



Transport for NSW

Beaches Link and Gore Hill Freeway Connection

Chapter 20

Land use and property

20 Land use and property

This chapter considers the potential impacts of the project on land use and property from the construction and operation of the project and identifies measures which address these impacts.

The Secretary's environmental assessment requirements as they relate to land use and property, and where in the environmental impact statement these have been addressed, are in Table 20-1.

Avoiding or minimising impacts has been a key consideration throughout the design and development process for the Beaches Link and Gore Hill Freeway Connection project. A conservative approach has generally been used in the assessments, with potential impacts presented before implementation of environmental management measures. The environmental management measures proposed to minimise the potential impacts in relation to land use and property are included in Section 20.5.

Table 20-1 Secretary's environmental assessment requirements – land use and property

| Secretary's requirement | Where addressed in EIS |
|--|---|
| Environmental impact statement | |
| <p>1. The EIS must include, but not necessarily be limited to, the following:</p> <ul style="list-style-type: none"> b. a description of the project and all components and activities (including ancillary components and activities) required to construct and operate it, including: <ul style="list-style-type: none"> – land use changes as a result of the proposal and the acquisition of privately owned, Council and Crown lands, and impacts to Council and Crown lands | <p>Impacts to properties, including property acquisitions and future land uses during construction and operation is discussed in Section 20.4.</p> |
| Socio-economic, Land Use and Property | |
| <p>1. The proponent must assess social and economic impacts (of all phases of the project) in accordance with the current guidelines (including cumulative construction and operational impacts of the proposal and major projects in the vicinity of the project) and in consultation with relevant land owners (such as the Ports Authority of NSW and those land owners whose property is being acquired).</p> | <p>Socio economic impacts as a result of the project are presented in Section 21.4 and Section 21.5 of Chapter 21 (Socio-economics). Chapter 27 (Cumulative impacts) assesses the cumulative construction and operational impacts of the proposal and major projects in the vicinity of the project.</p> <p>A summary of consultation conducted for the project is provided in Chapter 7 (Stakeholder and community engagement) and Section 21.2.3 of Chapter 21 (Socio-economics).</p> |
| <p>2. The proponent must assess impacts from construction and operation on potentially affected properties, businesses, recreational users and land and water users, including amenity impacts (including from cumulative and extended construction time frames and construction fatigue), property acquisitions/adjustments, future land uses,</p> | <p>Impacts to properties, including property acquisitions and future land uses during construction and operation is discussed in Section 20.4.</p> <p>Section 21.4 and Section 21.5 present the socio-economic impacts as a result of the project.</p> |

| Secretary s requirement | Where addressed in EIS |
|--|---|
| access, relevant statutory rights, and community severance and barrier impacts resulting from the project. | Chapter 27 (Cumulative impacts) assesses the cumulative construction and operational impacts of the proposal and major projects in the vicinity of the project. |
| <p>3. Where an immersed tube method (IMT) of construction is proposed for use in Middle Harbour, the Proponent must:</p> <p>a. provide details of how reductions to current harbour depths will be avoided</p> | <p>Section 5.2.3 of Chapter 5 (Project description) describes how, due to the profile of the harbour bed of Middle Harbour, the immersed tube tunnel units would sit both partially within a trench and on the bed of the Middle Harbour.</p> <p>Section 9.4.4 or Chapter 9 (Operational traffic and transport) indicates that shallow water depths at the entrance to Middle Harbour control navigation in the vicinity of the proposed tunnel crossing. The tops of the immersed tube tunnels would not interfere or restrict with maritime activities.</p> |
| <p>b. provide details confirming the level of protection for the IMTs will be similar to or better than that of the existing Sydney Harbour Tunnel</p> | <p>As discussed in Chapter 6 (Construction work) an additional concrete layer would be provided to protect the top of the completed tunnel units from marine activities during operation, including falling or dragging anchors. Section 23.3.4 of Chapter 23 (Hazards and risks) details the risks associated with interactions between maritime traffic and the immersed tube tunnels.</p> <p>Chapter 4 (Project development and alternatives) provides a justification for selection of the immersed tube tunnel method for the crossing of Middle Harbour.</p> |
| <p>c. identify impacts to ship scheduling in consultation with the Harbour Master; and</p> | <p>Due to depths constraints at the entrance to Middle Harbour, shipping does not occur in locations where construction works are proposed.</p> <p>Chapter 8 (Construction traffic and transport) and Chapter 9 (Operational traffic and transport) outline marine traffic impacts related to the construction and operation of the immersed tube tunnel respectively.</p> <p>Chapter 8 (Construction traffic and transport) specifies the consultation requirements with the Harbour Master to minimise impacts during construction.</p> <p>Impacts of closures in Middle Harbour on businesses are discussed in Section 21.4 and Section 21.5.6 of Chapter 21 (Socio-economics) and Appendix U (Technical working paper: Socio-economic assessment), including Annexure B.</p> |

| Secretary s requirement | Where addressed in EIS |
|---|--|
| d. provide details of full mission simulation which takes in account, movement of tunnel units past the Spit Bridge and within Middle Harbour. | Outcomes of the simulation report are outlined in Section 8.4.3 of Chapter 8 (Construction traffic and transport). |
| 4. The Proponent must assess potential impacts on utilities (including communications, electricity, gas, fuel and water and sewerage) and the relocation of these utilities. | Chapter 5 (Project description) outlines utilities and services management for the project and Appendix D (Utilities management strategy) provides a detailed description of utilities likely to be impacted and a framework for utility installations, relocations, adjustments and protection. |
| 5. Where the project is predicted to impact on utilities the Proponent must undertake a utilities management strategy, identifying management options, including relocation or adjustment of the utilities. | Appendix D (Utilities management strategy) provides a detailed description of utilities likely to be impacted and a framework for utility installations, relocations, adjustments and protection. |
| 6. A draft Community Consultation Framework must be prepared identifying relevant stakeholders, procedures for distributing information and receiving/responding to feedback and procedures for resolving stakeholder and community complaints during construction and operation. Key issues that must be addressed in the draft Framework include, but are not limited to: <ul style="list-style-type: none"> a. traffic management (including property access, pedestrian access) b. landscaping/urban design matters c. construction activities including out of hours work; and d. noise and vibration mitigation and management. | Chapter 7 (Stakeholder and community engagement) provides the content for the framework and a Community consultation framework is provided in Appendix E (Community consultation framework). |

20.1 Legislative and policy framework

The assessment of land use and property impacts has been carried out taking into account the following legislation, policies, guidelines and strategic planning documents:

- The *Native Title Act 1993* (Cwlth) and *Aboriginal Land Rights Act 1983* provide a framework for the protection of native title rights on certain Crown lands. There are no Crown lands subject to a native title claim within the project footprint
- *Greater Sydney Region Plan: A Metropolis of Three Cities – Connecting People* (Greater Sydney Commission, 2018a)
- *Our Greater Sydney 2056: North District Plan – Connecting Communities* (Greater Sydney Commission, 2018b)
- *Our Greater Sydney 2056: Eastern City District Plan – Connecting Communities* (Greater Sydney Commission, 2018c)
- *Guidelines for developments adjoining land and water managed by the Office of Environment and Heritage* (Office of Environment and Heritage (OEH), 2013).

The above policies and strategic planning documents are further described in Chapter 3 (Strategic justification and project need). The *Guidelines for developments adjoining land and water managed by the Office of Environment and Heritage* are discussed in Section 20.4.2.

The following local strategic planning statements and plans are also relevant to current and future land use in the project footprint:

- *North Sydney Local Strategic Planning Statement* (North Sydney Council, 2020a)
- *Draft Local Strategic Planning Statement* (Willoughby City Council, 2019)
- *Mosman Local Strategic Planning Statement: Enhancing Mosman* (Mosman Council, 2020)
- *Towards 2040 – Local Strategic Planning Statement* (Northern Beaches Council, 2020)
- *Northern Beaches Sportsground Strategy* (Northern Beaches Council, 2017a)
- *Northern Beaches Hospital Precinct Structure Plan* (Northern Beaches Council, 2017b).

Local strategic planning statements have been developed by councils in response to new legislative requirements introduced by the NSW Government in 2018, for all councils to respond to the priorities and actions identified in the NSW Government's regional and district plans. The statements outline the 20 year vision for land-use in the local area, the special character and values that are to be preserved and how change will be managed into the future for each council.

North Sydney Local Strategic Planning Statement provides a 20 year vision for land use planning within the North Sydney local government area. North Sydney Council aims to ensure that the North Sydney local government area continues to be an attractive place for residents, businesses, workers and visitors, and North Sydney residents to continue to enjoy high levels of amenity and liveability with good access to transport, job opportunities and areas of unique scenic and recreational quality. North Sydney Council is carrying out a planning study for the Military Road Corridor in response to the significant level of development interest within the precinct in recent years which seek to challenge existing planning controls.

Willoughby City Council's *Local Strategic Planning Statement* identifies 20 planning priorities and sets out a 20 year vision for land use planning in Willoughby local government area, considering both economic and social needs of the community.

The *Mosman Local Strategic Planning Statement: Enhancing Mosman* sets out a 20 year vision for land use planning in Mosman outlining how growth and change will be managed to maintain the high levels of environmental amenity, liveability and landscape quality that characterises Mosman. Fourteen planning priorities are identified, including a priority to improve access to, from and within Mosman, and to encourage active transport. The congestion of Spit-Military Roads is identified as a significant issue.

Towards 2040 – Local Strategic Planning Statement sets out a 20 year vision for land use planning in the Northern Beaches, with thirty planning priorities are identified. The connectivity of the Northern Beaches local government area is constrained by limited access into and out of the Northern Beaches, particularly by public transport, which is limited in most areas. Northern Beaches Council identifies coordination of land use with transport as essential to achieving the aims of the strategy.

The *Northern Beaches Sportsground Strategy* is a 15 year plan to provide a single approach to the management and long term planning of sporting facilities on the Northern Beaches. The Strategy has been informed by the *Northern Beaches Sportsgrounds and Golf Courses Discussion Paper* (Northern Beaches Council, 2017c) which was prepared in response to independent analyses commissioned by Council to review sportsgrounds supply and demand, and assess the feasibility of golf courses on the Northern Beaches. The strategy is further discussed in Section 20.4.2.

The *Northern Beaches Hospital Precinct Structure Plan* has been prepared by Northern Beaches Council in response to the NSW Government's significant investment in public infrastructure in Frenchs Forest including the new Northern Beaches Hospital. The area around the new Northern Beaches Hospital in Frenchs Forest has been identified by the NSW Government as a Planned

Precinct with a focus on providing priority infrastructure including schools, parks, transport, hospitals and road upgrades. The plan presents the strategic land use planning framework for the Frenchs Forest precinct and is further discussed in Section 20.4.2.

20.2 Assessment methodology

The assessment methodology for impacts on land use and property included the following key tasks:

- Reviewing key strategic planning policies and documents relevant to the project footprint and nearby areas to identify future land uses, planning controls and developments
- Reviewing the local environment and identifying existing land uses and properties within and around the project footprint
- Assessing the potential impacts on properties including those that would need to be acquired to construct and operate the project
- Assessing the potential impacts on existing and likely future land uses during construction and operation of the project
- Identifying measures to avoid, minimise and manage impacts on land use and property
- Identifying potential future uses of land required for construction but not required for operation.

20.3 Existing environment

20.3.1 Overview

The project would traverse the Lower North Shore and Northern Beaches region of metropolitan Sydney within the North Sydney, Willoughby, Mosman and Northern Beaches local government areas. A diverse range of development types and land use zones are currently located within and around the project footprint including residential, commercial, mixed uses, industrial and maritime, infrastructure and recreational open space.

The land use zones within the project footprint are defined under the following environmental planning instruments and are shown in Figure 20-1 to Figure 20-5:

- North Sydney Local Environmental Plan 2013 (North Sydney LEP 2013)
- Willoughby Local Environmental Plan 2012 (Willoughby LEP 2012)
- Mosman Local Environmental Plan 2012 (Mosman LEP 2012)
- Warringah Local Environmental Plan (Warringah LEP 2011) (now part of the Northern Beaches local government area)
- Manly Local Environmental Plan 2013 (Manly LEP 2013) (now part of the Northern Beaches local government area)
- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 (Sydney Harbour SREP).

Low and medium density residential land use zones are prominent in the suburbs of Cammeray, Naremburn, Northbridge, Seaforth and Balgowlah. Medium and high density residential land uses are generally located in the suburbs of Naremburn, Artarmon and Willoughby.

Industrial land use is concentrated around the Gore Hill Freeway in Artarmon. Local centres occupy parts of Northbridge and Balgowlah.

Environmental conservation and environmental management land use zones exist along the foreshore areas of Middle Harbour in Northbridge, Seaforth and Mosman, including the shoreline of Beauty Point and Pearl Bay, Seaforth Bluff and Clive Park.

There are a number of private and public recreation areas within and near the construction footprint. The largest of these are located in Artarmon (Artarmon Park), Cammeray (Cammeray Park and Cammeray Golf Course), Willoughby (Bicentennial Reserve), Northbridge (Flat Rock Reserve), Mosman (Spit West Reserve) and Balgowlah (Balgowlah Golf Course). Parts of Middle Harbour within and around the construction footprint are also used for recreation activities, and there are existing moorings within Middle Harbour and Pearl Bay, directly west of the Spit West Reserve foreshore.

Social infrastructure in the vicinity of the project is discussed in more detail in Chapter 21 (Socio-economics).

20.3.2 Cammeray to Northbridge

Existing land use

Existing land use in the area from Cammeray to Northbridge is characterised by areas of high and medium density residential development in Cammeray and Crows Nest, while Northbridge comprises mostly of general and low density residential development. ANZAC Park Public School and KU Cammeray Preschool are located to the east and west of the project respectively (refer to Figure 20-1).

Major road infrastructure located in this area includes the Warringah Freeway.

Local and neighbourhood centres are concentrated along Miller Street in Cammeray and Sailors Bay Road in Northbridge (refer to Figure 20-1).

Public recreation areas within the construction footprint between Cammeray and Northbridge include:

- Cammeray Golf Course at Cammeray
- Flat Rock Reserve at Northbridge.

Recreation areas located near the construction footprint between Cammeray and Northbridge include:

- ANZAC Park, Cammeray Park, Cammeray Croquet Club, Cammeray Tennis Club, Cammeray-Neutral Bay Skate Park, St Thomas' Rest Park at Cammeray and Crows Nest
- Flat Rock Baseball Diamond (also referred to as Bicentennial Reserve Baseball Diamond), Willoughby Leisure Centre and Northern Suburbs Netball Association at Willoughby.

Refer to Figure 20-1 for the location of the above recreation areas relative to the construction footprint.

Land use zoning

Land use zones in the area from Cammeray and Northbridge are defined under the North Sydney LEP 2013 and Willoughby LEP 2012, are shown in Figure 20-1.



Legend

Operational features

----- Beaches Link (tunnel section)

Construction features

▭ Construction footprint

▨ Construction support site

Land use zoning

- B1 Neighbourhood Centre
- B2 Local Centre
- B3 Commercial Core
- B4 Mixed Use
- B5 Business Development
- E2 Environmental Conservation
- E4 Environmental Living

- R2 Low Density Residential
- R3 Medium Density Residential
- R4 High Density Residential
- RE1 Public Recreation
- RE2 Private Recreation
- SP1 Special Activities
- SP2 Infrastructure

Figure 20-1 Land use and zoning – Cammeray to Northbridge

20.3.3 Gore Hill Freeway and surrounds

Existing land use

There is a clear distinction in land uses on either side of the Gore Hill Freeway. The south side of the freeway (within the Artarmon industrial area) is characterised by general and light industrial development, while medium and high density residential development dominates the north side of the freeway. Community land uses are located on both sides of the Gore Hill Freeway including several child care centres, Artarmon Public School, Artarmon NSW Ambulance Superstation and the Royal North Shore Hospital.

Public recreation areas located within the construction footprint around the Gore Hill Freeway Connection in Artarmon include Artarmon Park (refer to Figure 20-2). Artarmon Reserve, Thomson Park, Cleland Park and Naremburn Park are located in the vicinity of the construction footprint at Artarmon.

Significant road and rail infrastructure located in this area includes the Gore Hill Freeway, Lane Cove Tunnel and the T1 North Shore and Western and T9 Northern rail lines between St Leonards and Artarmon train stations and the Sydney Metro City & Southwest which is currently under construction (refer to Figure 20-2).

Land use zoning

Land use zones in the area around the Gore Hill Freeway are defined under the Willoughby LEP 2012, and are shown in Figure 20-2).

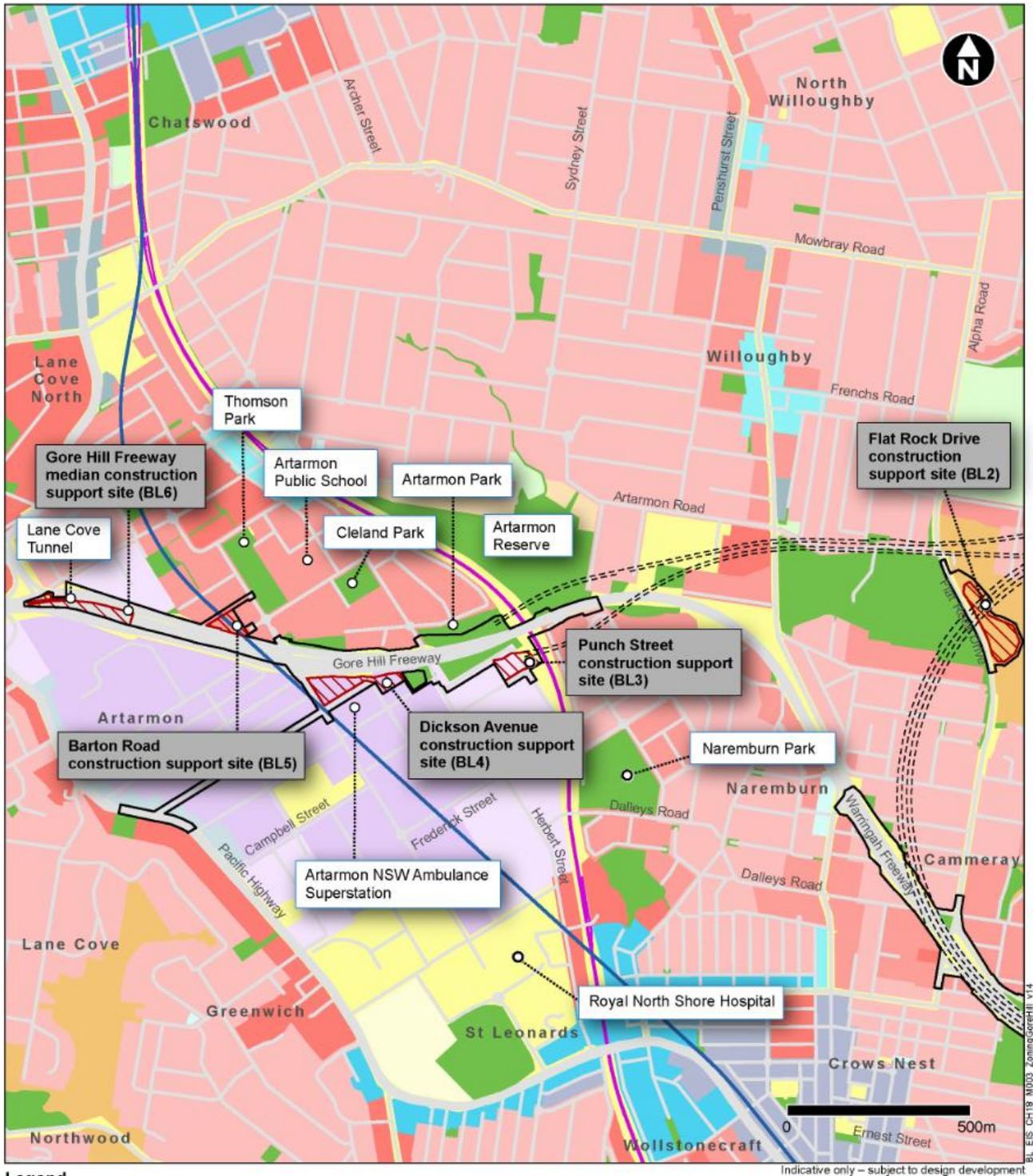


Figure 20-2 Land use and zoning – Gore Hill Freeway and surrounds

20.3.4 Northbridge to Seaforth

Existing land use

The area between Northbridge and Seaforth includes Middle Harbour and its foreshores. This area also encompasses the Spit West Reserve in Mosman (refer to Figure 20-3).

Land use zones along the foreshore of Middle Harbour in Northbridge mostly comprise environmental conservation and public recreation, including Clive Park. The foreshore of Middle Harbour in Seaforth mostly comprises low density residential development, including several properties that have jetties in Middle Harbour. Middle Harbour is used for recreation activities and by groups such as the Northbridge Sailing Club, Mosman Rowing Club and Middle Harbour Yacht Club.

Land at the Spit West Reserve in Mosman is used for public recreation and open space (refer to Figure 20-3). The D'Albora Marina and Mosman Rowing Club are both located at the Spit West Reserve. A number of commercial and private recreation land use zones are located on the eastern side of The Spit adjacent to Spit West Reserve, including restaurants, cafes, and yacht and sailing clubs. There are also several restaurants directly south of the Spit Bridge near to D'Albora Marina.

The major item of road infrastructure in this area is Spit Road, including the Spit Bridge. The Spit Bridge has scheduled daily openings to allow boats above the clearance height to pass through (refer Chapter 8 (Construction traffic and transport) for further details).

There are numerous Transport for NSW moorings licensed to private boat owners in Middle Harbour and Pearl Bay, directly west of the Spit West Reserve foreshore. The Spit West Reserve car park located off Spit Road and south of the Spit Bridge currently provides car parking spaces for the various marine and recreational uses that exist within and around the Spit West Reserve. There is also an existing off-road shared path that extends along the foreshore of Middle Harbour adjacent to the Spit West Reserve.

Land use zoning

Land use zones in the area between Northbridge and Seaforth are defined under the Willoughby LEP 2012, Manly LEP 2013 and Mosman LEP 2012 and are shown in Figure 20-3.



Legend

Indicative only – subject to design development

Operational features

----- Beaches Link (tunnel section)

Construction features

- Construction footprint
- Construction support site

Land use zoning

- B1 Neighbourhood Centre
- E2 Environmental Conservation
- E3 Environmental Management
- E4 Environmental Living

- R2 Low Density Residential
- R3 Medium Density Residential
- RE1 Public Recreation
- RE2 Private Recreation
- SP2 Infrastructure
- W1 Natural Waterways

Figure 20-3 Land use and zoning – Northbridge to Seaforth

20.3.5 Seaforth to Balgowlah

Existing land use

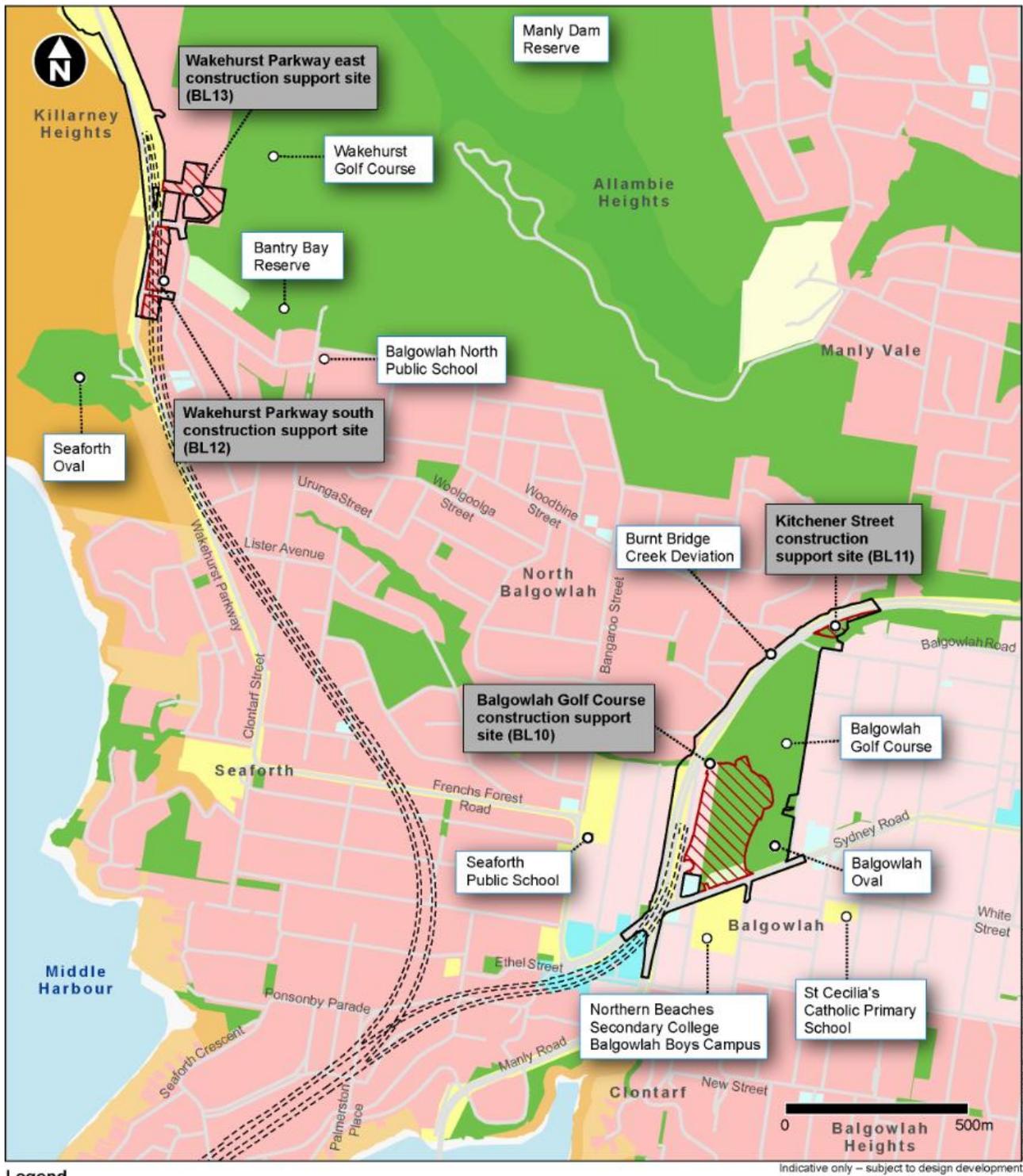
Land use in the area from Seaforth to Balgowlah is predominantly low density residential development. This area includes educational facilities, such as Northern Beaches Secondary – College Balgowlah Boys Campus, St Cecilia’s Catholic Primary School and Seaforth Public School (refer to Figure 20-4).

Major road infrastructure located in this area includes Burnt Bridge Creek Deviation, Manly Road, Condamine Street and Sydney Road. Both Sydney Road and Burnt Bridge Creek Deviation border the Balgowlah Golf Course. The Burnt Bridge Creek shared path extends between Sydney Road and Condamine Street adjacent the southbound lanes of Burnt Bridge Creek Deviation and along the western boundary of the Balgowlah Golf Course.

Balgowlah Golf Course is the only public recreation area within the construction footprint between Seaforth and Balgowlah. Balgowlah Oval is directly adjacent to the construction and operational footprints of the project (refer to Figure 20-4).

Land use zoning

Land use zones in the area between Seaforth and Balgowlah are defined under the Manly LEP 2013 and Warringah LEP 2011, and are shown in Figure 20-4.



Legend

Operational features

----- Beaches Link (tunnel section)

Construction features

--- Construction footprint

▨ Construction support site

Land use zoning

B1 Neighbourhood Centre

B2 Local Centre

E1 National Parks and Nature Reserves

E2 Environmental Conservation

E3 Environmental Management

R1 General Residential

R2 Low Density Residential

RE1 Public Recreation

RE2 Private Recreation

SP1 Special Activities

SP2 Infrastructure

Figure 20-4 Land use and zoning – Seaforth to Balgowlah

20.3.6 Seaforth to Frenchs Forest

Existing land use

Land use zones adjoining the Wakehurst Parkway in the area around Seaforth mostly comprise low density residential development on the eastern side of the Wakehurst Parkway. Further to the north, land use zones adjoining the Wakehurst Parkway comprise environmental conservation, national parks and nature reserves to the west including the Garigal National Park and Manly Warringah War Memorial Park known as Manly Dam Reserve (refer to Figure 20-5).

Major road infrastructure located in this area includes Frenchs Forest Road and the Wakehurst Parkway, of which the latter is classified as a regional road by Transport for NSW. The infrastructure land use zoning for the Wakehurst Parkway includes space on both sides of the road corridor to accommodate road widening (refer to Figure 20-5). The land between Seaforth and Frenchs Forest, which includes the suburbs of Killarney Heights and Allambie Heights, is mostly zoned and used for public recreation. These include the Wakehurst Golf Course and Manly Dam Reserve to the east of the Wakehurst Parkway, and the Garigal National Park to the west (refer to Figure 20-5). There is a Sydney Water site on the eastern side of the Wakehurst Parkway at Killarney Heights.

Land use adjoining the Wakehurst Parkway in the area around Frenchs Forest mostly comprises low density residential and areas for public recreation on the western side, while on the eastern side there is Frenchs Forest business hub and public recreation areas. Land use at the corner of the Wakehurst Parkway and Warringah Road has changed to incorporate the Northern Beaches Hospital (refer to Figure 20-5). The area surrounding the hospital has been identified as a Planned Precinct by the NSW Government within the *Northern Beaches Hospital Precinct Structure Plan*.

A Transport for NSW owned site compound previously used for the Northern Beaches Hospital road upgrade project is located within the road reserve at the north eastern corner of the Warringah Road and the Wakehurst Parkway intersection. The Northern Beaches Hospital road upgrade project was completed in August 2020 and revegetation works were carried out within the eastern section of the site as part of decommissioning. This included planting with species consistent with the Duffys Forest endangered ecological community. The project proposes to re-use this site as the Wakehurst Parkway north construction support site (BL14) and for tunnel support facilities during operation. The revegetated area would remain fenced off and protected from disturbance.

Public recreation areas near the construction footprint on either side of the Wakehurst Parkway include Seaforth Oval, Seaforth Bowling Club, Bantry Bay Reserve, Wakehurst Golf Course, Manly Dam Reserve, Ararat Reserve, Brick Pit Reserve, Warringah Aquatic Centre and Aquatic Reserve (including skate park).

Land use zoning

Land use zones in the area between Seaforth and Frenchs Forest are defined under the Manly LEP 2013 and Warringah LEP 2011, and are shown in Figure 20-5.

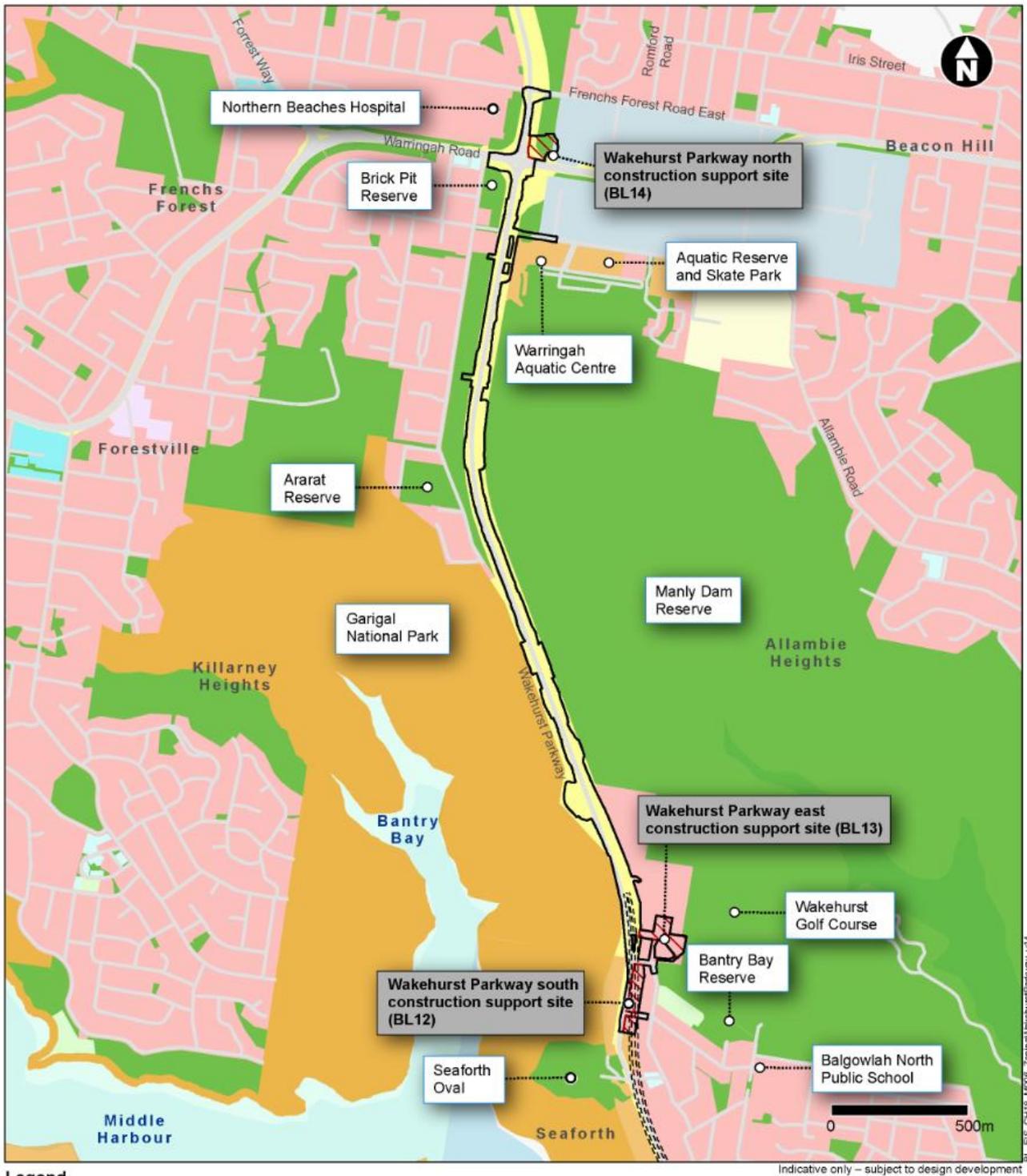


Figure 20-5 Land use and zoning – Seaforth to Frenchs Forest

20.4 Assessment of potential impacts

The project has the potential to impact on properties and land use in the following ways:

- Occupation of surface properties, including temporary use during construction and permanent acquisition for operational infrastructure
- Acquisition of substratum (below ground) land for the project tunnels
- Return of residual land (full or partial lots) required for construction but not for operation of the project
- Disruption of existing activities and limitations on the development potential of directly affected properties
- Changes in public open space availability
- Ground movement impacts to properties during construction and operation of the project.

Further assessment of impacts to boat moorings and jetties are discussed in Chapter 8 (Construction traffic and transport) and Chapter 21 (Socio-economics).

20.4.1 Property

Acquisition and temporary use of surface properties

The project has been designed and developed to minimise property acquisitions and has prioritised the use of Transport for NSW land where possible. Notwithstanding this, some temporary use and permanent acquisition of properties would be required. All property acquisitions required for the project would be carried out in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*, and in accordance with the land acquisition reforms announced by the NSW Government in 2016. Temporary use of properties would be managed through leasing or licensing arrangements or property acquisition where lease arrangements are not practical (refer to Table 20-3 for details). Where required, discussions would be held with affected landowners concerning the purchase, lease or license of land. Landowners and tenants of landowners affected by acquisition would be supported by access to counselling services throughout the process and a community relations support toll-free telephone line would be established to respond to any community concerns.

It is anticipated that the project would require full and partial acquisitions of 54 properties (excluding land owned by Transport for NSW). The anticipated properties required are summarised in Table 20-2. As of 15 September 2020, eight of these (private residential properties Balgowlah and Seaforth) had been acquired. The remaining 46 properties include:

- Twenty eight private residential properties
- Twelve private commercial properties
- Six government-owned properties.

Properties anticipated to be acquired by the project are shown in Figure 20-6 to Figure 20-10. Impacts of property acquisition are further discussed in Chapter 21 (Socio-economics).

Transport for NSW currently owns a number of properties at Seaforth between the Wakehurst Parkway, Kirkwood Street and Judith Street that were acquired in the 1970s and 1980s for the Warringah Transport Corridor that was proposed at the time. The properties are vacant lots. These properties would be utilised to facilitate this project, but as they are historical acquisitions and were not acquired specifically to facilitate this project, they are not included in Table 20-2. The acquisition of land for construction activities may result in residual land that would not be required for operational infrastructure or activities. The future use of this land is discussed below.

Part of Cammeray Golf Course would be occupied by temporary construction support sites and permanent operational infrastructure for the Western Harbour Tunnel and Beaches Link program of

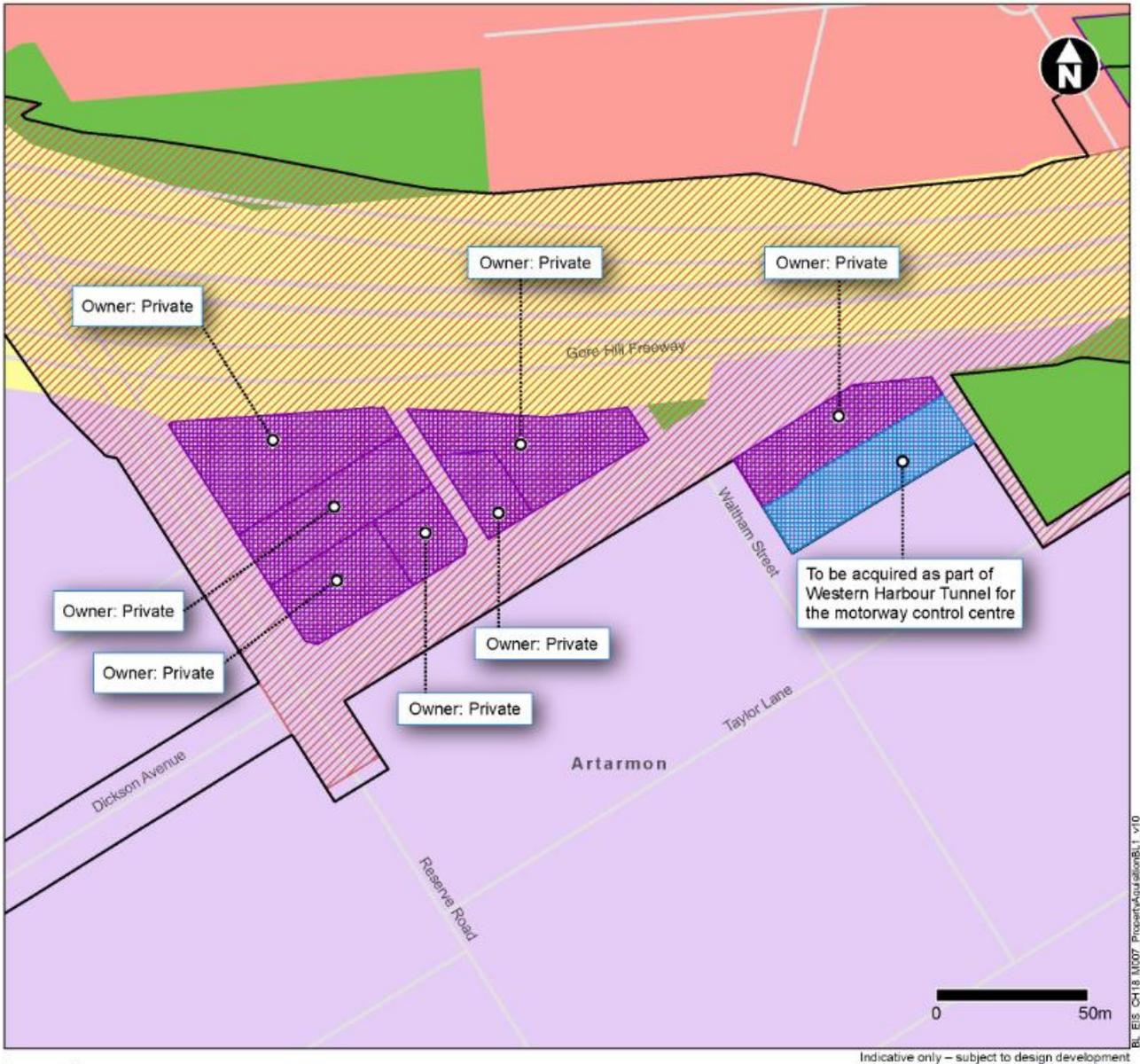
works. Due to proposed construction staging, the temporary and permanent land take at the golf course required for the Beaches Link component would occur as part of the Western Harbour Tunnel and Warringah Freeway Upgrade project. Consequently, this property is not included in Table 20-2.

Table 20-2 Anticipated property acquisition required for the project

| Location | Ownership | No. of property acquisitions ¹ | | Properties acquired for Beaches Link (as of 15 September 2020) |
|---|-----------------------|---|------------------------------|--|
| | | Full property acquisition | Partial property acquisition | |
| Beaches Link component | | | | |
| Artarmon | Private – commercial | 8 | - | - |
| | Government | - | 1 | - |
| Balgowlah | Private – residential | 28 | - | 7 |
| | Government | - | 2 | - |
| Seaforth and Killarney Heights | Private - residential | - | - | 1 |
| | Government | 1 | - | - |
| Frenchs Forest | Government | - | 1 | - |
| Total for Beaches Link component | | 37 | 4 | 8 |
| Gore Hill Freeway Connection component | | | | |
| Artarmon | Private – commercial | 4 | - | - |
| | Government | - | 1 | - |
| Total for Gore Hill Freeway Connection component | | 4 | 1 | - |
| Total | | 41 | 5 | 8 |

Notes:

1. Multiple parent lots and strata titles may exist within each property.



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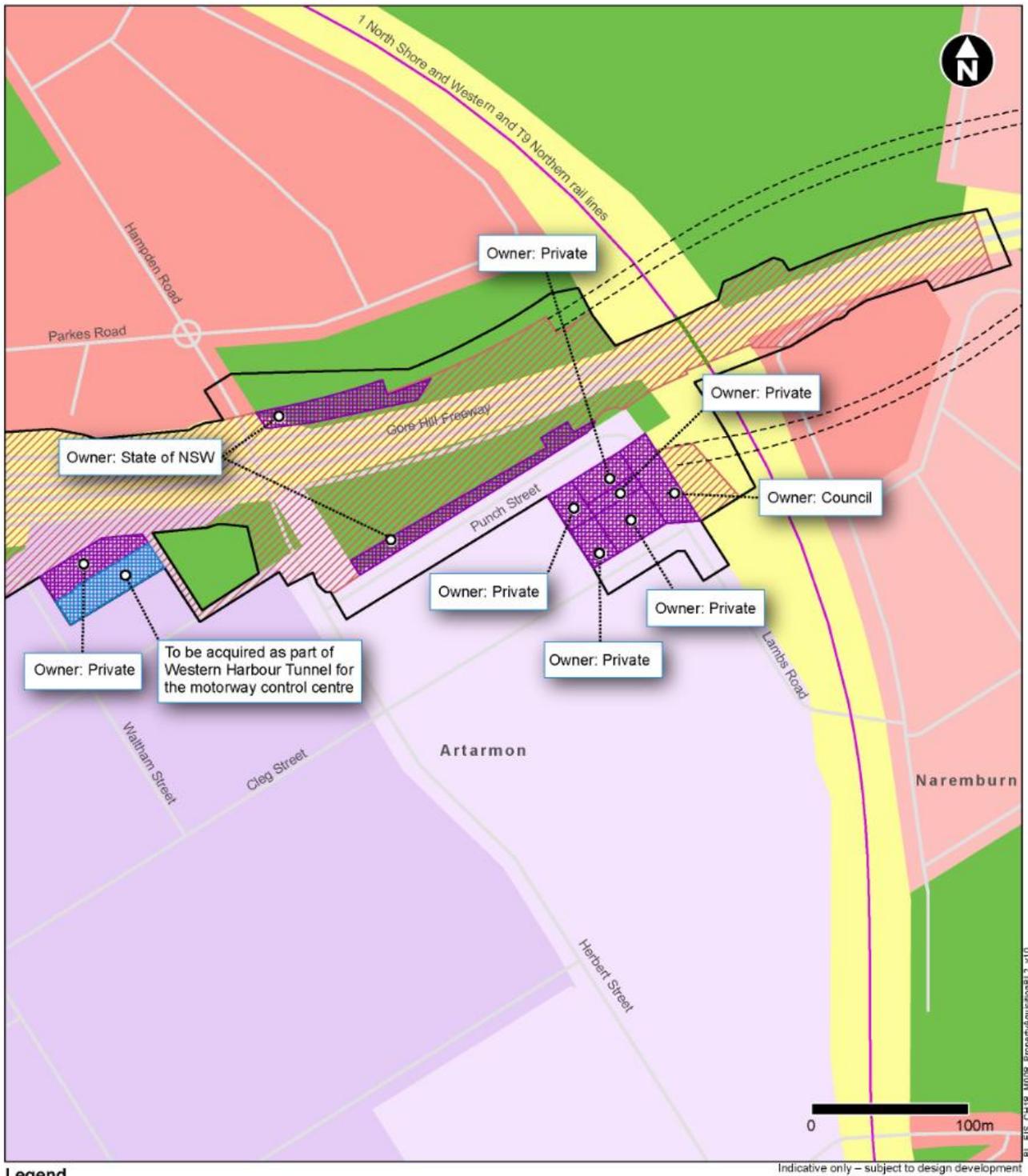
Operational features
 Operational footprint

Construction features
 Construction footprint

Property to be acquired
 Property to be acquired for the Western Harbour Tunnel & Warringah Freeway Upgrade project

Land use zoning
 IN1 General Industrial
 R3 Medium Density Residential
 RE1 Public Recreation
 SP2 Infrastructure

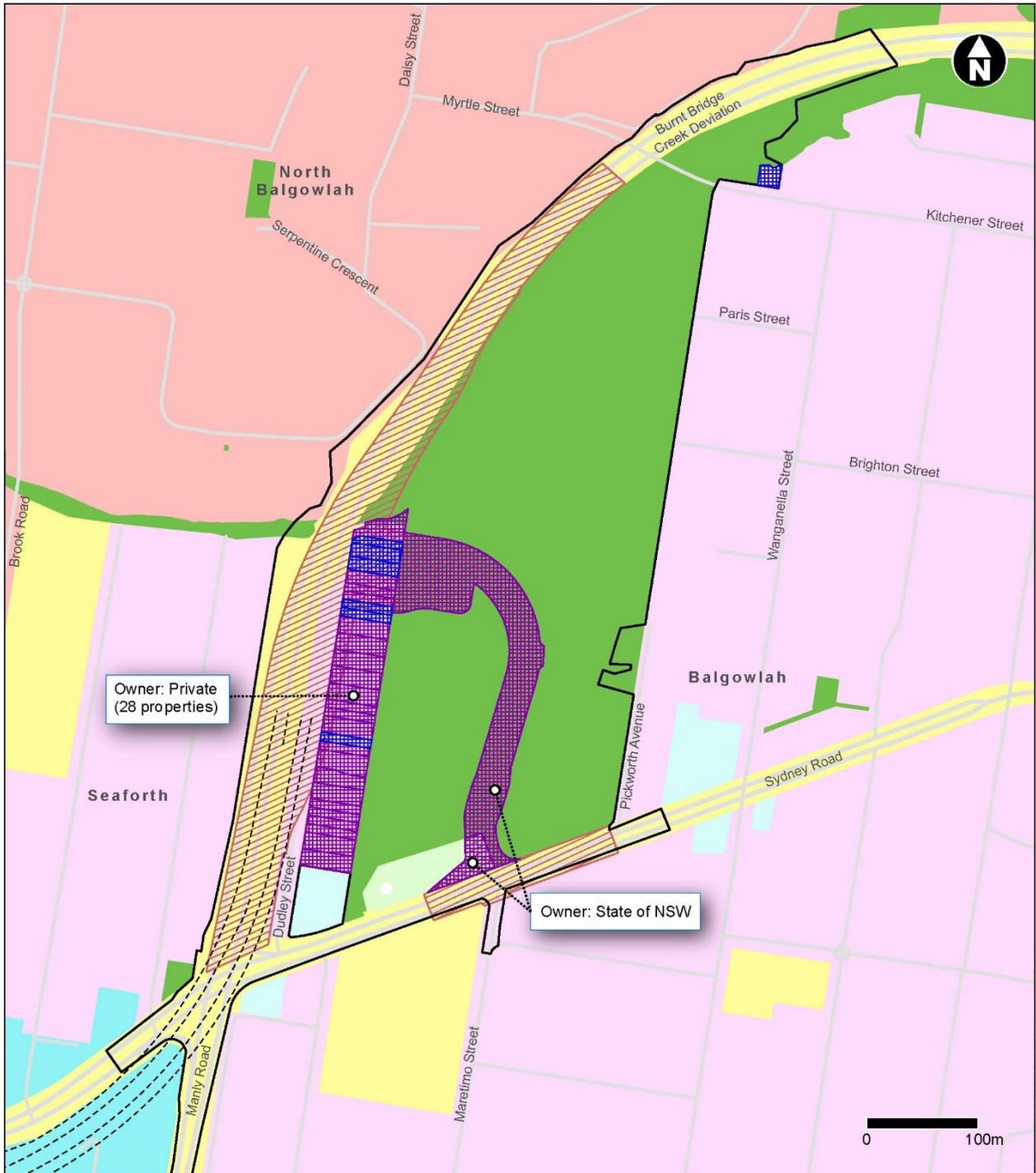
Figure 20-6 Property acquisitions for the project at Artarmon (around Dickson Avenue)



Legend

- | | | | |
|---|---|---|--|
| <p>Operational features</p> <ul style="list-style-type: none"> Operational footprint Beaches Link (tunnel section) <p>Other projects</p> <ul style="list-style-type: none"> T1 North Shore and Western and T9 Northern rail lines | <p>Construction features</p> <ul style="list-style-type: none"> Construction footprint | <ul style="list-style-type: none"> Property to be acquired Property to be acquired for the Western Harbour Tunnel & Warringah Freeway Upgrade project | <p>Land use zoning</p> <ul style="list-style-type: none"> IN1 General Industrial IN2 Light Industrial R2 Low Density Residential R3 Medium Density Residential RE1 Public Recreation SP2 Infrastructure |
|---|---|---|--|

Figure 20-7 Property acquisitions for the project at Artarmon (around Punch Street)



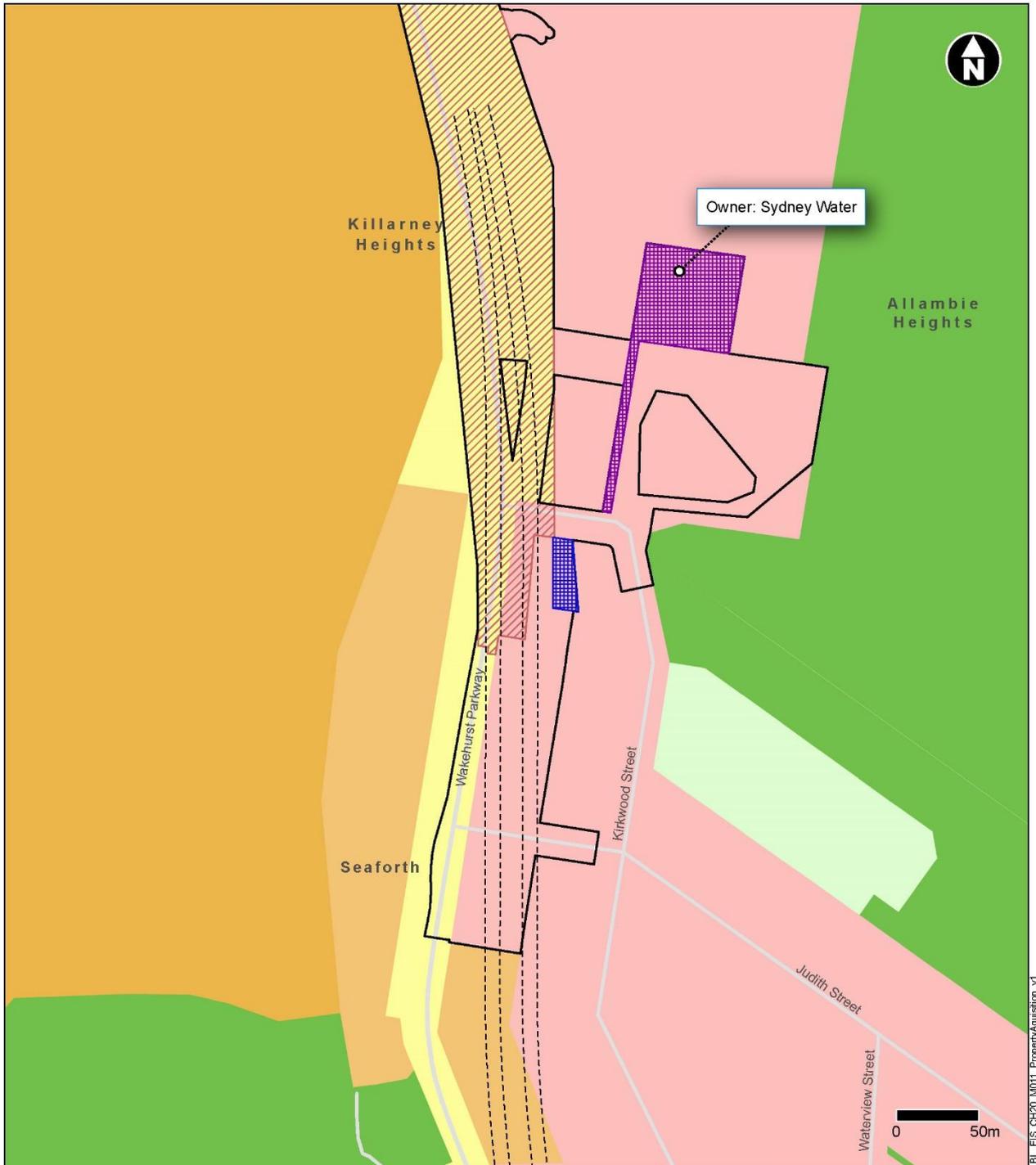
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Indicative only – subject to design development

Legend

- | | | | | | |
|-------------------------------|--|-------------------------|-------------------------|------------------------|----------------------------|
| Operational features | | Property to be acquired | Land use zoning | | R2 Low Density Residential |
| Operational footprint | | Acquired property | B1 Neighbourhood Centre | RE1 Public Recreation | |
| Beaches Link (tunnel section) | | | B2 Local Centre | RE2 Private Recreation | |
| | | | R1 General Residential | SP2 Infrastructure | |
| Construction features | | | | | |
| Construction footprint | | | | | |

Figure 20-8 Property acquisitions for the project at Balgowlah

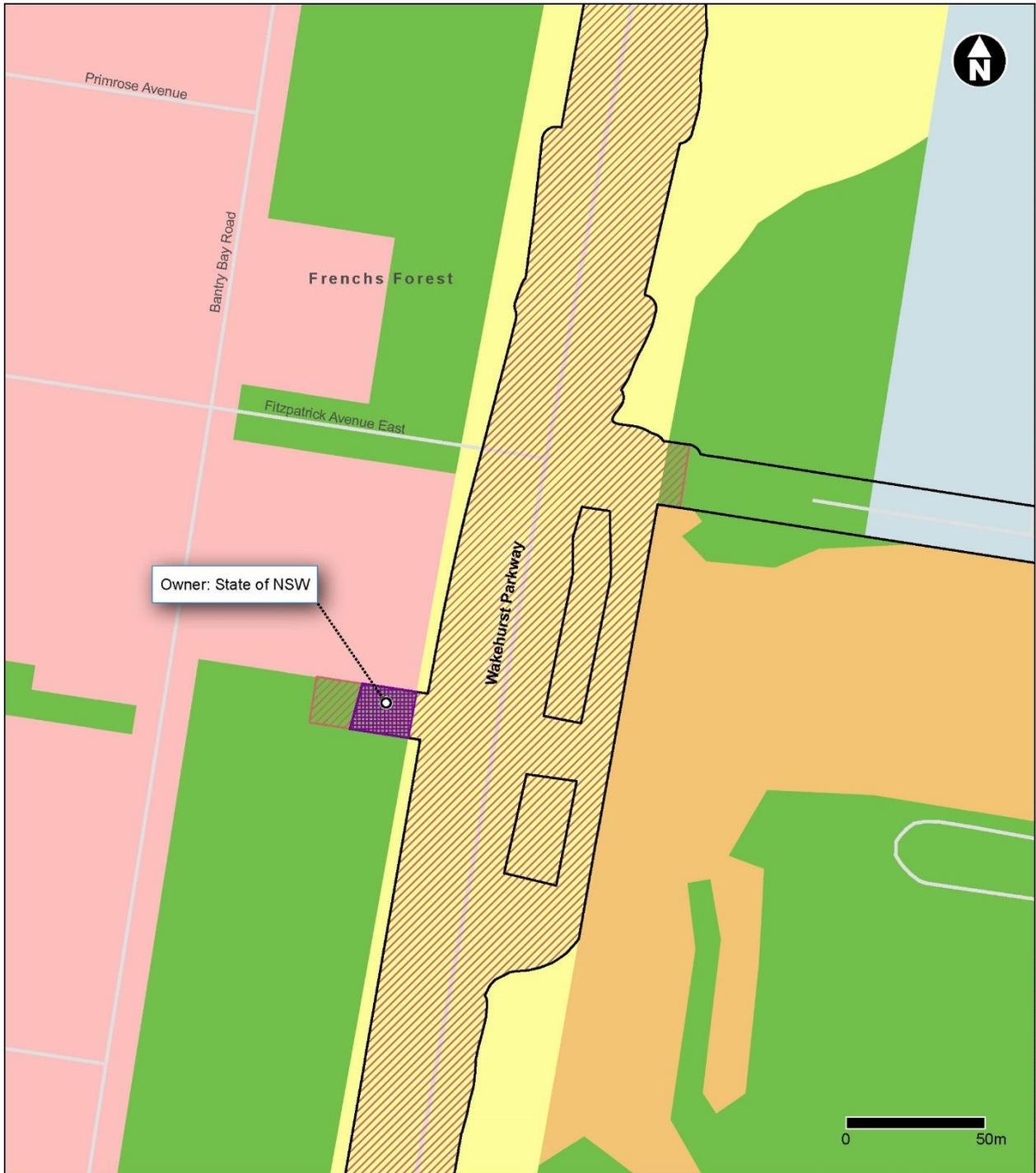


Indicative only – subject to design development

Legend

- | | | | | | | |
|-------------------------------|------------------------|------------------------------|--|---------------------------------------|-------------------------------|----------------------------|
| Operational features | | Construction features | | Property to be acquired | Land use zoning | |
| Operational footprint | Construction footprint | Acquired property | | E1 National Parks and Nature Reserves | E2 Environmental Conservation | R2 Low Density Residential |
| Beaches Link (tunnel section) | | | | RE1 Public Recreation | RE2 Private Recreation | SP2 Infrastructure |

Figure 20-9 Property acquisitions for the project at Seaforth and Killarney Heights



BL_EIS_CH18_M010_PropertyAcquisitionBL4_Y11

Indicative only – subject to design development

Legend

Operational features

Operational footprint

Construction features

Construction footprint

Property to be acquired

Land use zoning

B7 Business Park

E2 Environmental Conservation

R2 Low Density Residential

RE1 Public Recreation

SP2 Infrastructure

Figure 20-10 Property acquisitions for the Beaches Link component at Frenchs Forest

Temporary leases

Lease agreements identified in Table 20-2 would mainly be required for temporary construction support sites. Leased land would be rehabilitated in consultation with the relevant landowners, which are councils and government agencies, and returned as soon as practicable at the completion of construction. It is expected that following construction, sites would generally continue to be used consistent with their existing use. Table 20-3 provides a summary of the property leases associated with temporary construction support sites.

Table 20-3 Summary of anticipated property leases required for the project

| Location | Construction support site | Pre construction land use | Current land use zoning | Council/ government agency |
|---|---|---------------------------|---|----------------------------|
| Beaches Link component | | | | |
| Northbridge | Flat Rock Drive construction support site (BL2) | Flat Rock Reserve | E2 Environmental Conservation SP2 Infrastructure | Willoughby City Council |
| Mosman | Spit West Reserve construction support site (BL9) | Spit West Reserve | RE1 Public Recreation ¹ | Mosman Council |
| Balgowlah | Balgowlah Golf Course construction support site (BL10) | Balgowlah Golf Course | RE1 Public Recreation RE2 Private Recreation | Northern Beaches Council |
| Killarney Heights | Wakehurst Parkway east construction support site (BL13) | Manly Dam Reserve | R2 Low density residential | Northern Beaches Council |
| | Wakehurst Parkway east construction support site (BL13) | Sydney Water site | R2 Low density residential | Sydney Water |
| Gore Hill Freeway Connection component | | | | |
| Artarmon | Barton Road construction support site (BL5) | Vacant land | R3 Medium Density Residential | Willoughby City Council |
| | Temporary works site for construction of on ramp | Artarmon Park | RE1 Public Recreation | Willoughby City Council |

Notes:

1. Land use zoning relevant to the project. Other land use zonings apply to this lot but would not be impacted by the project.

Residual land

Residual land comprises lots that are created either when a property is only partially acquired to construct or operate the project or when land acquired to facilitate construction of the project is not required for the operational footprint.

Local environmental plans place minimum lot size requirements and other restrictions on parcels of land to be used for specified types of development. As such, the creation of a residual lot has the potential to affect the development potential of the land. Minimum lot sizes most often apply to land zoned for residential purposes but can also apply to other land use zonings. Residual land that would be created as a result of the project and its anticipated future treatment is summarised in Table 20-4.

Any future development of residual land beyond that included in the project description in Chapter 5 (Project description) would be subject to separate assessment and approval in accordance with the *Environmental Planning and Assessment Act 1979* and is beyond the scope of this project.

Table 20-4 Anticipated residual land created by the project

| Location | Pre construction land use | Current land use zoning | Project use and anticipated future treatment |
|-------------------------------|---------------------------|-------------------------|--|
| Beaches Link component | | | |
| Cammeray | Cammeray Golf Course | RE1 Public Recreation | <p>Part of Cammeray Golf Course would be occupied by temporary construction support sites and permanent operational infrastructure for the Western Harbour Tunnel and Beaches Link program of works. The land required for the project would be acquired and/or leased as part of the Warringah Freeway Upgrade component of the Western Harbour Tunnel and Warringah Freeway Upgrade project. Works to restore the golf course would be completed as part of the project.</p> <p>Both the Beaches Link and Gore Hill Freeway Connection project and the Western Harbour Tunnel and Warringah Freeway Upgrade project have been designed and developed to minimise impacts to Cammeray Golf Course. The configuration of the temporary construction support sites and the permanent operational infrastructure for both projects, whether implemented at the same time or at different times, would allow the site to continue to be used as a golf course. Amendments to the configuration of the golf course would be required to achieve this outcome, which would be carried out during construction of the projects. Golfing activities would be disrupted during the reconfiguration works. Transport for NSW have engaged and consulted with the golf course operator and landowner and this would continue to during further design development and implementation of the project to ensure the operation of the golf course during construction and operation of the project is possible.</p> |
| Balgowlah | Private – residential | R1 General Residential | <p>Thirty four residential properties on Dudley Street at Balgowlah would be required for use during construction as part of the Balgowlah Golf Course construction support site (BL10) and the connection to and from Burnt Bridge Creek Deviation. Six of the properties have been acquired as of 15 September 2020, with the remaining 28 properties proposed to be acquired prior to construction. During construction, the land to the east and north of the proposed access road not required for construction would be repurposed as part of the new open space and recreation facilities at Balgowlah. Land required as part of Balgowlah Golf Course construction support site (BL10) but not required permanently for operational</p> |

| Location | Pre construction land use | Current land use zoning | Project use and anticipated future treatment |
|-------------------|---------------------------|----------------------------|---|
| | | | <p>infrastructure would be repurposed as soon as practicable at the completion of construction. This land would form part of new and improved open space and recreation facilities at Balgowlah described further in Section 20.4.2.</p> <p>Refer to Figure 20-11 for further detail on anticipated treatment of the residual land as part of the new and improved open space and recreation facilities.</p> |
| Killarney Heights | Sydney Water site | R2 Low density residential | <p>This site is currently a non-operational part of the Sydney Water Bantry Bay Reservoir site. Transport for NSW would acquire this parcel of land from Sydney Water for use as part of the Wakehurst Parkway east construction support site (BL13).</p> <p>The site would be rehabilitated and revegetated as soon as practicable after construction completion and would be handed over to Northern Beaches Council to manage for use by the community as part of the Manly Dam Reserve. This would add about 4000 square metres of new public space to the Manly Dam Reserve.</p> |

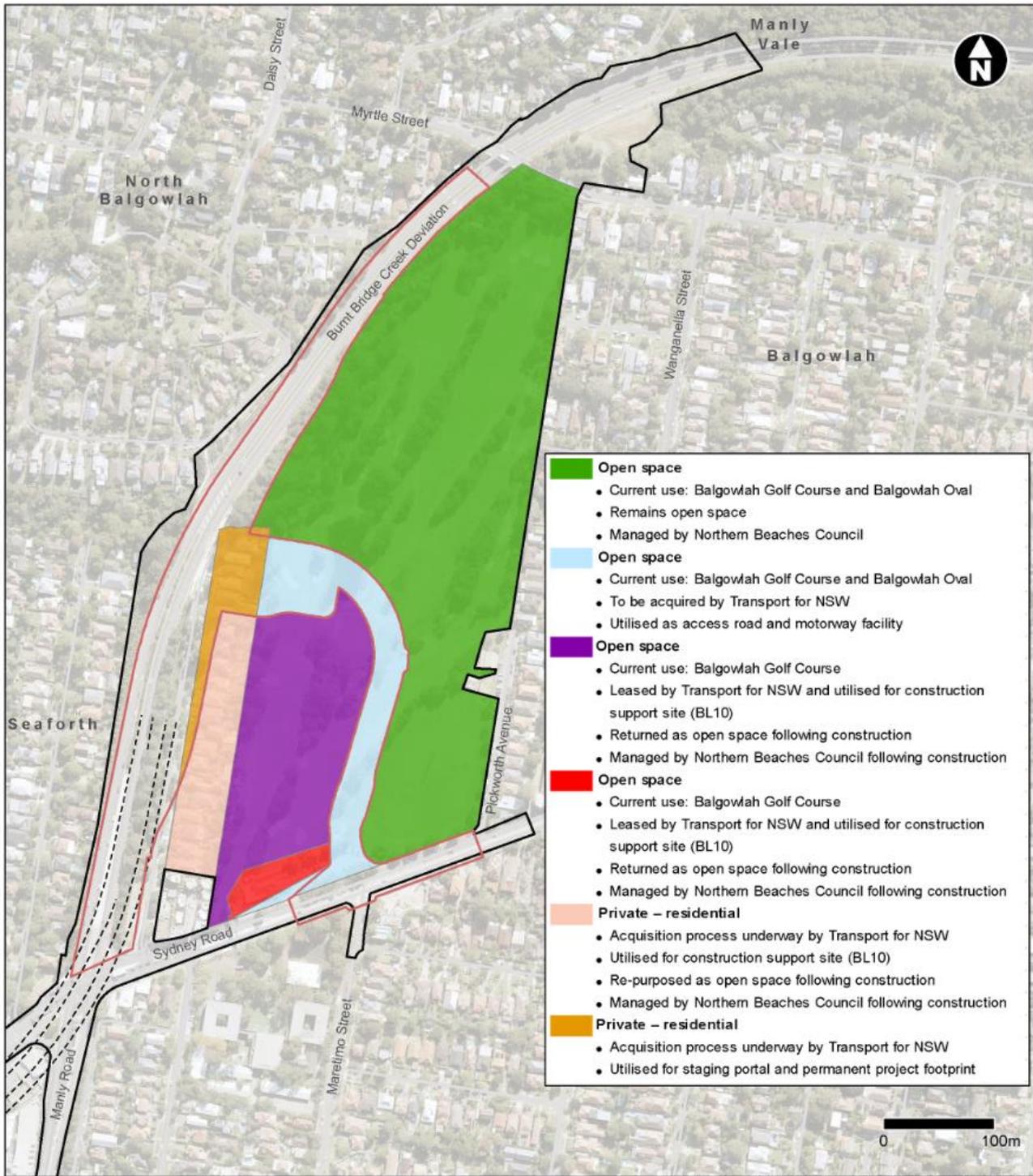
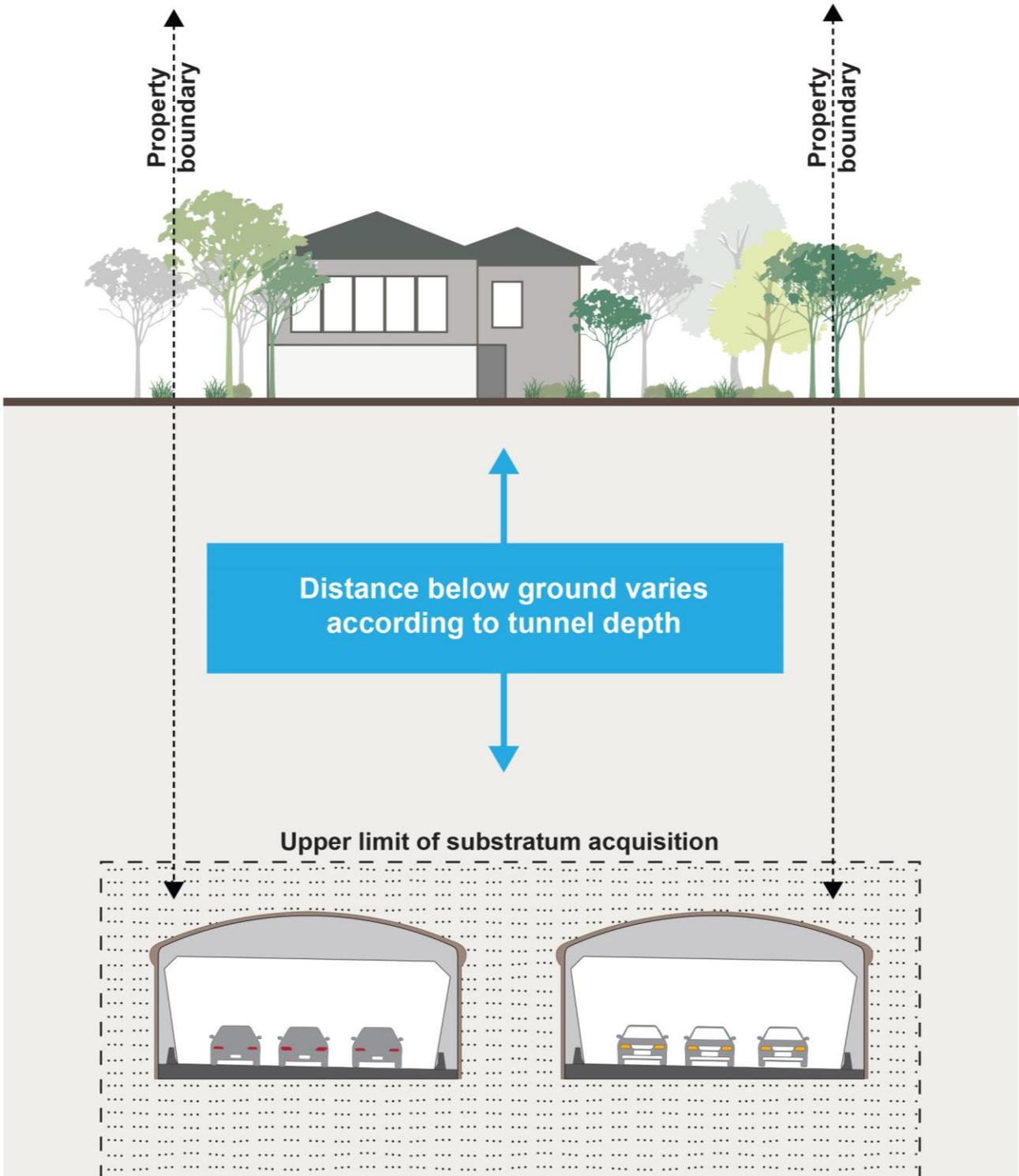


Figure 20-11 Property acquisition, temporary leases and use of residual land associated with the open space and recreation facilities at Balgowlah

Acquisition of substratum

The construction and operation of the project would require the acquisition of land below the surface of the ground where the mainline and ramp tunnels would be located. This is called substratum acquisition and is illustrated in Figure 20-12.



Legend

 Substratum acquisition envelope

Figure 20-12 Example of substratum acquisition

Substratum acquisition would consist of a stratum acquisition envelope around the tunnels, including any associated ground support that may be required. In some circumstances, the introduction of the tunnels has the potential to limit development above the tunnels. For example, depending on the depth of the tunnels, the ability to construct basement levels in buildings above the tunnels may be restricted. However, this is generally only the case where the tunnel depth is shallow, near tunnel portals. Tunnel portal locations are described in Chapter 5 (Project description). Otherwise, substratum acquisition does not generally affect the future use of property at the surface. Subject to council regulations and approvals, landowners would generally be able to:

- Carry out improvements, such as installing a swimming pool
- Dig deeper foundations for a new building or second storey additions.

Where substratum acquisition is required, Transport for NSW would contact owners of affected properties. Transport for NSW has the authority to acquire the subsurface land, under the *Roads Act 1993*. The *Land Acquisition (Just Terms Compensation) Act 1991* provides that compensation is not payable for substratum acquisition of land or easements unless specific circumstances as detailed in that Act apply. Appendix C of the *Roads and Maritime Services land acquisition information guide* (Roads and Maritime Services, 2014b) sets out in detail the compensation provisions of the *Land Acquisition (Just Terms Compensation) Act 1991* relating to substratum acquisition.

Ground movement impacts

Excavation below ground has the potential to result in ground movement at the surface (settlement). Depending on the amount and nature of the ground movement, settlement may present a risk to nearby buildings and other structures during construction and operation of the project.

An assessment of potential ground movement impacts associated with the project is provided in Chapter 16 (Geology, soils and groundwater). The assessment identified the worst case risk of settlement impacts to buildings as 'very slight', where any damage can be easily treated during normal decoration. The areas where the most settlement is predicted to occur would be in the vicinity of the tunnel alignment, primarily above Flat Rock Reserve, the Wakehurst Parkway tunnel portal, and at the Burnt Bridge Creek Deviation tunnel portal, though no buildings are present at these locations. As such, the risk of building impacts due to settlement is therefore very low during both construction and operation of the project. Environmental management measures to manage the potential impacts from ground movement are included in Chapter 16 (Geology, soils and groundwater).

20.4.2 Land Use

Potential land use impacts during construction

The occupation of land for construction works and temporary construction support sites associated with the project has the potential to impact the use and development potential of affected land. While the occupation of land for construction might occur over four to five years, these impacts would be temporary in nature, except for sites that are subsequently used for operational infrastructure (refer to Table 20-6). Table 20-5 outlines the potential land use impacts at each construction site and temporary construction support site required for the project.

The occupation and use of land during construction could also result in impacts associated with traffic and transport, noise and vibration, air quality and social and economic values. Consideration of these impacts is provided in Chapter 8 (Construction traffic and transport), Chapter 10 (Construction noise and vibration), Chapter 11 (Operational noise and vibration), Chapter 12 (Air quality) and Chapter 21 (Socio-economics). Utility relocations, adjustments and protection are discussed in Chapter 5 (Project description) and Appendix D (Utilities management strategy).

Table 20-5 Potential land use impacts during construction

| Construction location | Potential impacts on land use during construction |
|---|---|
| Cammeray to Northbridge | |
| <p>Cammeray Golf Course construction support site (BL1)</p> | <p>The Cammeray Golf Course construction support site (BL1) would temporarily occupy a portion of the existing golf course adjacent to the Warringah Freeway, and residential properties to be acquired (as part of the Western Harbour Tunnel and Warringah Freeway Upgrade project) along Morden Street in Cammeray. The site would be located on NSW Government owned land that is zoned for public recreational use associated with the Cammeray Golf Club.</p> <p>This site would be used for the construction and fitout of motorway facilities at the Warringah Freeway and would provide tunnel and construction support for the Beaches Link component of the project. However, the site would initially be established as a temporary construction support site for the Western Harbour Tunnel and Warringah Freeway Upgrade project.</p> <p>Transport for NSW proposes to address the potential impacts to the Cammeray Golf Course as part of the Western Harbour Tunnel and Warringah Freeway Upgrade project in a manner that maintains the ability of the site to be used for golf-related activities during the construction and operational phases of that project. Transport for NSW is consulting with the golf club, and Department of Planning, Industry and Environment (Crown Lands) and North Sydney Council (the trustee) to achieve this. At the completion of construction, some land at the site would be used on an ongoing basis for the operation of permanent project infrastructure. This area would be smaller than the footprint during construction.</p> <p>The adjoining Cammeray Park sportsground, tennis club, croquet club and skate park would remain operational during construction and would not be directly impacted during construction.</p> |
| <p>Flat Rock Drive construction support site (BL2)</p> | <p>The Flat Rock Drive construction support site (BL2) would be located in Flat Rock Reserve in Northbridge. The site is on Council-owned land and is zoned for environmental conservation.</p> <p>During construction, the site would temporarily occupy a small portion (about 10 per cent) of the reserve and would preclude the use of the site for environmental conservation and public open space and recreation activities. At the end of construction, the impacted portion of the reserve would be rehabilitated in consultation with Willoughby City Council and the community, and returned to the landowner. The temporary use of this land would have a negligible impact on the continued use of the wider Flat Rock Reserve area and Flat Rock Gully area for public open space and recreational use, as access to these areas would be maintained at all times during the construction and rehabilitation works. Upon completion, the site and adjacent areas within Flat Rock Reserve could remain zoned for environmental conservation.</p> |

| Construction location | Potential impacts on land use during construction |
|---|---|
| Gore Hill Freeway and surrounds | |
| Surface road works (Gore Hill Freeway Connection) | <p>Surface road works for the Gore Hill Freeway Connection would be carried out on and adjacent to the Gore Hill Freeway at Artarmon. Construction activities carried out along the road corridor would generally be on land owned by Transport for NSW and zoned for infrastructure related uses. Land use impacts would be negligible for works carried out on land zoned SP2 Infrastructure.</p> <p>The Gore Hill Freeway Connection would also require surface works to be carried out on land zoned for public recreation, notably in the area adjacent to Punch Street and the Gore Hill Freeway in Artarmon. There is an existing shared path at this location that provides connectivity between Artarmon Reserve and the Artarmon industrial area, as well as car parking along Punch Street. Pedestrians and cyclists would be required to detour around work sites for the duration of construction. Surface works would also be carried out within Artarmon Park along the north side of the Gore Hill Freeway. Works are unlikely to impact the recreational use of Artarmon Park, as the impacted area is steeply sloped and vegetated with dense scrub. The adjoining Artarmon Reserve would not be impacted. At the completion of construction, part of the land zoned for public recreation would be converted to permanent project infrastructure.</p> |
| Punch Street construction support site (BL3) | <p>The Punch Street construction support site (BL3) would occupy land within the Artarmon industrial area, adjacent to the T1 North Shore and Western line and T9 Northern line rail corridors and south of the Gore Hill Freeway in Artarmon. The site would be a tunnel support and project management site and would be located on land that is zoned for both light industrial and infrastructure related uses.</p> <p>The site would temporarily change the existing land use at this location from light industrial to construction infrastructure. The temporary construction support site would require the permanent acquisition of several industrial properties located on Punch Street, Lambs Road and Cleg Street. The total number of property acquisitions at this location has been minimised where possible. While the temporary construction support site would result in the loss of some existing light industrial and commercial businesses, impacts to the continued viability of the Artarmon industrial area more broadly are anticipated to be minor. Further, the construction activities would not preclude the continued operation of light industrial and commercial uses on land that adjoins or is located in proximity to the temporary construction support site within the Artarmon industrial area.</p> <p>During construction, Lambs Road between Punch Street and Cleg Street would be closed to allow construction vehicles to access to the site. Existing access to this section of Lambs Road is via Cleg Street and Punch Street and access impacts due to this closure would be minor (refer to Chapter 8 (Construction traffic and transport)).</p> <p>At the completion of construction, remaining land at the site would be used on an ongoing basis for the operation of permanent project infrastructure.</p> |

| Construction location | Potential impacts on land use during construction |
|--|--|
| Dickson Avenue construction support site (BL4) | <p>The Dickson Avenue construction support site (BL4) would occupy land within the Artarmon industrial area adjacent to the Gore Hill Freeway, Dickson Avenue and Reserve Road in Artarmon. The site would mostly be located on land that is zoned for general industrial uses. The site would also occupy a small portion of land that is zoned for public recreation located at the eastern end of Dickson Avenue.</p> <p>The site would temporarily change the existing land use at this location from general industrial and public recreation to construction infrastructure. The temporary construction support site would require the permanent acquisition of several industrial and commercial properties located on Reserve Road, Waltham Street and Dickson Avenue. While the temporary construction support site would result in the loss of several general industrial and commercial businesses, the project would not impact upon the continued viability of the broader Artarmon industrial area.</p> <p>The permanent acquisition of a small portion of public recreation zoned land located at the eastern end of Dickson Avenue would have a negligible land use impact as the land is currently severed from any expansive open space area and is located adjacent the Gore Hill Freeway corridor. The site is unsuitable for public open space and recreation activities in its current state.</p> <p>At the completion of construction, remaining land at the site would be used on an ongoing basis for the operation of permanent project infrastructure including surface connections between the Gore Hill Freeway, Dickson Avenue and Reserve Road.</p> |
| Barton Road construction support site (BL5) | <p>The Barton Road construction support site (BL5) would occupy land bordered by the Gore Hill Freeway, Butchers Lane and medium density residential development in Artarmon. The site would mostly be located on land that is zoned medium density residential. The site would also occupy a small portion of land that is zoned for infrastructure related uses located adjacent to the Gore Hill Freeway corridor.</p> <p>Land that would comprise the site is part owned by Transport for NSW and is currently vacant land. The remainder of the site is owned by Willoughby City Council. This land would also be required for the duration of construction.</p> <p>The site would temporarily change the existing land use at this location to construction infrastructure. In the longer term, the land has been identified by Willoughby City Council as an appropriate location for affordable housing.</p> <p>The site would be rehabilitated and reinstated at the completion of construction in consultation with Willoughby City Council. The temporary use of this land for construction purposes would not impact on its future development potential. Any future development would be subject to separate assessment and approval in accordance with the <i>Environmental Planning and Assessment Act 1979</i> and is beyond the scope of this project.</p> |

| Construction location | Potential impacts on land use during construction |
|--|--|
| Gore Hill Freeway median construction support site (BL6) | <p>The Gore Hill Freeway median construction support site (BL6) would be located within the Gore Hill Freeway median and above the Lane Cove Tunnel portals in Artarmon. The site would comprise vacant land owned by Transport for NSW and zoned for infrastructure related uses.</p> <p>The site would temporarily be used for equipment storage to support the Gore Hill Freeway Connection. The temporary use of this land for construction activities would have a negligible impact as the land would be used in accordance with the current zoning.</p> |
| Northbridge to Seaforth | |
| Middle Harbour south cofferdam (BL7) | <p>The Middle Harbour south cofferdam construction support site (BL7) and Middle Harbour north cofferdam construction support site (BL8) would be temporarily located in Middle Harbour off Northbridge and Seaforth, respectively. Marine exclusion zones would be set up around these two sites, with controlled navigation channels provided through the main works area to facilitate the safe passage of all vessels and recreational users.</p> |
| Middle Harbour north cofferdam (BL8) | <p>Construction activities associated with these sites including works such as dredging and immersed tube tunnel unit placement would require the establishment of maritime speed restrictions around the construction equipment. This has the potential to result in minor increases to transit times for vessels that travel through Middle Harbour. Construction is not expected to have substantial impacts on vessel travel times as private vessels would be given right of way and speed restriction zones would be limited to areas in the immediate vicinity of construction vessels.</p> <p>The Northbridge Sailing Club makes use of Middle Harbour upstream of the Spit Bridge and would need to consider relocating sailing courses away from the marine works exclusion zones during construction. Exclusion zones and course routes would be clearly marked by buoys and project commercial craft associated with the project would be required to give way to recreational craft which is contrary to normal maritime protocols. Opportunities to minimise and manage potential impacts, including the relocation of sailing courses to upstream of the Middle Harbour crossing, would be investigated prior to construction in consultation with the club. Sites would be managed in accordance with the environmental management measures outlined in Chapter 8 (Construction traffic and transport).</p> <p>Private recreational users with vessels located upstream of the Spit Bridge may also be impacted by exclusions zones and closures of the navigation channel. Closures would occur midweek to minimise the impact on other waterway users including recreational boating traffic. During installation of the outer two immersed tube tunnel units, full closure of the channel would not be required and smaller vessels would be provided an escort to ensure safe passage around the construction works.</p> <p>Three jetties connected to separate properties at Seaforth would be inaccessible for the duration of construction due to exclusion zone established around Middle Harbour north cofferdam construction support site (BL8). The bed of the harbour occupied by the private foreshore structures is leased from Transport for NSW. Transport for</p> |

| Construction location | Potential impacts on land use during construction |
|--|---|
| | <p>NSW would consult with the owners of these properties to determine alternative arrangements. About 10 moorings located off Seaforth and leased from Transport for NSW would also need to be temporarily relocated due to the establishment of Middle Harbour north cofferdam construction support site (BL8). Potential temporary impacts on vessel movements and marine activities in Middle Harbour are further considered in Chapter 8 (Construction traffic and transport).</p> |
| <p>Spit West Reserve construction support site (BL9)</p> | <p>The Spit West Reserve construction support site (BL9) would be mainly located in the water west of Spit West Reserve in Mosman with a small land-based site located directly adjacent. The land-based component of Spit West Reserve construction support site (BL9) would be located on land zoned for public recreation.</p> <p>The water-based component of the site would require the temporary relocation of about 55 swing moorings leased from Transport for NSW in Middle Harbour, including in Pearl Bay and those located adjacent to Spit West Reserve. Relocations would be managed in accordance with the environmental management measures outlined in Chapter 8 (Construction traffic and transport).</p> <p>The land-based component of the site would require a portion of Spit West Reserve adjacent to the existing car park to be temporarily leased for the duration of construction, therefore temporarily changing the existing land use at this location from public recreation and open space to construction infrastructure. Recreational users of Spit West Reserve would be required to use alternative parts of the reserve, which could include areas to the north and south of the temporary construction support site. The existing shared user path located along the foreshore of Middle Harbour would be temporary diverted around the site with connectivity along the reserve maintained.</p> <p>The Mosman Rowing Club located to the south of the site may be required to make minor modifications to existing courses to ensure an adequate clearance is maintained around the water-based component of the temporary construction support site (including the floating immersed tube tunnel casting facility). A controlled right of way would be provided to rowers through the main works. The club would be consulted during construction planning to develop suitable environmental management measures, as described in Chapter 8 (Construction traffic and transport).</p> <p>The Spit West Reserve construction support site car park would provide limited parking for construction supervisory staff. The Spit West Reserve public car park would not be utilised by construction workers. Instead, workers at this site would either use public transport or would be transported to the site by shuttle bus (where required) from the Balgowlah Golf Course construction support site (BL10). The impacted portion of Spit West Reserve would be rehabilitated in consultation with Mosman Council and returned to the landowner at the completion of construction. The temporary use of this land would not impact on the continued use of the site for open space and public recreational use at the completion of construction.</p> |

| Construction location | Potential impacts on land use during construction |
|--|--|
| Seaforth to Balgowlah | |
| Surface road works at Balgowlah | <p>Surface road works at Balgowlah would include the realignment and widening of Burnt Bridge Creek Deviation, and creation of new access road intersections at Burnt Bridge Creek Deviation and the existing intersection of Sydney Road and Maretimo Street. The surface road works would facilitate the widening of Burnt Bridge Creek Deviation, resulting in the establishment of permanent project infrastructure on public recreation zoned land at Balgowlah Golf Course.</p> <p>The surface road works would be carried out on land that is zoned SP2 infrastructure and RE1 Public Recreation. Works carried out within the road corridor and on land zoned SP2 Infrastructure would be consistent with the existing land use and zoning.</p> |
| Balgowlah Golf Course construction support site (BL10) | <p>The Balgowlah Golf Course construction support site (BL10) would encompass part of the Balgowlah Golf Course and parts of the properties acquired along Dudley Street. The site would be required for construction of the motorway tunnel connection to the Burnt Bridge Creek Deviation, new motorway facilities, the new access road and the new and improved open space and recreation facilities. Users of the golf course would need to use nearby alternative courses including Wakehurst Golf Course, Manly Golf Course and Warringah Golf Course, all located within two kilometres of the site and which provide equivalent recreation facilities.</p> <p>Residual land, primarily to the east and north of the new access road would progressively become available through the construction period, which would facilitate re-purposing it to the new and improved open space and recreation facilities. This would allow it to be handed over progressively for use by the community, consistent with the existing recreational land use and zoning. The new open space and recreation facilities to the west of the proposed access road, between the access road and the widened Burnt Bridge Creek Deviation, would be constructed and handed over to Northern Beaches Council after completion of the project. Construction of the new and improved public open space and recreation facilities is discussed further in Chapter 6 (Construction work).</p> <p>The existing clubhouse building is proposed to be removed for the new and improved open space and recreation facilities. However, consideration would be given to re-purposing the building for the wider community during the dedicated consultation process for the new and improved open space and recreation facilities jointly led by Transport for NSW and Northern Beaches Council.</p> <p>At the completion of construction, part of the existing Balgowlah Golf Course site would be occupied and used on an ongoing basis for the operation of permanent project infrastructure as shown in Figure 20-11.</p> |

| Construction location | Potential impacts on land use during construction |
|--|--|
| Kitchener Street construction support site (BL11) | <p>The Kitchener Street construction support site (BL11) would occupy land next to the Burnt Bridge Creek Deviation and directly north of the Kitchener Street bridge in Balgowlah. The site would support the surface road works at Balgowlah and would be located predominantly on vacant land zoned for public recreation. The site would also occupy land zoned for general residential land use.</p> <p>The land zoned for public recreation is currently vacant and is not used for public recreation purposes. Consequently, the temporary change of land use to construction infrastructure would be negligible. The site would be rehabilitated and reinstated at the completion of construction. The land zoned for general residential is owned by Transport for NSW and it may be used by the project as a site office and amenities. This would be confirmed during further design development and construction planning.</p> |
| Seaforth to Frenchs Forest | |
| Surface road works at Killarney Heights and Frenchs Forest | <p>Surface road works at Seaforth, Killarney Heights and Frenchs Forest would mostly involve the realignment and upgrade of the Wakehurst Parkway including integration of the project with road network upgrades completed as part of the Northern Beaches Hospital road upgrade project.</p> <p>Construction activities carried out along the Wakehurst Parkway would mostly be carried out on land owned by Transport for NSW and zoned for infrastructure related uses. Consequently, there would be no impact on land use and/or the development potential of land at Killarney Heights and Frenchs Forest. Construction works would not encroach within the adjoining environmental conservation zones or into the Garigal National Park.</p> |
| Wakehurst Parkway south construction support site (BL12) | <p>The Wakehurst Parkway south construction support site (BL12) would occupy land east of the Wakehurst Parkway between a point just south of Judith Street and the northern end of Kirkwood Street at Seaforth. The site would be located on land owned by Transport for NSW that is zoned and used for low density residential development.</p> <p>The temporary construction support site would temporarily change the existing land use from low density residential to construction infrastructure. At the completion of construction, all of the remaining land at the site would be rehabilitated and reinstated and made available for other uses. Reinstatement of the site may require the replacement of boundary fences for existing residential properties along Kirkwood Street located adjacent to the site. Any future development on the affected land would be subject to separate assessment and approval in accordance with the <i>Environmental Planning and Assessment Act 1979</i> and is beyond the scope of this project.</p> |

| Construction location | Potential impacts on land use during construction |
|--|--|
| Wakehurst Parkway east construction support site (BL13) | <p>The Wakehurst Parkway east construction support site (BL13) would occupy two portions of land east of the Wakehurst Parkway and north of Kirkwood Street currently owned by Sydney Water. The temporary construction support site would comprise both portions of land as one support site. One portion of land is surrounding the main Bantry Bay Reservoir site mostly north of the existing water tanks and would be leased by Transport for NSW from Sydney Water. The site would be temporarily used as a temporary construction support site for the duration of construction. The temporary occupation of this land would not affect the existing land use zoning that is applicable to the site. Sydney Water facility operations and the on-site Telstra tower would remain operational for the duration of construction activities at the site. All existing structures would be protected. The land to be leased would be rehabilitated in consultation with Sydney Water and returned to the landowner at the completion of construction.</p> <p>The other portion of the site would be located wholly on vacant non-operational Sydney Water owned land immediately north of the existing water tanks zoned for low density residential. Transport for NSW would acquire this non-operational part of the Bantry Bay Reservoir site from Sydney Water. This land would be rehabilitated and revegetated as soon as practicable after construction and would be handed over to Northern Beaches Council to manage for use by the community as part of the Manly Dam Reserve. This would add about 4000 square metres of new public space to the Manly Dam Reserve.</p> <p>A smaller portion of land required for the access road to and from the support site forms part of the Manly Dam Reserve, which is Crown land. This land would be leased, and rehabilitated and returned to Northern Beaches Council at the end of construction.</p> |
| Wakehurst Parkway north construction support site (BL14) | <p>The Wakehurst Parkway north construction support site (BL14) would occupy Transport for NSW owned land at the north east corner of the Wakehurst Parkway and Warringah Road in Frenchs Forest. The site would be located on land that is partly zoned for public recreation and partly zoned for infrastructure related uses. This site was previously used as a temporary construction support site for the Northern Beaches Hospital road upgrade project. As such, potential construction land use impacts would be considered negligible. Following construction, the site would be used for operation of the northern tunnel support facilities.</p> |

Potential land use impacts during operation

The project has the potential to permanently impact land use and the development potential of surrounding areas during operation. Permanent land use changes as a result of the project would occur largely in response to the physical introduction of permanent project infrastructure at Cammeray, Artarmon, Balgowlah, Killarney Heights and Frenchs Forest. The location of operational infrastructure has been developed with consideration of existing land use zones and future development to minimise permanent impacts, and is discussed further in Table 20-6.

Surrounding land would also be affected by the operation of the project. The operation of ventilation outlets at the Warringah Freeway, Gore Hill Freeway, Burnt Bridge Creek Deviation and Wakehurst Parkway has the potential to influence development patterns for existing and future elevated receptors (for example, those receptors within multi-storey residential buildings) and is discussed further in Table 20-7.

The permanent changes in land use due to the project would also have the potential to result in indirect impacts associated with traffic and transport, noise and vibration, air quality and social and economic values. Consideration of these potential impacts is provided in Chapter 9 (Operational traffic and transport), Chapter 11 (Operational noise and vibration), Chapter 12 (Air quality) and Chapter 21 (Socio-economics).

Table 20-6 Potential land use impacts during operation

| Operational infrastructure | Potential impacts on land use during operation |
|--|---|
| Cammeray to Northbridge | |
| <ul style="list-style-type: none"> • Surface connections at the Warringah Freeway • Underground connections to the Western Harbour Tunnel • Ventilation outlet and motorway facilities at the Warringah Freeway | <p>Permanent project infrastructure would be established within the existing Cammeray Golf Course adjacent to the Warringah Freeway which would change a portion of the existing land use from public recreation to permanent transport infrastructure for the project. This would reduce the amount of land available for public recreational use. However, the layout would enable Cammeray Golf Course to be retained in a modified form that enables continuation of golf-related activities. Transport for NSW is consulting with Cammeray Golf Club, Department of Planning, Industry and Environment (Crown lands) and North Sydney Council (the trustee) to achieve this outcome.</p> <p>Operation of the ventilation outlet and motorway facilities at the Warringah Freeway might also place restrictions on future development because of the impact on potential elevated receivers. This issue is discussed further in the following section.</p> |
| Gore Hill Freeway and surrounds | |
| <ul style="list-style-type: none"> • Connections to and from the motorway tunnel to the Gore Hill Freeway/Lane Cove Tunnel and Reserve Road • Realignment and upgrade of the Gore Hill Freeway • Modifications and upgrades to road bridges • Minor changes to local roads • Realignment and reconstruction of shared user infrastructure | <p>The Gore Hill Freeway Connection component of the project would connect and integrate the Beaches Link tunnels with the Gore Hill Freeway/Lane Cove Tunnel and Reserve Road at Artarmon providing added connectivity. Surface road works would also include realignment and upgrade of the existing motorway and minor changes to the surrounding road network.</p> <p>Operational infrastructure including the ventilation outlet and motorway facilities at the Gore Hill Freeway, air supply facility and wastewater treatment plant would be located adjacent the eastern extent of the Gore Hill Freeway Connection on land currently bordered by Punch Street, Lambs Road and Cleg Street. The project infrastructure would be established within the Artarmon industrial area on land zoned for light industrial uses. While the project would reduce the amount of land that would otherwise be used for light industrial activities, the project is not expected to impact on the continued viability of the Artarmon industrial area more broadly. Further, the project would not preclude the continued operation of light industrial and/or commercial uses on land that adjoins or is located in proximity to the project infrastructure within the Artarmon industrial area.</p> <p>Changes to local roads within the Artarmon industrial area would include removal of the connection between Punch Street and Lambs Road, with the conversion of Punch Street to a cul-de-sac. The creation of a cul-de-sac at Punch Street would have a minor impact on connectivity throughout the north eastern portion of the Artarmon industrial area.</p> <p>Construction of the westbound off ramp connecting to Reserve Road would require the conversion of Dickson Avenue to a cul-de-sac, directly east of the intersection with Reserve Road in Artarmon. Access to the existing</p> |

| Operational infrastructure | Potential impacts on land use during operation |
|---|--|
| <ul style="list-style-type: none"> • Wastewater treatment plant • Ventilation outlet and motorway facilities at the Gore Hill Freeway • Motorway control centre at the Gore Hill Freeway | <p>properties on Dickson Avenue would be provided from Hesky Lane. While the cul-de-sac at Dickson Avenue would be a permanent change to the road network, access would be retained to all potentially affected properties and impacts to the existing general industrial and warehousing land uses would be minor. The creation of a cul-de-sac at Dickson Avenue would have a minor impact on connectivity throughout the eastern portion of the Artarmon industrial area.</p> <p>Permanent project infrastructure would also include new and upgraded connections to the existing road network along the Gore Hill Freeway corridor. This infrastructure would be established within the existing road corridor on land zoned for infrastructure related uses.</p> <p>The existing motorway creates a barrier between adjoining areas and restricts north-south connectivity for pedestrians and cyclists to the existing overpasses. While the project would not remove this barrier, the project would provide a positive contribution to the local area by providing new and upgraded active transport infrastructure that would improve connectivity across and around the Gore Hill Freeway. This would include the replacement of the shared user path along the southern side of the Gore Hill Freeway, replacement of the existing pedestrian footpath along the eastern side of the Reserve Road bridge, and a new pedestrian footpath adjacent to the cycle path behind the southern abutment of the Reserve Road bridge.</p> |
| Northbridge to Seaforth | |
| <ul style="list-style-type: none"> • Immersed tube tunnels | <p>Operational infrastructure in the area between Northbridge and Seaforth would include immersed tube tunnels for the crossing of Middle Harbour. The immersed tube tunnels would sit on both excavated rock within a trench and piles driven into the bed of the harbour maintaining between 16 metres and 22 metres of water depth over the tunnels, depending on the distance from the shore. The immersed tube tunnels would not introduce navigational impacts for water-based activities and operations carried out in Middle Harbour as marine vessels using Middle Harbour are already restricted by the relatively shallow harbour entrance at The Spit. Further, there would be no land use impacts during operation to foreshore land along Middle Harbour in Northbridge and Seaforth.</p> <p>No other permanent operational infrastructure would be established at surface level in the area between Northbridge and Seaforth. Works would otherwise comprise subsurface tunnelling that would not introduce any permanent impacts to existing land uses, current land use zones or the strategic land use direction of the area.</p> |

| Operational infrastructure | Potential impacts on land use during operation |
|--|---|
| Seaforth to Balgowlah | |
| <ul style="list-style-type: none"> • New access road connecting Burnt Bridge Creek Deviation and Sydney Road • Road widening works and minor changes to local roads • New and upgraded active transport infrastructure • Ventilation outlet and motorway facilities at the Burnt Bridge Creek Deviation. | <p>The project would introduce permanent land use impacts on the land at Balgowlah Golf Course as a result of:</p> <ul style="list-style-type: none"> • The construction and alignment of tunnel portals within the Burnt Bridge Creek Deviation road corridor • The construction of a new access road through the existing golf course that would connect Burnt Bridge Creek Deviation and Sydney Road, and provide local access to the new and improved open space and recreation facilities • Establishment of a ventilation outlet and motorway facilities at the Burnt Bridge Creek Deviation • Realignment and reconstruction of the shared path on the south eastern side of Burnt Bridge Creek Deviation between the Kitchener Street bridge and Dudley Street • Construction of a new shared user path along the eastern side of the new access road between Burnt Bridge Creek Deviation and Sydney Road. <p>Engagement with Northern Beaches Council as part of the project has identified potential for Balgowlah Golf Course and residual land from the Dudley Street properties to be developed as new and improved open space and recreation facilities, which would align with the <i>Northern Beaches Sportsground Strategy</i> (Northern Beaches Council, 2017a) and address the current under supply of sporting grounds available for public use in the local area.</p> <p>A dedicated consultation process jointly led by Transport for NSW and Northern Beaches Council would 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. This consultation would be separate to the consultation for the Beaches Link environmental impact statement. This process would start after the environmental impact statement public exhibition period and well in advance of construction starting. As part of this consultation process, a community reference group would 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.</p> <p>The design of permanent operational infrastructure established at the Balgowlah Golf Course has been optimised to increase the opportunities for the use of the remaining land as new open space and recreation facilities. Including residual land from properties acquired along Dudley Street, the project would return an area, equivalent to around 90 per cent of the current open space, to the community as new and improved public open space and recreation facilities.</p> <p>An indicative layout of the new and improved open space and recreation facilities at Balgowlah is provided in Figure 5-28 of Chapter 5 (Project description) and provides for a mix of active and passive recreation needs that address the current, and growing, shortfall in recreation facilities within the local area.</p> |

| Operational infrastructure | Potential impacts on land use during operation |
|--|--|
| | <p>Works at Balgowlah would also include new and upgraded active transport infrastructure to improve connectivity across and around the Burnt Bridge Creek Deviation, the new access road and new and improved open space and recreation facilities. This would include the realignment and reconstruction of the shared user path along the southern side of the Burnt Bridge Creek Deviation between a location south of the Kitchener Street bridge and the new intersection of the Burnt Bridge Creek Deviation with the new access road. The realigned and reconstructed shared user path would be connected with the existing shared user path at Dudley Street. Improvements would also include the extension of the existing shared user underpass beneath the Burnt Bridge Creek Deviation to the north of Dudley Street, and a new at-grade pedestrian crossing of the new access road at the intersection with Sydney Road. The final pedestrian and cycle facilities would be determined during further design development and consideration of the consultation process described above for the new and improved open space and recreation facilities at Balgowlah.</p> |
| Seaforth to Frenchs Forest | |
| <ul style="list-style-type: none"> • Surface works to connect and integrate the project with the surrounding road network • Realignment and widening of the Wakehurst Parkway • New pedestrian underpasses beneath the Wakehurst Parkway • New fauna underpasses beneath the Wakehurst Parkway • Demolition and reconstruction of the pedestrian bridge near Aquatic Drive • Shared user path between Warringah Road and Kirkwood Street | <p>The Wakehurst Parkway would be realigned and upgraded to allow connection to the ramp tunnels with the surface and widened between the ramp tunnels and Warringah Road in Frenchs Forest to improve capacity and safety. The works would be carried out entirely within the existing road reserve and Transport for NSW owned land zoned for infrastructure related uses. There would be no impact on existing land uses.</p> <p>The Wakehurst Parkway between Seaforth and Frenchs Forest currently creates a barrier between adjoining areas which largely severs east-west connectivity for fauna, pedestrians and cyclists where there is no dedicated crossing location. The project would provide a positive contribution to the local area by providing new and upgraded active transport infrastructure that would improve connectivity and user safety along and across the Wakehurst Parkway. This would include a new shared user path along the eastern side of the Wakehurst Parkway between Seaforth and Frenchs Forest, three new shared user underpasses of the Wakehurst Parkway, reconstruction and lengthening of the existing pedestrian overpass across the Wakehurst Parkway near Warringah Road, and a new shared user bridge over a drainage culvert and existing fauna underpass near Warringah Road. The project would also provide new and replaced fauna crossing infrastructure along the Wakehurst Parkway. Further detail on proposed fauna, pedestrian and cycle facilities is provided in Chapter 5 (Project description).</p> <p>The ventilation outlet and motorway facilities at the Wakehurst Parkway at Killarney Heights would be located above the ramp tunnel portals to the Wakehurst Parkway and on land within the existing road corridor that is zoned for infrastructure related uses. The ventilation outlet and motorway facilities are considered to be compatible with the existing land use zone. Land use zones surrounding the ventilation outlet and motorway facilities include national parks and nature reserves, public recreation and low density residential. These land use zones do not support multi-storey development and therefore any potential impacts from the ventilation</p> |

| Operational infrastructure | Potential impacts on land use during operation |
|---|---|
| <ul style="list-style-type: none"> • Minor changes to local roads • Ventilation outlet and motorway facilities at the Wakehurst Parkway • Tunnel support facility at Frenchs Forest. | <p>outlet and motorway facilities on future elevated receptors are not expected at this location. Further discussion on elevated receptors is provided below.</p> <p>Northern Beaches Council has adopted the <i>Northern Beaches Hospital Precinct Structure Plan (2017b)</i> which provides the overarching strategic land use planning framework for the area surrounding the Northern Beaches Hospital precinct. Part of the project would be located within the area covered by the structure plan, including the connection from the Wakehurst Parkway to Warringah Road in Frenchs Forest. The project would support the future land use planning framework that is envisioned under the structure plan and would improve connectivity to and from the Northern Beaches Hospital precinct.</p> |

The project would involve the operation of ventilation outlets and motorway facilities at the Warringah Freeway, Gore Hill Freeway, Burnt Bridge Creek Deviation and the Wakehurst Parkway (refer to Chapter 5 (Project description)).

Table 20-7 identifies land use zones and applicable height restrictions, if any, in an area of around 300 metres from each of the project ventilation outlets. It also outlines potential implications for existing and future land use planning.

The permanent changes in land use due to the project would also have the potential to result in indirect impacts associated with traffic and transport, noise and vibration, air quality and social and economic values. Consideration of these impacts is provided in Chapter 9 (Operational traffic and transport), Chapter 11 (Operational noise and vibration), Chapter 12 (Air quality) and Chapter 21 (Socio-economics). The air quality impact assessment (refer to Chapter 12) and the human health impact assessment (refer to Chapter 13) demonstrate that operation of the motorway facilities and ventilation outlets would not result in unacceptable air quality impacts or an unacceptable impact to human health for existing or future buildings (including elevated receptors) up to a height of 20 metres in the vicinity of the proposed ventilation outlets. However, there would be potential impacts for any future buildings above 20 metres in height and within 300 metres of the outlets that would need to be considered by the relevant local council as part of future development applications (refer to Chapter 12 (Air quality)).

Table 20-7 Existing building height restrictions around project ventilation outlets and motorway facilities

| Ventilation outlet | Relevant land use zones within 300 metres of the ventilation outlet | Existing height restrictions within 300 metres of the ventilation outlet | Potential implications for existing and future planning controls |
|--|--|--|---|
| <p>Ventilation outlet at the Warringah Freeway</p> | <p>Land use zones for the area around the ventilation outlet at the Warringah Freeway are shown in Figure 20-1 and include the following within 300 metres of the ventilation outlet:</p> <ul style="list-style-type: none"> • Predominantly R4 High Density Residential and R3 Medium Density Residential, with some pockets of R2 Low Density Residential • A small area of B4 Mixed Use zone at the western end of Military Road • Several areas of SP2 Infrastructure, including education facilities, places of worship and road infrastructure • Areas of RE1 Public Recreation (including ANZAC Park, St Leonards Park and the Cammeray Golf Course). | <p>Building height restrictions applicable to land around the ventilation outlet at the Warringah Freeway under the North Sydney LEP 2013 include:</p> <ul style="list-style-type: none"> • A maximum of 12 metres for most land zoned R4 High Density Residential, with some pockets up to 16 metres around Military Road on the eastern side of the Warringah Freeway • A maximum of 8.5 metres for most land zoned R3 Medium Density Residential, with a single site on Lytton Street permitted up to 11 metres • A maximum of 8.5 metres for land zoned R2 Low Density Residential • A maximum of 16 metres for land zoned B4 Mixed Use • Maximum heights for land zoned SP2 Infrastructure (education establishments and places of worship) consistent with surrounding residential zones, being either 8.5 metres or 12 metres. There are no height limits imposed on SP2 Infrastructure (road infrastructure) zones. | <p>All land use zones within 300 metres of the ventilation outlet, where habitable residential or commercial structures would be permissible, currently have height restrictions of less than 20 metres. Where height restrictions do not exist, particularly in RE1 Public Recreation and SP2 Infrastructure (road infrastructure) zones, development of elevated habitable structures would either be prohibited or inconsistent with the aims of the zone. No additional development controls would be required to manage the interaction between the operation of the ventilation outlet and currently permissible habitable structures in the area. However, if zoning and/or development controls were to be reviewed in the future, the potential for interactions between the project and future development for buildings above 20 metres and within 300 metres of the ventilation outlet would need to be considered.</p> |

| Ventilation outlet | Relevant land use zones within 300 metres of the ventilation outlet | Existing height restrictions within 300 metres of the ventilation outlet | Potential implications for existing and future planning controls |
|--|--|--|---|
| <p>Ventilation outlet and motorway facilities at the Gore Hill Freeway</p> | <p>Land use zones for the area around the ventilation outlet and motorway facilities at the Gore Hill Freeway are shown in Figure 20-2 and include the following within 300 metres of the ventilation outlet:</p> <ul style="list-style-type: none"> • Predominantly R3 Medium Density Residential and R2 Low Density Residential to the north and east of the ventilation outlet • Predominantly IN1 General Industrial and IN2 Light Industrial to the south of the ventilation outlet • Pockets of RE1 Public Recreation (including Artarmon Park, Artarmon Reserve and Naremburn Park) • SP2 Infrastructure along the T1 North Shore and Western rail line and T9 Northern rail line and the Gore Hill Freeway corridor. | <p>Building height restrictions applicable to land around the ventilation outlet and motorway facilities at the Gore Hill Freeway under the Willoughby LEP 2012 include:</p> <ul style="list-style-type: none"> • Maximum heights of 8.5 metres, nine metres and 12 metres for land zoned R3 Medium Density Residential or R2 Low Density Residential, depending on location • No specified height restriction for land zoned IN1 General Industrial, IN2 Light Industrial, RE1 Public Recreation or SP2 Infrastructure. | <p>All land use zones within 300 metres of the ventilation outlet, where habitable residential structures would be permissible, currently have height restrictions of less than 20 metres. Although it is possible that industrial development could be carried out at heights greater than 20 metres in the IN1 General Industrial or IN2 Light Industrial zones, it is anticipated that development at this height would either be undesirable or unlikely to include habitable spaces at or about 20 metres. For other land use zones, particularly in RE1 Public Recreation and SP2 Infrastructure (road infrastructure) zones, development of elevated habitable structures would either be prohibited or inconsistent with the aims of the zone.</p> <p>No additional development controls would be required to manage the interaction between the operation of the ventilation outlet and currently permissible habitable structures in the area. However, if zoning and/or development controls were to be reviewed in the future, the potential for interactions between the project and future development for buildings above 20 metres and within 300 metres of the ventilation outlet would need to be considered.</p> |

| Ventilation outlet | Relevant land use zones within 300 metres of the ventilation outlet | Existing height restrictions within 300 metres of the ventilation outlet | Potential implications for existing and future planning controls |
|---|--|--|---|
| <p>Ventilation outlet and motorway facilities at the Burnt Bridge Creek Deviation</p> | <p>Land use zones for the area around the ventilation outlet and motorway facilities at the Burnt Bridge Creek Deviation are shown in Figure 20-4 and include the following within 300 metres of the ventilation outlet:</p> <ul style="list-style-type: none"> • Predominantly R1 General Residential to the south and R2 Low Density Residential to the north • Areas of RE1 Public Recreation comprising the Balgowlah Golf Course site, several local parks and the riparian zone along Burnt Bridge Creek • SP2 Infrastructure along the Burnt Bridge Creek Deviation. | <p>Building height restrictions under the Manly LEP 2013 and Warringah LEP 2011 include:</p> <ul style="list-style-type: none"> • A maximum of 8.5 metres for land zoned R1 General Residential and R2 Low Density Residential in both local government areas • No specified height restriction for land zoned RE1 Public Recreation, or SP2 Infrastructure. | <p>All land use zones within 300 metres of the ventilation outlet, where habitable residential structures would be permissible, currently have height restrictions of less than 20 metres. Where height restrictions do not exist, particularly in RE1 Public Recreation and SP2 Infrastructure (road infrastructure) zones, development of elevated habitable structures would either be prohibited or inconsistent with the aims of the zone.</p> <p>No additional development controls would be required to manage the interaction between the operation of the ventilation outlet and currently permissible habitable structures in the area. However, if zoning and/or development controls were to be reviewed in the future, the potential for interactions between the project and future development for buildings above 20 metres and within 300 metres of the ventilation outlet would need to be considered.</p> <p>The new and improved open space and recreation facilities at Balgowlah would not be restricted by the ventilation outlet.</p> |

| Ventilation outlet | Relevant land use zones within 300 metres of the ventilation outlet | Existing height restrictions within 300 metres of the ventilation outlet | Potential implications for existing and future planning controls |
|--|--|--|--|
| <p>Ventilation outlet and motorway facilities at the Wakehurst Parkway</p> | <p>Land use zones for the area around the ventilation outlet and motorway facilities at the Wakehurst Parkway are shown in Figure 20-5 and include the following within 300 metres of the ventilation outlet:</p> <ul style="list-style-type: none"> • R2 Low Density Residential predominantly to the south, but with some small areas to the north of the ventilation outlet • Mainly E1 National Parks and Nature Reserves and E2 Environmental Conservation to the west of the ventilation outlet • Mainly RE1 Public Recreation (Manly Dam Reserve) to the east of the ventilation outlet, with a pocket (Seaforth Oval) to the south and an area of RE2 Private Recreation at the Seaforth Bowling Club • SP2 Infrastructure along the Wakehurst Parkway corridor. | <p>Building height restrictions under the Manly LEP 2013 and Warringah LEP 2011 include:</p> <ul style="list-style-type: none"> • A maximum of 8.5 metres for land zoned R2 Low Density Residential in both local government areas • No specified height restriction for land zoned RE1 Public Recreation, RE2 Private Recreation, E1 National Parks and Nature Reserves, E2 Environmental Conservation or SP2 Infrastructure. | <p>All land use zones within 300 metres of the ventilation outlet which habitable residential structures would be permissible currently have height restrictions of less than 20 metres. Development of elevated habitable structures in other relevant land use zones is either prohibited, unlikely to be desirable, or inconsistent with the aims of the zone.</p> <p>No additional development controls would be required to manage the interaction between the operation of the ventilation outlet and currently permissible habitable structures in the area. However, if zoning and/or development controls were to be reviewed in the future, the potential for interactions between the project and future development for buildings above 20 metres and within 300 metres of the ventilation outlet would need to be considered.</p> |

Changes in public open space

The following public open space areas would be impacted during construction and operation:

- Cammeray Golf Course
- Flat Rock Reserve
- Artarmon Park
- Spit West Reserve
- Balgowlah Golf Course.

The temporary construction support sites at Flat Rock Reserve and Spit West Reserve would not be needed to operate the project and would be rehabilitated and returned to an equivalent state as soon as practicable at the completion of construction. The project would not impact the ability of these areas to be used in a manner consistent with their existing use as public open space.

Changes in public open space during operation of the project would be limited to the Cammeray and Balgowlah golf courses and Artarmon Park.

As discussed in Table 20-4 and Table 20-6, the changes at Cammeray Golf Course would be managed to ensure it is able to continue to be used for golf-related activities, albeit in a modified form.

The changes at Balgowlah Golf Course due to the project would preclude the continued operation of the golf course. As discussed in Table 20-4 and Table 20-6, engagement with Northern Beaches Council has identified potential for the residual land to be developed as open space and recreation facilities that better address the local government area's current and future needs. A dedicated consultation process jointly led by Transport for NSW and Northern Beaches Council would 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. As part of this consultation process, a community working group would 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.

Along with residual land from properties acquired along Dudley Street, the project would progressively return an area, equivalent to around 90 per cent of the current open space, to the community as new and improved public open space and recreation facilities (refer to Figure 20-11).

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. This change would not impact the long term viability of the remainder of Artarmon Park, as the impacted area is steeply sloped and vegetated with dense scrub. The adjacent and much larger Artarmon Reserve would not be impacted.

Land managed by the former Office of Environment and Heritage

The *Guidelines for developments adjoining land and water managed by the Office of Environment and Heritage* aim to provide advice to avoid and minimise any direct or indirect adverse impacts on land and water bodies managed by the former the Office of Environment and Heritage (now the Department of Planning, Industry and Environment (Environment, Energy and Science)).

These guidelines have been prepared for use by councils and other planning authorities when they assess development applications. While Clause 94 of the State Environmental Planning Policy (Infrastructure) 2007 provides for development for the purpose of road or road infrastructure facilities to be permissible without consent, as part of best practice, these guidelines have been considered in Table 20-.

Table 20-8 Issues to be considered for projects adjoining Office of Environment and Heritage land

| Issues to be considered for projects adjoining Office of Environment and Heritage land | Where addressed in the EIS |
|--|---|
| Erosion and sediment control | <p>An assessment of the project's impact on soil and land resources, with particular emphasis on soil erosion and sediment transport, is provided in Chapter 16 (Geology, soils and groundwater).</p> <p>Chapter 17 (Hydrodynamics and water quality) assesses the potential impacts on surface water with regard to erosion, siltation, and bank stability. Impacts from scour and erosion on geomorphology are also discussed.</p> |
| Stormwater runoff | <p>Minimising the effects of proposed stormwater and wastewater management on natural hydrological attributes and on the existing capacity of stormwater systems is described in Chapter 17 (Hydrodynamics and water quality).</p> |
| Wastewater | <p>The effects of proposed stormwater and wastewater management on surface water quality are assessed in Chapter 17 (Hydrodynamics and water quality). Information on wastewater discharge, including volumes and rates of discharge, are also discussed.</p> |
| Management implications relating to pests, weeds, and edge effects | <p>Impacts to terrestrial flora, including edge effects, spread of weeds and pathogens is discussed in Chapter 19 (Biodiversity).</p> |
| Fire and the location of asset protection zones | <p>An assessment of bushfire risks relating to construction and operation is presented in Chapter 23 (Hazards and risks).</p> |
| Boundary encroachments and access through Office of Environment and Heritage land | <p>The project would not encroach on or require access through Office of Environment and Heritage land.</p> |
| Visual, odour, noise, vibration, air quality and amenity impacts | <p>Consideration of these impacts is provided in Chapter 8 (Construction traffic and transport), Chapter 10 (Construction noise and vibration), Chapter 11 (Operational noise and vibration), Chapter 12 (Air quality), Chapter 21 (Socio-economics) and Chapter 22 (Urban design and visual amenity).</p> <p>Possible noise, vibration, dust and light spill impacts to native fauna species are discussed in Chapter 19 (Biodiversity).</p> |
| Threats to ecological connectivity and groundwater-dependent ecosystems | <p>Habitat connectivity is addressed in Chapter 19 (Biodiversity). Impacts to groundwater dependent ecosystems are considered in Chapter 16 (Geology, soils and groundwater) and Chapter 19 (Biodiversity).</p> |
| Cultural heritage | <p>Impacts to non-Aboriginal heritage are assessed in Chapter 14 (Non-Aboriginal heritage) and impacts to Aboriginal heritage are assessed in Chapter 15 (Aboriginal heritage).</p> |

20.5 Environmental management measures

The project has been designed to minimise the requirement for property acquisition as far as practical and optimise the use of land already owned by Transport for NSW. Measures to avoid, minimise or manage land use and property impacts as a result of the project are detailed in Table 20-9.

Additional environmental management measures relevant to the management of land use impacts are also outlined in other chapters of the environmental impact statement, including:

- Chapter 8 (Construction traffic and transport)
- Chapter 9 (Operational traffic and transport)
- Chapter 10 (Construction noise and vibration)
- Chapter 11 (Operational noise and vibration)
- Chapter 12 (Air quality)
- Chapter 13 (Human health)
- Chapter 21 (Socio-economics)
- Chapter 22 (Urban design and visual amenity).

Table 20-9 Environmental management measures - land use and property

| Ref | Phase | Impact | Environmental management measure | Location |
|-----|-----------------------------------|-------------------------------|---|----------|
| LP1 | All phases | Changes to lease arrangements | Transport for NSW will consult with existing lease holders of properties that will be directly affected by the project regarding any changes to lease arrangements. | BL/GHF |
| LP2 | All phases | Residual land | Identification of residual land of the project will be confirmed during further design development and construction planning. Appropriate strategies for the ongoing management and/or divestment of the residual land will consider the location, land use characteristics, area and adjacent land uses. | BL/GHF |
| LP3 | Pre-construction and construction | Property acquisition | Land acquisition for the project will be carried out in accordance with the <i>Land Acquisition (Just Terms Compensation) Act 1991</i> , the <i>Roads and Maritime Services land acquisition information guide</i> (Roads and Maritime Services, 2014) and <i>Fact sheet: Property acquisition of subsurface lands</i> (Roads and Maritime Services, 2015) and in accordance with the land acquisition reforms announced by the NSW Government in 2016. Transport for NSW will appoint a Personal Manager – Acquisition to help landowners and residents who may be affected by acquisition for the project. | BL/GHF |

| Ref | Phase | Impact | Environmental management measure | Location |
|-----|-----------------------------------|--|---|----------------|
| | | | The Personal Manager – Acquisition will be in regular contact with these individuals to provide updates on the project and respond to questions and queries. Should acquisition for the project be confirmed for a particular property, the Personal Manager – Acquisition will work with the affected landowners and residents to offer assistance and support throughout the acquisition and relocation process. | |
| LP4 | Pre-construction and construction | Residual land at Balgowlah | 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. This process will start after the environmental impact statement public exhibition period and well in advance of construction commencing. 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. | BL (Balgowlah) |
| LP5 | Construction | Temporary use of land | Land subject to temporary use, including areas of public open space, will be rehabilitated as soon as practicable to an appropriate condition, taking into consideration the location, land use characteristics, area and adjacent land uses or in accordance with the urban design and landscape plan where applicable (environmental management measure V1). Rehabilitation will be carried out in consultation with the relevant landowner, the local council and community (where appropriate). | BL/GHF |
| LP6 | Construction | Access impediments to private property | Where impacts to private property access is unavoidable during construction, landowners or lease holders/tenants where appropriate will be consulted in advance to develop appropriate alternative access arrangements. | BL/GHF |

| Ref | Phase | Impact | Environmental management measure | Location |
|-----|-----------|---|---|----------|
| LP7 | Operation | Air quality impacts for elevated receivers located around ventilation outlets and motorway facilities | Transport for NSW will assist Northern Beaches Council, North Sydney Council, Willoughby City Council, and the Department of Planning, Industry and Environment (as appropriate) in determining relevant land use considerations applicable to future development in the immediate vicinity of ventilation outlets for inclusion in local environmental plans or development control plans, where required, to manage interactions between the project and future development. This may include procedures for identifying the requirement for consultation with Transport for NSW. | BL/GHF |

Beaches Link = BL, Gore Hill Freeway Connection = GHF