Transport for NSW

Beaches Link and Gore Hill Freeway Connection

Part A

Introduction, overview of engagement and submissions received, refinements and clarifications

November 2021

A Introduction, overview of engagement and submissions received, refinements and clarifications

Contents

Transport for NSW

Beaches Link and Gore Hill Freeway Connection

A1 – Introduction and background

November 2021

A1 Introduction and background

Contents

The Western Harbour Tunnel and Beaches Link program is a major transport infrastructure program that would make it easier, faster and safer to get around Sydney. As Sydney continues to grow, faster and more reliable trips are essential to reducing congestion and providing new levels of access to jobs, recreation, and services such as schools and hospitals. By creating a western bypass of the Sydney CBD, the Western Harbour Tunnel would take pressure off the Sydney Harbour Bridge, Sydney Harbour Tunnel and ANZAC Bridge; while Beaches Link would create an alternative to the Military Road and Warringah Road corridors to relieve traffic pressure on the North Shore.

The program has been designed as part of an integrated transport network, with a focus on new public transport connections and improved journey times and reliability for buses. It would also provide improvements to walking and cycling routes, providing more shared transport options.

A1.1 Introduction

Transport for NSW is seeking approval under Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979* to construct and operate the Beaches Link and Gore Hill Freeway Connection project (the project).

The project is part of the Western Harbour Tunnel and Beaches Link program of works. The program of works includes:

- The Western Harbour Tunnel and Warringah Freeway Upgrade project which comprises a new tolled motorway tunnel connection across Sydney Harbour, and an upgrade of the Warringah Freeway to integrate the new motorway infrastructure with the existing road network and to connect to the Beaches Link and Gore Hill Freeway Connection project
- The Beaches Link and Gore Hill Freeway Connection project which comprises a new tolled motorway tunnel connection across Middle Harbour from the Western Harbour Tunnel, the Warringah Freeway and Gore Hill Freeway to Balgowlah and Killarney Heights including the surface upgrade of Wakehurst Parkway from Seaforth to Frenchs Forest and upgrade and integration works to connect to the Gore Hill Freeway at Artarmon.

A combined delivery of the Western Harbour Tunnel and Beaches Link program of works would unlock a range of benefits for freight, public transport and private vehicle users. It would support faster travel times for journeys between the Northern Beaches and south, west and north-west of Sydney Harbour. Delivering the program of works would also improve the resilience of the motorway network, given that each project provides an alternative to the existing heavily congested harbour crossings.

The project and the Western Harbour Tunnel and Warringah Freeway Upgrade project are subject to separate but coordinated environmental assessment and approval processes.

This project included an extensive engagement program ahead of the environmental impact statement including proactive engagement with the community and stakeholders. As a result, the project has benefitted from the input of local knowledge, insight, experience, goals and priorities, to identify issues, potential environmental management strategies and opportunities to improve project outcomes, which were presented in the environmental impact statement.

A1.2 The project

A1.2.1 Project location

The project would be located within the North Sydney, Willoughby, Mosman, Northern Beaches and Lane Cove local government areas, connecting Cammeray in the south with Killarney Heights, Frenchs Forest and Balgowlah in the north. Key features of the project are shown in Figure A1-1 and Figure A1-2. The project would also be located within the Newcastle local government area during construction, as following exhibition of the environmental impact statement, Transport for NSW has identified a preferred location for the loadout facility at the Port of Newcastle for sediment from Middle Harbour that is not suitable for offshore disposal (refer to Section 5 (Treatment and loadout of dredged and excavated material not suitable for offshore disposal) of the preferred infrastructure report for further details).

A1.2.2 Overview of the project

The Beaches Link and Gore Hill Freeway Connection project would comprise two components:

- Twin tolled motorway tunnels connecting the Warringah Freeway and the Western Harbour Tunnel at Cammeray and the Gore Hill Freeway at Artarmon to the Burnt Bridge Creek Deviation at Balgowlah and Wakehurst Parkway at Killarney Heights, and an upgrade of Wakehurst Parkway (the Beaches Link)
- Connection and integration works along the existing Gore Hill Freeway and surrounding roads at Artarmon (the Gore Hill Freeway Connection).

The project is an integrated transport solution that would address urban congestion on Sydney's road network. It would take pressure off Spit Bridge and Military Road – improving amenity in Mosman, Cremorne and Neutral Bay and relieving traffic flows on Warringah Road, Roseville and through the suburbs of Willoughby and Northbridge. It would provide direct access from the Northern Beaches to the Warringah Freeway for fast and reliable access to North Sydney, the Sydney CBD and beyond. It would also provide a fast, reliable link between the Northern Beaches and other key centres including St Leonards and Macquarie Park via the direct Gore Hill Freeway connection. For public transport there would be opportunities for express buses within the Beaches Link tunnel, additional express bus services along Military Road, and improved connections to the Sydney Trains and new Sydney Metro rail networks.

Key features of the Beaches Link component of the project are shown in Figure A1-1 and would include:

- Twin mainline tunnels about 5.6 kilometres long and each accommodating three lanes of traffic in each direction, together with entry and exit ramp tunnels to connections at the surface. The crossing of Middle Harbour between Northbridge and Seaforth would involve three lane, twin immersed tube tunnels
- Connection to the stub tunnels constructed at Cammeray as part of the Western Harbour Tunnel and Warringah Freeway Upgrade project
- Twin two lane ramp tunnels:
    - Eastbound and westbound connections between the mainline tunnel under Seaforth and the surface at the Burnt Bridge Creek Deviation, Balgowlah (about 1.2 kilometres in length)
    - Northbound and southbound connections between the mainline tunnel under Seaforth and the surface at the Wakehurst Parkway, Killarney Heights (about 2.8 kilometres in length)

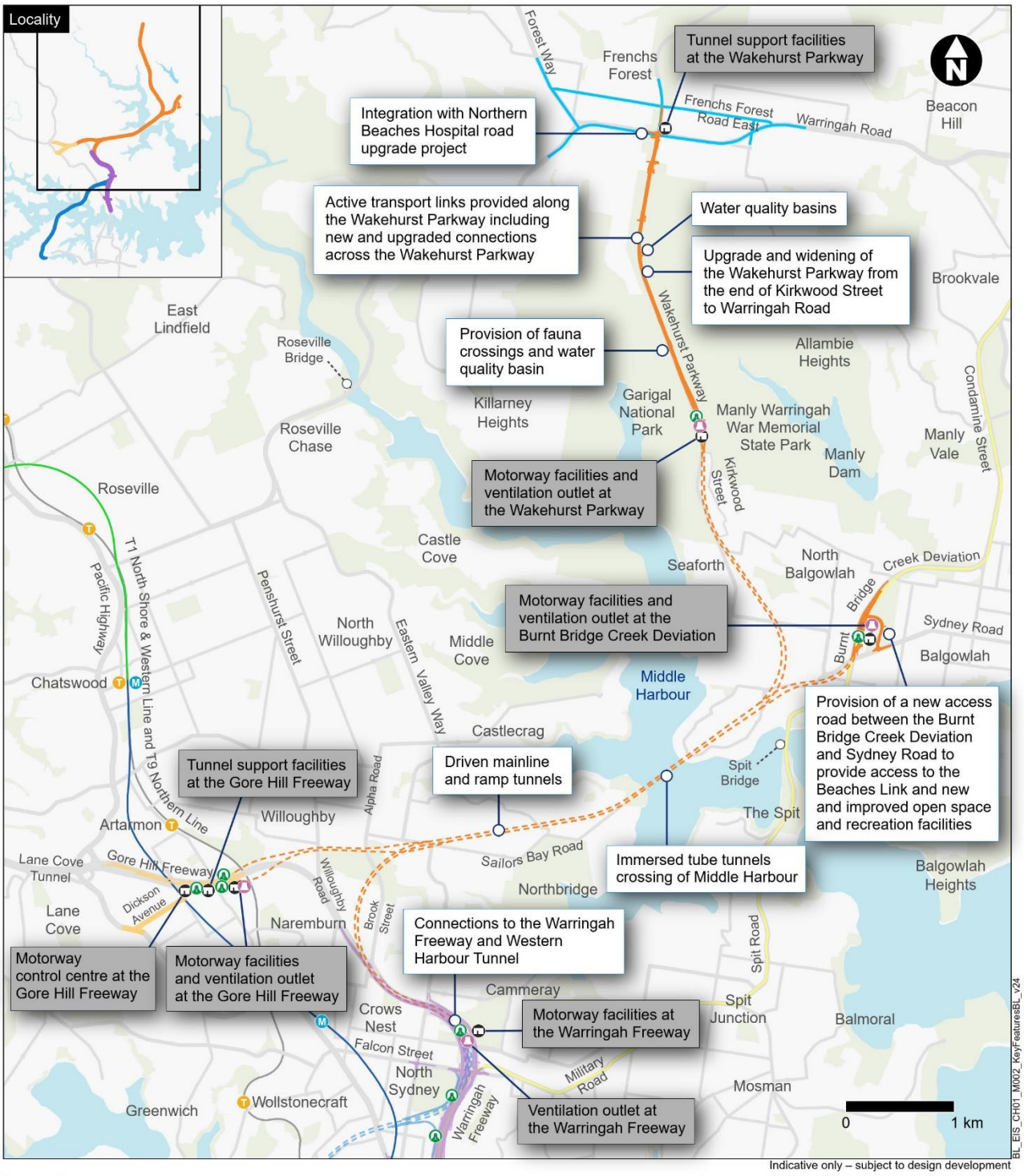
  - Eastbound and westbound connections between the mainline tunnel under Northbridge and the surface at the Gore Hill Freeway and Reserve Road, Artarmon (about 2.1 kilometres in length)
  - An access road connection between the Burnt Bridge Creek Deviation and Sydney Road including the modification of the intersection at Maretimo Street and Sydney Road, Balgowlah
- Upgrade and integration works along the Wakehurst Parkway at Seaforth, Killarney Heights and Frenchs Forest, through to Frenchs Forest Road East
- New and improved open space and recreation facilities at Balgowlah
- New and upgraded active transport infrastructure (pedestrian and cyclist facilities)
- Ventilation outlets and motorway facilities at the Warringah Freeway in Cammeray, the Gore Hill Freeway in Artarmon, the Burnt Bridge Creek Deviation in Balgowlah and the Wakehurst Parkway in Killarney Heights
- Operational facilities, including a motorway control centre at the Gore Hill Freeway in Artarmon, and tunnel support facilities at the Gore Hill Freeway in Artarmon and Wakehurst Parkway in Frenchs Forest
- Other operational infrastructure including groundwater and tunnel drainage management and treatment systems, surface drainage, signage, tolling infrastructure, fire and life safety systems, roadside furniture, lighting, emergency evacuation and emergency smoke extraction infrastructure, Closed-Circuit Television (CCTV) and other traffic management systems.

Key features of the Gore Hill Freeway Connection component of the project are shown in Figure A1-2 and would include:

- Upgrade and reconfiguration of the Gore Hill Freeway between the T1 North Shore & Western Line and T9 Northern Line and the Pacific Highway
- Modifications to the Reserve Road and Hampden Road bridges
- Widening of Reserve Road between the Gore Hill Freeway and Dickson Avenue
- Modification of the Dickson Avenue and Reserve Road intersection to allow for the Beaches Link off ramp
- Upgrades to existing roads around the Gore Hill Freeway to integrate the project with the surrounding road network
- Upgrade and inclusion of traffic lights of the Dickson Avenue and Pacific Highway intersection
- New and upgraded active transport infrastructure (pedestrian and cyclist facilities)
- Other operational infrastructure, including surface drainage and utility infrastructure, signage and lighting, CCTV and other traffic management systems.

A more detailed description of the project is provided in Chapter 5 (Project description) of the environmental impact statement.

Section A4 of this submissions report also provides several design refinements to the project which have been made to further minimise impacts on the community and sensitive receivers.



Legend

Operational features
- Beaches Link
- Gore Hill Freeway Connection
- Surface connection
- Permanent operational facility
- Ventilation outlet

Connecting projects
- Western Harbour Tunnel
- Warringah Freeway Upgrade
- Northern Beaches Hospital road upgrade project (Completed 2020)

Other projects
- Sydney Metro City & Southwest (under construction)
- Sydney Metro Northwest

Existing transport network
- Northern Beaches B-Line
- Suburban rail/Sydney Trains
- Train station

Design features
- Surface
- Tunnel

Figure A1-1 Key features of the Beaches Link component of the project

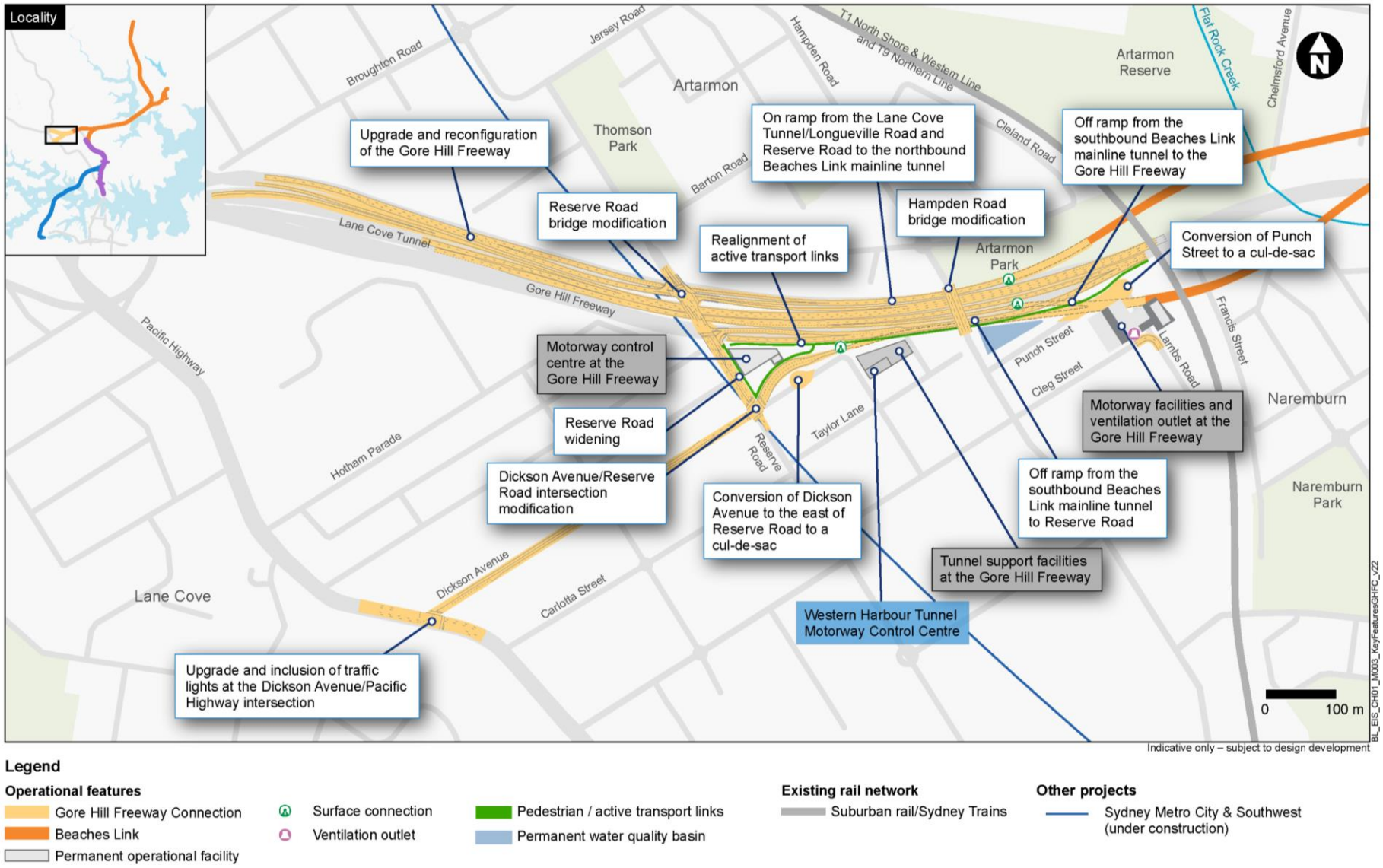


Figure A1-2 Key features of the Gore Hill Freeway component of the project

A1.3 Need for the project

The Greater Sydney Commission's *Greater Sydney Region Plan – A Metropolis of Three Cities* (Greater Sydney Commission, 2018a) proposes a vision of three cities where most residents have convenient and easy access to jobs, education and health facilities and services. In addition to this plan, and to accommodate for Sydney's future growth, the NSW Government is implementing the *Future Transport Strategy 2056* (NSW Government, 2018), a plan that sets the 40-year vision, directions and outcomes framework for customer mobility in NSW. The Western Harbour Tunnel and Beaches Link program of works is proposed to provide additional road network capacity across Sydney Harbour and Middle Harbour thereby improving transport connectivity with Sydney's Northern Beaches.

Freight services, public transport and other road users travelling to and from the Northern Beaches region currently experience some of the slowest and most unreliable journey times across Greater Sydney. The transport challenges for the North District and Northern Beaches region are the product of a number of key issues:

- High traffic volumes and limited capacity at the eastern Sydney Harbour and Middle Harbour crossings, and roads around the Harbour CBD
- Limited arterial road capacity servicing the Northern Beaches region
- Low population density across the Northern Beaches region
- Travel time reliability and speed of public transport journeys constrained by a congested road network.

In addition to the transport challenges created by the limited arterial roads servicing the North District and Northern Beaches region, the current situation also has urban amenity implications. High through traffic and congestion along the existing arterial roads servicing the Northern Beaches undermines efforts to improve liveability in several inner urban areas along and next to these routes.

Across the Harbour CBD and Northern Beaches, several parts of the road network perform a 'place' function. This means that, as well as being transport corridors, parts of the road network are destinations in their own right, including for shopping and dining precincts and open spaces such as beaches, parklands and bushland. These places play an important role in supporting the liveability, productivity and sustainability of Greater Sydney, and the transport network has an important role in supporting this objective, as reflected in 'Successful Places' being one of the six NSW-wide outcomes established by the *Future Transport Strategy 2056*.

The Military Road/Spit Road corridor is one of the busiest and most congested road corridors in NSW. In addition to local trips, about one third (33 per cent) of interregional journeys to and from the Northern Beaches pass through the corridor every day. Through traffic and congestion are a key cause of poor urban amenity along the corridor, impacting areas such as Neutral Bay, The Spit and Mosman. These impacts include restricted parking, reduced pedestrian and cyclist amenity, limited vegetation, and traffic noise and air quality impacts.

Congestion of these corridors also results in broader urban amenity impacts beyond the arterial corridors themselves, with drivers moving to local routes in an attempt to avoid congestion. Transport for NSW customer research carried out in 2017 indicates that 73 per cent of motorway users 'rat-run' through local streets to avoid congestion. Improving the core motorway and arterial capacity, resilience and reliability is a key part of the multi-modal transport network required to improve the amenity of local communities and reduce 'rat running'.

The Beaches Link and Gore Hill Freeway Connection project is a vital part of the overall Western Harbour Tunnel and Beaches Link program of works. A summary of the transport challenges,

project objectives and overall project benefits are shown in Figure A1-3 below. The project would provide a reduction in journey times and improved journey reliability, and resilience for the critical road network servicing the Northern Beaches region. This would deliver considerable benefits for freight services, public transport, and other users of the new and existing links and also enable amenity improvements in areas along and adjacent to the congested surface corridors.

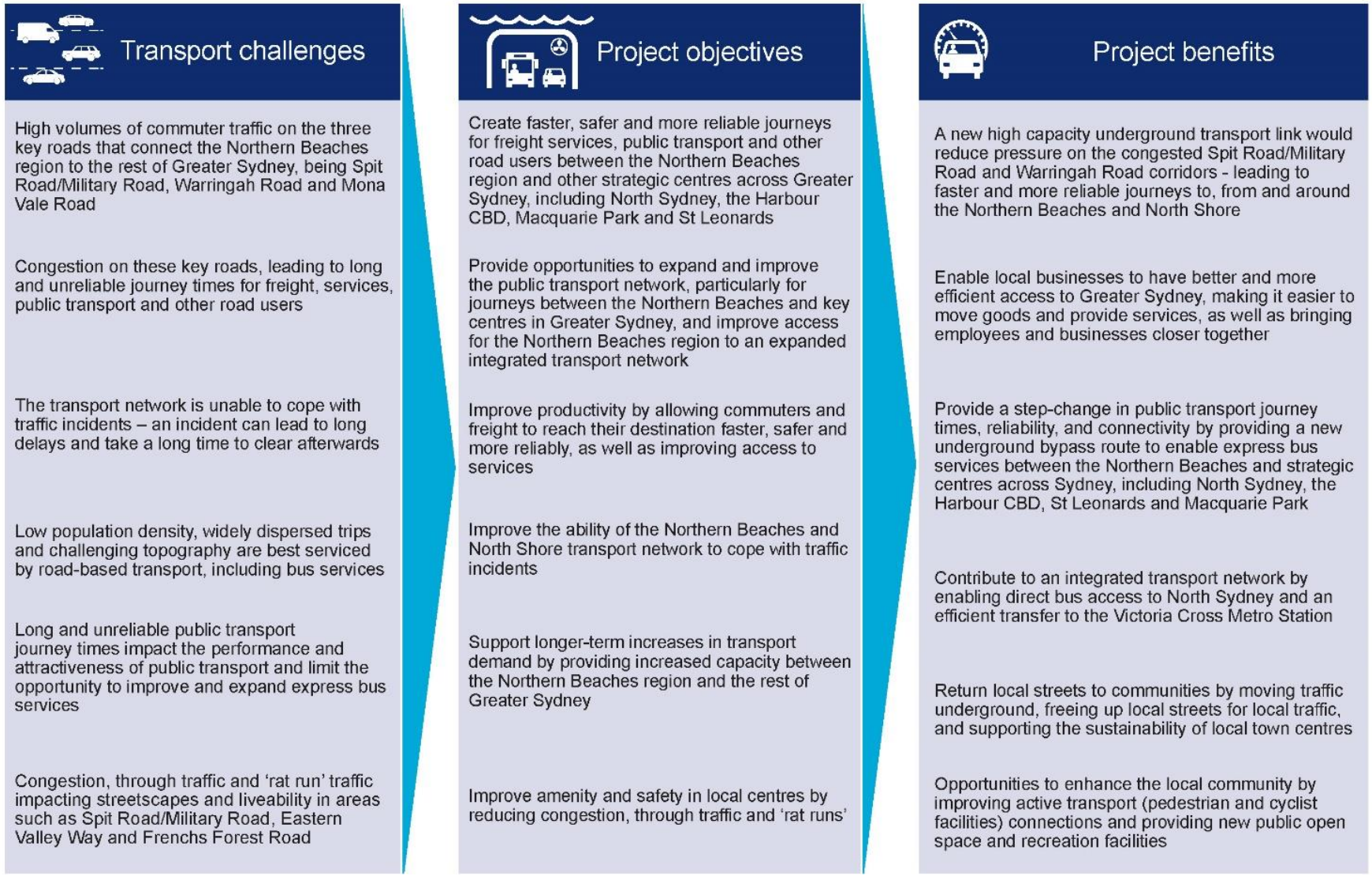


Figure A1-3 Project challenges, objectives, and benefits

A1.4 Statutory context

Clause 94 of the State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) provides that development for the purpose of a road or road infrastructure facilities may be carried out by or on behalf of a public authority without development consent on any land.

Clause 14(1) of the State Environmental Planning Policy (State and Regional Development) 2011 (State and Regional Development SEPP) declares development to be State significant infrastructure if it is permissible without consent under Part 4 of the *Environmental Planning and Assessment Act 1979* and is specified in Schedule 3 of the State and Regional Development SEPP.

Transport for NSW has made a request to the Minister for Planning and Public Spaces for the project to be declared critical State significant infrastructure. Section 5.13 of the *Environmental Planning and Assessment Act 1979* provides for the declaration of critical State significant infrastructure by means of an environmental planning instrument. Clause 16 of the State and Regional Development SEPP declares development listed in Schedule 5 to be critical State significant infrastructure. Transport for NSW's request is that the project be listed in Schedule 5.

Other relevant NSW legislation that would apply to the project includes the:

- *Land Acquisition (Just Terms Compensation) Act 1991* (NSW)
- *Contaminated Land Management Act 1997* (NSW)
- *Heritage Act 1977* (Section 146)
- *Crown Land Management Act 2016*
- *Local Government Act 1993*
- *Native Title (New South Wales) Act 1994*
- *Fisheries Management Act 1994* (Section 199)
- *Marine Pollution Act 2012*
- Provisions in the *Marine Safety Act 1998*, Marine Safety Regulation 2016, *Ports and Maritime Administration Act 1995* and Ports and Maritime Administration Regulation 2012
- *Sydney Water Act 1994*
- *Waste Avoidance and Resource Recovery Act 2001*.

Relevant commonwealth legislation that would apply to the project includes the:

- *Environment Protection and Biodiversity Conservation Act 1999*
- *Environment Protection (Sea Dumping) Act 1981*
- *Native Title Act 1993*
- *Airports Act 1996 and Civil Aviation Act 1986.*

A1.5 Beaches Link and Gore Hill Freeway Connection environmental impact statement

An environmental impact statement was prepared for the project in accordance with the relevant provisions under the *Environmental Planning and Assessment Act 1979*. The environmental impact statement addressed the environmental assessment requirements issued by the Secretary of the Department of Planning, Industry and Environment on 15 December 2017 and reissued on

22 April 2020, and the relevant provisions of Schedule 2 of the Environmental Planning and Assessment Regulation 2000. A copy of the Secretary's environmental assessment requirements and where they are addressed in the environmental impact statement are provided in Appendix A (Secretary's environmental assessment requirements checklist).

In accordance with the *Environmental Planning and Assessment Act 1979*, the environmental impact statement presented an assessment of environmental issues identified during the planning and design of the project. The assessment considered the areas directly or indirectly affected by construction and operation of the project. Further detailed investigations, planning and surveys would be carried out during subsequent project development stages. All technical road design requirements and road functionality as described in the environmental impact statement, the preferred infrastructure report and this submissions report would need to be considered and revised environmental management measures and conditions of approval for the project would need to be satisfied.

The environmental impact statement was placed on public exhibition on 9 December 2020, with an exhibition closing date of 1 March 2021. This equated to a total exhibition period of 61 days, noting that the period between 20 December 2020 and 10 January 2021 (inclusive) was not included within the 61 days as part of the official exhibition period. Public exhibition of the environmental impact statement provided the community, interested parties and key stakeholders (including government agencies and councils) with an understanding of the project and the opportunity to comment on the environmental impact statement.

A1.6 Purpose of the document

During the exhibition of the environmental impact statement, submissions were received by the Department of Planning, Industry and Environment. Copies of all submissions were provided to Transport for NSW. The Secretary of the Department of Planning, Industry and Environment requested Transport for NSW on 11 March 2021 respond to the issues raised in the submissions in a submissions report.

The Department of Planning, Industry and Environment also requested Transport for NSW on 14 May 2021 prepare a preferred infrastructure report, in addition to a submissions report, providing further assessment and information on some key issues. The preferred infrastructure report is a separate report and includes:

- Further information on previous assessments of alternative locations, social and environmental impacts considered during site selection of the Flat Rock Drive construction support site (BL2)
- Assessment of the reconfiguration of Spit West Reserve construction support site (BL9) and further assessment of impacts to recreational users of the area
- Further assessment of water quality impacts to Middle Harbour from the sill associated with the immersed tube tunnels at the Middle Harbour crossing
- Assessment of the proposed location for the temporary onshore loadout facility for dredged and excavated material not suitable for offshore disposal
- Further assessment of potential impacts to local road intersections as a result of traffic changes during project operation.

This submissions report and the preferred infrastructure report have been provided to the Department of Planning, Industry and Environment for review and assessment. After the Department of Planning, Industry and Environment completes its assessment, a draft environmental assessment report would be prepared for the Secretary of the Department of Planning, Industry and Environment, which may include recommended conditions of approval for the project. The assessment report would then be provided to the Minister for Planning and Public Spaces, to determine the project. The Minister for Planning and Public Spaces' determination, including any conditions of approval and the Secretary's report, would be published on the Department of Planning, Industry and Environment website following determination.

This submissions report has the following structure:

- **Part A** (Introduction and overview of consultation and submissions received)
    - Section A1 (Introduction) provides background on the Beaches Link and Gore Hill Freeway Connection, reiterates why the project is needed, outlines the assessment and planning approval process and the purpose of this submissions report
    - Section A2 (Community and stakeholder engagement) outlines the engagement activities carried out prior to, during and after the public exhibition of the environmental impact statement as well as ongoing engagement proposed during the pre-construction, construction and commissioning phases
    - Section A3 (Submissions received) provides an overview of the submissions received including a summary of the issues raised
    - Section A4 (Project refinements) provides details on refinements made to the project in response to submissions received
    - Section A5 (Clarifications) provides clarifications on aspects of the project highlighted during the submissions process
- **Part B** (Response to stakeholder submissions)
    - Sections B1 to B14 provide responses to stakeholder submissions. This includes setting out the issues raised in key stakeholder submissions on the environmental impact statement and responses to those issues. Key stakeholders include government agencies and local councils
- **Part C** (Response to community submissions)
    - Sections C1 to C29 provide responses to the issues raised in community submissions associated with planning and statutory requirements, strategic justification and project need, project development and alternatives, project operation, construction works, consultation and the impacts of the project and presents responses to those issues
- **Part D** (Revised environmental management measures)
    - Part D presents 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. This submissions report refers to both the environmental management measures contained in the environmental impact statement and the revised environmental management measures which represent the commitments to mitigate environmental impacts of the project during construction and operation

- **Appendices** (Additional technical information) including:
    - Appendix A: Updated mapping and assessment of Aboriginal cultural heritage sites
    - Appendix B: Parking impact assessment
    - Appendix C: Sediment and marine water quality memorandums
        - Appendix C1 – Responses to submissions on marine construction activities, sediment and water quality
        - Appendix C2 – Review of recreational exposures during dredging activities
    - Appendix D: Expanded groundwater modelling uncertainty analysis
    - Appendix E: Further information on predicted groundwater drawdown, baseflow reductions and related environmental impact assessment
        - Annexure A – Assessment of baseflow change in freshwater creeks
        - Annexure B – Groundwater dependent ecosystem assessment
    - Appendix F: Further information on biodiversity matters
        - Appendix F1 – Updated Duffys Forest threatened ecological community mapping and assessment
        - Appendix F2 – Updated biodiversity credit reports
        - Appendix F3 – Supplementary koala survey and assessment
        - Appendix F4 – Biodiversity development assessment report roadmap
        - Appendix F5 – Updated biodiversity assessment
    - Appendix G: Updated flood mapping
    - Appendix H: Supplementary non-Aboriginal heritage assessment
    - Appendix I: Noise insulation program
    - Appendix J: Construction noise strategy.

Refer to the separate preferred infrastructure report for details on the further assessments and information requested by the Department of Planning, Industry and Environment, noting that in a number of instances, information contained within the preferred infrastructure report further addresses a number of issues raised in stakeholder and community submissions. Appropriate cross-references have been included between this submissions report and the preferred infrastructure report to assist the community and key stakeholders navigate between each document.

Transport for NSW

Beaches Link and Gore Hill Freeway Connection

A2 – Community and stakeholder engagement

November 2021

A2 Community and stakeholder engagement

Contents

A2.1 Community engagement overview

Transport for NSW recognises a project of this scale and significance does not go without impact. This is why Transport for NSW completed an extensive stakeholder and community engagement program for the project, ahead of the environmental impact statement exhibition. This included proactive engagement with the community, State and local government agencies, utility service providers, special interest groups and relevant industry stakeholders. The project has benefitted from the input of local knowledge, insight, experience, goals and priorities, which has helped to identify issues, potential environmental management strategies, design refinements and opportunities to improve project outcomes, presented in the environmental impact statement.

Transport for NSW's engagement program for the Beaches Link and Gore Hill Freeway Connection project included the companion project, the Western Harbour Tunnel and Warringah Freeway Upgrade project.

Since the release of the preferred route and concept design for the project in 2017, Transport for NSW has engaged with thousands of people who live and work in and around the project area. The project team has listened to better understand community concerns and have incorporated feedback and suggestions into the design where possible.

An overview of the stakeholder and community engagement process is provided in Figure A2-1.

Moving forward through the remainder of the planning process and into the construction period, stakeholder and community engagement would continue. During construction there would be a community contact system in place to ensure there are mechanisms for the community to get in touch at any time. Transport for NSW would also work closely with the teams of nearby construction projects to help minimise impacts of construction and consultation fatigue in local areas.

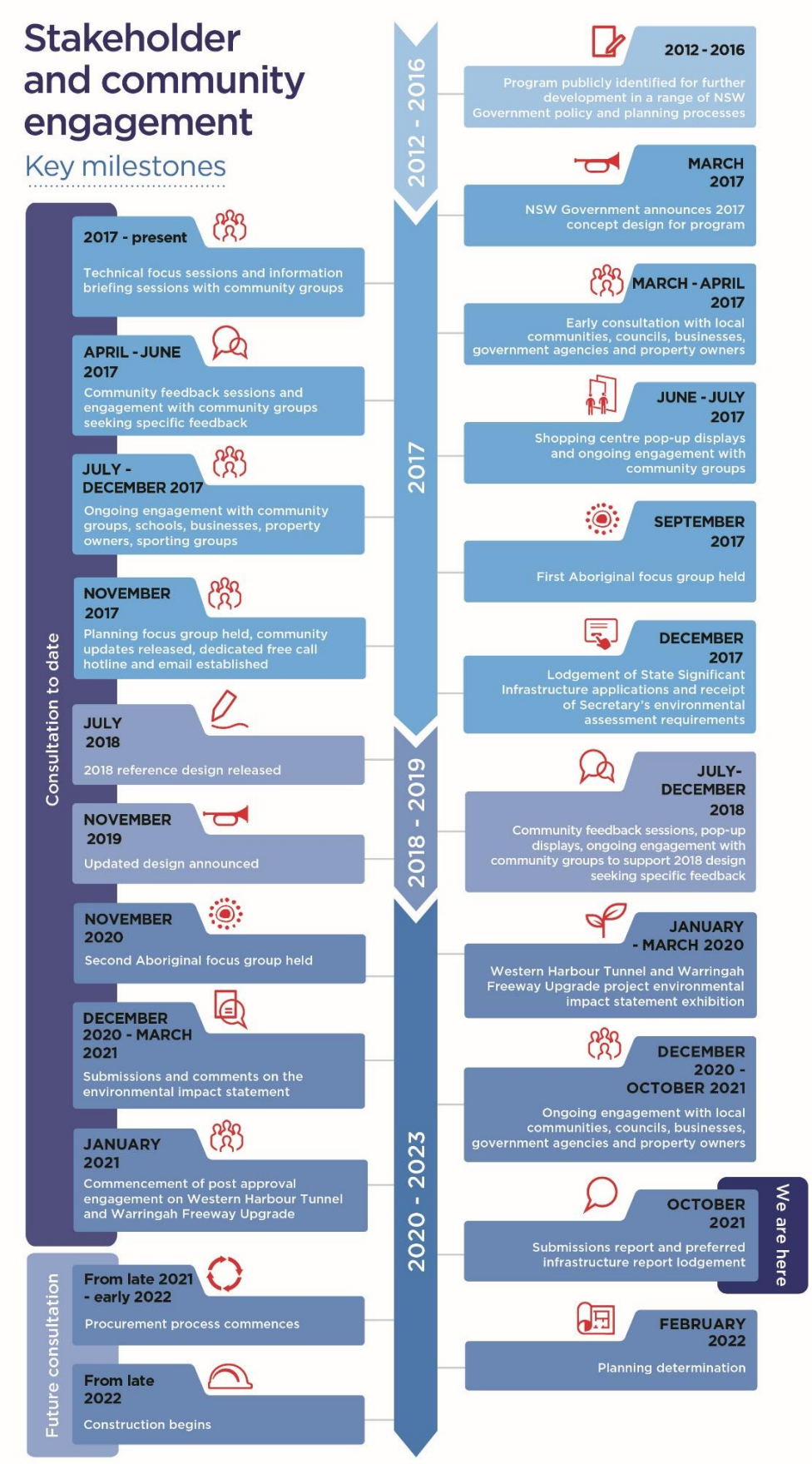


Figure A2-1 Overview of the project stakeholder and community engagement process

A2.2 Engagement during design and environmental impact statement preparation

Transport for NSW has carried out an extensive community engagement program to date. This has included a range of consultation and communication activities aimed at providing opportunities for community and stakeholder involvement throughout the project's development.

Engagement with key government and other project stakeholders, including Infrastructure NSW, Port Authority of NSW and other divisions of Transport for NSW (including the Transport Coordination Branch and the Northern Beaches B-Line Program) has occurred since early 2016 to develop the design and plan investigations. Engagement with the public and broader stakeholders, including local councils, started in March 2017 and has continued through to the preparation of this submissions report.

Prior to the release of the environmental impact statement, engagement for the project was carried out as part of the Western Harbour Tunnel and Beaches Link program of works. This included two rounds of formal public consultation between:

- April and June 2017 following the announcement of the proposed design (concept design)
- July and December 2018 following the publishing of further development of the design (reference design).

During these periods, community engagement activities included:

- General program information and feedback channels (including the program website, email address, and 1800 number; letterbox drops; online community engagement map; program updates to email subscribers; feedback forms; and ministerial enquiries)
- Hosted events (community feedback sessions and pop-up information displays)
- Resident and stakeholder meetings, and door knocks
- Notifications of investigation work
- Newspaper advertisements, media releases, and Facebook posts.

Key statistics from these two rounds of formal public consultation are shown in Figure A2-2.

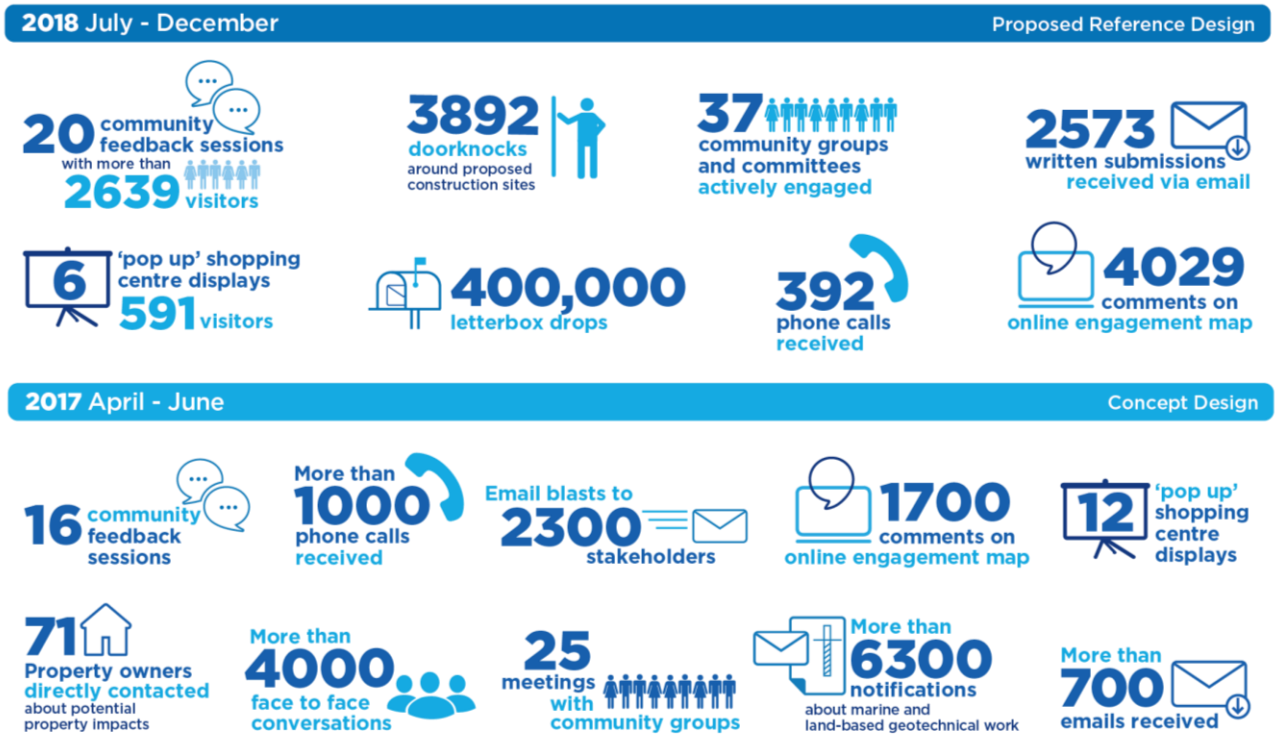


Figure A2-2 Key statistics from the Western Harbour Tunnel and Beaches Link program of works public consultation periods

For further information on these activities, refer to Section 7.2.6 of the environmental impact statement. In addition to these formal engagement periods, consultation and engagement with stakeholders has been ongoing, with the project team holding numerous workshops and meetings with councils, community groups and other stakeholders.

Feedback from the 2017 consultation period informed the development of the project reference design. Specific outcomes of this engagement and how it has informed the project's development, including specific project refinements, can be found in Section 7.4 of the environmental impact statement.

The community and stakeholders have also been encouraged to contact the project team at any time to discuss the project via phone, email or post.

A2.3 Consultation during the environmental impact statement exhibition

A2.3.1 Consultation overview

The environmental impact statement exhibition period was from 9 December 2020 until 1 March 2021 for 61 days (noting that the period between 20 December 2020 and 10 January 2021 was not included in the 61 days, see Section A1.5). During this time, a range of engagement activities were carried out to engage with stakeholders and the community on information in the environmental impact statement, to encourage engagement in communications activities and to provide guidance on the submissions process.

The release of the environmental impact statement coincided with the global COVID-19 pandemic, and in particular the outbreak of the Avalon, Northern Beaches cluster, which presented a unique set of challenges for any face-to-face engagement. As such, the engagement strategy was adapted to focus predominately on digital engagement tools such as the online publication of the

environmental impact statement and community guide, an interactive online portal featuring an interactive map and virtual information room, virtual information sessions, and targeted virtual street meetings and stakeholder briefings.

Submissions on the project were received by the Department of Planning, Industry and Environment during the exhibition period and were provided to Transport for NSW following close of the exhibition period. On 11 March 2021 the Department of Planning, Industry and Environment requested that Transport for NSW provide this submissions report to address the issues identified in the submissions from members of the public, interest groups and government agencies. A number of late community and agency submissions received by the Department of Planning, Industry and Environment after the close of the exhibition period were also provided to Transport for NSW to address in this submissions report.

A2.3.2 Engagement activities

Transport for NSW supported the public exhibition of the environmental impact statement by using a number of different engagement methods, carrying out a variety of activities and the development of diverse communication materials.

These included:

- Advertisements in metropolitan and local publications (including multicultural publications, which were selected based on census data of the languages most often spoken by residents within the project area)
- Distribution of the environmental impact statement and other communications collateral, including:
    - Electronic copies of the environmental impact statement (via the project's interactive online portal)
    - Physical copies provided to local councils and electorate offices (the decision on whether copies were displayed varied depending on individual office's COVID-safe policies)
- Written communications and project collateral including:
    - Notifications to email subscribers
    - The Beaches Link and Gore Hill Freeway Connection community guide to the environmental impact statement
    - Fact sheets on key temporary construction support sites and key topics
    - Frequently asked questions (FAQs) document which was progressively updated throughout the exhibition period to address key topics raised through email and phone enquiries and during virtual information sessions
    - Postcards promoting the environmental impact statement exhibition period and virtual information sessions letterbox dropped to the project area
    - Posters promoting the environmental impact statement exhibition period provided to local councils and electorate offices (the decision on whether copies were displayed varied depending on individual office's COVID-safe policies)
    - Electronic project information packs sent to key stakeholders
- Digital engagement through the project's interactive online portal, including:
    - Interactive map

  - Virtual information room
  - Project overview and 3D animation videos (for example building across Middle Harbour, dredging of the bed of the harbour, and an overview of the new and improved open space and recreation facilities in Balgowlah)
  - Before and after slide images to demonstrate key project sites before and after project completion
  - Recordings of virtual information sessions
  - Digital copies of the environmental impact statement and other communications collateral
- Direct engagement including:
  - Virtual community information sessions
  - Virtual meetings and briefings with key stakeholders and community groups
  - Stakeholder phone calls
  - Responses to enquiries and questions via the 1800 number and project email address
  - Door knocks in impacted areas (before this was discontinued due to COVID-19 health advice in relation to outbreak of the Avalon, Northern Beaches cluster)
- Social media campaign on Facebook.

Key statistics from the environmental impact statement exhibition period are provided in Figure A2-3, with further details on engagement activities provided below.

Figure A2-3 Key statistics from the Beaches Link and Gore Hill Freeway Connection project environmental impact statement exhibition period

The original planned community engagement strategy for the environmental impact statement included some face-to-face engagement if health restrictions allowed this. However, due to COVID-19 restrictions continuing throughout the environmental impact statement exhibition period, in

particular the Avalon, Northern Beaches cluster outbreak in December 2020 and in accordance with Transport for NSW COVID-19 taskforce advice, the community engagement strategy was adapted to give the community safe and convenient online options to engage with the project team. The project team focused on providing enhanced digital engagement tools which are detailed in Section A2.3.6 and Section A2.3.7 below.

A2.3.3 Advertisements in local and metropolitan publications

Newspaper advertisements were placed to announce the environmental impact statement public exhibition period and to promote the virtual information sessions for the project. Advertisements in multicultural publications were selected based on census data of the languages most often spoken by residents within the project area. Advertisements placed in local, metropolitan and multicultural publications are outlined in Table A2-1 below.

Table A2-1 Advertisements for Beaches Link and Gore Hill Freeway Connection project environmental impact statement public exhibition

Publication	Date of publication
Sydney Morning Herald	9 December 2020
Daily Telegraph	9 December 2020
Manly Daily (digital)	9 December 2020 – 30 December 2020 and 25 January – 15 February
La Fiamma (digital)	9 December – 15 December 2020
National Australian Chinese Daily	9 December 2020
Mosman Daily	10 December 2020 and 28 January 2021
North Shore Times	10 December 2020 and 28 January 2021

A2.3.4 Copies of the environmental impact statement

Electronic copies

Electronic copies of the environmental impact statement were available to view and download from:

- The Department of Planning, Industry and Environment Major Projects website: www.planningportal.nsw.gov.au/major-projects
- The project's interactive online portal: nswroads.work/blportal.

Physical copies

Physical copies of the environmental impact statement are typically displayed at local councils and libraries during the exhibition period. However, given the COVID-19 situation, physical copies of the environmental impact statement (along with copies of the community guide to the environmental impact statement – refer to Section A2.3.5 below) were instead distributed to local councils and electorate offices and depending on the COVID-19 policy of the council or library, they would choose whether to display the environmental impact statement in accordance with their individual COVID-19 policies.

Table A2-2 details which offices received a printed copy of the environmental impact statement, and which locations Transport for NSW is aware chose to display this printed copy. It should be noted that in the instances the environmental impact statement was displayed, it may not have been displayed for the whole exhibition period. In particular, due to the Public Health (COVID-19 Northern

Beaches) Order 2020 stay-at-home advisory issued in December 2020, the Northern Beaches Council office was closed for a period of time.

Table A2-2 Offices/libraries provided with printed copies of the Beaches Link and Gore Hill Freeway Connection project environmental impact statement and community guide

Location	Environmental impact statement displayed
Department of Planning, Industry and Environment	-
Willoughby City Council	-
Mosman Council	-
North Sydney Council	Displayed at Stanton Library, North Sydney
Lane Cove Council	Displayed at Lane Cove Council office
Northern Beaches Council	Displayed at Dee Why customer service centre
Willoughby Electorate Office	-
Wakehurst Electorate Office	-
Warringah Electorate Office	-
Manly Electorate Office	-
North Sydney Electorate Office	-
Lane Cove Electorate Office	-
Mackellar Electorate Office	-

A2.3.5 Written communication and project collateral

Notifications to email subscribers

The project team maintains an email distribution list and encourages the community and stakeholders to sign up to receive ongoing project updates. During the environmental impact statement exhibition period, four email notifications were sent to subscribed stakeholders. A summary is provided below in Table A2-3.

Table A2-3 Email notifications sent during exhibition period

Date sent	Number of stakeholders sent to	Information included
10 December 2020	2779	Notification to advise that the environmental impact statement was on exhibition and invitation for stakeholders to register for the first round of virtual information sessions
12 January 2021	2790	Reminder that the environmental impact statement was on exhibition and to register for the first round of virtual information sessions
28 January 2021	3595	Reminder that the environmental impact statement was on exhibition and invitation for stakeholders to register for the second round of virtual information sessions
19 February 2021	2833	Reminder that the environmental impact statement was on exhibition and that exhibition period would close soon

Community guide to the environmental impact statement

A community guide to the environmental impact statement was prepared and made available during the public exhibition period, including via the project's interactive online portal. The purpose of the guide is to provide an easy to read summary of the environmental impact statement. The guide included information on the project's design, design changes, project benefits, potential impacts from building and operating the project, and the measures Transport for NSW would put in place to manage potential impacts. Details of how to view the full environmental impact statement were also included and readers were encouraged to make a submission to the Department of Planning, Industry and Environment.

Due to the restrictions of face-to-face meetings, printed copies of the community guide were provided to the Councils and Electorate Offices outlined in Table A2-2. In addition, the Pittwater and Sydney Electorate Offices also received printed copies of the community guide to the environmental impact statement, along with electronic copies of the environmental impact statement on USB.

Project fact sheets

A number of project fact sheets were prepared to support the environmental impact statement. These were released progressively and made available electronically on the project's interactive online portal. These included:

- How to use Beaches Link
- Project benefits and overview
- Building across the harbour
- Building on land
- Artarmon temporary construction sites
- Frenchs Forest temporary construction site
- Cammeray Golf Course temporary construction site
- Middle Harbour and Mosman temporary construction sites
- Northbridge/Willoughby temporary construction site
- Seaforth and Killarney heights temporary construction sites
- Balgowlah fact sheet
- Air quality
- Noise and vibration
- Traffic and transport
- Waste management on land and water
- Biodiversity (flora and fauna).

Frequently asked questions (FAQs) document

A FAQs document was prepared and made available electronically on the project's interactive online portal from the start of the exhibition period. The document addressed key questions on construction, environment, air quality, traffic and noise and vibration impacts. This is a 'live' document which was progressively updated throughout the exhibition period to address frequently asked questions raised at virtual information sessions, and continues to be updated on a regular basis to address common enquiries raised via phone and email. After the first round of virtual information sessions, the document was expanded and customised to address location-specific

questions, along with additional questions on topics such as air quality, water quality and the impact of COVID-19 on the project.

Community update postcards and posters

A community update postcard was distributed to around 84,000 properties within the project area via letterbox drop. There were two rounds of postcard letterbox drops to these 84,000 properties. The first postcard distributed from 9 December 2020 announced the environmental impact statement was on public exhibition, encouraged the community to register for the first round of virtual information sessions and provided contact information for the project. The second postcard, which was distributed from the 3 February 2021, was a reminder that the environmental impact statement was still on public exhibition, encouraged the community to register for the second round of virtual information sessions and provided contact information for the project.

Copies of the community update postcards, in addition to A3 and A4 posters to promote the exhibition period, the project's interactive online portal and Transport for NSW contact details, were also sent to the local councils, libraries and electorate offices listed below. Depending on the COVID-19 policy of the venue, they decided whether to display the posters.

- Northern Beaches Council – Manly and Mona Vale
- Mosman Council
- North Sydney Council
- Lane Cove Council
- Willoughby City Council
- Stanton Library, North Sydney
- Barry O'Keefe Library (Mosman)
- Forestville Library
- Glen Street Library (Frenchs Forest)
- Manly Library
- Warringah Mall Library
- Dee Why Library
- Lane Cove Library
- Balgowlah Seaforth Library
- Willoughby Electorate Office
- Lane Cove Electorate Office
- Wakehurst Electorate Office
- Warringah Electorate Office
- Mackellar Electorate Office
- Manly Electorate Office
- North Shore Electorate Office
- Pittwater Electorate Office
- Sydney Electorate Office.

Electronic project information packs

Electronic project information packs were emailed to local councils, electorate offices and other key stakeholders at the start of the exhibition period. These included project fact sheets and the community guide to the environmental impact statement. These were provided to notify stakeholders of the exhibition period, invite them to the virtual information sessions and provide guidance on how to get further information.

A2.3.6 Digital engagement – project's interactive online portal

Project's interactive online portal – overview

The project's interactive online portal went live at the start of the environmental impact statement exhibition period on 9 December 2020. During the exhibition period it was accessed by 26,704 unique visitors with a total of 68,022 page views. The project's interactive online portal provided the community an opportunity to engage with the project information in an interactive way, whilst also including links to the environmental impact statement chapters and appendices. The project's interactive online portal featured a virtual information room, interactive map, animations/videos, before/after slides of key locations across the project and RSVP form for the virtual information sessions. Key statistics from the project's interactive online portal are provided in Figure A2-4, with further details provided below.

Figure A2-4 Key statistics from the project's interactive online portal during the environmental impact statement exhibition period

Interactive map

The interactive map was a feature on the project's interactive online portal, allowing users to explore the project in more detail, including potential construction and operational impacts, key features, proposed environmental management measures and local changes as they related to them or their area.

The map allowed for community members to enter their property address for a greater understanding of the project in direct relation to the property.

The interactive map contained several separate layers of information for the key assessment areas from the environmental impact statement including traffic, construction, air quality, open space, noise and vibration, heritage, urban design and visual amenity, biodiversity and water quality.

These map layers contained information taken directly from the environmental impact statement and presented by location to allow for a greater depth of understanding of the project and key

assessment areas in a visual and interactive format. The layers could be turned on and off by the user at any time.

The interactive map was visited over 18,000 times, property addresses were searched over 1500 times and information hotspots were clicked nearly 45,000 times throughout the exhibition period.

The interactive map will continue to be updated as the project progresses.

Virtual information room

The virtual information room was a feature on the project's interactive online portal, allowing users to explore key project information in an interactive manner. With face to face information sessions not possible, this was an alternative way for users to browse information boards on key topics such as construction site maps, design changes, environmental impacts, project overview and benefits.

Videos and 3D information

To further assist the community to understand the project in a more visual manner, the following videos were created:

- Beaches Link and Gore Hill Freeway Connection overview, to provide the community a project overview and understanding of the benefits
- A message from the Western Harbour Tunnel and Beaches Link Program Director
- Building across Middle Harbour 3D animation video, to explain cofferdam construction and installation of the immersed tube tunnel units
- Dredging 3D animation video, to explain the process and methodology which would be used to dredge across Middle Harbour
- Artist's impression of the new and improved open space and recreation facilities in Balgowlah 3D animation, noting that this is still subject to Council and community consultation.

These videos are available on the project's interactive online portal and were played over 10,000 times during the environmental impact statement exhibition period.

Virtual information sessions recordings

The 12 virtual information sessions that were held (described in Section A2.3.7) were recorded and made available on the project's interactive online portal within 48 business hours of the live sessions. This allowed the community to watch the sessions in their own time, for example if they were not able to attend the live sessions or experienced technical difficulties in joining during the live stream. The recorded sessions were viewed over 3700 times during the exhibition period.

A2.3.7 Direct engagement with stakeholders and the community

Virtual community information sessions, meetings and briefings

During the exhibition period, 12 virtual information sessions were held to provide the community with an overview of the environmental impact statement and address any questions and concerns. To best communicate the relevant information and address key questions and concerns, the sessions were divided based on key project locations. These sessions were attended by representatives from the project team, including technical leads, engineers, environment and planning personnel, and specialists in traffic, noise, vibration, air quality and human health. The dates and number of attendees at each of the sessions are outlined in Table A2-4.

The first round of sessions, which were held in January 2021, consisted of a formal presentation by a panel of technical specialists followed by a question and answer session. The community were

given an opportunity to ask questions of the project team via the online chat function. These questions were answered either by a moderator in the online chat function, or directed by the facilitator to a member of the panel.

The format of the second round of sessions in February was customised following community feedback to include more time for questions and answers, and less time on formal presentations. In addition, the first round of sessions provided a valuable insight that the community wanted key topics/concerns, including air quality, noise and vibration, traffic, and flora and fauna, to be addressed in more detail. In response to this feedback, the second round of sessions included additional slides providing more details on these topics, and the sessions were opened with some discussion on commonly asked questions as a starting point.

Due to the high number of questions and concerns raised about air quality in the first round of sessions, a dedicated air quality information session was held with external specialists including the Office of the Chief Scientist and Engineer.

The community were notified of the sessions through newspaper and digital/social media advertising, a community update postcard, door knocking activities, email notifications to registered stakeholders and information on the project's interactive online portal. These sessions provided opportunities for members of the community to ask questions of the project team and help to further inform the development of formal submissions.

Table A2-4 Community virtual information sessions during the environmental impact statement exhibition period

Location /topic of discussion	Date	Time	Number of attendees
Artarmon	14 January 2021	4pm-5pm	44
Cammeray	14 January 2021	5.30pm-7pm	94
	10 February 2021	6pm-7pm	61
Northbridge/Willoughby	19 January 2021	4pm-5.30pm	116
	8 February 2021	6pm-7pm	52
Seaforth/Killarney Heights/Frenchs Forest	19 January 2021	6pm-7.30pm	117
	9 February 2021	4pm-5pm	38
Mosman/Middle Harbour	20 January 2021	4pm-5.30pm	100
	8 February 2021	4pm-5pm	33
Balgowlah	20 January 2021	6pm-7.30pm	237
	10 February 2021	4pm-5pm	55
Air quality *	9 February 2021	6pm-8pm	58

** Note: an incorrect link was sent to stakeholders who had registered to attend the event. This was rectified within half an hour of the session start time, and the finish time was extended to 8pm so that the session duration remained the same (it was not cut short due to the delayed re-start time).*

Virtual meetings were also held with key stakeholders including residents, community and special interest groups impacted by the project.

1800 number, project email and stakeholder phone calls

The project phone number (1800 931 189) and email (whtbl@transport.nsw.gov.au) were available prior to and during the environmental impact statement exhibition period as channels for the

community and stakeholders to find out more information and ask questions. The project phone number and email address were promoted in newspaper advertisements, community update postcards, factsheets, environmental impact statement, community guide to the environmental impact statement, the project's interactive online portal, during door knocking activities and the project website. Stakeholders were also able to submit enquiries via the interactive online portal.

In addition, the project team made a number of phone calls to key stakeholders at the start of the exhibition period to notify them of the environmental impact statement's exhibition, encourage them to register for the virtual information sessions, and to address any initial questions they may have had.

Table A2-5 provides an outline of the contacts during the environmental impact statement public exhibition period.

Table A2-5 Summary of the number of 1800 number calls, project emails, enquiries via the project's interactive online portal and other phone calls during the exhibition period

Activity	Total number
Email interactions*	1114 (Outgoing emails – 618; Incoming emails – 496)
Enquiries via the project's interactive online portal	97
1800 number calls	114
Incoming phone calls to direct phone lines	33
Outgoing phone calls to key stakeholders	144

** Note: The initial email to/from a stakeholder and response to that email is counted as one interaction. Any subsequent correspondence with a stakeholder is counted as a new interaction.*

Door knocks

Over 1220 properties in areas that would be impacted by the project were door knocked during the public exhibition period. These doorknocks were carried out to notify residents and businesses in close proximity to the project construction sites of the environmental impact statement's public exhibition, provide further information about how this may impact them, encourage them to attend the virtual information sessions, address any initial questions and provide guidance on where they could find further information on the project.

Transport for NSW intended to doorknock an additional approximate 1000 properties; however, due to changed NSW Health guidelines for COVID-19, advice from the Transport for NSW COVID-19 Task Force, and to keep the community and Transport for NSW staff safe, these doorknocks were unable to be carried out.

Engagement with councils and agencies

A number of meetings and briefing sessions were held during the exhibition period with local councils and agencies. These engagement activities are summarised in Table A2-6.

Table A2-6 Engagement during environmental impact statement exhibition – Councils and agencies

Stakeholder	Date	Engagement topics/activities
Willoughby City Council	10/12/2020	Briefing to discuss: • Flat Rock Drive construction support site (BL2) selection and impacts

Stakeholder	Date	Engagement topics/activities
		• Middle Harbour construction impacts – navigational channels and water quality • Traffic modelling.
Willoughby City Council Councillors	10/12/2020	Briefing to discuss: • The proposed Flat Rock Drive construction support site (BL2), including management of traffic and safety at the site and noise and vibration impacts • Traffic modelling and network changes • Emergency vehicle access through the local area • Middle Harbour construction impacts – harbour sediments and marine life, navigational channels and impacts to marine recreational activities.
Aboriginal Heritage Office	22/01/2021	Site inspection • Area adjacent to Wakehurst Parkway to try and locate AHIMS site 45-6-0662 (Frenchs Forest; Bantry Bay; Wakehurst Parkway). • The site could not be located however a potential engravings site adjacent to Wakehurst parkway was identified. Further details are provided in Section 3 of Appendix A of this submissions report.
Willoughby City Council	27/01/2021	Virtual meeting to discuss: • Council plans for Hallstrom Park stormwater harvesting ponds • Water criteria requirements for turf irrigation.
Willoughby City Council	09/02/2021	Virtual meeting to discuss: • Council plans for Hallstrom Park stormwater harvesting ponds • Water criteria requirements for turf irrigation • Potential operational phase water reuse • Artarmon Wastewater Treatment Plant discharge volume and criteria.
Mosman Council	16/02/2021	Virtual meeting to discuss: • Impacts at Spit West Reserve, including site management at Spit West Reserve construction support site (BL9) • Middle Harbour construction activities • Land and marine construction traffic • Pedestrian and cyclist safety • Air quality.

Engagement with community groups and residents

A number of meetings and virtual information sessions were held during the exhibition period with residents, community and special interest groups to discuss issues of specific interest and/or importance to these stakeholders. These engagement activities are summarised in Table A2-7.

Table A2-7 Engagement during environmental impact statement exhibition – Community groups and residents

Stakeholder	Date	Engagement topics/activities
Seaforth Public School and P&C	14/12/2020	Virtual meeting with school representatives and P&C to discuss: • Tunnel portal location and permanent facilities • Air quality impacts and ventilation outlets • Balgowlah Golf Course construction support site (BL10) • Environmental management measures.
Bike North, Bicycle NSW, Walk Sydney, Northern Sydney Local Area Health Service, Trailcare	29/01/2021	Virtual meeting with key bicycle groups to discuss: • Overview of shared user path impacts • Proposed mountain bike trail impacts and detours • User safety, signage, disruptions and maintenance of connectivity.
Manly Warringah War Memorial State Park Advisory Committee	01/02/2021	Virtual meeting to discuss: • Biodiversity offsets • Fauna fencing, fauna crossings and fauna management measures • Construction footprint and impact on nearby tracks and mountain bike trails • Water quality • Portal location at Wakehurst Parkway • Weed removal.
Residents of Kirkwood and Judith Streets, Seaforth	02/02/2021	Virtual information session including: • A presentation by the project team including an overview of the project, indicative construction timelines, construction activities at Wakehurst Parkway south construction support site (BL12) and Wakehurst Parkway east construction support site (BL13), and construction impacts and mitigation measures (including traffic, noise and vibration and air quality) • Question and answer session for residents.
Residents of Hope Street, Seaforth	03/02/2021	Virtual information session including: • A presentation by the project team including an overview of the project, indicative construction timelines, construction activities at the Balgowlah Golf Course construction support site (BL10), and construction impacts and mitigation measures (including noise and vibration, traffic and air quality) • Question and answer session for residents.
Manly Warringah Mountain Bike (MTB) Club, TrailCare, Garigal Gorillas MTB Club	12/02/2021	Virtual information session including: • A presentation by the project team including an overview of the project, indicative construction timelines, impacts to mountain bike trails near to the Wakehurst Parkway during and post construction, mitigation measures, and the potential restoration of mountain bike trails post construction • Question and answer session for attendees.

Stakeholder	Date	Engagement topics/activities
St Cecilia's Catholic School and P&C	17/02/2021	Virtual information session including: • A presentation by the project team including an overview of the project, indicative construction timelines, impacts and mitigation measures covering issues raised by the school including noise and vibration, air quality, dust and health impacts, traffic impacts near the school and safety of the students • Question and answer session for attendees.
Northbridge Progress Association	24/02/2021	Virtual information session including: • A presentation by the project team including an overview of the project, indicative construction timelines, impacts and mitigation measures covering issues raised by the association including impacts to Flat Rock Reserve, flora and fauna, construction and operational noise and vibration, air quality, construction traffic, water quality and impacts in Middle Harbour • Question and answer session for attendees.

A2.3.8 Project website and social media

Program website

The program website was updated for the commencement of the public exhibition period to link the community to the project's interactive online portal.

Social media (Facebook)

A Facebook campaign was live during the environmental impact statement exhibition period. Paid posts were used to promote the exhibition of the environmental impact statement, encourage the community to make submissions, and create awareness of upcoming virtual information sessions and the 3D animations and project overview video.

The Facebook posts had a reach of over 255,000 people during the environmental impact statement public exhibition. The posts were geo-targeted to the project area, specifically the suburbs of Seaforth, Balgowlah, Artarmon, Cammeray, North Sydney, Frenchs Forest, Killarney Heights, Crows Nest, Cremorne, Northbridge, Willoughby and Mosman.

The interest in the environmental impact statement remained high right up until it closed. The campaign had a 10 per cent engagement rate and a 6.3 per cent click rate (seven times the industry average for a Facebook campaign of this nature).

A2.3.9 Accessibility for culturally and linguistically diverse (CALD) communities

To ensure that project information was accessible to CALD communities, translating and interpreting services were promoted on all the factsheets produced for the environmental impact statement. A "Translating and Interpreting Service" panel written in the most common languages in the study area was included along with the Translating and Interpreting services phone number (131 450).

The 12 live virtual information sessions were available with live captions in other languages (English, Simplified Chinese, Italian, Korean and Portuguese), with the facilitator promoting this at the beginning of each session.

In addition, the project's interactive online portal has Google translate functionality in nine languages.

A2.4 Engagement after environmental impact statement exhibition

A2.4.1 Direct engagement with stakeholders and the community

A number of meetings and briefing sessions were held after the close of the exhibition period, prior to lodgement of this submissions group, with councils and agencies (Table A2-8), as well as community groups, schools and residents (Table A2-9) to continue to engage with impacted stakeholders.

Table A2-8 Engagement post environmental impact statement exhibition – Councils and agencies

Stakeholder	Date	Engagement topics/activities
Northern Beaches Council	02/03/2021	Meeting to discuss: • Construction footprint at Wakehurst Parkway • Design and construction constraints at Wakehurst Parkway • Impacts to active transport facilities, in particular mountain bike trails near Wakehurst Parkway, and potential design refinements to minimise impacts to shared path and mountain bike trails • Fauna fencing and tree removal • Cyclist safety and speed limits of Wakehurst Parkway.
Northern Beaches Council	05/03/2021	Meeting to discuss: • Transport for NSW biodiversity offset obligations • Opportunities for offsetting within the Northern Beaches Council local government area.
Northern Beaches Council	15/03/2021	Meeting to discuss: • The new and improved open space and recreation facilities at Balgowlah.
Northern Beaches Council	23/03/2021	Meeting to discuss: • Impacts to cycle paths and mountain bike trails near Wakehurst Parkway • Potential council formalisation of trails • Opportunities to reduce impacts.
Mosman Council	28/04/2021	Virtual meeting to discuss • Spit West Reserve construction support site (BL9) • Impacts on recreational and sporting users • Potential design refinements to minimise these impacts.
Northern Beaches Council	19/05/2021	Meeting to discuss: • Impacts to cycle paths and mountain bike trails near Wakehurst Parkway • Potential council formalisation of trails • Opportunities to reduce impacts.

Stakeholder	Date	Engagement topics/activities
Metropolitan Local Aboriginal Land Council	20/05/2021	Site inspection • AHIMS site 45-6-2111 (Clive Park 3, Northbridge) • Area adjacent to Wakehurst Parkway to further inspect potential engravings site and try and locate AHIMS site 45-6-0662 (Frenchs Forest; Bantry Bay; Wakehurst Parkway) • Further details are provided in Section 3 of Appendix A of this submissions report.
Willoughby City Council	20/05/2021	Meeting to discuss: • Impacts to Dickson Avenue and Flat Rock Drive construction support site (BL2) • Update on preferred infrastructure report.
Willoughby City Council	03/06/2021	Meeting to discuss: • Preferred infrastructure report requirements • Flat Rock Drive construction support site (BL2), including site selection process and final form of the site post construction
Northern Beaches Council	16/06/2021	Meeting to discuss: • New and improved open space and recreation facilities at Balgowlah • Proposed engagement approach for the final form of these facilities.
Department of Primary Industries (Fisheries)	25/06/2021	Meeting to discuss: • Proposed dredging methodology within Middle Harbour • Revised environmental management measures to be documented in the submissions report • Future liaison opportunities across the Western Harbour Tunnel and Beaches Link program of works during the construction phase.
Department of Education (School Infrastructure)	13/07/2021	Meeting to discuss: • Proposed environmental management measures to be implemented for the project • Future quarterly engagement prior to and post planning approval
Mosman Council	12/07/2021 and 14/07/2021	Meeting to discuss: • Preferred infrastructure report requirements • Supply of recreational facilities within the immediate area and the demand for these facilities throughout the year • Spit West Reserve temporary construction support site (BL9) reconfiguration

Stakeholder	Date	Engagement topics/activities
		• Future requirements for Transport for NSW and Mosman Council engagement with recreational users of Spit West Reserve
Willoughby City Council	26/07/2021	Meeting to discuss: • Willoughby City Council submission • Works within Middle Harbour • Flat Rock Drive construction support site (BL2) preferred infrastructure report • Beaches Link network integration and optimisation, Artarmon
Department of Education (School Infrastructure)	06/08/2021	Meeting to discuss: • Northern Beaches Secondary College Balgowlah Boys Campus • Management plans, environmental management measures and opportunities to minimise impacts to Northern Beaches Secondary College Balgowlah Boys Campus during construction and operation
Northern Beaches Council	09/8/21	Meeting to discuss • Northern Beaches Council submission regarding dissolved oxygen (DO) and the Middle Harbour sill created by the immersed tube tunnels • Results of DO modelling carried out for the preferred infrastructure report Following the presentation questions from Northern Beaches Council were addressed by Transport for NSW and Cardno.
Port of Newcastle	17/8/21 and 19/8/21	Meetings with Port of Newcastle to discuss: • Project status • Preferred infrastructure report • Loadout facility at Mayfield • Environmental assessment results and discussion of environmental controls • Follow-up meeting regarding use of the Mayfield berth.
NSW Environment Protection Authority	17/08/2021	Meeting to discuss: • Noise insulation program for inclusion in this submissions report
Northern Beaches Council	02/09/2021	Meeting to discuss: • Northern Beaches Council submission • Results of traffic modelling carried out for the preferred infrastructure report requirements

Stakeholder	Date	Engagement topics/activities
North Sydney Council	03/09/2021	Meeting to discuss: • North Sydney Council submission • Results of traffic modelling carried out for the preferred infrastructure report requirements
Department of Planning, Industry and Environment (Environment, Energy and Science Group)	09/09/2021	Meeting to discuss: • Department of Planning, Industry and Environment (Environment, Energy and Science Group) submission
City of Newcastle Council	29/09/21	Virtual meeting to discuss: • Port of Newcastle construction support site (BL15) • Potential noise, odour, water quality, traffic and amenity impacts • Environmental management measures

Table A2-9 Engagement post environmental impact statement exhibition – Community groups and schools

Stakeholder	Date	Engagement topics/activities
Mosman Rotary Club	23/03/2021	Meeting including: • Presentation by the project team including an overview of the project, indicative construction timelines, construction activities at the Spit West Reserve construction support site (BL9), and impacts and mitigation measures including impacts at Middle Harbour • Question and answer session for attendees.
Mosman Rowing Club	15/04/2021	Meeting including: • Presentation by the project team including an overview of the project, indicative construction timelines, construction activities at the Spit West Reserve construction support site (BL9), impacts and mitigation measures covering issues including works at Middle Harbour, proposed navigational channel and marine traffic restrictions • Question and answer session for attendees.
Northbridge Sailing Club	15/04/2021	Meeting including: • Presentation by the project team including an overview of the project, indicative construction timelines, construction activities at the Spit West Reserve construction support site (BL9), impacts and mitigation measures covering issues including works at Middle Harbour, proposed navigational channel and marine traffic restrictions and relocation of moorings • Question and answer session for attendees.

Stakeholder	Date	Engagement topics/activities
Balgowlah Rotary Club	18/05/2021	Meeting including: • A presentation by the project team including an overview of the project, indicative construction timelines, construction activities at the Balgowlah Golf Course construction support site (BL10), construction impacts and mitigation measures, noise and vibration, traffic and air quality • Question and answer session for attendees.
1st Northbridge Sea Scout Group and 1st Sailors Bay Sea Scouts	17/06/2021	Meeting to discuss: • Presentation by the project team including an overview of the project, indicative construction timelines, construction activities at the Spit West Reserve construction support site (BL9), impacts and mitigation measures covering issues including works at Middle Harbour, proposed navigational channel and marine traffic restrictions and water quality at Middle Harbour • Question and answer session for attendees.
Northbridge Sailing Club	21/07/2021	Meeting to discuss: • Potential exemptions for sailing in mooring areas • Relocations of moorings impacted by the project in Middle Harbour • Opportunities for Northbridge Sailing Club to share course with other clubs during construction • Question and answer session for attendees.
Mosman Council, Mosman Netball Club, Mosman Junior Cricket Club, Mosman Football Club. Mosman Parkrun (adults) and Mosman Rowing Club	03/08/2021	Virtual information session including: • Preferred infrastructure report requirements • Reconfiguration of Spit West Reserve construction support site (BL9) to facilitate ongoing recreational use of the reserve during construction • Question and answer session for attendees.
Northern Beaches Secondary College Balgowlah Boys Campus P&C (note: School Principal was not in attendance)	24/08/2021	Virtual meeting to discuss: • P&C suggested environmental management measures for implementation during construction • Question and answer session for attendees.

Manly Warringah Football Club and Beauty Point Public School were also invited to the meeting held 3 August 2021 however no representatives were available to attend. All stakeholders, including those who were unable to attend the meeting held 3 August 2021, were issued a copy of the presentation and invited to contact the project team if they had further questions or comments. For further details refer to Section 3 (Spit West Reserve temporary construction support site (BL9) reconfiguration) of the preferred infrastructure report.

A2.4.2 Submissions report lodgement

This submissions report will be made publicly available and further engagement will be carried out with the community and key stakeholders to make sure they are aware of its release, have access to the document, and can find responses to their feedback.

Transport for NSW will support the public release of the submissions report by using a number of different engagement methods, carrying out a variety of communications activities and the development of communications materials. This will include:

- Written communication including:
    - Notification to email subscribers including a link to the below community update
    - Community update to notify the community that the submissions report is available. This will be letterbox dropped to 84,000 properties within the vicinity of the project
    - FAQs document to address questions the key topics of the submissions report
- Digital/social media engagement tools including:
    - The submissions report will be uploaded to the project website and project's interactive online portal
    - Facebook campaign to promote the release of the submissions report
- Direct engagement including:
    - Phone calls to key stakeholders to inform them of the submissions report release
    - Meetings with key stakeholder and community groups to discuss relevant issues in the submissions report
    - Responses to enquiries and questions via the 1800 number and project email address
    - Briefings with relevant councils and agencies to provide an update on the project
    - Static displays at local libraries and councils. This will be dependent on the COVID-19 restrictions at the time and if the local library and councils choose to display.

A2.5 Future consultation

Consultation on the project would continue throughout the remainder of the planning assessment process and into the construction period, with a view to further minimising project impacts wherever possible. The 1800 number and email address would continue to operate and the project website and interactive online portal would be updated as the project progresses.

Future engagement would be carried out in line with Appendix E (Community consultation framework) of the environmental impact statement, environmental management measures (refer to Table D2-1 of this submissions report), and as required by any conditions of approval. Should the project be approved, a community communication strategy would be developed in accordance with Appendix E (Community consultation framework). The community communication strategy would describe in detail Transport for NSW's liaison and engagement process with stakeholders and consultation activities for the project development, delivery and operation, and would guide the project team's interactions with the community and stakeholders and set standards for proactive engagement.

A dedicated consultation process jointly led by Transport for NSW and Northern Beaches Council will take place to give the community an opportunity to provide input on the final layout of the new and improved open space and recreation facilities at Balgowlah, in accordance with revised environmental management measure LP4 (refer to Table D2-1 of this submissions report). This consultation will be separate to the consultation for the environmental impact statement and is expected to commence after planning approval and in advance of construction starting. As part of this consultation process, a community reference group will be established, with representative stakeholder groups and the community, to support Transport for NSW and Northern Beaches Council with the development of this important public space. An expression of interest for participation in the consultation process is expected to be issued in early 2022.

Transport for NSW will also work closely with Willoughby City Council on its preferred final form of the Flat Rock Drive construction support site (BL2) in consultation with the local community. The site will be rehabilitated in line with the land use zoning. Vegetation and landscaping will be determined in consultation with Willoughby City Council and the community and will be implemented as soon as practicable at the completion of construction.

Transport for NSW

Beaches Link and Gore Hill Freeway Connection

A3 – Submissions received

November 2021

A3 Submissions received

Contents

A3.1 Respondents

Submissions in response to the environmental impact statement were received and accepted by the Department of Planning, Industry and Environment during and shortly after the public exhibition period.

Submissions were accepted via:

- Electronic submission (online) at www.planningportal.nsw.gov.au/major-projects
- Electronic submission (email) to the Contact Planner at Department of Planning, Industry and Environment
- Post addressed to the Director, Transport Assessments, Planning and Assessment, Department of Planning, Industry and Environment, Locked Bag 5022, Parramatta NSW 2124.

A total of 1549 submissions were received. Of that total, 10 were received from NSW Government agencies, four from local councils, and 1535 from other organisations and members of the public.

The 1535 community submissions were made by 1445 different individuals or organisations.

A breakdown of submissions by submitter type is provided in Table A3-1 below.

Table A3-1 Submissions breakdown by submitter type

	Total
NSW Government agencies and local councils	14
Organisation	94
Public	1441
Total	1549

Of the 1549 submissions received, 42 submissions registered support of the project, 1354 registered an objection, and 153 submissions registered as a comment.

A3.2 Overview of submissions and issues raised

A3.2.1 NSW Government agencies

Ten NSW Government agencies made submissions. These are summarised below, with full responses provided in Part B (Response to key stakeholders). Transport for NSW has considered the issues raised by NSW Government agencies and is committed to managing impacts through the next project stages. Transport for NSW will continue to engage with agencies throughout the project.

NSW Environment Protection Authority

The NSW Environment Protection Authority provided comments on the management of noise and vibration, and made recommendations regarding the assessment and management of surface water quality, hydrogeology, contamination, air quality and waste. Supplementary advice was provided in relation to noise and vibration impacts, particularly regarding proposed out-of-hours work and the associated community engagement.

A response to the issues raised by the NSW Environment Protection Authority is provided in Section B1 of this submissions report.

NSW Health (Northern Sydney Public Health Unit)

NSW Health (Northern Sydney Public Health Unit) provided comments on the health impacts associated with operational ambient and tunnel air quality, the air quality assessment methodology and ventilation outlet design. Questions were raised about the location of residential, workplace and recreational receptors and air quality data. Concern was raised about applying *National Environment Protection (Ambient Air) Measures* (NEPM) to an individual project.

A response to the issues raised by NSW Health (Northern Sydney Public Health Unit) is provided in Section B2 of this submissions report.

Office of the Chief Scientist and Engineer (Advisory Committee on Tunnel Air Quality)

The Advisory Committee on Tunnel Air Quality (ACTAQ), chaired by the NSW Chief Scientist and Engineer, reviewed Appendix H (Technical working paper: Air quality) and provided comments on the air quality assessment, including the modelling of air emissions, the meteorological model, background air quality monitoring and construction impacts. ACTAQ concluded these documents constitute a thorough review of high quality and noted that the choices made about data used and methods followed have been logical and reasonable, and it is their view that the benefit of exploring alternative approaches would be questionable or marginal. Recommendations were made that relevant agencies should consider approaches for future projects to resolve air quality monitoring being commissioned too late.

The submission comments are consistent with advice the ACTAQ and the Chief Scientist and Engineer provided to the Chief Health Officer on 4 December 2020, following their scientific review of sections of the environmental impact statement which relate to emissions from the ventilation outlets. The review is one of the stronger measures introduced by the NSW Government in 2018 on emissions from motorway tunnels and is an additional check in the environmental assessment process. The statements made by the ACTAQ, the Chief Scientist and Engineer and Chief Health Officer are available on the Department of Planning, Industry and Environment's major projects website at www.planningportal.nsw.gov.au/major-projects/project/10456.

As the review was not a submission on the environmental impact statement a response to the review is not included in this submissions report. A response to the issues raised by the Office of the Chief Scientist and Engineer (ACTAQ) in their submission is provided in Section B3 of this submissions report.

Department of Planning, Industry and Environment (Environment, Energy and Science Group)

The Department of Planning, Industry and Environment (Environment, Energy and Science Group) provided comments about biodiversity (including impacts on native vegetation, groundwater dependent ecosystems and fauna connectivity), revegetation and landscaping, dewatering of Balgowlah Golf Course stormwater harvesting dam, and floodplain risk management, in addition to recommendations for new and updated environmental management measures.

A response to the issues raised by the Department of Planning, Industry and Environment (Environment, Energy and Science Group) is provided in Section B4 of this submissions report.

Department of Primary Industries (Fisheries)

The Department of Primary Industries (Fisheries) provided recommendations and comments about creek crossings, offsets, silt curtains, management of White's seahorse, consultation, monitoring and management plans.

A response to the issues raised by the Department of Primary Industries (Fisheries) is provided in Section B5 of this submissions report.

Department of Planning, Industry and Environment (Water) and the Natural Resources Access Regulator

The Department of Planning, Industry and Environment (Water) and the Natural Resources Access Regulator provided comments and recommendations on water licencing, controlled activities, vegetation management, surface water impacts, groundwater management (including modelling and monitoring), and contamination.

A response to the issues raised by the Department of Planning, Industry and Environment (Water) and the Natural Resources Access Regulator is provided in Section B6 of this submissions report.

Department of Planning, Industry and Environment (Crown Land)

The Department of Planning, Industry and Environment (Crown Land) commented that any affected Crown land will need to be compulsorily acquired under the *Land Acquisition (Just Terms Compensation) Act 1991*.

A response to the comment raised by Department of Planning, Industry and Environment (Crown Land) is provided in Section B7 of this submissions report.

Fire and Rescue NSW

Fire and Rescue NSW had no comments about the environmental impact statement, however, noted their understanding that consultation will be carried out with Fire and Rescue NSW throughout the design process.

A response to the comment raised by Fire and Rescue NSW is provided in Section B8 of this submissions report.

Heritage NSW

Heritage NSW provided comments on consultation with Aboriginal stakeholders and noted their support for the development of an Aboriginal heritage interpretation strategy in consultation with Registered Aboriginal Parties. Heritage NSW also commented that the management and mitigation measures in Appendix L (Technical working paper: Aboriginal cultural heritage assessment report) are appropriate.

A response to the comments raised by Heritage NSW is provided in Section B9 of this submissions report.

Heritage Council of NSW

The Heritage Council of NSW raised questions about impacts on non-Aboriginal heritage sites and potential non-Aboriginal sites and made recommendations on certain environmental management measures. The submission also acknowledged the appropriateness of maritime heritage management measures, but requested consideration of slumping.

A response to the issues raised by the Heritage Council of NSW is provided in Section B10 of this submissions report.

A3.2.2 Local councils

A total of four local councils made submissions on the environmental impact statement during the exhibition period. The local councils which made submissions are outlined below and the submissions are responded to in Part B (Response to key stakeholders). Due to the size of the

submissions received from councils the issues raised by each council were categorised according to the key issue raised in line with the chapters of the environmental impact statement. Transport for NSW has considered the issues raised by local councils and is committed to minimising risks and the identified impacts throughout future project stages. Transport for NSW will continue to engage with local councils throughout the project.

Northern Beaches Council

Northern Beaches Council noted in-principle support for the construction of the project, subject to the minimisation of impacts on the community and the environment. Northern Beaches Council noted their key areas of concern for the project to address through further design development including biodiversity, groundwater drawdown, construction impacts and how these are managed, traffic and transport, tunnel emissions and ongoing monitoring, the Balgowlah Golf Course precinct and request for ongoing consultation. Northern Beaches Council also provided recommendations for new and updated environmental management measures.

A response to the issues raised by Northern Beaches Council is provided in Section B11 of this submissions report.

Willoughby City Council

Willoughby City Council raised concerns about construction traffic and transport, air quality, noise and vibration, heritage, environment, biodiversity, social and economic impacts. Concern was also raised about the effects of changed traffic volumes and distribution, in particular noise and vibration, during the operational phase. Recommendations to realise urban renewal and active and public transport infrastructure/services opportunities were provided.

A response to the issues raised by Willoughby City Council is provided in Section B12 of this submissions report.

Mosman Council

Mosman Council noted in-principle support for the project however raised concern over the lack of opportunities identified to improve the ‘Place’ function of the Military Road/Spit Road corridor. Mosman Council requested the establishment of a working group between Mosman Council, North Sydney Council and Transport for NSW to develop designs for the Military Road/Spit Road corridor. Mosman Council also requested further consultation with regards to the Spit West Reserve construction support site (BL9).

A response to the issues raised by Mosman Council is provided in Section B13 of this submissions report.

North Sydney Council

North Sydney Council raised concerns about the impact on North Sydney Council transport planning and management, the North Sydney CBD place making and future growth agenda, and the condition of Council owned or managed public domain and open space upon construction completion. North Sydney Council also provided comments regarding consistent application of conditions of approval for the Western Harbour Tunnel and Warringah Freeway Upgrade project, specifically with regards to loss of open space and the North Sydney Integrated Transport Program.

A response to the issues raised by North Sydney Council is provided in Section B14 of this submissions report.

A3.2.3 Community

A total of 1535 community submissions were received from 1445 different individuals and organisations. The issues raised by each submitter varied, largely based on their location and also their particular interests in the project.

Of the 1535 community submissions, 94 were received from 86 separate organisations. These organisations are listed below in Table A3-2.

Table A3-2 Community, peak and industry organisations that made submissions

Organisation type	Name
Commercial organisations	• DTYSI Pty Ltd • E J Nye & Associates Pty Ltd • Futran • Keneco Property Pty Ltd • Northside Motorcycles Artarmon.
Peak groups	• Greens NSW • North Sydney Independents.
Interest groups	• Action for Public Transport (NSW) Inc • Australian Conservation Foundation Community Northern Beaches • Baringa Bush Community Garden Seaforth • Baringa Bush Residents Group • Beaches Link - how it could affect you Facebook group • Bicycle NSW • Bike North • Catholic Community of North Harbour • Connect Macquarie Park & North Ryde • Flat Rock Gully Resident Action Group • Garigal Landcare • Good for Manly • Ku-ring-gai Bat Conservation Society Inc. • Lung Foundation Australia/Asthma Australia • Manly Warringah War Memorial State Park Advisory Committee Community Representatives • Motorcycle Council of NSW • Naremburn Action Group • North Harbour Community Group • Save Flat Rock Gully and Middle Harbour • Save Manly Dam Catchment Committee • Saving Sydney's trees • STEP Inc • Stop the Tunnels • TrailCare.
Schools and school P&C	• Anzac Park Public School P&C Association • Balgowlah North Public School • Cammeray Public School P&C Association

Organisation type	Name
	• Cammeraygal P&C Association • Catholic Schools Broken Bay • Manly West P&C Association • Marist Catholic College North Shore, St Mary's Campus • Wenona School • NBSC Balgowlah Boys P&C Association • Neutral Bay Public School P&C • Northbridge Public School Parents and Citizens Association • Seaforth Public School Parent & Citizens Association • St Cecilia's Catholic School and Advisory Committee • St Kieran's Primary School Advisory Council • St Philip Neri Parents & Friends Association.
Precinct groups and Owners corporations	• Artarmon Progress Association • Balgowlah Residents Group • Bay Precinct Committee • Brightmore Precinct Committee • Castlecrag Progress Association Inc • Edward Precinct, North Sydney • Federation of Willoughby Progress Associations • Milson Precinct Committee • Naremburn Action Group (NAG) • Naremburn Progress Association • Northbridge Progress Association • Paris St Balgowlah Residents • Parks Precinct • Peppermint Grove Community Association • Registry Precinct • Residents of Pickworth Avenue in Balgowlah • Waverton Precinct • Westlake Place Residents Community Group • Willoughby Environmental Protection Association Inc • Willoughby South Progress Association • Wollstonecraft Precinct.
Sporting groups	• 1st Northbridge Sea Scout Group • 1st Sailors Bay Sea Scouts • AFL NSW/ACT • Balgowlah Golf Club • Cammeray Croquet Club Incorporated • Middle Harbour 16' Skiff Club • Mosman Rowing Club • Northbridge Sailing Club • Northern Suburbs Netball Association • NSW & ACT Laser Association • NSW NS14 Association

Organisation type	Name
	• Seaforth Football Club • Tasar Association of New South Wales.
Council groups	• Bicentennial Reserve and Flat Rock Gully Committee • Committee for North Sydney • Sydney Coastal Councils Group.

Common issues

Each submission was examined in detail to identify and understand the issues raised. The content of each community submission was reviewed and categorised based on key issues which broadly aligned with the environmental impact statement chapters (for example Construction traffic and transport) and sub-issues under each of these issue headings (for example traffic changes).

The issues raised in each submission were extracted and collated and have been presented as a summary of the issues raised by individual submissions. This means that while the exact wording of a particular submission may not be presented in the summary of the issue, the intent of each individual issue raised has been addressed and corresponding responses to the issues have been provided. Where similar issues have been raised in different submissions, only one response has been provided.

The community issues raised and the associated response provided forms the basis of Part C (Response to community submissions) of this submissions report.

Proforma submissions and community guidance

Around 111 community submissions were either standardised proforma letters or had been modified from proforma letters. An analysis showed that while issues raised in proforma letters and guidance notes were repeated across many submissions, these submissions had been modified to varying degrees to reflect individual concerns and comments.

The issues raised in each proforma submission have been examined in detail and included in the summary of the specific issues raised by individual submissions.

Summary of issues raised

Consultation and engagement has been carried out with the community and stakeholders during the design development process and environmental assessment to ensure key potential impacts have been identified at an early stage, and where possible, avoided, or appropriate environmental management measures developed. Transport for NSW has considered the issues raised by community members, and is committed to minimising impacts to the community. Transport for NSW will use a range of measures to reduce the impact of construction work when working close to communities.

The key community issue categories are shown on Figure A3-1 and a further breakdown of the sub-issues raised for the top issue category (environmental impacts) is shown on Figure A3-2.

Table A3-3 lists the key issues raised in the submissions in order of how many submissions raised each issue (note that some submissions raised multiple issues), in addition to where each of these issues are addressed in this submissions report.

Detailed discussion of the issues raised by the community and responses to these issues are located in Part C (Response to community submissions) of this submissions report.

Transport for NSW will continue to engage with the community throughout the project in accordance with Appendix E (Community consultation framework) (refer to Section A2.5 above).

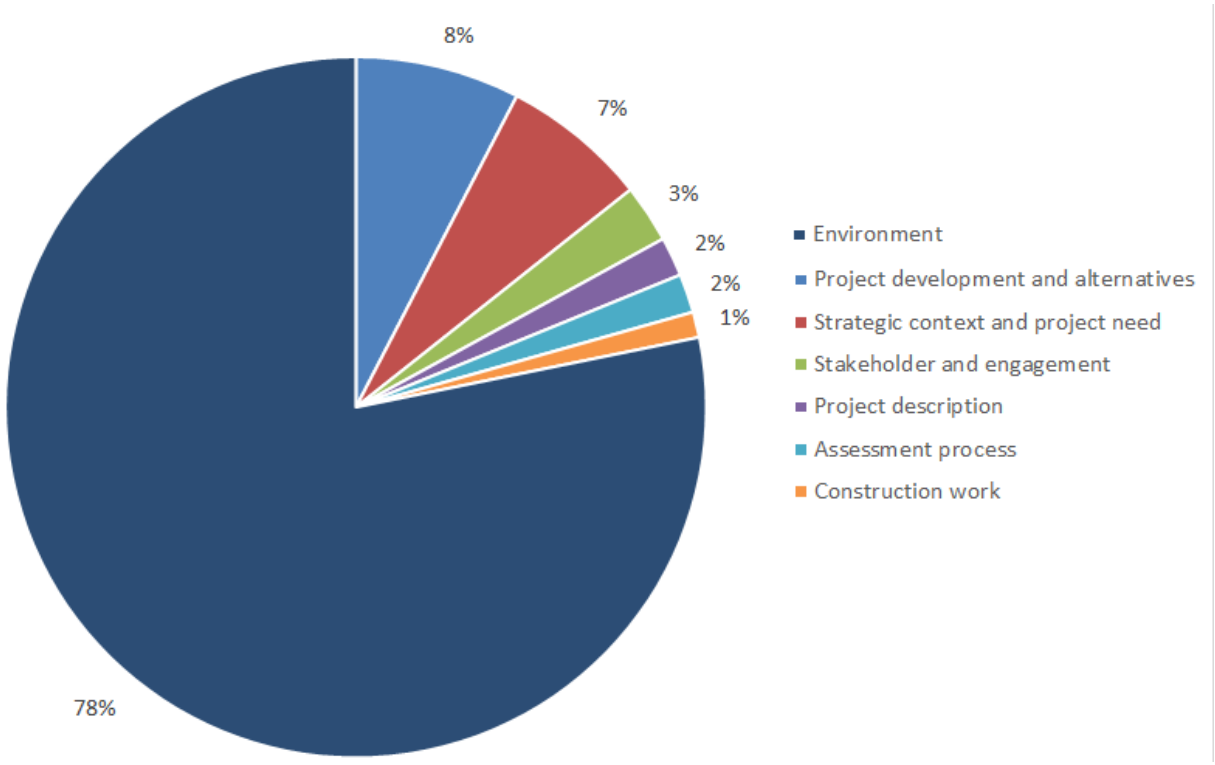


Figure A3-1 Key issues raised in community submissions

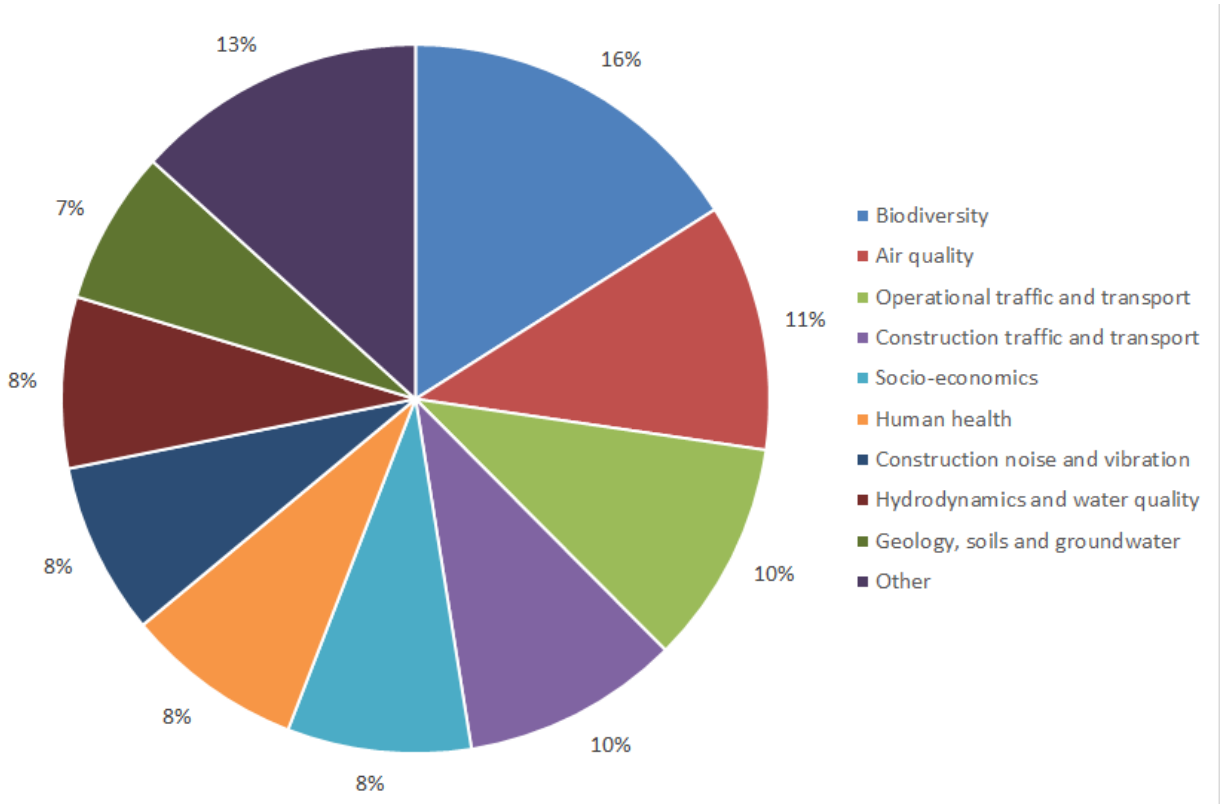


Figure A3-2 Key types of environmental impact issues raised in community submissions

Table A3-3 Issues raised in submissions in order of most common issues and where responses are located in this submissions report

Issues	Location of response
Biodiversity	Section C18
Air quality	Section C11
Operational traffic and transport	Section C8
Construction traffic and transport	Section C7
Project development and alternatives	Section C3
Strategic context and project need	Section C2
Socio-economics	Section C20
Human health	Section C12
Construction noise and vibration	Section C9
Hydrodynamics and water quality	Section C16
Geology, soils and groundwater	Section C15
Land use and property	Section C19
Stakeholder and community engagement	Section C6
Urban design and visual amenity	Section C21
Project description	Section C4
Assessment process	Section C1
Out of scope	Section C28
Construction work	Section C5
Greenhouse gas and climate change	Section C25
Heritage	Sections C13 and C14
Operational noise and vibration	Section C10
Sustainability	Section C24
Resource use and waste management	Section C23
Cumulative impacts	Section C26
Flooding	Section C17
Hazards and risks	Section C22
Related projects	Section C29

Transport for NSW

Beaches Link and Gore Hill Freeway Connection

A4 – Project refinements

November 2021

A4 Project refinements

Contents

A4.1 Introduction

This section provides a summary of the results of design refinements and investigations carried out since exhibition of the environmental impact statement. These refinements are proposed to:

- Improve the overall functionality of the project
- Further reduce the potential impacts of the project and/or respond to issues raised during exhibition

Refinements are changes that are consistent with the parameters of the project described in the environmental impact statement. Where required, the potential impacts of refinements have been considered and assessed.

The Department of Planning, Industry and Environment requested Transport for NSW prepare a preferred infrastructure report which provides additional information and outlines other proposed design and construction changes and assesses the environmental impact of these changes. Where necessary, the preferred infrastructure report has made provisions for additional environmental management measures.

The preferred infrastructure report is available on the Department of Planning, Industry and Environment website www.planningportal.nsw.gov.au/major-projects/project/10456. An overview of the proposed changes is found in Section 1 (Introduction and background) of the preferred infrastructure report.

A4.2 Design refinements

The following design refinements are proposed to improve the overall functionality of the project as well as to further reduce the potential impacts of the project and/or respond to issues raised during exhibition of the environmental impact statement:

- Realignment of the Wakehurst Parkway shared user bridge ramps
- Relocation and reclassification of fauna underpasses
- Temporary and permanent realignment of mountain bike trails
- Reduced impacts to Frenchs Bullock Track
- Facilitation of bus layover at Warringah Freeway during construction
- Stormwater basin at Balgowlah
- Project staging.

The proposed refinements are described in the following sections. The project may be subject to additional refinements during further design development. Additional refinements would be considered in accordance with the process outlined in Section 28.3 of the environmental impact statement.

A4.3 Realignment of the Wakehurst Parkway shared user bridge ramps

A4.3.1 The project as described in the environmental impact statement

The project includes the replacement of the existing pedestrian bridge across the Wakehurst Parkway, with a new shared user bridge about 350 metres south of Warringah Road at Frenchs Forest, as described in Section 5.2.8 of the environmental impact statement.

The alignment of the replacement pedestrian bridge and associated shared user path along Wakehurst Parkway, as exhibited, impacts an area of Duffys Forest endangered ecological community and permanently impacts the Jumping Jack mountain bike trail which is an unofficial north-south loop trail extending from the Pipeline Trail.

A4.3.2 Need for the proposed refinement

Following further consultation with the NSW Department of Education (School Infrastructure) and Northern Beaches Council, as outlined in Section B11.20.1, it is proposed the ramps for the new shared user bridge be realigned locally to facilitate direct connectivity between Fitzpatrick Avenue East and Aquatic Drive with secondary access also provided via the bridge to the Warringah Aquatic Centre. The refined location of the bridge crossing would better suit the main travel route for connectivity to and from the proposed relocation of The Forest High School and the greater Frenchs Forest area.

Along with providing improved connectivity for a future pedestrian and cyclist corridor, the refined ramp alignments would reduce the area of Duffys Forest endangered ecological community impacted by the project. The refined ramp alignments would also avoid permanent impacts to the Jumping Jack mountain bike trail and facilitate a contiguous shared user path along Wakehurst Parkway at this locality, consistent with the project design along the rest of the Wakehurst Parkway corridor.

A4.3.3 Description of refinement

Design features and location

The proposed refinement is shown in Figure A4-1.

The proposed design consists of a distinctive curvilinear bridge with the centre of the bridge above Wakehurst Parkway, generally consistent with the original alignment about 350 metres south of Warringah Road at Frenchs Forest. The refined curvilinear design is consistent with the urban design theme of two shared user bridges recently constructed by Transport for NSW including the connection of Hilmer Street with the Northern Beaches Hospital Precinct. The bridge ramps would meet ground level about 80 metres north of the original alignment, at Aquatic Drive to the east of Wakehurst Parkway and Fitzpatrick Avenue East to the west of Wakehurst Parkway. To provide connectivity along the future pedestrian and cyclist corridor, the curvilinear bridge design is required due to constraints including but not limited to:

- A difference in elevation of roughly five metres to the east and west of Wakehurst Parkway
- Avoiding direct impacts to existing high voltage power lines and poles
- Maintaining sufficient clearance beneath the bridge and the road surface for high vehicles
- Maintaining a connection from the bridge to the Warringah Aquatic Centre
- Enabling connectivity to existing and planned pedestrian/shared user paths by Northern Beaches Council

- Reducing biodiversity impacts
- Satisfying relevant accessibility requirements as per the *Disability Discrimination Act 1992*.

The bridge would be about 100 metres in length.

In consultation with Northern Beaches Council, Transport for NSW would facilitate extension of the Possum Trail mountain bike track from its current northernmost end-point adjacent Bantry Bay Road, as far as the revised bridge ramp alignment to the west of Wakehurst Parkway and Fitzpatrick Avenue East.

Figure A4-1 Overview of the Beaches Link and Gore Hill Freeway Connection project, including the refined alignment of the shared user bridge across Wakehurst Parkway (update to Figure 5-9 of the environmental impact statement)

Construction

The indicative construction methodology would be as described in Section 6.5.2 of the environmental impact statement.

Project footprint and land requirements

The bridge ramp to the east of Wakehurst Parkway for both the exhibited and refined design would be on land zoned SP2 Infrastructure. The land is owned by Transport for NSW.

The bridge ramp to the west of Wakehurst Parkway for both the exhibited and refined design would be on land zoned RE1 Public Recreation. The refined ramp would land at Fitzpatrick Avenue East, which is a cul-de-sac local road owned by Northern Beaches Council.

The proposed refinement would reduce the projects land requirements and the construction and operational footprint by about 1228 square metres. The refined construction footprint is shown in Figure A4-2.

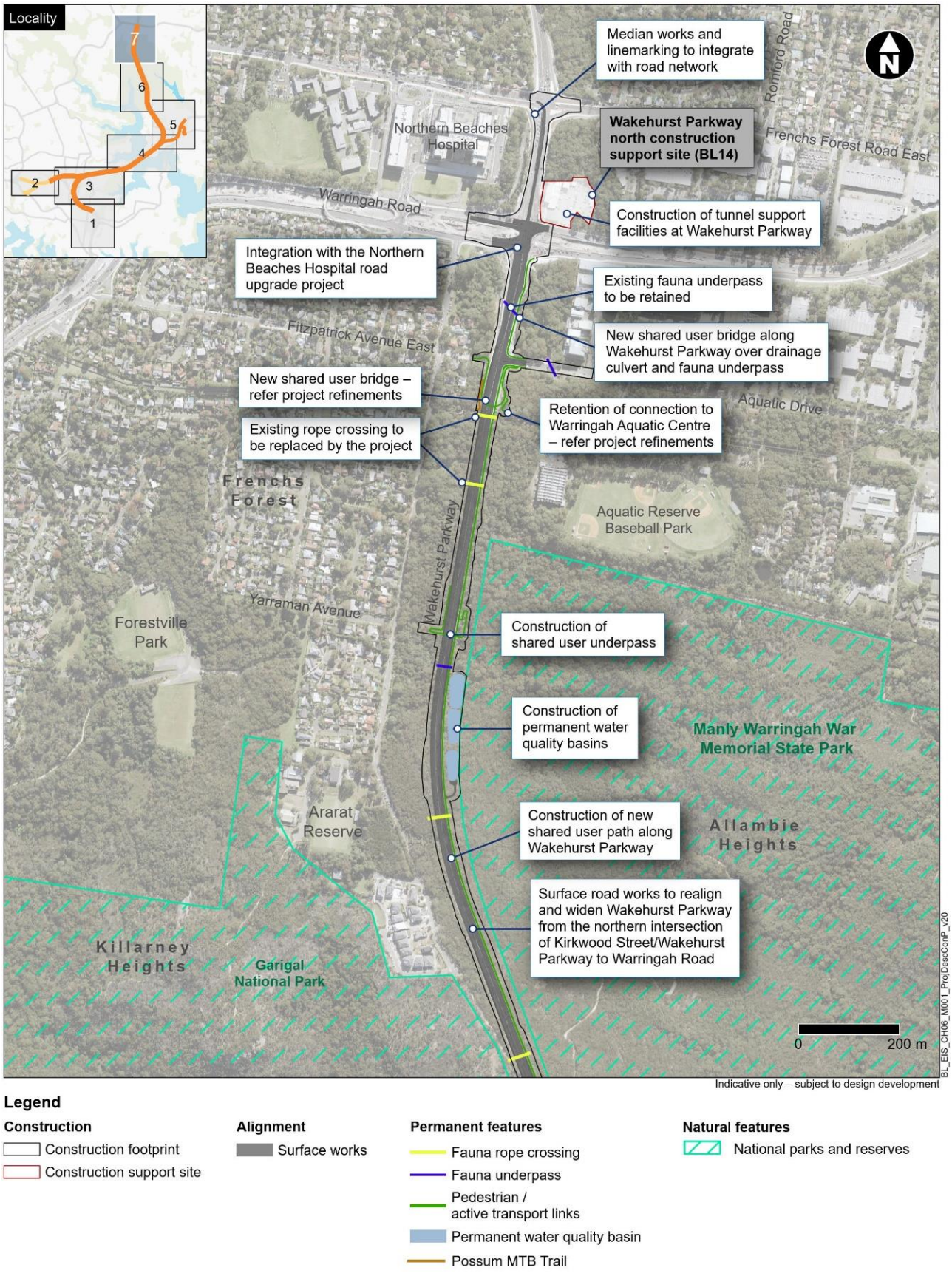


Figure A4-2 Overview of construction activities and construction footprint, including revised construction footprint for the refined alignment of the shared user bridge across Wakehurst Parkway (update to Figure 6-29 of the environmental impact statement)

A4.3.4 Environmental screening assessment

Biodiversity

The alignment of the replacement pedestrian bridge and associated shared user path along Wakehurst Parkway, as exhibited, impacts an area of Duffys Forest endangered ecological community. The proposed refinement reduces impacts to Duffys Forest endangered ecological community by around 1648 square metres. Changes to the areas of vegetation impacted by the proposed refinement are provided in Table A4-1, with a reduction in impacts to native vegetation of 1675 square metres and an overall net reduction in impact of about 1416 square metres.

Table A4-1 Changes in vegetation impacts

Vegetation community	Change in impact
PCT 1786 (Duffys Forest endangered ecological community)	-1684 square metres (+987; -2671)
PCT 1845	+19 square metres (+120; -101)
Weeds and Exotics	+259 square metres

The proposed refinement and associated reduction in impacts to vegetation is shown in Figure A4-3.

Due to the changes in vegetation impacts from the proposed refinement, the overall total area of vegetation removed for the project would also reduce from 20.92 hectares to 20.78 hectares. This area of vegetation to be removed consists of:

- 13.98 hectares of native vegetation that meets the definition of a PCT
- 1.29 hectares of native revegetation
- 0.36 hectares of native plantings
- 4.89 hectares of urban exotic/native plantings
- 0.26 hectares of weeds and exotics.

With consideration of the above and reclassification of PCT 1292 (refer to Section B4.4 of this submissions report), a revised biodiversity credit calculation has been carried out and is provided in Appendix F2 of this submissions report. A summary of the key updates to ecosystem and species credits due to the proposed design refinement includes:

- PCT 1786 (Duffys Forest endangered ecological community) direct ecosystem credits reduced from 43 to 36 and overall direct ecosystem credits for the project reduced from 391 to 383
- PCT 1786 (Duffys Forest endangered ecological community) indirect ecosystem credits reduced from 14 to nine and overall indirect ecosystem credits for the project reduced from 50 to 45
- Species credits for Eastern Pygmy-possum (*Cercartetus nanus*) reduced from 403 to 397
- Species credits for Large-eared Pied-bat (*Chalinolobus dwyeri*) reduced from 670 to 658

Overall species credits for the project reduced from 1099 to 1081.

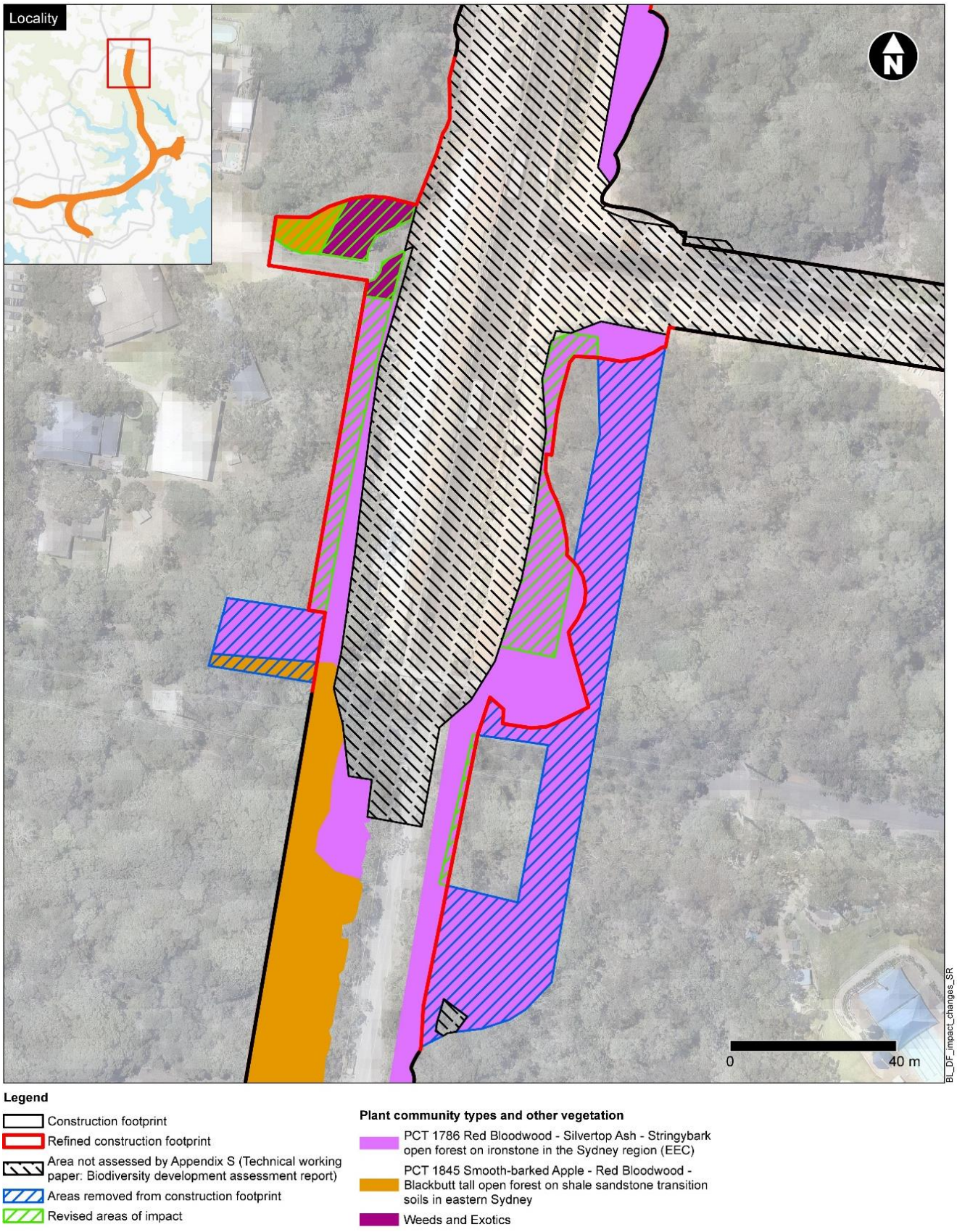


Figure A4-3 Changes in vegetation impacts from the realignment of the Wakehurst Parkway shared user bridge ramps

Visual amenity

Construction of the replacement pedestrian bridge, as exhibited, is anticipated to have high to moderate impacts on the Wakehurst Parkway road corridor landscape character zone (LCZ) (LCZ 3) as described in Section 22.6.1 of the environmental impact statement. Whilst the proposed refinement would reduce the overall extent of vegetation removal, there would still be a minor increase in visibility of construction activities, vehicle movements, earthworks, surface roadworks and exposure to built form in this landscape. The overall impact rating of high-moderate remains appropriate due to the potential for altered traffic conditions, increased congestion and the presence of construction traffic, whilst the road corridor itself would be able to accommodate some of this change without major impact to its character.

Moderate impacts are anticipated during operation, as exhibited, for the Wakehurst Parkway road corridor landscape character zone 3 (LCZ 3) which includes the replacement pedestrian bridge, as described in Section 22.7.1 of the environmental impact statement. Reducing the operational footprint and extent of vegetation removal has the potential to result in improved landscape character outcomes for the project. However, an overall impact rating of moderate remains appropriate.

Viewpoint 6 (Wakehurst Parkway (north)) is representative of the view available to motorists travelling north and southbound on Wakehurst Parkway in the vicinity of the Warringah Aquatic Centre. During construction of the replacement pedestrian bridge, as exhibited, this viewpoint is expected to have high/moderate impacts due to likely direct views of site hoardings, increased vehicular movements and construction equipment. Construction of the proposed refinement is anticipated to have a similar visual impact. Operation of the project, as exhibited, in this area would have moderate visual impact as the scale of road infrastructure would increase, including views of the replacement shared user bridge. Whilst the proposed refinement would reduce the overall extent of vegetation removal and contribute to the existing tree lined character of the road, the visual impact rating of moderate would remain.

Some residents of Fitzpatrick Avenue East to the east of Bantry Bay Road would have visibility of the footpath to the refined bridge to the west of Wakehurst Parkway. Where the footpath immediately turns south at Wakehurst Parkway, views of the remainder of the footpath and views of the shared user bridge would be screened by dense vegetation to be retained by the project.

The curvilinear bridge design is consistent with the urban design requirements outlined in Section 22.2.2 of the environmental impact statement. The bridge design complements the two curvilinear shared user bridges recently constructed by Transport for NSW including the connection of Hilmer Street with the Northern Beaches Hospital Precinct.

Noise

The replacement pedestrian bridge, as exhibited, would generally be constructed during standard construction hours, with some works required out of hours when completing large lifts over the existing road, delivering oversized loads and when road occupancy licences are needed to minimise impacts on road network performance and ensure worker safety. Construction of the proposed refinement would follow a similar construction methodology, with works again generally occurring during standard construction hours. Due to similarities in construction methodology and the distance to the closest sensitive receiver changes noise and vibration impacts are not anticipated between the exhibited and refined design.

As the replacement bridge would only be used by pedestrians and cyclists, both the exhibited and refined design would not result in operational noise impacts.

Consultation

Following further consultation with the NSW Department of Education (School Infrastructure) and Northern Beaches Council on the need for improved connectivity along a future pedestrian and cyclist corridor as outlined in Section B11.20.1 of this submissions report, Transport for NSW developed the curvilinear bridge design within the limitations of the constraints outlined above.

Residential receivers and stakeholders along Bantry Bay Road and Fitzpatrick Avenue East have been notified of the realignment of the Wakehurst Parkway shared user bridge ramps.

An urban design and landscape plan will be developed during further design development and will include further detail on the urban and landscape design with additional developed visuals, cross sections and plans (refer to environmental management measure V1 in Table D2-1 of this submissions report). This plan will also be made available to the public for feedback.

A4.4 Relocation and reclassification of fauna underpasses

A4.4.1 The project as described in the environmental impact statement

The project includes a number of new and replacement fauna crossings, as described in Section 5.2.11 of the environmental impact statement and Table 5.16 of Appendix S (Technical working paper: Biodiversity development assessment report). These include:

- Three new fauna underpasses:
    - One new fauna underpass located about 1000 metres north of Kirkwood Street
    - One new fauna underpass located about 620 metres south of Aquatic Drive
    - One new fauna underpass located about 725 metres north of Kirkwood Street
- Retention of the existing fauna underpass north of Aquatic Drive constructed as part of the Northern Beaches Hospital road upgrade project
- Three new fauna rope crossings:
    - One new rope crossing located about 910 metres north of Kirkwood Street
    - One new rope crossing located about 1370 metres north of Kirkwood Street
    - One new rope crossing located about 885 metres south of Aquatic Drive
- Replacement of three existing fauna rope crossings:
    - Replacement of the existing fauna rope crossing about 330 metres north of Kirkwood Street
    - Replacement of the fauna rope crossing about 110 metres south of Aquatic Drive constructed as part of the Northern Beaches Hospital road upgrade project
    - Replacement of the fauna rope crossing about 200 metres south of Aquatic Drive constructed as part of the Northern Beaches Hospital road upgrade project
- Fauna fencing as required along the Wakehurst Parkway.

Proposed fauna crossing locations were developed for the reference design assessed in the environmental impact statement in consideration of the following factors:

- The even spread of roadkill recorded along Wakehurst Parkway (as mapped in the *Biodiversity Assessment Report* within the *Northern Beaches Hospital Connectivity and Network Enhancement Project – Stage 2 Environmental Impact Statement* (SMEC, 2015))
- The occurrence/distribution of target species and species habitat along the alignment
- The need to provide sufficient coverage of the full length of the upgraded and realigned section of Wakehurst Parkway
- Design and engineering constraints such as road alignment, topography and location of other current or proposed infrastructure/facilities, including fire trails, mountain bike trails, proposed shared user paths/underpasses, sediment basins and drainage culverts
- Location of existing fauna crossings constructed as part of the Northern Beaches Hospital road upgrade project.

A4.4.2 Need for the proposed refinement

Following exhibition of the environmental impact statement and receipt of the Department of Planning, Industry and Environment (Environment, Energy and Science Group) submission on the environmental impact statement, Transport for NSW carried out further investigations and development of the design to refine the location and type of fauna underpasses. This included investigating opportunities further optimise the location of the underpasses along the Wakehurst Parkway and their dimensions, and to determine if any of the combined drainage/fauna underpasses could become dedicated fauna underpasses. This was done in the context of biodiversity, design and topographical constraints.

The investigation resulted in some refinements to fauna underpass locations and characteristics, which would potentially result in higher use by target fauna.

A4.4.3 Description of refinement

Design features and location

Locations of the project's fauna crossings are shown in Figure A4-4 to Figure A4-6. The refined locations and characteristics of the fauna underpasses are summarised in Table A4-2 which updates Table 5.16 of Appendix S (Technical working paper: Biodiversity development assessment report). Changes from the environmental impact statement are indicated in bold text and grey shading within the table.

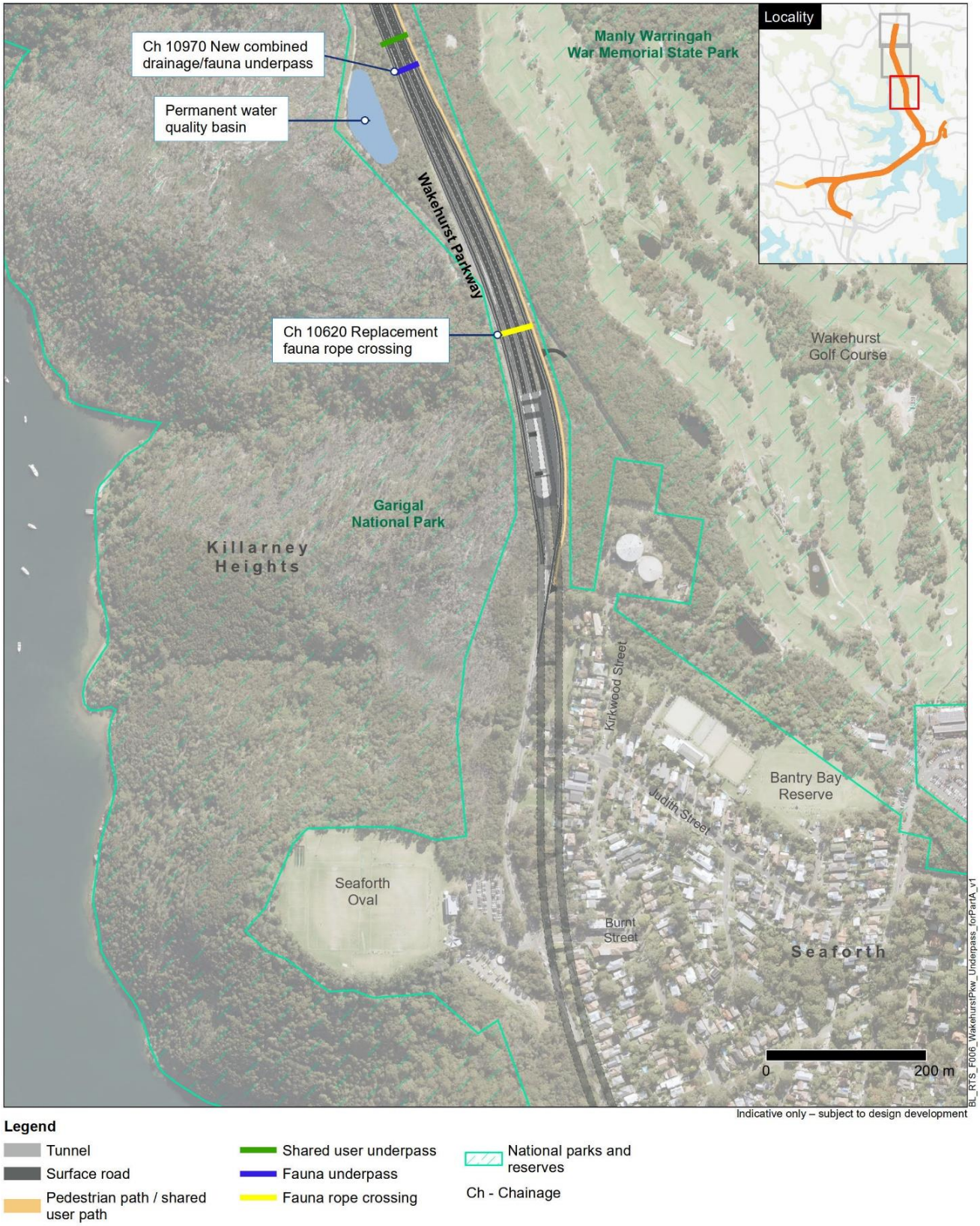


Figure A4-4 Fauna crossing locations at Wakehurst Parkway (map 1)

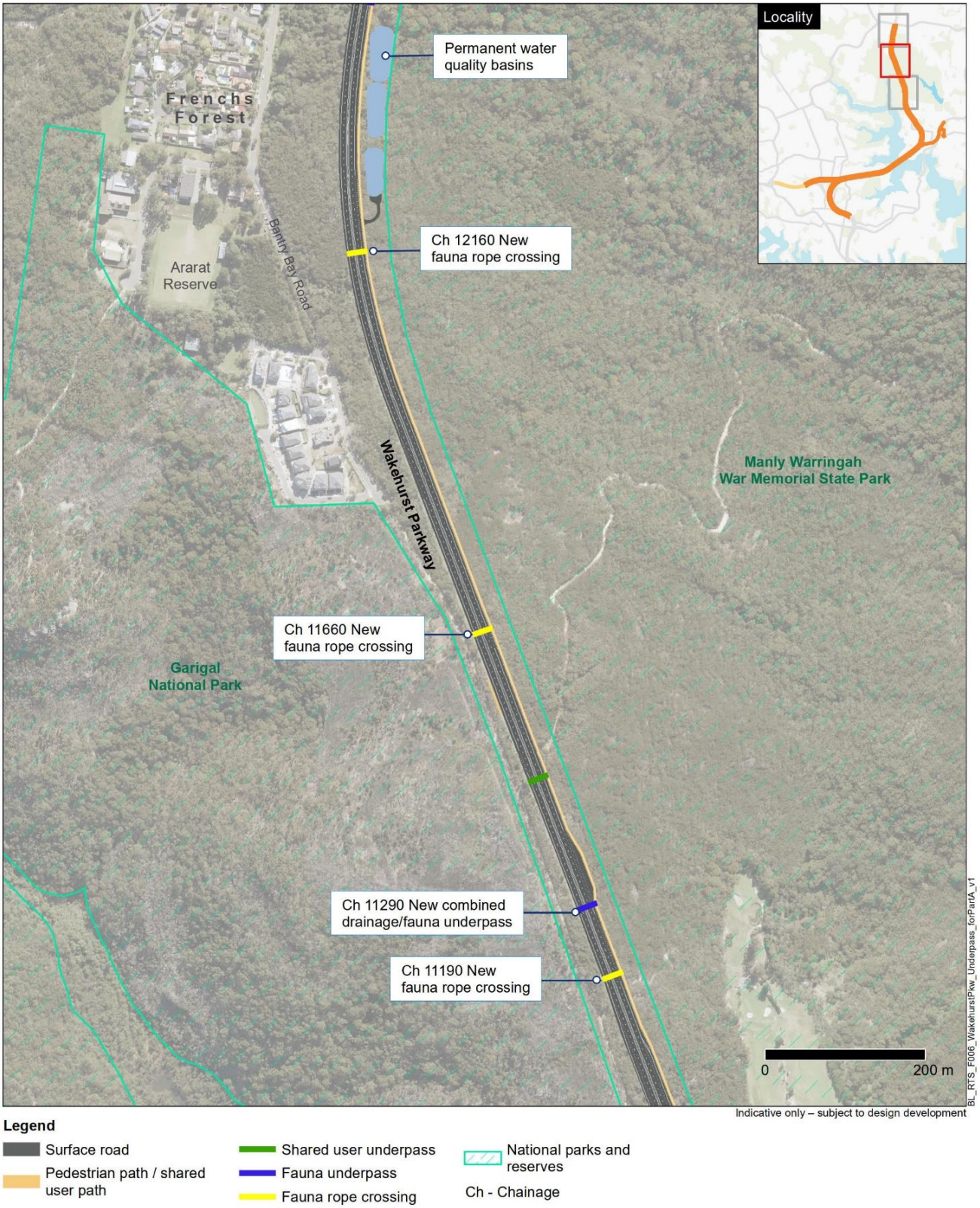


Figure A4-5 Fauna crossing locations at Wakehurst Parkway (map 2)

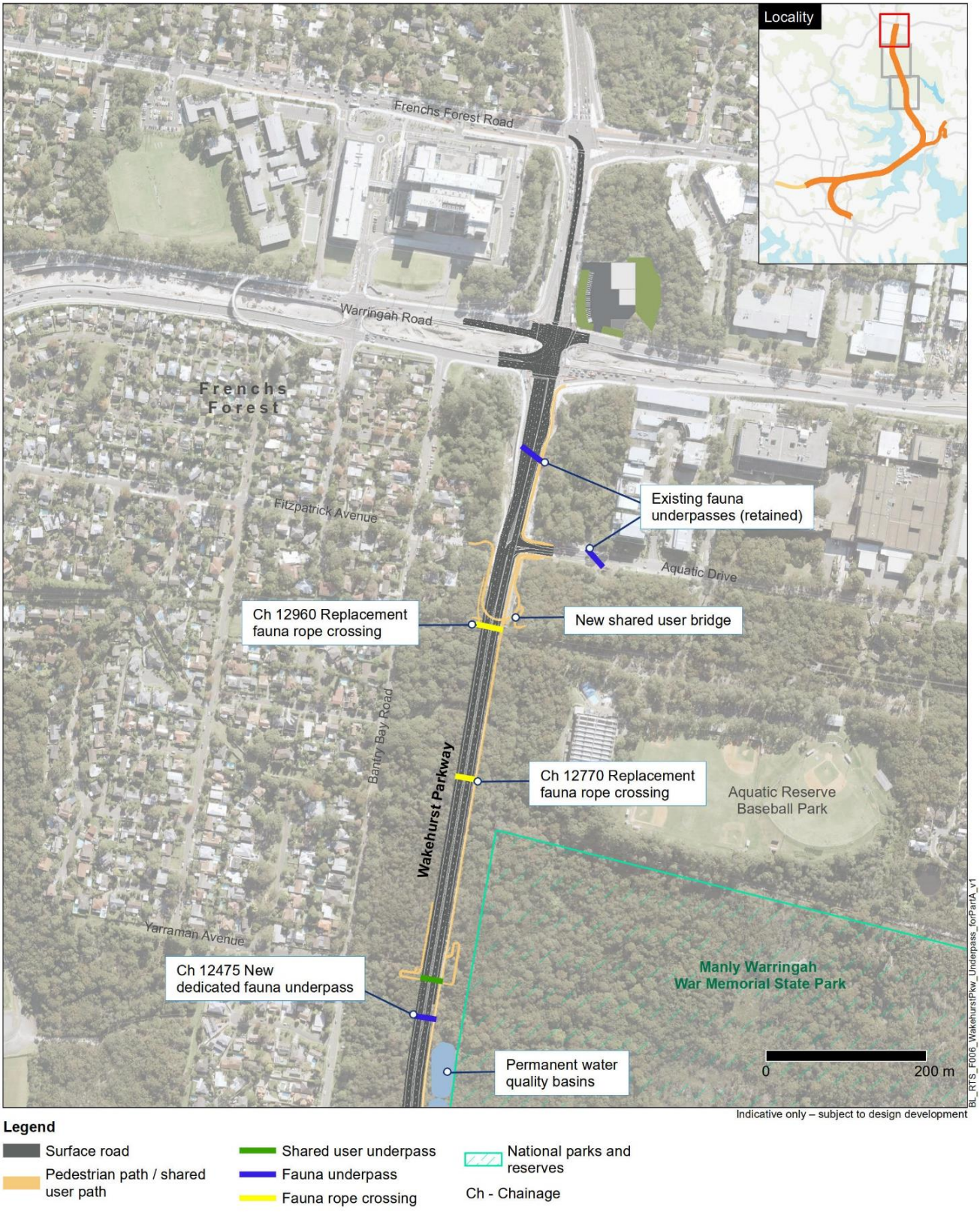


Figure A4-6 Fauna crossing locations at Wakehurst Parkway (map 3)

Table A4-2 Fauna crossings provided by the project

Location			Approx. distance from previous crossing	Characteristics of fauna crossings	Target species
Description	**Chainage (environmental impact statement)[1]**	**Chainage (revised reference design control)[1]**			
Fauna underpasses					
One new fauna underpass located about **715 metres** (was 725 metres) north of Kirkwood Street	**Ch 2915** (was 2925)	Ch 10970	355 m	Combined drainage/fauna underpass **2.4m high** (was 1.8m high) x 3m wide	Threatened species • Red-crowned Toadlet (*Pseudophryne australis*) • Rosenberg's Goanna (*Varanus rosenbergi*) • Southern Brown Bandicoot (*Isoodon obesulus*) • Eastern Pygmy-possum (*Cercartetus nanus*) Protected species • Commonly occurring reptiles such as Red-bellied Black Snake (*Pseudechis porphyriacus*), Eastern Brown Snake (*Pseudonaja textilis*), Diamond Python (*Morelia spilota*) and **Lace Monitor (*Varanus varius*)[2]** • Commonly occurring amphibians such as **Peron's Tree Frog (*Litoria peronii*)[2]** • Large terrestrial mammals such as Swamp Wallaby (*Wallabia bicolor*) • Small terrestrial mammals such as Brown Antechinus (*Antechinus stuartii*) and Short Beaked Echidna (*Tachyglossus aculeatus*) • Arboreal mammals that may travel along the ground such as Common Brushtail Possum (*Trichosurus vulpecula*) and **Common Ringtail Possum (*Pseudocheirus peregrinus*) [2]**.
One new fauna underpass located about 1000 metres north of Kirkwood Street	Ch 3230	Ch 11290	90 m	Combined drainage/fauna underpass 1.8m high x 3m wide	
One new fauna underpass located about **605 metres** (was 620 metres) south of Aquatic Drive	**Ch 4405** (was 4390)	Ch 12475	305 m	**Dedicated fauna underpass** (was combined) 2.4m high x 3m wide	

Location			Approx. distance from previous crossing	Characteristics of fauna crossings	Target species
Description	**Chainage (environmental impact statement)[1]**	**Chainage (revised reference design control)[1]**			
Fauna rope crossing					
Replacement of the existing fauna rope crossing about 330 metres north of Kirkwood Street	Ch 2560	Ch 10620	-	Rope canopy bridge (replacement)	Threatened species: • Eastern Pygmy-possum Protected species: • Common Brushtail Possum • Common Ringtail Possum • Sugar Glider (*Petaurus breviceps*) • Feathertail Glider (*Acrobates pygmaeus*).
One new rope crossing located about 910 metres north of Kirkwood Street	Ch 3140	Ch 11190	225 m	Rope canopy bridge (new)	
One new rope crossing located about 1370 metres north of Kirkwood Street	Ch 3600	Ch 11660	370 m	Rope canopy bridge (new)	
One new rope crossing located about 885 metres south of Aquatic Drive	Ch 4100	Ch 12160	500 m	Rope canopy bridge (new)	
Replacement of the fauna rope crossing about 200 metres south of Aquatic Drive constructed as part of the Northern Beaches Hospital road upgrade project	Ch 4750	Ch 12770	345 m	Rope canopy bridge (replacement)	
Replacement of the fauna rope crossing about 110 metres south of Aquatic Drive constructed as part of the Northern Beaches Hospital road upgrade project	Ch 4900	Ch 12960	150 m	Rope canopy bridge (replacement)	

1. It is noted that the chainage control point for the design has changed during further design development since the environmental impact statement. For ease of reference, chainages aligning to the control point used for the environmental impact statement (provided in Table 5.16 of Appendix S (Technical working paper: Biodiversity development assessment report)) as well as chainages aligning to the new control point have both been included.
2. Lace Monitor, Peron's Tree Frog and Common Brushtail Possum have been included as additional fauna underpass target species due to further review of roadkill records and habitat availability (refer to Section B4.8.1 of this submissions report).

While refinements have occurred to the fauna underpasses presented in the environmental impact statement, the design investigations confirmed the challenges presented by engineering constraints such as topography along the Wakehurst Parkway. As such, the existing general locations of the underpasses are the only suitable areas to locate the underpasses without carrying out significant design modifications (eg increases in vertical alignment). Increasing the vertical alignment of the upgraded and realigned Wakehurst Parkway would result in additional property impacts, potential impacts to Garigal National Park and Manly Warringah War Memorial State Park, and additional vegetation clearing.

It is noted that the crossings are all within 500 metres of each other, which is considered to be a relatively high density of crossings for a project of this size, and appropriate to enable ample opportunities for arboreal fauna to cross the upgraded and realigned Wakehurst Parkway (refer to Table A4-2 for species targeted by the different crossing types).

In summary, the key proposed changes are:

- One of the combined drainage/fauna underpasses (located about 715 metres north of Kirkwood Street) has shifted slightly south (about 10 metres) and increased in height from 1.8 metres to 2.4 metres. The increased height of the underpass would improve natural light penetration and increase the potential of the underpass being used by the target species
- One underpass (located about 605 metres south of Aquatic Drive) has moved about 15 metres north to avoid potential conflicts with the operational water quality basin in this area and to allow the underpass to function as a dedicated fauna underpass, rather than a combined drainage/fauna underpass. This would enable a more naturalised substrate floor and improved fauna furniture opportunities, increasing the potential of it being used by target species.

The dedicated fauna underpass would be designed to achieve dry passage which would include a natural substrate, such as soil or mulch, as a base consistent with recommendation within the *Wildlife Connectivity Guidelines: Managing wildlife connectivity of road projects* (Draft) (Roads and Maritime Services, 2011c). Sandy loam would be preferred if soil is to be used to prevent the generation of a mud substrate.

The two combined drainage/fauna underpasses are single cell structures and have been designed to also convey runoff as part of the project's drainage design. The floor of these culverts would be concrete, with sediment and leaf litter likely to naturally accrete during operation of the project with levels of this natural material fluctuating based on the intensity of the runoff flow (which is generally expected to be low, given that the road alignment follows a ridgeline). Further, the combined drainage/fauna underpasses would include a raised bench to facilitate dry passage.

Following further design investigation as part of this submissions report and consultation with project teams from Pacific Highway upgrade projects, the dry passage criteria for the combined drainage/fauna underpasses has been refined to be:

- Must provide dry fauna passage during a one in 1-year ARI three-day storm event, or must not have wet sections that retain water for longer than three days
- Include a dry ledge or similar with a minimum ledge width of 1.2 metres.

The above dry passage criteria are consistent with recent Pacific Highway upgrade projects including Woolgoolga to Ballina. In addition, it is anticipated that the combined drainage/fauna underpass would be dry most of the time as the structure is located in a drainage line that experiences ephemeral flows only.

During further design development, the fauna underpasses would continue to be refined, including investigation as to whether they can be further optimised (for example whether any of the remaining combined drainage/fauna underpasses could become dedicated fauna underpasses). Fauna

underpass specifications would also be refined during further design development, including detailing requirements for fauna furniture (for example timber railings or shelter rocks) to facilitate the use of underpasses by targeted arboreal fauna. It should be noted that while fauna furniture would be more readily applied to the dedicated structure, the combined drainage/fauna underpasses would also include fauna furniture where it would not affect the hydrological performance. Fauna crossing designs and fauna exclusion fencing will be developed in accordance with the *Wildlife Connectivity Guidelines: Managing wildlife connectivity of road projects* (Draft) (Roads and Maritime Services, 2011c) as required by revised environmental management measures B2 and B3 (refer to Table D2-1 of this submissions report).

Construction

The indicative construction methodology would be as described in Section 6.5.6 of the environmental impact statement.

Project footprint and land requirements

The proposed refinement would not affect the construction or operational footprints or change the project's permanent and temporary land requirements.

A4.4.4 Environmental screening assessment

The proposed refinement would improve biodiversity outcomes by potentially resulting in higher use by target fauna.

There would be no other changes to impacts.

A4.5 Temporary and permanent realignment of mountain bike trails

A4.5.1 The project as described in the environmental impact statement

The project would require a temporary adjustment to some of the mountain bike trails on either side of the Wakehurst Parkway, as identified in Section 21.4.8 of the environmental impact statement.

Impacts to walking and mountain bike trails adjacent to the Wakehurst Parkway during construction of the project are discussed in Section 8.4.5 of the environmental impact statement.

A4.5.2 Need for the proposed refinement

Based on feedback and concerns expressed by Northern Beaches Council, community and bike interest groups in submissions on the environmental impact statement, Transport for NSW has carried out further consultation with Northern Beaches Council and relevant mountain biking associations along with further targeted investigations to determine potential project impacts on mountain bike trails, and more accurately map where these active transport facilities are located.

A4.5.3 Description of refinement

Design features and location

Figure A4-7 and Figure A4-8 have been developed since exhibition of the environmental impact statement and provide an overview of existing cycle paths and mountain bike trails near Wakehurst Parkway. These figures identify potential impacts as a result of conflicts with the construction footprint or operational features.

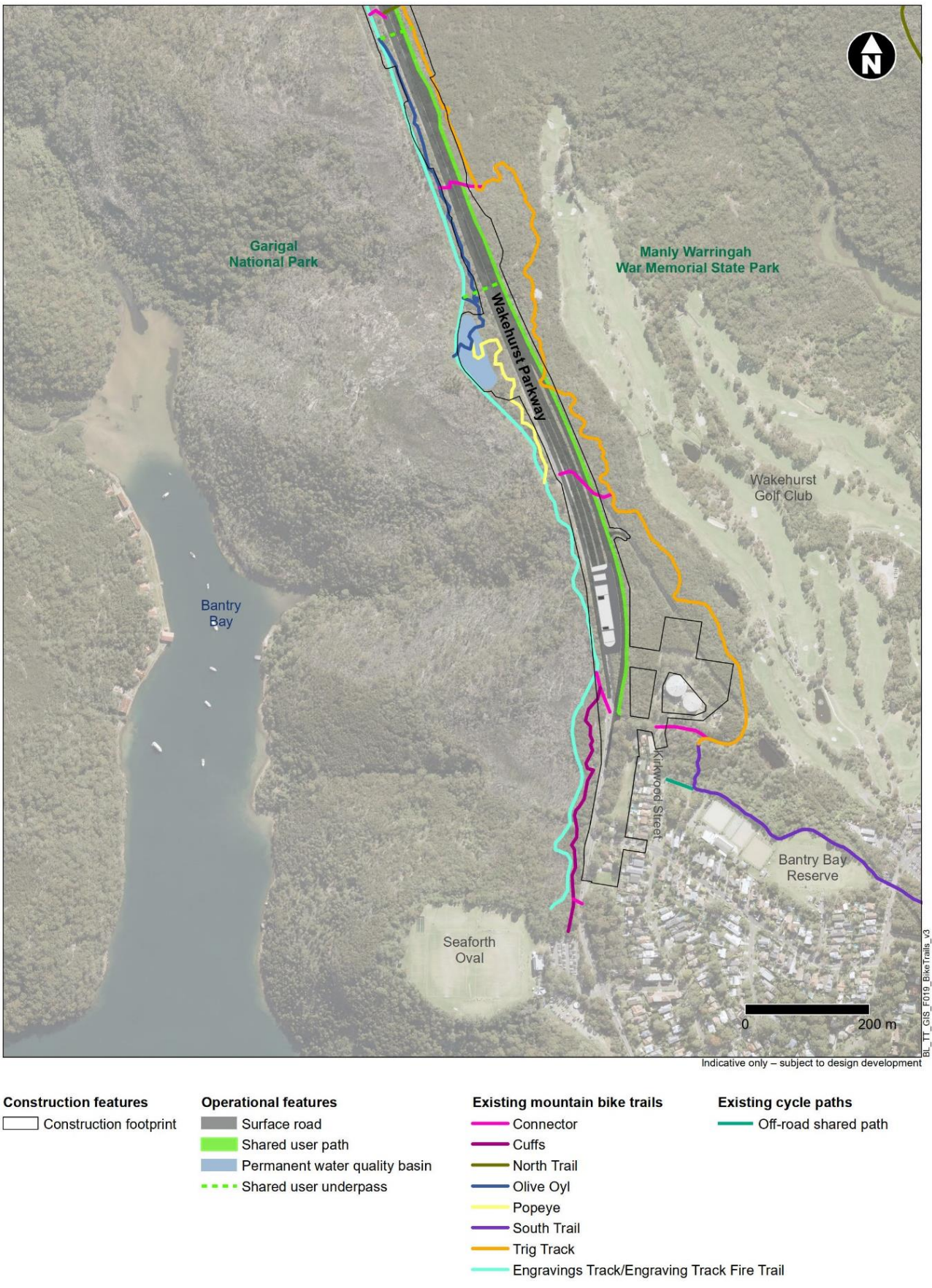


Figure A4-7 Overview of active transport impacts within Frenchs Forest and surrounds (southern area)

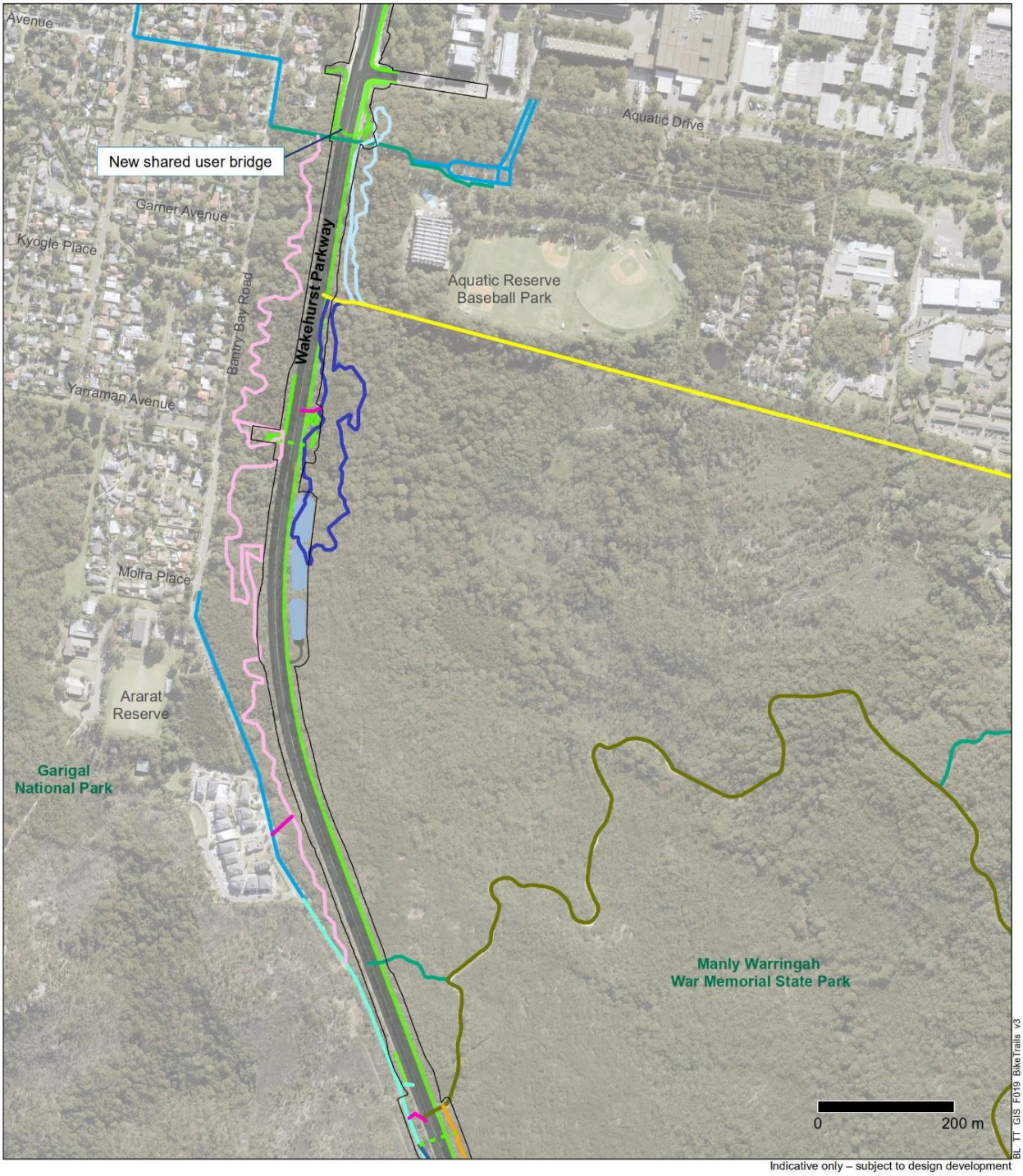


Figure A4-8 Overview of active transport impacts within Frenchs Forest and surrounds (northern area)

Figure A4-9 to Figure A4-12 provide greater detail at key areas of concern along the Wakehurst Parkway.

Currently, the following mountain bike trails would potentially be impacted by the project:

- Possum Trail – This is a one directional trail located on the western side of Wakehurst Parkway from just south of the southern end of Bantry Bay Road to the existing pedestrian bridge over the Wakehurst Parkway near to Warringah Aquatic Centre. This trail forms part of the Extended Possums Loop. This trail would be connected to the proposed shared user underpass being constructed by the project opposite Yarraman Avenue as shown in Figure 5-24 of the environmental impact statement. Slight realignment of the trail within the construction footprint would be required at this location however access would be maintained during construction and operation (refer to Figure A4-10 below). As noted in Section A4.3, the Possum Trail would be extended by the project to provide a connection to Fitzpatrick Avenue East and the replacement shared user bridge over Wakehurst Parkway
- Fatback – This is a one directional loop trail on the eastern side of Wakehurst Parkway to the south of Sydney Water's aboveground water supply pipelines near Aquatic Reserve Baseball Park. Permanent water quality basins are proposed in this area (refer to Figure 5-24 of the environmental impact statement). Figure A4-10 indicates where the existing Fatback trail would conflict with the proposed permanent water quality basins. In consultation with Northern Beaches Council, Transport for NSW will close the Fatback Trail loop, however a section of the existing Fatback trail will be retained to provide connectivity between the new shared user underpass at Yarraman Avenue and the Pipeline Trail
- Jumping Jack – This is a one directional loop trail on the eastern side of Wakehurst Parkway to the north of Sydney Water's aboveground water supply pipeline near Aquatic Reserve Baseball Park. Figure A4-11 indicates where the existing Jumping Jack trail overlaps with the proposed pedestrian bridge. The Jumping Jack trail would be temporarily impacted during construction however due to the proposed refinement outlined in Section A4.3, permanent impacts to the trail have been avoided
- North Trail – This is a one directional trail that starts at a small layby/parking area on the eastern side of Wakehurst Parkway and continues in a north-east direction towards Manly Creek. This trail forms part of the 11 kilometre mountain bike trail loop at Manly Warringah War Memorial State Park. This trail could be connected to the proposed shared user path along the eastern side of Wakehurst Parkway as shown in Figure 5-23 of the environmental impact statement if deemed appropriate by Northern Beaches Council during further design development. Minor adjustment to the trail at the interface with the construction footprint would be required during construction to facilitate these works. Access would be maintained to provide connectivity between the Trig Track and the North Trail during construction and operation to ensure the 11 kilometre mountain bike trail loop at Manly Warringah War Memorial State Park continues to operate. Figure A4-12 indicates where the existing North Trail overlaps with the construction footprint along Wakehurst Parkway
- Trig Track – This is a one directional trail that starts on the eastern side of Sydney Water's Bantry Bay Reservoir site and continues in the northerly direction between Wakehurst Parkway to the west and Wakehurst Golf Course to the east. This trail forms part of the 11 kilometre mountain bike trail loop at Manly Warringah War Memorial State Park. Trig Track connects to North Trail adjacent to a small layby/parking area on the eastern side of Wakehurst Parkway. Trig Track would be affected by the project with a number of short sections requiring realignment where it is within the Wakehurst Parkway road reserve. Access would be maintained to provide connectivity between the Trig Track and the North Trail during construction and operation to ensure the 11 kilometre mountain bike trail loop at Manly Warringah War Memorial State Park continues to operate. Figure A4-12 indicates where the existing Trig Track overlaps with the construction footprint along Wakehurst Parkway

- Olive Oyl – This is a one directional trail located between Wakehurst Parkway to the east and Garigal National Park and a fire trail to the west. It connects to Popeye and Engravings Track – Fire Trail. A permanent water quality basin is proposed in this area (refer to Figure 5-23 of the environmental impact statement) and the southern section of Olive Oyl would need to be realigned within the Wakehurst Parkway road reserve around the basin. Figure A4-12 indicates where the existing Olive Oyl trail would conflict with the proposed permanent water quality basin
- Popeye – This is a bi-directional trail located between Wakehurst Parkway to the east and Garigal National Park and a fire trail to the west. It connects to Olive Oyl and Engravings Track – Fire Trail. As a permanent water quality basin is proposed in this area (refer to Figure 5-23 of the environmental impact statement) and the Popeye trail would need to be realigned within the Wakehurst Parkway road reserve around the basin. Figure A4-12 indicates where the existing Popeye trail would conflict with the proposed water quality basin
- Cuffs – This is a one directional trail located between Wakehurst Parkway to the east and Garigal National Park and the Engravings Track to the west. It connects to the Engravings Track and the Wakehurst Parkway road corridor. The northern section of Cuffs is within the Wakehurst Parkway construction footprint however the connection to the Engravings Track – Fire Trail would be retained. Figure A4-9 indicates where the existing Cuffs trail would intersect with the proposed construction footprint. The mountain bike trail network currently also includes east west connections on the road across Wakehurst Parkway which would no longer be possible following the commencement of construction as a new median concrete barrier would be constructed between the northbound and southbound lanes. Instead, east west connections on the networks would be facilitated by the new shared user underpasses and relocated shared user bridge being provided as part of the project.

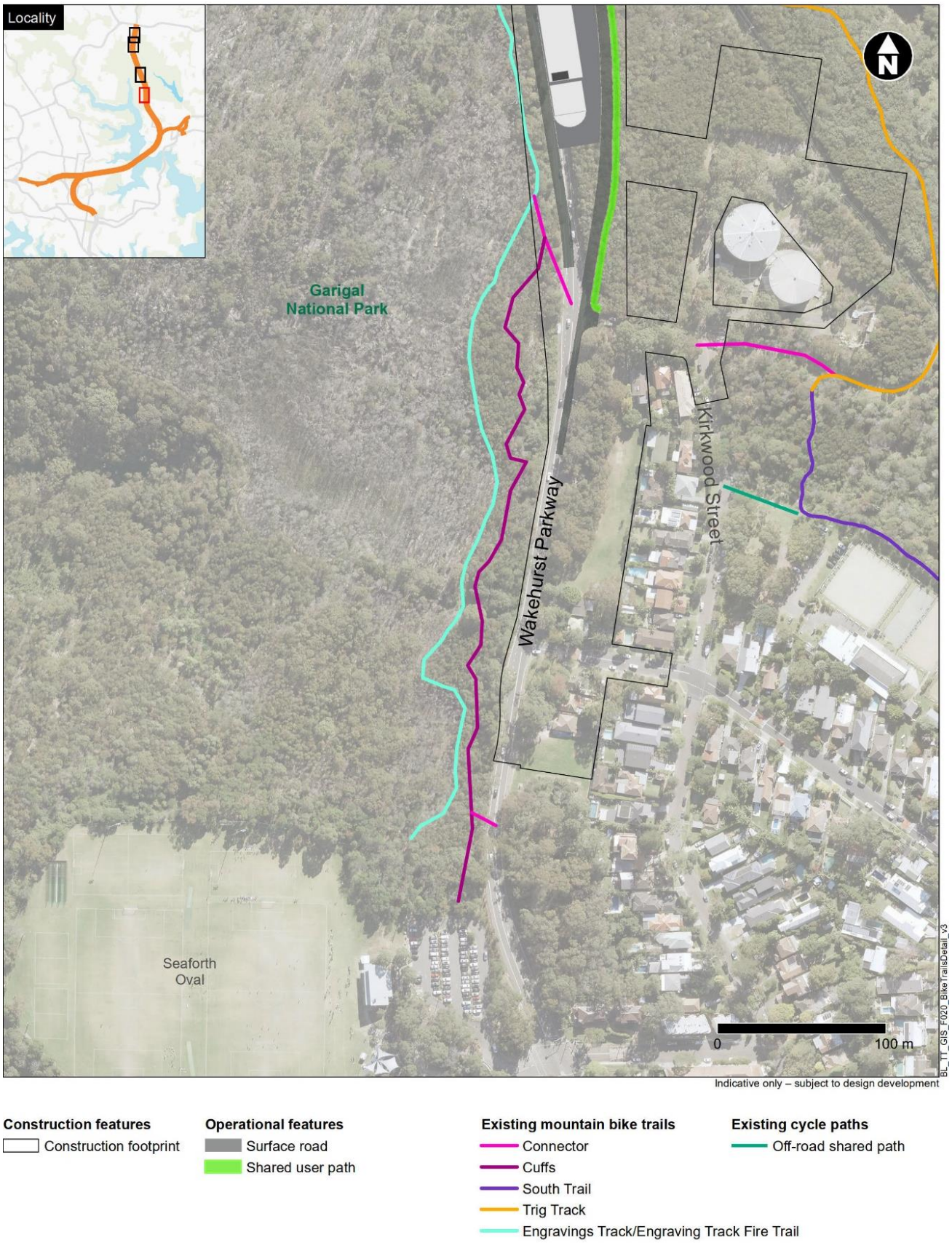


Figure A4-9 Active transport impacts within Frenchs Forest and surrounds (map 1)

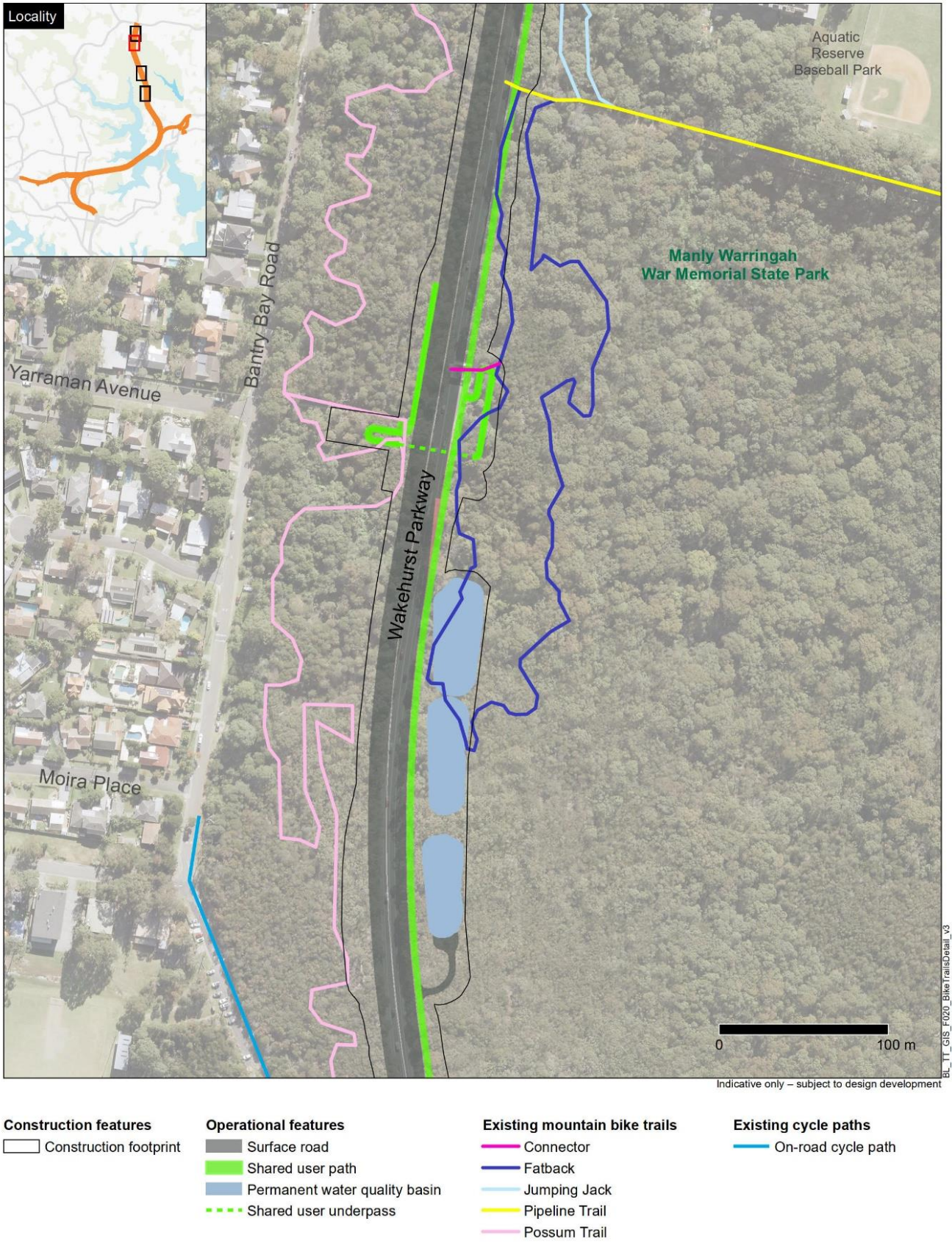


Figure A4-10 Active transport impacts within Frenchs Forest and surrounds (map 2)

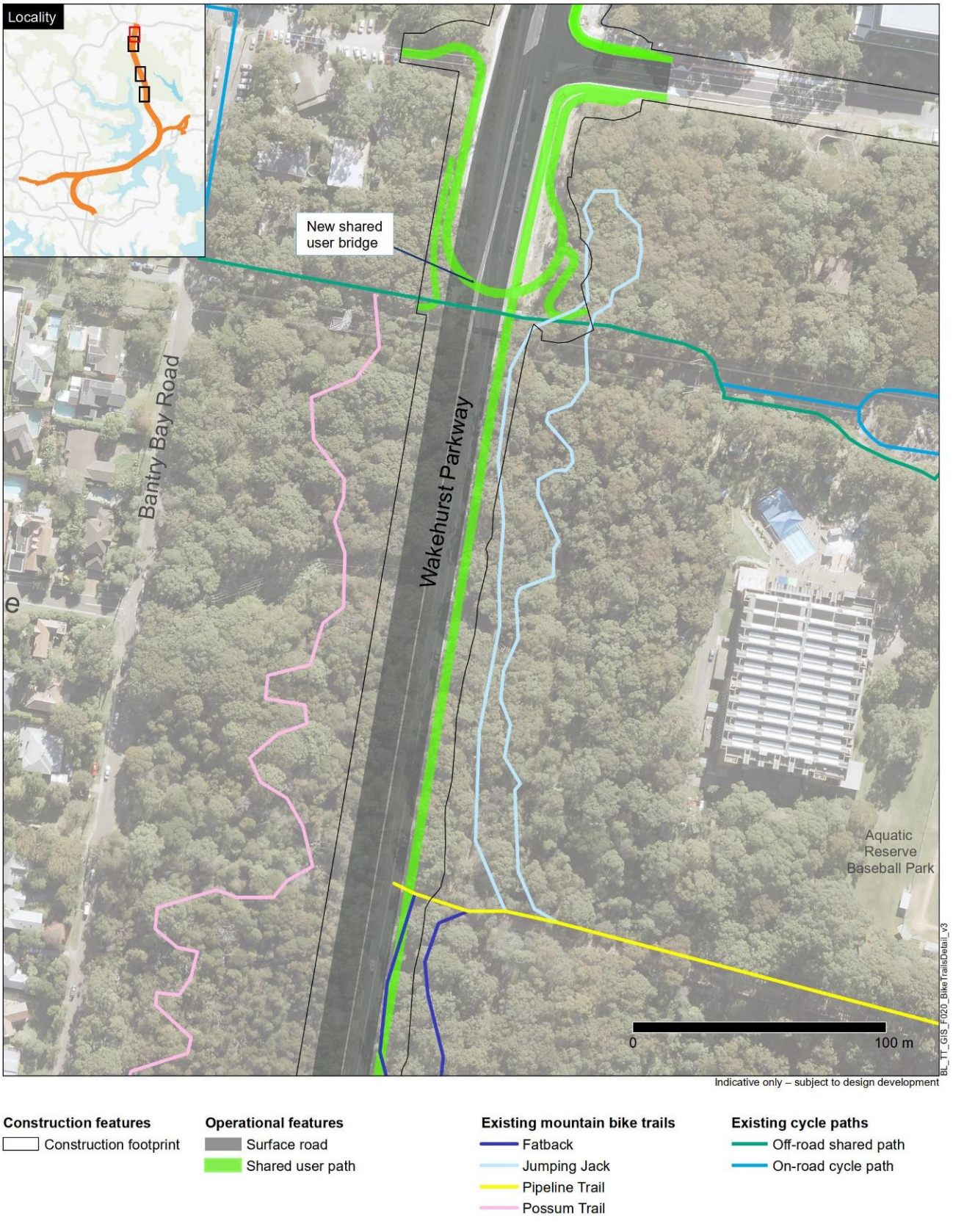


Figure A4-11 Active transport impacts within Frenchs Forest and surrounds (map 3)

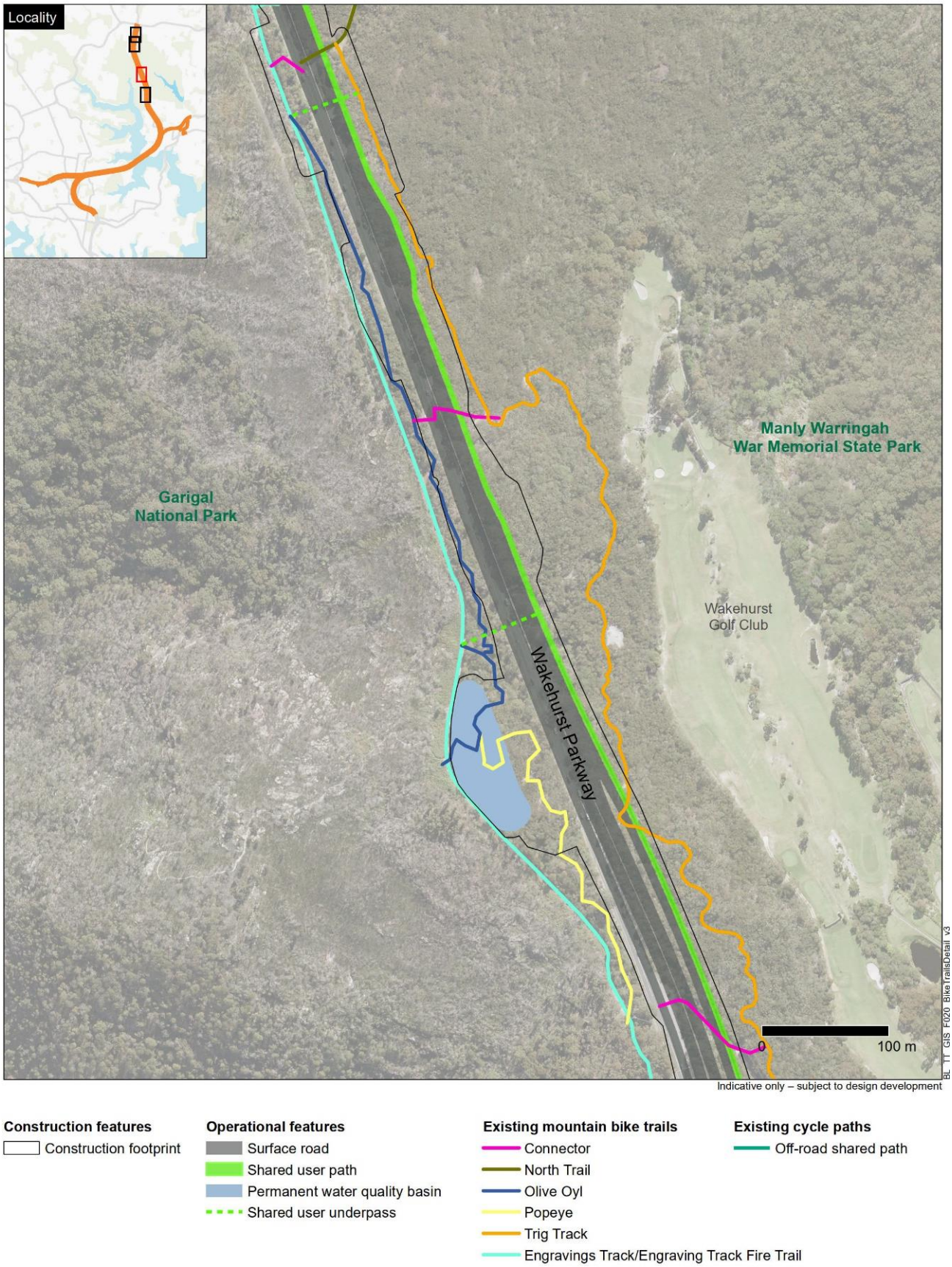


Figure A4-12 Active transport impacts within Frenchs Forest and surrounds (map 4)

Where possible, during further design development Transport for NSW would refine the design of the project and seek to avoid or otherwise minimise impacts to the mountain bike trail network. Where impacts cannot be avoided, minor detour routes would be implemented including some staging of trail adjustments to align with construction staging of the Wakehurst Parkway upgrade works. Advanced notification of track closures would be provided at key locations. Construction of the three permanent shared user path underpasses proposed along the Wakehurst Parkway would be prioritised where feasible to facilitate enhanced connectivity. Any detours and adjustments would be designed with consideration of user safety and convenience.

A4.5.4 Environmental screening assessment

The potential impacts of the project, including the proposed refinement, were compared to those of the exhibited project described in the environmental impact statement.

The indicative construction methodology would be as described in Section 6.5 of the environmental impact statement. The proposed refinement would not affect the construction and operation footprints or change the project's permanent and temporary land requirements.

The proposed refinement would not result in any vegetation clearing in addition to that outlined in the environmental impact statement and changes would be accommodated within the construction footprint to the extent possible. Engagement and consultation have been carried out with Northern Beaches Council and mountain biking associations to describe the impacts to mountain bike trails and seek feedback (refer to sections A2.3 and A2.4). Transport for NSW would continue to consult with Northern Beaches Council and relevant mountain biking associations during further design development of the project regarding potential impacts to the Manly Warringah War Memorial State Park mountain bike trail network at Wakehurst Parkway.

A4.6 Reduced impacts to Frenchs Bullock Track

A4.6.1 The project as described in the environmental impact statement

There would be minor impacts to the locally listed non-Aboriginal heritage item Frenchs Bullock Track, with a small section at the northern end of the Frenchs Bullock Track potentially being permanently modified by a fill embankment associated with roadworks extending into the curtilage of the item (refer to Chapter 14 (Non-Aboriginal heritage) and Table 14-3 of the environmental impact statement). Due to the low resolution of the spatial data for the heritage curtilage of Frenchs Bullock Track, a southern section of the track may be impacted by the existing alignment of the Wakehurst Parkway and would be further impacted by the project. However, the Engravings Trail, which largely follows the curtilage of the Frenchs Bullock Trail in this area would not be impacted.

Following detailed survey, further design development and construction planning, works could potentially still result in a permanent and irreversible change of up to 20 per cent of the track. However, the changes would not detrimentally impact the historical and aesthetic significance of the heritage item as the greater majority of the track remains in-situ and would continue to display its historical and aesthetic significance.

The environmental impact statement acknowledges the opportunity for road fill embankment designs to be adjusted to lessen the impacts on the track. Further detailed survey will be completed to confirm the heritage curtilage of the southern section of Frenchs Bullock Track prior to construction to determine if this section will be directly impacted as required by environmental management measure NAH9 (refer Table D2-1 of this submissions report). During further design development and construction planning the impacts would be re-assessed with a view to redesign shared user path underpass connections to the track, thereby minimising the level of impact.

A4.6.2 Need for the proposed refinement

As a result of further design development, and following receipt of the Northern Beaches Council submission on the project environmental impact statement, the design of the fill embankments has been further refined and assessed to reduce the likelihood of impacts in the northern section.

A4.6.3 Description of refinement

Design features and location

For the northern section of Frenchs Bullock Track, fill retaining walls have been introduced at the proposed combined fauna underpass and proposed shared user underpass on the western side of the roadway around chainages 11300 and 11450 accordingly (note that the chainage control point for the design has changed during further design development since the environmental impact statement (refer to note under Table A4-2 above)). The fill retaining walls have eliminated the spread of the previous fill embankments, such that the embankments have been moved eastward to be closer to the roadway and remove the prior encroachment on to the Frenchs Bullock Track in this area.

However, further detailed survey will still need to be completed to confirm the heritage curtilage of the southern section of Frenchs Bullock Track prior to construction to determine if this section will be directly impacted. Environmental management measure NAH9 (refer Table D2-1 of this submissions report) remains unchanged and ongoing work to avoid impacts during further design development will still be carried out.

Construction

The indicative construction methodology would be as described in Section 6.5 of the environmental impact statement.

Project footprint and land requirements

The proposed refinement would not affect the construction and operation footprints or change the project's permanent and temporary land requirements.

A4.6.4 Environmental screening assessment

Non-Aboriginal heritage impacts of the proposed refinement have been assessed in Appendix H of this submissions report, and would result in an overall reduction of impacts to Frenchs Bullock Track. Further work including detailed survey to confirm the heritage curtilage and refinements to avoid impacts during further design development, would still be required.

There would be no other changes to impacts.

A4.7 Facilitation of bus layover at Warringah Freeway during construction

A4.7.1 Need for the proposed refinement

Following internal consultation within Transport for NSW, it is proposed that the functionality of the Warringah Freeway southbound bus corridor near the Cammeray Golf Course temporary construction support site (BL1) be refined to enable additional bus layover functions in the afternoon peak.

The proposed refinement would allow the use of the off side road shoulder for bus layover functions. This would enable an additional 12 bus bays to be provided at this location in addition to the 12 bus bays proposed on the near side of the Warringah Freeway corridor. The proposed refinement will

allow a total of 31 bus bays to be replaced across the Western Harbour Tunnel and Beaches Link program of works.

A4.7.2 Description of refinement

Design features and location

No changes to the southbound lane configuration are proposed, only the functionality of the off side shoulder during the afternoon peak to enable an additional 12 bus bays to be provided. It is proposed that during the afternoon peak the speed limit through the bus layover area will be reduced to ensure safe bus access into and out of the individual bays.

Construction

No changes are proposed for the construction methodology.

Project footprint and land requirements

The proposed refinement would not affect the construction and operation footprints or change the project's permanent and temporary land requirements.

A4.7.3 Environmental screening assessment

The potential impacts of the proposed refinement were compared to those of the exhibited project described in the environmental impact statement. The potential changes to the key impacts are described below.

Bus travel routes and traffic impacts

Due to the relocation of the 24 bus bays into the separation bus corridor near Cammeray Golf Course, any buses travelling southbound for North Sydney CBD would need to merge into the general public traffic lanes and use the Alfred Street North exit and cross the High Street bridge to reach their destination. Speed limit reductions in the afternoon peak to ensure safety would cause minor impact to travel times however, this would only impact the buses in the southbound bus lane near the Cammeray Golf Course and the speed limit reductions are localised to the vicinity of the bus layover facilities.

A4.8 Stormwater basin at Balgowlah

The project would impact the Balgowlah Golf Course stormwater dam as part of constructing the new access road between Sydney Road and the Beaches Link portal as discussed in Section 17.4.5 of the environmental impact statement. The stormwater dam currently functions with a dual purpose as stormwater flood detention and as a stormwater harvesting dam for the golf course. The environmental impact statement states that the Balgowlah Golf Course stormwater dam would initially be retained and maintained as construction water and irrigation of Balgowlah Oval by Northern Beaches Council. As construction progresses the stormwater dam would be removed and replaced north of its existing location. Further, the size and location of a new stormwater flood detention basin and ongoing need for an associated stormwater harvesting scheme would be assessed and determined during further design development. A suitable alternate location, size and future use of the new basin would be determined as part of the dedicated consultation process regarding the final layout of the new and improved public open space and recreation facilities at Balgowlah.

Following exhibition of the environmental impact statement, and further consultation with Northern Beaches Council, it has now been confirmed that there is an ongoing need for the stormwater harvesting scheme.

The project has been refined such that the existing Balgowlah Golf course stormwater dam would not be decommissioned (although it may be slightly modified to allow construction of the whole Access Road alignment) until the new stormwater basin at Balgowlah is commissioned, in order to:

- Continue to provide water harvesting for Balgowlah Oval irrigation
- Provide construction water for surface works
- Perform flood detention functions.

A suitable alternate location and size for the new stormwater basin at Balgowlah will be determined as part of the dedicated consultation and follow on design process associated with the final layout of the new and improved public open space and recreation facilities at Balgowlah.

The proposed refinement would not affect the construction and operation footprints or change the project's permanent and temporary land requirements.

In response to the proposed refinement, environmental management measure WQ1 (refer to Table D2-1 of this submissions report) has been revised as follows:

> The ~~need~~ **final design** for a stormwater harvesting water quality basin at Balgowlah **to replace the existing Balgowlah Golf Course stormwater dam will be developed** ~~assessed and determined~~ during further design development **in consultation with Northern Beaches Council**. ~~If the stormwater harvesting water quality basin is considered to be required, a~~ **A** suitable alternate location **and size for the basin** ~~and future use~~ will be determined as part of the dedicated consultation **and follow on design** process **associated with** ~~regarding~~ the final layout of the new and improved public open space and recreation facilities at Balgowlah. **The new stormwater basin at Balgowlah will be constructed and operational prior to the decommissioning of the existing Balgowlah Golf Course stormwater dam.**

A4.9 Project staging

The scope of the Beaches Link and Gore Hill Freeway Connection project is described in Chapter 5 (Project Description) of the environmental impact statement and notes the project may be staged, depending on future decisions regarding the delivery of the project. As a result of further planning and procurement packaging, Transport for NSW has elected to stage the project.

The project stages are anticipated to be as follows:

- Stage 1 – Enabling and early works:
    - Balgowlah Golf Course construction support site (BL10)
    - Flat Rock Drive construction support site (BL2)
- Stage 2 – Gore Hill Freeway Connection project
- Stage 3 – Beaches Link project

The Stage 1 enabling and early works to facilitate site establishment and construction access is expected to commence prior to construction of the main works (Stage 2 and Stage 3) to respond to market trends on contractor availability. A staging report would be prepared and provided to the Department of Planning, Industry and Environment for information prior to the commencement of construction. The staging report would detail how the construction of the project would be staged including details of work and other activities to be carried out in each stage and the general timing of when construction of each stage will commence and finish.

A4.10 Reduced flooding impacts to residential properties upstream of Burnt Bridge Creek

Transport for NSW is obliged to ensure that the impact of the project on flood behaviour during events greater than one per cent annual exceedance probability (1% AEP) in magnitude does not result in:

a) Adverse impacts on critical infrastructure (such as hospitals) and vulnerable development (such as aged care facilities and schools), and

b) Significant increases in the hazardous nature of flooding that would lead to an increased risk to life.

No land uses listed under point a) above are being adversely impacted by the project during events greater than 1% AEP. In regards to point b) above, it is considered that the impacts attributable to the project in the probable maximum flood (PMF) event does not present a significant increase in the hazardous nature of flooding, with the possible exception of six residential dwellings that are located upstream of Burnt Bridge Creek Deviation. As outlined in Section 6.2.1.2 of Appendix R (Technical working paper: Flooding), the project has the potential to increase peak flood levels by up to about 0.5 metres in up to six existing dwellings that are located immediately upstream of the Burnt Bridge Creek Deviation crossing of Burnt Bridge Creek during more extreme storm events more intense than the 1% AEP event. While floor level survey would be required in order to assess whether the project would significantly increase the flood hazard in the six affected dwellings, it is noted that the depth of aboveground inundation associated with three of the affected dwellings exceeds two metres in a PMF event under present day conditions.

Transport for NSW is committed to minimising and/or eliminating adverse impacts in residential developments located upstream of Burnt Bridge Creek Deviation. Following exhibition of the environmental impact statement, Transport for NSW is carrying out further refinement of the Reference Design to reduce road levels at the existing creek crossing of Burnt Bridge Creek so that, subject to final detailed design and final flood modelling, the impacts upstream of Burnt Bridge Creek Deviation can be minimised to the greatest extent possible.

Flooding impacts in other areas are considered to be minor or confined to areas where there is no development. Notwithstanding, during further design development, Transport for NSW would include appropriate mitigations within the design to ensure that there would not be an unacceptable increase in flood hazard in existing development and therefore risk to life during floods larger than 1% AEP.

It should also be considered that the final landform and associated flood modelling results downstream of the creek crossing of Burnt Bridge Creek Deviation is not final and subject to further consultation with the community and stakeholders regarding final agreed features associated with the new and improved open space and recreation facilities at Balgowlah. As such, final detailed design, including the modified basin to replace the existing golf course dam, will be subject to further consultation and final flood modelling. The intention would be for the new and improved open space and recreation facilities and basin to be designed to minimise where possible impacts downstream and to the north-west within North Balgowlah, once the final landform of the former Balgowlah Golf Course has been determined.

To reflect Transport for NSW's commitment to not significantly increase flooding hazard, environmental management measure F2 (refer to Table D2-1 of this submissions report) has been revised as follows:

> Impact of the project on flood behaviour during operation will be confirmed during further project development. This will include the consideration of future climate change and a partial blockage

of the local stormwater drainage system. **The project will be designed such that the flood hazard in existing residential development during floods larger than 1% AEP would not be significantly increased such that there would be an increased risk to life.**

Further, new environmental management measure F10 has been developed to reflect Transport for NSW's commitment to minimise/eliminate adverse flooding impacts in residential development upstream of the Burnt Bridge Creek Deviation crossing of Burnt Bridge Creek:

Opportunities to minimise and/or eliminate adverse impacts in residential development that is located upstream of the Burnt Bridge Creek Deviation for events greater than the 1% AEP event will be investigated during further design development. This would include refinement of road levels at the existing creek crossing of Burnt Bridge Creek, and detailed design of the new stormwater basin at Balgowlah.

Transport for NSW

Beaches Link and Gore Hill Freeway Connection

A5 – Clarifications

November 2021

A5 Clarifications

Contents

A5.1 General clarifications

This section identifies general clarifications identified in the environmental impact statement. Where relevant, the text provided can be considered to replace the text from the environmental impact statement. None of these clarifications result in any significant change to the environmental impacts described in the environmental impact statement.

Other minor errors and discrepancies are included in Section A5.2.

A5.1.1 Construction staff and worker car parking

The provision of sufficient car parking has been queried. The approach taken for the project regarding the provision of construction staff and worker car parking is detailed below.

Locating temporary construction support sites to support large scale infrastructure projects in urban environments is a complex issue, and requires consideration of a variety of factors including:

- Minimising property acquisitions, especially private residential dwellings
- Connectivity of the site with arterial roads to minimise haulage and heavy vehicle movements through local streets
- Ensuring the sites are of a size to accommodate all of the work requirements, including parking
- Avoidance of environmental and heritage values.

In urban environments, it is challenging to achieve all of these objectives. Where possible, temporary construction support sites have been located to accommodate provision for worker parking and the project has sized temporary construction support sites balancing the different constraints in each location, with a particular emphasis on minimising property acquisitions. As a result, for some sites not all worker parking is able to be accommodated within the temporary construction support sites, and/or additional demand management and supply measures may be needed.

The number of car parking spaces and tailored complementary demand management strategies at each temporary construction support site would be determined during detailed construction planning, when the contractor/s have been engaged.

Transport for NSW has revised environmental management measure CTT11 to better reflect the intention to minimise parking in local streets where local existing demands are high, through a range of complementary initiatives. The revised environmental management measure CTT11 (refer to Table D2-1 of this submissions report) is as follows:

> Impacts resulting from on- and off-street parking changes during construction will be minimised where reasonable and feasible. Depending on the location, options to manage construction staff and worker parking and manage impacts to stakeholders may include:
>
> a) Proactively encouraging usage of public transport for workers though site induction information sessions
> b) Provision of shuttle buses from public transport hubs where appropriate
> c) Staged removal and replacement of parking
> d) Provision of alternative parking arrangements such as off-site contractor managed parking lots
> e) Managed staff parking arrangements

f) Working with relevant council(s) to introduce appropriate parking restrictions adjacent to construction sites and support sites or appropriate residential parking schemes.

The broad strategies for worker parking currently under consideration are summarised in Table A5-1. These strategies would be tailored to suit the requirements and geographical spread of the workforce to ensure maximum take up, once the contractor/s have been engaged.

Table A5-1 Indicative construction worker and staff parking strategies

Temporary construction support sites south of Middle Harbour	Temporary construction support sites north of Middle Harbour

• Encourage workers to use public transport, with key bus corridors including
  - Pacific Highway, Warringah Freeway, Miller Street, Falcon Street and Military Road for Cammeray Golf Course (BL1) construction support site
  - Brook Street and Flat Rock Drive corridor for Flat Rock Drive (BL2) construction support site
  - Pacific Highway, Gore Hill Freeway and Epping Road for (Punch Street (BL3), Dickson Avenue (BL4), Barton Road (BL5) and Gore Hill Freeway median (BL6) construction support sites)
  - T1 North Shore and T9 Northern Lines are also accessible from Artarmon, North Sydney, St Leonards and Waverton railway stations
• Shuttle buses to and from public transport centres
• Shuttle buses to and from any alternate additional parking site(s) to be procured by the contractor/s
• Provision of on-site parking as outlined in Table A5-2
• Encourage workers to carpool
• Encourage workers to use paid parking services nearby/parking leases.
	• Encourage workers to use public transport, with key bus corridors (including the Northern Beaches B-Line) including Military Road, Spit Road, Manly Road, Sydney Road, Burnt Bridge Creek Deviation and Condamine Street for Spit West Reserve (BL9), Balgowlah Golf Course (BL10) and Kitchener Street (BL11) construction support sites
	• Shuttle buses to and from public transport centres
	• Provision of on-site parking as outlined in Table A5-2
	• Parking provided at Balgowlah Golf Course construction support site (BL10), with shuttle buses provided to Spit West Reserve (BL9) and Kitchener Street (BL11) construction support sites
	• Additional parking accommodated on the road reserve within the Wakehurst Parkway Upgrade component of the project as required and suiting staging of works (to support Wakehurst Parkway south (BL12), Wakehurst Parkway east (BL13), Wakehurst Parkway north (BL14))
	• Encourage workers to carpool
	• Encourage workers to use paid parking services nearby/parking leases.

The project would provide on-site parking as outlined in Table A5-2. Construction support site layouts and requirements at this stage are indicative and would be further defined during subsequent design and construction planning phases when contractor/s are engaged. This would allow the nominated contractor/s to fully detail temporary construction support site layouts to suit their particular construction methodologies in each support site location. Any impacts and measures to manage parking impacts would be detailed in the traffic management plan, as a sub-plan under the construction environmental management plan (refer to Section D1 of this submissions report.

Table A5-2 On-site parking provision at temporary construction support sites

Construction support site	Parking provision
Dickson Avenue (BL4), Barton Road (BL5), Balgowlah Golf Course (BL10), Wakehurst Parkway south (BL12), Wakehurst Parkway north (BL14)	Car parking areas provided for construction staff and workers
Cammeray Golf Course (BL1), Flat Rock Drive (BL2), Punch Street (BL3), Gore Hill Freeway (BL6), Spit West Reserve (BL9), Kitchener Street (BL11), Wakehurst Parkway east (BL13)	Car parking areas provided for site staff and limited parking for construction workers
Middle Harbour south cofferdam (BL7), Middle Harbour north (BL8)	No parking provided *

** Workers would be transported by boat from Spit West Reserve construction support site (BL9) to and from the cofferdams*

It is also noted that in consultation with the Department of Planning, Industry and Environment, Transport for NSW has carried out a parking study to better understand existing parking supply and demand in the vicinity of temporary construction support sites. The results of this study are included in Appendix B of this submissions report, and will help to inform the further development of parking impact mitigation strategies.

A5.1.2 Construction intersection performance for Burnt Bridge Creek Deviation/BL10 construction support site access

The intersection performance results for the road network under the 'base' (without construction vehicles) and 'construction' (with construction vehicles and proposed intersection modifications during construction) scenarios are summarised in Table 5-14 of Appendix F (Technical working paper: Traffic and Transport) for the morning and evening peak hours. Table 5-14 of Appendix F (Technical working paper: Traffic and Transport) has been updated to summarise the modelled intersection performance of the Burnt Bridge Creek Deviation/BL10 construction support site access (refer to Table A5-3 below for the relevant component of the updated table).

Note that performance is not provided for the '2024 base' scenario as the intersection would only exist in the '2024 construction' scenario.

The Burnt Bridge Creek Deviation/BL10 construction support site access intersection is expected to operate at a satisfactory Level of Service (A) during construction in 2024.

Table A5-3 Modelled base and construction year morning and evening peak hour intersection performance – Balgowlah and surrounds (addition to Table 5-14 of Appendix F (Technical working paper: Traffic and transport)

Intersection/peak period	2024 base						2024 construction					
	Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LoS	Degree of saturation	Maximum queue length by directional approach (metres)		Demand flow (vehicles per hour)	Average delay (seconds per vehicle)	LoS	Degree of saturation	Maximum queue length by directional approach (metres)	
Burnt Bridge Creek Deviation/BL10 construction support site access												
Morning peak	-	-	-	-	Northbound	-	2,530	7	A	0.54	Northbound	50
					Eastbound	-					Eastbound	-
					Southbound	-					Southbound	140
					Westbound	-					Westbound	25
Evening peak	-	-	-	-	Northbound	-	3,130	7	A	0.62	Northbound	115
					Eastbound	-					Eastbound	-
					Southbound	-					Southbound	80
					Westbound	-					Westbound	25

A5.1.3 Operational traffic metrics for tunnel and non-tunnel users

The operational traffic and transport modelling presented in Appendix F (Technical working paper: Traffic and transport) demonstrates project benefits and impacts to all road users through the provision of various network and intersection metrics at each surface interface area. To provide further clarity regarding the operational impacts which would be experienced by customers who would use the future motorway network (including Beaches Link tunnels) versus those who would not (ie impacts on surface streets), additional transport performance metrics are presented in Table A5-4 below.

Table A5-4 provides details on average speed and number of vehicles during the year 2037 AM and PM peak periods for motorway/tunnel users versus non-motorway users, and supplementing modelled peak network performance metrics provided in Appendix F (Technical working paper: Traffic and transport). Key findings from this additional transport performance analysis are summarised below.

It is noted that additional review and assessment of the environmental impact statement operational traffic models has been carried out, including additional modelling (where considered necessary) to further refine traffic and transport operational models to provide further clarity on the modelling outcomes, including any potential localised intersection performance benefits/residual impacts in the surrounding network as a result of the project (refer to Section 6 (Assessment of road intersection operational performance) of the preferred infrastructure report).

Warringah Freeway and surrounds

When considering all traffic, the Beaches Link and Gore Hill Freeway Connection environmental impact statement (as reported in Table 8-10 of Appendix F (Technical working paper: Traffic and transport)) indicates a reduction of average network speeds for all traffic of about five per cent in the AM peak (2037 'Do something' scenario), and an improvement of between 15 per cent and 40 per cent for other 2037 peak periods and scenarios modelled.

The additional analysis indicates a reduction of average network speeds for non-motorway traffic of up to 15 per cent for the 2037 'Do something' and 'Do something cumulative' scenarios, with the exception of the PM peak in the 2037 'Do something cumulative' scenario which indicates an improvement of about 15 per cent.

Further, the results in Table A5-4 indicate that:

- The reduction in Gore Hill Freeway traffic speeds in the 'Do something' AM model is due to increased localised demand/congestion on the freeway network in the area due to Beaches Link, noting that this issue is resolved by the introduction of the Western Harbour Tunnel in the 'Do something cumulative' scenario. This is illustrated by the reduction in traffic speeds on the Sydney Harbour Bridge and Sydney Harbour Tunnel in the 'Do something' AM models, noting that these issues are resolved by the introduction of the Western Harbour Tunnel in the 'Do something cumulative' scenario
- Non-motorway traffic performance is generally unaffected by Beaches Link
- When the Western Harbour Tunnel is also introduced ('Do something cumulative'), non-motorway traffic is shown to have about a 15 per cent reduction in average network speeds during the AM peak, but about a 15 per cent improvement during the PM peak
- Generally, the modelling shows that road user impacts/benefits created by Beaches Link would be mitigated/amplified respectively by the introduction of the Western Harbour Tunnel (noting that this is the intent of the overall Western Harbour Tunnel and Beaches Link program's integrated and complementary design).

Gore Hill Freeway and Artarmon

When considering all traffic, the Beaches Link and Gore Hill Freeway Connection environmental impact statement (as reported in Table 8-18 of Appendix F (Technical working paper: Traffic and transport)) indicates an improvement of average network speeds for all traffic of about 20 per cent in the AM and PM peaks (2037 'Do something' scenario), and a reduction of about five per cent in the PM peak for the 2037 'Do something cumulative' scenario (compared to 'Do minimum').

The additional analysis indicates an improvement of average network speeds for non-motorway traffic of about 10 per cent in the AM and PM peaks (2037 'Do something' scenario), and a reduction of about five per cent in the PM peak for the 2037 'Do something cumulative' scenario.

Further, the results in Table A5-4 indicate that:

- The 'Do something' and 'Do something cumulative' modelling indicates that Lane Cove Tunnel traffic would benefit from improved travel conditions in the AM peak, and would be maintained in the PM peak
- The 'Do something' modelling indicates that Gore Hill Freeway traffic would benefit from improved travel conditions in the AM peak, and would be maintained in the PM peak
- The 'Do something cumulative' modelling indicates that the Western Harbour Tunnel would not impact Gore Hill Freeway traffic in the AM peak, but has the potential to impact travel speeds by about 15 per cent in the PM peak
- Non-motorway traffic is shown to benefit from a 10 per cent improvement in network speeds in the AM peak in both the 'Do something' and 'Do something cumulative' scenarios
- Non-motorway traffic performance is shown to be maintained in the PM in the 'Do something' scenario, with a potential five per cent reduction in average speed as a result of the introduction of the Western Harbour Tunnel in the 'Do something cumulative' scenario.

Balgowlah and surrounds

When considering all traffic, the Beaches Link and Gore Hill Freeway Connection environmental impact statement (as reported in Table 8-26 of Appendix F (Technical working paper: Traffic and transport)) indicates an improvement of average network speeds for all traffic of between 50 per cent and 75 per cent for all 2037 peak periods and scenarios.

The additional analysis indicates an improvement of average network speeds for non-motorway traffic of between 15 per cent and 30 per cent for all 2037 peak periods and scenarios.

Table A5-4 indicates that non-motorway traffic would benefit from a 25 per cent to 30 per cent travel speed improvement in the AM peak, and a 15 to 20 per cent improvement in the PM peak.

Frenchs Forest and surrounds

When considering all traffic, the Beaches Link and Gore Hill Freeway Connection environmental impact statement (as reported in Table 8-34 of Appendix F (Technical working paper: Traffic and transport)) indicates a reduction of average network speeds for all traffic of between 10 per cent and 20 per cent for all 2037 peak periods and scenarios.

The additional analysis indicates a reduction of average network speeds for non-motorway traffic of between five per cent and 15 per cent for all 2037 peak periods and scenarios.

Further, the results in Table A5-4 indicate that:

- Non-motorway traffic is shown to have a potential approximately five per cent reduction in travel speeds as a result of Beaches Link in the AM and PM peaks
- Non-motorway traffic is shown to have a potential approximately 15 per cent reduction in AM peak/five per cent reduction in PM peak travel speeds as a result of the Western Harbour Tunnel being introduced.

Table A5-4 Modelled average network speeds (km/h) and total traffic (vehicles) for motorway users and all other traffic

	AM Peak (8am to 9am)						PM Peak (5pm to 6pm)					
	2037 'Do minimum'		2037 'Do something'		2037 'Do something cumulative'		2037 'Do minimum'		2037 'Do something'		2037 'Do something cumulative'	
	Km/h	Vehicles	Km/h	Vehicles	Km/h	Vehicles	Km/h	Vehicles	Km/h	Vehicles	Km/h	Vehicles
Warringah Freeway and surrounds												
Gore Hill Freeway traffic	43.2	7674	31.4	8021	49.8	9134	34.4	7469	42.4	8953	57.3	8210
Beaches Link traffic	-	-	40.0	2226	64.6	3485	-	-	51.7	2658	65.8	3527
Western Harbour Tunnel traffic	-	-	-	-	52.1	8219	-	-	-	-	56.1	7128
Sydney Harbour Bridge traffic	34.7	6563	28.4	6038	42.1	6298	33.0	6616	31.3	5516	39.8	5045
Sydney Harbour Tunnel traffic	49.5	4006	32.5	4264	43.6	3902	33.1	4400	46.7	4150	48.6	2941
All other traffic (ie traffic that does not use any motorways)	20.3	13,200	19.1	13,259	17.5	12,786	16.6	15,941	16.5	14,448	19.3	15,188
All traffic [1]	*34.5*	-	*32.5*	-	*40.1*	-	*28.2*	-	*34.8*	-	*39.3*	-
Gore Hill Freeway and surrounds												
Lane Cove Tunnel traffic	47.1	3770	57.2	4162	58.2	4001	63.4	3771	62.8	4120	62.0	4128
Beaches Link traffic	-	-	57.1	1834	56.5	1293	-	-	48.2	1255	45.9	1077
Gore Hill Fwy traffic	30.8	2079	34.3	2254	35.0	2227	32.6	2571	31.8	2237	28.3	2193
All other traffic (ie traffic that does not use any motorways)	41.0	10,073	45.0	9775	44.9	10,006	42.9	9439	43.0	9204	40.6	9212
All traffic [1]	*38.5*	-	*45.7*	-	*46.5*	-	*42.6*	-	*43.3*	-	*40.5*	-
Balgowlah and surrounds												
Beaches Link traffic	0.0	0	42.6	2821	41.6	3178	0.0	0	42.7	2863	43.4	3106
Non-Beaches Link traffic	25.0	9845	32.1	7873	31.8	7614	22.7	9911	26.6	8487	27.2	8323
All traffic [1]	*21.7*	-	*38.4*	-	*38.2*	-	*21.8*	-	*32.4*	-	*32.5*	-

	AM Peak (8am to 9am)						PM Peak (5pm to 6pm)					
	2037 'Do minimum'		2037 'Do something'		2037 'Do something cumulative'		2037 'Do minimum'		2037 'Do something'		2037 'Do something cumulative'	
	Km/h	Vehicles	Km/h	Vehicles	Km/h	Vehicles	Km/h	Vehicles	Km/h	Vehicles	Km/h	Vehicles
Frenchs Forest and surrounds												
Beaches Link traffic [2]	26.9	1896	27.5	4421	27.1	4475	32.2	2316	27.4	4491	23.4	4633
Non-Beaches Link traffic	31.8	14,873	30.4	13,508	27.5	12,560	32.6	15,961	31.2	15,058	30.5	14,698
All traffic [1]	*31.1*	-	*28.6*	-	*25.4*	-	*34.6*	-	*30.0*	-	*28.4*	-

1. All traffic (as reported in Appendix F (Technical working paper: Traffic and transport))

2. Wakehurst Parkway (south of Warringah Road) used as proxy - no Beaches Link specific zone in model

A5.1.4 Operational intersection performance of the Pacific Highway/Dickson Avenue intersection

The intersection performance results for the road network during operation (years 2027 and 2037) is summarised in Table 8-22 and Table 8-23 of Appendix F (Technical working paper: Traffic and Transport) for the morning peak hour and evening peak hour, respectively. Table 8-22 and Table 8-23 of Appendix F (Technical working paper: Traffic and Transport) have been updated to summarise the modelled intersection performance of the Pacific Highway/Dickson Avenue intersection (refer to Table A5-5 and Table A5-6 below for the relevant component of the updated tables).

The Pacific Highway/Dickson Avenue intersection is expected to operate at a satisfactory Level of Service (LoS) during AM (LoS B) and PM (LoS A) peak periods through to the 2037 design year.

Table A5-5 Modelled 'Do something cumulative' morning peak hour intersection performance – Gore Hill Freeway and Artarmon study area (addition to Table 8-22 of Appendix F (Technical working paper: Traffic and transport))

Intersection	2027 'Do minimum'		2027 'Do something'		2027 'Do something cumulative'		2037 'Do minimum'		2037 'Do something'		2037 'Do something cumulative'	
	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS
Pacific Highway/Dickson Avenue intersection	6	A	16	B	16	B	7	A	19	B	19	B

Table A5-6 Modelled 'Do something cumulative' evening peak hour intersection performance – Gore Hill Freeway and Artarmon study area (addition to Table 8-23 of Appendix F (Technical working paper: Traffic and transport))

Intersection	2027 'Do minimum'		2027 'Do something'		2027 'Do something cumulative'		2037 'Do minimum'		2037 'Do something'		2037 'Do something cumulative'	
	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS
Pacific Highway/Dickson Avenue intersection	6	A	13	A	13	A	6	A	13	A	13	A

A5.1.5 Transcription errors for operational localised intersection performance results for Warringah Freeway and surrounds area

Some transcription errors were made in Appendix F (Technical working paper: Traffic and transport) and Chapter 9 (Operational traffic and transport) of the environmental impact statement in the reporting of some localised intersection performance results for the Warringah Freeway and surrounds area. The corrected values are presented in Table A5-7 and Table A5-8 below. The reporting errors of localised intersection performance results are generally isolated and/or relatively immaterial; as such the primary network and travel time metrics as reported in the environmental impact statement are correct, and therefore the key outcomes of the traffic and transport assessment are not affected.

The results presented in the following tables should be considered as replacing relevant results presented in the environmental impact statement as follows:

- Table A5-7 results supersede relevant morning peak hour intersection results in the following environmental impact statement tables:
    - Appendix F (Technical working paper: Traffic and transport)
        - Table 6-14 Modelled 'Do minimum' morning peak hour intersection performance – Warringah Freeway and surrounds study area
        - Table 7-15 Modelled 'Do something' morning peak hour intersection performance – Warringah Freeway and surrounds study area
        - Table 8-14 Modelled 'Do something cumulative' morning peak hour intersection performance – Warringah Freeway and surrounds study area
    - Chapter 9 (Operational traffic and transport) of the environmental impact statement: Table 9-6 Modelled intersection performance on the Warringah Freeway and surrounds area (AM peak (8am–9am) and PM peak (5pm–6pm) during operation in 2027 and 2037)
- Table A5-8 results supersede relevant evening peak hour intersection results in the following environmental impact statement tables:
    - Appendix F (Technical working paper: Traffic and transport)
        - Table 6-15 Modelled 'Do minimum' evening peak hour intersection performance – Warringah Freeway and surrounds study area
        - Table 7-16 Modelled 'Do something' evening peak hour intersection performance – Warringah Freeway and surrounds study area
        - Table 8-15 Modelled 'Do something cumulative' evening peak hour intersection performance – Warringah Freeway and surrounds study area
    - Chapter 9 (Operational traffic and transport) of the environmental impact statement: Table 9-6 Modelled intersection performance on the Warringah Freeway and surrounds area (AM peak (8am–9am) and PM peak (5pm–6pm) during operation in 2027 and 2037).

Note that only intersections with reporting errors in the environmental impact statement have been included in the tables below. Also note that these updated results have been considered while carrying out revised modelling for the preferred infrastructure report (refer to Section 6 (Assessment of road intersection operational performance) of the preferred infrastructure report).

Table A5-7 Modelled 'Do something cumulative' morning peak hour intersection performance – Warringah Freeway and surrounds study area (update to Table 8-14 of Appendix F (Technical working paper: Traffic and transport))

Intersection	2027 'Do minimum'		2027 'Do something'		2027 'Do something cumulative'		2037 'Do minimum'		2037 'Do something'		2037 'Do something cumulative'	
	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS
Willoughby Road/Gore Hill Freeway interchange	>100	F	27	B	9	A	>100	F	~~21~~ **27**	B	~~10~~ **9**	A
Brook Street/Warringah Freeway on ramp	>100	F	13	A	8	A	>100	F	~~70~~ **31**	~~E~~ **C**	~~64~~ **66**	E
Brook Street/Warringah Freeway off ramp	61	E	21	B	9	A	67	E	~~9~~ **40**	~~A~~ **C**	~~16~~ **15**	B
Brook Street/Merrenburn Avenue	>100	F	31	C	26	B	>100	F	~~70~~ **35**	~~E~~ **C**	~~50~~ **51**	D
Amherst Street/West Street	~~5~~ **3**	A	~~7~~ **5**	A	~~50~~ **26**	~~D~~ **B**	~~5~~ **4**	A	~~>100~~ **4**	~~F~~ **A**	~~>100~~ **99**	F
Amherst Street/Miller Street	21	B	38	C	42	C	20	B	~~58~~ **55**	~~E~~ **D**	~~44~~ **45**	D
Miller Street/Ernest Street	25	B	44	D	42	C	32	C	~~40~~ **44**	~~C~~ **D**	~~41~~ **42**	C
Miller Street/Falcon Street	35	C	27	B	30	C	38	C	~~25~~ **29**	~~B~~ **C**	~~44~~ **47**	D
Ernest Street/Warringah Freeway on ramp	5	A	19	B	29	C	5	A	~~53~~ **22**	~~D~~ **B**	~~36~~ **38**	C
Ernest Street/Warringah Freeway off ramp (off ramp in PM, on ramp in AM)	5	A	19	B	28	B	5	A	~~48~~ **21**	~~D~~ **B**	~~34~~ **66**	C

Intersection	2027 'Do minimum'		2027 'Do something'		2027 'Do something cumulative'		2037 'Do minimum'		2037 'Do something'		2037 'Do something cumulative'	
	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS
Falcon Street/Warringah Freeway ramps	29	C	36	C	42	C	15	B	~~45~~ **37**	~~D~~ **C**	~~51~~ **66**	~~D~~ **E**
Watson Street/Military Road	18	B	38	C	28	C	26	B	~~37~~ **41**	C	~~30~~ **36**	C
Military Road/Ben Boyd Road	15	B	47	D	47	D	23	B	~~44~~ **58**	~~D~~ **E**	~~43~~ **63**	~~D~~ **E**
Falcon Street/Merlin Street	24	B	46	D	39	C	32	C	~~47~~ **49**	D	~~54~~ **65**	~~D~~ **E**
Berry Street/Walker Street	29	C	76	F	41	C	39	C	~~46~~ **45**	D	~~50~~ **46**	D
Berry Street/Miller Street	55	D	49	D	58	E	69	E	39	C	~~57~~ **59**	E
Mount Street/Arthur Street	46	D	46	D	18	B	59	E	~~33~~ **25**	~~C~~ **B**	~~33~~ **18**	~~C~~ **B**
Mount Street/Walker Street	36	C	47	D	35	C	48	D	~~41~~ **34**	C	~~43~~ **38**	~~D~~ C
Pacific Highway/High Street/Arthur Street	19	B	57	E	18	B	38	C	~~45~~ **56**	D	~~19~~ **20**	**B**
Pacific Highway/Walker Street/Blue Street	36	C	55	D	33	C	65	E	~~49~~ **54**	D	~~32~~ **36**	C
Pacific Highway/Miller Street/Mount Street	38	C	79	F	62	E	41	C	~~72~~ **77**	F	~~62~~ **70**	~~E~~ **F**
Pacific Highway/Berry Street	56	E	17	B	60	E	52	D	~~16~~ **16**	B	~~60~~ **62**	E

Intersection	2027 'Do minimum'		2027 'Do something'		2027 'Do something cumulative'		2037 'Do minimum'		2037 'Do something'		2037 'Do something cumulative'	
	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS
Pacific Highway/Bay Road	55	D	23	B	42	D	77	F	~~23~~ **24**	B	88	F
Miller Street/McLaren Street	23	B	40	C	56	E	72	F	42	C	~~62~~ **57**	E
Miller Street/Ridge Street	38	C	33	C	63	E	53	D	~~45~~ **47**	D	~~70~~ **73**	~~E~~ **F**
Miller Street/Carlow Street	13	A	8	A	15	B	13	A	~~8~~ **9**	A	~~28~~ **30**	C
High Street/Clark Road	18	B	32	C	36	C	55	D	~~37~~ **38**	C	38	C
High Street/Alfred Street North	~~13~~ **10**	A	~~49~~ **41**	~~D~~ **C**	19	B	~~62~~ **33**	~~E~~ **C**	~~32~~ **67**	~~C~~ **E**	~~18~~ **17**	B
Mount Street/Alfred Street North	<5	A	16	B	14	B	<5	A	~~16~~ **52**	~~B~~ **D**	14 **13**	A
Ernest Street/Ben Boyd Road	12	A	11	A	18	B	12	A	~~14~~ **13**	B	~~26~~ **28**	B
Pedestrian crossing at Military Road	6	A	<5	A	5	A	5	A	~~<5~~ **6**	A	~~6~~ **7**	A

Note:

- Strike through text = incorrect value reported in environmental impact statement
- Bold = corrected value

Table A5-8 Modelled 'Do something cumulative' evening peak hour intersection performance - Warringah Freeway and surrounds study area (Update to Table 8-15 of Appendix F (Technical working paper: Traffic and transport))

Intersection	2027 'Do minimum'		2027 'Do something'		2027 'Do something cumulative'		2037 'Do minimum'		2037 'Do something'		2037 'Do something cumulative'	
	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS
Amherst Street/West Street	~~9~~ **7**	A	~~89~~ **49**	~~F~~ **D**	~~43~~ **24**	~~D~~ **B**	14 **10**	A	>100 **71**	F	73 **41**	~~F~~ **C**
Falcon Street/Warringah Freeway ramps	72	F	70	E	52	D	~~>100~~ **98**	F	68	E	60	E
High Street/Alfred Street	~~>100~~ **43**	~~F~~ **D**	~~41~~ **15**	~~C~~ **B**	~~42~~ **18**	~~C~~ **B**	~~>100~~ **66**	~~F~~ **E**	~~42~~ **15**	~~C~~ **B**	~~46~~ **24**	~~D~~ **B**

Note:

- Strike through text = incorrect value reported in environmental impact statement
- Bold text = corrected value

A5.1.6 Transcription errors for operational localised intersection performance results for Gore Hill Freeway and Artarmon area

Some transcription errors were made in Appendix F (Technical working paper: Traffic and transport) and Chapter 9 (Operational traffic and transport) of the environmental impact statement in the reporting of some localised intersection performance results for the Gore Hill and Artarmon area. The corrected values are presented in Table A5-9 and Table A5-10 below. The reporting errors of localised intersection performance results are generally isolated and/or relatively immaterial; as such the primary network and travel time metrics as reported in the environmental impact statement are correct, and therefore the key outcomes of the traffic and transport assessment are not affected.

The results presented in the following tables should be considered as replacing relevant results presented in the environmental impact statement as follows:

- Table A5-9 results supersede relevant morning peak hour intersection results in the following environmental impact statement tables:
    - Appendix F (Technical working paper: Traffic and transport)
        - Table 6-22 Modelled 'Do minimum' morning peak hour intersection performance – Gore Hill Freeway and Artarmon study area
        - Table 7-25 Modelled 'Do something' morning peak hour intersection performance – Gore Hill Freeway and Artarmon study area
        - Table 8-22 Modelled 'Do something cumulative' morning peak hour intersection performance - Gore Hill Freeway and Artarmon study area
    - Chapter 9 (Operational traffic and transport) of the environmental impact statement: Table 9-6 Modelled intersection performance on the Gore Hill Freeway and Artarmon area (AM peak (8am–9am) and PM peak (5pm–6pm) during operation in 2027 and 2037)
- Table A5-10 results supersede relevant evening peak hour intersection performance results in the following environmental impact statement tables:
    - Appendix F (Technical working paper: Traffic and transport)
        - Table 6-23 Modelled 'Do minimum' evening peak hour intersection performance – Gore Hill Freeway and Artarmon study area
        - Table 7-26 Modelled 'Do something' evening peak hour intersection performance – Gore Hill Freeway and Artarmon study area
        - Table 8-23 Modelled 'Do something cumulative' evening peak hour intersection performance – Gore Hill Freeway and Artarmon study area
    - Chapter 9 (Operational traffic and transport) of the environmental impact statement: Table 9-6 Modelled intersection performance on the Gore Hill Freeway and Artarmon area (AM peak (8am–9am) and PM peak (5pm–6pm) during operation in 2027 and 2037).

It is noted that additional information is presented regarding average delay for the 'Do something' and 'Do something cumulative' evening peak hour intersection performance in the Gore Hill Freeway and Artarmon study area in the preferred infrastructure report (refer to Section 6 (Assessment of road intersection operational performance) of the preferred infrastructure report).

Table A5-9 Modelled 'Do something cumulative' morning peak hour intersection performance – Gore Hill Freeway and Artarmon study area (update to Table 8-22 of Appendix F (Technical working paper: Traffic and transport))

Intersection	2027 'Do minimum'		2027 'Do something'		2027 'Do something cumulative'		2037 'Do minimum'		2037 'Do something'		2037 'Do something cumulative'	
	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS
Epping Road/Longueville Road/Parkland Avenue	52	D	73	F	~~75~~ **71**	F	~~83~~ **70**	~~F~~ **E**	74	F	~~77~~ **72**	F
Longueville Road/Pacific Highway	40	C	49	D	~~39~~ **32**	C	~~54~~ **49**	D	33	C	~~38~~ **31**	C
Pacific Highway/Howarth Road/Norton Lane	20	B	8	A	~~10~~ **7**	A	~~28~~ **29**	~~B~~ **C**	9	A	~~11~~ **7**	A
Pacific Highway/Gore Hill Freeway interchange	~~29~~ **33**	~~B~~ **C**	~~32~~ **46**	~~C~~ **D**	~~25~~ **32**	~~B~~ **C**	~~41~~ **49**	~~C~~ **D**	~~24~~ **35**	~~B~~ **C**	~~25~~ **33**	~~B~~ **C**
Reserve Road/Gore Hill Freeway interchange	61	E	46	D	~~52~~ **49**	D	~~47~~ **56**	D	55	D	~~60~~ **58**	E
Reserve Road/Dickson Road	14	A	21	B	~~24~~ **22**	B	~~19~~ **21**	B	29	B	~~27~~ **24**	B
Reserve Road/Barton Road [1]	69	E	87	F	~~77~~ **83**	F	>100	F	84	F	~~85~~ **88**	F

Note:

- [1] Unsignalised intersection (roundabout) - LoS based on worst approach delay as assumed in environmental impact statement
- Strike through text = incorrect value reported in environmental impact statement
- Bold = corrected value

Table A5-10 Modelled 'Do something cumulative' evening peak hour intersection performance – Gore Hill Freeway and Artarmon study area (update to Table 8-23 of Appendix F (Technical working paper: Traffic and transport))

Intersection	2027 'Do minimum'		2027 'Do something'		2027 'Do something cumulative'		2037 'Do minimum'		2037 'Do something'		2037 'Do something cumulative'	
	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS
Epping Road/Longueville Road/Parkland Avenue	~~80~~ **68**	~~F~~ **E**	66	E	~~81~~ **65**	~~F~~ **E**	~~87~~ **75**	F	71	F	~~>100~~ **82**	F
Longueville Road/Pacific Highway	~~42~~ **39**	C	38	C	~~45~~ **41**	~~D~~ **C**	~~49~~ **44**	D	42	C	~~86~~ **70**	F
Pacific Highway/Howarth Road/Norton Lane	~~13~~ **7**	A	5	A	~~11~~ **5**	A	~~13~~ **8**	A	6	A	~~13~~ **5**	A
Pacific Highway/Gore Hill Freeway interchange	~~29~~ **37**	C	~~17~~ **38**	~~B~~ **C**	~~29~~ **38**	~~B~~ **C**	~~23~~ **30**	~~B~~ C	~~17~~ **38**	~~B~~ **C**	~~29~~ **41**	~~B~~ **C**
Reserve Road/Gore Hill Freeway interchange	~~55~~ **61**	~~D~~ E	48	D	48	D	~~57~~ **64**	E	47	D	~~51~~ **52**	D
Reserve Road/Dickson Road	~~73~~ **82**	F	50	D	~~87~~ **97**	F	~~85~~ **96**	F	66	E	~~95~~ **>100**	F
Reserve Road/Barton Road [1]	>100	F	~~>100~~ **69**	~~E~~ **F**	>100	F	>100	F	>100	F	>100	F

Note:

- [1] Unsignalised intersection (roundabout) – LoS based on worst approach delay as assumed in environmental impact statement
- Strike through text = incorrect value reported in environmental impact statement
- Bold = corrected value

A5.1.7 Number of lanes at the northbound connection from Balgowlah

The design for the Balgowlah connection includes two lanes northbound, as outlined in Table 5-7 of the environmental impact statement. Table 7-9, Table 7-10, Table 8-8 and Table 8-9 of Appendix F (Technical working paper: Traffic and transport) incorrectly state that the Balgowlah connection would provide three lanes northbound – this should instead say two lanes.

It is noted that the forecast 2037 demand for this connection is expected to be in the order of 2000 vehicles per hour; hence a two-lane configuration is considered to be able to safely and efficiently accommodate this level of demand.

For completeness, the Beaches Link tunnel VISSIM traffic models have been checked to ensure they reflect the relevant Beaches Link tunnel design, including the 2-lane northbound configuration for the Balgowlah connection. The correct model outcomes are presented in Table A5-11 and Table A5-12 demonstrating no material change to traffic performance outcomes presented in the environmental impact statement, and indicating that the configuration would operate efficiently based on the level of demand forecast.

Table A5-11 Modelled 'Do something cumulative' morning peak hour Beaches Link and Gore Hill Freeway Connection performance (update to Table 8-8 of Appendix F (Technical working paper: Traffic and transport))

Segment	Direction	Minimum no. of lanes	2027 'Do something'		2027 'Do something cumulative'		2037 'Do something'		2037 'Do something cumulative'	
			Density (PCU/km/lane)	LoS	Density (PCU/km/lane)	LoS	Density (PCU/km/lane)	LoS	Density (PCU/km/lane)	LoS
Balgowlah Connection (main carriageway)	Northbound	2	5.4	A	5.8	A	5.9	A	6.8	A
	Southbound	2	15.4	C	17.0	D	18.5	D	20.6	D

Table A5-12 Modelled 'Do something cumulative' evening peak hour Beaches Link and Gore Hill Freeway Connection performance (update to Table 8-9 of Appendix F (Technical working paper: Traffic and transport))

Segment	Direction	Minimum no. of lanes	2027 'Do something'		2027 'Do something cumulative'		2037 'Do something'		2037 'Do something cumulative'	
			Density (PCU/km/lane)	LoS	Density (PCU/km/lane)	LoS	Density (PCU/km/lane)	LoS	Density (PCU/km/lane)	LoS
Balgowlah Connection (main carriageway)	Northbound	2	8	B	12.7	C	12.3	C	13.4	C
	Southbound	2	11.2	C	8.6	B	9.2	B	9.8	B

A5.1.8 Wakehurst Parkway shared user path barrier

A new shared user path would be provided along the Wakehurst Parkway from Seaforth to Frenchs Forest, improving pedestrian and cyclist connectivity between these two areas, and to recreational areas including the Garigal National Park and Manly Warringah War Memorial State Park as described in Table 5-2 of the environmental impact statement.

Currently, cyclists travelling along Wakehurst Parkway must do so on the road occupied by vehicle traffic. The proposed Wakehurst Parkway shared user path would be a dedicated off-road path for cyclists and pedestrians, allowing cyclists to be physically distanced from road traffic and able to travel more slowly than drivers.

To provide further separation between motorists and active transport users, the design of the shared user path would include the provision of a safety barrier on the kerbline. The barrier would be a W-beam steel rail, with sections of concrete barrier where there are fill retaining walls on the outside of the shared path. Breaks would be provided in the barrier to access bus stops and vehicle fire trails.

The cross sections AA and BB on page 172 of Appendix V (Technical working paper: Urban design, landscape character and visual impacts) have been updated to show the provision of this safety barrier, with the updated cross sections provided in Figure A5-1 and Figure A5-2 of this submissions report.

It is noted that artist impressions of the shared path proposed along Wakehurst Parkway are provided in Section 4.9.18 of Appendix V (Technical working paper: Urban design, landscape character and visual impact) showing viewpoints looking south and north along Wakehurst Parkway. While these artist impressions do not show the presence of a safety barrier, as noted above the design would include the provision of a safety barrier.

During further design development, the design would continue to be developed in accordance with relevant standards, including Austroads and Transport for NSW standards, to ensure the safety, amenity and comfort of pedestrians, cyclists and drivers.

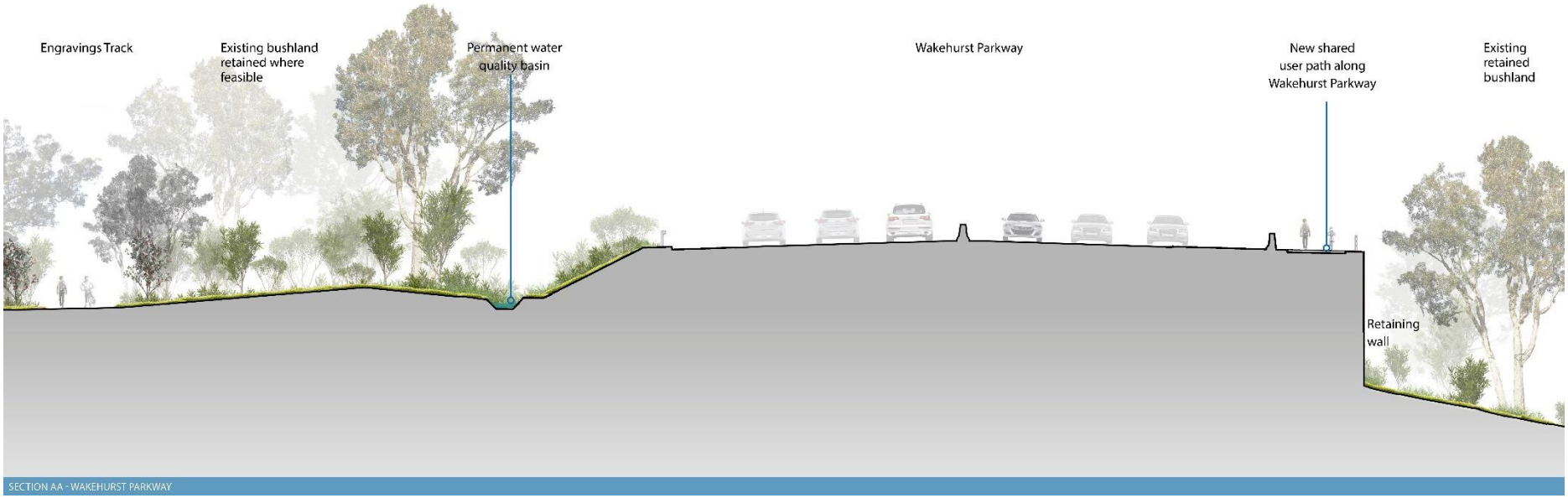


Figure A5-1 Section AA – Wakehurst Parkway (Update to Section AA figure from Appendix V (Technical working paper: Urban design, landscape character and visual impacts, page 172)

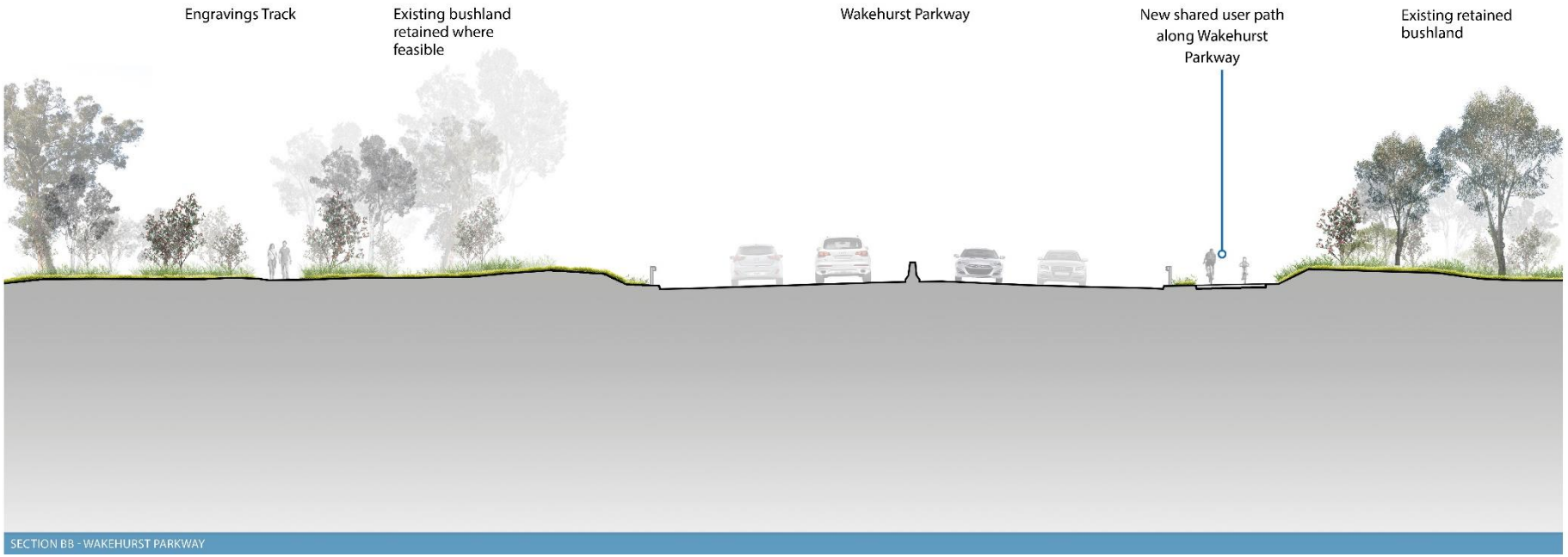


Figure A5-2 Section BB – Wakehurst Parkway (Update to Section AA figure from Appendix V (Technical working paper: Urban design, landscape character and visual impacts, page 172)

A5.1.9 Flat Rock Reserve memorial plaque

Following exhibition of the environmental impact statement, Transport for NSW become aware of a memorial plaque situated adjacent to Flat Rock Creek within the Flat Rock Reserve. The memorial plaque is located within the construction footprint but outside of the Flat Rock Drive construction support site (BL2) footprint.

The location of the memorial plaque within the construction footprint has been confirmed on site using GPS during a site inspection in June 2021 and is shown on Figure A5-3.

The memorial plaque is for a community member who was instrumental in the creation of the Flat Rock Reserve bushland and passed away in 2004. Transport for NSW is investigating opportunities to avoid impacts to this memorial plaque such that it does not need relocating. However, Transport for NSW has also advised Willoughby City Council of the plaque and are in the process of contacting the family of the deceased to determine whether they would like options to temporarily/permanently relocate the memorial, notwithstanding an intention to protect it within the construction footprint.

There is also a second plaque in the vicinity of Flat Rock Drive construction support site (BL2), however this plaque is located outside of the construction footprint and temporary construction support site footprint, namely the Wilksch Walk plaque. The Wilksch Walk plaque is also shown on Figure A5-3 and is a Willoughby City Council plaque that would not be impacted by the project.

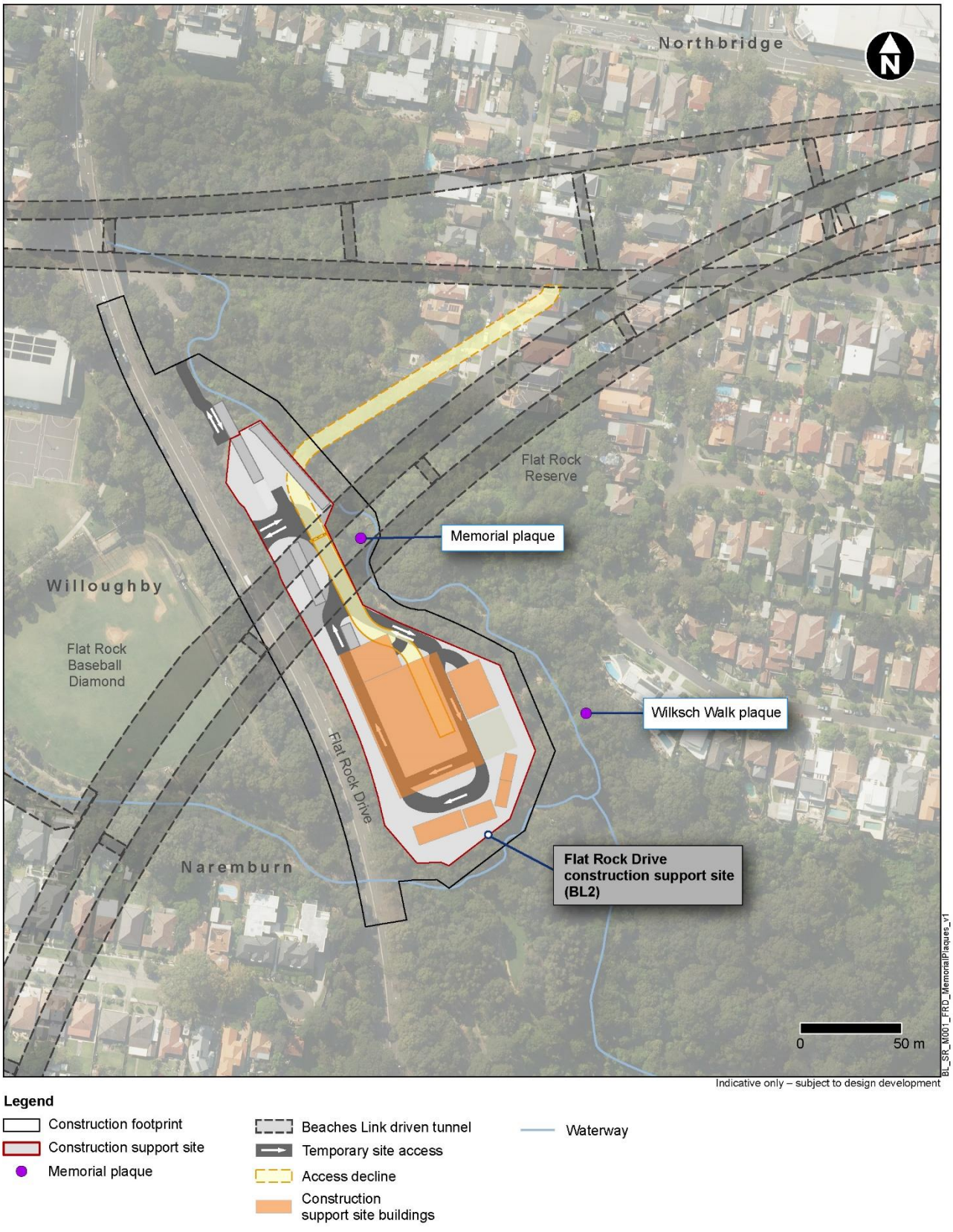


Figure A5-3 Location of Flat Rock Reserve memorial plaque and Wilksch Walk plaque

A5.1.10 Gore Hill Freeway Connection out of hours work

Due to the volume and complexity of the work and constraints associated with the location, the Gore Hill Freeway Connection project would need a substantial program of works, involving periods of work outside standard construction hours. The duration of out of hours work at the Gore Hill Freeway Connection has been queried, with Section 5.1.6.1 of Appendix G (Technical working paper: Noise and vibration) noting work on the Gore Hill Freeway would be completed over five nights per week. However, since exhibition of the environmental impact statement, the majority of works associated with the Gore Hill Freeway Connection are no longer proposed to occur on five consecutive nights per calendar week.

Work on and next to the trafficable parts of the Gore Hill Freeway would be subject to road occupancy licences issued by Greater Sydney Operations (previously Transport Management Centre). Road occupancy licences would specify the requirements for working and would typically require the work to occur outside standard construction hours when traffic volumes are low, so that the functional integrity of the road network is maintained. Furthermore, where work requires the closure of major arterial and tolled roads (eg the Lane Cove Tunnel), the times and periods for the closure of these roads are typically dictated by the road operator. Sometimes in the past, road occupancy licences issued for work on the Gore Hill Freeway and Warringah Freeway have required that the work be carried out over a number of consecutive nights to provide consistency and improved wayfinding for drivers in the changed traffic conditions.

Transport for NSW does not at this stage generally propose to work in a manner that would result in noise impacts to any one receiver on five consecutive nights per week unless required through a specific road occupancy licence which would also require approval through an environment protection licence. Transport for NSW currently expects that surface road work outside standard construction hours would only be needed 10 per cent of the time for most activities and 30 per cent of the time for pavement/road modification works as per Table 5-42 of Appendix G (Technical working paper: Noise and vibration). However, as the work would move around the construction sites, it is expected that the same receivers would not be affected each time.

Transport for NSW has committed that the construction noise and vibration management plan would be developed and contain provisions to limit noise impacts, where $L_{Aeq(15\ minute)}$ noise levels are more than 5 dB(A) above the rating background level, at any one sensitive receiver to no more than two consecutive (or three non-consecutive) nights per week and 10 nights per month, unless otherwise approved through an environment protection licence. Typically, environment protection licences limit work outside standard construction hours so that the amenity of any one sensitive receiver is not affected on more than two consecutive (or three non-consecutive) nights per week and 10 nights per month. Unless otherwise agreed with the community, required by a road occupancy licence for the closure of a major arterial road (eg Lane Cove Tunnel) or approved through an environment protection licence, these provisions would be adopted for work on the Gore Hill Freeway to reduce the potential for amenity impacts (ie to provide respite) to adjacent residents outside standard construction hours.

Transport for NSW will continue to investigate design, staging and delivery opportunities to minimise the volume of night works, which will continue when contractor/s are engaged and further design development has occurred.

A5.1.11 Noise insultation program and construction noise strategy

The impact of construction noise from the project was assessed in Chapter 10 (Construction noise and vibration) of the environmental impact statement. Whilst the project would endeavour to maximise opportunities to carry out surface road works during standard construction hours, an extended program of works would be required outside of these hours at the Gore Hill Freeway,

Artarmon and Burnt Bridge Creek Deviation and Sydney Road, Balgowlah. Transport for NSW recognises that during these works there is the potential for noise impacts to residential receivers, including during evening and night time periods. The noise assessment indicates that the sleep disturbance screening criterion is likely to be exceeded at various locations when night time work occurs in close proximity to some residential receivers. Given the nature of the construction works these predicted exceedances, though unavoidable, would be temporary and intermittent and are based on a conservative realistic worst case scenario which assumes all equipment expected to be used at a given site would be operating simultaneously, at a worst case intensity, and with a worst case orientation during a 15 minute period and at the closest possible location to an affected sensitive receiver.

The project would aim to minimise noise impacts through the implementation of the environmental management measures outlined in Table D2-1 of this submissions report. Furthermore, Transport for NSW has developed the Construction noise strategy in Appendix J of this submissions report, which provides greater detail on how noise impacts would be managed on the project, consolidating the measures within policies, guidelines, standards and regulations which are applicable to the project.

Transport for NSW will continue to investigate design, staging and delivery opportunities to minimise the volume of works outside standard construction hours, which will continue when contractor/s are engaged and further design development has occurred. Where works are required outside of standard construction hours, feasible and reasonable measures will be considered and implemented to reduce the potential for noise impacts as detailed in revised environmental management measure CNV9 (refer to Table D2-1 of this submissions report), including:

- Scheduling works during the day wherever practicable
- Selection of less noisy plant and construction methods
- Scheduling nosiest activities as early as possible in the work shift outside standard construction hours
- Using portable barriers around particularly noise equipment/activities.

In addition, to further mitigate construction noise from works outside standard construction hours, assessment for potential noise treatments would be proactively carried out at eligible properties directly adjacent to high out of hours work activity areas and implemented, where applicable, as early as possible in the construction program as outlined in the noise insulation program in Appendix I of this submissions report. The noise insulation program describes the delivery of at-property noise treatment to mitigate the impact of operational and construction noise at eligible properties. It includes the criteria for eligibility, treatment options and the noise treatment assessment and installation process.

A5.1.12 Updated mapping

Following exhibition of the environmental impact statement, and as a result of issues raised by the Aboriginal Heritage Office in the Northern Beaches Council submission (refer to Section B11.14 of this submissions report), a new search of the Aboriginal Heritage Information Management System (AHIMS) register was carried out in February 2021 to confirm site locations of Aboriginal cultural heritage sites along the project alignment.

As a result of the updated AHIMS search, no new AHIMS sites were determined in the search area in addition to those that were already identified in the 2017 and 2018 searches and as already included in Chapter 15 (Aboriginal cultural heritage) of the environmental impact statement and Appendix L (Technical working paper: Aboriginal cultural heritage assessment report). However, the site coordinates of some AHIMS sites were found to have changed as a result of the updated

search carried, with some sites moving closer to the project alignment. The results of this new search are included in Appendix A of this submissions report.

As a result of the new AHIMS search and an additional site inspection of AHIMS site 45-6-2111 (Clive Park 3, Northbridge) carried out in May 2021, Figure 15-1 to Figure 15-5 of the environmental impact statement and Figure 4-2 to 4-6 of Appendix L (Technical working paper: Aboriginal cultural heritage assessment report) have been updated to reflect the confirmed locations of the 16 AHIMS sites located within the study area. The updated figures are shown as Figure 2-1 to Figure 2-5 of Appendix A of this submissions report, and these figures now supersede those shown in the environmental impact statement.

In addition, a potential engravings site adjacent to Wakehurst Parkway has also been identified, as shown in Figure 2-5 of Appendix A of this submissions report and this site has been assessed as having overall low to moderate sensitivity (refer to Table 4-2 of Appendix A of this submissions report).

Further attempts to locate AHIMS site 45-6-0662 (Frenchs Forest; Bantry Bay; Wakehurst Parkway) have also been carried out during two site inspections which occurred since exhibition of the environmental impact statement. However as the site could still not be located, updates to environmental management measure AH1 (refer to Table D2-1 of this submissions report) have been made. In addition, a clarification regarding the reference to Sefton (1996) in the environmental impact statement and further consideration of AHIMS site 45-6-0654 (Clive Park 1; Northbridge) has been carried out and this is also reported in Appendix A of this submission report.

Due to the above, the overall assessment results for potential impacts to known Aboriginal cultural heritage sites has also been updated and is included in Table 5-1 of Appendix A of this submissions report. This table supersedes Table 15-7 of the environmental impact statement.

Refer to Appendix A of this submissions report for further information.

A5.1.13 Heritage technical working paper authors

The authorships for several of the environmental impact statement technical working paper appendices have been updated due to inadvertent omissions. The following updates are relevant:

- A new ‘Section 1.7 – Authorship’ has been added to Appendix K (Technical working paper: Maritime heritage) as follows:

  This report was written by the following authors from Cosmos Archaeology Pty Ltd:

  - Cosmos Coroneos

    BA(Hons) Archaeology, University of Sydney 1988

    Grad. Dip. Maritime Archaeology, Curtin University 1990

  - Caroline Wilby

    Bachelor of Arts (Prehistoric Archaeology, History & Criminology), University of Melbourne, 1998

    Bachelor of Arts (Honours) (Aboriginal Archaeology), La Trobe University, 2000

  - Danielle Wilkinson

    Bachelor of Arts (Archaeology, Classics and Ancient History), University of Western Australia, 2010

    Masters of Maritime Archaeology, Flinders University of South Australia, 2012

- Section 1.9 of Appendix L (Technical working paper: Aboriginal cultural heritage assessment report) has been updated to read:

  The Potential Submerged Sites Assessment (Cosmos Archaeology, 2020) (Annexure E) was written by Cosmos Coroneos, who is a qualified maritime archaeologist and Caroline Wilby, who is a qualified Aboriginal Archaeologist.

- Table 1.2 of Appendix L (Technical working paper: Aboriginal cultural heritage assessment report) has been updated with a new last row added as follows:

  - Caroline Wilby

    Bachelor of Arts (Prehistoric Archaeology, History & Criminology), University of Melbourne, 1998

    Bachelor of Arts (Honours) (Aboriginal Archaeology), La Trobe University, 2000.

A5.1.14 Finalisation of White's Seahorse threat-listing under the Environment Protection and Biodiversity Conservation Act 1999

White's Seahorse (*Hippocampus whitei*) is listed as endangered under the *Fisheries Management Act 1994* and at the time of preparing Appendix T (Technical working paper: Marine ecology) was nominated for threat-listing under the *Environment Protection and Biodiversity Conservation Act 1999*. As such, a preliminary assessment of significance under the *Environment Protection and Biodiversity Conservation Act 1999* was carried out for completeness and is documented in Annexure D of Appendix T (Technical working paper: Marine ecology). The preliminary assessment was carried out against the endangered species significant impact criteria in accordance with the Department of the Environment (2013) *Matter of National Environmental Significance Significant Impact Guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999*. The preliminary assessment of significance concluded the project would not have a significant impact on this species.

Following commencement of exhibition of the environmental impact statement, the listing of White's Seahorse was finalised on 12 December 2020 as endangered. As such, the preliminary assessment documented in Annexure D of Appendix T (Technical working paper: Marine ecology) remains applicable and consistent with the final listing. The conclusion that the project would not have a significant impact on this species, as detailed in Section 19.5.6 of the environmental impact statement, is maintained.

A5.1.15 Clarification of groundwater baseflow impacts

Predictions of groundwater drawdown and reductions in groundwater baseflow 100 years after tunnel opening are detailed in Appendix N (Technical working paper: Groundwater) for creeks including Flat Rock Creek, Quarry Creek and Burnt Bridge Creek. These predictions were based on a groundwater model which included a number of conservative assumptions about hydrogeological conditions along the alignment in lieu of site-specific information available at the time the groundwater model was originally developed. Details of the inherent conservatism of the groundwater model are included in Section 2.1.3 of Appendix E of this submissions report.

The environmental impact statement did not include a definition of groundwater baseflow and there was concern expressed in community submissions that the predicted changes in groundwater baseflow would result in observable changes to streamflow in creeks and impacts to vegetation, amenity and enjoyment of these resources.

The water flowing in creeks and watercourses is known as streamflow. Streamflow is the combination of water from several sources including rainfall run-off, direct rainfall into the stream, discharge from stormwater pipes and groundwater contributions. The proportion of streamflow that

comes from groundwater is referred to as groundwater baseflow. While the boundary of each of these sources of water is difficult to distinguish in reality, a schematic showing the basic elements of streamflow is provided in Figure A5-4.

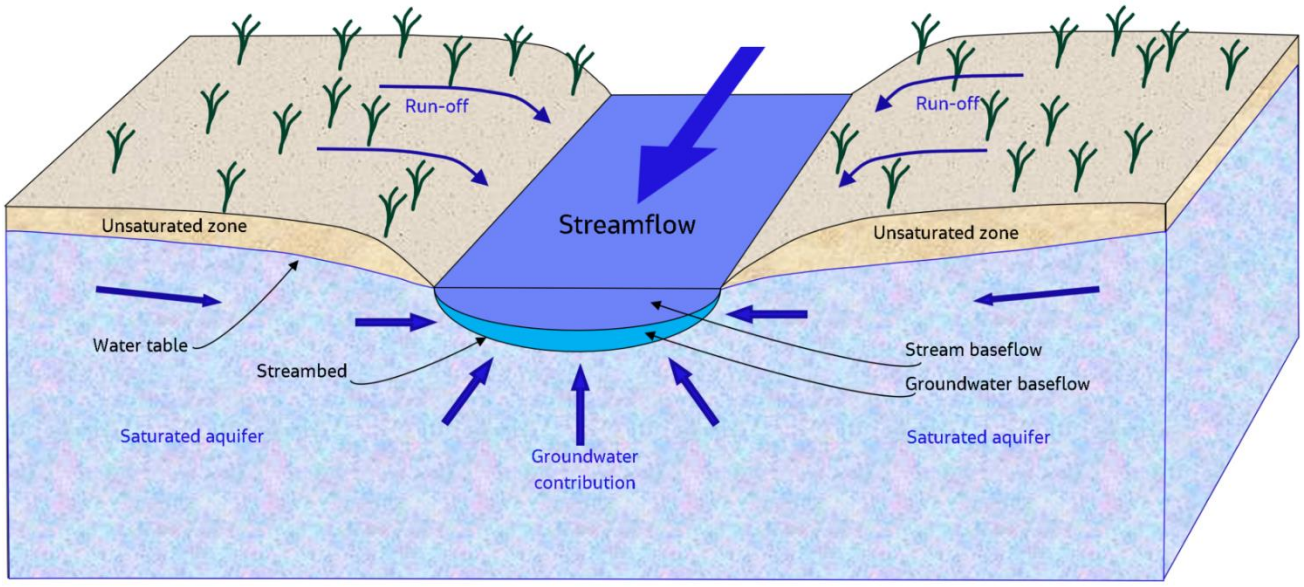


Figure A5-4 Basic elements of streamflow (modified from United States Geological Survey (USGS) (2001))

As a result of feedback received from Government agencies and the community regarding the level of groundwater baseflow reductions predicted in Flat Rock Creek, Quarry Creek and Burnt Bridge Creek, Transport for NSW has carried out further investigations and groundwater modelling to support a focused assessment of the potential environmental impacts to these creek systems. This has included both revised predictions of groundwater baseflow reductions as well as changes to observable streamflow. A detailed report summarising the results of the additional studies completed is provided in Appendix E of this submissions report.

The following additional investigations and assessment were carried out:

- Detailed inspection of the bed and banks of Flat Rock Creek, Quarry Creek and Burnt Bridge Creek to assess the nature of the creek streambed and the potential for interaction between the creek surface water and groundwater
- Additional groundwater modelling, including update of the numerical groundwater model used for the environmental impact statement as a result of changes identified in the above survey
- Revised predictions of groundwater drawdown and baseflow reductions along individual, discrete sections of each creek
- Indicative changes to streamflow (relative to groundwater baseflow reductions) based on streamflow measurements carried out in 2018 and the revised modelling.
- Surveys by freshwater and terrestrial ecologists of Flat Rock Creek, Quarry Creek and Burnt Bridge Creek to confirm existing conditions and facilitate assessment of potential impacts to aquatic ecology and groundwater dependent ecosystems based on revised groundwater drawdown and baseflow reduction predictions
- Potential social and water quality issues arising from the revised groundwater baseflow reductions were also considered.

The overall findings of the additional studies are generally consistent with the conclusions contained in the environmental impact statement and no additional management or mitigation measures are considered necessary to address the predicted groundwater baseflow reductions or consequent environmental impacts. The revised baseflow reductions to Flat Rock Creek, Quarry Creek and Burnt Bridge Creek are provided in Table 3-3 of Appendix E of this submissions report and are lower than those predicted in the environmental impact statement.

In terms of changes to streamflow, indicative reductions of 22 per cent at Flat Rock Creek Weir and one per cent at Burnt Bridge Creek downstream were determined based on the streamflow measurements taken in May 2018 and are provided in Table 3-4 of Appendix E of this submissions report.

Further details of the results and explanation of the methodologies adopted are provided in Appendix E of this submissions report.

As more information becomes available on groundwater levels and contamination through ongoing groundwater monitoring, groundwater modelling will be updated to refine the predictions, in accordance with revised environmental management measure SG2 (refer to Table D2-1 of this submissions report). Inflow predictions will be updated prior to finalising detailed design and will include designed tunnel linings, and the detailed design will be updated based on the updated operational inflow and impact predictions.

If refined predictions of groundwater levels and drawdown indicate that impacts would be greater than the impacts presented in the environmental impact statement, feasible and reasonable mitigation measures will be incorporated into the detailed design and implemented.

Following completion of environmental management measure SG2, a focussed study will be carried out in consultation with Department of Planning, Infrastructure and Environment (Environment, Energy and Science Group) to confirm potential groundwater drawdown and associated baseflow reductions at Burnt Bridge Creek, Flat Rock Creek and Quarry Creek due to tunnelling, and confirm potential impacts on freshwater ecology in the affected watercourses and nearby groundwater dependent ecosystems, in accordance with revised environmental management measure SG6 (refer to Table D2-1 of this submissions report). The study will consider how existing site features affect the interaction between surface water and groundwater along the affected reaches of these watercourses, and the hydraulic connectivity in the underlying geology. Where ecological impacts are predicted to be worse than that presented as part of the environmental impact statement/submissions report, feasible and reasonable mitigation measures to address the impacts will be identified in consultation with a suitably qualified and experienced specialist, incorporated into the detailed design, and implemented during construction. The mitigation measures considered will include tunnel linings.

A5.1.16 Groundwater uncertainty analysis modelling

Appendix N (Technical working paper: Groundwater) provided an assessment of the potential groundwater impacts of the project. The groundwater model used in the environmental impact assessment was developed following feedback from regulators on previous tunnelling projects. Based on this feedback, and the geotechnical information available at the time, a number of conservative assumptions were incorporated into the model. Details of the model development and assessment of groundwater impacts are presented in the groundwater modelling report provided in Annexure F of Appendix N (Technical working paper: Groundwater). However, given that the available data used to develop the model was limited by the early stage of design, there is an element of uncertainty in the groundwater modelling results and therefore the potential impacts.

To address this uncertainty, Annexure F of Appendix N (Technical working paper: Groundwater) contained an uncertainty analysis prepared in accordance with the *Australian Groundwater Modelling Guidelines* (Barnett et al., 2012). The purpose of the uncertainty analysis modelling was to investigate the sensitivity of model predictions to parameter values assigned to the groundwater model. The uncertainty analysis involved targeted sensitivity analyses to assess potential groundwater-related impacts, identifying key factors of high and low range hydraulic parameter values. This analysis estimated the potential changes in groundwater table drawdown under extreme parameter value modelling conditions and explored the potential implications of these changes at key environmental features.

Following receipt of submissions from public agencies, public organisations and the community in which the potential for significant groundwater baseflow reductions predicted in Flat Rock Creek, Quarry Creek and Burnt Bridge Creek was indicated to be of concern, additional assessment of the potential impacts on environmental features have been carried out.

Appendix D of this submissions report presents further details of the uncertainty analysis, including the range of environmental impacts that could occur to the following:

- Groundwater supply bores
- Areas of environmental interest for contamination
- Groundwater dependent ecosystems and sensitive environments
- Surface water systems.

This expanded uncertainty analysis has is based on the same groundwater model runs as used in the environmental impact statement and the additional details are consistent with the summary statements and conclusions presented in the environmental impact statement.

It should be noted that Transport for NSW has conducted further investigations and assessment of predicted groundwater baseflow reductions and the potential environmental impacts as part of this submissions report (refer to Section A5.1.15). The additional investigations and analysis completed, including revised groundwater drawdown and groundwater baseflow predictions and consequent impacts on freshwater ecology, groundwater dependent ecosystem, water quality impacts and social considerations in Flat Rock Creek, Quarry Creek and Burnt Bridge Creek, are provided in Appendix E of this submissions report.

A5.1.17 Effect of COVID-19 on modelling carried out for the environmental impact statement

The COVID-19 pandemic is an unprecedented event that is currently impacting the way people work and their travel patterns, while creating uncertainty about the future, as discussed in Section 3.1 of the environmental impact statement.

The impact of COVID-19 on the transport network has been multi-faceted, and is largely broken down into immediate and medium term impacts:

- Immediate: major reductions in public transport and car trips, reductions in public transport capacity, increased second hand car purchases, increased intrastate visitation, reduction in public transport preference, increased online shopping, and deliveries, reductions in overseas and interstate visitors
- Medium-term: Reduction in overseas migration, leading to a decrease in NSW and Sydney population growth rates, reducing overall projected travel demand; reduced commuter trips due to more people working from home, changing spatial distribution of interpeak / daily non-commute trips.

Significant uncertainty still exists about how long the impacts of COVID-19 will last. In response to the evolving Delta outbreak of COVID-19, areas of Greater Sydney and NSW have gone into lockdown in mid-2021 to manage the spread of the virus while the vaccination program is rolled out. Once vaccination targets have been met and rules have been eased, outbreaks could continue to occur in 2021 and into the future, depending on the timing and efficacy of the vaccination program. It is not possible to accurately predict when immediate and medium term impacts would finish, or when a return to pre-pandemic travel patterns will occur. At this time, the duration of impacts to transport demands and behaviours from the COVID-19 pandemic are still unknown, and current traffic conditions and travel behaviours are the result of a variety of temporary factors, including reduced public transport capacity and demand.

While the COVID-19 pandemic presents immediate to medium-term challenges for Sydney (and NSW more broadly), the project has been developed with a long-term view to address the challenges Greater Sydney will face over the next 40 years, to enable and accommodate growth, and to deliver long-lasting benefits for road users, communities and businesses. As Sydney continues to grow, faster and more reliable trips are essential to reducing congestion and providing new levels of access to jobs, recreation, and services such as schools and hospitals. Mona Vale Road, Military Road/Spit Road and Warringah Road/Eastern Valley Way road corridors generally operate well over capacity during peak periods, as described in Chapter 3 (Strategic context and project need) of the environmental impact statement. This contributes to high levels of congestion, long and unreliable journey times and, consequently, poor accessibility to and from the region. Beaches Link would create an alternative to the Military Road/Spit Road and Warringah Road/Eastern Valley Way corridors to separate out through and by-pass traffic, reducing pressure on congested road corridors servicing the Northern Beaches and North Shore.

As such, the need for the project and other strategic transport projects to meet the demands of a growing population and economy remains critical to ensuring the future success of Sydney.

Given the immediate to medium term nature of current conditions, the modelling approach used for the environmental impact statement is considered to be the most appropriate methodology for long-term planning and was completed in accordance with appropriate standards and guidelines.

While it is difficult to fully assess the long-term impact of the event, evidence of Greater Sydney's resilience to such disruptions is already apparent. Ongoing traffic and transport monitoring shows that traffic levels on most roads in the project area returned to those levels near that of the pre-COVID-19 pandemic period in early 2021, prior to the mid-2021 lockdown (acknowledging that public transport capacity and user behaviours are still in a temporary state). It is expected that similar trends will be observed once the lockdown rules have been eased, and traffic levels will return to those levels in the pre-COVID-19 pandemic period. Transport for NSW will continue to monitor and analyse the potential long-term effects of the COVID-19 pandemic on travel demand, including changes to existing travel conditions as well as future travel behaviours and underlying economic demand drivers.

A5.1.18 Biodiversity development assessment report roadmap and updated biodiversity assessment

In response to issues raised by government agencies, including the Department of Planning, Industry and Environment (Environment, Energy and Science Group), and the community, Transport for NSW has updated and/or carried out supplementary assessments to Appendix S (Technical working paper: Biodiversity development assessment report). Additional information and updates to Appendix S (Technical working paper: Biodiversity development assessment report) are addressed in the relevant sections of Section B4, Section C18 and supported by Appendices F1, F2 and F3 of this submissions report.

To assist government agencies and the community, Transport for NSW have developed a biodiversity development assessment report roadmap which is included in Appendix F4 of this submissions report. The purpose of the biodiversity development assessment report roadmap is to provide a convenient, high-level overview of updates to the biodiversity assessment to address feedback from government agencies and the community, and to map the relevant sections from Appendix S (Technical working paper: Biodiversity development assessment report) to the updated or supplementary information within the submissions report. Appendix F4 of this submissions report should also be read in conjunction with Table A5-13 of this submissions report which identifies and clarifies several minor errors and discrepancies in Appendix S (Technical working paper: Biodiversity development assessment report).

Appendix F5 of this submissions report provides an updated biodiversity assessment to synthesise the updated and supplementary information provided in this submissions report, with Appendix S (Technical working paper: Biodiversity development assessment report).

A5.1.19 Management of contaminated soils and sediment

Appendix M (Technical working paper: Contamination) documents the investigations that were completed to identify potential contaminated soils and contaminated marine sediments as part of the environmental impact assessment.

A Stage 1 contamination investigation was carried out and identified 17 potential areas of environmental interest within the vicinity of the project. This investigation assisted in identifying construction limitations/constraints and management options for the project with respect to contamination, soils and sediments.

Marine sediment investigation and sampling was carried out within the proposed Middle Harbour crossing and construction support sites at Middle Harbour south cofferdam (BL7), Middle Harbour north cofferdam (BL8) and the Spit West Reserve construction support site (BL9) as part of the Douglas Partners and Golder Associates (2018) investigation, as outlined in Section 4.4.1 of Appendix M (Technical working paper: Contamination). Subsequent to the Douglas Partners and Golder Associates (2018) investigation, further sediment sampling and testing was carried out by Royal HaskoningDHV in 2020 for the purpose of assessing the suitability of dredged sediments for offshore disposal, an activity regulated under the Commonwealth *Environment Protection (Sea Dumping) Act 1981* (refer to Section C15.3.1 of this submissions report for further detail on this investigation). Determination of the offshore disposal permit(s) is subject to assessment and approval by the Commonwealth. The Royal HaskoningDHV investigation results are summarised in Annexure C of Appendix M (Technical working paper: Contamination). Key findings are outlined below:

- The gravelly, muddy sand near the shoreline is suitable for offshore disposal
- The top 1 metre of grey green mud along the majority of the Middle harbour crossing tunnel alignment is not suitable for offshore disposal. Based on the available sediment data, the top 1 metre of sediment would need to be disposed to land and would be classified as general solid waste
- Contaminant concentrations in the grey green mud reduce with depth. Sediment below 1 metre depth is suitable for offshore disposal.

For the terrestrial areas of environmental interest (B1-B11 and B13-B17 as shown in Table 5-1 and Figure 5-2 of Appendix M (Technical working paper: Contamination)), detailed Stage 2 investigations including additional boreholes to assess further for potential contaminated soil and landfill gas (if applicable), will be carried out prior to construction activities. If contamination is identified as part of the Stage 2 investigation, measures will be identified to adequately manage the

risk in accordance with revised environmental management measures SG8 and SG15 of Table D2-1 of this submissions report. Further detail on the investigation and management of contaminated soil is provided in Section C15.1.1 of this submissions report.

Contaminated sediments present in the marine area of environmental interest (B12 as shown in Table 5-1 and Figure 5-2 of Appendix M (Technical working paper: Contamination)) will be managed in accordance with environmental management measures SG17 and WM3, with further detail on the management and treatment of marine sediments included in Section C15.3 of this submissions report and Section 5 of the preferring infrastructure report.

A5.1.20 Flat Rock Drive construction support site (BL2) area

The construction footprint at Flat Rock Drive construction support site is shown in Figure 6-31 of the environmental impact statement. The construction footprint identifies the area where works are required for road widening for the site access, reconfiguration of the public carpark, redirecting the drainage line into a box culvert and providing shared user path detours. The construction footprint (including a section of Flat Rock Drive) equates to about 10 per cent of Flat Rock Reserve as stated in Table 20-5 and Table 21-5 of the environmental impact statement. The construction support site boundary shown in Figure 6-31 of the environmental impact statement identifies the area required for operation of the temporary site facilities and equates to about five per cent of Flat Rock Reserve.

A5.2 Minor errors and discrepancies

This section identifies minor errors and discrepancies identified in the environmental impact statement. These errors and discrepancies (refer to Table A5-13) have been identified through the submissions received, review comments from the Department of Planning, Industry and Environment or by Transport for NSW.

Where relevant, the text provided can be considered to replace the text from the environmental impact statement. Where “strike through” or bold font has been used, this indicates text to be deleted or added, respectively. None of the clarifications presented in Table A5-13 result in a significant change to the environmental impacts assessed in the environmental impact statement.

Table A5-13 Clarifications on the environmental impact statement

Chapter/Appendix reference	Error/discrepancy	Clarification
Executive summary, Figure E-2	Inconsistency in metrics	The "AM peak" label shown in Figure E-2 of the environmental impact statement is an error. All of the metrics quoted in Figure E-2 are daily traffic volumes.
Executive summary, Figure E-5 onward	Figure numbering	Figure numbering within the executive summary restarted at "Figure E-1" in error for figures following Figure E-5. Notwithstanding, in-text cross references to these figures were consistent with the figure numbers presented in the figure captions.
Chapter 1 (Introduction)	Typographical error	Figure 1-2 of the environmental impact statement and Figure 1-1 of all technical working papers contain the following errors: • 'Narenburn' should read 'Naremburn' • The label for 'Flat Rock Drive' was incorrectly placed over 'Brook Street' • The label for Alpha Street was missing. These errors have been rectified in Figure A1-1 of this submissions report.
Chapter 1 (Introduction), Section 1.3 and Section 1.3 of all technical working papers	Additional local government areas in 'project location' description	The project location description has been updated as follows: "The project would be located within the North Sydney, Willoughby, Mosman~~, and~~ Northern Beaches **and Lane Cove** local government areas, connecting Cammeray in the south with Killarney Heights, Frenchs Forest and Balgowlah in the north... **The project would also be located within the Newcastle local government area during construction**". Lane Cove was omitted from the description in error – it is noted that there are some works at the Pacific Highway. Newcastle has been added as, since the completion of the environmental impact statement, Transport for NSW has identified a preferred location for the load out facility at the Port of Newcastle (refer to the preferred infrastructure report for further details). The project location has been updated in Section A1.2.1 of this submissions report.
Chapter 2 (Assessment process), Section 2.2.1	Further detail added about requirement for operational environment protection licence for contaminated groundwater treatment	The first bullet point in Section 2.2.1 of the environmental impact statement has been updated and should read: • An environment protection licence for road construction and **operational** road tunnel emissions **(and any other relevant scheduled operational activity)** under Chapter 3 *of the Protection of the Environment Operations Act 1997*. In accordance with Section 5.24 of the *Environmental Planning and Assessment Act 1979*, such a licence cannot be refused for an approved project and is to be substantially consistent with any approval under Division 5.2.

Chapter/Appendix reference	Error/discrepancy	Clarification
Chapter 3 (Strategic context and project need), Table 3-2	Additional reference added	The last row of Table 3-2 of the environmental impact statement on page 3-27 (State Infrastructure Strategy) should also include reference to *State Infrastructure Strategy Update 2014* (Infrastructure NSW, 2014). This first line of this specific table row should read: The *State Infrastructure Strategy Update 2014* (Infrastructure NSW, 2014) recommended the Beaches Link tunnel for further review and development.
Chapter 3 (Strategic context and project need), Figure 3-4	Submission identified incorrect figure label	There was a discrepancy between the labelling of Figure 3-4 of the environmental impact statement and Table 7-3 in Appendix F (Technical working paper: Traffic and transport). It is confirmed that the Figure 3-4 caption "Forecast change in weekday traffic volumes average (two-way) in the AM peak on key Northern Beaches corridors by 2037" is incorrect. The correct label should read: "Figure 3-4 Forecast change in average weekday traffic volumes average (two-way, daily) on key Northern Beaches corridors by 2037".
Chapter 4 (Project development and alternatives), Figure 4-4	Incorrect trip metrics	Figure 4-4 of the environmental impact statement includes key metrics for the Eastern Harbour City's road transport network, including vehicles and bus passengers which use the Sydney Harbour Bridge, Spit Bridge and Roseville Bridge each day. It was included in the environmental impact statement to provide a summary of the demand on road infrastructure at key locations and the role of these corridors in serving public transport customers. The metric of vehicles includes all traffic eg cars, trucks and buses and therefore it should not be combined with the metric of bus passengers to provide an indication of total daily trip volumes. It is noted that this error has an immaterial impact on the traffic and transport assessment as the total volumes in Figure 4-4 were not used to assess impacts, rather they were included in the figure to graphically explain traffic demand. The existing traffic demand and daily vehicle numbers at key locations, including the Spit Bridge and Roseville Bridge, are summarised in Table 4-1 of Appendix F (Technical working paper: Traffic and transport).
Chapter 5 (Project description), Figure 5-1	Further detail added to depict southbound bus lane on the Warringah Freeway	As outlined in Table 5-9 of the environmental impact statement, buses travelling southbound in the Beaches Link tunnel would be provided with direct access to a new southbound bus lane on the Warringah Freeway. Figure 5-1 of the environmental impact statement has been updated to show the bus lane included in the Warringah Freeway Upgrade (refer to Figure A5-5 below). The transition for buses moving from the Beaches Link tunnel southbound general traffic lanes into the bus lane would occur on the surface of the Warringah Freeway, roughly in the area between Ernest Street and Falcon Street.

Chapter/Appendix reference	Error/discrepancy	Clarification
Chapter 5 (Project description), Figure 5-2	Further detail added to depict eastbound and westbound traffic lanes on Dickson Avenue, west of Reserve Road	Figure 5-2 of the environmental impact statement has been updated to better represent line marking on Dickson Avenue (refer to Figure A5-6 below). To confirm, changes to Dickson Avenue would not include reducing Dickson Avenue to a single lane/ one way traffic. No configuration changes are proposed for Curry Lane and Carlotta Street.
Chapter 5 (Project description), Figure 5-5	Error in mapping	Figure 5-5 of the environmental impact statement shows a grey box on the left-hand side of the figure adjacent to the 'Localised adjustment of Burnt Bridge Creek' label. This box is covering some houses and was included in error on the figure. No impact to these properties is proposed as is indicated in Chapter 20 (Land use and property) of the environmental impact statement.
Chapter 5 (Project description), Section 5.2.7	Incorrect reference	Section 5.2.7 of the environmental impact statement references that "The design and operation of the tunnel ventilation systems are detailed in Appendix I (Technical working paper: Air quality). This sentence should refer to Appendix H (Technical working paper: Air quality).
Chapter 5 (Project description), Table 5-12	Minor clarification regarding works in Artarmon	Table 5-12 describes changes to local roads around the Gore Hill Freeway Connection to be "minor". The word "minor" was used to describe the scale of these surface road works, relative to the scale of the project as a whole. However, it is noted that receivers near surface works in the Artarmon industrial area would experience impacts during construction, and the scale of the works to these local receivers would not be considered to be minor. As such, Table 5-12 should be updated to remove the word "minor".
Chapter 6 (Construction work), Table 6-25	Inclusion of additional key activity at Balgowlah Golf Course construction support site (BL10)	In Table 6-25 of the environmental impact statement, add 'Concrete batching' as a 'Key activity'. In the 'Hours of construction' row of the table, it should be noted that the batch plant would not be used outside standard construction hours.
Chapter 6 (Construction work), Table 6-35	Inclusion of concrete batch plant construction hours	The 'Tunnelling, tunnelling support and underground activities' row of Table 6-35 (Proposed construction hours) in Chapter 6 (Construction work) of the environmental impact statement should indicate that the concrete batch plant proposed at Balgowlah Golf Course construction support site (BL10) would only be used during standard construction hours.
Chapter 6 (Construction work), Table 6-4 and Chapter 24 (Resource use and waste management), Section 24.3.3	Typographical error	Table 6-4 and Section 24.3.3 of the environmental impact statement incorrectly refer to soft sediments not suitable for offshore disposal anticipated to be in the top 0.5 – 1.0 metre of the bed of the harbour.

Chapter/Appendix reference	Error/discrepancy	Clarification
		This is an error and should read as the top 0 – 1.0 metre, which is consistent with what is stated in Section 2 of Annexure C to Appendix M (Technical working paper: Contamination).
Appendix E (Technical working paper: Community consultation framework)	Some relevant stakeholders have not been included	Table 6-1 of Appendix E (Community consultation framework) will be updated to include Fire and Rescue NSW, TrailCare and Garigal Gorillas as an additional key stakeholder.
Chapter 8 (Construction traffic and transport), Page 8-47 and Figure 8-12 **Appendix F (Technical working paper: Traffic and transport), page 202 and Figure 5-32**	Inconsistency in pedestrian and cyclist detours at Artarmon	The third bullet point on page 8-47 of the environmental impact statement and the third bullet point on page 202 of Appendix F (Technical working paper: Traffic and transport) state that "Alternative routes would divert these users via Station Street, Francis Road, Lambs Road, Cleg Street and Reserve Road". The adjusted active transport infrastructure presented in Figure 8-12 of the environmental impact statement and Figure 5-32 of Appendix F (Technical working paper: Traffic and transport) is inconsistent with this text as the detour is shown as going down Waltham Street and Dickson Avenue. The correct route for the proposed detour, based on the current level of design and construction planning, would be as per the aforementioned text continuing along Cleg Street to Reserve Road instead of turning right along Waltham Street. This correct route has been included below in Figure A5-8 of this submissions report. The detour route would be finalised once the contractor has been engaged and construction planning and staging is progressed. Transport for NSW is continuing to develop the design and construction planning in the Gore Hill Freeway area, including detailed staging of the work. The contractor/s would finalise and complete plans for staging the work during further design development and construction planning in consultation with Transport for NSW. At this time appropriate sequencing of the work in the Gore Hill Freeway area would be confirmed, including cut and cover work and water quality basin upgrade work in and near Punch Street which impacts the existing shared user path along the Gore Hill Freeway, and finalisation of complex sewer and stormwater relocations in this constrained area, and in consideration of any interface required between contractors if the project is staged. The intention is to plan this work so as to reduce the current distance and duration of impact of the detour, including consideration of cyclist safety. Transport for NSW is continuing to engage with key stakeholders within Transport for NSW and external interested parties such as bike groups with respect to this proposed detour. In addition, there is a typographical error in relation to "Francis Road" which should be amended to its correct name, "Francis Street".
Chapter 8 (Construction traffic and transport), Figure 8-18	Incorrect figure legend	In Figure 8-18 of the environmental impact statement, the North Trail is shown in blue as an 'Existing on-road cycle path' in the legend but should be green to represent an 'Existing off-road shared user path'. The North Trail is correctly shown in Figure A4-8 of this submissions report.

Chapter/Appendix reference	Error/discrepancy	Clarification
Chapter 9 (Operational traffic and transport), Section 9.4.1	Typographical error	The third dot point of Section 9.4.1 of the environmental impact statement should read: “Daily traffic demand on Eastern Valley Way would decrease by up to 40 per cent as a result of the project”. The 40 per cent reduction in traffic was correctly reported in both Chapter 3 (Strategic context and project need) of the environmental impact statement and Appendix F (Technical working paper: Traffic and transport).
Appendix F (Technical working paper: Traffic and transport), Annexure A (Navigational impact assessment)	Cofferdams in incorrect location in Figure 6.2 and Map 7	The location of the cofferdams presented in both Figure 6.2 and Map 7 of Annexure A of Appendix F (Technical working paper: Traffic and transport) are incorrect. The location of the cofferdams should be as is presented in Figure 6-36 of the environmental impact statement. In addition, the indicative silt curtain label has been corrected to point to the blue dotted line. A revised figure is provided in Figure A5-7 below.
Appendix F (Technical working paper: Traffic and transport), Table 5-3	Missing footnote	Peak vehicle movements per day presented in Table 5-3 of Appendix F (Technical working paper: Traffic and transport) are each way (ie a heavy/light vehicle arriving at a site and leaving a site counts as two movements). This information was presented as a footnote to Table 6-39 of the environmental impact statement.
Appendix F (Technical working paper: Traffic and transport), Table 5-6	Incorrect identification of slip lane	The southbound slip lane to the Warringah Freeway was incorrectly coded as a high-angle slip lane rather than a low-angle slip lane in the 2024 AM base model. As such, Table 5-6 of Appendix F (Technical working paper: Traffic and transport) incorrectly presents the Warringah Freeway/Miller Interchange Southbound Morning Peak maximum queue length for the 2024 base scenario as 130 meters. With the correct slip lane coding, the queue length for the 2024 base scenario is 90 metres, and as such there is no change between the 2024 base and ‘with construction scenarios’. This error does not impact any of the other modelling results.
Appendix F (Technical working paper: Traffic and transport), Section 8.6.5	Incorrect travel times presented	The text in Section 8.6.5 of Appendix F (Technical working paper: Traffic and transport) incorrectly states that "bus travel times along Frenchs Forest Road would potentially increase marginally during evening periods as a result of the increased traffic travelling through the Sydney Road/Frenchs Forest Road roundabout, when compared to the ‘Do something’ scenario." The results presented in Table 8-33 (Modelled 'Do something cumulative' evening peak hour bus travel times - Balgowlah and surrounds study area) indicate that Manly Road/Sydney Road to Wakehurst Parkway/ Judith Street (via Frenchs Forest Road) travel time would be shorter in the 'Do something cumulative' vs the 'Do something' scenario.

Chapter/Appendix reference	Error/discrepancy	Clarification
Appendix F (Technical working paper: Traffic and transport), Table 9-1	Typographical error	There is a typographical error in Table 9-1 of Appendix F (Technical working paper: Traffic and transport) under CTT1. The text currently reads: "caused by these movementsproject" The correct text should instead read: “caused by these movements”
Appendix F (Technical working paper: Traffic and transport), Annexure A (Navigational impact assessment), Section 6.4.2 and Section 6.9	Right of way of maritime vessels	Annexure A of Appendix F (Technical working paper: Traffic and transport) states the following regarding right of way of maritime vehicles: • Construction vessels would be required to give way to recreational vessels in the defined navigation channel (Section 6.4.2 of Annexure A) • Rowers and sailing craft would have right of way over maritime construction vessels in the vicinity of the project (Section 6.9 of Annexure A). These statements were contrary to legal requirements. In order to avoid any confusion and resultant safety issues if these measures were inconsistently applied or followed, the project would instead revert to the law of the sea, which is that vessels restricted in their ability to manoeuvre would have right of way.
Chapter 10 (Construction noise and vibration) Section 10.6.7	Typographical error	There is a typographical error on page 10-51 of Section 10.6.7of the environmental impact statement. The text on page 10-51 should refer to the implementation of reasonable and feasible measures, rather than coordination ‘where reasonable and feasible’. It is noted, however, that environmental management measure CNV13 (refer to Table D2-1 of this submissions report) commits that “Construction noise from concurrent and consecutive major projects in the vicinity of work locations associated with the project will be managed to minimise cumulative construction noise impacts”. The environmental management measure then states the reasonable and feasible approaches will be used to mitigate impacts. This commitment supersedes the error in the text at page 10-51.
Chapter 10 (Construction noise and vibration), Table 10-23	Typographical error	In the row for ‘Concrete batching’ in Table 10-23 of the environmental impact statement, replace all ‘0’ entries for periods outside standard construction hours and the ‘117’ in the ‘Sleep disturbance’ column with ‘-’, as the concrete batch plant would not be used outside standard construction hours.
Chapter 10 (Construction noise and vibration), Table 10-8 and Table 10-9 Appendix G (Technical working paper: Noise and vibration), Annexure B.2	Clarification on impacted suburb in noise catchment area (NCA) 46.1	Table 10-8 and Table 10-9 of the environmental impact statement incorrectly indicate that sensitive receiver buildings in NCA 46.1 potentially affected by ground-borne noise during roadheader tunnelling and other subsurface activities and rock hammer tunnelling respectively are located in Clontarf, as this is the reference suburb for the NCA 46.1 indicated in Annexure B.2 of Appendix G (Technical working paper: Noise and vibration). However, NCA 46.1 extends over both Clontarf and Balgowlah and all of the sensitive receivers potentially affected by ground-borne noise and vibration are located in Balgowlah, near the Balgowlah Golf

Chapter/Appendix reference	Error/discrepancy	Clarification
		Course construction support site (BL10), as shown in Annexure J.2 and Annexure K.2 of Appendix G (Technical working paper: Noise and vibration). No sensitive receiver buildings in Clontarf are expected to be impacted. Therefore, the reference suburb for NCA 46.1 in Table 10-8 and Table 10-9 of the environmental impact statement and in Annexure B.2 of Appendix G (Technical working paper: Noise and vibration) should be read as Clontarf/Balgowlah.
Appendix G (Technical working paper: Noise and vibration), Table 2-1	Incorrect noise source referenced in Table 2-1	Table 2-1 of Appendix G (Technical working paper: Noise and vibration) describes the noise source which dominates the noise environment at monitoring locations. For L18, L19, L20, L21, L22 and L23 the dominant source is noted as the Warringah Freeway, however they are located near the Gore Hill Freeway. The dominant noise source should therefore read as Gore Hill Freeway.
Appendix G (Technical working paper: Noise and vibration) and Chapter 10 (Construction noise and vibration)	Incorrect identification of St Cecilia's Catholic Primary School	St Cecilia's Catholic Primary School in Balgowlah is incorrectly listed as a place of worship within the environmental impact statement. This receiver should be listed as a school. St Cecilia's church located on the corner of Wanganella Street and White Street should be listed separately a Place of Worship. Notwithstanding, the noise management levels for non-residential receivers set in accordance with the *Interim Construction Noise Guideline* (Department of Environment and Climate Change (DECC), 2009) (provided in Table 10-4 of the environmental impact statement) indicate that the noise management level for a place of worship and classroom at schools is the same (45 dB(A)). Environmental management measures outlined in Table D2-1 of this submissions report which are relevant to schools would apply to St Cecilia's Catholic Primary School.
Appendix G (Technical working paper: Noise and vibration) and Chapter 10 (Construction noise and vibration)	Omission of ANZAC Park in discussion on vibration impacts	Construction vibration assessments carried out as part of Appendix G (Technical working paper: Noise and vibration) considered both listed and unlisted non-Aboriginal heritage items. Maps showing heritage items and the minimum working distances for vibration from mainline and ramp tunnelling and surface works shown are provided in Annexures K and L respectively of Appendix G (Technical working paper: Noise and vibration). While ANZAC Park was mapped and assessed within Annexures K and L respectively of Appendix G (Technical working paper: Noise and vibration), it is noted that ANZAC Park was unintentionally excluded from the discussion within Section 5.2.5.1 and Table 5-19 of Appendix G (Technical working paper: Noise and vibration). Subsequently, the omission was also repeated in Section 10.6.3 of the environmental impact statement. Notwithstanding, similar to other nearby impacted sites such as Cammeray Park, ANZAC Park would be subject to review prior to construction to confirm whether any sensitive structures or features are located within the park and if further investigation for vibration impacts is required.

<table>
<tr><th>Chapter/Appendix reference</th><th>Error/discrepancy</th><th>Clarification</th></tr>
<tr><td>Appendix G (Technical working paper: Noise and vibration), Figure 5-10, Section 5.5.2.5 and Annexure B.1</td><td>Omission of Flat Rock Baseball Diamond as a recreational receiver in the non-residential airborne noise assessment</td><td>
Flat Rock Baseball Diamond is located adjacent Flat Rock Drive construction support site (BL2) and is an active recreation area sensitive receiver as defined by Table 3 of Interim Construction Noise Guideline (DECC, 2009). It is noted that Flat Rock Baseball Diamond was unintentionally excluded from noise catchment area 36.1 on Figure 5-10 and Annexure B.1 of Appendix G (Technical working paper: Noise and vibration) as a ‘Recreational – Active’ receiver type. In addition, it was not assessed as part of the non-residential airborne noise assessment within Section 5.5.2.5 of Appendix G (Technical working paper: Noise and vibration).

Following exhibition of the environmental impact statement, additional modelling has predicted construction noise levels to be within the noise level ranges for recreational receivers in Table 5-77 of Appendix G (Technical working paper: Noise and vibration) at each construction stage for Flat Rock Drive construction support site (BL2). The predicted construction noise levels are as follows:
<table>
<tr><th rowspan="2">Noise management level dB(A)</th><th colspan="9">Predicted noise levels (dB(A)) at each construction stage (refer to Table 5-77 of Appendix G (Technical working paper: Noise and vibration))</th></tr>
<tr><th>FRD_01</th><th>FRD_02</th><th>FRD_03</th><th>FRD_04</th><th>FRD_05</th><th>FRD_06</th><th>FRD_07</th><th>FRD_08</th><th>FRD_09</th></tr>
<tr><td>65</td><td>72</td><td>70</td><td>76</td><td>58</td><td>61</td><td>57</td><td>51</td><td>40</td><td>61</td></tr>
</table>

As a result of the omission, Table 5-78 of Appendix G (Technical working paper: Noise and vibration) has not included Flat Rock Baseball Diamond in providing the total number of non-residential receivers over the noise management levels for Flat Rock Drive construction support site (BL2). As such, the total number of recreational receivers exceeding the noise management levels should read as:
<table>
<tr><th rowspan="2">Modelled representative activity</th><th rowspan="2">Assessment reference</th><th colspan="3">Recreational</th></tr>
<tr><th>1-10 dB(A)</th><th>11-20 dB(A)</th><th>>20 dB(A)</th></tr>
<tr><td>Early works</td><td>FRD_01</td><td>5</td><td>0</td><td>0</td></tr>
<tr><td>Establish site</td><td>FRD_02</td><td>3</td><td>0</td><td>0</td></tr>
<tr><td>Road widening</td><td>FRD_03</td><td>3</td><td>2</td><td>0</td></tr>
</table>

While the total number of non-residential receivers over the noise management levels for Flat Rock Drive construction support site (BL2) has changed from that shown in the environmental impact statement, the overall impact has not changed as construction noise levels are consistent with the range of levels in Table 5-77 of Appendix G (Technical working paper:
</td></tr>
</table>

Chapter/Appendix reference	Error/discrepancy	Clarification
		Noise and vibration). Relevant construction noise environmental management measures within Table D2-1 of this submissions report will be implemented to manage potential impacts where feasible and reasonable.
Appendix G (Technical working paper: Noise and vibration), Table 3-2	Typographical error	Table 3-2 of Appendix G (Technical working paper: Noise and vibration) incorrectly states that the Out-of-Hours Work (Evening) time window on Monday to Friday is 7pm to 10pm. The table should refer to a 6pm to 10pm time window in accordance with the *Interim Construction Noise Guideline* (DECC, 2009).
Appendix G (Technical working paper: Noise and vibration) Section 3.2	Typographical error	Section 3.2 of Appendix G (Technical working paper: Noise and vibration) states that "The ICNG refers to the NPfI…" This text should read "The ICNG refers to the Industrial Noise Policy (INP)…"
Appendix G (Technical working paper: Noise and vibration), Table 5-1	Corrections to indicative construction program	The overarching indicative program present in Table 5-1 of Appendix G (Technical working paper: Noise and vibration) should read as per Table 6-3 of the environmental impact statement.
Appendix G (Technical working paper: Noise and vibration), Table 5-2	Incorrect reference to construction hours	Table 5-2 of Appendix G (Technical working paper: Noise and vibration) indicates that tunnel fitout would only occur during standard construction hours. This is an error, as these activities would not be limited to standard construction hours. It is noted that the assessments of each individual construction support site in Appendix G (Technical working paper: Noise and vibration), correctly identify and assess tunnel fitout activities as occurring 24/7 (refer to Tables 5-22, 5-69, 5-87, 5-134, 5-191).
Appendix G (Technical working paper: Noise and vibration), Section 5.10.2.3.3	Typographical error	It is noted that there is a typographical error in Section 5.10.2.3.3 of Appendix G (Technical working paper: Noise and vibration). As per the data presented in Table 5-167, the text should read "… and only up to three and 15 receiver buildings predicted to exceed awakening reaction levels during typical works, respectively."
Appendix G (Technical working paper: Noise and vibration), Section 5.10.2.3.3	Typographical error	It is noted that there is a typographical error in Section 5.10.2.3.3 Appendix G (Technical working paper: Noise and vibration), which notes there is potential for 940 receiver buildings to exceed the sleep disturbance screening level. The text may cause confusion that 940 receiver buildings would exceed the sleep disturbance screening levels at both Burnt Bridge Creek Deviation (BGC_06) and Sydney Road (BGC_07). The text should be amended to "940 receiver buildings above the sleep disturbance screen level **at each location**" for clarity. This is consistent with the information presented in Table 5-167 which noted 936 (Burnt Bridge Creek Deviation BGC_06) and 939 (Sydney Road BGC_07) properties are predicted to exceed the sleep disturbance screening levels during worst-case works at each location. As the work locations are spatially separated and worst-case (or any work) might not occur at

Chapter/Appendix reference	Error/discrepancy	Clarification
		each location concurrently, it is not appropriate to combine the numbers for reporting purposes.
Appendix G (Technical working paper: Noise and vibration), Table 5-102	Incorrect construction activity	There is an error in Table 5-102 of Appendix G (Technical working paper: Noise and vibration) which notes that the immersed tube piled supports would use “Screw piling into rock”. This should be corrected to “Impact piling into rock” to reflect the activity assessment.
Appendix G (Technical working paper: Noise and vibration), Annexure E, Table E.4	Incorrect construction activity	There is an error in Table 5-102 of Appendix G (Technical working paper: Noise and vibration) which notes that the immersed tube piled supports would use “Screw piling into rock”. This should be corrected to “Impact piling into rock” to reflect the activity assessment.
Appendix G (Technical working paper: Noise and vibration), Annexure G, Table E.4	Typographical error	There is an error in Table E.4 of Annexure G of Appendix G (Technical working paper: Noise and vibration) which notes that the Activity/modelled works for Works ID MHC_09 is “Piling for cofferdams”. This should be corrected to “Piling for immersed tube tunnel”.
Appendix G (Technical working paper: Noise and vibration), Annexures K and L	Incorrect listed heritage sites	Three potential heritage sites (namely ANZAC Park, Henry Lawson’s Cave and Balgowlah Golf course) are incorrectly marked as being ‘listed’ sites as per the mapping legend. These sites are not listed but are potential heritage sites.
Chapter 12 (Air quality), Section 12.6.1	Incorrect reference	Section 12.6.1 of the environmental impact statement incorrectly states that “The design and operation of the tunnel ventilation system is shown in Figure 5-1 of Chapter 5 (Project description).” The correct figure reference is Figure 5-26 of the environmental impact statement.
Appendix H (Technical working paper: Air quality), Annexure D (Existing air quality and background concentrations), Table D-20	Inconsistency in figures presented	There is a typographical error in Table D-20 of Appendix H (Technical working paper: Air quality). The values for the 98th percentile 24-hour average PM_{10} and $PM_{2.5}$ should be 48.04 µg/m^3 and 22.06 µg/m^3, respectively, for both residential, workplace and recreational receptors and community receptors. The values of 43.6 µg/m^3 and 22.8 µg/m^3 are incorrect in the table only and have not been used in the analysis of the results. That is, the assessment has used the correct numbers, but the table was not updated.
Appendix H (Technical working paper: Air quality) Annexure G, Table G-8	Typographical error	It is noted that there are typographical errors for outlet K in Table G-8, Annexure G of Appendix H (Technical working paper: Air quality). In column 5, the hours for: • I-1 should read ‘Hours 00 to 06, 18 to 23’, I-2 should read ‘Hours 07 to 08’ and I-3 should read ‘Hours 09 to 17’ • J-1 should read ‘Hours 00 to 06, 18 to 23’, J-2 should read ‘Hours 07 to 14’ and J-3 should read ‘Hours 15 to 17’

<table>
<tr><th>Chapter/Appendix reference</th><th>Error/discrepancy</th><th>Clarification</th></tr>
<tr><td></td><td></td><td>
K-1 should read ‘Hours 00 to 06, 19 to 23’, and the hours for K-2 should read ‘Hours 07 to 14, 18’
The above typographical errors in the hours outlined for outlet K in Table G-8, do not change the outcome of the assessment.
</td></tr>
<tr><td>Appendix H (Technical working paper: Air quality) Annexure G, Table G-9 and Table G-16</td><td>Typographical error</td><td>
There is a typographical error in Table G-9 and Table G-16 of Annexure G of Appendix H (Technical working paper: Air quality). The Average emission rates by source group used in GRAL (kg/h) should read:
Table G-9 (corrected) Outlet A, 2016-BY
<table>
<tr><th>Hour start</th><th>NO_x (g/s)</th><th>CO (g/s)</th><th>PM_{10} (g/s)</th><th>$PM_{2.5}$ (g/s)</th><th>THC (g/s)</th></tr>
<tr><td colspan="6">Average emission rates by source group used in GRAL (kg/h)</td></tr>
<tr><td>A-1</td><td>0.921</td><td>1.632</td><td>0.028</td><td>0.023</td><td>0.107</td></tr>
<tr><td>A-2</td><td>4.983</td><td>8.090</td><td>0.144</td><td>0.129</td><td>0.564</td></tr>
<tr><td>A-3</td><td>7.739</td><td>10.879</td><td>0.248</td><td>0.225</td><td>0.860</td></tr>
</table>
Table G-16 (corrected) Outlet B, 2027-DM
<table>
<tr><th>Hour start</th><th>NO_x (g/s)</th><th>CO (g/s)</th><th>PM_{10} (g/s)</th><th>$PM_{2.5}$ (g/s)</th><th>THC (g/s)</th></tr>
<tr><td colspan="6">Average emission rates by source group used in GRAL (kg/h)</td></tr>
<tr><td>B-1</td><td>0.939</td><td>2.531</td><td>0.035</td><td>0.022</td><td>0.071</td></tr>
<tr><td>B-2</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>B-3</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
</table>
The correct values above were used in the air quality modelling assessment, therefore no changes are required to the assessment outcomes.
</td></tr>
<tr><td>Appendix H: (Technical working paper: Air quality), Section 8.4.2</td><td>Typographical error</td><td>There is a typographical error in Section 8.4.2 of Appendix H (Technical working paper: Air quality). The text incorrectly states that the lowest exit velocity (of the different source groups) is used to estimate the mass emissions rates. It is acknowledged that based on information provided in Table G-163 (Annexure G of Appendix H (Technical working paper: Air Quality)), the maximum exit velocity is used instead.</td></tr>
</table>

Chapter/Appendix reference	Error/discrepancy	Clarification
Appendix I (Technical working paper: Health impact assessment), Section 9.9	Clarification regarding toll relief eligibility	Section 9.9 of Appendix I (Technical working paper: Health impact assessment) states that in July 2019, the NSW Government implemented a toll relief initiative to ease the cost of living for frequent NSW toll road users though the provision of half-priced or free vehicle registration. Tolling infrastructure has been included as part of the environmental assessment to provide the NSW Government with the option to apply tolls to traffic using the Beaches Link tunnels. The decision to apply a toll to a road is a NSW Government decision and is not made at the project level. The application of the toll relief program, and eligibility of any road user, is likewise a broader NSW Government policy, rather than a project decision. Notwithstanding, the toll relief initiative is a broader NSW Government initiative, and there are conditions of eligibility to be met. It should also be noted that alternate untolled routes would be available for motorist using existing surface roads.
Chapter 16 (Geology, soils and groundwater), Table 16-4	Typographical error	Table 16-4 of the environmental impact statement was missing an entry in the 'width' column for M4 East project. This should have included “14-20”.
Chapter 16 (Geology, soils and groundwater), Table 16-9	Incorrect reference	Table 16-9 of the environmental impact statement lists Middle Harbour crossing, west (Northbridge) and Middle Harbour crossing, east (Seaforth). This is incorrect and should read Middle Harbour crossing, south (Northbridge) and Middle Harbour crossing, north (Seaforth).
Chapter 16 (Geology, soils and groundwater), Section 16.4.4	Typographical error	The first bullet point under Section 16.4.4 of the environmental impact statement should read: “Offshore disposal - An application for offshore disposal of suitable dredged material ~~has been~~ **will be** submitted to the Commonwealth Department of Agriculture, Water and the Environment…”
Chapter 16 (Geology, soils and groundwater), Figure 16-8 and Figure 16-9	Inconsistency in figure legend	Figure 16-8 and Figure 16-9 of the environmental impact statement present incorrectly settlement contours in metres within the figure legends. Settlement contours are in millimetres, and the legend should reflect this accordingly. Updates to Figure 16-8 and Figure 16-9 of the environmental impact statement are provided in Figure A5-9 and Figure A5-10 of this submissions report, respectively.
Appendix M (Technical working paper: Contamination), Section 4.3	Clarification	Section 4.3 of Appendix M (Technical working paper: Contamination) states that “only one service station is located near tunnel elements of the project (Cammeray – about 300 metres north of the project).” While Table 4-4 in Appendix M indicates seven service station sites within 500 metres of the project which have been notified under section 60 of the *Contaminated Land Management Act 1997*, as shown in Figure 4-1, the Cammeray site is the closest to the tunnel – all the rest are closer to surface works elements.

Chapter/Appendix reference	Error/discrepancy	Clarification
Appendix M (Technical working paper: Contamination), Section 6.5	Typographical error	There is a typographical error in Section 6.5 of Appendix M (Technical working paper: Contamination). The text should read as follows: "Potential impacts as a result of disturbance of contaminated sediment without appropriate ~~remediation and/or~~ management may include…".
Appendix M (Technical working paper: Contamination), Table 9-1	Typographical error	There are some errors in Table 9-1 of Appendix M (Technical working paper: Contamination), page 103. The second paragraph of text onwards for the impact Contamination-sediments should read as follows (strike through indicates text to be deleted, bold text is text to be added): "Where bed sediments within Middle Harbour require excavation and removal to facilitate construction, there are two options for the disposal of sediments. These include: • Offshore disposal – The appropriateness of the offshore disposal option would need to be assessed in accordance with *National Assessment Guidelines for Dredging* (Department of Environment, Water, Heritage and the Arts, 2009) • Landfill disposal – Sediments not suitable for offshore disposal and requiring disposal to landfill would be assessed in accordance with the *Waste Classification Guidelines* (NSW Environment Protection Authority (EPA), 2014b). ~~Landfill disposal is likely to be appropriate for both clean and contaminated sediments.~~ Excavated bed sediments to be disposed to landfill (ie not suitable for offshore disposal) are likely to require some initial treatment at an onshore transfer point to reduce water content (ie achieve a spadable condition), reduce odours and neutralise ASS (if present) before transport to a suitable licensed landfill facility. **Investigations by Royal Haskoning DHV have been carried out for the purpose of assessing the suitability of dredged sediments for offshore disposal (refer to Annexure C).** ~~Additional investigations have should be required to determine the extent (laterally and vertically) and separation of clean and contaminated bed sediments to facilitate disposal.~~ Appropriate management measures should be developed to remove or suitably reduce the contamination risks from sediments during construction activities. Where sediments are disturbed as part of construction activities, sediment transport and distribution within the water column should be appropriately managed so as not to cause harm to benthic and marine ecosystems and/or adversely reduce water quality."

Chapter/Appendix reference	Error/discrepancy	Clarification
Appendix N (Technical working paper: Groundwater), Section 3.2.1	Correction	Water access licences and approvals administered under the *Water Management Act 2000* are discussed in Section 3.2.1 of Appendix N (Technical working paper: Groundwater). The discussion on what exemptions Transport for NSW has under the *Water Management Act 2000* unintentionally referenced the Water Management (General) Regulation 2011 which was repealed in July 2018. The primary regulation under the *Water Management Act 2000* should have referred to the Water Management (General) Regulation 2018. Notwithstanding, the discussion within Section 3.2.1 of Appendix N (Technical working paper: Groundwater) that Transport for NSW is exempt as a roads authority from requiring a water access licence during construction of the project remains consistent under the Water Management (General) Regulation 2018. Prior to operation, Transport for NSW would demonstrate that appropriate water access licences are held or can be obtained to account for groundwater take and/or describe any exemptions that apply.
Appendix N (Technical working paper: Groundwater), Section 4.7	Typographical error	There is a typographical error in Section 4.7 of Appendix N (Technical working paper: Groundwater). The text should read as follows: "The modelled groundwater inflows to the tunnels were controlled by the formation permeability, which in some cases causes inflows to the tunnels greater than one litre per second per kilometre. However, a construction requirement for the project is that the tunnel inflows do not exceed 1 litre per second per kilometre ~~on average~~ **across any given kilometre**, and the tunnels would be treated during construction to ensure that this is the case. Therefore, the actual tunnel inflows would be less than predicted by the modelling". Environmental management measure SG16 has also been revised to include this amendment (refer to Table D2-1 of this submissions report).
Appendix N (Technical working paper: Groundwater), Section 6.1.1	Typographical error	It is noted that there is an error in Section 6.1.1 of Appendix N (Technical working paper: Groundwater). The text should read: As shown in Table 6-1, average inflows for each year of construction are generally ~~above~~ **below** the design criteria of one litre per second per kilometre that has been adopted as an acceptable level of inflow for the project. It is expected that criteria would be based on average values for the tunnel length, which the current design satisfies in every year except 2025. Planned measures to reduce, collect and dispose of tunnel inflows during construction are summarised in Section 7.1.
Appendix N (Technical working paper: Groundwater), Annexure F (Groundwater modelling report), Section 6.1.1	Correction	Section 6.1.1 of Annexure F of Appendix N (Technical working paper: Groundwater) contains an error in the second bullet point (page 55) and should read: Scenario 2 ("Null + Metro + WHTWFU" run) assesses potential future groundwater impacts when groundwater stresses associated with Metro and WHTWFU projects are superimposed

Chapter/Appendix reference	Error/discrepancy	Clarification
		on Scenario 1. Components of the Beaches Link project are not included in Scenario ~~3~~ **2** simulations.
Appendix N (Technical working paper: Groundwater), Section 6.2.3.5	Typographical error	It is noted that Section 6.2.3.5 of Appendix N (Technical working paper: Groundwater) incorrectly states that inflows to the tunnels would be collected and discharged to local waterways of Willoughby, Flat Rock, Burnt Bridge Creeks and Manly Dam. The text should read: "Groundwater inflows to the tunnels would be collected, **treated** and discharged **in**to ~~local waterways (Willoughby Creek,~~ Flat Rock Creek~~, Burnt Bridge Creek and Manly Creek/Manly Dam)~~ **during operation**. This is expected to offset baseflow reductions to ~~these waters, as the additional creek flows~~ **this waterway and** could partially feed the surrounding groundwater system."
Appendix N (Technical working paper: Groundwater), Annexure F (Groundwater modelling report), Section 6.1.1	Correction	Section 6.1.1 of Annexure F of Appendix N (Technical working paper: Groundwater) contains an error in the second bullet point (page 55) and should read: • **Scenario 2** ("Null + Metro + WHTWFU" run) assesses potential future groundwater impacts when groundwater stresses associated with Metro and WHTWFU projects are superimposed on Scenario 1. Components of the Beaches Link project are not included in Scenario ~~3~~ **2** simulations The above correction does not affect the modelling or assessment carried out for the environmental impact statement and Table 6-1 provides the method of calculating the cumulative and Beaches Link only drawdown impacts.
Appendix N (Technical working paper: Groundwater), Annexure F (Groundwater modelling report), Attachment 6 (Simplified construction staging summary)	Corrections to indicative construction program	The simplified construction staging summary presented in Attachment 6 of Annexure F of Appendix N (Technical working paper: Groundwater) should read as per Table 6-3 of the environmental impact statement.
Chapter 17 (Hydrodynamics and water quality), Table 17-2	Further detail added about requirement for operational environment protection licence for groundwater treatment	The first row of Table 17-2 of the environmental impact statement has been updated and should read: Environment protection licences are issued for a broad range of activities listed in Schedule 1 of the Protection of the *Environment Operations Act 1997* and aim to address air, noise, waste, land contamination and water pollution issues created by those activities. An environment protection licence for road construction**,** and **operational** road tunnel emissions **(and any other relevant scheduled operational activity)** under Chapter 3 of the Act would be required for ~~construction of~~ the project.

Chapter/Appendix reference	Error/discrepancy	Clarification
Chapter 17 (Hydrodynamics and water quality), Section 17.4.2	Correction	Section 17.4.2 of the environmental impact statement contains an error in the last paragraph on page 17-37 and should read: Along with the use of several shallow and deep draft silt curtains around ~~cofferdams and~~ dredging activities, shallow draft silt curtains would be installed along the shorelines where appropriate to mitigate potential impacts to nearby ecologically sensitive areas (eg. seagrass and rock reef habitat).
Chapter 17 (Hydrodynamics and water quality), Figure 17-7 in Section 17.4.3 and Appendix O (Technical working paper: Surface water quality and hydrology), Figure 5-1	Figure corrections	Figure 17-7 of the environmental impact statement and Figure 5-1 of Appendix O (Technical working paper: Surface water quality and hydrology) have been updated with minor changes to discharge locations and to show the Cammeray Golf Course wastewater treatment plant site which was inadvertently omitted from these environmental impact statement figures. Refer to Figure A5-11 below for the updated figure.
Appendix O (Technical working paper: Surface water quality and hydrology), Section 2.1.1	Further detail added about requirement for operational environment protection licence for groundwater treatment	Section 2.1.1 of Appendix O (Technical working paper: Surface water quality and hydrology) is incorrect and should read: The *Protection of the Environment Operations Act 1997* (POEO Act) regulates air and water pollution, noise control and waste management. Section 120 of the POEO Act makes the pollution of waters an offence. Environment protection licences under Chapter 3 of the Act are required for a broad range of activities listed in Schedule 1 of the POEO Act and aim to address water pollution issues created by those activities. The project would involve the construction, widening and re-routing of roads and road tunnel emissions, which are listed as road construction activities in Schedule 1 of the POEO Act. An environment protection licence for road construction and **operational** road tunnel emissions **(and any other relevant scheduled operational activity)** would be required for the project.
Appendix O (Technical working paper: Surface water quality and hydrology), Section 6.5	Typographical error	It is noted that the last bullet in Section 6.5 of Appendix O (Technical working paper: Surface water quality and hydrology) contains an error. The text should read: "Groundwater inflows to the tunnels would be collected, treated and discharged ~~to local waterways (Willoughby Creek,~~ **into** Flat Rock Creek ~~and Burnt Bridge Creek)~~ **during operation**. This is expected to offset baseflow reduction to ~~these waters, as the additional creek flows~~ **this waterway and** could partially feed the surrounding groundwater system."
Appendix P (Technical working paper: Hydrodynamic and dredge plume modelling), Executive summary	Correction	The Executive summary of Appendix P (Technical working paper: Hydrodynamic and dredge plume modelling) contains an error in the fourth paragraph on page iv. The text should read:

Chapter/Appendix reference	Error/discrepancy	Clarification
		The main outcomes of the hydrodynamic modelling impacts related to the two temporary construction phase cofferdams (Middle Harbour south cofferdam (BL7) and Middle Harbour north cofferdam (BL8)) and **adjacent** ~~associated~~ deep silt curtains are:
Appendix P (Technical working paper: Hydrodynamic and dredge plume modelling)	Minor wording change	The final dot point on page iv of the Executive Summary of Appendix P (Technical working paper: Hydrodynamic and dredge plume modelling) has been updated to align with findings on pages 82 and 86 of Appendix P (Technical working paper: Hydrodynamic and dredge plume modelling) and should read: "Tidal flushing times **in the area upstream of the crossing are indicated to increase as a result of** ~~would be slightly longer due to the addition of the sill-like feature created by~~ the immersed tube tunnels; however, flushing times **are still expected to** ~~would~~ remain relatively rapid".
Appendix P (Technical working paper: Hydrodynamic and dredge plume modelling), Section 6.1.1	Correction	The second paragraph of Section 6.1.1 of Appendix P (Technical working paper: Hydrodynamic and dredge plume modelling) is incorrect and should read as follows: **Silt curtains are not required for the cofferdam installation works or the immersed tube tunnel piling as both of these piling activities would not result in any signifciant distrurbace of the bed of the harbour. Any disturbance would be localised at the bed of the harbour and would settle out quickly within the project footprint.** Deep draft silt curtains would be placed around the ~~cofferdams and adjacent~~ dredging activities, **and would likely be attached to the corners of the cofferdams**. Silt curtains are flexible, typically water permaeble (and sometimes impermeable) barriers that act to prevent the dispersion of fine grained sediment in the water column. For the project they have been designed to contain sediment suspended during ~~cofferdam piling and~~ dredging activities with a configuration shown in Figure 6-1. The silt curtains would be designed with a draft of 12 metres to maximise containent of fine grained sediment. The deep draft silt curtains would be in place for the duration of the ~~cofferdam piling and adjacent~~ dredging activities. The two deep draft silt curtains would supplement the use of shallow draft silt curtains (ie. shallow draft silt curtains about two to three metres deep, sometimes referred to as a "moon pool") that would be located around ~~select piling and~~ dredging plant and around ecologically sensitive areas (eg. nearby seagrass and rocky reff habitat) to provide additional protection.
Appendix P (Technical working paper: Hydrodynamic and dredge plume modelling), Section 6.1.2	Correction	The first sentence of the second paragraph of Section 6.1.2 of Appendix P (Technical working paper: Hydrodynamic and dredge plume modelling) is incorrect and should read as follows: During the peak ebb tide, the Middle Harbour north cofferdam (BL8) and ~~accompanying~~ **adjacent** deep draft silt curtain **for the dredging works,** reduced current speeds around Seaforth Bluff (at all depths) in a downstream direction.

Chapter/Appendix reference	Error/discrepancy	Clarification
Appendix P (Technical working paper: Hydrodynamic and dredge plume modelling), Section 7.2	Typographical error	It is noted that in Section 7.2 of Appendix P (Technical working paper: Hydrodynamic and dredge plume modelling), it is incorrectly stated that silt curtains are proposed to be installed "around some dredging plant". This is an error and should read "around dredging plant."
Appendix P (Technical working paper: Hydrodynamic and dredge plume modelling), Section 7.2.2, pages 97-98	Confirmation whether the 12 metre deep draft silt curtains used in the dredge plume model and project construction would be permeable or impermeable	Section 6.1.1 (page 50) of Appendix P (Technical working paper: Hydrodynamic and dredge plume modelling) states that silt curtains are "… typically water permeable (and sometimes impermeable) barriers that act to prevent the dispersion of fine grained sediment suspended in the water column." However, the environmental impact statement did not make a clear statement about whether the deep draft silt curtains used for the project would be permeable or impermeable. Section 7.2.2 (page 98) of Appendix P (Technical working paper: Hydrodynamic and dredge plume modelling) states that "the deep draft silt curtains were replicated in the model through the inclusion of a physical structure which limits the advection of sediment in the top 12 metres of the water column." By limiting advection of sediment (ie not allowing sediment to move through the water column), the dredge plume modelling assumed that the silt curtains would be impermeable, either by being installed initially as impermeable curtains or by soon becoming 'blinded' by the accumulation of fine sediment particles adhering to the inside of the curtain. The deep draft silt curtains proposed to be used during project construction would in effect be impermeable, which is consistent with the assumptions used in the hydrodynamic and dredge plume modelling carried out.
Appendix Q (Technical working paper: Marine water quality), Figure 4-1	Correction	The figure note underneath Figure 4-1 in Appendix Q (Technical working paper: Marine water quality) is incorrect and should read as: NB. **Moon pool silt curtains are shown around the vessel.** Actual operations will include **an** additional **deep draft (10-12 metre)** silt curtain~~s~~ around **the dredging activities** ~~a moon pool on the dredge vessel~~ and **a shallow (2-3 metre) silt curtain** around nearby sensitive nearshore habitats.
Appendix Q (Technical working paper: Marine water quality), Section 5.1.1	Incorrect statement	Section 5.1.1 of Appendix Q (Technical working paper: Marine water quality) states "Construction activities would be likely to lead to mobilisation of harbour bed sediments within shallower waters and formation of localised plumes that disperse rapidly into the ambient waters". This sentence should read "Construction activities would be likely to lead to mobilisation of harbour bed sediments within shallower waters and the formation of minor plumes which would be short lived and localised, owing to the nature of the activities and the low current speeds in the area, and which would resettle to the bed of the harbour".

Chapter/Appendix reference	Error/discrepancy	Clarification
Chapter 18 (Flooding)	Inconsistent flow velocities presented in Section 18.6.2 of the environmental impact statement and Section 6.2.1.1 of Appendix R (Technical working paper: Flooding)	Section 18.6.2 of the environmental impact statement presents impacts on flow velocities and the duration of inundation external to the road corridor for storms up to 1% AEP. This section has been incorrectly paraphrased from Section 6.2.1.1 of Appendix R (Technical working paper: Flooding). As outlined in the technical working paper, the concentration of flow at discrete locations along the widened section of the Wakehurst Parkway has the potential to increase peak flows and the duration of inundation in a number of receiving drainage lines which run to the east **and west** of the road corridor. Conversely, in a number of different receiving drainage lines which run to the east **and west** of the road corridor, the upgrade of the Wakehurst Parkway also has the potential to decrease peak flows.
Chapter 18 (Flooding)	Typographical error regarding environmental management measure F9 phase	The phase in environmental management measure F9 was incorrectly transcribed as operation and should have referred to construction. The phase has also been corrected to 'construction' in Table D2-1 of this submissions report.
Chapter 19 (Biodiversity), Appendix S (Technical working paper: Biodiversity development assessment report)	Incorrect guideline referenced in environmental management measure B26	Environmental management measure B26 incorrectly referenced *Guide 2: Exclusion zones of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011). The correct reference is *Guide 7: Pathogen Management* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011a). This has been corrected in Table D2-1 of this submissions report. This has been corrected in the updated biodiversity assessment provided in Appendix F5 of this submissions report.
Appendix S (Technical working paper: Biodiversity development assessment report) Annexure D (Freshwater ecology impact assessment)	Wastewater treatment plant discharge location incorrectly shown on Figure 2-1 and Figure 2-2	Figure 2-1 and Figure 2-2 of Annexure D of Appendix S (Technical working paper: Biodiversity development assessment report) incorrectly identify a wastewater treatment plant discharge location at Seaforth Oval and at Flat Rock Creek (from the Punch Street wastewater treatment plant). The discharge locations would be as per Figure 17-7 of the environmental impact statement which has been updated (refer to Figure A5-11 below). This has been corrected in the updated biodiversity assessment provided in Appendix F5 of this submissions report.
Appendix S (Technical working paper: Biodiversity development assessment report) and	Inconsistency between Section 3.6.1.4.4 of Appendix S and	Section 3.6.1.4.4 of Appendix S (Technical working paper: Biodiversity development assessment report) acknowledges that there are three sites of *prostanthera marifolia* (Seaforth Mintbush) in close proximity, with the closest being 70 metres from the subject land at Wakehurst Parkway. However, the habitat assessment table in Annexure A of Appendix S (Technical working paper: Biodiversity development assessment report) states the nearest

Chapter/Appendix reference	Error/discrepancy	Clarification
Annexure A (Habitat assessment tables)	Annexure A of Appendix S	recording is "around 1km from the subject land". This is an error, the assessment table should read as per Section 3.6.1.4.4 of Appendix S (Technical working paper: Biodiversity development assessment report). It should be noted that a new search of the BioNet database was carried out in March 2021, as discussed in Section C18.1.1 of this submissions report. At some point in the last year, two NSW herbarium records dating from 2002 and 2008 that were previously identified as *Prostanthera junonis* have been reclassified to Seaforth Mint Bush. However neither species is recorded in the construction footprint, and the conclusions in the environmental impact statement remain appropriate. This has been corrected in the updated biodiversity assessment provided in Appendix F5 of this submissions report.
Appendix S (Technical working paper: Biodiversity development assessment report), Section 5.4	Typographical error	It is noted that in Section 5.4 of Appendix S (Technical working paper: Biodiversity development assessment report) it is incorrectly stated that: “The installation of the immersed tube tunnels would occur 24 hours a day, seven days a week” The text should read: “The installation of the immersed tube tunnels would require one continual work period of around 48 hours for the immersion of each of the six tunnel units. Use of Spit West Reserve construction support site (BL9) outside standard construction hours would be required to provide support each time.” This has been corrected in the updated biodiversity assessment provided in Appendix F5 of this submissions report.
Appendix S (Technical working paper: Biodiversity development assessment report), Section 5.5	Typographical error	Section 5.5 of Appendix S (Technical working paper: Biodiversity development assessment report), 5th paragraph, incorrectly states that 24.05 hectares of vegetation would be removed for the project. However, as noted in Section 5.1.3, around 20.92 hectares of vegetation would be removed. The text should instead read: “The removal of ~~24.05~~ **20.92** hectares of vegetation, which contains varying abundance of the blossom and fruit trees that form part of the Grey-headed Flying-fox diet, does not comprises a significant proportion of foraging habitat available to the species in the surrounding locality.” However, it is noted that since the environmental impact statement exhibition, due to design refinements carried out in relation to the realignment of the Wakehurst Parkway shared user bridge ramps (refer to Section A4.3 above), removal of vegetation as a result of the project has decreased from 20.92 ha to 20.78 ha, of which 20.52 ha is potential foraging habitat.

Chapter/Appendix reference	Error/discrepancy	Clarification
		Updated habitat areas for Grey headed Flying-fox have been included in the updated biodiversity assessment provided in Appendix F5 of this submissions report.
Appendix S (Technical working paper: Biodiversity development assessment report), Section 5.6	Error in spatial extent	Section 5.6 of Appendix S (Technical working paper: Biodiversity development assessment report) incorrectly states "Other areas mapped as groundwater dependent ecosystems with potential reliance on subsurface groundwater by BOM (2018) are not located within areas of predicted drawdown, and the project would not result in direct or indirect impacts to these areas of vegetation". The assessment discussion and outcomes for Coastal Sandstone Gully Forest, Sandstone Riparian Scrub and Coastal Sand Forest would apply to the small areas of Coastal Sandstone Plateau Heath, Estuarine Fringe Forest and Illawarra Gully Wet Forest. Further detail and updated mapping are included in Section B4.16.2 of this submissions report. This has been corrected in the updated biodiversity assessment provided in Appendix F5 of this submissions report.
Appendix S (Technical working paper: Biodiversity development assessment report), Table 5.10	Error in potential drawdown extent in Table 5.10 of Appendix S	There is an error in Table 5.10 of Appendix S (Technical working paper: Biodiversity development assessment report) in discussing the potential drawdown extent impact on Duffys Forest endangered ecological community. The discussion within Table 5.10 (with respect to assessment requirement (g) of the serious and irreversible impact assessment for Duffys Forest endangered ecological community) should reflect the drawdown assessment from the groundwater assessment, and as such should read: "The project may result in water table drawdown beneath patches of Duffys Forest TEC adjoining the Wakehurst Parkway to the east and south of Seaforth Oval. Groundwater modelling for the project has predicted up to three to five metres of water table drawdown beneath these patches of Duffys Forest after 100 years of operation (2128) (Jacobs, 2020b). The Duffys Forest TEC is not considered to be a groundwater dependent ecosystem and would likely only draw on groundwater opportunistically during periods of low rainfall." This has been corrected in the updated biodiversity assessment provided in Appendix F5 of this submissions report.
Appendix S (Technical working paper: Biodiversity development assessment report), Annexure E	Typographical errors	It is noted that the text on page E-6 of Annexure E of Appendix S (Technical working paper: Biodiversity development assessment report) should be corrected as follows (noting that the correction aligns with vegetation removal figures provided in Section 5.1.3 of Appendix S): **"Reduce the area of occupancy of an important population** The project would result in the removal of up to ~~15.08~~ **14.15** hectares of PCTs and ~~6.52~~ **6.77** hectares of other vegetation that contains varying abundance of preferred feed trees. The removal of ~~21.60~~ **20.92** hectares of vegetation, that contains varying abundance of the

Chapter/Appendix reference	Error/discrepancy	Clarification
		blossom and fruit trees that form part of the Grey-headed Flying-fox (as listed in Table 1), does not comprise a significant proportion of foraging habitat available to the species in the surrounding locality. Preferred feed trees occur commonly in large tracts of native vegetation contained within Garigal National Park, Manly Dam Reserve, Ku-ring-gai Chase National Park, Lane Cove National Park, smaller bushland reserves, golf courses, residential gardens and street trees. The removal of this ~~24.05~~ **20.92** hectares of potential foraging habitat would have a minimal impact on the area of occupancy of the species. **Fragment an existing important population into two or more populations** The removal of ~~24.05~~ **20.92** hectares of potential foraging habitat from the subject land would not fragment the population of the Grey-headed Flying-fox into two or more populations. **Adversely affect habitat critical to the survival of a species** While the project would result in the removal of ~~24.05~~ **20.92** hectares of potential foraging habitat, this habitat is not likely to be habitat critical to the survival of this species. Alternative foraging habitat is readily available in in large tracts of native vegetation contained within Garigal National Park, Manly Dam Reserve, Ku-ring-gai Chase National Park, Lane Cove National Park, smaller bushland reserves, golf courses, residential gardens and street trees." It is noted that since the environmental impact statement exhibition, due to design refinements carried out in relation to the realignment of the Wakehurst Parkway shared user bridge ramps (refer to Section A4.3 above), removal of PCTs as a result of the project has decreased from 14.15 hectares to 13.98, and overall vegetation removal has decreased from 20.92 hectares to 20.78 hectares, of which 20.52 hectares is potential foraging habitat. Updated habitat areas for Grey headed Flying-fox have been included in the updated biodiversity assessment provided in Appendix F5 of this submissions report.
Appendix S (Technical working paper: Biodiversity development assessment report), Section 2.6.2.2.12	Inconsistency in recorded species	It was incorrectly stated in Section 2.6.2.2.12 of Appendix S (Technical working paper: Biodiversity development assessment report) that Annexure C only included species recorded by Arcadis. Species recorded by WSP provided in *Harbourlink Terrestrial Biodiversity Survey Report* (WSP, 2018) (unpublished) were also included. This has been corrected in the updated biodiversity assessment provided in Appendix F5 of this submissions report.
Appendix T (Technical working paper: Marine ecology), Table 3-5	Incorrect figure	It is noted that in Table 3-5 of Appendix T (Technical working paper: Marine ecology) that the area of P. Australis in the study area has been incorrectly reported. The correct figure in Table 3-5 should be 0.26 ha.

Chapter/Appendix reference	Error/discrepancy	Clarification
Appendix T (Technical working paper: Marine ecology), Section 3.6	Typographical errors	It is noted that there are typographical errors in Section 3.6 of Appendix T (Technical working paper: Marine ecology). The second paragraph below Table 3-5 should read: "There were ~~46~~ ***29*** fragmented patches of *P. australis* in the study area, where *P. australis* is the most abundant species (greater than 50 per cent of seagrass cover in a patch), occupying a total area of ~~0.87~~ ***0.26*** hectares. Most of these occurred along the subtidal reaches of Explosives Reserve, Castlecrag, Clive Park and Beauty Point along the west/south banks and Seaforth and Brady***s*** Point along the east/north banks. These occurrences within the study area are far enough to only allow genetic connectivity through seed dispersal rather than rhizomatous growth. However, *P. australis* meadows are unlikely to be connected through seed dispersal as no mature *P. australis* meadows have been observed to be established from seedlings (Threatened Species Scientific Committee (TSSC), 2015). Hence, each occurrence of this species at the aforementioned locations are likely to be considered an individual population. As the majority of these occur as isolated patches within the study area, with the largest being ~~0.10~~ ***0.05*** hectares at ~~Pickering~~ ***Bradys*** Point at ~~Seaforth~~ ***Clontarf***, the occurrence of *P. australis* in the study area does not meet all of the key diagnostic characteristics for *P. australis* Commonwealth EEC (Table 3-6). Hence, the occurrence of *P. australis* within the study area is not considered as the *P. australis* Commonwealth EEC under the EPBC Act and *P. australis* Commonwealth EEC would not be considered further in this report. The FM Act listing of *P. australis* as an endangered population is considered in Section 3.8."
Appendix T (Technical working paper: Marine ecology), Annexure D	Typographical errors	It is noted that there are typographical errors on page D3, Annexure D of Appendix T (Technical working paper: Marine ecology). The following amendments should be made: "*Posidonia australis* is widespread, subtidally in temperate and cool-temperate marine waters of southeastern, southern and south-western Australia (Fisheries Scientific Committee, 2010). The largest meadows of *Posidonia australis* are generally found on soft sedimentary environments within the protected waters of marine bays and marine dominated coastal lakes. Around 0.26 ~~0.46~~ hectares of the *Posidonia australis* endangered population occurs within the study area ~~where~~ **with** the largest patches **being** ~~were~~ recorded at ~~Pickering~~ **Bradys** Point at ~~Seaforth~~ **Clontarf**. No *Posidonia australis* endangered population meadows were recorded within the project area."
Chapter 20 (Land use and property), Section 20.4.2	Incorrect reference to Table 20-4	Section 20.4.2 of the environmental impact statement states "As discussed in Table 20-4, changes at Artarmon Park would be limited to the conversion of a portion of land adjacent to the Gore Hill Freeway zoned for public recreation for permanent project infrastructure.." The reference should be to Table 20-5 of the environmental impact statement.
Chapter 22 (Urban design and visual amenity) and Appendix V	Existing noise wall on Gore Hill	There is a discrepancy between the extent of new and existing noise barriers shown in Figure 5-2 and Figure 22-2 of the environmental impact statement and Figure 4.8, Figure 4.9 and

Chapter/Appendix reference	Error/discrepancy	Clarification
(Technical working paper: Urban design, landscape character and visual impact)	Freeway and new noise wall section along the top of cut and cover is missing from Figure 22-1	Figure 4.13 of Appendix V (Technical working paper: Urban design, landscape character and visual impact). The extent of new and existing noise barriers shown in Figure 5-2 is correct.
Chapter 22 (Urban design and visual amenity) and Appendix V (Technical working paper: Urban design, landscape character and visual impact)	The visualisation of the Gore Hill Freeway portals does not show the new noise walls on the roof of the westbound portal	There is a discrepancy between the extent of new and existing noise barriers shown in Figure 5-2 and Figure 22-18 and Figure 22-19 of the environmental impact statement and Viewpoint 4 of Appendix V (Technical working paper: Urban design, landscape character and visual impact). The extent of new and existing noise barriers shown in Figure 5-2 is correct.
Chapter 22 (Urban design and visual amenity) and Appendix V (Technical working paper: Urban design, landscape character and visual impact)	Inconsistency in impact assessment rating presented for North Sydney Viewpoint 8	Table 22-11 of the environmental impact statement incorrectly notes that the magnitude of impact for North Sydney Viewpoint 8 is 'High', however this is inconsistent with assessment table presented in Section 4.6.16 of Appendix V (Technical working paper: Urban design, landscape character and visual impact). The magnitude of impact should be 'Moderate' in Chapter 22 (Urban design and visual amenity), per the assessment in Appendix V (Technical working paper: Urban design, landscape character and visual impact).
Chapter 24 (Resource use and waste management), Section 24.3.3 and Table 24-8	Typographical error	Section 24.3.3 and Table 24-8 of the environmental impact statement incorrectly refers to a dredged and excavated material volume of 10,000 cubic metres for soft soils and sediments that are not suitable for offshore disposal. This value is an error and should read as 12,000 cubic metres, which is consistent with what is stated in Table 7-1 of Appendix P (Technical working paper: Hydrodynamic and dredge plume modelling).
Chapter 24 (Resource use and waste management), Section 24.4.1	Correction	The second sentence at the start of Section 24.1.1 of the environmental impact statement states that ongoing maintenance is not included as part of the project. This is incorrect and this paragraph should read as follows: Materials used for the operation of the project would be limited to those required for ongoing maintenance activities, and the operation of the motorway control centre and tunnel support facilities. ~~As outlined in Chapter 5 (Project description), ongoing maintenance activities are not included as part of the project and would be considered separately at the relevant time in the future.~~
Chapter 26 (Climate change risk and greenhouse gas)	Typographical error	Table 26-4 in the environmental impact statement lists the actions that would be carried out during further design development to 'mitigate the effects of climate change'. It should read

Chapter/Appendix reference	Error/discrepancy	Clarification
		'manage the effects of climate change' as the term 'mitigate' is associated with reducing carbon emissions.
Chapter 26 (Climate change risk and greenhouse gas)	Typographical error	The third column with the risk summary in Table 26-4 in the environmental impact statement should be changed from 'Climate change risks and flood modelling projections' to 'Changes to flooding impacts from climate change' as suggested by Northern Beaches Council.
Appendix Y (Compilation of environmental management measures)	Correction	Environmental management measure SG8 notes that potentially contaminated areas directly affected by the project will be further investigated and managed, including at Warringah Freeway (from North Sydney to Cammeray). Contamination investigations for the Beaches Link and Gore Hill Freeway Connection project in this area will be carried out as part of the Western Harbour Tunnel and Warringah Freeway Upgrade project Stage 2 contamination investigations. Environmental management measure SG8 has been updated in Table D2-1 of this submissions report to remove reference to investigations in this area.
Throughout	Naming convention for Manly Warringah War Memorial State Park	Manly Warringah War Memorial State Park was mislabelled 'Manly Dam Reserve' throughout the environmental impact statement.
Throughout	Change in Department name of Department of Primary Industries (Fisheries)	Department of Primary Industries (Fisheries) is now part of the Department of Regional NSW, and not Department of Planning, Industry and Environment – Regions, Industry, Agriculture and Resources.
Throughout	Change in name for Infrastructure Sustainability Council of Australia	Infrastructure Sustainability Council of Australia is now called the Infrastructure Sustainability Council.
Throughout	Typographical error	It is noted that environmental management measure SG8 referred to the year of the Contaminated Land Management Act incorrectly. The text should read: "*Contaminated Land Management Act ~~2008~~* ***1997***".

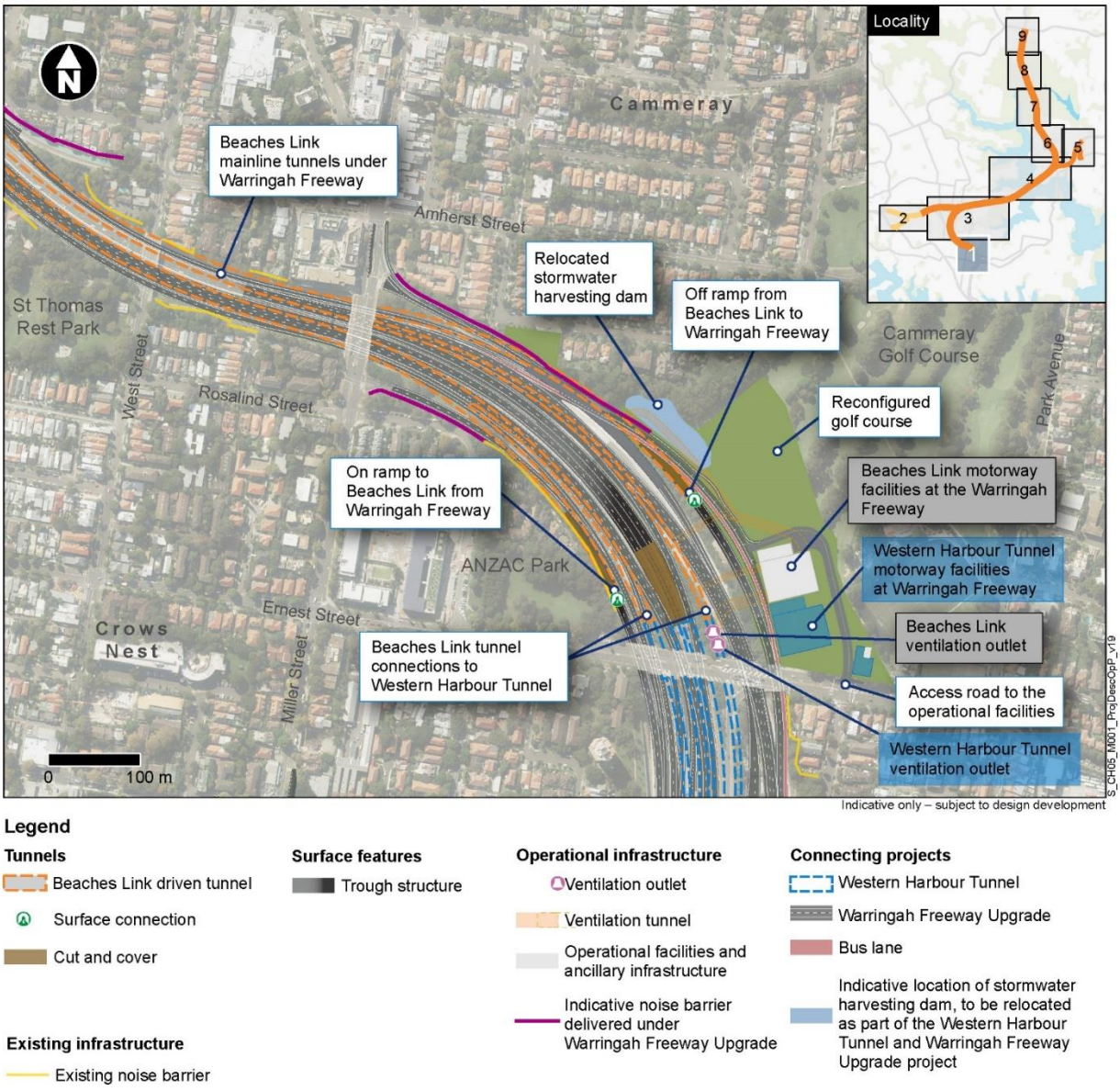


Figure A5-5 Overview of the Beaches Link and Gore Hill Freeway Connection project (map 1) (update to Figure 5-1 of the environmental impact statement)

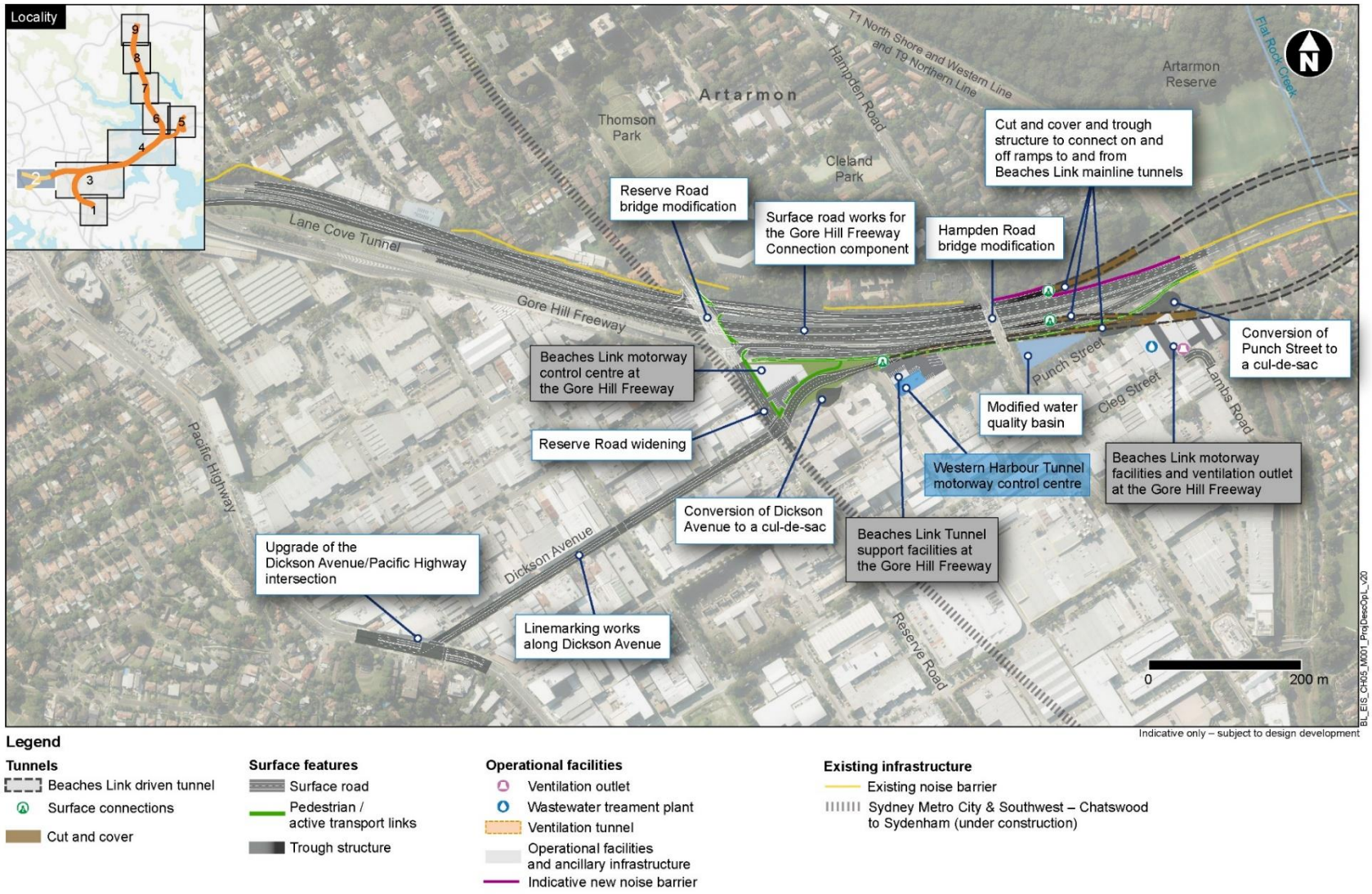


Figure A5-6 Overview of the Beaches Link and Gore Hill Freeway Connection project (map 2) (update to Figure 5-2 of the environmental impact statement)

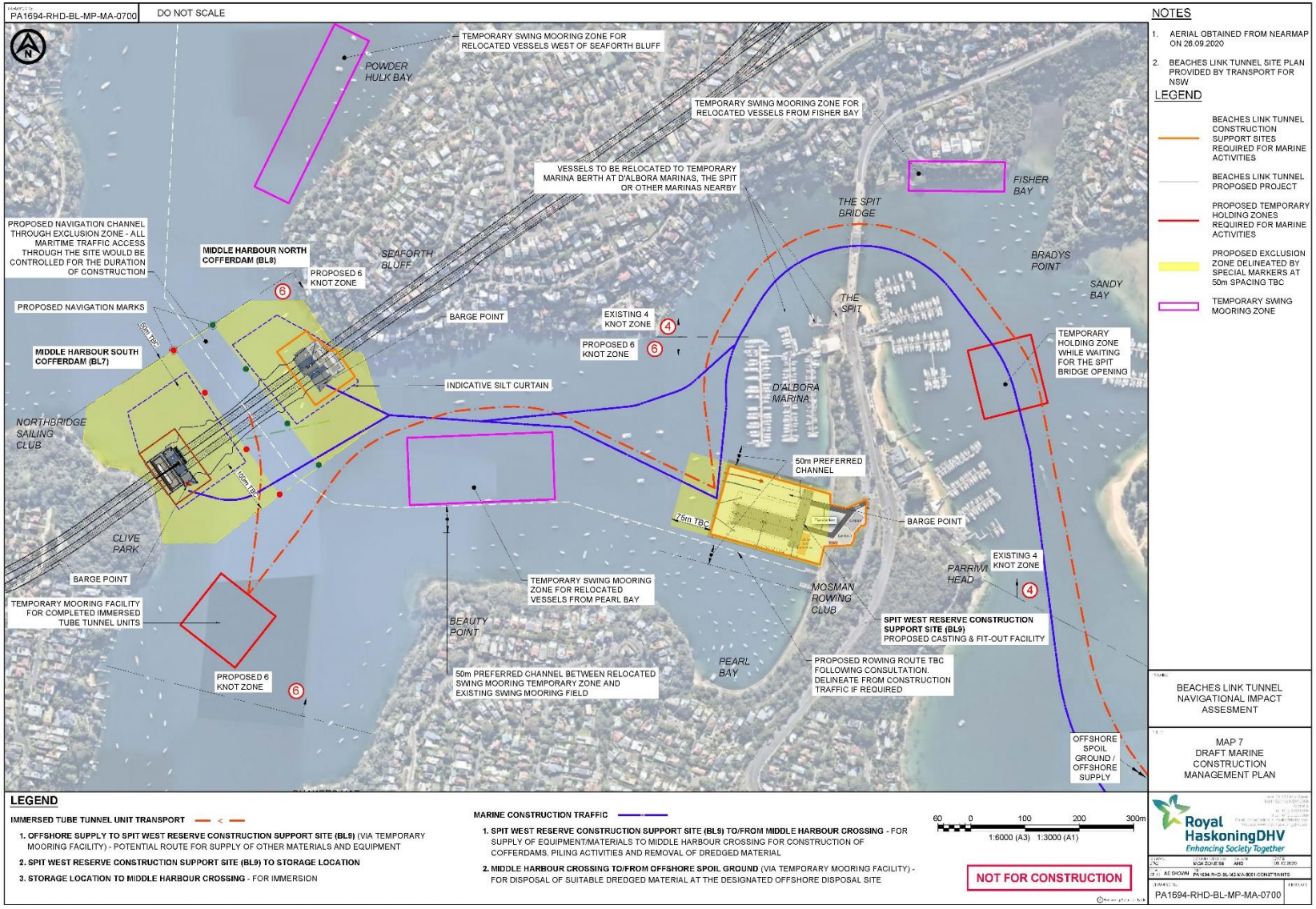
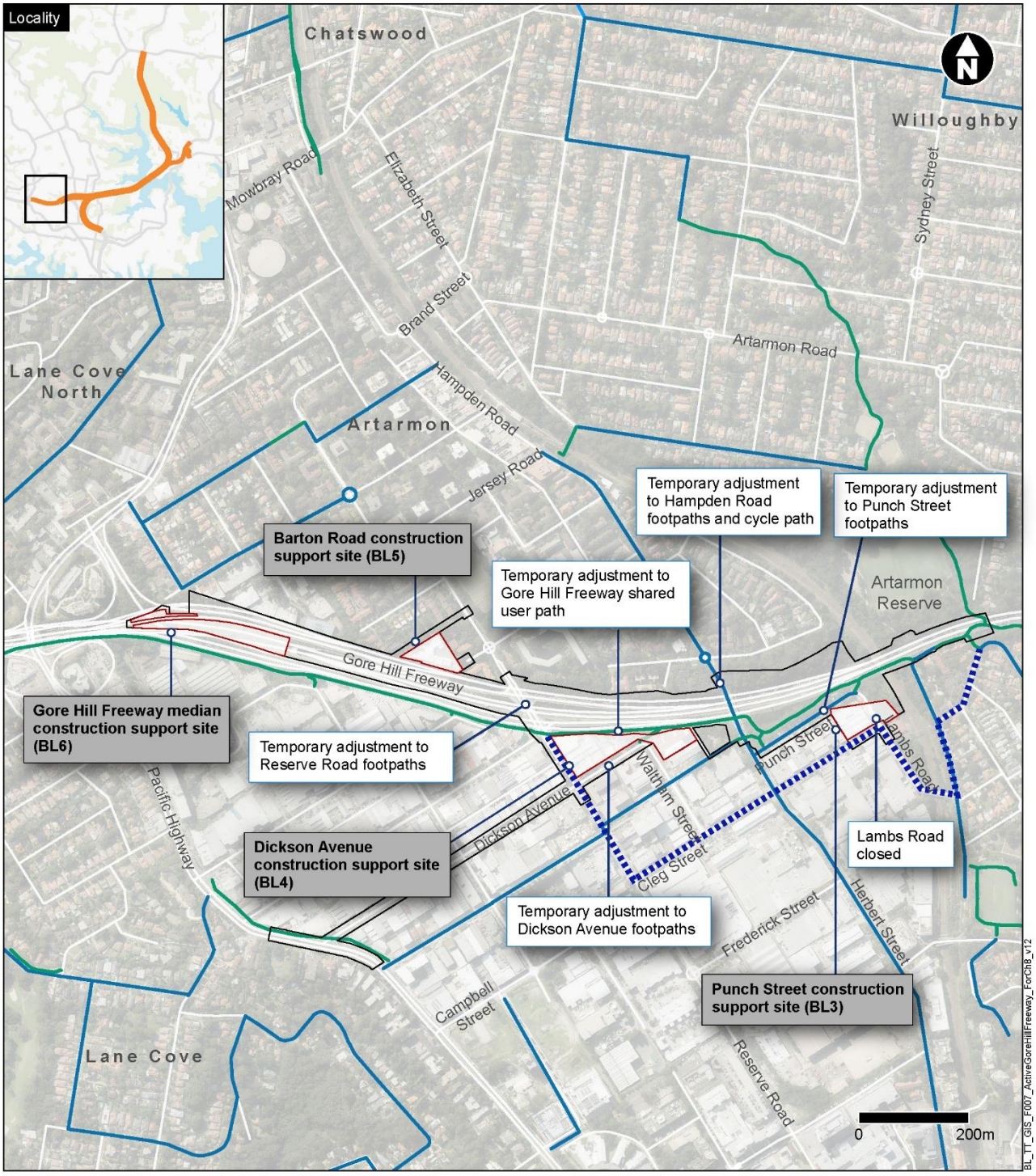


Figure A5-7 Marine construction traffic routes and envisaged route of rowing craft during construction of the immersed tube tunnels (update to Figure 6.2 and Map 7 of Annexure A of Appendix F (Technical working paper: Traffic and transport))



Legend

Construction features
- Construction support site boundary
- Construction footprint

Existing active transport infrastructure
- Existing off-road shared user path
- Existing on-road cycle path

Adjusted active transport infrastructure
- Gore Hill Freeway shared user path detour

Note: this detour route is based on the current level of design and construction planning, and would be finalised once the contractor has been engaged and construction planning and staging is progressed. It is also noted that there may be multiple iterations of the detour (ie the detour won't be fully in effect during site establishment works and would progressively change as works progress)

Figure A5-8 Active transport impacts within the Gore Hill Freeway and Artarmon area during construction (update to Figure 8-12 of the environmental impact statement and Figure 5-32 of Appendix F (Technical working paper: Traffic and transport))

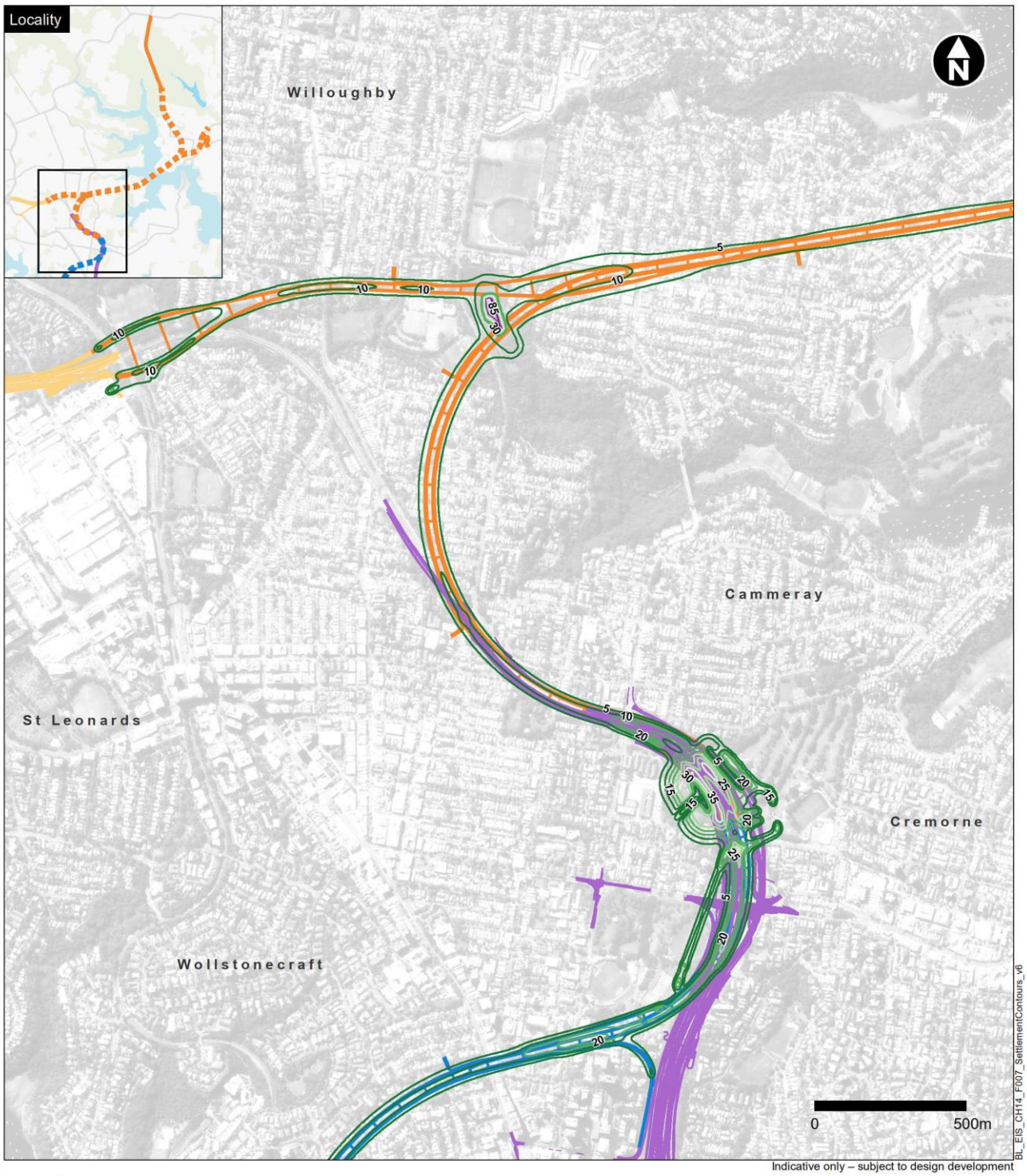


Figure A5-9 Settlement contours – Cammeray, Willoughby (update to Figure 16-8 of the environmental impact statement)

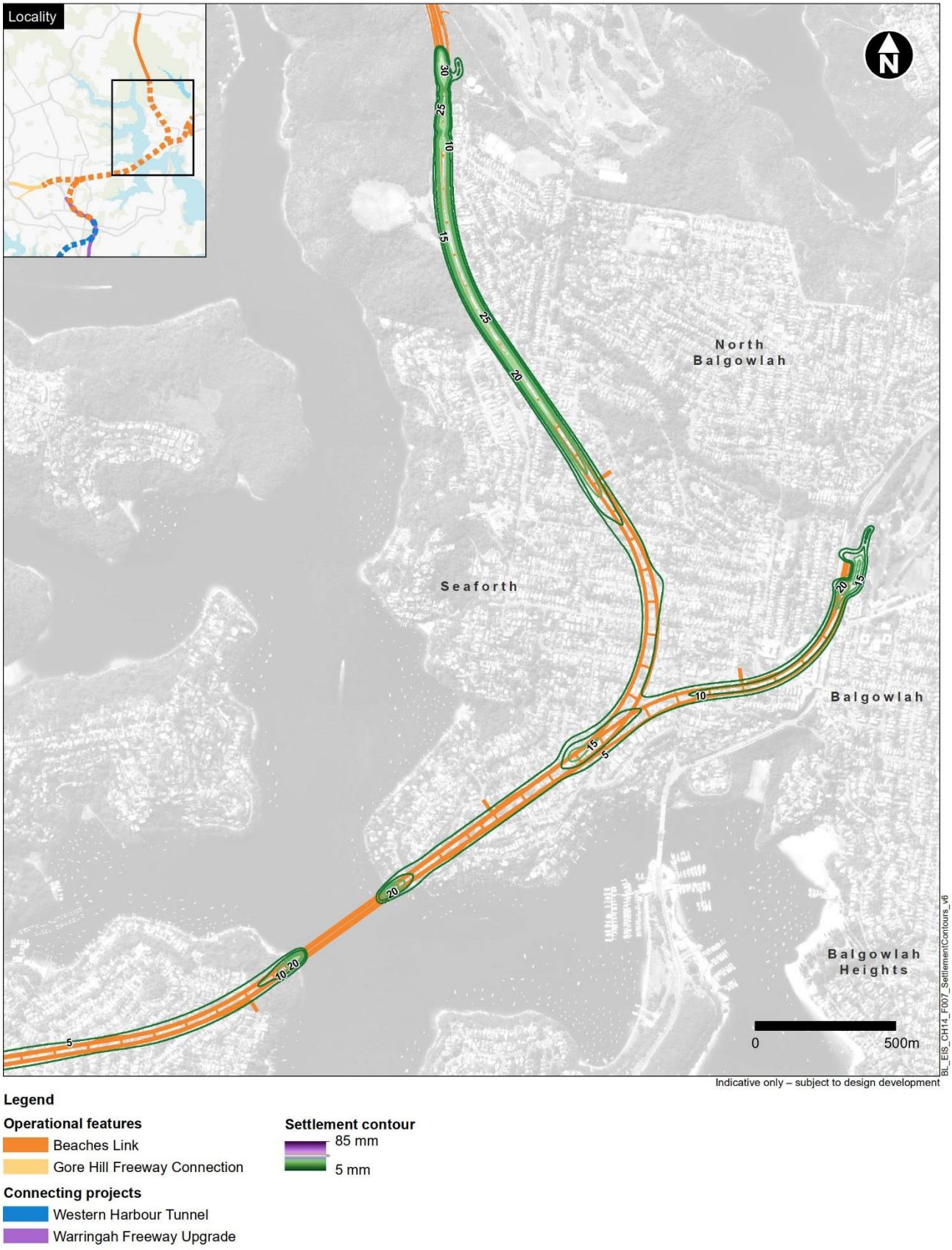


Figure A5-10 Settlement contours – Middle Harbour, Seaforth, Balgowlah (update to Figure 16-9 of the environmental impact statement)

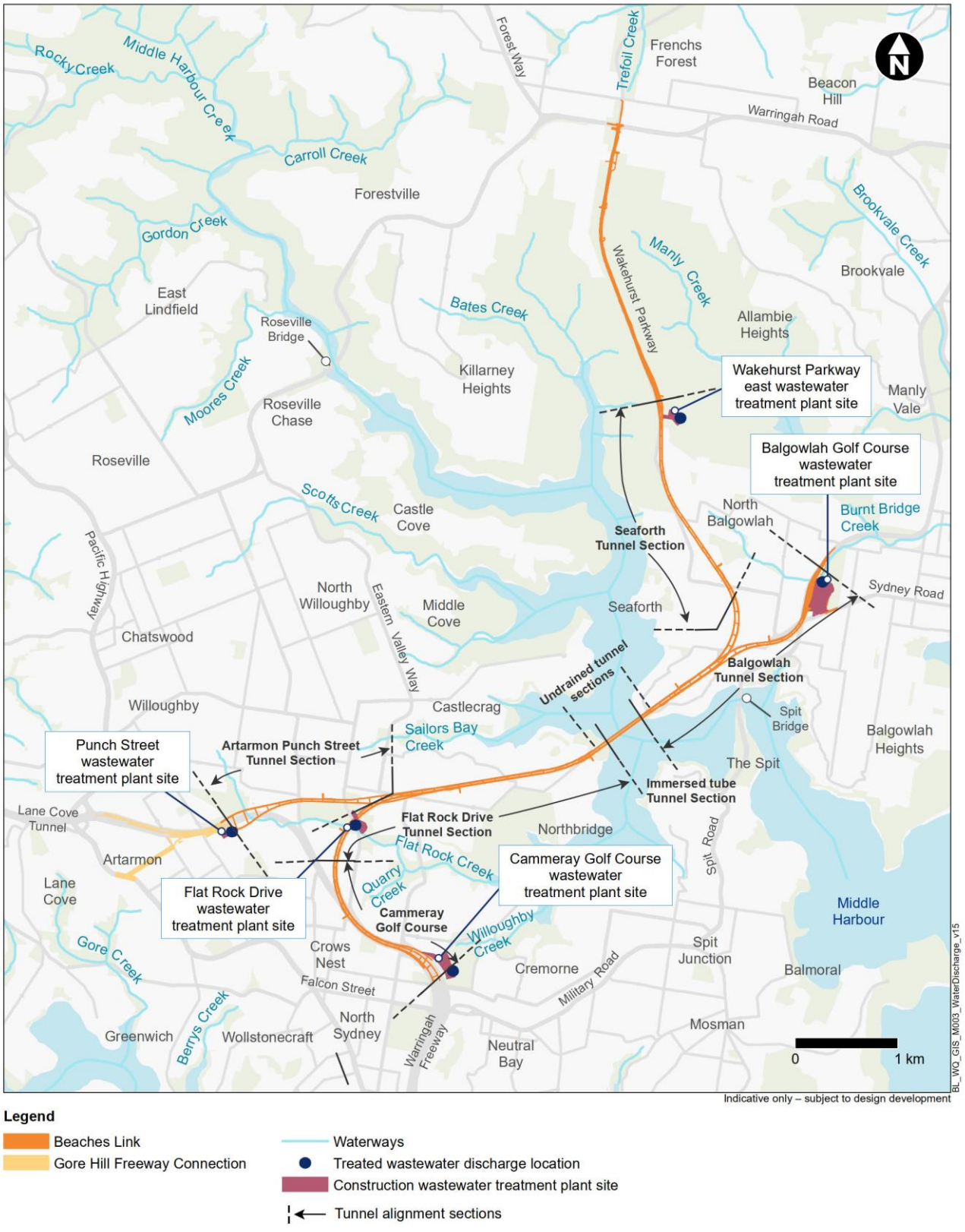


Figure A5-11 Construction wastewater treatment plants and discharge locations (update to Figure 17-7 of the environmental impact statement and Figure 5-1 of Appendix O (Technical working paper: Surface water quality and hydrology))

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