adjoining natural setting". Existing landscape characteristics between the project and Viewpoint 3 are predominantly low growing wetland and grazing vegetation communities. The provision of thick vegetation buffers within the project footprint would be inconsistent with the urban design objectives and are not proposed in this location.

7.16.2 Urban design and landscape vision and objectives

Submission number

47, 49

Issue description

Support for the urban design and landscape vision and objectives as detailed in Sections 15.3.1 and 15.3.2 of the EIS.

Response

Transport acknowledges and notes the support for the urban design and landscape vision and objectives.

7.17 Soils and contamination

7.17.1 Riverbank stability and erosion

Submission number

12

Issue description

The earthen banks on both sides of the Hunter River at the viaduct crossing point are not stabilised and appear vulnerable to erosion. Bank stabilisation near the proposed footings of the viaduct should be part of this project.

Response

Chapter 10 (Hydrology and flooding) and Appendix J (Hydrology and Flooding Working Paper) of the EIS present an assessment of scour and erosion risk and outline the management measures that would be implemented during construction and operation. The project design has been developed to minimise erosion and scour impacts to stormwater discharge locations and riverbank areas.

During construction environmental management measures, including detailed erosion and sediment control plans, would be developed and implemented to reduce risks associated with erosion and scour of water discharge locations and riverbank areas. During operation, hydrological impacts would be managed through the inclusion of permanent erosion and scour protection, such as rock armouring, where the detailed design identifies that protection would be required. In addition, Transport would monitor waterways during construction and for a minimum of 12 months after construction to ensure that erosion and scour impacts have been successfully mitigated.

7.17.2 Contamination

Submission number

34

Issue description

Landowner at Tarro requests information as to number and location of viaduct pylons potentially located on their land as the property is listed on the EPA register of contaminated land due to the likely presence of asbestos.

Response

The concept design included up to five sets of viaduct bridge pylons under the motorway alignment in the area between Woodlands Close and the rail corridor. This would be subject to optimisation during the detailed design stage. Any works in areas suspected of being impacted by asbestos or other forms of contamination would be completed in accordance with any relevant regulatory requirements, notices or statutory guidance by Safework NSW (or similar).

7.18 Air quality

Submission number

8

Issue description

Construction of the M1 Pacific Motorway is a highly damaging project which will have significant detrimental impact on air quality and exacerbation of poor health outcomes for surrounding communities.

Response

As described in Chapter 4 (Project development and alternatives) of the EIS, the project was developed using a multi-disciplinary process that identified and assessed routes against a range of engineering, environmental, community, land-use and economic criteria. This process determined that the project alignment represented the best balance after a multi-criteria analysis of all known constraints and opportunities. The design of the project would result in free-flowing traffic conditions and reduced travel time, reducing motor vehicle emissions and the potential air quality impacts associated with these emissions compared to other alternatives considered.

The potential operational air quality impacts of the project were quantified using dispersion modelling as described in Chapter 18 (Air Quality) of the EIS. The air quality results indicate that the project would not cause exceedances of the NSW EPA air quality impact assessment criteria. For one air quality parameter, particulate matter less than 2.5 micrometers in diameter (PM2.5), the background level already exceeds the assessment criteria. The project would not result in a change in the annual average above the determined criterion to manage risk to human health.

7.19 Climate change risk

Submission number

8

Issue description

The construction of the M1 Pacific Motorway is a highly damaging project which will have an ongoing contribution to climate change.

Response

Construction of the project would generate greenhouse gases due to fuel use, vegetation clearing and embedded emissions in construction materials. However, any resulting long-term climate change impacts would not occur during construction due to the relatively short construction duration.

The operation of the project would generate greenhouse gases mainly through vehicle use. While the project is anticipated to result in more vehicle kilometres travelled compared to if the project was not built, the actual greenhouse gas production per kilometre travelled would decrease as the project improves the efficiency of vehicular travel by providing free flowing traffic conditions and reduced travel times.

Submission number

39, 52

Issue description

- The climate change assessment details the Scope 1, 2 and 3 carbon emissions expected from the project, with more than half of it coming from the scope 3 emissions from the production and use of construction materials.
- While not currently a statutory requirement, in keeping with the NSW Government's Net Zero Plan's emission targets, the project should identify its carbon budget and outline options to offset emissions to make it carbon neutral.
- The project objectives should be expanded to include "Achieve net zero carbon emissions through design, construction and operation".
- It is pleasing that a comprehensive assessment of greenhouse gas emissions has been undertaken in the Climate Change Risk Working Paper and EIS, however, it should include how the project can have a net zero carbon impact, and a commitment to offsetting carbon emissions arising from the project.
- Project approval should be on the basis that carbon emissions attributable to the operation, maintenance and decommissioning of the project are fully quantified and offset using an appropriate mechanism. This includes embodied energy in materials, fossil fuel use for transport and management, road maintenance, waste disposal, land management costs and associated transport.
- The project should not proceed unless it has a net zero carbon contribution, both in construction and during operation.

Response

When delivering the project, Transport would be obligated to comply with its sustainability strategy and policy.

While the project does not propose to achieve net zero carbon emissions, key sustainability criteria would be imposed on the major delivery partners in order to achieve sustainable outcomes for the project.

Chapter 20 of the EIS outlines the sustainability focus areas that the project is targeting to address during the next phase of the project. This would be supported by Transport's environmental management measure to develop a Sustainability Management Plan (SU01) that would document key target measures for the delivery partners of the project.

7.20 Cumulative impacts

7.20.1 Lower Hunter Freight Corridor

Submission number

47

Issue description

The EIS identifies that “As the alignment for the Lower Hunter Freight Corridor development has not yet been determined, this development is not shown on Figure 23-1”. The preferred corridor for the Lower Hunter Freight Corridor has now been identified as presented in the document: *Lower Hunter Freight Corridor Draft Strategic Environmental Assessment* (Transport for NSW/WSP July 2021)

Response

Table 23-2 of Chapter 23 (Cumulative impacts) of the EIS identifies the projects that were considered as part of the cumulative assessment undertaken for the project and this includes the Lower Hunter Freight Corridor project. While the specific route details were not able to be produced in the EIS figures, the potential impacts of the project were able to be considered as the project teams for the M1 Pacific Motorway extension to Raymond Terrace project and Lower Hunter Freight Corridor project have been liaising with regard to ensuring the project designs are compatible.

Submission number

52

Issue description

- The environmental assessment should have been an integrated/combined impact assessment for both the M1 Pacific Motorway extension to Raymond Terrace project and the Lower Hunter Freight Corridor project. The combined effects of these projects is much greater than each individually, especially considering long term impacts to biodiversity and habitat connectivity in the Lower Hunter region.
- Designing projects concurrently can lead to improved long term land use outcomes.
- Integration with the Lower Hunter Freight Corridor should have been considered in detail in the cumulative impact assessment.

Response

The M1 Pacific Motorway extension to Raymond Terrace and Lower Hunter Freight Corridor projects are at different stages of the project development process. The M1 Pacific Motorway project is further advanced compared to the Lower Hunter Freight Corridor and has completed route selection, route options and concept design enabling the detailed environmental assessment to be completed. The design of the M1 Pacific Motorway project has been carried out to allow for future design of the Lower Hunter Freight Corridor. The environmental assessment of the Lower Hunter Freight Corridor project would occur in the future when they are seeking to progress the project.

Chapter 23 (Cumulative impacts) of the EIS discusses the interaction with future projects including the Lower Hunter Freight Bypass project.

7.20.2 Assessment of cumulative impacts

Submission number

52

Issue description

- The cumulative impacts identified in EIS Chapter 23 are based only on identification of ten projects. This ignores other significant impacts, especially allowed for under regional and local planning strategies, and continuing land use change such as progressive loss of biodiversity through land clearing.
- The most significant potential cumulative impact of the project is its impact on encouraging more travel and longer distance travel. This is not considered and has the potential for significant longer-term impacts on urban development and increasing demands for more roads and carbon emissions.

Response

As identified in Section 23.1 of the EIS, the cumulative impact assessment considered major developments near the project that would be carried out in a timeframe such that there would be interaction with the project. Assessing potential cumulative impacts of smaller projects such as those covered by local planning strategies is problematic as timing and whether or not a project would actually proceed would be difficult to determine.

Notwithstanding, as an example, Chapter 7 (Traffic and transport) and Appendix G (Traffic and Transport Working Paper) of the EIS assesses in detail the future traffic growth assumed over the next 20-30 years on the road network, which endeavours to estimate the cumulative future impacts of all development.

The project would improve the efficiency of the local, regional and state transport networks and make travel times shorter and reduce holiday peak congestion. It is not anticipated that the project would encourage more travel or longer distances being travelled, rather the project would allow for more efficient travel times and eliminate stop / start traffic conditions allowing improved fuel efficiency for vehicles.

8 Revised environmental management measures

The environmental impact statement for the project identified the environmental management measures that would be adopted to avoid or reduce environmental impacts (refer to Chapter 24 of the EIS).

After consideration of the issues raised in the public submissions, the environmental management measures for the project have been revised (refer **Appendix K**).

The adjustments to the measures were made to:

- Make additional commitments based on the response to submissions within this report
- Make additional commitments based on the findings of further assessments provided within this report
- Make additional commitments based on the additional consultation carried out during the preparation of this report
- Modify the wording so that the outcome of a commitment is clearer to implement.

These revised environmental management measures will be incorporated into the detailed design and applied during the construction and operation of the project.

9 Updated project justification

This chapter provides an updated justification of the project taking into consideration the issues raised in the submissions and the project refinements initiated by Transport.

9.1 Updated justification of the project

Taking into consideration the issues raised in the submissions and the minor project refinements initiated by Transport, the justification for the project does not materially change from what was presented in the EIS. Many of the submissions received simply required clarification of aspects already identified and considered in the EIS. Some submissions required additional assessment and presentation of further information but did not result in any substantial change to the project. Several of the project refinements were a result of further consultation with landowners and asset managers to better accommodate their requirements while still providing for the project needs.

As stated in the EIS, the project would help integrate the needs of the Hunter region's road network with those of the broader National Land Transport Network. By providing one of the last major upgrades required to complete a free-flowing dual carriageway route between Sydney and Brisbane, the project would improve traffic efficiency and congestion caused by the interaction of high volumes of National, interstate, regional and local traffic on the currently constrained road network.

An updated project justification is presented below. In line with the EIS, the project justification has considered the objects of the EP&A Act and the principles of ecologically sustainable development as a framework in which to evaluate the project.

9.1.1 Objects of the EP&A Act

Table 9-1 Assessment of the project against the objects of the EP&A Act

EP&A Act object	Comment
To promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources.	As identified in the EIS, the project would promote the social and economic welfare of the community by improving road safety, reducing congestion along the local road network, and increasing connectivity of the local and greater road network. The project would also provide increased flood immunity of the road network and provide a new flood emergency and evacuation access route. The project has been designed to avoid and minimise impacts on natural and other resources. The submissions received and project refinements do not alter these positive aspects of the project. Consultation with stakeholders during the submissions response process would lead to improved land acquisition outcomes and some project refinements would contribute to reduction of impacts such as flooding.
To facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment	Ecologically sustainable development principles have been considered throughout the project's development and are outlined in Section 9.1.2.

EP&A Act object	Comment
To promote the orderly and economic use and development of land	The project is one of the last major remaining upgrades required to complete a high standard dual carriageway connection between Sydney and Brisbane. The project supports current and future planned economic activity by improving regional and inter-regional connectivity, reducing travel times, and alleviating congestion along the local road network. The project would improve access and connectivity to current and future employment and growth areas to and from the M1 Pacific Motorway and Pacific Highway. This aspect of the project remains unchanged from the EIS.
To promote the delivery and maintenance of affordable housing	Not applicable to the project.
To protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats	A range of corridor options and design refinements have been considered for the project since planning began in 2004. As a result of this process, the environmental impacts of the project have been avoided and minimised where possible, including impacts to ecological communities and native species and their habitats. As part of project refinements, the construction footprint boundary has been reviewed and altered in some key areas to reduce impacts to koala habitat. The BAR has been revised to provided updated assessment of impacts to facilitate calculations for provision of biodiversity offsets.
To promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage)	The project design has adopted as narrow a footprint as possible in all areas to minimise impacts to Aboriginal and non-Aboriginal heritage sites. The design has also placed the alignment as close as practicable to existing development and infrastructure to limit regional fragmentation impacts and to avoid impacts on less disturbed areas by consolidating the project corridor within existing development, utilities and road corridors. Management measures have been proposed to mitigate impacts to heritage, such as an extensive Aboriginal heritage salvage program. This aspect of the project remains unchanged from the EIS.
To promote good design and amenity of the built environment	This aspect of the project is unchanged from the EIS. The design of the project has been guided by five urban design objectives to promote good design and amenity of the built environment: 1. Provide a flowing road alignment that is responsive and integrated with the landscape 2. Provide a landscaped Motorway that integrates with the adjoining natural setting 3. Provide an enjoyable, interesting motorway 4. Value the communities and towns along the road 5. Provide a simplified and unobtrusive road design.

EP&A Act object	Comment
To promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants	Not applicable to the project.
To promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State	As part of the EIS and response to submissions process consultation has been carried out with the relevant local councils, State and Commonwealth government agencies.
To provide increased opportunity for community participation in environmental planning and assessment	The project development process has involved extensive, ongoing consultation with relevant stakeholders and the community since planning began in 2004. The EIS exhibition and response to submission process is a continuation of Transport's community consultation for the project.

9.1.2 Principles of ecologically sustainable development

Ecologically sustainable development (ESD) requires the effective integration of economic and environmental considerations in decision-making processes. The four main principles supporting the achievement of ESD are discussed below.

Precautionary principle

The precautionary principle deals with reconciling scientific uncertainty about environmental impacts with certainty in decision-making. It provides that where there is a threat of serious or irreversible environmental damage, the absence of full scientific certainty should not be used as a reason to postpone measures to prevent environmental degradation.

As identified in the EIS, the precautionary principle has been applied throughout the project development process including route evaluation to avoid to high value areas and potential environmental impacts, as well as during the assessment process where worst case scenarios were assessed with development of mitigation measures to effectively manage predicted impacts.

The application of the precautionary principle has continued through the EIS exhibition and response to submission phase with further assessment of some environmental issues to better understand potential impacts and expansion of some management and mitigation measures to ensure environmental protection.

Inter-generational equity

Inter-generational equity is concerned with the distribution of economic, social and environmental costs and benefits. Inter-generational equity introduces a temporal element with a focus on minimising the distribution of costs to future generations.

The EIS identified that the environmental impacts most relevant to inter-generational equity are biodiversity, water quality, socio-economic, air quality, waste, sustainability and climate change, and cumulative impacts. In responding to submissions Transport has given further consideration and / or assessment as well as the development of additional mitigation measures where applicable for several of these issues including biodiversity, water quality, socio-economic and cumulative impacts.

Conservation of biological diversity and ecological integrity

Conservation of biological diversity and ecological integrity was a fundamental consideration of the project design development and environmental assessment. The project design was refined several times in order to avoid unnecessary impacts to biodiversity values, including wetlands to the north and south of the Hunter River and areas of koala habitat.

In response to submissions, Transport has identified the opportunity to reduce the construction footprint in areas of koala habitat to further reduce impacts to this species and additional offsetting has been identified with the updated assessment.

Improved valuation and pricing of environmental resources

The principle of internalising environmental costs into decision making requires consideration of all environmental resources which may be affected by the carrying out of a project, including air, water, land and living things.

The EIS and this Submissions Report have examined the environmental impacts of the project and identified appropriate environmental management measures for environmental resources which have the potential to be adversely impacted, including the revisions of biodiversity offset obligations. Management measures to minimise resource use, pollution, waste generation and waste disposal requirements are included in the mitigation and management measures. Requirements imposed from implementing these measures would result in an economic cost to Transport and, consequently, appropriate valuation has been given to environmental resources.

Taking into consideration the submissions received and the responses provided, as well as the project refinements, the project is justified in terms of the social and economic benefits it would bring with environmental impacts to be managed and mitigated such that they are acceptable.

Glossary of terms and abbreviations

Terms and abbreviations used in this glossary are relevant only to those used in the Submission Report. For a complete list of terms and abbreviations relevant to the project, reference should be made to the EIS.

Term	Meaning
Access road	A road providing access to a property or another road.
ACHAR	Aboriginal Cultural Heritage Assessment Report
AEP	Annual Exceedance Probability The probability of a rainfall or flood event exceeding the nominated level in a year. The 1% AEP is the probability of an event exceeding a nominated level in 100 years.
Afflux	An increase in water level resulting from a constriction in the flow path.
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
Alignment	The geometric layout (of a road) in plan (horizontal) and elevation (vertical).
Ancillary facility	A temporary facility for construction of the project. Typically, ancillary facilities would include temporary buildings (including offices, amenities, and first aid facilities), hardstand parking areas, materials laydown and storage areas, perimeter fencing, and workshops.
ARI	Annual Recurrence Interval
ARTC	Australian Rail Track Corporation
ASS	Acid Sulfate Soil
BAR	Biodiversity Assessment Report
Batter	A receding slope of a wall, structure or earthwork.
Bilateral agreement	The bilateral agreement made under section 45 of the Environment Protection and Biodiversity Conservation Act 1999 relating to environmental assessment
CEMP	Construction Environmental Management Plan
CNVG	Construction Noise and Vibration Guideline
CNVMP	Construction Noise and Vibration Management Plan
Construction footprint	The area required to build the project.

Term	Meaning
CSSI	Critical State Significant Infrastructure
CSWMP	Construction Soils and Water Management Plan
Culvert	One or more adjacent enclosed channels for conveying a stream below formation level.
Cut / cutting	Formation resulting from the construction of the road below existing ground level where the material is cut out or excavated.
dB / dB(A)	Decibel dB(A) is a weighted scale which corresponds to the hearing threshold of the human ear
Detailed design	The final stage of design for the project. It includes designs, plans and construction drawings for all project elements.
DPE	Department of Planning and Environment (formally DPIE)
DPI	Department of Primary Industries
DPIE	Department of Planning, Industry and Environment
Earthworks	All operations involved in loosening, excavating, placing, shaping and compacting soil or rock.
EES Group	The Environment, Energy and Science Group of the Department of Planning and Environment (formerly the NSW Office of Environment and Heritage)
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
Embankment	An earthen structure where the road (or other infrastructure) subgrade level is above the natural surface.
EPA	Environment Protection Authority
EPBC Act	The *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
EPL	Environmental Protection Licence
ESCP	Erosion and Sediment Control Plan
ESD	Ecologically Sustainable Development
FFMP	Flora and Fauna Management Plan
Fill	The material placed in an embankment.
FM Act	The *Fisheries Management Act 1994*
Heritage Act	*The Heritage Act 1977*

Term	Meaning
ICNG	Interim Construction Noise Guideline
Interchange	A grade-separated junction between roads where a road passes over or under the highway via a bridge or underpass structure with one or more interconnecting roads.
LCZ	Landscape Character Zone
LEP	Local Environmental Plan
LGA	Local Government Area
LHFC	Lower Hunter Freight Corridor
M1 Pacific Motorway	A key north-south corridor linking Sydney to the Central Coast, Newcastle and Hunter region. It is a dual carriageway road with two lanes in each direction and a 110km/h speed limit.
MNES	Matters of National Environmental Significance
NCA	Noise Catchment Area
NCG	Noise Criteria Guideline
NLTN	National Land Transport Network
NMG	Noise Mitigation Guideline
NML	Noise Management Level
OEH	The (former) Office of Environment and Heritage
Operational footprint	Generally includes the M1 Pacific Motorway extension to Raymond Terrace and additional areas required for operation and maintenance of the project
PACHCI	Procedure of Aboriginal Cultural Heritage Consultation and Investigation
POEO Act	The *Protection of the Environment Operations Act 1997* (NSW)
RBL	Rated Background Level
Receiver	An environmental modelling term used to describe a map reference point where the impact is predicted. A sensitive receiver is a home, work place, school or other place where people spend some time.
RNP	Road Noise Policy
SEARs	Secretary's Environmental Assessment Requirements
SSI	State Significant Infrastructure
Stockpile	Temporarily stored materials such as soil, sand, gravel and spoil/waste.
TEC	Threatened Ecological Community

Term	Meaning
The Project	M1 Pacific Motorway extension to Raymond Terrace
TN	Total Nitrogen
TP	Total Phosphorus
Transport	Transport for NSW
TSC Act	*Threatened Species Conservation Act 1995* (NSW) (repealed)
TSP	Total Suspended Particles
TSS	Total Suspended Solids
WM Act	The *Water Management Act 2000*

NSW GOVERNMENT

Publication Number: 22.078
ISBN: 978-1-922549-86-0