Transport for NSW

Beaches Link and Gore Hill Freeway Connection

Frequently asked questions (FAQs)

Last updated 21 January 2022

Contents

General

What is Beaches Link and Gore Hill Freeway Connection?

Beaches Link will, for the first time, provide a motorway link between the Northern Beaches and the rest of Sydney, including connections to key commercial and economic centres at St Leonards, Macquarie Park and beyond to northwest Sydney via the Gore Hill Freeway connection at Artarmon.

The tunnel will also include new connections to North Sydney via the Warringah Freeway at Cammeray and direct access onto Burnt Bridge Creek Deviation at Balgowlah and Wakehurst Parkway at Seaforth – which will also be widened from one lane to two in each direction between Seaforth and Frenchs Forest.

When will construction start and finish?

Major work on Beaches Link and Gore Hill Freeway Connection is planned to begin by 2023 and expected to take five to 6 years, subject to planning approval and procurement

This is a complex project and we will need to follow all the appropriate processes and procedures, including those surrounding approvals and procurement.

We are taking our time to make sure we get this project right for local residents and the people of our State.

We have already made a range of refinements to the design of key elements of the project to ensure it balances the needs of motorists and the local community. This will transform the way we move around Sydney.

The completion of open space and recreation facilities in Balgowlah is planned to be completed upon completion of the project.

When was the EIS?

The Beaches Link and Gore Hill Freeway Connection Environmental Impact Statement (EIS) was on public exhibition between 9 December 2020 and 1 March 2021. We thank those who engaged with us during this time.

Following the exhibition period of the EIS, Transport for NSW prepared a submissions report, which responds to the submissions on the EIS received from the community, NSW Government agencies and local councils. In addition, Transport for NSW has prepared a preferred infrastructure report (PIR) to provide further information, and provide further assessments in response to a request from the Department of Planning and Environment (DPE).

We have now provided the submissions report and PIR to DPE to help inform the Minister for Planning when making a decision on approval of the project. The submissions report and PIR have both been made publicly available on the DPE Major Projects website (www.planningportal.nsw.gov.au/major-projects/project/10456) and the project interactive online portal (nswroads.work/blportal). Please also see our FAQs on the submissions report and PIR in this document.

What is the status of the project?

We expect to have a decision on the project in early 2022. If the project is approved, we will build and operate the project in accordance with the Conditions of Approval set by the Minister for Planning.

Transport remains committed to the timely delivery of Beaches Link. Subject to planning approval and procurement, work is expected to start on the Beaches Link and Gore Hill Freeway Connection in 2023.

What are the benefits of the project?

Beaches Link will offer new direct connections from the Northern Beaches to Warringah Freeway and North Sydney, the Inner West (via Western Harbour Tunnel) and Macquarie Park (via the Gore Hill Freeway Connection) linking people with jobs, education and services.

- By 2037 future forecast travel time savings include up to:
  - 38 minutes from Balgowlah to Sydney CBD
  - 56 minutes from Dee Why to Sydney Airport
  - 54 minutes from Frenchs Forest to Rozelle
  - 32 minutes from Manly to Macquarie Park
- Reduce traffic on:
  - Spit Road by up to 33%
  - Warringah Road by up to 23%
  - Eastern Valley Way by up to 40%
  - Military Road by up to 11%
  - Mona Vale Road by up to 8%
- Part of an integrated transport network, designed to boost public transport to and from the Northern Beaches, including opportunities for new express bus routes via the tunnel to the Sydney CBD, North Sydney and Macquarie Park
- More than 5 kilometres of new and upgraded cycle and pedestrian pathways
- We will return an area equivalent to around 90 per cent of the current open space at Balgowlah as new and improved public open space and recreation facilities for the community.

What's in the Environmental Impact Statement (EIS)?

The EIS assesses the potential environmental and social impacts of the Beaches Link and Gore Hill Freeway Connection project, and is a requirement of any major infrastructure build in NSW.

The Beaches Link and Gore Hill Freeway Connection EIS is separate to the Western Harbour Tunnel and Warringah Freeway Upgrade EIS, which was exhibited in early 2020 with project approval granted in January 2021.

To help communities and stakeholders understand more about Beaches Link, Transport for NSW has an interactive portal, along with a community guide to the EIS, virtual information room and videos/images.

The interactive portal helps explain the key parts of the project, including the proposed project alignment, potential impacts of construction work, the work we have done to consider local Aboriginal cultural heritage, along with the research carried out on local geology, soils and groundwater.

The EIS also includes detailed strategies that demonstrate how we will avoid, mitigate and manage the potential impact of the project.

How will the NSW Government fund the project?

Funding for ongoing planning and development of Beaches Link has been allocated as part of the Western Harbour Tunnel project. The NSW Government will provide $6.3 billion (over the next four years) for the construction of the Western Harbour Tunnel and Beaches Link Program including the Warringah Freeway Upgrade. This includes $454 million from the 2021-22 NSW Budget.

Will there be a toll to use Beaches Link?

There will be a toll to travel on the Beaches Link and Gore Hill Freeway Connection, as announced by the NSW Government in 2017.No decision has been made on the future tolling strategy.

When will the business case be released?

The Business Case contains confidential and market-sensitive information, such as forecast construction costs, which if made public could jeopardise the integrity of the procurement process for the project and risk achieving value for money for the people of NSW.

Consistent with NSW Government policy, a summary of the Business Case for the Beaches Link will be released by Infrastructure NSW at an appropriate time once an investment decision has been made. Further information is available at www.infrastructure.nsw.gov.au.

How much will Beaches Link cost to build?

The cost of the project will be known when construction contracts have been awarded.

What about public transport alternatives?

Roads, motorways, rail, light rail, ferries and buses are all part of an integrated multi-modal transport solution for Sydney.

The Western Harbour Tunnel and Beaches Link program of works will deliver significant public transport benefits and will:

- improve bus travel on the Sydney Harbour Bridge, Anzac Bridge and Warringah Freeway
- improve bus journeys on key corridors such as Military Road, Spit Road and Warringah Road
- create opportunities to further improve bus services and provide new express bus routes, such as connecting the Northern Beaches to North Sydney and other major centres
- provide a new direct connection to North Sydney for an efficient interchange with Sydney Metro
- provide a continuous free-flowing southbound bus lane on the Warringah Freeway from Miller Street to the Sydney Harbour Bridge, separating buses from other traffic.

The Western Harbour Tunnel and Beaches Link program of works will also deliver significant walking and cycling infrastructure upgrades.

For more information, please see Chapter 3: Strategic context and project need and Chapter 4: Project development and alternatives of the Beaches Link EIS, and Chapter 3: Strategic context and project need and Chapter 4: Project development and alternatives of the Western Harbour Tunnel EIS, which outline the strategic options for the project and alternatives that were considered.

Will there be further design changes?

The plans presented in the EIS, including refinements presented in the submissions report and information presented in the PIR, are subject to further design refinement as part of the detailed design and planning process and in consultation with the successful contractor. Where design refinements do not meet the criteria laid out in Chapter 28 of the EIS, approval for a design modification would be sought from the Minister for Planning in accordance with the requirements of Division 5.2 of the *Environmental Planning and Assessment Act 1979*. For more information, also see Section 2.3 Next steps in Chapter 2 of the EIS.

How will you support local businesses during the construction of Beaches Link?

Transport for NSW understands the concerns of business owners and operators located close to Beaches Link and Gore Hill Freeway Connection construction work, and we are committed to responding to their needs and minimising any impacts from our work to their business.

A business survey was carried out in 2017 to gain a better understanding of the main concerns of businesses in regard to the project. The results of the survey are provided in Annexure A of Appendix U: Socio-economic assessment and discussed in Chapter 21: Socio economics of the EIS. Business-related environmental management measures are also included in Table D2-1 of Part D of the submissions report. Local business owners also attended community information sessions. Further engagement has also been carried out with business stakeholders during the EIS exhibition period.

As part of our planning for construction and throughout the construction phase we will continue to engage and consult closely with business stakeholders to further understand their circumstances and identify any specific feasible and reasonable mitigation measures to reduce impacts.

For more information on our planned engagement methods for local businesses, see Table 6-1 of Appendix E: Community consultation framework in the EIS.

Submissions report

What is the submissions report?

The Beaches Link and Gore Hill Freeway Connection Environmental Impact Statement (EIS) was on public exhibition from 9 December 2020 to 1 March 2021. We thank those who engaged with us during this time.

Transport for NSW has prepared a submissions report, which responds to the submissions received from the community, NSW Government agencies and local councils during the EIS exhibition period. The submissions report also includes a number of additional assessments of key environmental impacts in response to community or agency concerns regarding the project raised during the EIS exhibition period

What were the key environmental issues raised in community submissions?

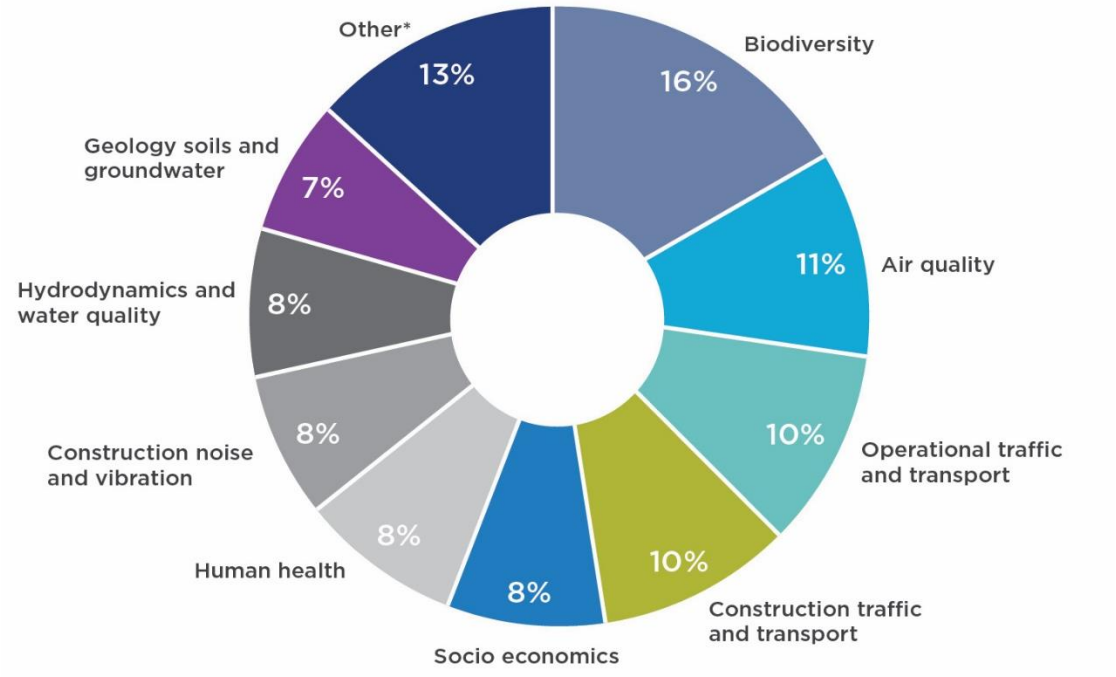
A total of 1549 submissions on the EIS were received. Of these, 10 were received from NSW Government agencies, four from local councils, and 1535 from other organisations and members of the public.

Each community submission on the EIS has been examined individually to understand the concerns raised. Where similar issues have been raised in different submissions, only one response has been provided. Issues raised related to:

- environment
- project development and alternatives
- strategic context and project need
- stakeholder and engagement
- project description
- assessment process
- construction work.

The key environmental issues raised are shown in the following chart. For more information on issues raised, please refer to Part A of the submissions report.

Key environmental impact issues raised in community submissions



Note: 78% of community submissions received related to environmental issues, and a breakdown of these is shown in the above chart.

*Other issues included:

- Land use and property
- Urban design and visual amenity
- Greenhouse gas and climate change
- Heritage
- Operational noise and vibration
- Sustainability
- Resource use and waste management
- Cumulative impacts
- Flooding
- Hazards and risks
- Related projects

What refinements have been made since the EIS exhibition?

Your feedback received during the EIS exhibition has been used to further refine the project design and update environmental management measures. Further design refinements outlined in the submissions report and PIR include but are not limited to:

Improving pedestrian and cyclist connectivity across Wakehurst Parkway, Frenchs Forest

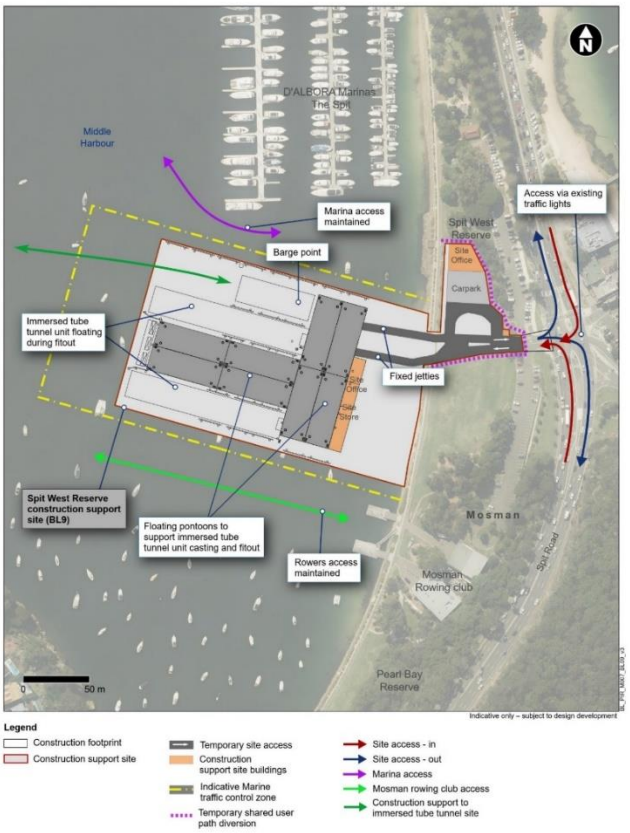
We have realigned the Wakehurst Parkway shared user bridge ramps at Frenchs Forest, following further consultation with NSW Department of Education (School Infrastructure) and Northern Beaches Council. The new alignment will provide direct pedestrian and cyclist connectivity between Fitzpatrick Avenue East and Aquatic Drive, as well as facilitate access to the Warringah Aquatic Centre and proposed new Forest High School on Allambie Road, which can be accessed via Aquatic Drive. The new alignment will reduce the area of Duffys Forest endangered ecological community impacted by the project and avoid permanent impacts to the Jumping Jack mountain bike trail.

Reducing impacts to Spit West Reserve, Mosman

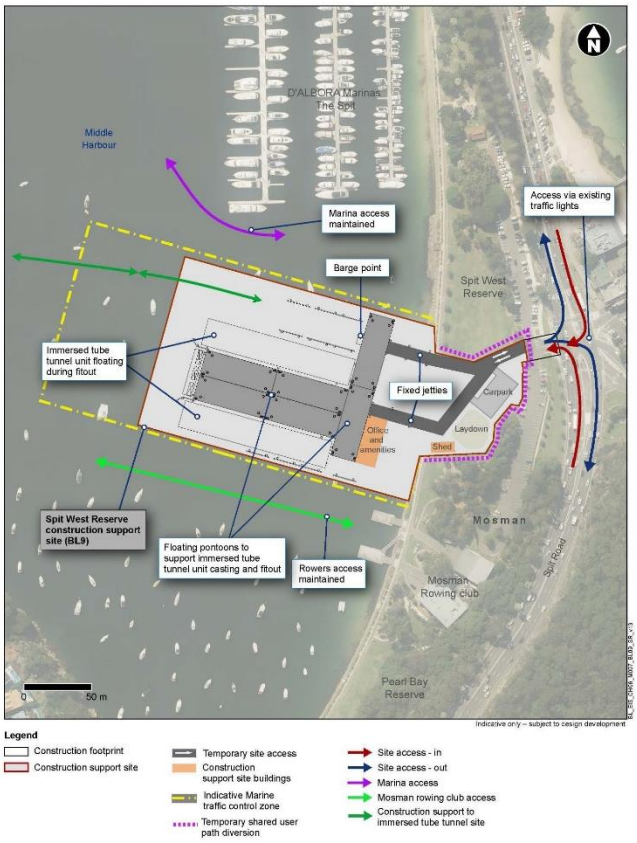
Following further consultation with Mosman Council and recreational user groups, we have reconfigured the Spit West Reserve temporary construction support site. The reconfiguration will reduce impacts to recreational users of the reserve during construction by maintaining access to the majority of current facilities, such as playing fields for soccer, netball, cricket, running and school sport.

Transport for NSW is committed to continuing to work with Council and community groups to investigate further opportunities to reduce impacts from our work to the park and its activities.

For more information on the design reconfiguration, including potential netball court and soccer field configurations, see Section 3 of the PIR.



Reconfigured Spit West Reserve temporary construction support site (as presented in Section 3 of the PIR)



Previous design of Spit West Reserve temporary construction support site (as presented in EIS)

Reducing impacts to the local mountain bike trail network

We understand the importance of the mountain bike trails around Wakehurst Parkway to the local community. We are committed to further refining the design of Wakehurst Parkway in consultation with Northern Beaches Council and key bicycle user groups to avoid or minimise impacts to the local mountain bike trail network, where possible, both during construction and operation of the project.

Reducing flooding impacts to residential properties upstream of Burnt Bridge Creek

Transport for NSW is committed to minimising and/or eliminating adverse impacts in residential developments located upstream of Burnt Bridge Creek Deviation. Following exhibition of the EIS, Transport for NSW is carrying out further refinement of the Reference Design to reduce road levels at the existing creek crossing of Burnt Bridge Creek so that, subject to final detailed design and final flood modelling, the impacts upstream of Burnt Bridge Creek Deviation can be minimised to the greatest extent possible. Transport for NSW commits to designing the project such that the flood hazard in existing residential development during floods larger than 1% AEP would not be significantly increased such that there would be an increased risk to life.

How do I find the response to my submission?

Each submission was examined in detail to identify and understand the issues raised. The content of each community submission was reviewed based on key issues. The issues raised in each submission have been categorised, collated and summarised with responses provided in the submissions report.

The relevant chapters in the submissions report regarding submissions is as follows:

- Part A (Introduction, overview of engagement and submissions received, refinements and clarifications)
    - Section A3 (Submissions received) provides an overview of this submissions received including a summary of the issues raised
- Part B (Response to stakeholder submissions)
    - Section B1 to B14 provide responses to stakeholder submissions. This includes setting out the issues raised in key stakeholder submissions on the EIS and responses to those issues. Key stakeholders include government agencies and local councils
- Part C (Response to community submissions)
    - Section C1 to C29 provide responses to the issues raised in community submissions associated with planning and statutory requirements, strategic justification and project need, project development and alternatives, project operation, construction works, consultation and the potential environmental impacts of the project and presents responses to those issues.

Why haven't more changes been made?

During 2017, 2018 and the 2020/21 EIS exhibition period we carried out extensive engagement to seek your feedback on the various stages of the Beaches Link and Gore Hill Freeway Connection design. Leading up to and throughout this time, a wide range of subject matter experts have carefully planned a design which balances the project's objectives while also minimising impact on the community and environment. Your feedback has been critical at each stage in helping us refine this design and make various positive changes to the project, a number of which were presented in the EIS. The changes we have made in response to community feedback are those which we are confident would provide the best outcome. These changes included:

Reducing impacts on Burnt Bridge Creek, Balgowlah

The proposed tunnel portal location at Burnt Bridge Creek Deviation has been shifted further to the south. This enables us to reduce traffic staging works on Burnt Bridge Creek Deviation, reduce our impacts on Burnt Bridge Creek and eliminate the need to demolish and replace the existing Kitchener Street Bridge, which minimises impacts to grey-headed flying fox habitat north of Kitchener Street.

Improving access to Beaches Link and the new and improved open space and recreation facilities at Balgowlah

We have worked with the community on a number of alternatives to connect Beaches Link with Sydney Road, provide access for users of the new and improved public open space and recreation facilities at Balgowlah, and deliver a solution that provides the best outcome for the community. As a result, in conjunction with shifting the tunnel portal further to the south, we have redesigned the permanent access road to reduce its length, move it away from residents, and allow open space to be returned to the community earlier.

Maximising usable community space in the final layout at Balgowlah

We have redesigned the connection at Balgowlah to return an area equivalent to around 90 per cent of the current open space at Balgowlah to the community as new and improved open space and recreation facilities. The redesign allows for earlier completion and handover of some new open space and recreation facility areas. The final layout will be determined based on community input as part of a dedicated consultation process to be jointly led by Transport for NSW and Northern Beaches Council. An expression of interest for participation in the consultation process is expected to be released to the community in 2022.

Maximising distance between construction activities and community facilities at Willoughby and Northbridge

Using the eastern side of Flat Rock Drive as a temporary construction support site provides a greater distance between the site and the Willoughby Leisure Centre indoor facilities, netball courts and car park,

and avoids direct impacts to the baseball diamond. Construction vehicles will have direct access to and from the site via Flat Rock Drive.

Moving the tunnel connection to Wakehurst Parkway at Killarney Heights further north to reduce impacts to the surrounding community

The tunnel entry and exit ramps at Killarney Heights have been moved about 450 metres further north along Wakehurst Parkway. This will reduce construction and operational impacts for the surrounding community as well providing an improved tunnel connection to Wakehurst Parkway. This also reduces impacts on Duffys Forest. This significant design change was adopted following community engagement on the concept design in 2017.

Reducing impacts of the Wakehurst Parkway construction support site, near Kirkwood Street, on the surrounding community

Using the Sydney Water land north of Kirkwood Street as a temporary construction support site minimises impacts to residents and Seaforth Oval. After construction, the section of this site not required for Sydney Water operations will be incorporated into the Manly Warringah War Memorial State Park for the community to enjoy. Please note, the project may be subject to additional refinements during further design development. Additional refinements would be considered in accordance with the process outlined in Section 28.3 of the EIS.

Can I provide feedback on the submissions report?

The assessment and approval process for the project is discussed in Chapter 2 (Assessment process) of the EIS. The public exhibition of the EIS provided the community and key stakeholders (including government agencies and councils) with the opportunity to comment on the EIS, and this was the period when submissions could be made. However, we always encourage you to contact us with any questions you may have about the EIS, submissions report or PIR. The project team can be contacted by phone 1800 931 189 or email whtbl@transport.nsw.gov.au

The submissions report provides responses to the submissions made during the EIS exhibition period. In response to a request by DPE, we have also prepared a PIR to provide additional information, describe design changes and provide further assessment of economic, environmental and social impacts of the project. The submissions report and PIR are available on the DPE Major Projects website (www.planningportal.nsw.gov.au/major-projects/project/10456) and the project interactive online portal (nswroads.work/blportal). DPE will, on behalf of the NSW Minister for Planning, review the EIS, the submissions report and the PIR for the project. Once DPE has completed its assessment, the assessment report will be provided to the NSW Minister for Planning, who will then make a determination on whether to approve the project. If approved the project would be constructed and operated in accordance with the environmental management measures described in the EIS, submissions report and PIR, and Minister's Conditions of Approval.

Preferred infrastructure report

What is a preferred infrastructure report (PIR)?

In response to a request by DPE, we have prepared a PIR to provide additional information and provide further assessment of environmental and social impacts of the project.

What does the PIR cover?

The report includes:

- further information on alternative locations and potential impacts considered during selection of the Flat Rock Drive temporary construction support site
- assessment of the reconfiguration of the Spit West Reserve temporary construction support site and potential impacts to recreational users of the area
- further assessment of predicted water quality impacts in Middle Harbour from the sill created by the immersed tube tunnels across the harbour
- assessment of the proposed location for the temporary onshore loadout facility for dredged and excavated material not suitable for offshore disposal
- further assessment potential impacts to local road intersections due to traffic changes during the operation of the project.

For more information, please refer to the PIR.

Can we make submissions on the PIR?

We have provided the submissions report and PIR to DPE to help inform the Minister for Planning when making a decision on approval of the project. These documents are not being publicly exhibited for the community to make further submissions.

However, we always encourage you to contact us with any questions you may have about the EIS, submissions report or PIR. The project can be contacted by phone 1800 931 189 or email whtbl@transport.nsw.gov.au

What does this mean for a decision on planning approval for Beaches Link and Gore Hill Freeway Connection?

We expect to have a decision on the project in early 2022. If the project is approved, we will build and operate it in accordance with the Conditions of Approval set by the Minister for Planning.

Flat Rock Drive temporary construction support site

Why was Option B (Flat Rock Reserve) selected as the preferred site?

In July 2018, Transport for NSW released a Proposed Reference Design for Beaches Link, which identified two options for a temporary construction support site on Flat Rock Drive at Naremburn and Northbridge:

- 'Option A', at the site of the Flat Rock Baseball Diamond located on the western side of Flat Rock Drive
- 'Option B', within part of Flat Rock Reserve on the eastern side of Flat Rock Drive.

Following extensive assessment of these options and associated impacts together with consideration of community feedback on the options, the area on the eastern side of Flat Rock Drive (Option B) was selected as the preferred location for the temporary construction support site.

As described in the EIS, selection of the Flat Rock Reserve site enabled us to avoid direct impact on nearby residential or commercial properties, the Flat Rock Baseball Diamond, and be further from the Willoughby Leisure Centre indoor facilities, netball courts and car park.

For more details, see Chapter 4: Project development and alternatives of the EIS and Section 2 of the PIR.

Why was the Flat Rock Drive site identified in the PIR?

As part of the Beaches Link EIS, Transport for NSW carried out a comprehensive options analysis process in identifying the preferred location for the Flat Rock Drive temporary construction support site, situated within Flat Rock Reserve. This process considered environmental, social, traffic, property and construction impacts and is summarised in Chapter 4, Section 4.5.7 Temporary construction support site location alternatives of the EIS.

The social and environmental impacts associated with this temporary construction support site were thoroughly assessed in the EIS. Transport does not propose relocating the Flat Rock Drive temporary construction support site, however, in response to a request by DPE has provided additional information in the PIR regarding the alternative locations and potential impacts considered during selection of the Flat Rock Drive temporary construction support site.

Please see Section 2 of the PIR for more information on the comparative analysis and selection process.

Why can't another location away from Flat Rock Drive be chosen?

For a tunnelling project of the scale of the Beaches Link and Gore Hill Freeway Connection project, an intermediate or mid-tunnel site is needed to complete Beaches Link in a timely and safe way. Without a mid-tunnel site, the construction program would be extended by 18-24 months due to the long tunneling distances required. This would significantly extend the duration of construction-related impacts on the community, particularly in Artarmon and Cammeray. It would also result in unacceptable costs, potential safety implications and difficulties in procuring a contractor to carry out these works.

The majority of Beaches Link is proposed to pass beneath highly urbanised suburbs, including Naremburn, Northbridge and Willoughby, which have limited arterial roads. This presents a significant challenge to establishing an appropriate intermediate tunneling or mid-tunnel site for a number of reasons:

- it would likely require the acquisition of a significant number of properties, including additional private residential and commercial properties
- construction haulage would need to take place on local roads and
- the tunnel is particularly deep below these communities, which may increase the volume of tunnelling required, leading to a longer construction program.

For more information, see sections 2.3 and 2.4 of the PIR.

Why isn't Option A (Flat Rock Baseball Diamond) the preferred site?

The PIR outlines a comparative analysis of Option A and Option B which was carried out to inform the site selection process for a temporary construction support site at Flat Rock Drive. This process assigns a risk rating to assessed categories and compares these for a range of potential environmental, social, traffic, property and construction impacts across the two options. Given the assessment carried out during the design development in 2018 and additional assessment documented in this PIR in response to community and stakeholder feedback, Option B continues to be the preferred option for the Flat Rock Drive construction support site for the following reasons:

- Reduced impact to the community as there would be no impact to organised sporting facilities within Bicentennial Reserve, and community and recreational activities at Flat Rock Reserve will still be possible throughout construction of the project
- A greater distance between the site and the sporting facilities at Bicentennial Reserve including Willoughby Leisure Centre indoor facilities, netball courts or car park reducing amenity impacts to, and community enjoyment, of these facilities
- Reduced risk of contamination impacts at Option B. There would also be a lower human health risk associated with exposure of the potential release of landfill gases at Option B compared to Option A
- Fewer heavy vehicle movements due to shorter access decline and less spoil generation
- A faster construction program due to the shorter tunnel access decline and commencement of excavation of the mainline tunnels much closer to Middle Harbour than Option A
- Shorter traffic and transport impacts, noise and vibration impacts, air quality and human health impacts, water quality and flooding impacts, land use and property impacts, community and social impacts, visual impacts and cumulative impacts due to the faster construction program at Option B

- Option B would require less land to be temporarily leased from Willoughby City Council. The site would occupy roughly 5% of Flat Rock Reserve, facilitating ongoing use of the rest of the reserve by the community for active and passive recreation
- Reduced cumulative impacts due to its distance from Willoughby Leisure Centre.

We acknowledge the importance of Flat Rock Reserve to many community members. We are committed to working with them and Council to rehabilitate the site at the completion of construction work.

To review the comparison of Option A and Option B, see Section 2.6 of the PIR.

What are the plans for Flat Rock Reserve site after completion?

We understand the importance of the Flat Rock area to the local community and we are committed to rehabilitating the site once our project is completed.

We are committed to working with Willoughby Council and the local community on measures to minimise our impacts, enhance the social and environmental value of Flat Rock Reserve, and quickly and responsibly rehabilitate the site. Transport for NSW will consult with Willoughby City Council and the community (including bush care groups) to determine the vegetation and landscaping which will be used for rehabilitation, eg. selection of plant species, the final alignment of walking tracks and measures which could be taken ahead of construction commencing.

These rehabilitation measures will be implemented as soon as practicable at the completion of construction, including investigating opportunities to progressively rehabilitate the temporary construction support site. Consultation will also consider the opportunity to reuse suitable timber and root balls not used by the project.

Within the first year of construction at the Flat Rock Drive temporary construction support site, Transport will develop a Flat Rock Drive Social Value Strategy. The strategy will be developed in consultation with Willoughby City Council and relevant community groups and will include initiatives which enhance the social and environmental value of the Flat Rock Reserve. These initiatives, which will be implemented during construction and for three years post the completion of construction, will seek to:

- enhance the Flat Rock Reserve, including in the areas of access, amenity and facilities
- support existing Council and community outcomes, initiatives and programs
- partner with educational facilities and other stakeholders in research.

Examples of initiatives could include:

- increasing vegetation bordering the Flat Rock Drive construction support site to provide further screening and accelerate its rehabilitation
- contributing to the implementation of the Flat Rock Reserve Action Plan
- salvaging and translocating plants for reuse by Council and community groups
- implementing a seed collection program for reuse by the project, Council and community groups
- researching into the climate resilience of landscape communities, using new software which tracks the performance of rehabilitation and performance of rehabilitation as fauna habitat.

For additional information on this, please also see Section 2 (Flat Rock Drive temporary construction support site (BL2) options analysis) of the PIR.

Spit West Reserve temporary construction support site

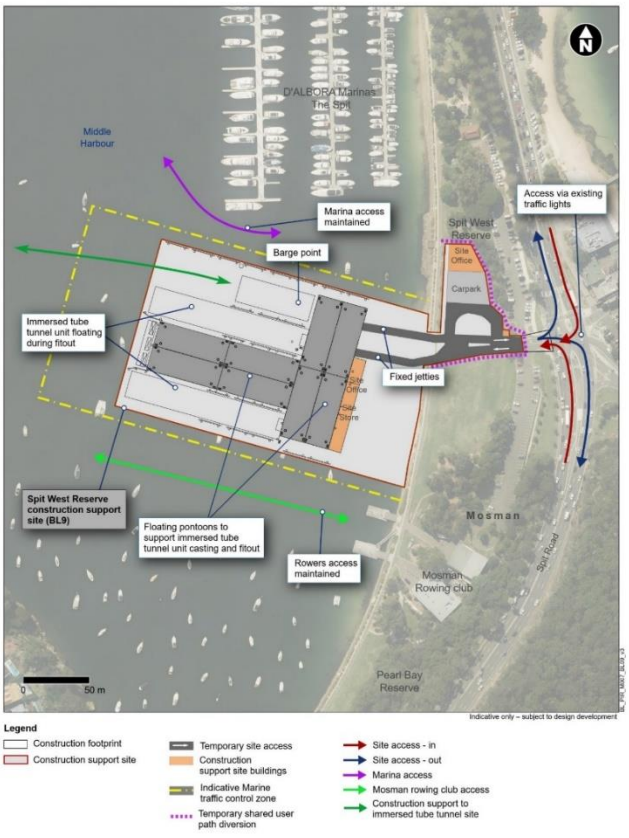
Why was Spit West Reserve identified in the PIR?

Mosman Council's EIS submission identified that the proposed Spit West Reserve temporary construction support site (BL9) would impact on recreational users of the land-based area, including several groups who use the area for junior sport. Through consultation with Mosman Council following the exhibition of the EIS, Transport for NSW received more detailed information on the location and configuration of soccer playing fields and turf netball courts within Spit West Reserve. Transport for NSW has subsequently assessed a reconfiguration of the Spit West Reserve construction support site (BL9) to reduce impacts to recreational users of the reserve. Mosman Council's submission can be viewed here on the Major Projects website.

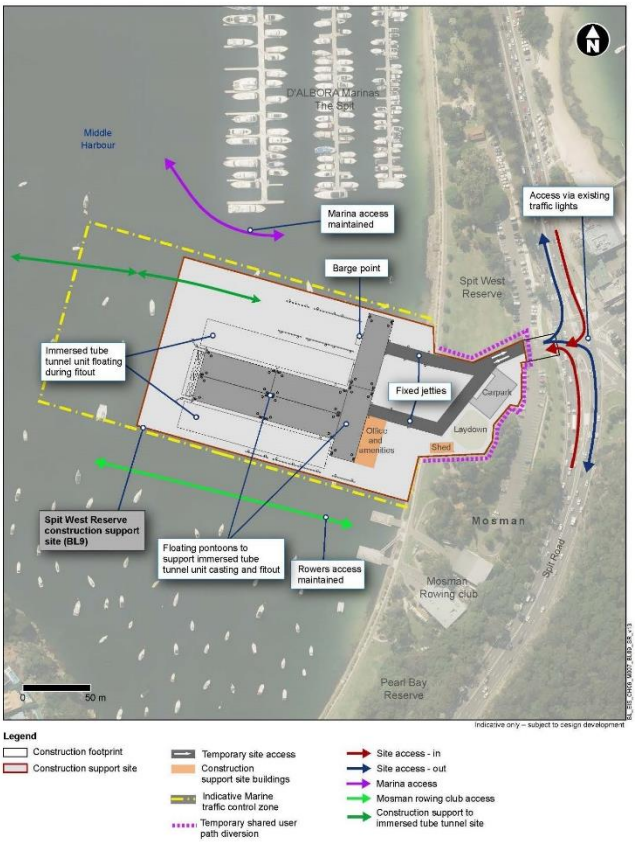
What changes have been made to the proposed construction site at Spit West Reserve, Mosman?

Following further consultation with Mosman Council and recreational user groups, we have reconfigured the Spit West Reserve temporary construction support site. The reconfiguration will reduce impacts to recreational users of the reserve during construction by maintaining access to the majority of current facilities, such as playing fields for soccer, netball, cricket, running and school sport. A diagram of the reconfigured site design is below.

Transport for NSW is committed to continuing to work with Council and community groups to investigate further opportunities to reduce impacts from our work to the park and its activities. For more information on the reconfiguration, including potential netball court and soccer field configurations, see Section 3 of the PIR.



Reconfigured Spit West Reserve temporary construction support site (as presented in Section 3 of the PIR)



Previous design of Spit West Reserve temporary construction support site (as presented in the EIS)

Water quality at Middle Harbour

What concerns were raised about environmental impacts in Middle Harbour?

During the Beaches Link EIS exhibition period, concerns were raised by DPE and Northern Beaches Council over the potential impacts on dissolved oxygen and marine ecology in Middle Harbour from the sill created along the seabed by the immersed tube tunnel units. Given Middle Harbour's unique terrain (bathymetry) and water-flow patterns, additional in-depth modelling and monitoring was requested to enable further assessment of impacts, confirm the findings of the EIS and develop any additional mitigation measures that may be necessary.

What were the findings of the additional assessments undertaken to address concerns?

Modelling carried out for the PIR (refer Section 4 of the PIR) supports the conclusions made in the EIS. The immersed tube tunnels would only slightly decrease concentrations of dissolved oxygen near the bed of the harbour in deeper waters after heavy rain from what would be expected to occur under natural conditions. It would also not substantially increase the duration of occasionally naturally low dissolved oxygen concentrations. The small changes predicted would be confined to an area of deeper water in the deep basin immediately upstream of the immersed tube tunnels. The magnitude, duration, and spatial scale of the effect of the immersed tube tunnel sill to benthic fauna in these areas would not be measurable beyond natural impacts from occasionally low dissolved oxygen events. Given sensitive fish habitat, such as seagrass or subtidal rocky reef, are located in shallow water close to the shoreline of Middle Harbour, these habitats would be unaffected by any changes in dissolved oxygen levels in deeper waters immediately upstream of the immersed tube tunnel sill.

The modelling indicates dissolved oxygen levels near the seabed is sensitive to the assumed high sediment oxygen demand. As such, a new environmental management measure WQ20 (refer to Appendix C of the PIR) has been proposed to carry out pre-construction monitoring as follows:

Monitoring of dissolved oxygen, temperature, salinity, turbidity and sediment oxygen demand will be monitored for a period of 12 months prior to construction in Middle Harbour. The monitoring will include:

a) Vertical profile monitoring of dissolved oxygen, temperature, salinity and turbidity at one location within the deep basin upstream of the immersed tube tunnel location where the changes to dissolved oxygen are predicted to occur

b) Monthly vertical profiling of dissolved oxygen, temperature, turbidity and salinity upstream and downstream of the immersed tube tunnel location at up to six locations within Middle Harbour

c) Monthly sampling of sediment oxygen demand at the location in a) above and every three months at each upstream vertical profile site in b) above.

The need for further modelling or post-construction monitoring of potential dissolved oxygen changes will be determined following the completion of the pre-construction monitoring.

For more information, refer to Section 4 of the PIR and Appendix Q (Marine water quality) and Appendix T (Marine ecology) of the EIS.

Temporary onshore loadout facility

Why is a loadout facility needed?

Removal of sediment from the bed of Middle Harbour would be required as part of cofferdam construction and to form the partial trench for the installation of the immersed tube tunnels at the Middle Harbour crossing, as outlined in Section 6.4.4 of the EIS.

While much of the material to be dredged from Middle Harbour is suitable for offshore disposal, our assessments indicate approximately 12,000m^3 of sediments to be dredged from the top zero to one metre of the seabed will not be suitable for offshore disposal (see Table 7-1 in Appendix P: Hydrodynamic and dredge plume modelling of the EIS). This material would be classified as general solid waste due to exceedances of the screening level for copper, lead, mercury, silver and zinc.

Dredged and excavated materials not suitable for offshore disposal would be loaded onto hopper barges and treated on board at Middle Harbour before being transported to a temporary onshore loadout facility outside of

Middle Harbour. At the loadout facility material would be transferred directly from the barges into trucks and disposed of at a suitably licenced waste facility as general solid waste.

As part of the project planning, a suitable loadout facility for handling and transferring this material is required. For more information, see Section 5 of the PIR.

What options have been assessed/recommended for the loadout facility?

Since exhibition of the EIS, Transport for NSW has considered multiple potential locations for the loadout facility. Middle Harbour does not have any viable existing locations for a loadout facility, nor are there viable options for a temporary loadout facility within Middle Harbour due to a lack of suitable wharves and the limited availability of land within Middle Harbour. Potential locations for a loadout facility are therefore outside of Middle Harbour.

The loadout facility is expected to be needed for only four weeks, meaning options that use existing wharfage will avoid impacts associated with establishing a new temporary facility.

Transport for NSW has proposed a site at the Port of Newcastle as the preferred site for the temporary loadout facility at this stage of the design and development of the project. Should the loadout facility be located at the Port of Newcastle, the treated material would be transported by barge to Port of Newcastle. There would be no storage of material at the Port of Newcastle. Upon arrival at the Port the material would be loaded directly into trucks, which would then be sealed and covered for transport to a suitably licensed waste facility.

Transport will continue its commitment to the environment, as well as the local community and will keep all stakeholders updated throughout this process.

Transport for NSW is continuing discussions with Port of Newcastle and the Port Authority of NSW. The final location of the loadout facility may be subject to change during further design development in consultation with a contractor/s, once engaged. For more information on the site selection process, see Section 5.3 of the PIR.

For more information about the proposed loadout facility at the Port of Newcastle, please refer to our fact sheet.

Road intersections

Why were road intersections identified for review as part of the PIR?

Beaches Link and the Gore Hill Freeway Connection is likely to result in redistributions of traffic. While overall road network performance and travel time is expected to improve as a result of the project, Transport for NSW acknowledged in the project EIS that the redistribution of traffic may cause localised delays at some intersections.

For DPE to carry out its evaluation of the project, DPE requested Transport for NSW carry out further analysis and provide additional information to confirm any potential impacts to individual intersections due to the delivery of the project, and on how any impacts would be managed.

Will these localised intersection delays mean increased time on the road?

The EIS acknowledges that some intersections will experience localised delays during operation. However, given that many other intersections and corridors would experience improved performance, it also identifies that the substantial broader network benefits of the project would offset these localised delays for the majority of road users. In any one journey, it is expected a customer will travel through several intersections and road corridors, and therefore benefit from a net improvement in their overall travel time.

Traffic modelling and analysis carried out has demonstrated that the project is not expected to create significant residual adverse impacts on local roads within the project area.

For more information on operational traffic performance, see Section 6 of the PIR and Chapter 9 (Operational traffic and transport) and Appendix F (Traffic and transport) – Part 1 and Part 2 – of the EIS.

Which intersections/road corridors were reviewed as part of the PIR?

As part of the PIR process, Transport for NSW has provided further detailed traffic information and analysis for the below road corridors, as requested by DPE:

- Warringah Freeway and surrounds:

    - Amherst Street: West Street to Miller Street (Local road corridor)
    - Ernest Street: Merlin Street to Miller Street (Regional road corridor)
    - Miller Street: Falcon Street to Pacific Highway (Regional road corridor)
    - Brook Street: Merrenburn Avenue to Chandos Street (Regional road corridor)
- Gore Hill Freeway and Artarmon:
    - Reserve Road: Barton Road to Dickson Avenue (Local road corridor)
- Balgowlah and surrounds:
    - Sydney Road: Frenchs Forest Road to Wanganella Street (State road corridor)
- Frenchs Forest and surrounds:
    - Frenchs Forest Road: Warringah Road to Gladys Avenue (Local road corridor)
    - Warringah Road: Hilmer Street to Frenchs Forest Road (State road corridor)

What were the outcomes of the PIR and were any changes implemented?

The additional traffic modelling and analysis carried out for the PIR demonstrates the project is not expected to create significant residual adverse impacts on local roads within the project area. This is consistent with the findings presented in the EIS.

In the two areas where there is the potential for relatively minor adverse impacts – Warringah Freeway and surrounds, and Frenchs Forest and surrounds – any potential residual impacts would be mitigated by complementary public transport and demand management initiatives. This is consistent with the approach currently proposed by relevant, separate projects and processes in these areas.

Transport for NSW will continue to collaborate with relevant stakeholders through existing processes and forums (such as the North Sydney Integrated Transport Program, and Northern Beaches Hospital Precinct Structure Plan forums) to implement public transport and demand management initiatives to mitigate any residual impacts and pinch points and improve movement and place outcomes.

Topic specific questions

Active transport / shared user paths

How will you be managing impacts to active transport/shared user paths?

We are committed to minimising direct impacts to existing pedestrian and cycling facilities where possible. Whether we are designing a temporary detour route or a permanent route, we will design shared user paths in line with appropriate road safety standards and guidelines, taking into consideration user safety and convenience. This includes planning and seeking approval for changes to the various shared pathways. Our objective is to provide a safe solution for future users of the paths.

For more information on construction impacts, see Chapter 8: Construction traffic and transport of the EIS. For details on operational impacts, including changes to active transport infrastructure, refer to Chapter 9: Operational traffic and transport of the EIS. In addition, please see Part C sections C7.7 and C8.8 of the submissions report.

Air quality

Where are the ventilation outlets?

There will be ventilation outlets at the following locations:

- Within the Warringah Freeway at Cammeray (the structure will be built as part of the Western Harbour Tunnel and Warringah Freeway Upgrade project)
- The industrial area adjacent to the Gore Hill Freeway at Artarmon
- Next to Burnt Bridge Creek Deviation at Balgowlah
- Within Wakehurst Parkway at Killarney Heights

These can be viewed on our interactive map.

Will they be filtered?

The independent NSW Chief Scientist and Engineer has released a report in relation to road tunnel air quality.

The report found that emissions from well-designed road tunnels cause a negligible change to surrounding air quality, and as such, there is little to no health benefit for surrounding communities in installing filtration and air treatment systems in such tunnels.

The use of ventilation outlets in combination with mechanical ventilation ensures that vehicle emissions from within the tunnel are dispersed effectively into the atmosphere.

You can learn more about ventilation systems, filtration and air treatment systems by visiting chiefscientist.nsw.gov.au or nswroads.work/airquality.

Will those ventilation outlets be close to schools or community facilities?

Our commitment is that the tunnels will be built to meet strict air quality standards using state-of-the-art ventilation and tunnel design.

Moving traffic into underground tunnels will also reduce traffic on surface roads, allowing local streets to be returned to local communities.

Our assessments have shown emissions from the ventilation outlets for the project will have a negligible contribution to surrounding air quality and will be generally undetectable.

The ventilation outlets will be continuously monitored. The EPA will regulate the ventilation outlets to ensure they meet air quality limits.

Will air quality monitoring be made available to the public?

We understand community concerns about air quality, which is why in 2018, the NSW Government announced stronger measures on emissions from motorway tunnels.

In NSW, DPE monitors, analyses and publishes information about air quality. The EPA regulates air quality

and implements measures for managing and reporting air pollution.

Beaches Link and its associated ventilation systems would be built and operated in compliance with any conditions of approval set by DPE. Further, the monitoring of ventilation outlet emissions during operation would be regulated under an Environment Protection Licence (EPL) prescribed under the POEO Act.

These measures include the EPA regulating the ventilation outlets for all current and future operating motorway tunnels to ensure they meet air quality limits. As part of these measures additional checks are required as part of the environmental assessment process.

We will continuously monitor air quality within the ventilation outlets and tunnel 24 hours a day during operation and use real-time data to ensure we are meeting strict air quality criteria. Air quality data will be available to the public to view on a dedicated webpage showing the tunnels are achieving the required levels of air quality. In addition, ambient air quality monitoring will also be carried out for 12 months before, and a set period of time, likely at least 24 months, after the tunnel opens to verify everything is performing as expected and confirm we are meeting air quality standards.

How big will the ventilation outlets be?

The EIS air quality impact assessment considers the following height of ventilation outlets:

- Warringah Freeway outlet: approximately 30m high
- Gorehill Freeway outlet: approximately 25m high
- Wakehurst Parkway outlet: approximately 25m high
- Burnt Bridge Creek Deviation outlet: approximately 20m high.

Please note the final dimensions of the four ventilation outlets for Beaches Link would be determined during detailed design. Please see Chapter 5: Project description of the EIS for more information relating to the ventilation outlets.

Will air quality within Beaches Link be safe for motorcycle riders?

Yes, it will. Extensive analysis has been conducted and the tunnel is designed to meet the in-tunnel air quality requirements for human health. This has included assessing for worst-case scenarios such as major traffic breakdowns, as well as extended in-tunnel travel such a continuous journey through both Beaches Link and Western Harbour Tunnel.

While individuals using motorbikes would not have the opportunity to reduce exposure inside the tunnel through the use of vehicle ventilation controls, the time spent inside tunnels under congested conditions would be less than other users given their ability to lane filter during heavy traffic.

For more information on in-tunnel air quality assessments, see Chapter 12: Air Quality of the EIS and for information on the tunnel ventilation system, see Chapter 5: Project description of the EIS. Please also refer to Chapter 13: Human Health and Appendix I: Health impact assessment of the EIS for further details on the health impacts associated with in-tunnel air quality criteria.

COVID-19

Does COVID-19 impact the business case for Beaches Link?

With more than 12 million people expected to live in NSW by 2056, we are continuing to invest in and build transport infrastructure to support current and future generations.

Improvements to road, rail and public transport will ensure our transport network enables easier, faster and safer journeys. That's why the NSW Government is investing $107.1 billion in infrastructure over the next four years, including $72.2 billion for roads and public transport, helping to grow the NSW economy and create tens of thousands of jobs in the process.

We always need to strike the right balance between future forecasting and where projects are needed most, but the people of NSW should be assured we are committed to keeping major projects going, even during uncertain times like these.

While the pandemic (along with other unprecedented events such as bushfires) presents short- to medium-term challenges for Sydney (and NSW more broadly), the project has been developed with a long-term view to address the challenges Greater Sydney will face over the next 40 years, to enable and accommodate

growth, and to deliver long-lasting benefits for road users, commuters, communities and businesses. As such, the need for this project, and other strategic transport projects, to meet the demands of a growing population and economy remains critical to ensuring the future success of Sydney.

Will modelling be redone to reflect changes in traffic due to COVID-19?

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

At this time, long-term impacts to traffic from COVID-19 are still unknown, and current traffic conditions and travel behaviours are the result of a variety of temporary factors, including reduced public transport capacity and demand. Ongoing traffic and transport monitoring shows that traffic in the project area has already returned to levels near that of the pre-COVID-19 period. Given the continually evolving nature of current conditions, and also the relative stability of traffic levels, while noting some traffic is likely related to suppressed demand for public transport, there is no plan at this time to review the modelling done for the Beaches Link EIS.

Transport will continue to monitor and analyse the potential long-term effects of COVID-19 on travel demand, including changes to existing travel conditions as well as future travel behaviours and underlying economic demand drivers.

Construction

During what time will construction work and heavy-vehicle movements occur?

General site activities and spoil haulage would be carried out during standard construction hours (**7am to 6pm Monday to Friday, 8am to 1pm Saturday**). No spoil haulage or surface civil works would occur on Sundays or public holidays.

Tunnel construction and fitout would be carried out up to 24 hours per day, seven days per week either within an acoustic shed or underground. Night-time deliveries would be required to support the tunneling activities.

There will be situations where night work will be required. For instance, some minor activities, such as concrete delivery (required for the safety reasons during tunneling), may occur intermittently at night. Additionally, to keep people moving on the busy Warringah Freeway and Gore Hill Freeway during peak travelling times, some of our work will need to be carried out outside of standard construction hours.

We will notify affected residents before starting any work outside of standard construction hours. Some traffic staging works will need to be carried out at night.

Detailed information on the various construction-related activities and the times in which they'll take place case be found in Chapter 6: Construction, Section 6.9.1 of the EIS. In addition, Section 6.8.2 of the EIS details the activities that will occur at each temporary construction support site.

Where are the construction sites located?

There are 14 temporary construction support sites proposed including tunnelling and tunnelling support sites, surface work sites, cofferdams, mooring sites, wharf facilities, laydown areas, parking and staff amenities. They will be located at Cammeray, Northbridge, Artarmon, Mosman, Balgowlah, Seaforth, Killarney Heights and Frenchs Forest.

We encourage you to read Chapter 2 of the community guide to the EIS to find out more.

How were the construction sites selected?

We have carefully selected each of our temporary sites to limit our impact on you while we are working and to keep your neighbourhoods and streets safe duringconstruction.

To minimise impacts on the community, our temporary sites generally:

- are located as close as possible to the tunnels or surface work they support to minimise unnecessary tunnelling or heavy vehicle movements
- have direct access to main roads or water so our vehicles will not be travelling on your local streets, wherepossible
- reduce the amount of private property we need to acquire or impact

- avoid sensitive environments and community locations where possible
- are mindful of not intruding on open space any more than is absolutely necessary
- avoid impact on heritage sites or items
- maintain access to public facilities such as shared user paths, where possible.

What sort of disruption will residents experience during construction of Beaches Link?

This EIS assessed the environmental impacts during construction and operation of the project, and detailed our mitigation measures to manage these. Additional assessments and updated mitigation measures were also provided as part of the submissions report and PIR.

We acknowledge a project of this scale cannot be constructed without some impacts. However, through our community engagement in 2017, 2018 and 2020-21, we have heard your concerns and taken many of them on board to refine the design.

The NSW Government is committed to minimising disruptions to residents. For more information on how we propose to reduce our impacts, see Section 3 of our community guide to the EIS, together with Part D (Revised environmental management measures) of the submissions report.

How will construction dust be managed?

The effects of airborne dust during construction works would likely be temporary and of relatively short duration. For all construction works, the aim would be to prevent dust-related impacts on receivers through the implementation of best management practices routinely used on construction sites. Mitigation measures could include:

- suppressing dust with water
- covering stockpiles of loose materials or applying seeding and temporary revegetation and grassing if stored for longer periods
- cleaning up loose materials from hard surfaces
- stabilising unsealed areas
- maintaining tunnel spoil stockpiles in acoustic sheds or underground to avoid the generation of dust during unloading and loading of spoil
- selection of equipment and materials handling techniques that minimise the potential for dust generation
- ceasing dust generating activities during unfavourable weather conditions or changing how they are managed to minimise dust emission

Site inspections and activity supervision to monitor the effectiveness of implemented measures and identify any additional measures, if required, will be implemented.

In addition, we will prepare a Construction Environment Management Plan (CEMP) to outline measures to be implemented onsite to manage dust. This CEMP will be prepared in consultation with the relevant government agencies and will be reviewed and approved by DPE.

How accurate is the current design and when will residents know the exact depth or distance of the tunnel from their property?

To view your property in relation to the tunnel, visit our interactive map and enter your address in the search bar. For more detailed information and maps of properties in relation to tunnel alignment and various construction scenarios (for example, tunnelling vibration), see EIS Appendix G: Noise and vibration – Part 1, Part 2 and Part 3.

The proposed design in the EIS, including tunnel depths, is indicative and is subject to detailed design by the contractor/s. To view the current tunnel depth (vertical alignment) estimates, see pages 5-18 to 5-20 of Chapter 5: Project description in the EIS. Once exact depths are confirmed, an online tunnelling tool will be made available via which you will be able to view the tunnel depth below each property.

How will work for Beaches Link, Western Harbour Tunnel and Warringah Freeway Upgrade be staged?

The Beaches Link and Gore Hill Freeway Connection project and the Western Harbour Tunnel and Warringah Freeway Upgrade project are separate projects, each with their own start and completion times. There is, however, some crossover between the projects.

Major work on the Beaches Link and Gore Hill Freeway Connection project is planned to begin by 2023, subject to planning approval and procurement. The Western Harbour Tunnel and Warringah Freeway Upgrade projects have received planning approval and will commence construction before the Beaches Link and Gore Hill Freeway Connection Project. It is planned for the Warringah Freeway Upgrade to complete the surface works necessary to construct the two Beaches Link tunnel portals within the Warringah Freeway. This will assist in minimising disruption to traffic and the community in and around Cammeray. The Warringah Freeway Upgrade will carry out this Beaches Link surface work in advance when they have access to these specific areas during the staging of their works to minimise the impacts and duration of the works.

For more information on the Western Harbour Tunnel and Warringah Freeway Upgrade project, visit the interactive portal at: nswroads.work/whtportal. Additionally, if you'd like to receive email updates on any of these projects, email us at whtbl@transport.nsw.gov.au

Where will the spoil from construction work be taken to?

Transport for NSW is committed to maximising beneficial reuse of spoil generated during construction as much as possible. The management of spoil, dredged and excavated materials during construction of the project would depend on a number of factors such as the type of spoil and whether it is considered to be suitable or unsuitable for reuse.

Land-based spoil

Where possible, the project would maximise reuse of land-based spoil generated during construction. Where spoil cannot be reused for the project, opportunities to reuse this material on other development, construction or remediation sites across Greater Sydney would be identified. While actual destinations for site spoil will be determined by the contractors at a later time, potential sites are determined based on where major developments are occurring at the time and may include for example:

- Western Sydney Airport
- Moorebank Intermodal Terminal Precinct
- Kurnell Landfill
- Penrith Lakes Scheme.

Any contaminated material disturbed during construction would be separated from uncontaminated material on site to prevent cross contamination. Contaminated material would be encapsulated on site where appropriate, and in accordance with relevant regulatory requirements. Any material that is not suitable for encapsulation would be loaded into sealed and covered trucks for disposal at a suitably licenced facility.

The final destination(s) for land-based spoil excavated for the project would be determined as part of the planning for the construction phase by the contractor/s in consultation with Transport for NSW.

Dredged and excavated materials from harbour construction activities

Dredged and excavated materials suitable for offshore disposal would be transported from Middle Harbour on split hopper barges and disposed of at a designated offshore disposal site in accordance with legislative requirements and approvals. Dredged and excavated materials not suitable for offshore disposal would be loaded onto hopper barges and treated on board at Middle Harbour before being transported to a temporary onshore loadout facility outside of Middle Harbour. At the loadout facility material would be transferred directly from the barges into trucks and disposed of at a suitably licenced waste facility. For more information refer to Section 5 of the PIR.

Where will you be stockpiling tunneling spoil?

Stockpiling of tunneling spoil will occur only within the acoustic sheds or underground. Underground stockpiling supplements the capacity of the acoustic sheds, enabling ample excess tunnel spoil to be stored in case of transport delays due to conditions such as wet weather at spoil disposal sites, as well as over long weekends and public holidays.

As an example, the mainline tunnel in the vicinity of the Flat Rock Drive construction support site has two

tunnel merge caverns where the Gore Hill Ramp tunnels join the mainline tunnels. These caverns are four to five lanes wide and about 200m long and have adequate capacity for underground spoil storage if needed.

Will any stockpiling occur outside the acoustic sheds?

Limited space outside the acoustic sheds has been allocated for other earthworks if the material cannot be loaded directly onto trucks. This may include materials required for initial site set up before tunneling commences, surface earthworks and associated road works, cut and cover and trough structures. However, appropriate measures, such as bunding (for example retaining walls or floor bunding), would be in place to avoid potential impacts associated with runoff, sedimentation and leachate. External stockpiling locations would not be used for tunneling spoil.

The capacities of these external stockpiling locations can be found in Table 24-7 of Chapter 24: Resource use and waste management of the EIS.

For additional information related to stockpiling, including the environmental management measures we will carry out to reduce impacts, you may wish to refer to other chapters of the EIS:

Chapter 12: Air quality

Chapter 22: Urban design and visual amenity

Chapter 24: Resource use and waste management

How are the acoustic sheds designed to accommodate stockpiling?

The internal shed design is subject to detailed design by the contractor/s, however, there will likely be a long 'bin' structure down one side of the shed to maximise stockpile capacity and the ability for loaders to push up spoil. Surge amounts can be accommodated in tunnel caverns if required. The acoustic sheds are lined with noise dampening materials to ensure works within the sheds are limited in their impacts to the community.

Consultation

What community consultation was done prior to the EIS?

Since the project was announced in early 2017, a wide range of consultation and engagement activities have been carried out to help refine the design based on community feedback and is aimed to reduce community impact wherever possible. This includes:

- more than 7500 face-to-face conversations
- 44 community feedback and information sessions
- email blasts to 4800 stakeholders
- over 1500 telephone calls received
- over 70 meetings with community groups and key stakeholders
- 21 pop-up shopping centre displays
- over 6500 homes door knocked
- 480,000 letterbox drops
- an information portal, which attracted more than 22,000 unique visits.

Note: the above consultation and engagement was carried out for the whole Western Harbour Tunnel and Beaches Link program.

What community consultation was carried out during the EIS?

Community engagement activities during the public exhibition period of the EIS included:

- interactive portal featuring a virtual information room and interactive map
- virtual information sessions in January and February 2021
- meetings with key stakeholders and special interest groups
- door knocking impacted properties where possible and in line with COVID-19 health advice
- two letterbox drops to more than 80,000 properties each time
- project phone line and email inbox for the community to ask questions.

Were there any design changes due to community consultation ahead of the EIS?

Feedback from our extensive community consultation in 2017 and 2018 helped to refine the design and make a number of positive changes to the project during development including:

- moving proposed tunnel ramps and ventilation outlets 450 metres north from the concept design location at Wakehurst Parkway to reduce construction and operational impacts for the surrounding community as well providing an improved tunnel connection to Wakehurst Parkway.
- providing pedestrian, cyclist and fauna crossings across Wakehurst Parkway
- selecting 'Option B' for the tunnelling site at Wakehurst Parkway, being the site behind the Bantry Bay reservoir tanks, and changing construction vehicles access to the site to reduce impacts to the community during construction
- selecting 'Option B' for the tunnelling site at Flat Rock Drive, being the site to the east of Flat Rock Drive, to reduce impacts to open space and sporting precincts, avoid private property and provide trucks direct access to main roads.
- refining the Balgowlah Connection to increase the amount of public open space that can be returned, return this space earlier, improve traffic and transport outcomes and reduce impacts to Burnt Bridge Creek.

For more information on refinements made to the design following the EIS exhibition period, please see the November 2021 Community Update on our interactive portal.

Environment & biodiversity

Were electric vehicles taken into consideration in modelling for the project?

A significant uptake of electric vehicles was not included in the modelling projections. The air quality modelling, therefore, provides a conservative estimate. Should uptake in electric vehicle increase by 2027 and 2037, it is likely the air quality impacts would be less than predicted.

What impact will the project have on the environment?

All our work will be carried out in line with the project's Conditions of Approval, Environment Protection Licence (EPL), environmental management measures and Construction Environmental Management Plan which are overseen by DPE and the NSW Environment Protection Authority (EPA).

We will continue to have a dedicated team of environmental specialists to ensure ongoing consultation with DPE as required by the Conditions of Approval. We encourage you to read Section 3 of the community guide to the EIS to find out more.

How much vegetation will be removed and how will you compensate for this?

The project will not have a significant impact on threatened flora species based on the very low numbers of individuals to be removed, most of which are planted (ie. they are not native remnant).

Some of the key mitigation measures we will implement to reduce our impact on vegetation includes: further minimising vegetation removal during further design development and detailed construction planning, where possible, providing biodiversity offsets to manage impacts to native vegetation as required; replacing mature amenity trees removed as a result construction at a ratio of 2:1; and replanting vegetation within the project area where possible; and.

For more information, you may find the following chapters of the EIS helpful: Chapter 19: Biodiversity and Chapter 22: Urban design and visual amenity; and Appendix W: Arboricultural impact assessment, which includes maps that show locations of trees assessed within the study area and their potential impacts. Refer to Table D2-1 of the submissions report for details on biodiversity, vegetation and landscaping environmental management measures.

How does the project address concerns about its impact on climate change?

For information on this topic, we recommend reading Chapter 26 Climate change and greenhouse gas of the EIS, which assesses the potential impacts on climate change from the project, and includes adaptation measures that have been incorporated into the design of the project.

As per environmental management measure CC1, noted in Table D2-1 of the submissions report, the

following actions will be carried out during further design development to ensure climate change is adequately addressed:

a) Flood modelling will continue to use sea level rise projections and future climate change rainfall projections

b) The extent of scour protection will be refined

c) Sensitivity testing for future climate change will be carried out in the detailed design of drainage channels and culverts. Increased capacity will be provided where feasible and reasonable.

Further information on this can also be found in Part C, section C25, of the submissions report.

How will you reduce impacts to water quality?

For information on the various environmental management measures we will use to mitigate impacts to groundwater and waterways, including work in Middle Harbour, see Table D2-1 of the submissions report. Additionally, you find further information in section C16 of Part C of the submissions report as well as Section 4 of the PIR, which discusses the potential effects of the immersed tube tunnel sill.

How will you be ensuring the water quality will be safe during construction in Middle Harbour?

We understand the importance of managing water quality during our work in Middle Harbour, and our dredging methodology for soft sediments involves the use of a backhoe dredge with a closed environmental clamshell bucket to minimise the spread of excavated material into the water column. Further, we have also planned a wide range of environmental management measures to be carried out during our work in the area. These include but are not limited to:

- Two deep draft silt curtains (one on each side of the crossing) designed with a draft of 10-12 metres placed around the dredging activities
- Shallow draft silt curtains ('Moon pools') about two to three metres deep immediately at the dredge excavation point, attached to the backhoe dredge
- Shallow silt curtains around ecologically sensitive areas (eg. nearby seagrass and rocky reef habitat) to provide additional protection.

For more information, see Chapter 17: Hydrodynamics and water quality of the EIS.

How will you protect wildlife in the project areas?

A number of environmental management measures will be implemented to minimise impacts to fauna. For example, during construction, these may include minimising the removal of native vegetation where possible, pre-construction surveys and adaptive management measures to minmise impacts on Grey-headed Flying-foxes, among other measures. In operation, this includes establishing measures to facilitate fauna crossing across Wakehurst Parkway .

For more information, see our Flora and fauna fact sheet as well as the detailed list of environmental management measures in Table D2-1 of Part D of the submissions report. In addition, section C18 of Part C of the submissions report provides responses to concerns around this issue.

Noise and vibration

Note: *For questions relating to the Noise Insulation Program, which has been outlined in the submissions report, please see the submissions report FAQs section of this document or read Appendix I (Noise insulation program) of the submissions report.*

How have you assessed for noise?

We have used a conservative approach with investigation and assessment of potential impacts based on worst-case scenarios. For example, when we assess construction noise, we have assumed all machinery and equipment is used at the same time, at its loudest and in the location on site where it would have the highest impact on residents. This scenario is unlikely to ever occur though as we will stage work to reduce overlap of noisy work activities, where possible.

What do you consider acceptable noise levels?

While we are building, we will monitor noise and vibration to check levels are less than predicted and that they are complying with our licence conditions. We will also do this to help identify if we need to make changes to our construction methodology to minimise impacts.

All our work will be carried out in line with the project's Conditions of Approval, Environment Protection Licence (EPL) and Construction Environmental Management Plan which are overseen by DPE and the NSW EPA.

We will be using a range of measures to keep the community informed of our work and to reduce the impact of our work.

The assessment process for noise uses reference noise levels for areas, known as noise management levels (NMLs), to assess the noise impact of our work. The residential NML for an area is equal to the background noise level at the quietest time of the day or night, plus 10 decibels during the day or five decibels at night. You are considered to be affected by the noise generated by our work if it results in noise at your house being above the relevant NML. There are different NMLs for non-residential properties which may be more sensitive to changes in noise levels. This includes hospitals, schools, places of worship, childcare centres and recreation areas. We will work closely with any sensitive receivers to identify possible solutions to manage the potential impact of our work on your personal circumstances.

How can I complain if noise levels or other aspects of construction work are unacceptable?

A complaints management system will be developed and implemented before the start of construction activities for the project. This will include establishing and maintaining:

- a toll-free 24-hour telephone number(s) through which complaints and enquiries could be registered
- a postal address to which written complaints and enquires may be sent
- an email address to which electronic complaints and enquiries may be transmitted
- a mediation system for complaints unable to be resolved
- mechanism for community members to make enquiries in common community languages of the area.

The above complaints management system will be maintained during construction and for 12 months after the project is completed. For more information, see Appendix E: Community consultation framework of the EIS. To ensure you receive future updates, we recommend subscribing to our email distribution list by emailing us at whtbl@transport.nsw.gov.au.

Will trees help reduce noise impacts?

We appreciate there is a commonly held belief that vegetation helps reduce the impact of noise. However, trees do not generally provide an effective noise barrier unless there is a substantial width of vegetation. While trees can help provide a visual barrier against the source of noise and this effect alone can be a powerful mitigation tool, it cannot be relied upon to reduce measured noise levels. Where there is a dense row of trees, they may provide measurable benefit, including road traffic noise up to 3 dB(A) after 20 metres, increasing up to 7dB(A) over 120 metres of trees. We do not include the benefit of vegetation not protected from potential future development when designing noise mitigation to meet noise objectives. This is because future changes in land use clearing can prevent long-term objectives being met.

Once the ventilation outlets are operational, how noisy will they be?

While certain equipment associated with the fixed facilities, such as in-tunnel jet fans and axial fans at ventilation outlets, have the potential to emit noise that could impact sensitive receivers in the vicinity, it is not expected the ventilation outlets, once in operation, will have significant noise impacts on nearby receivers. The assessment results indicate that noise emissions from the proposed fixed facilities would comply with the relevant project noise levels established in accordance with the guidelines. Final noise predictions and assessment would occur during further design development.

Will the increase of people working from home be taken into account in the mitigation measures for noise during construction work?

There are no planned changes to noise-related environment management measurements in response to the increased number of people working from home as a result of the current COVID-19 pandemic. Given the

immediate to medium term nature of current COVID-19 conditions, the modelling approach used for the EIS is considered to be the most appropriate methodology for long-term planning and was completed in accordance with appropriate standards and guidelines. Assessments have shown that expected daytime construction noise will generally be no more than 10dB above the existing background noise levels, which is within the EPA's construction noise guidelines. However, there may be exceedances at certain locations for some construction activities, generally for short periods. Where noise management levels are exceeded there is a requirement to implement reasonable and feasible noise mitigation. Measures to avoid, minimise and mitigate the potential noise impacts from construction works during construction are provided in Table D2-1 of Part D of the submissions report.

Noise Insulation Program

What is the Noise Insulation Program?

The Noise Insulation Program involves the delivery of at-property noise treatment to mitigate the impact of noise at eligible properties. To help expedite the assessment and treatment of eligible properties, Transport for NSW has taken a proactive approach in developing the program prior to planning approval for inclusion in the submissions report (refer to Appendix I: Noise Insulation Program). Noise treatment refers to architectural acoustic measures which aim to reduce the impact of noise at properties, such as window and door treatments and mechanical ventilation.

Why has my building been identified? What happens next?

We have identified a number of buildings which are eligible for accelerated noise treatment assessments which will determine which treatments can be provided at the property. At this stage of the project, eligible properties for accelerated assessment must meet the criteria in the Noise Insulation Program and are expected to be impacted by out-of-hours construction noise for an extended duration. The list is subject to change as part of the ongoing design refinement and assessment process and further buildings may be added as the project progresses.

For multi-dwelling buildings, only some properties may qualify for a noise treatment assessment depending on their position in the building. Physical inspections may be required for us to confirm if properties meet the criteria. Further information about how properties are identified for treatment is provided in Section 2 of Appendix I (Noise Insulation Program) of the submissions report.

Additional buildings may be eligible for noise treatment assessments once we confirm the predicted operational noise impacts of the project and measures to manage these impacts. This will be done during the detailed design phase.

When will I be contacted?

If your building has been identified for a noise treatment assessment, you don't need to do anything. We will start contacting property owners prior to the commencement of construction. We will deliver the program in stages and will contact property owners progressively when we are ready to carry out an assessment.

I live near the project. Why hasn't my building been identified?

At this early stage of the project, we are providing assessments to eligible buildings which are likely to be impacted by out-of-hours construction work for an extended duration. This is so residents will benefit from reduced noise while major out-of-hours construction is carried out.

We have developed screening criteria to identify which properties qualify for noise treatment to reduce the impact of construction noise. To ensure treatment is provided equitably and consistently across the project, we can only offer noise treatment to properties which meet the criteria.

Detailed information about our criteria for noise treatment is provided in Section 2 of Appendix I (Noise Insulation Program) of the submissions report. Further buildings may be eligible for noise treatment assessments as part of the project's ongoing design refinement and assessment process.

My building was identified for operational noise treatment in the EIS. Why isn't it listed in the Noise Insulation Program?

The Noise Insulation Program outlines our approach for delivering accelerated at-property noise treatment to mitigate the impact of construction noise at eligible properties. At this early stage of the project, the document identifies buildings which qualify for accelerated noise treatment assessments to reduce the

impact of out-of-hours construction noise.

We need to carry out further work to confirm the predicted operational noise levels at properties. We will carry out detailed noise modelling during the detailed design phase. As part of this process, we will confirm properties which qualify for consideration of noise treatment to reduce the impact of operational noise.

How long does the process take?

Providing noise treatment is a complex process and it can take several months from the initial assessment until treatment is installed. Timeframes can be longer for strata buildings where we need to seek approval from owners' corporations. We will make every effort to provide treatment as early as possible, however this is dependent on property owners and owners corporations providing timely approvals and access for inspections and installation.

How can I find out more information?

Appendix I of the submissions report (Noise Insultation Program) outlines detailed information about our processes and criteria for providing noise treatment to eligible properties. If your property is identified for noise treatment, we will contact you once the project is approved. If you have questions, you are welcome to contact us on 1800 931 189 or by emailing whtbl@transport.nsw.gov.au.

Open space and recreational facilities

Will any recreational and community facilities (e.g. sporting fields, picnic areas etc.) be impacted by construction?

The project has balanced impacts to private property with temporary and permanent impacts to areas of open space. We have sought to minimise impacts on open space. There will be some temporary impacts to some recreational and community facilities where we are proposing our temporary construction support sites. Areas of public open space subject to temporary use will be rehabilitated as soon as practicable to an appropriate condition.

We encourage you to read pages 99-101 of the community guide to the EIS to find out more.

In addition, changes have been made to Spit West Reserve temporary construction site to reduce construction impacts. For these, please refer to the PIR section of this FAQ document.

What are you doing to protect the open space within the project area?

We recognise how important open space is, which is why we will be returning as much of the temporary sites we use for construction as we can as improved areas for the community to enjoy. Areas of public open space subject to temporary use will be rehabilitated as soon as practicable to an appropriate condition.

In Balgowlah, we will 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. These areas will be returned progressively. 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 consultation is expected to commence after planning approval and in advance of construction starting. As part of this consultation process, a community reference group will be established, with representative stakeholder groups and the community, to support Transport for NSW and Northern Beaches Council with the development of this important public space. An expression of interest for participation in the consultation process is expected to be issued in early 2022.

We understand the importance of the Flat Rock area to the local community and we are committed to rehabilitating the site once our project is completed. We are committed to working with Willoughby Council and the local community on measures to minimise our impacts, enhance the social and environmental value of Flat Rock Reserve, and quickly and responsibly rehabilitate the site. Transport for NSW will consult with Willoughby City Council and the community (including bush care groups) to determine the vegetation and landscaping which will be used for rehabilitation.

Property

Will any properties be acquired by the NSW Government to complete this project?

We have designed the project to minimise the need for private property acquisition, where possible. The project has balanced impacts to private property with temporary and permanent impacts to areas of open space.

We will use space efficiently and make the most of our work areas, enabling us to reduce the overall temporary and permanent operational footprint of our project. We will also need to acquire or temporarily lease a number of properties along the project alignment. These are a mixture of residential, commercial and open space.

Transport for NSW has commenced consultation with affected property owners about the acquisition process and potential adjustments required to properties. Consultation with affected residents and the community would be ongoing throughout the further design development and construction phases in accordance with Appendix E (Community consultation framework) in the EIS.

Where do the tunnels run and is my property impacted?

A tunnel project allows us to minimise property acquisition required as well as move traffic from surface roads underground.

We will be using roadheader technology for our land tunnels similar to that used on the newly opened WestConnex and NorthConnex tunnels.

We encourage you to use our interactive map to look at the proposed tunnel alignment. The tunnel alignment will be confirmed during further design development.

If the tunnel goes under my house will you compensate me?

Where a tunnel is beneath a property, Transport for NSW will require 'subsurface acquisition'. This is the acquisition of an interest in the land under a property, with an annotation made on the property title.

Substratum acquisition will occur once the tunnel alignment is confirmed during further design development.

Generally, the tunnel will not impact on a property owner's ability to develop their land, for example, building such things as a swimming pool or basement. We are managing the property acquisition process in accordance with legislative requirements and reforms. We will send letters to affected property owners to confirm subsurface property acquisition is required. The letters are sent progressively, according to the construction schedule and when access to the subsurface land is required. Consistent with the *Land Acquisition (Just Terms Compensation) Act 1991*, no financial compensation is provided for subsurface acquisition in the majority of cases.

How will you manage the impacts to properties during construction?

We understand there has been concern about the potential for vibration and settlement when we are tunnelling to cause damage to properties. Our objective is to protect private property while we are building our tunnels and carrying out surface work.

As a guide, property owners for properties within the zone of influence of tunnel settlement or within minimum working distances for vibration will be offered a free property condition survey before work starts, to provide a clear record of the property's condition. If your property is within the zone of influence of tunnel settlement or within minimum working distances for vibration, you are strongly encouraged to take up this offer when it is offered to you.

If any damage is found to be directly related to our project, the damage will be addressed at no cost to the property owner.

We will also establish an Independent Property Impact Assessment Panel (IPIAP) to verify property condition survey reports, resolve any property damage disputes and establish ongoing settlement monitoring requirements. Panel members will be highly qualified in the fields of structural, geotechnical and/or civil engineering and be independent of the government and project. For more information, see environmental management measure SG7 in Part D of the submissions report.

Will I hear/feel anything during tunnelling?

While we will be tunnelling underground 24 hours a day, seven days a week, you may hear the noise for around one to two weeks in some locations. This is based on our tunnelling equipment moving about 25-30 metres per week. It is unlikely you will be able to hear the tunnelling equipment because it will be deep underground. When we are tunnelling at shallower depths, or directly under your property, you may experience what is known as ground-borne noise generated by our work.

Ground-borne noise is a bit different to air-borne noise in that you can sometimes feel it. Ground-borne noise is sometimes mistaken for vibration. A good example of what ground-borne noise sounds and feels like is an old refrigerator humming. Ground-borne noise would generally only be noticed for a period of 1 to 2 weeks as the tunnelling equipment passes below the property.

The depths of the tunnel will vary depending on where you live. Please see pages 28-29 of the 'community guide to the EIS' document for more details on the indicative tunnel depths under your local area. For more information on noise and vibration, see chapter 10, construction noise and vibration in the EIS.

Will there be any further property acquisitions or have all affected property owners now been notified?

Based on the current design, as presented in the EIS, all owners of properties that will be acquired have now been informed. As the current design is not yet approved, however, should further changes be required property acquisition requirements may need to be revised. Substratum acquisition will occur once the tunnel alignment is confirmed during further design development.

Traffic – Construction

Will there be trucks on my local road?

We have carefully selected our temporary construction support sites so have direct access to main roads or water so our vehicles will not be travelling on your local streets, where possible.

In the majority of cases, our construction sites will increase traffic in the most impacted locations, by a small percentage per hour during peak construction. Overall, this is a small increase to current traffic volumes, and in most locations the road network would continue to operate at a satisfactory level of service during peak periods. Please see Chapter 8, construction traffic and transport of the EIS for more information.

How will you be managing worker parking?

We know from our earlier engagement you are concerned about workers parking in local streets and community carparks.

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

Tailored complementary demand management strategies that we will implement at each temporary construction support site may include actively encouraging workers to use public transport, provision of shuttle buses from public transport hubs where appropriate, staged removal and replacement of parking, provision of alternative parking arrangements (such as off-site contractor managed parking lots), managed staff parking arrangements, and working with relevant councils to introduce appropriate parking restrictions adjacent to sites or appropriate residential parking schemes.

Refer to Section A5.1.1 of the submissions report for further details.

How will trucks enter and exit each worksite and what is the expected number of truck movements per day?

To minimise impacts on the community, our temporary sites generally:

- are located as close as possible to the tunnels or surface work they support to minimise unnecessary tunnelling or heavy vehicle movements
- have direct access to main roads or water so our vehicles will not be travelling on your local streets, where possible

For maps and details of truck movements specific to each worksite, please Section 2 of the EIS Guide or the relevant fact sheet for your area. Additionally, Chapter 6: Construction work and Chapter 8: Construction traffic and transport of the EIS have more detailed information.

How will you manage safety for school children and pedestrians around construction traffic?

The safety of the community remains paramount for all phases of the project. A range of environmental management measures will be incorporated into the construction environmental management plan for the project as required to maintain the safety of pedestrians, cyclists, road users and workers. These include, but are not limited to, managing vehicle movements to and from construction sites, such as via manual supervision or physical barriers; setting up directional signage and linemarking; and establishing detours. Other measures also include:

- communicating changes well ahead of time
- ensuring adjustments and changes are put in place and well communicated before existing facilities are closed
- designing adjustments to shared paths in accordance with safety standards and guidelines
- using accredited and trained traffic controllers at all times
- inducting all workers to ensure safety of the community and site workers are their number one priority

More details can be found in section 8.5 in Chapter 8: Construction traffic and transport, of the EIS. In addition, Conditions of Approval typically require traffic management plans that demonstrate public safety is not compromised.

Will construction traffic be minimised during and peak travel periods such as school start/finish times?

Local schools are considered key stakeholders and would be engaged throughout the construction period via phone calls, emails, letters, meetings and briefings. The project team would provide information at key project milestones. Ongoing engagement will be carried out with schools near construction works about the timing and duration of works and reducing impacts to them.

Traffic – Operation

How will we be able to access Beaches Link?

The entry and exit portals for Beaches Link are located in Balgowlah, Killarney Heights, Cammeray and Artarmon. For the specific entry/exit ramps for each location, see our How to use Beaches Link fact sheet.

Will Beaches Link increase rat running?

Beaches Link is expected to reduce rat running. Reasons for this include that it is expected reduce traffic on currently heavily congested roads such as Military Road and Eastern Valley Way, making them more attractive to road users who may typically seek to bypass them by using residential roads.

Will there be dedicated bus lanes through the Beaches Link tunnels?

Dedicated bus lanes are typically added to prioritise the passage of buses along congested roads. As Beaches Link is expected to experience free-flowing traffic, it is currently considered unnecessary to add dedicated bus lanes to the tunnel.

Will the tunnel cater for the double decker buses and freight vehicles?

Yes, it will. The Beaches Link mainline and ramp tunnels and surface connections have been designed to allow use by buses and other heavy vehicles, including double decker bus services.

Will the B-Line buses be diverted through the Beaches Link Tunnel?

Currently there are no commitments to divert existing bus routes into the Beaches Link tunnels. The project will, however, create opportunities for new express bus routes between the Northern Beaches and existing (e.g. Sydney CBD, North Sydney, St Leonards and Macquarie Park) and future strategic centres.

Urban design

Why can't the permanent facilities be underground?

While it is possible for the permanent facilities or part thereof to be underground, doing so introduces a lot of complexity. For example, these facilities house extremely large fans, and the ongoing regular maintenance of these large fans would present underground access difficulties and would be more time consuming and challenging to ensure the heavy lifting can be managed safely.

In addition, even if placed underground, surface access provisions for regular maintenance activities would mean that substantial surface space would still be required for the facility site, which means that not much additional open space would be able to be returned to the community.

What will the permanent facilities, such as the motorway control centre and tunnel support facilities, look like?

The community will have an opportunity to provide feedback on permanent facilities during the development of the urban design and landscape plan (UDLP). The UDLP will be publicly exhibited and available for comment during the construction period.

Additionally, further information on initial considerations can be found in the EIS in Chapter 22: Urban design and visual amenity as well as Appendix V: Urban design, landscape character and visual impact.

Location specific questions

Artarmon

Active transport

How did you decide on the detour to the existing shared path alongside the Gore Hill Freeway?

We acknowledge that a variety of our activities, such as road widening and vehicle access, will impact the shared user path. We have considered a variety of alternatives that we consider reasonable and safe. For example, these may include temporarily diverting path users along Station Street, Francis Street, Lambs Road, Cleg Street and Reserve Road. This is noted in Chapter 8: Construction traffic and transport of the EIS.

We have heard the feedback from the community and relevant stakeholders in regard to the proposed detour route for active transport users at Gore Hill Freeway, Artarmon. Feedback has suggested the detour route needs refinement to make it more user friendly. We are currently working on improving the proposed detour route. The detour route will be finalised once the contractor has been engaged and construction planning and staging is progressed. Transport for NSW is continuing to engage with key stakeholders within Transport for NSW and external interested parties such as bike groups with respect to this proposed detour. Once the design and construction staging in the area has been revised, we will inform the community and relevant stakeholders.

How long will the temporary detour for the shared pathway along the Gore Hill Freeway be necessary?

Our current plans estimate the detour for the shared path along the Gore Hill Freeway at Artarmon will be in place for around three to four years. Through detailed planning, however, we hope to reduce the extended staging works in that area. During detailed design, we will also be consulting with local stakeholders to refine the detour to reduce the impacts and achieve the best possible outcome for the community.

Construction

Which roads in the area will construction vehicles use?

Of the four temporary construction support sites located at Artarmon, the main tunneling site is the Punch Street temporary construction support site. The intention would be for construction vehicles to enter the Punch Street construction support site via Cleg Street and exit via Punch Street and west along the Gore Hill Freeway. Access details for this and the other Artarmon sites can be viewed in Chapter 6: Construction work of the EIS. Chapter 8: Construction traffic and transport, section 8.4.2 of the EIS, also provides details on construction traffic in the Artarmon area. Please also see section C7.3.2 of Part C of the submissions report.

How many heavy vehicle movements will there be?

Heavy vehicle movements into and out of the Punch Street construction support site are estimated to be approximately 30 movements per hour during peak construction periods – meaning approximately 15 heavy vehicles in and 15 out per hour. Outside of peak construction period of the project there should be fewer truck movements. To view heavy vehicle traffic movement modelling figures for the various Beaches Link temporary construction support sites, see EIS Chapter: 6 Construction, Table 6-39. More information regarding traffic during construction can be found in Chapter 8: Construction traffic and transport of the EIS.

Noise

Will my property be impacted by operational noise and how will you manage this?

A conservative approach has generally been used in the assessments, with potential impacts presented before implementation of environmental management measures. We have identified and assessed properties that may be affected by noise from the project when it is opened to traffic.

We always try to mitigate traffic noise at the source first, for example installing low-noise pavement where appropriate. If this does not reduce the noise enough, we then look at other options for you. This includes measures such as building noise walls or providing your property with noise treatments.

Receiver buildings which have been identified as eligible for consideration of at-property treatment can be viewed in the EIS, Appendix G: Noise and vibration – Part 2, Annexure R. Properties near the Artarmon temporary construction support sites are shown on page 3057. The properties that are eligible for consideration for at-property treatments, with all other proposed mitigations in place, would be confirmed during further design development.

If your property is potentially eligible for noise treatment we will be in contact. You do not need to contact us as we will be in touch with property owners directly. More information regarding operational noise and vibration can be found in Chapter 10: Operational noise and vibration of the EIS.

Balgowlah

Active transport

How will active transport along Burnt Bridge Creek be impacted?

A 50-metre temporary shared user path would be constructed within the Balgowlah Golf Course when the shared user path along the existing Burnt Bridge Creek Deviation is adjusted for the road widening and box culvert extension and when the existing shared user underpass of Burnt Bridge Creek Deviation is extended. The extension of the existing shared user underpass beneath the Burnt Bridge Creek Deviation at Burnt Bridge Creek would be staged to maintain access at all times.

Subject to final planning for staging of these works, additional short-term detours may be required due to construction access restrictions, however, impacts on pedestrians and cyclists are expected to be minor given that existing connectivity would be maintained and additional travel distances via the temporary shared user path would be minimal. Appropriate linemarking and signage would be used to identify diversions, communication to the community well ahead of any changes and, where required, traffic controllers would ensure safe passage for users. More details on this can be found in Section 8.4.4 of Chapter 8: Construction traffic and transport of the EIS.

During the operational phase, Beaches Link will provide new and upgraded public and active transport infrastructure along Burnt Bridge Creek Deviation, within the new and improved open space and recreation facility area and along the new access road at Balgowlah. More details on this can be found in Table 5-9 in Chapter 5: Project description of the EIS.

Air quality

Why wasn't Balgowlah Boys included in the EIS air quality assessments as a community receiver?

Balgowlah Boys High School is included the Beaches Link and Gore Hill Freeway Connection EIS Air Quality assessment. The list of community receivers in the EIS is a representative sample of all potential community, workplace residential and recreational receptors, so while the school isn't named explicitly, the potential air quality impacts around the location of the school have been predicted and are considered in the results.

The data predicts some small improvements in air quality around this location due to reduced traffic on Manly Road.

Construction

Why were the tunnel portals moved further south along Burnt Bridge Creek Deviation?

Following public consultation and further investigations, the tunnel portals were shifted further south along Burnt Bridge Creek Deviation and the permanent access road redesigned. This provided many benefits, including reducing the access road's length and potential impacts, reduce traffic staging work on Burnt Bridge Creek Deviation, reducing impacts on Burnt Bridge Creek and eliminating the need to replace the existing Kitchener Street Bridge.

For more information on why the selected design was chosen, see Table 4-19 in Chapter 4: Project development and alternatives in the EIS.

Consultation

When will the consultation for the design of the new and improved open space and recreation facility area in Balgowlah start?

The current layout of the new and improved open space and recreation facilities is indicative and subject to a further consultation process. We will have a dedicated consultation period to give the community an opportunity to have their say on the final layout of the recreational area at Balgowlah. This consultation is separate to the consultation for the Beaches Link EIS and will be undertaken in collaboration with Northern Beaches Council. As part of this consultation process, we will establish a community reference group, with representative stakeholder groups and the community, to support us and Council with the development of this important open space in Balgowlah. An expression of interest for participation in the consultation process is expected to be issued in early 2022. More details about the community reference group will be communicated at a later date. To ensure you are notified of this process, please call us on **1800 931 189** or email us at whtbl@transport.nsw.gov.au and ask to be included on our email distribution list.

Will any new noise walls be built along Burnt Bridge Creek Deviation?

There are no proposed new permanent noise walls for the Balgowlah area. The existing noise barriers on Burnt Bridge Creek Deviation will provide attenutation from operational noise impacts and the noise assessment confirmed that increasing the height of these walls would not provide substantial additional noise benefits. Additional information on operational phase noise barriers can be found in Chapter 11: Operational noise and vibration of the EIS.

A temporary noise wall will be installed on the western side of the Balgowlah golf course temporary construction support site, adjacent to Burnt Bridge Creek Deviation. This can be viewed via the 'Noise and vibration' tab of the interactive map. A range of additional measures to mitigate noise impacts will be implemented throughout the construction phase and noise monitoring will be undertaken. See page 85 of our EIS Guide for more information on how we will reduce noise impacts.

How will Balgowlah Oval and the scout hall be impacted by the project?

The existing Balgowlah Oval and the Scout Hall will remain operational during the Beaches Link construction works, including during works adjacent to construct the new and improved open space and recreation facilities, until a new facility (should it be determined through the dedicated consultation process that a new Balgowlah Oval is to be constructed) is commissioned. Construction of the new access road and the new and improved open space and recreation facilities would be staged so that the current access to the existing Balgowlah Oval would be maintained. Pedestrian access along Sydney Road including the existing pedestrian bridge over Sydney Road will remain in place with minor adjustments to allow for widening on the northern side of Sydney Road. The existing Balgowlah Oval would remain operational throughout construction,

Environment & biodiversity

How will you reduce groundwater drawdown at Burnt Bridge Creek?

Groundwater baseflow is only one component of streamflow, which is a combination of water from several sources including rainfall run-off, direct rainfall into the stream, discharge from stormwater pipes and groundwater contributions. The proportion of streamflow that comes from groundwater is referred to as groundwater baseflow.

The groundwater drawdown modelled and presented in the EIS assumes full hydraulic connectivity in the underlying geology and no mitigation, so is a conservative scenario. The conservative predicted baseflow reduction presented in the EIS at Burnt Bridge Creek after approximately 100 years of operation was 96 per cent.

Further assessments were carried out for the submissions report, including additional field investigations, revised predictions of groundwater baseflow reductions, and changes to observable streamflow. As a result, the revised reduction in groundwater baseflow at Burnt Bridge Creek after 100 years of operation is predicted to be 60 per cent. Based on modelling against monitored streamflow levels and the predicted contributions of baseflow to total streamflow, baseflow is predicted to comprise about two per cent of streamflow at Burnt Bridge Creek downstream. Therefore a 60% reduction in baseflow would only result in an about one per cent reduction in total streamflow. Refer to Appendix E of the submissions report for further information.

As more information becomes available on groundwater levels through ongoing groundwater monitoring, groundwater modelling will be updated to refine the predictions. We will then refine our design in detailed design to minimise drawdown and ensure acceptable environmental outcomes. This could involve using a lined tunnel in this area, which would have the effect of reducing the water drawdown in the area.

How will you protect the flying fox population?

While there could be potential noise impacts on the Grey-headed flying fox camp at Balgowlah, mitigation measures will include quieter construction methods where possible and the use of temporary noise barriers, arranging the Kitchener Street construction support site to maximise acoustic shielding and programming noise intensive works (eg. rock hammering / resurfacing works) to avoid the months of September through to February when juveniles are born and most at risk from disturbance (potential to fall to ground). A person experienced in flying-fox behaviour will monitor disturbance levels within the Grey-headed Flying Fox camp at Balgowlah during construction activities that result in noise levels at the camp that exceed the preconstruction ambient noise levels. Adaptive management measures to minimise impacts on Grey-headed Flying-foxes will be developed in consultation with DPE (Environment, Energy and Science) and an

appropriately qualified expert in Grey-headed Flying-fox biology and behaviour, if Grey-headed Flying-fox behaviour during monitoring suggests that disturbance levels are high.

Traffic

Won't the traffic lights at the access road and Burnt Bridge Creek Deviation lead to traffic backing up as drivers try to exit the tunnel?

The Beaches Link portals in Balgowlah would include a new intersection with traffic signals connecting the new access road with Burnt Bridge Creek Deviation and the tunnel portals. This would include dual right-turn lanes into the new access road from the Beaches Link off ramp and dual left-turn lanes out of the new access road to the Beaches Link on ramp and Burnt Bridge Creek Deviation southbound. Northbound through traffic coming out of the Beaches Link tunnel onto Burnt Bridge Creek Deviation would bypass these traffic signals.

As shown in Table 9-10 in Chapter 9: Operational traffic and transport of the EIS, the access road/burnt bridge creek deviation intersection is expected to perform at an LoS of A, meaning an optimal 'level of service'. Additionally, further information about intersection performance can be found in Section 6 (Assessment of road intersection operational performance) of the PIR.

What is the purpose of the access road?

The new access road serves a dual purpose. It provides efficient access to Beaches Link from surrounding suburbs including Balgowlah, North Balgowlah, Seaforth and Manly and also provides easy access to the new and improved open space and recreation facilities for the community.

How is construction work expected to impact traffic on Burnt Bridge Creek Deviation?

A tunnelling and surface works support site would be located on Balgowlah Golf Course. During the peak of construction this site is expected to generate:

- 1195 light vehicle movements per day
- 495 heavy vehicle movements per day

This will increase traffic in the area by 2.5 per cent during peak construction. Overall, this is a small increase to current traffic volumes.

Kitchener Street support site (BL11) is expected to generate 65 light vehicles and 10 heavy vehicles per day.

Travel times from areas such as Narrabeen to Balgowlah are already long. How will Beaches Link affect traffic on roads north of Balgowlah?

Traffic modelling and analysis indicates that the Beaches Link tunnel would improve travel times and reliability for existing road users as well as customers who decide to use the new motorway connection.

In the Balgolwah area, traffic would continue to use the Pittwater Road / Condamine Street corridor to travel south from areas such as Dee Why and Narrabeen. The Beaches Link project is not forecast to materially change traffic demand on this corridor.

However, Beaches Link is expected to significantly reduce traffic travelling through the Burnt Bridge Creek Deviation / Sydney Road, Manly Road intersection, reducing congestion at this intersection and the consequent effects of queuing from this intersection across the broader existing road network, including the Condamine Street / Pittwater Road corridor.

How will traffic and pedestrian safety be managed at the intersection of Sydney Road, Maretimo Street and the access road?

During construction

The Sydney Road/Maretimo Street intersection would be modified during construction, with an additional approach allowing site access to the Balgowlah Golf Course construction support site from Sydney Road. New traffic lights will be put in place to benefit vehicles performing a right turn into or out of Maretimo Street. This will improve safety and reduce delays in and out of the Northern Beaches Secondary College Balgowlah Boys Campus, given that movements under the current priority controlled intersection arrangement must give way to multiple conflicting movements.

In addition, construction vehicles exiting the Balgowlah Golf Course construction support site via a right-turn would be required to give way to vehicles turning left from Maretimo Street and would not conflict with vehicles turning right.

During operation

A signalised pedestrian crossing would be provided at the new access road off Sydney Road via the traffic signals provided for the Sydney Road/Maretimo Street/access road intersection. In the operational phase of the project, this would ensure safe access to Balgowlah Oval for users of the existing Sydney Road pedestrian bridge, including students from Northern Beaches Secondary College – Balgowlah Boys Campus.

North-south traffic movements (and vice versa) through the intersection between Maretimo Street and the future access road would not be permitted.

Cammeray

Air quality

Will the Beaches Link and Western Harbour Tunnel ventilation outlets be combined?

There will be two separate ventilation outlets co-located within the Warringah Freeway at Cammeray, one for Western Harbour Tunnel and one for Beaches Link. The two outlets will appear as a common structure to improve urban design outcomes, but will operate independently.

For more information on the locations of the ventilation outlets, see Chapter 5: Project description of the EIS. For further details on the air quality assessment, refer to Chapter 12: Air quality of the EIS.

Have the air quality measures for Beaches Link accounted for cumulative air quality measures from the Western Harbour Tunnel? Will Cammeray be more impacted because of the two outlets?

We understand the concern around potential impacts to air quality and can assure you that a cumulative assessment of impacts from both Beaches Link and Western Harbour Tunnel is included in the air quality impact assessment of the EIS. The EIS has assessed the impacts of both tunnels operating concurrently and separately.

For more information, please see Chapter 12: Air quality of the EIS, which includes assessment of cumulative impact scenarios. Further, Chapter 27: Cumulative impacts of the Beaches Link EIS, provides an overview of the potential cumulative impacts of this project with other nearby projects (including Western Harbour Tunnel), and other topic-specific cumulative impacts are assessed in the relevant specific chapters.

Environment & biodiversity

How will the project impact Cammeray Golf Course's stormwater harvesting scheme and how will you manage this?

The project would not impact the stormwater harvesting scheme implemented by North Sydney Council at the Cammeray Golf Course. However, the existing storage dam at the Cammeray Golf Course would be impacted by the Western Harbour Tunnel and Warringah Freeway Upgrade project. As part of the Western Harbour Tunnel and Warringah Freeway Upgrade project, Transport for NSW will install a new permanent replacement storage dam (and associated infrastructure) within the golf course prior to decommissioning of the existing dam. If the new stormwater harvesting storage facility is not operational prior to the dewatering of the existing dam, Transport for NSW will pay for all water usage costs associated with the use of the harvesting storage facility/dam incurred by Council or the golf club until the replacement facility is operational. The relocation of the dam will be subject to an agreement between Transport for NSW, Cammeray Golf Club and North Sydney Council.

For more information, please see the Western Harbour Tunnel and Warringah Freeway Upgrade Submissions Report, Part C (C17.5 Stormwater storage dam at Cammeray Golf Course).

Noise

Will noise walls be built along the Warringah Freeway for Beaches Link?

There are no noise walls planned for the Warringah Freeway as part of the Beaches Link project, however, some noise walls have been proposed for construction along the freeway as part of the Warringah Freeway Upgrade. For more information on this, please visit the Western Harbour Tunnel & Warringah Freeway Upgrade portal.

Traffic – Operation

How is Beaches Link expected to impact traffic in the North Sydney and surrounds?

Beaches Link is expected to reduce traffic demand on existing corridors which provide connectivity between the Lower North Shore and Northern Beaches such as Military Road (Neutral Bay) and Miller Street (Cammeray), and consequently improve travel times and reliability on these routes.

In combination with the Warringah Freeway Upgrade and Western Harbour Tunnel the project would generally improve network performance for roads within and around North Sydney. The proposed network integration works and resulting improved traffic performance in the North Sydney area have been developed in the context of the growing North Sydney CBD environment.

While there is the potential for some localised delays at some intersections at peak times, this would be

offset by the substantial travel time benefits provided by the project at the broader network level, particularly for trips which utilise the enhanced future motorway network. To address residual issues Transport for NSW would continue to investigate further opportunities to provide additional benefits or mitigate residual impacts through the Western Harbour Tunnel and Beaches Link program and/or other relevant processes, such as the North Sydney Integrated Transport Program. Given the context of this complex, constrained, urban area, additional mitigations would focus on multi-modal transport and demand management strategies.

For more information, see Chapter 9: Operational traffic and transport of the EIS, section 9.4.2. Additionally, further information about intersection performance can be found in Section 6 (Assessment of road intersection operational performance) of the PIR.

Middle Harbour / Mosman

Construction

What impacts will the project have on Spit West Reserve?

A temporary construction support site will be located at Spit West Reserve. This site will be primarily located in the water as a floating worksite in the harbour west of Spit West Reserve, which will minimise impact to the park. The park will be open and accessible during the construction phase, however, an area of Spit West Reserve will be temporarily occupied during construction of the Beaches Link project. Once our work is complete, we will rehabilitate the area and return this space to the community.

A proposed design for the construction support site was presented in the EIS, however, following community and stakeholder feedback, the layout of the support site was reconfigured as part of the PIR to reduce impacts to recreational users of the reserve, particularly in regard to community sport. The reconfiguration reduced the land-based support site area from 4500m^2 to 3600m^2. The revised design will enable continued use of the reserve for community netball, cricket and soccer during construction work.

For EIS-related information, see Table 20-5 in Chapter 20: Land use and property and pages 6-66 to 6-69 in Chapter 6: Construction work of the EIS; and for the revised design, see Section 3 of the PIR.

Why isn't Clive Park being used for construction work to reduce impacts to other parts of the community?

Temporary construction support sites were carefully selected based on a number of factors including construction requirements, environmental investigations and community and stakeholder feedback. Key factors applied to identification of potential temporary construction support sites included:

- locating the temporary construction support sites as close as possible to project construction areas
- avoiding sensitive environments and community locations where possible
- avoiding direct impacts on heritage sites or items
- maximising opportunities for direct access to motorways and arterial roads or water transport opportunities for construction traffic, and avoiding the need to use local residential streets if possible
- minimising direct and indirect property impacts and acquisition requirements, particularly in residential areas.

We understand how important Clive Park is to the community for its landscape amenity, recreational value and foreshore, including its tidal pool. Our studies also revealed it is home to several important Aboriginal heritage items. Details of these items can be viewed in Chapter 15: Aboriginal cultural heritage of the EIS and Appendix A of the submissions report. Transport for NSW is committed to minimising impacts to the park and therefore selected to carry out marine-based work using cofferdams built offshore from Clive Park.

Environment & biodiversity

What mitigation measures will be taken to protect flora and fauna in Middle Harbour?

We have specifically designed the vertical alignment of the proposed Middle Harbour crossing to take advantage of the deeper water and minimise the amount of dredging required.

Our dredging of the seabed methodology has been designed to minimise impact on the marine environment and has been used safely in some very sensitive marine environments around the world. This includes the use of a closed environmental clamshell bucket for material with elevated levels of contamination and three layers of silt curtains to minimise sediments dispersing into the water column. This includes:

1. two deep draft silt curtains designed with a draft of 10-12 metres placed around the dredging activities
2. shallow draft silt curtains (‘moon pools’) about two to three metres deep immediately at the dredge excavation point, attached to the backhoe dredge
3. shallow silt curtains around ecologically sensitive areas (eg. nearby seagrass and rocky reef habitat) to provide additional protection.

Construction activities within Middle Harbour have the potential to decrease the surrounding water quality and impact the occurrence and behaviour of fish and other prey for threatened fauna species. However,

these impacts would be temporary and localised and species would be able to forage in other parts of the harbour. The selected methodology for the project will limit the potential for turbidity impacts on the surrounding marine environment.

We have designed and located the cofferdams offshore to reduce the impact on more sensitive ecosystems at the shoreline and the sensitive areas of seagrass and rocky reef.

Prior to commencement of impact piling, appropriate management measures to minimise noise impacts on fish and aquatic organisms will be developed and implemented by a suitably qualified and experienced marine ecologist and implemented during impact piling works. The measures will include investigation and trialing of the piling methods and contingency actions in the unlikely event that distressed or dead fish are observed within or adjacent to the construction footprint during piling works.

Before we start major construction, a **Construction Environmental Management Plan (CEMP)** will be developed to detail how the project will preserve, protect and manage any potential impact to the local environment. The CEMP will need to be approved by DPE before we can start any major construction work.

For a detailed list of biodiversity-related mitigation measures, see Table D2-1 of Part D of the submissions report. Additionally, please view our Biodiversity (flora and fauna) fact sheet for further information.

What impacts are the immersed tube tunnels expected to have on currents and tidal flows?

The immersed tube tunnels would be installed as a series of pre-cast units. Due to the profile of the seabed, the units would sit both partially within a trench closer to the shore and above the seabed on piles towards the centre of the harbour crossing.

The middle sections would be placed with the tops of the tunnel units being about 9.2 metres above the existing level of the seabed, creating a sill-like feature over a length of around 250 metres and around 40 metres wide. The water depth above the immersed tube tunnels would vary between 16 metres and 22 metres, depending on the distance from the shore.

Hydrodynamic modelling of the potential impacts on tidal currents and tidal flushing indicates there would be negligible changes to tidal movements, including no change in water levels upstream of the sill. More details can be found in Section 17.5 Assessment of operational impacts in Chapter 17: Hydrodynamics and water quality of the EIS. Furthermore, additional information on assessment of potential effects of the sill can be found in Section 4 of the PIR.

Noise

Will work in Middle Harbour be noisy and how will you reduce it?

The majority of noise would result from the construction of the Middle Harbour north and south cofferdams, cofferdam excavation works and immersed tube tunnel foundation works. The noisiest work would be the impact piling (also known as hammer piling) for the installation of the cofferdams and the immersed tube tunnel support piles.

Rock hammering, piling and dredging would be carried out during standard construction hours only. However, certain activities may be carried out up to 24 hours per day, seven days per week. This would include dewatering of cofferdams.

Furthermore, to manage the noise impacts to residents in the vicinity and to ensure respite to sensitive receivers, impact piling in any given week would be carried out over no more than either a two-hour period each workday or over a six-hour period on a single workday. Impact piling is planned to be completed over a 12-month period. Once these noise-intensive activities have been completed, the remaining activities in this locality would be less noise intensive and would have a lower potential to cause amenity impacts.

For more information on the expected noise impacts from work in Middle Harbour, see Section 10.6.8 in Chapter 10: Construction noise and vibration of the EIS. In addition, Appendix G: Noise and vibration – part 2, pages 96-100, provide detailed maps of expected noise impacts under a range of work scenarios. Finally, for details on hours of work, see Tables 6-21 and 6-23 of Chapter 6: Construction work of the EIS.

Traffic

What impact will Beaches Link have on the traffic at the Military Road and Ben Boyd Road intersection?

As a result of the project, it is forecast that there would be major reductions in traffic volumes on major arterial routes around northern Sydney. This includes peak period traffic demand on Military Road and Spit Road decreasing as a result of the project, by up to 11 per cent and 33 per cent respectively by 2037. The

overall reduction in traffic on these surface roads would result in improved travel speeds on these routes as a result of the project, resulting in improved journey times.

There is a variety of factors that influence isolated intersection performance in complex urban networks. In addition to the geometry (capacity) and traffic (demand) of a specific intersection, upstream and downstream conditions of the broader network influence operations and delays at specific/isolated locations. It is for these reasons that network metrics (average speed across the whole network) and corridor travel time metrics have been provided in the EIS, submissions report and PIR as primary metrics to enable affected stakeholders to understand the benefits / impacts to journeys (ie through multiple intersections), rather than a delay / benefit at a single point on that journey. In many cases where a delay at a specific intersection has been projected, travel conditions leading up to that location/past that location are shown to have significantly improved, offsetting the intersection delay shown.

With this context in mind, during operation, the intersection of Ben Boyd Road and Military Road has the potential to experience longer delays as a result of the Warringah Freeway Upgrade project, due to the reconfiguration of Warringah Freeway, which would change the accessibility of the Ernest Street ramps to and from the Warringah Freeway.

As a result, while there is the potential for localised delays at some intersections such as this one at peak times, this would be offset by the substantial travel time benefits provided by the project at the broader network level.

A review of operational network performance will be carried out after 12 months, and again after five years from the opening of the project to confirm the operational impacts of the project on surrounding arterial roads and major intersections. If required, Transport for NSW will investigate local area traffic management measures to minimise the impact of the project on the surrounding local road network. Such measures will be determined in consultation with relevant councils and implemented where feasible and reasonable.

Further information about intersection performance can be found in Chapter 9 of the EIS and Section 6 (Assessment of road intersection operational performance) of the PIR.

Will the Spit Bridge need to open more as a result of construction in Middle Harbour?

A vessel simulation for marine transport of the steel shell immersed tube tunnel units from the Outer Harbour to Spit West Reserve construction support site, transiting the Spit Bridge, was carried out by the Port Authority of NSW. The simulation found that the construction method proposed in Chapter 6 (Construction work) of the EIS can be carried out safely and with limited impact to existing harbour operations.

We may need to have the bridge open for slightly extended periods on six occasions to allow passage for the steel shell immersed tube tunnel units – once for each of the six steel shell immersed tube tunnel units as they are transported from Spit West Reserve construction support site through to the temporary mooring location before immersion in Middle Harbour. These units will be taken through one at a time, occurring at intervals of approximately three to four months. Our computer modelling and simulations showed the Spit Bridge may need to be open for approximately an extra 15 minutes for each opening.

We expect that all other vessel movements, such as barges transporting dredge materials or construction plant and materials, will be carried out during standard bridge opening times without the need for additional or extended opening times. Details of vessel movements can be found in Table 6-40 of Chapter 6: Construction work of the EIS.

What are the future plans for Military Road?

With Beaches Link earmarked to open in the second half of the decade, there is an opportunity to reimagine Military Road and how this corridor services the Lower North Shore and Northern Beaches.

Over the coming years, Transport for NSW will work with the community, stakeholders and local council to understand how the NSW Government's vision for an integrated public transport and road network can best service the community.

For further information refer to Section B13.2 of the submissions report.

Transport for NSW will update the community as soon as the NSW Government has more to say.

Northbridge / Willoughby / Naremburn

Active transport

How will the bike paths and shared pathways be impacted during construction? How will you mitigate these impacts and are these detours confirmed?

Potential construction impacts on the active transport network within the Warringah Freeway and surrounds area during construction are summarised in Figure 8-9 of Chapter 8: Construction traffic and transport of the EIS. Potential impacts on active transport around Naremburn are summarised in Figure 8-10.

The main shared path running through the proposed Flat Rock Drive temporary construction support site will be temporarily relocated adjacent to Flat Rock Drive during the early widening works on Flat Rock Drive to accommodate the site.

The existing walking tracks along the eastern perimeter of the site would be largely maintained, with two temporary diversions required for the duration of construction. Alternate adjusted paths will be communicated and will be installed to ensure access to Flat Rock Reserve remains for users of the area during construction.

The shared path underpass crossing Flat Rock Drive will not be impacted.

Construction

How will you manage construction work to reduce disturbance of the landfill in the Flat Rock Reserve area?

Work in former landfill sites is not uncommon in Sydney, and there are established methods for safely constructing within such sites.

We have considered this in the design and planning for our tunnel access ramp, which aims to minimise disturbance of landfill. Only about one per cent of the material we need to remove at this site is landfill – the rest will be clean sandstone. The landfill is mainly old building materials and the removal will have limited potential impacts on local air quality or nearby waterways and will be managed in accordance with relevant environmental management measures.

In accordance with the NSW EPA'S preferred treatment methods, it is likely we would keep the landfill material onsite and re-bury it within a specially designed layer, a process called capping. Any landfill removal will be carried out in a controlled manner by experienced contractors. The work will adhere to well-established policies and procedures for removal of potentially contaminated materials including an Environment Protection Licence (EPL) regulated by the NSW EPA, and a Construction Waste Management Plan which will be developed for the project.

For information about issues related to landfill in the Flat Rock Reserve and Bicentennial Reserve, see Chapter 16: Geology, soils and groundwater of the EIS. Table D2-1 of Part D of the submissions report provides details of the environmental management measures that will be carried out.

Why is the construction site located on the eastern side of Flat Rock Drive?

In July 2018, we released a Proposed Reference Design for the Beaches Link, which identified two options for a temporary intermediate tunnel construction site on Flat Rock Drive at Naremburn:

- 'Option A', at the site of the current Flat Rock Baseball Diamond located on the western side of Flat Rock Drive
- 'Option B', within part of Flat Rock Reserve on the eastern side of Flat Rock Drive.

Following extensive assessment of these options and consideration of community feedback and other impacts, we have selected the area on the eastern side of Flat Rock Drive (Option B) as the preferred location for the temporary tunnel site, to remove spoil from the tunnel and provide access for plant, equipment and workers.

You told us you value open space and sporting precincts. Using this site will mean a greater distance between the site and the sporting facilities and we won't be impacting Willoughby Leisure Centre indoor facilities, netball courts or car park. It will also avoid the need to acquire residential property or impact the baseball diamond, and provides trucks with direct access to and from the site via a main road.

Having a site located at Flat Rock Drive has ensured we do not require a site within the Northbridge

residential area. Avoiding the use of a site wholly within the Northbridge residential areas will ensure heavy vehicles and spoil disposal trucks are kept off local roads such as Sailors Bay Road.

Refer to Section 2 of the PIR for further information.

Will you be working at night along Flat Rock Drive?

Some road widening work on Flat Rock Drive to establish the proposed temporary construction site will need to be carried out at night time, to reduce impacts on peak traffic. Tunnel excavation and fit out below ground will be 24/7, however, spoil is stockpiled within an acoustic shed at night and spoil haulage from tunnelling will be done during standard work hours only. Occasional deliveries may also occur at night, such as concrete deliveries needed for safe tunnelling to occur. Major concrete deliveries, such as that needed for road paving, would occur in the day only.

Will you be rehabilitating the site after construction is completed?

We understand the importance of the Flat Rock area to the local community and we are committed to rehabilitating the site once our project is completed.

We are committed to working with Willoughby Council and the local community on measures to minimise our impacts, enhance the social and environmental value of Flat Rock Reserve, and quickly and responsibly rehabilitate the site. Transport for NSW will consult with Willoughby City Council and the community (including bush care groups) to determine the vegetation and landscaping which will be used for rehabilitation, eg selection of plant species, the final alignment of walking tracks and measures which could be taken ahead of construction commencing.

These rehabilitation measures will be implemented as soon as practicable at the completion of construction, including investigating opportunities to progressively rehabilitate the temporary construction support site. Consultation will also consider the opportunity to reuse suitable timber and root balls not used by the project.

Within the first year of construction at the Flat Rock Drive temporary construction support site, Transport will develop a Flat Rock Drive Social Value Strategy. The strategy will be developed in consultation with Willoughby City Council and relevant community groups and will include initiatives which enhance the social and environmental value of the Flat Rock Reserve. These initiatives, which will be implemented during construction and for three years post the completion of construction, will seek to:

- enhance the Flat Rock Reserve, including in the areas of access, amenity and facilities
- support existing Council and community outcomes, initiatives and programs
- partner with educational facilities and other stakeholders in research.

Examples of initiatives could include:

- increasing vegetation bordering the Flat Rock Drive construction support site to provide further screening and accelerate its rehabilitation
- contributing to the implementation of the Flat Rock Reserve Action Plan
- salvaging and translocating plants for reuse by Council and community groups
- implementing a seed collection program for reuse by the project, Council and community groups
- researching into the climate resilience of landscape communities, using new software which tracks the performance of rehabilitation and performance of rehabilitation as fauna habitat.

For additional information on this, please also see Section 2 (Flat Rock Drive temporary construction support site (BL2) options analysis) of the PIR.

Environment & biodiversity

How will Flat Rock Creek be protected during construction work?

In the vicinity of the Flat Rock Drive construction support site, the waterway includes a constructed surface creek, above-ground concrete-lined stormwater channels, a naturalised bedrock channel and an underground box culvert. Flat Rock Creek is within a box culvert from Willoughby Road to a point 150m east of Flat Rock Drive. This can be viewed in Figure 17-2 in Chapter 17: Hydrodynamics and water quality of the EIS for further details.

Drainage works associated with an existing above-ground watercourse within Flat Rock Reserve at the Flat

Rock Drive construction support site would be staged to ensure creek flows and velocities are not substantially changed and to avoid downstream erosion and bed and bank stability impacts.

In addition, monitoring of hydrology and water quality would continue throughout construction work and once Beaches Link is operational. For details, see Chapter 17: Hydrodynamics and water quality, of the EIS.

For environmental management measures relating to water quality, please see Table D2-1 of the submissions report.

Noise

Will there be any noise walls constructed along Brook Street?

During construction, the majority of tunnelling work would be underground and within the acoustic shed. Noise modelling has found that a noise barrier to the south of the Flat Rock Drive construction support site (in addition to the acoustic shed) is not required. Noise monitoring during construction will be ongoing and a range of measures to mitigate noise impacts, will be carried out. See page 85 of our EIS Guide for more information on how we will reduce noise impacts.

Although the Flat Rock Drive construction support site will be used to support tunnelling activities, there are no operational facilities or permanent surface works in this area (refer to Figure 5-3 of the EIS). As such, there are no permanent noise walls proposed in this area.

To view planned and existing noise walls, view the Noise and vibration tab of the interactive map.

Open space & Socio-economics

Will the Flat Rock Drive temporary construction support site impact sports facilities in the area?

Using this location for our site provides a greater distance between the Flat Rock Drive temporary construction support site and the Willoughby Leisure Centre indoor facilities, netball courts and car park. It also avoids impacts to the baseball diamond and other sporting facilities in the area. For more information on assessments on social impacts and related mitigation methods, please see Chapter 21: Socio-economics of the EIS. Also refer to PIR Section 2 for further information.

Traffic – Construction

How will trucks access the Flat Rock Drive temporary construction support site?

Access to and from the site will be via a temporary signalised intersection on Flat Rock Drive. From Flat Rock Drive/Brook Street, heavy vehicles will have access to the Warringah Freeway. Local surface work for road widening, pedestrian and cyclist paths and utility adjustments will be required on Flat Rock Drive to build the signalised intersection and turning lane. Road widening work will be carried out on the eastern side of Flat Rock Drive.

Seaforth

Active Transport

Can you please explain what is happening to the pedestrian bridges along Wakehurst Parkway?

Table 5-8 in Chapter 5 Project Description of the EIS notes that the existing pedestrian bridge on Wakehurst Parkway south of Aquatic Drive will be replaced with a new pedestrian bridge structure to suit the road widening works. This replacement bridge is identified on Figure 5-24.

Also identified on Figure 5-24 is a new shared user bridge over a drainage culvert along Wakehurst Parkway. For the avoidance of doubt, please note that this shared user bridge runs parallel to Wakehurst Parkway, as opposed to across Wakehurst Parkway.

The bridges will form part of the new active transport connectivity facilities provided along Wakehurst Parkway. Active transport to be provided along Wakehurst Parkway, in addition to the bridges mentioned above, includes;

- A new shared user path along the eastern side of the Wakehurst Parkway, from the northern end of Kirkwood Street at Seaforth to the intersection with Warringah Road at Frenchs Forest.
- A new shared user underpass beneath the Wakehurst Parkway about 700 metres north of Kirkwood Street to connect Garigal National Park and the Engravings Trail to the Manly Warringah War Memorial State Park.
- A new shared user underpass beneath the Wakehurst Parkway about 1150 metres north of Kirkwood Street to connect Garigal National Park to the Manly Warringah War Memorial State Park.
- A new shared user underpass beneath the Wakehurst Parkway about 750 metres south of the intersection with Warringah Road at Frenchs Forest.

Please refer Figure 5-23 and Figure 5-24 in Chapter 5 of the EIS for reference.

Design

Why can't the Wakehurst Parkway tunnel portal and ventilation outlets be further north and away from residential properties?

Following community feedback on the Concept Design released in March 2017, the portal was relocated about 450 metres further north along the Wakehurst Parkway, which allowed for better community and engineering outcomes. Some of these benefits include:

- better connectivity from Beaches Link to the Wakehurst Parkway surface, which optimised the incline angle of the ramp tunnel
- reduced potential indirect impacts to Seaforth Oval
- reduced length of surface works
- reduced impacts to Duffy's Forest
- greater distance from residents, improving amenity for these residents (250m to nearest resident)
- still avoids direct impacts to Garigal National Park and Manly Warringah War Memorial State Park

For further information on the alternatives considered for the portal locations, including benefits of the preferred location, see Chapter 4: Project development and alternatives, pages 4-46 to 4-47 of the EIS.

Land use

What will happen to the Wakehurst Parkway East temporary construction support site once construction is complete?

The temporary construction support site would be rehabilitated and revegetated as soon as practicable after construction completion and land that is surplus to Sydney Water's operational requirements would be handed over to Northern Beaches Council to manage for use by the community as part of the Manly Warringah War Memorial State Park. This would add about 4000 square metres of new public space to the Manly Warringah War Memorial State Park.

For more information, please see Chapter 20: Land use and property of the EIS.

Traffic

How will Seaforth residents access the tunnel during operation?

The tunnel portals on Wakehurst Parkway are north facing with no U-turn capacity for northbound traffic, so the Killarney Heights tunnel portal may not be suitable to access for some Seaforth residents. Instead, the main route would be south along Frenchs Forest Road, left onto Sydney Road, through the Burnt Bridge Creek Deviation intersection, then left onto the access road for southbound access into the Beaches Link tunnel.

For more information on how to access the tunnel, please see our fact sheet.

Will the heavy vehicles carrying the spoil from the tunnelling, use Roseville Bridge or Forest Way?

Heavy vehicles from the Wakehurst Parkway construction support sites carrying spoil will head north along Wakehurst Parkway to Warringah Road then most likely to the west or north-west of Sydney. The final destinations for spoil would be planned following appointment of the construction contractor/s.

Heavy vehicles will travel along the arterial road network only, which may include routes along Forest Way or over the Roseville Bridge. In addition, concrete trucks will also access the Wakehurst Parkway East temporary construction support site from the north.

For maps and more information on construction traffic routes in the Seaforth and Frenches Forest area, see Appendix F: Traffic and transport – Part 1, section 5.5.

Visual amenity

Considering Kirkwood Street residents who will have the construction site behind their property, how high will the offices and the temporary noise barrier be?

The temporary noise barrier will be similar to that shown in the image in the Noise and Vibration fact sheet. It will be 4-5 metres high and made of solid materials on the bottom, with clear perspex (plastic) on top to allow sunlight into the backyards of properties along Kirkwood Street. The solid barrier colour and material ratio (solid/perspex) would be determined in consultation with impacted residents.

The final layout of the temporary construction support site will be determined by the construction contractor (if the project is approved) and detailed in a Construction Environment Management Plan (CEMP), to be reviewed and approved by DPE. This plan will be prepared and approved prior to the commencement of construction. Office and amenity blocks will need to be stacked at this locale given the limited size of the construction footprint. The current design in the EIS is proposing to have two levels of temporary site offices.

Next steps

We have provided the submissions report and PIR to DPE to help inform the Minister for Planning when making a decision on approval of the project. The submissions report and PIR have both been made publicly available on the DPE Major Projects website (www.planningportal.nsw.gov.au/major-projects/project/10456) and the project interactive online portal (nswroads.work/blportal).

We expect to have a decision on the project in early 2022. If the project is approved, we will build and operate the project in accordance with the Conditions of Approval set by the Minister for Planning.

We are committed to continuing to work collaboratively with our stakeholders and the community throughout all phases of the project.

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Please note, if you do not see your question in this document, please feel free to contact us directly by calling us on **1800 931 189** or emailing us at **whtbl@transport.nsw.gov.au**

nswroads.work/blportal

1800 931 189

whtbl@transport.nsw.gov.au

Customer feedback
Transport for NSW, Locked Bag 928 North Sydney NSW 2059

Visit our interactive web portal
Read the EIS, find out more or ask our team a question.

nswroads.work/blportal

Our phone line is monitored 24 hours when work is taking place.

131 450

Translating and Interpreting Service If you need an interpreter, please call the Translating and Interpreting Service (TIS National) on **131 450** and ask them to telephone Transport for NSW on **1800 931 189**.

Chinese (simplified)

若您需要口译员，请拨打**131 450** 致电翻译与口译服务处(TIS National)，并要求他们转拨 **1800 931 189**致电Transport for NSW。

Italian

Se avete bisogno di un interprete, chiamate il servizio traduttori e interpreti (TIS National) al numero **131 450** e chiedete di telefonare a Transport for NSW al numero **1800 931 189.**

Portuguese

Se necessitar de um(a) Intérprete, por favor, ligue para o Serviço de Tradução e Interpretação (TIS National), através de **131 450** e peça o telefone do Transport for NSW, através de **1800 931 189**.

Privacy Transport for NSW is collecting your personal information in connection with Beaches Link and Gore Hill Freeway Connection ("the Project"). In addition to collecting your name and contact details we may collect other information such as your submissions and other communications with us. We will retain and use this information for consultation purposes, including communications and analysis in connection with the Project. We will not disclose your personal information to third parties unless authorized by law and if we include your submissions in any public report we will not identify you. Providing your personal information is voluntary but if you do not provide it we may not include you on our stakeholder database and you might miss further consultation opportunities. Your personal information will be held by us and you can contact us to access or correct it. Please write to us at either whtbl@transport.nsw.gov.au or Transport for NSW, Locked Bag 928, North Sydney NSW 2059.