

Western Harbour Tunnel and Warringah Freeway Upgrade

North Sydney Tree Replacement Strategy

June 2023



Acknowledgement of Country

Transport for NSW acknowledges the traditional custodians of the land on which we work and live.

We pay our respects to Elders past and present and celebrate the diversity of Aboriginal people and their ongoing cultures and connections to the lands and waters of NSW.

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

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

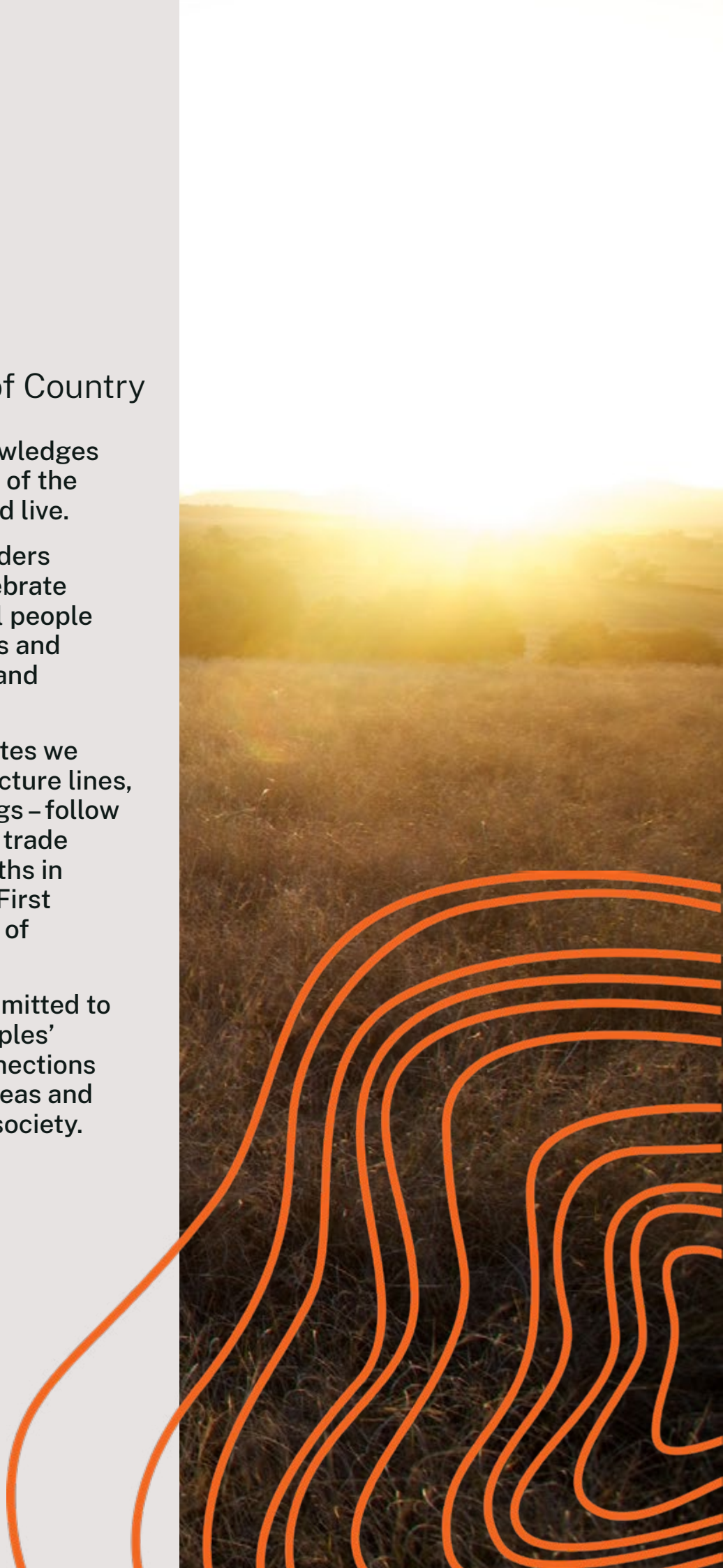
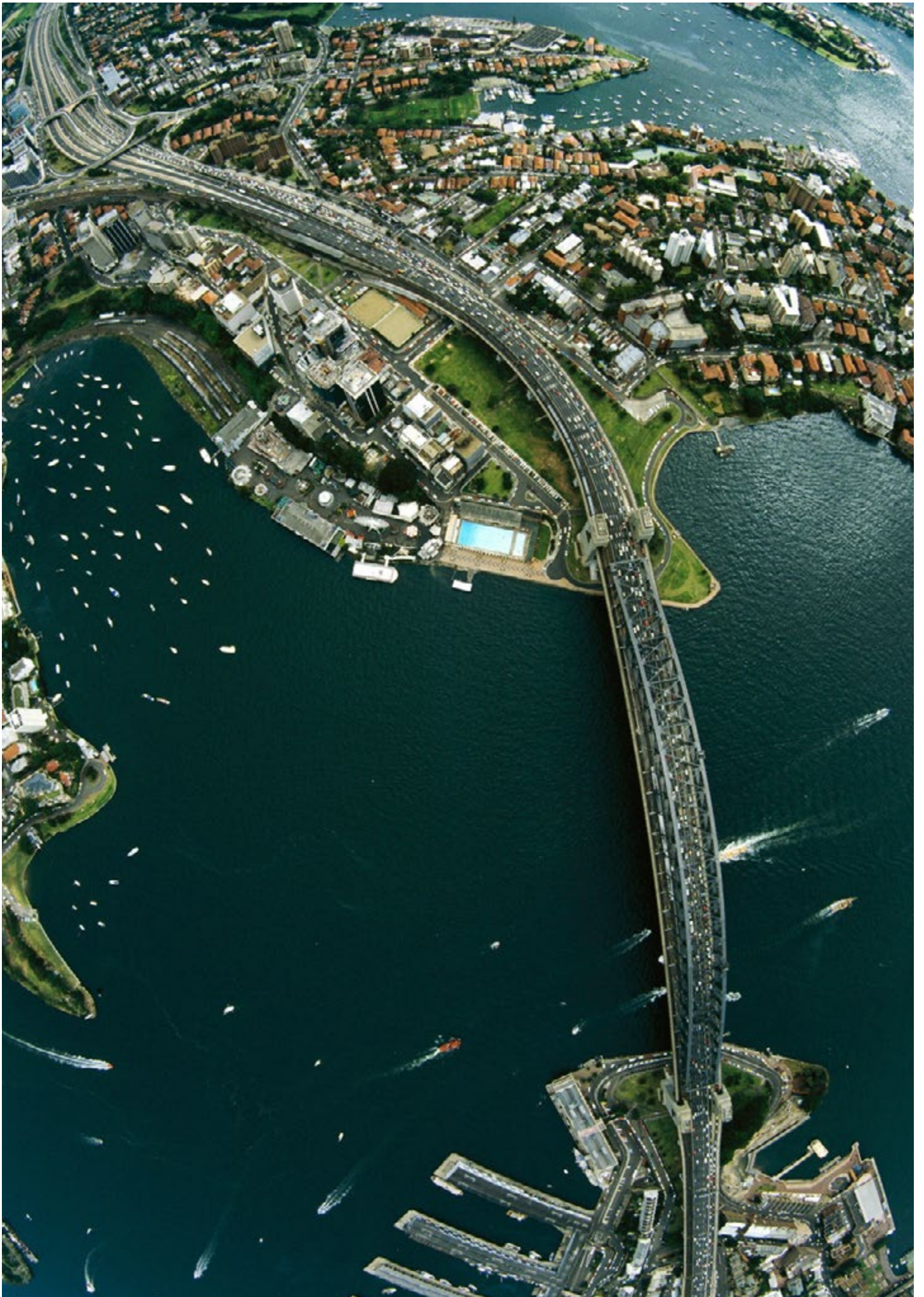


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1. Overview

Transport for NSW (Transport) is planning and delivering an unprecedented investment in public transport and place making projects in the North Sydney local government area.

Transport is committed to integrated transport and place-making projects that support North Sydney CBD's future growth and role as a globally connected precinct. Transport shares North Sydney Council's desire for a more connected, place-based North Sydney.

Key benefits of the suite of projects underway in North Sydney include easier access to the broader integrated transport network, improved active and sustainable transport options and a more vibrant and liveable locality in which people live, work and do business.

Significant projects include the Western Harbour Tunnel and Warringah Freeway Upgrade, the new Sydney Metro stations at Victoria Cross and Crows Nest, the North Sydney Integrated Transport Plan and the northern cycle access ramp to the Sydney Harbour Bridge.

The Western Harbour Tunnel and Warringah Freeway Upgrade program will provide new and streamlined connectivity from North Sydney to the broader motorway network. It includes links to the M4 and M5 and faster access to Sydney's north, west, south and Sydney Airport. From North Sydney, the tunnel will provide a 20-minute journey to Sydney Olympic Park and 15 minutes to Kingsford Smith Airport.

As part of the projects, there will be impacts to some trees along the alignment. Where trees do need to be removed, they will be replaced in accordance with the project planning approvals, which require trees to be replaced at a ratio of two to one, resulting in a future increase in high quality tree canopy.

As part of this process, taking into account community and stakeholder feedback, Transport is committed to implementing a Tree Replacement Strategy to facilitate the tree replacement requirements of the projects in the North Sydney area.

This strategy has been developed in partnership with North Sydney Council to gain agreement on principles for tree replacement in the LGA as part of the Western Harbour Tunnel and Warringah Freeway Upgrade.

The scale of work taking place within North Sydney will have impacts on trees and vegetation. Transport is committed to working collaboratively with North Sydney Council as part of this strategy to replace trees, in line with the project approval requirements including the two to one ratio, to ensure we leave a positive legacy for the community.

An overarching objective of this strategy will be to ensure a focus on quality tree replacement, including the selection of the best trees appropriate to planting locations, to ensure a continuance of North Sydney's already high-quality tree coverage.

Transport recognises the value the North Sydney community places on its natural landscapes, heritage features and open space and is working with the local community, stakeholders and North Sydney Council on a range of initiatives designed to improve open space and create new public places for the community to gather.

Transport is committed to continuing to work with Council to achieve a shared vision for long term place making opportunities in North Sydney and this strategy forms a key component of this ongoing approach.



2. Introduction



The Tree Replacement Strategy aims to meet project requirements with a considered approach to tree selection, replacement location and staging, with an overarching objective of high-quality tree replacement in North Sydney.

2.1 Purpose of this strategy

Transport is committed to implementing the Tree Replacement Strategy to facilitate the tree replacement requirements of the Western Harbour Tunnel and Warringah Freeway Upgrade projects in the North Sydney local government area (LGA) as set out in the project planning approvals (described in detail in Section 5.4).

The Strategy is being developed in partnership with North Sydney Council to gain agreement in principle for tree replacement in the LGA including:

- the potential for trees to be replaced in the North Sydney LGA in areas within 500 metres from the construction boundary
- the potential for trees to be replaced in the North Sydney LGA in areas outside the 500 metre construction boundary
- identifying open space areas in the LGA which are suitable for tree replacement including Council managed parks
- working together to identify areas of Crown Land including some Crown Land areas managed by Council where tree replacement may be suitable
- seeking opportunities to plant replacement trees in alternative areas including Transport-owned land, private land, educational campuses and community spaces

- general principles around the types of trees appropriate as replacement trees in particular settings (e.g. parks, streets, bushland)
- understanding that the replacement of trees will be managed in accordance with the project planning approvals, noting that there is scope for alternate approaches by agreement between Transport and Council
- communication protocols between project teams and Council with respect to tree replacement and associated matters including the progressive replacement of trees during project construction.

Transport will engage adaptively with North Sydney Council through the life of the projects on the above principles and others that may be suggested by Council.

Transport will also replicate the principles and approach in this strategy with other Councils along the project alignment including Willoughby City Council and Inner West Council.

2.2 Tree Replacement – Transport and Council interface

Table 1 on the next page shows key project documentation including documents required under the project Minister's Conditions of Approval (MCoA) relating to tree removal and replacement requirements. This strategy is not a direct requirement of the MCoA.

It has been prepared in the early stages of project delivery, however, to guide the collaborative approach to tree replacement between Transport and North Sydney Council and to assist in the ongoing development of the planning-approval required documents.

Table 1 – Tree Replacement Strategy and planning approval documents

Document	Purpose	Engagement	Timing
Tree Replacement Strategy	Stakeholder engagement strategy to facilitate collaboration and agreement with local Councils including North Sydney Council on principles for tree replacement.	Council to provide feedback on strategy document prepared by Transport. Transport to incorporate feedback where feasible with a view to Council endorsement of the agreed strategy.	Transport has been working with and continues to work with North Sydney Council.
Flora and Fauna Management Sub-Plan	Requirement of planning approval and includes details on how the project will manage potential flora and fauna impacts during construction including mitigation measures and the process of vegetation to be cleared as part of the project.	MCoA requires the sub-plan to be developed in consultation with relevant Councils (including North Sydney Council). Council has been consulted on sub-plans prepared for the project to-date.	Flora and Fauna Management Sub-Plan is one of a range of sub-plans prepared under the Construction Environmental Management Plan (CEMP) required under the MCoA. The CEMP Sub-plans must be submitted to the Planning Secretary for approval along with, or subsequent to, the submission of the CEMP but in any event, no later than one month before construction.
Place, Design and Landscape Plans	Requirement of planning approval and must include the location of existing vegetation, areas of vegetation to be retained and proposed planting and seeding details, including the use of local indigenous species for revegetation activities. The plans also include a range of other matters relating to design outcomes for the project (e.g. built environment, landform, open space, heritage, visuals and others).	MCoA requires the Plans to be developed in consultation with relevant Councils (including North Sydney Council).	The plans must be prepared in consultation with relevant Councils including North Sydney Council. The plans must be reviewed by a project Design Review Panel submitted to the Planning Secretary for approval no later than one month before construction of permanent work subject to the PDLP. Transport will consult with North Sydney Council throughout the course of the project in the development of the report.
Landscape Strategy Report	Requirement of planning approval and details the type, size, number and location of replacement trees. The report must demonstrate how any replacement plantings are consistent with the requirements of relevant conditions of the planning approval.	MCoA requires the Report to be developed in consultation with relevant Councils (including North Sydney Council).	The report must be submitted to the Planning Secretary for information no later than nine months following the commencement of operation. Transport will consult with North Sydney Council in the development of the report.

3. About the projects

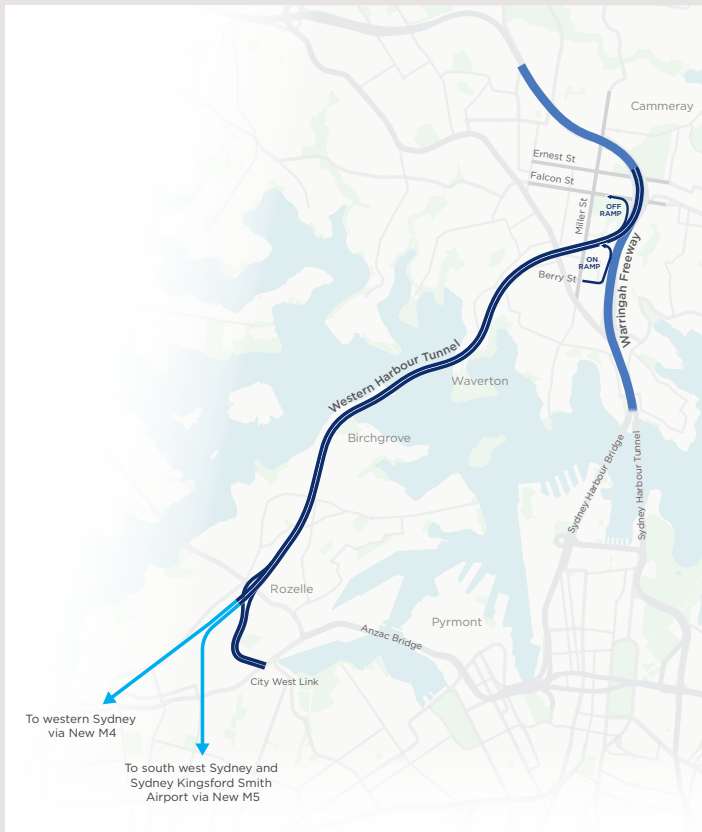
3.1 Project overview

In January 2021, the NSW Government granted planning approval for the Western Harbour Tunnel and Warringah Freeway Upgrade projects.

The Western Harbour Tunnel project involves a 6.5-kilometre twin-tunnel motorway from Rozelle to Cammeray, including a new Sydney Harbour crossing and upgrades to streamline the Warringah Freeway and provide connections to the M4 and M5 motorways.

North of Sydney Harbour, the entirety of the Western Harbour Tunnel runs beneath the North Sydney LGA and most of the alignment of the Warringah Freeway Upgrade is within the LGA, with a small proportion in the Willoughby LGA.

Figure 1 – Western Harbour Tunnel and Warringah Freeway Upgrade alignment



3.2 Transport challenges and project objectives

As part of the development of the projects, Transport identified a range of challenges across Sydney's wider transport network that could be addressed through a new crossing of Sydney Harbour and upgrades to freeway connections and configurations north of the Harbour. A range of transport challenges were identified including:

- high volumes of commuter traffic on roads around the Sydney Harbour central business district (the 'Harbour CBD')
- congestion on key roads around the Harbour CBD including roads which are nearing capacity including the Sydney Harbour Bridge, Sydney Harbour Tunnel and Anzac Bridge, adding additional strain on the road network
- disruption to the Harbour CBD road network due to traffic incidents – an incident can quickly cause long delays across the broader network and take a long time to clear afterwards
- the performance of the Warringah Freeway is impacted by high traffic volumes, congestion on harbour crossings, and merges and weaves
- congestion impacting the streetscapes, sustainability and liveability across the Eastern Harbour City and Sydney's north.

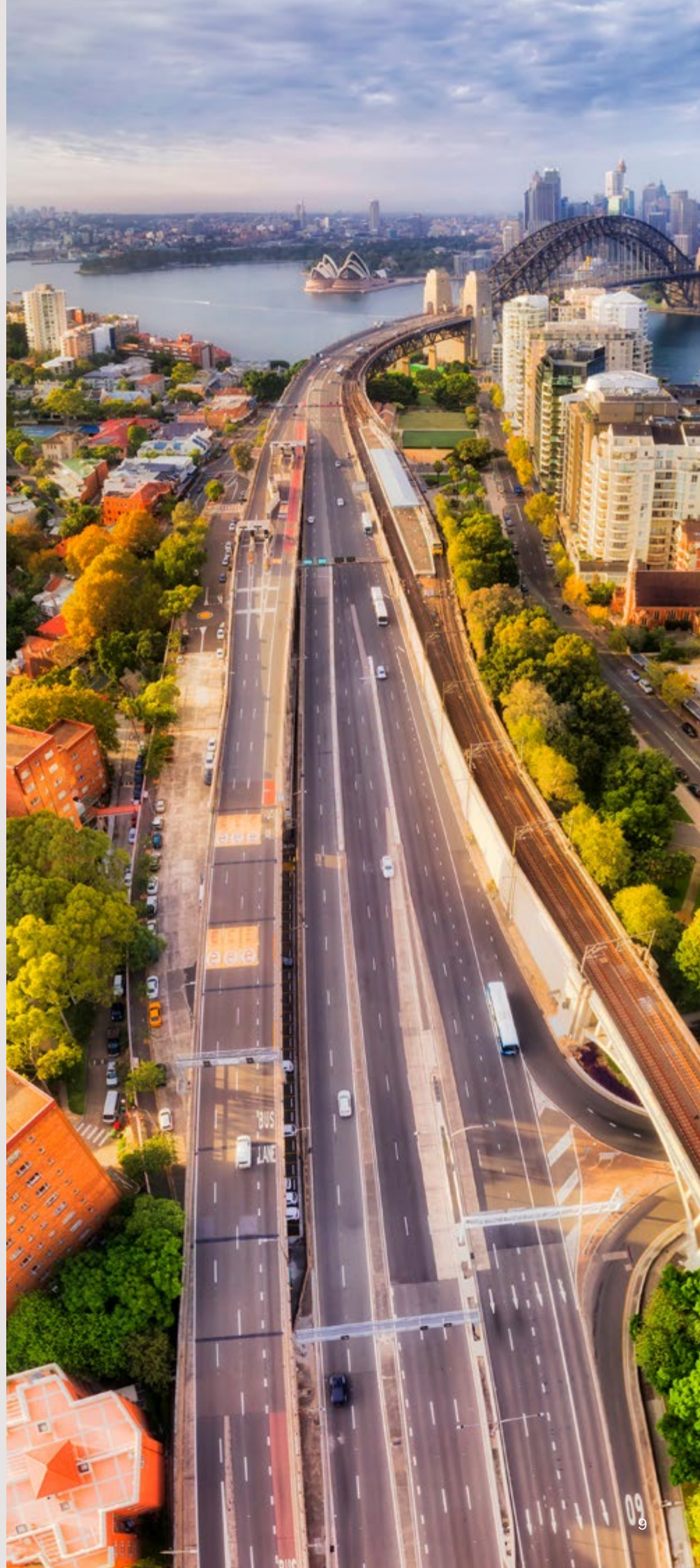
To meet these challenges, during the planning phase for the projects, Transport identified the following projects objectives:

- reduce congestion on key roads around the Harbour CBD, including the Sydney Harbour Bridge, Sydney Harbour Tunnel and Anzac Bridge
- create faster, safer and more reliable journeys across Sydney Harbour, particularly for traffic bypassing the Harbour CBD to the west
- improve productivity by allowing commuters and freight to reach their destination faster, safer and more reliably
- increase the ability for the Harbour CBD road network to cope with traffic incidents
- reduce travel times, delays and queuing on the Warringah Freeway by improving cross-harbour capacity and reducing merges and weaves, supporting long-term increased demand
- improve streetscapes, sustainability and liveability across the Eastern Harbour City and Sydney's North districts by reducing congestion.

3.3 Project background

Options for new road crossings of Sydney Harbour have been considered for many years. These have included concepts for new bridges and tunnels at several locations along the harbour.

After the release of the *NSW Long Term Transport Master Plan* (Transport for NSW, 2012) and *State Infrastructure Strategy Update 2014* (Infrastructure NSW, 2014), investigations into alternative harbour motorway crossings focused on tunnelled solutions to provide a western bypass of the Sydney CBD.



These investigations found that a new harbour crossing and tunnelled motorway west of the CBD addresses the identified transport needs of providing additional transport capacity across Sydney Harbour to relieve congestion and improve reliability on existing crossings. Importantly, it will:

- increase road capacity on the critical north-south harbour crossing by 50 per cent, providing journey time and reliability benefits to users of the new route, as well as users of the existing crossings
- provide an alternative western bypass of the CBD, reducing pressure on the heavily congested Anzac Bridge and Western Distributor corridor
- improve performance, reliability and resilience of the adjoining arterial road network, which is heavily affecting performance of the existing harbour crossings
- improve travel times between key centres for all road users, including a significant number of bus users, service vehicles and freight
- re-establish road hierarchy for the harbour crossings as part of a 'three crossings strategy'.

Community and stakeholder engagement has been an integral component in the development of the projects and the Western Harbour Tunnel and Warringah Freeway Upgrade program more widely. The engagement program has proactively informed and involved community members and stakeholders during project development.

Engagement with the public and broader stakeholders commenced in March 2017 and continued through to the preparation, display and submissions process for the Environmental Impact Statement (EIS) and into the early project delivery phase.

3.4 Key benefits

The Western Harbour Tunnel will provide vital additional capacity on the busiest road corridor in Sydney, improving liveability and amenity for local communities who will benefit from reduced through traffic and congestion at surface and improved connectivity. It will also deliver meaningful productivity benefits for NSW.

The tunnel will leverage the underground WestConnex network to deliver a new western bypass of the Harbour CBD, significantly increasing the efficiency and capacity of the transport crossings of Sydney Harbour.

The additional core motorway capacity delivered will significantly improve journey times and journey time reliability for about 2.5 million trips for people who use the Sydney Harbour Bridge and Sydney Harbour Tunnel road crossings every week, as well as users of many arterial roads whose performance is affected by these crossings.

The Warringah Freeway Upgrade will connect the new tunnel with the existing road corridor and streamline traffic movements to optimise the future use of the three harbour crossings.

It will serve journeys through strategic centres north of the harbour including North Sydney, St Leonards, Chatswood and Macquarie Park. Increased road network capacity and connectivity as a result of the project will also result in travel time savings for freight movements, further serving the growth of Greater Sydney.

This new western bypass of the Sydney CBD will also serve through journeys between the south and west of Sydney, including the international gateways of Sydney Airport and Port Botany.

The increase in harbour crossing capacity and efficiency delivered by the project will also remove a major bottleneck that constrains the road transport capacity of areas north of Sydney Harbour.

The Western Harbour Tunnel and Warringah Freeway Upgrade will enable new connections across the motorway network, which will deliver significant benefits for public transport, freight and other road users over an increased catchment.



The major transport benefits of the projects include:

- a third harbour crossing to reduce congestion on the Sydney Harbour Bridge, Sydney Harbour Tunnel and Anzac Bridge – leading to faster and more reliable journeys to, from and around the Harbour CBD
- return local streets to communities by moving traffic underground, freeing up local streets for local traffic and supporting the sustainability of local town centres
- make journeys on the Warringah Freeway easier and safer by improving lane configuration and providing clear directions on the best way to cross the harbour and reach your destination
- enable local businesses to have better and more efficient access to Greater Sydney, making it easier to move goods and provide services, as well as bringing employees and businesses closer together
- contribute to an integrated transport network by enabling direct bus access to North Sydney and an efficient transfer to the new Sydney Metro network
- opportunities to enhance the local community by improving shared user connections and providing new public open space.



4. Guiding information



Transport understands the importance local communities places on trees and the role they play in open space, creating liveable and sustainable places for people to enjoy.

Transport is committed to replacing trees at the required two to one ratio as well as delivering a future increase in quality tree canopy in partnership with communities, stakeholders and local councils. Wherever possible the project teams will manage works to avoid and minimise the need for tree removal.

4.1 Key policy considerations

Increasing and improving quality tree canopy across the Western Harbour Tunnel and Warringah Freeway. Replacing trees at the required ratio across the Western Harbour Tunnel and Warringah Freeway Upgrade alignment, including replacement tree planting in the North Sydney LGA and in other local council areas along the overall project alignment, will generate social, economic and environmental benefits.

These include:

- improved urban heat island outcomes
- enhanced shade
- better air quality and ambient air temperatures
- improved community health
- increased fauna habitat
- increased species diversity where appropriate

- improved community amenity
- positive partnership opportunities with North Sydney Council, Inner West Council and Willoughby City Council and other key Western Harbour Tunnel and Warringah Freeway Upgrade stakeholders
- beneficial commercial outcomes for tree suppliers
- the potential for urban tree cover to influence public and environmental health, climate change and resilience outcomes in North Sydney is one of the key drivers that has influenced this strategy.

A number of strategic planning policies and directions for Greater Sydney underpin tree replacement for the Western Harbour Tunnel and Warringah Freeway Upgrade as they guide the development of a more sustainable urban environment. This is further described in the following sections.

4.2 Trees in the urban environment

Trees have the potential to transform the quality of life in Australian cities.

This has been documented by a wealth of research and recognised by the Greater Cities Commission (GCC), the organisation established by the NSW Government to lead metropolitan planning for the Sydney region.

The GCC's aim is to make Greater Sydney more productive, sustainable and liveable. The vision, strategic directions and objectives to achieve this aim are outlined in *A Metropolis of Three Cities*, also known as the *Greater Sydney Region Plan*, which sets a 40-year vision to manage growth and change for Greater Sydney in the context of social, economic and environmental matters.

It identifies a requirement to expand urban tree canopy in the public realm (Objective 30).

4.3 Tree replacement benefits

As Greater Sydney grows and urban areas become denser, extending urban tree canopy is one of the most effective ways to improve amenity. A target has been set to increase tree canopy cover to 40 per cent, up from the current 23 per cent.



Urban tree canopy can be complemented by green ground cover, rain gardens, green roofs and green walls. The *Greater Sydney Region Plan* identifies multiple benefits of urban tree canopy cover, including:

- **environmental benefits:** providing habitat and protecting the health of waterways and improvements to air quality through the removal of fine particles from the air and through the conversion of carbon dioxide to oxygen
- **economic benefits:** a ten per cent increase in tree canopy has been shown to increase property values by an average of \$50,000
- **place-making benefits:** trees enhance the quality of the public domain
- **amenity benefits:** trees, through the provision of shade and reduced UV exposure, increase the attractiveness of walking and cycling as a means of transport
- **urban landscape benefits:** increased urban tree canopy cover also contributes to realising other key planning objectives including the implementation of the *Sydney Green Grid* (Plan Objective 32), an initiative to connect communities to the landscape with multiple benefits including better access to open spaces, encouraging healthy lifestyles, supporting walking and cycling, supporting ecological resilience and enhancing bushland and habitat corridors
- **urban heat mitigation benefits:** trees provide shade which reduces the ambient air temperature. It is estimated that every ten per cent increase in tree canopy cover can reduce land surface temperatures by 1.13° Celsius.

4.4 Guiding documents

A number of documents have been identified as key references and guides in developing this strategy. As part of the development of a tree replacement program for the project, and in developing the urban design and landscape related documents required under the planning approval, Transport will incorporate the principles and objectives of these guiding documents into the delivery of replacement trees.

The documents integrate existing research or guidance on the benefits of urban tree canopy cover. Guiding documents to be used as part of the tree replacement program include, but are not limited to:

North Sydney Council policies and guiding documents:

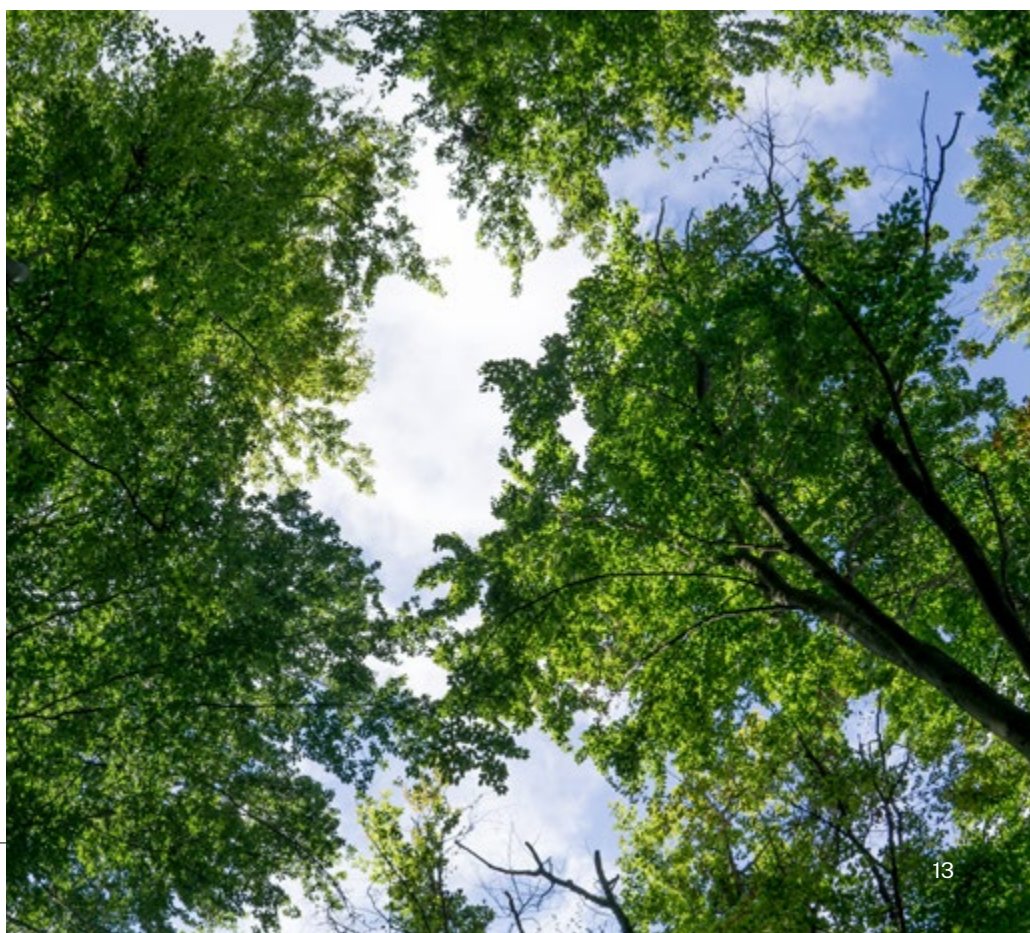
- North Sydney Street Tree Strategy
- North Sydney Urban Forest Strategy
- North Sydney Public Domain Strategy
- Other documents as identified by Council in the development of this strategy.

NSW Government / Transport policies and guiding documents:

- Greater Sydney Green Grid 2017
- Urban Tree Canopy Guide 2017
- Transport for NSW Biodiversity Guidelines
- Transport for NSW Beyond the Pavement policy.

In developing this strategy in addition to overarching documents guiding tree replacement required as part of the MCoA, Transport will also consider a range of policy documents, guidelines and inputs prepared by other local Councils along the alignment, including Inner West Council and Willoughby City Council.

Transport will seek to replicate the approach outlined in this strategy in the Inner West and Willoughby local government areas.





4.5 About these documents

4.5.1 North Sydney policies and guiding documents

Managing Trees in North Sydney

North Sydney Council maintain a large network of public trees with over 17,000 street trees plus many more growing in parks and reserves.

Transport recognises that North Sydney Council's environmental and urban design teams have over many years delivered high quality urban vegetation and high levels of maintenance and care for trees.

Transport is committed to working in a partnership approach in delivering tree replacement, combining the knowledge and experience of Council with that of Transport to ensure high quality tree replacement outcomes to the benefit of the community and environment in North Sydney.

As a basis for developing this strategy and implementing a replacement tree program, the following North Sydney Council policies and guiding documents will be used alongside a range of complementary NSW Government policies and frameworks as outlined further below.

Detailed information around managing trees in North Sydney is available on the **North Sydney Council website**.

North Sydney Council Street Tree Strategy

The North Sydney Street Tree Strategy is Council's strategy providing clear guidelines for the effective short and long-term management of the network of trees, which comprise the basis of virtually all streetscapes in the North Sydney area. This network consists of over 17,000 individual trees.

In implementing the Tree Replacement Strategy, Transport will work with council to ensure an alignment wherever feasible with the principles of the Street Tree Strategy.

View information on the North Sydney Street Tree Strategy **North Sydney Council website**



North Sydney Urban Forest Strategy

The North Sydney Urban Forest Strategy provides an in-depth look at how Council's 'green infrastructure' is performing and considers how Council can maximise its performance in the future. In implementing the Tree Replacement Strategy, Transport will be informed and enact the synergies between the two strategies including emphasising the common objective of an increase in quality urban tree canopy coverage in the North Sydney LGA.

View information on the North Sydney Urban Forest Strategy **North Sydney Council website**

North Sydney Public Domain Strategy

The North Sydney CBD Public Domain Strategy is designed by Council to prioritise urban life, community gathering and pedestrian safety. It identifies a range of projects that will create a strong, connected network of public urban spaces in the CBD and outlines a timeline and framework to deliver these projects. In implementing the Tree Replacement Strategy, Transport will work with Council to take a holistic approach to tree replacement across the LGA including in regard to the CBD and the creating of cool, green and liveable public spaces.

View information on the North Sydney Public Domain Strategy **North Sydney Council website**

4.5.2 NSW Government policies and guiding documents

The Greater Sydney Green Grid (2017)

The Greater Sydney Green Grid is a long-term vision for a network of high quality green spaces that connect communities to the natural landscape. It includes tree-lined streets, waterways, bushland corridors, parks and open spaces linked to centres, public transport and public places.

An introduction to the Sydney Green Grid (2017) can be viewed on the **NSW Government architect website**

Draft Greener Places Design Guide

The guide proposes an improved approach for NSW, outlining the strategies and indicative targets to achieve improved canopy cover across the Greater Sydney Region, and other urban areas across NSW.

View the draft Greener Places Design Guide on the **NSW Government Architect website**

4.5.3 Transport for NSW policies and guiding documents

Transport for NSW Biodiversity Guidelines

Transport has developed best practice guidelines for project managers, staff and contractors to use to help protect biodiversity during construction of road projects and ongoing maintenance works.

The guidelines provide a comprehensive range of measures to minimise the impact to flora and fauna, prior to and during the clearing of native vegetation and their habitats.

View the Transport Biodiversity Guidelines on the **Transport for NSW website**

Transport for NSW Beyond the Pavement policy

An urban design approach for transport infrastructure planning, design and construction.

The policy encourages project teams to 'think beyond the pavement' - that is consider the broader context of which infrastructure is a part as well as the broader government framework and agenda to which Transport projects should contribute.

View the Transport for NSW Beyond The Pavement policy (2020) **Transport for NSW website**

5. Tree and vegetation impacts

As part of the projects, there will be impacts to some trees along the alignment. Transport’s approach in delivering the projects is to avoid or minimise the need to remove trees through project design and careful environmental management. Trees that do need to be removed will be replaced in accordance with planning approvals, including the two to one replacement ratio requirement.

Most of the sites required for construction of the Western Harbour Tunnel and Warringah Freeway Upgrade have either already been disturbed or contain trees and plantings which have been planted (i.e. they are not remnant).

In certain locations along the alignment, as identified through the environmental assessment process, vegetation will be required to be removed to facilitate the work. This will include some native plants, planted medians, non-native species and weeds.

Most of the trees and plants we need to remove are located within the Warringah Freeway corridor and at the Cammeray Golf Course construction site.

An indicative diagram of areas of impact is below at Figure 2. It should be noted the areas of tree removal or impacts shown are associated with the Warringah Freeway Upgrade.

More information on vegetation impacts associated with the Western Harbour Tunnel will be available as the project moves to the detailed design phase. This strategy will be progressively updated as the projects are delivered.

Figure 2 – Tree removal areas (Warringah Freeway Upgrade)





5.1 Environmental impact assessment

The Western Harbour Tunnel and Warringah Freeway Upgrade EIS was placed on public exhibition by the Department of Planning and Environment (DPE) (formerly the NSW Department of Planning, Industry and Environment, 'DPIE') between January and March 2020.

During the display a significant community and stakeholder engagement program was carried out, following on from previous public engagement during the concept design phase of the projects in 2017.

As part of the planning approval process, the projects were declared Critical State Significant Infrastructure (CSSI) in 2018. The EIS was prepared in accordance with the provisions of Part 5.2 of the *Environmental Planning and Assessment Act 1979*. Key environmental issues associated with the projects were considered throughout the design and development process and these were addressed in the EIS.

The EIS was considered by DPIE and planning approval was granted by the NSW Minister for Planning in January 2021.

The EIS remains publicly available and includes a wide range of information on the project design, potential environmental impacts and mitigation strategies, on the [Transport for NSW website](#).

The following sections of the EIS provide information on tree and vegetation removal:

- Chapter 19 – Biodiversity
- Chapter 22 – Visual amenity
- Appendix S – Biodiversity Development Assessment Report
- Appendix V – Urban design, landscape character and visual impact
- Appendix W – Arboricultural impact assessment

These and all other sections of the EIS can be accessed on the [EIS page](#) of the project website.

During the EIS public exhibition, 1,441 submissions were received from members of the public, with 13 submissions from NSW Government agencies and five from local Councils. Transport has taken feedback from the community and stakeholders into account as a result of the environmental assessment process where feasible. A detailed Response to Submissions Report was released in September 2020 providing Transport's responses to the matters raised.

The submissions report can be accessed via: portal.com.au/rms/wfu/documents-and-notifications

5.2 Impact mitigation

Transport for NSW is committed to minimising the community and environmental impacts of the Western Harbour Tunnel and Warringah Freeway Upgrade which will improve safety and reliability for motorists.

Transport will reinstate and rehabilitate parks, open space and recreation areas impacted by construction and not required for permanent infrastructure back to the community.

A Place, Design and Landscape Plan for the Warringah Freeway Upgrade is being developed as part of main work activities. As per E178 in the Minister's Conditions of Approval (MCoA), the Place, Design and Landscape Plan must be prepared by a suitably qualified and experienced person in consultation with relevant Councils, the community and affected landowners and businesses.

The public display of the Place, Design and Landscape Plan will occur in 2023. A similar plan will follow for the Western Harbour Tunnel later in the project.

Transport is committed to replacing trees and plantings at a ratio of two to one and to delivering an increase in tree canopy working in partnership with North Sydney Council. Tree replacement will be guided by condition E185 of the MCoA. In line with the MCoA, replacement trees must be located on public land and be prioritised within 500 metres of the affected areas, with the aim of delivering increased shading to footpaths and pedestrian and cycle paths.

While Transport is committed to prioritising replacing trees within 500 metres of the project boundary, work to achieve this will take place within a number of project constraints and other challenges (listed further in section 5.6).

To meet this priority, Transport will also holistically investigate tree planting opportunities in other areas within the project boundary.

If and when replacement tree planting opportunities within the 500 metre project boundary have been exhausted then in conjunction with North Sydney Council and the community further opportunities for tree planting will be identified beyond the project boundary within North Sydney LGA.

5.3 Tree definition

In the EIS, trees were defined and assessed as those being at least four metres high with a diameter at breast height (DBH) of over 600 millimetres.

DBH is a standard measurement for trees and is where the diameter of the trunk is measured. It sits at 4.5 feet or 1.4 metres high.

As part of the MCoA (SSI-8863), the following definition of a tree was provided:

“Long lived woody perennial plant greater than (or usually greater than) three metres in height with one or relatively few main stems or trunks (AS4373-2007 Pruning of amenity trees).”

In accordance with MCoA A3, as there is an inconsistency between the EIS definition of a tree and the Infrastructure Approval definition of a tree, the definition of a tree provided in the Infrastructure Approval has been adopted by the Project.

The change in definition has come about from the MCoA. This means the amount of vegetation to be cleared is the same, however, how vegetation is defined and offset has changed.

What may have been assessed as a shrub or bush in the EIS is now considered a tree under the MCoA definition. The benefit of this re-definition is that under MCoA E184 (which requires two to one replanting of any tree to be removed) more trees will be replanted as part of the project.

It should be noted that around Australia and across infrastructure projects in the past, there has been no universal definition of a tree in terms of its size, dimensions and maturity.

5.4 Project Conditions of Approval

In January 2021, the NSW Minister for Planning and Public Spaces granted formal planning approval for the Western Harbour Tunnel and Warringah Freeway Upgrade projects.

The MCoA for the projects include a range of conditions relating to the impacts on trees and vegetation across the alignment, from Rozelle to Willoughby. Transport acknowledges that some of the more significant impacts of the projects are associated with the Warringah Freeway Upgrade, which largely runs through the North Sydney LGA.

A key requirement of the Minister’s Conditions of Approval (MCoA) is that the projects *“must be designed to retain as many trees as possible. Replacement trees and plantings must be provided at a ratio of two to one and deliver an increase in tree canopy to enhance the relevant council’s position in respect of the Sydney Green Grid, unless otherwise specified by the Planning Secretary”*.



Transport will work in partnership with local Councils to ensure replacement trees are of sizes, species and maturities appropriate to the areas in which they will be planted.

Specific approval conditions apply regarding the location, species, quality, timing and size of replacement trees. Additionally, as part of the MCoA, a range of project documents must be developed in relation to the replacement of trees and other landscape and amenity considerations.

As referred to earlier in this document, these include a Flora and Fauna Management Sub-Plan which will detail the processes for managing vegetation and associated issues. The Landscape Strategy Report and Place, Design and Landscape Plans must also be prepared.

Transport will work with North Sydney Council to replace trees with the intent to deliver an increase in quality tree canopy and an aim to enhance Council’s position in respect of the Sydney Green Grid – the NSW Government’s initiative as part of the Greater Sydney Region and District Plans, delivering an interconnecting network of open space that will keep the city cool, encourage healthy living, enhance biodiversity and ensure ecological resilience.

Table 2 below provides an overview of certain key MCoA conditions with specific relevance to trees and vegetation across the corridor.

Table 2 – Key Minister’s Conditions of Approval relating to trees and vegetation

Condition number	Condition requirement
E184	The CSSI must be designed to retain as many existing trees as possible. Replacement trees and plantings must be provided at a ratio of two to one and deliver an increase in tree canopy and aim to enhance the relevant council’s position in respect of the Sydney Green Grid, unless otherwise agreed by the Planning Secretary.
E185	Replacement trees must: <ul style="list-style-type: none"> (a) be located on public land and prioritised within 500 metres of the construction boundary, that delivers increased shading to footpaths, pedestrian and cycle paths (b) be of a species suitable to the location, having regard for local ecology and existing street trees (c) meet the requirements for quality tree stock specified in the AS2303:2018: Tree Stock for Landscape Use (d) be provided no later than six months following the commencement of operation (e) have a minimum pot size consistent with the relevant council’s plans / programs / strategies for vegetation management, street planting, or open space landscaping, or as agreed by the relevant council(s).
E186	Replacement and enhancement of vegetative screening along the project corridor must take place in a progressive manner during construction to allow for the early establishment of vegetative screening.
E187	A Landscape Strategy Report must be prepared which details the type, size, number and location of replacement trees. The report must demonstrate how any replacement plantings are consistent with the requirements of Condition E184 and Condition E185. The report must be submitted to the Planning Secretary for information no later than nine months following the commencement of operation.
E177-181 (Excerpt)	A Place Design and Landscape Plan must be prepared. The PDLP must include... <ul style="list-style-type: none"> (f) the location of existing vegetation, areas of vegetation to be retained and proposed planting and seeding details, including the use of local indigenous species for revegetation activities.

5.5 Tree replacement timing considerations

Transport is committed to the replacement of trees removed as part of the projects as soon as is practical during the life of the project and will ensure trees are replaced progressively.

This will provide the opportunity for planted trees to start to grow during the project lifecycle resulting in more mature replacement trees being in place at the end of the work.

The MCoA require that overall strategies and specific information on tree replacement be addressed in key planning documentation to be prepared by Transport and project delivery teams. These include Place, Design and Landscape Plans and a Landscape Strategy Report.

The Place, Design and Landscape Plans are required to be prepared and submitted to the Planning Secretary no later than one month before the construction of permanent work. The Landscape Strategy Report is required to be submitted to the Planning Secretary no later than three months after the commencement of operation of the projects.

In planning for the required number of trees to be used as replacement trees in the North Sydney area, it is considered unlikely that the preferred tree species would be commercially available to purchase “off the floor” at the required quantity at any single point in time.

As such, Transport will work in partnership with North Sydney Council throughout the course of the projects on forward planning for procurement and progressive replacement of tree stock.

For the projects to plan in a way that will meet the requirements of the MCoA and meet the tree replacement needs of Council, it is essential that the required number of trees of the desired species, at appropriate maturity levels, are planned for and sourced early.

Based on initial investigations, the time required to grow street trees from seed to the required size is between around 85 weeks for smaller to medium sized trees and 130 weeks for larger trees.

A number of factors that could extend or reduce these timings, including availability of stock overall, or stock of particular species, and time of year of required seed collection. Availability of stock in smaller sizes in nurseries may reduce the timeframes.

Time of year of ordering of tree stock is also an important consideration, relative to appropriate planting and growing seasons.

Given the complexities in planning for, ordering, procuring and delivering replacement trees, Transport will work with North Sydney Council to develop a staged approach to overall tree replacement. Indicative stages and timings of the approach are set out in Section 10 of this report.

5.6 Constraints in the North Sydney LGA

As our urban environment becomes more compact, finding space for trees and tree roots will become harder, and require greater investment, including supporting infrastructure, to create sustainable growing environments.

In discussions with North Sydney Council throughout the course of 2022, Transport and Council have identified a number of constraints associated with tree replacement options in the LGA.

Transport recognises these constraints and will work with the community, stakeholders and Council as part of the roll out of this strategy in line with planning approval requirements to collaboratively identify opportunities and develop solutions to address these challenges.

Identified constraints include:

- as a highly built up urban area with existing good tree coverage particularly in residential areas, there is limited streetscape for replacement trees
- there are significant underground and overhead utilities throughout the LGA including water and gas mains underground, and electricity cabling and wires both underground and overhead
- engineering constraints in relation to the planting of trees – including clearance, safety, lines of sight (including tree under canopy) in accordance with Austroads standards
- including provisions for maintenance of trees including access for maintenance and the need for maintenance to be carried out safely
- North Sydney's small geographic area relative to other councils across Greater Sydney, and North Sydney's role as both a business centre and residential area
- a significant number of longstanding parks and open space that have been well vegetated for many decades, limiting scope for additional tree planting.

It should be noted that many of these constraints are not unique to North Sydney, and apply in other project impacted LGAs, such as Inner West and Willoughby.

In working to address these constraints, a number of opportunities have been identified for tree replacement. In some cases, these are within the required 500 metre project boundary, with potential options beyond this requirement.

Transport's aim in replacing trees is to replace as many quality trees as possible to meet project conditions of approval. Trees within the North Sydney LGA that have been removed as a result of the projects will be replaced on the two to one ratio within the North Sydney LGA.

5.7 Developing this strategy

This strategy has been developed and will be implemented in partnership with North Sydney Council, Transport project and urban design teams and contractor project delivery teams.

Engagement activities include external and internal meetings and briefings, gathering of supporting information and seeking feedback on the strategy from North Sydney Council. The purpose of the engagement approach with stakeholders is to:

- gather relevant information and facilitate sharing of stakeholder views to guide early strategy development
- provide regular updates to stakeholders on progress of the overall projects as it relates to trees and inputs into the strategy
- obtain input into the strategy and facilitate in-principle agreement on replacement planting objectives, options, potential locations and a range of potential replacement tree species.

A number of engagement activities have been carried out as shown in Table 3 below.

Table 3 – Engagement activities in developing this strategy

Activity	Details
Tree impacts workshop February 2022	Workshop between Transport and North Sydney Council to identify priorities to be factored into the development of the strategy and principles to support desired tree replacement outcomes.
Interface meetings and briefings ongoing fortnightly throughout 2022	Regular Transport and North Sydney Council interface meeting at which status, intent and progress of Tree Replacement Strategy was discussed.
Internal Transport site inspections and investigations throughout 2022	Transport project team and Place North team site inspections and internal investigations to gather information and assess potential scope for tree replacement in the North Sydney LGA
Site inspections at Warringah Freeway and Cammeray Golf Course 28 June 2022	Inspection between Council representatives and Transport representative to gather high level information and view of tree removal areas.
Internal Transport subject matter experts review of strategy structure and proposed content Aug-Sept 2022	Subject matter experts from Transport projects, corporate, environmental planning and urban design provided comment and input into the strategy.
Presentation to North Sydney Council representatives September 2022	Presentation providing an overview of key sections of the strategy document provided to North Sydney Council Acting General Manager and project / Council interface lead.
North Sydney Council provided with draft strategy for review and comment November 2022	Draft strategy provided to North Sydney Council interface, to arrange review by relevant Council environmental and urban design teams and other relevant areas, with Transport commitment to review feedback and revise document as appropriate.
Community feedback Q4 2022 Q1 2023	Feedback on draft strategy sought from local community.
Update Tree Replacement Strategy to include community feedback	Transport has reviewed community feedback gained through submissions made by community members and groups and a summary of feedback received has been included in the updated strategy
North Sydney Council provided with updated strategy for feedback Q2 2023	Transport to refine strategy taking into account all community, stakeholder and Council feedback
Mid 2023	Strategy to be finalised.





6. Tree replacement objectives

Learning from experience on previous projects and based on initial research for the Western Harbour Tunnel and Warringah Freeway Upgrade projects, Transport has identified three overarching principles to guide the delivery of tree replacement.

6.1 Principles for tree replacement

Delivering the tree replacement program across the life of the projects, including meeting the planning requirements such as the two to one replacement ratio, will require the adoption and adaption of these principles.

The identified principles are:

1. **Community centred** – delivering benefits to the impacted local community
2. **Returning green space** – reinstating quality open and green space in the local area
3. **Achievable** – providing certainty to meet project approval requirements.

Transport will work with North Sydney Council to refine and adapt these principles in the early stages of project delivery to provide a framework for the selection of specific tree locations and species, sourcing and delivery approaches and community engagement activities.

In accordance with these principles, the project teams will prioritise tree replacement in areas and location types where these three principles most overlap – providing benefits to people and communities, the environment and places and with efficient and viable delivery in mind.

Adopting these principles will ensure replacement trees can be best delivered progressively throughout the life of the projects, with community support, to enhance local open space and ensure the successful growth of replacement trees.



6.2 Objectives for tree replacement

Transport and the project teams are carrying out desktop studies, reviews of existing documentation and experiences and learnings from previous or current major transport and infrastructure projects in NSW and beyond, to gather information to assist in meeting the tree replacement requirements of the MCoA.

The review of background documentation and other project experience, together with stakeholder engagement, has identified a number of opportunities that guide and inform the location of the replacement tree planting.

Transport will work with North Sydney Council in delivering this strategy using the five objectives below to guide ongoing discussions, planning and delivery of tree replacement in the North Sydney LGA through to the delivery phase of the projects.

- **Objective One** – prioritise community open space
- **Objective Two** – prioritise proximity to tree removal sites
- **Objective Three** – plant in areas according to existing Council policies
- **Objective Four** – balance needs such as amenity, comfort, light, people movement, views
- **Objective Five** – plant in areas that will promote growth and success of planted trees.

6.3 Future canopy coverage

Transport is committed to replacing trees to deliver an increase in quality tree canopy working in partnership with North Sydney Council on an ongoing basis throughout the life of the project.

With regard to canopy coverage, as part of the planning approval requirements, in partnership with key stakeholders, the maturity of replacement trees in the replacement planting will be outlined in key planning documents including the size, type and location of plantings.

Selection of pot size, planting location and species of trees will take place with the intent to provide a quality canopy cover for future years. A range of tree sizes and maturities will be provided appropriate to the areas where replanting will take place.

As required by planning conditions, for replacement trees in Council maintained parks and streets, Transport will ensure minimum pot sizes will be consistent with the requirements of Council plans, programs and strategies or as agreed with Council.

In developing the Place, Design and Landscape Plans and Landscape Strategy Report, Transport and the project teams will be guided by a range of guidelines and policies with the intent of providing quality future canopy cover by the replacement trees in North Sydney and other areas.

Due to the constraints of the North Sydney LGA and available landscape, the selection of quality trees and ensuring the survival of species will be key, in addition to the quantity of planting and with the implementation of an appropriately funded maintenance program.

In line with North Sydney Council's Urban Forest Strategy (2019), this project falls under multiple categories of classification including 'Urban' (Target Canopy Cover 25%) and 'Suburban' (Target Canopy cover 50%).

Based on land use within the North Sydney and the international recommended target cover for CBD zones, urban zones and residential zones, the overall canopy cover target for North Sydney is 34.4%.

Transport will work with Council to implement and establish an increased and diverse tree canopy with the aim of reaching these targets.

6.4 Tree relocation options

The potential for relocation of mature trees in the North Sydney LGA is currently being investigated by Transport and the project delivery teams. It should be noted that relocation of mature trees is costly and has associated risks with only certain species being viable candidates. Native species have a low success rate in surviving relocation at a mature age.

Candidate species are generally non-native which can include species of palm and non-native deciduous trees, with varying survival success. In determining if trees are suitable for relocation, advice from a suitably qualified arborist will be sought to inform whether individual trees can be successfully and feasibly relocated.

Given limitations on the feasibility of tree relocation, Transport's preference is to retain vegetation by redesigning construction work where possible or seeking arborist advice to retain trees. This is common practice across infrastructure projects including works on the Warringah Freeway Upgrade project where the design has been managed to avoid or reduce tree impacts.

Arboriculture investigations are taking place for the main work portion of the Warringah Freeway Upgrade. Currently no individual trees have been identified as viable for relocation. Similar investigations will be carried out as the main works program commences on the Western Harbour Tunnel north of Sydney Harbour.

With regard to the practicality of relocating individual trees, there is no specific limit on the size of trees which can be relocated.

If an individual tree was identified as being potentially suitable for relocation (ie. with an appropriate location found for relocation and the tree assessed as being likely to survive the process) practical issues including cost, time and safety would be assessed on a case-by-case basis. Where reasonable and feasible across the Western Harbour Tunnel and Warringah Freeway Upgrade projects, Transport will seek to relocate trees identified as suitable candidates.

6.5 Potential planting locations

Under the MCoA, replanting should take place up to 500 metres from the project construction boundary. Precise areas for replacement will be determined working in partnership with North Sydney Council as part of the development of the Landscape Strategy Report, required by the MCoA. This report must detail the type, size, number and location of replacement trees.

This report will also inform the Place, Design and Landscape Plans for the projects which will include the location of existing vegetation, areas of vegetation to be retained and proposed planting and seeding details, including the use of local indigenous species for revegetation activities.

The MCoA requires that these documents are developed and implemented during construction and operation of the projects. Transport and the project teams will progressively develop and implement these documents during the construction phase. The Place, Design and Landscape Plans will be developed for each major contract across the projects.

There are limitations on the number of replacement trees that can be planted within 500 metres of the project boundary.

As such, North Sydney Council and Transport have discussed the potential to identify alternative locations in the North Sydney LGA where replacement trees could be planted, outside the 500-metre requirement. It should be noted that replacement trees will be prioritised within 500 metres of the construction boundary, as per the MCoA. Should locations outside the 500-metre requirement be identified and agreed with Council, Transport would seek approval from the Planning Secretary.

Transport will work in partnership with Council and the community to identify possible tree planting locations.



6.6 Tree species for replacement planting

In the North Sydney LGA, Transport is committed to working in partnership with Council through current local tree planting strategies and plans to guide the final selection of species identified under this strategy and as part of the planning approval documents.

Based on a preliminary document review and the objectives of the Tree Replacement Strategy, the following three approaches for tree selection have been identified and Transport will work through these to seek advice from and agreement with North Sydney:

1. **Tree type and location** – selecting the most appropriate tree type and size for each specific location to ensure the greatest success in tree growth and survival and community and environmental benefit
2. **Environmental benefit through diversity** – ensuring there is a diversity in species across local areas in keeping with, or improvement to, pre-project species diversity
3. **Methodical delivery** – planning, procuring and delivering replacement trees in a methodical way to ensure availability and planting of trees progressively through the life of the projects.

More detail on these three approaches follows below.

Tree type and location

The Tree Replacement Strategy is based on a tree selection approach that begins with an analysis of growing conditions, desired project outcomes and species characteristics as key considerations to determining a list of suitable species.

Right tree, right place in the context of this Tree Replacement Strategy means finding the best trees with the greatest benefits and attributes for each location, while avoiding assets and impacts to properties. This approach delivers the maximum heat mitigation benefits while also reducing the likelihood of tree failure.

Environmental benefit through diversity

Scientific research indicates that a large representation of any one particular plant family leaves urban tree populations vulnerable to pest and disease outbreaks, as a single pathogen would be able to cause significant losses to a large share of the tree population.

Low species diversity also increase vulnerability to the kinds of weather conditions the project area is expected to experience, that is: increases in heat waves and reduced rainfall/ prolonged drought.

To ensure longevity of replacement tree planting and maximise long-term benefits to communities and environment in the North Sydney LGA, this strategy promotes diversity in tree species and growth rates, consistent with broadly accepted best practice guidelines.

Methodical delivery

The ability to procure the identified tree species within the limited project time frame is a key need of the project to achieve project planning approval requirements.

Transport will work with Council to identify potential commercially readily available species, to ensure stock availability to support the project planning conditions.

7. Strategy for replacing trees

Transport (and its precursor agency, Roads and Maritime Services) has worked collaboratively with North Sydney Council on tree management approaches in the North Sydney LGA since 2017, as part of the development and environmental assessment phase of the Western Harbour Tunnel and Warringah Freeway Upgrade projects.

7.1 Working with North Sydney Council

Transport continues to support Council's ongoing understanding of the projects and potential impacts and is committed to working in partnership with Council to understand its needs and the needs of the local community.

In February 2022, representatives from Transport and North Sydney Council participated in a tree strategy workshop. The purpose of this workshop was to identify priorities to be included in the development of the Tree Replacement Strategy and principles to support desired tree replacement outcomes.

The workshop provided an opportunity for stakeholders to identify issues associated with tree removal and replacement in the North Sydney LGA and potential opportunities in the short and long term.

During this workshop Transport provided an overview of the areas in the LGA where vegetation is required to be removed.

Transport also provided a summary of the Flora and Fauna Management Sub-Plan, including provisions such as the engagement of a qualified arborist, assessments of the vegetation likely to be impacted by the projects, assessment of potential alternate construction methodologies to reduce impacts on vegetation and how these will inform final clearing plans.

Due to the highly built-up nature of the comparatively small North Sydney LGA, there are constraints upon areas in the LGA where replacement trees can be planted.

7.2 Place, Design and Landscape Plans

Project Place, Design and Landscape Plans are a requirement of planning approval and must include the location of existing vegetation, areas of vegetation to be retained and proposed planting and seeding details, including the use of local indigenous species for revegetation activities.

The plans also include a range of other matters relating to design outcomes for the projects (eg. built environment, landform, open space, heritage, visuals and others).

A Place, Design and Landscape Plan will be developed for each of the major contract components of the projects, including the Warringah Freeway Upgrade and the Western Harbour Tunnel packages. MCoA requires the plans to be developed in consultation with relevant Councils (including North Sydney Council).

The plans must be reviewed by an independent project Design Review Panel and submitted to the Planning Secretary for approval no later than one month before construction of permanent work subject to the plans. Transport will work with North Sydney Council throughout the course of the projects in the development of the plans.

7.3 Landscape Strategy Report

The Landscape Strategy Report is a requirement of planning approval and details the type, size, number and location of replacement trees. The report must demonstrate how any replacement plantings are consistent with the requirements of relevant conditions of the planning approval.

MCoA requires the report to be developed in consultation with relevant Councils (including North Sydney Council).

The report must be submitted to the Planning Secretary for information no later than nine months following the commencement of operation. Transport will work with North Sydney Council in the development of the report.

7.4 Flora and Fauna Sub-management Plan

A Flora and Fauna Sub-Management Plan is a requirement of planning approval and includes details on how the projects will manage potential flora and fauna impacts during construction including mitigation measures and the process of vegetation to be cleared as part of the projects.

MCoA requires the Sub-Plan to be developed in consultation with relevant Councils (including North Sydney Council). Council has been consulted on sub-plans prepared for the projects to-date.

Flora and Fauna Management Sub-Plan is one of a range of sub-plans prepared under the Construction Environmental Management Plan (CEMP) required under the MCoA.

The CEMP sub-plans must be submitted to the Planning Secretary for approval along with, or subsequent to, the submission of the CEMP but in any event, no later than one month before construction.



8. Tree replacement locations

This section provides an overview of potential options for replacement trees in the North Sydney LGA.

8.1 Tree replacement locations – open space and Crown Land opportunities

Consideration will be given to alternative locations for replanting, including open space and Crown Land in the North Sydney LGA if suitable.

It should be noted that some Crown Land in the LGA is managed by Council and use of such areas for replanting would be discussed with Council.

Additionally, some of the Crown Land parks managed by Council have landscape masterplans in place. Any additional planting in these parks will be required to be in accordance with these community masterplans.

Transport and North Sydney Council will work together to identify areas of Crown Land including Crown Land areas managed by Council where tree replacement may be suitable.

Transport will further investigate these options with Council.

8.2 Tree replacement locations – areas owned or managed by Transport

Transport for NSW and its related agencies own and manage a significant asset base across NSW including parcels of land throughout the North Sydney LGA. These include arterial roads, railway corridor, road verges, median strips and other transport-related assets.

In planning and constructing the Western Harbour Tunnel and Warringah Freeway Upgrade infrastructure, Transport has and will continue to identify areas in Transport-owned land where tree replacement planting can take place.

While a significant portion of the trees to be removed as part of the projects are along the Warringah Freeway corridor, as has been identified in the EIS, there are opportunities for replanting along the freeway corridor progressively as the infrastructure is built.

A key consideration in planting additional trees along road corridors is safety of motorists and pedestrians, including line of sight, tree height and tree placement to allow for pedestrian thoroughfare.

Transport will work with North Sydney Council in continuing to identify Transport-owned land that may be suitable.

8.3 Tree replacement locations – community opportunities

Transport recognises the unique environmental, cultural and heritage features of the North Sydney Council area and understands how the local community cherishes the landmark open space features of the area.

Transport will engage with North Sydney Council and the local community to identify opportunities for residents, business and community groups to participate in and assist with tree placement in the LGA.

At this stage of project delivery, Transport and the project teams consider that the following initiatives would be of value to both the community and the successful delivery of the projects.

8.3.1 Schools and educational campuses

With around 20 schools and educational campuses in North Sydney alone, including the Australian Catholic University campus, Transport will investigate opportunities for these institutions, along with others across the project boundary, to participate in tree planting and replacement opportunities.

These potential locations are not necessarily on public land, though they are community facilities with significant areas of open space, presenting opportunities for a cooler and greener locality in North Sydney should they be suitable for tree replacement options.

Transport recognises that Council will have existing, long-established relationships with education providers in the LGA, and will work in partnership with Council in discussing options with these stakeholders.



8.3.2 Verge gardens

Verge, or median, gardens form an important part of the urban forest and have the potential to improve the appearance of streetscapes and provide opportunities to engage with the local community.

Across the Greater Sydney metropolitan area, local communities and councils have been increasingly exploring opportunities to create verge gardens in suitable locations. Verges may have limitations in terms of the space required for larger trees (as defined in the MCoA) and Transport will work with Council to identify areas where this option may be possible and desirable in North Sydney.

8.3.3 Pocket parks

Transport will investigate opportunities across the alignment in the North Sydney and other LGAs to develop 'pocket parks'. These are small areas of public land which can be set aside for a cool and green spaces in a pocket of an otherwise developed area.

As is the case with verge gardens, recently the NSW Government and councils across Greater Sydney have been encouraging the development of small parks or 'pocket parks' in suitable public spaces. These small parks, often located in small, under-utilised areas of open space, align with the delivery of government initiatives to enhance the quality of life for local communities.

8.3.4 Sporting fields and facilities

Transport will work with Council to identify areas within or around sporting fields or facilities in the North Sydney LGA where there may be opportunities to plant replacement trees.

Many such facilities are owned or under the care and control of Council and a collaborative approach will be adopted so that Council can provide Transport with information and opportunities at any such facilities.

8.3.5 Community planting options

Studies have found that trees planted with community involvement have significantly higher survival rates. Transport will work with Council to seek opportunities to empower local communities through their involvement in the strategy.

Some community planting options may involve active participation with the North Sydney community in tree replacement in the LGA. While planting on private or residential land is currently in addition to the requirements of the MCoA, increasing quality vegetation in private land in the LGA would enhance the local environment and private amenity for residents.

8.3.6 Establishing replacement trees

Transport will ensure that an appropriately funded maintenance program is in place to maintain new trees through a 24 month (minimum) establishment period. Any replacement tree loss that occurs will be replanted by Transport in consultation with Council.

8.3.7 Aboriginal / First Nations groups

Heritage and Country disturbance are an important consideration in urban design and landscape planning. Any construction should have as minimal disturbance to the ground as possible. For Aboriginal people, the ground and water are important and should not be disturbed unnecessarily so as to minimise change to ecosystems and cultural values within Country.

Creating a place where Aboriginal peoples cultural heritage is shared with users is very important in developing understanding and appreciation of our shared cultural heritage.

Transport, in partnership with Council, will seek opportunities to connect to Country through the selection and replanting of specific trees, seeking to identify plants associated with Aboriginal seasons, ceremonies, healing properties, men and women's plants, seasonal indicators, decoration, food, fire, habitat and implements.

8.3.8 Further options to be explored in partnership with Council

Transport and Council will continue to explore tree replacement options in a partnership approach to delivering replacement trees progressively throughout the course of the project delivery, as part of ongoing forums and discussions. Tree replacement approaches will be managed adaptively so that new options can be implemented as the projects evolve.

9. Community feedback

9.1 Feedback overview

The community is helping shape the future of the Western Harbour Tunnel and Warringah Freeway Upgrade Tree Replacement Strategy. Over 100 submissions were received from community members and community organisations. We sought feedback on community views on locations for replacement trees, tree types, dimensions, and native species.

In finalising the strategy, we are working with the local community, stakeholders and North Sydney Council to determine the best outcomes for replacement native tree species, sizes and locations.

Transport will continue to consult the community and stakeholders on these including local councils. Transport thanks all community members and groups who provided feedback on the strategy.

9.1.1 How we engaged

The draft Tree Replacement Strategy was published on our website on 7 December 2022 and community members were invited to provide feedback until 5 February 2023. All stakeholders across the Western Harbour Tunnel and Warringah Freeway Upgrade who have registered for updates received an invitation to provide feedback.

Supporting communications material included:

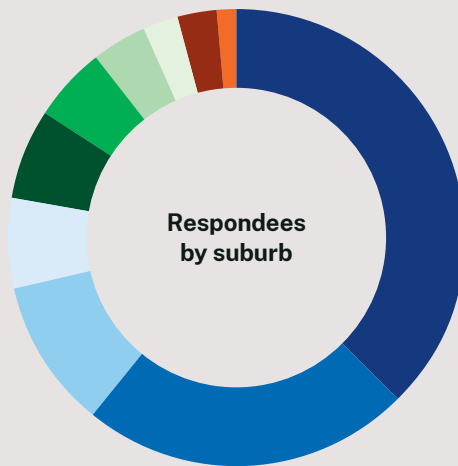
- full strategy document placed on web
- dedicated strategy web page with feedback form and contact channels
- tree replacement explanatory video
- tree nursery video
- tree replacement fact sheet
- tree protection fact sheet
- strategy overview summary

- email to all stakeholders on project mailing list
- supporting digital media
- notification to Council.

9.1.2 Who we heard from

Transport for NSW received submissions from community members and stakeholders through website form submissions, the dedicated project email address and phone calls taken by our project team.

Out of 102 submissions, most were received from people living in the North Sydney LGA, in the suburbs of North Sydney, Waverton, McMahaons Point, Cammeray, Neutral Bay, Kirribilli, Milsons Point and Crows Nest. A small number of submissions were received from areas along the Western Harbour Tunnel and Warringah Freeway Upgrade but outside the North Sydney LGA.



9.2 What we heard

Community members provided valuable input on potential locations around the North Sydney local government area for replacement trees and the types of species suited to these areas.

Transport has analysed and collated community feedback to assess how to apply community suggestions into best practice for the strategy.

Overview

- 102 submissions received from the community via feedback forms, emails and phone calls
- sentiment broadly split between constructive and concerns
- common themes and issues emerged from the feedback
- community views will be taken into account in finalising the Tree Replacement Strategy and developing the PDLF.

Stakeholders were mostly interested in ensuring the Tree Replacement Strategy is implemented quickly and in line with the planning approvals, managing impacts of tree replacement on local biodiversity and amenity for the project area and surrounding suburbs.



9.2.1 Key topics and themes

Out of all the submissions, there was a strong sentiment that people would like to see trees planted close to the project corridor at a ratio of two to one, with further community consultation and involvement, more mature or semi-mature native trees planted and ongoing caretaking for trees and protection of fauna in the local environment. The top ten key topics and themes across the community feedback are shown in the snapshot in Figure 3 below.

There is strong stakeholder and community support for the project requirement that two trees be replanted for every tree removed. Transport is working to meet this project requirement, and this outcome will mean that there will be more trees in the local area at the end of the project than there were before.

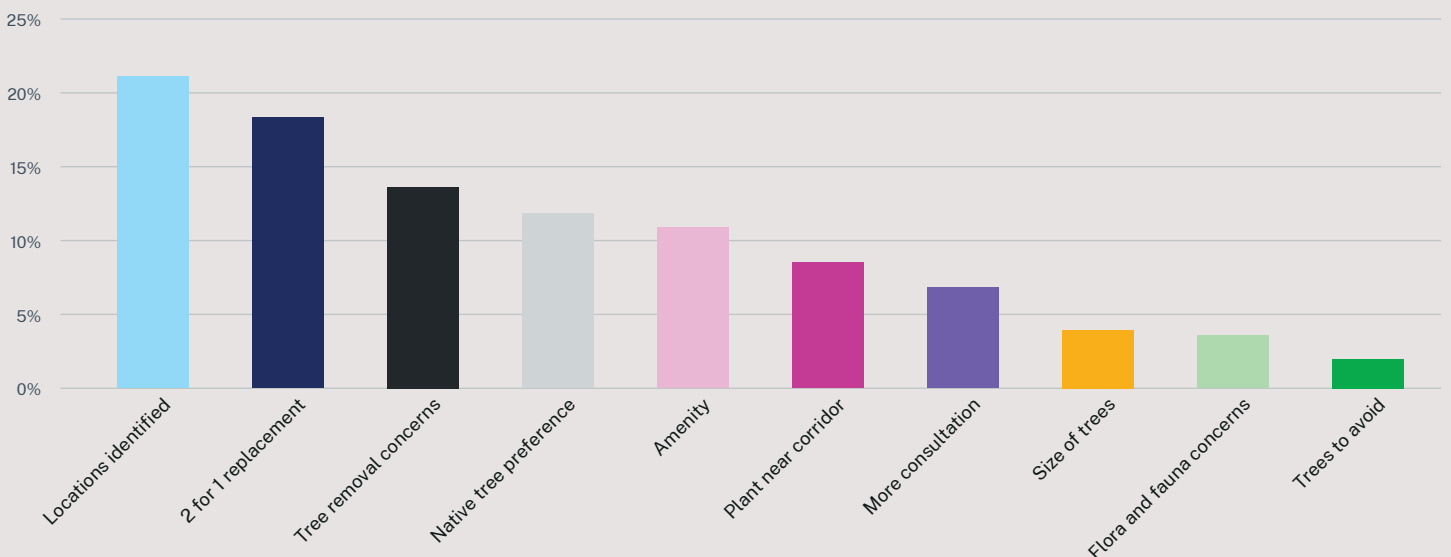
Stakeholders also expressed a desire for trees to be replanted progressively through the life of the project. Key insights include:

- Specific locations preferred – the community supports planting of trees close to where trees were removed from, with some support for tree planting further afield in North Sydney beyond the project corridor
- Support for two for one tree replacement – the community expressed strong support for the planting of two replacement trees for every tree removed, with some community members suggesting this ratio should be exceeded if possible
- Tree removal concerns – the community and stakeholders expressed concerns around the need for tree removal as part of the

projects, expressing a desire for all avenues to be explored before a tree is removed

- Native tree preference – there is overwhelming support and understanding for the need for replacement trees to be native Australian trees wherever possible, with species selected in keeping with the existing biodiversity in the North Sydney area
- Local amenity considerations – a significant component of the community feedback included the desire for replanting of trees in locations that improve local amenity, providing shade and visual screening, and a source of food to attract native fauna.

Figure 3 – Top ten topics and themes

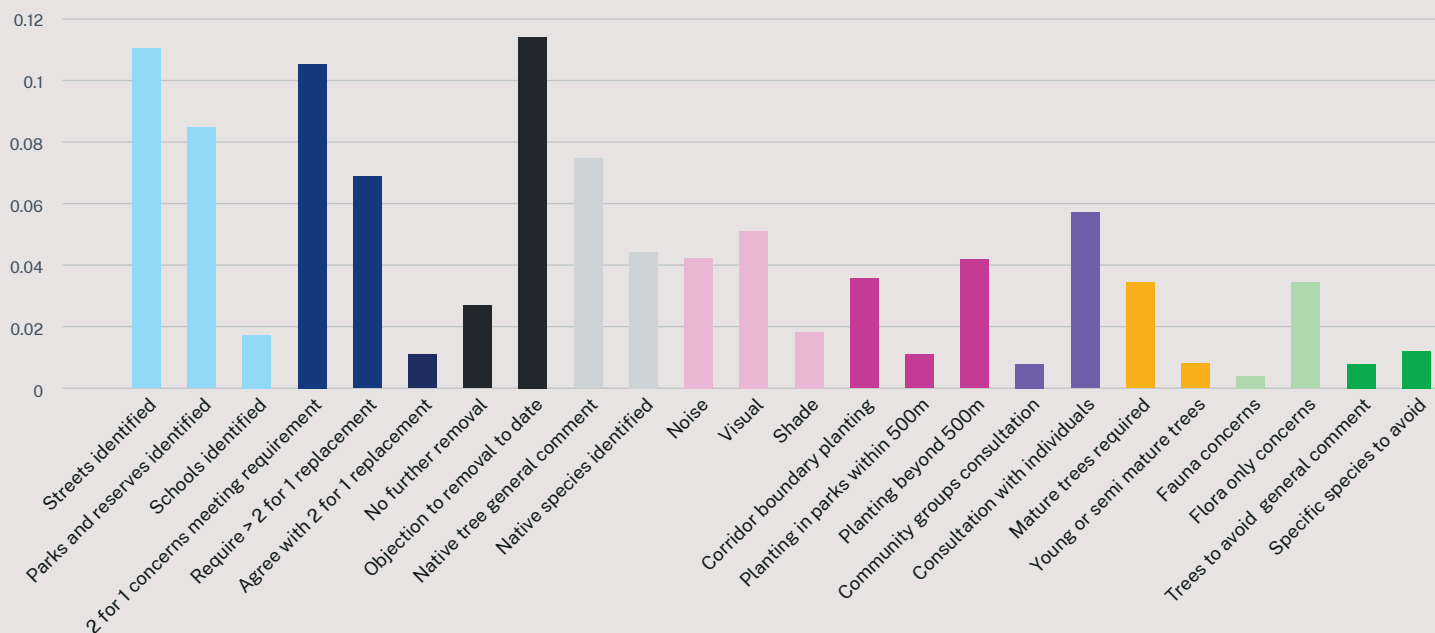




- More mature trees preferred – the community support the projects investigating the planting of more mature or semi-mature trees, to improve the tree canopy in the area and ensure that trees have grown larger by the time the projects are completed
- More consultation with community needed – there is a desire in the community to be further involved in the tree replacement approach and to participate in further community engagement opportunities such as the Place, Design and Landscape Plans
- Flora and fauna – a number of people responding to the strategy indicated a concern that replacement trees provide suitable habitat and food sources for native wildlife, with trees selected designed to encourage birds, small mammals and other animals
- Tree types to avoid – some community members, in supporting the need for native plants, also expressed concern that non-native specific species be avoided, to ensure an improved local, healthy environment for the community.

An analysis of the most common sub-themes identified through a more detailed analysis of the submissions is shown in Figure 4 below.

Figure 4 – Top community sub-themes



9.3 Preferred locations

Community members and stakeholders responding to the strategy indicated a preference for replacement trees to be planted along the project corridor, near to where trees have been previously removed.

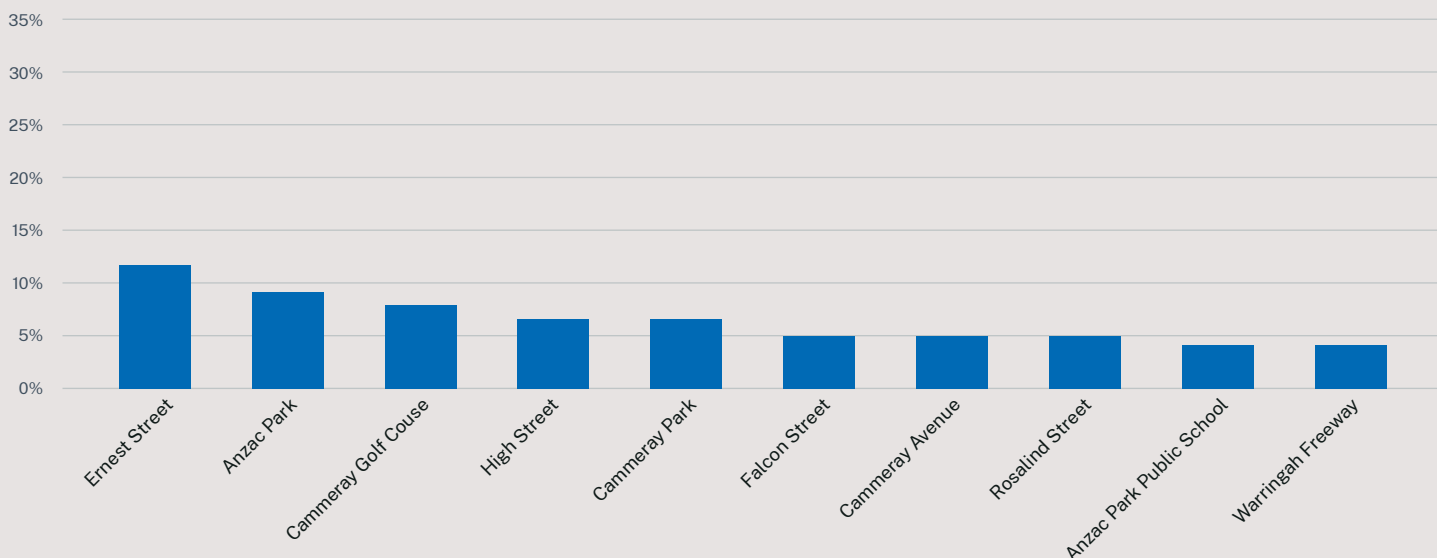
A significant number of people additionally specified parks and precincts where tree replacement should take place. A number of community members also indicated that Transport, working with Council, could investigate areas beyond the immediate project boundary as future planting locations.

Overall, popular locations for replanting included among many others:

- broadly along corridor boundary – to provide visual screening
- areas near residences – replace trees from where they were removed
- Cammeray Golf Course
- Anzac Park
- Ernest Street area
- High Street
- around active transport infrastructure.

The top 10 locations identified are shown in Figure 5 below.

Figure 5 – Tree planting locations identified by the community



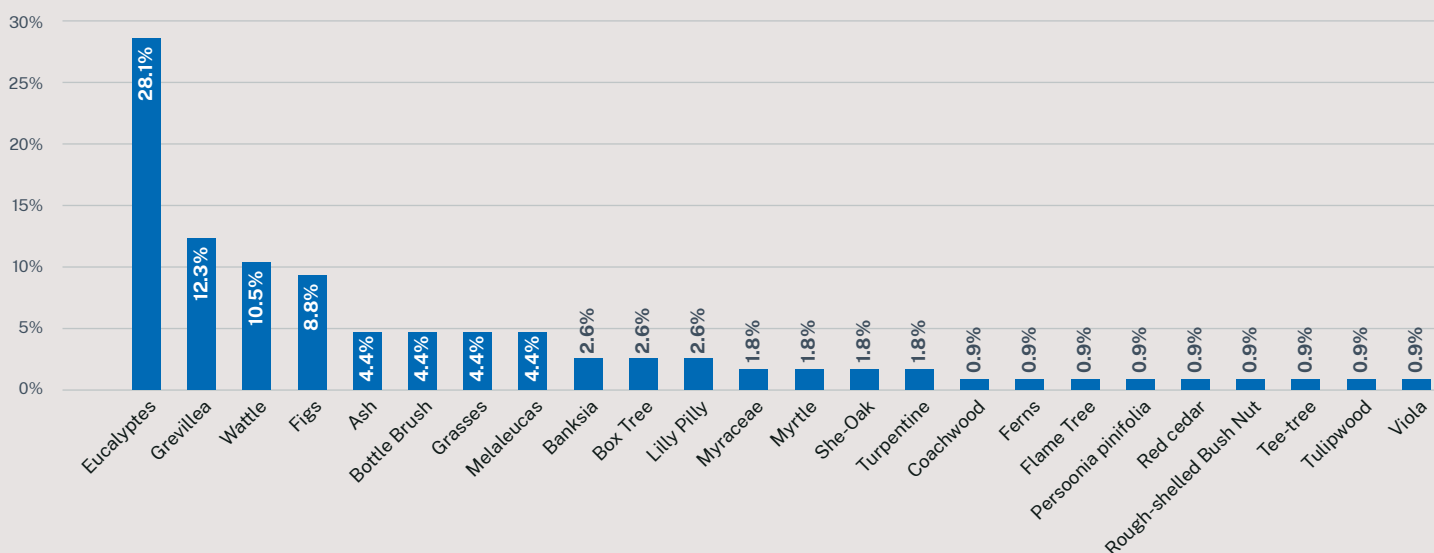
9.4 Preferred species

Many community members making submissions regarding the strategy nominated in detail the tree species and types they would like to see planted as replacement trees. Transport and the project delivery teams will ensure community preferences for species are taken into account in delivering the replacement tree program. Commonly listed species included:

- Eucalyptus
- Grevillea
- Wattle
- Figs
- Ash
- Bottle Brush
- Melaleuca
- wide range of others.

Some respondents also nominated certain types of non-native tree species to avoid as part of the planting program. The top most commonly preferred species identified are shown in Figure 6 below.

Figure 6 – Tree species preferred by the community



9.5 How we will address community feedback in implementing the strategy

Transport is committed to implementing a tree replacement approach across the projects that takes into account community feedback and preferences. The project teams will continue to work through the detailed community feedback to ensure the tree replanting program is aligned with the community's views and values.

As we prepare to implement replacement tree planting over the life of the projects, we commit to a range of key actions suggested or preferred by the community and stakeholders. We will also continue to work in partnership with North Sydney Council to ensure these commitments are met.

Tables 4 and 5 on the following page provide a summary of key community preferences and concerns and our commitments on how we will respond these as the projects progress.

Table 4 – How we will respond to community preferences













	Community preferences	How we will respond
	Preference for use of native trees	Native Australian trees will be prioritised in the replanting program with most new trees expected to be natives
	Requests for trees to be planted as screening along noise walls and corridor boundary	We will prioritise replanting directly along the corridor in areas where trees have been removed
	Work with community groups and local institutions to develop replacement locations	There will be ongoing work in partnership with Council and in engagement with the community in selecting tree replacement types, sizes and locations
	Two to one tree replacement ratio should be exceeded if possible	We will work to meet the two to one tree replacement requirement with a focus on an increase in quality tree coverage and canopy
	Types of trees to avoid (eg. trees perceived to cause problems such as plane trees)	Community feedback has included concerns around some tree species—we will actively avoid tree types not supported by the community
	Cammeray Golf Course and the surrounding precinct is a key location with tree planting potential	Tree replanting has been undertaken in the golf course at a two to one ratio—as we roll out the strategy we will explore options for further planting around the Cammeray precinct

Table 5 – How we will respond to community concerns

	Community concerns	How we will respond
	Concerns that two to one ratio will be a challenge to meet	We will work in partnership with Council to meet the two to one requirement and adapt the replacement program as required to ensure high quality of tree coverage and canopy
	More community consultation has been required / is needed	Place, Design and Landscape Plans for the project will be on public exhibition and will detail locations and proposed species for replacement trees—the community and Council will be consulted on the Plans and invited to provide feedback
	Replacement trees will take a long time to grow	We will replant trees progressively through the life of the project, so that by the time the project ends replacement trees will be well established and will have grown significantly
	Trees removal should have been avoided for the project	We will continue our approach of avoiding or minimising tree removal as part of the project—the tree replacement approach means more trees at the end of the project than there were before
	Concerns regarding inappropriate species	Community feedback has included concerns around some tree species—we will actively avoid tree types not supported by the community—Australian native trees will be prioritised
	Lack of suitable space for replacement trees	We will work with Council and the community to finalise replacement locations, including taking into account community, stakeholder and Council feedback on locations

10. Implementing the strategy

10.1 Proposed Transport and Council joint working group

Transport is committed to working closely with Council to develop this strategy to identify and agree on principles, opportunities and areas that may be suitable for replacement planting and to ensure Council has ongoing involvement into the locations and species of trees to replace those being removed.

Transport proposes that the further refinement, agreement and roll out of this strategy would be progressed through a joint working group approach between agencies on an ongoing basis from Q3 2023. The working group would comprise of key nominated representatives from Council and Transport, across landscape and environmental management personnel and project delivery representatives.

As part of this proposed group, Transport will work with North Sydney Council to develop a snapshot of areas which are suitable for replanting within the North Sydney LGA.

In addition to the working group approach, during the delivery of the projects Transport and the project teams are regularly engaging with North Sydney Council. Regular Transport-Council meetings are held to discuss a variety of project matters such as actions required of Transport and Council and ongoing progress updates.

These regular forums will continue in addition to the working group, to ensure open dialogue and to agree on initiatives with regard to tree replacement. Transport will continue to work collaboratively with Council in the development of the strategy for the Western Harbour Tunnel and Warringah Freeway Upgrade. These forums will also allow for discussion where appropriate on other projects

taking place in the North Sydney LGA which may interface with tree replacement initiatives.

10.2 Communications protocols

A key element of the project approach will be to develop and implement well-established, clearly understood governance arrangements for communication and engagement activities.

It is critical that decisions, activities and behaviours complement and support each other to ensure a streamlined approach to communication and engagement and to minimise confusion for community members, external stakeholders and organisations.

Transport and North Sydney Council participate in a major projects working group which meets fortnightly to discuss progress, milestones, actions and status of key issues with regard to the major projects underway in North Sydney.

This forum primarily covers the Western Harbour Tunnel and Warringah Freeway Upgrade as well as Sydney Metro City and Southwest. The forum includes a dedicated major projects resource at Council and includes senior community and stakeholder engagement staff from Transport.

The forum can also be used as a touch point for these Council and Transport representatives to escalate broader project-related issues in North Sydney and will be an initial forum to facilitate tree replacement discussions.

As the teams delivering the projects 'on the ground' develop specific tree replacement initiatives, Transport, the project teams and North Sydney Council will engage in line with the requirements of the MCoA.

This will involve a collaborative approach in engaging with Council in the development of the Place, Design and Landscape Plans and the Landscape Strategy Report.

10.3 Ongoing options identification

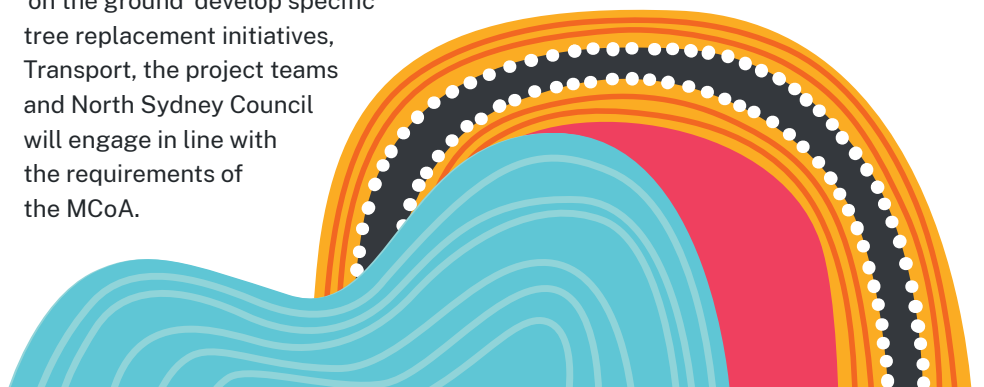
This strategy is a living document and will be reviewed and updated throughout the course of the Western Harbour Tunnel and Warringah Freeway Upgrade projects.

As the projects continue, Transport and North Sydney Council will continue to work together to identify options for tree replacement.

Transport is committed to working with stakeholders and the community to identify new and innovative options for tree replacement as they come to light.

This will include options for tree replacement locations and species. Based on previous experience on projects of a similar scale, Transport and its project teams have identified a preliminary list of species suitable for a range of location categories.

A list of proposed tree species suitable for a range of locations will be finalised in 2023 as part of the Warringah Freeway Upgrade PDL. Transport and the project delivery teams will engage with Council to finalise this list.





10.4 Progressive replacement approach

As part of commitments, Transport and the project teams will progressively look to rehabilitate the corridor as soon as reasonably possible. Planning will start early in the projects for the sourcing of replacement trees.

This will ensure that appropriately sized trees will be available at required times during project delivery.

A number of indicative locations have been identified where trees could be progressively planted. These will need to be agreed with Council and will be progressed in the development of the Place, Design and Landscape Plans and Landscape Strategy Report.

Transport and the project teams will also work with North Sydney Council to investigate initiatives to engage with local communities and community groups to identify opportunities for planting replacements including investigating options with land care / bush care groups.

10.5 Sourcing replacement trees

A schedule for the progressive replacement of trees and plans for sourcing of trees will be developed by the project teams.

Native species will generally be sourced from within the same region to ensure the success of plantings, with the main suppliers of replacement trees and plants located in Greater Sydney, the Blue Mountains and Central Coast.

The project teams have commenced discussions with suppliers to source replacement trees and will continue to work with nurseries to ensure the right mix of tree species are progressively ordered.

10.5 Proposed tree replacement actions

This section outlines a series of next steps that must be undertaken in order to ensure implementation of the Tree Replacement Strategy. Implementation involves the following key planning steps:

- investigating additional replacement planting opportunities within the project corridor
- determining installation capacity and planning for an orderly roll-out
- initiating tree procurement and determining supply
- identify and planning for timely community consultation
- monitoring and tracking progress.

10.5.1 Tree installation actions

Specific tree replacement actions in the replacement delivery phase include:

- work with project contractors and their detailed design teams to identify potential additional locations for replacement tree planting within the project corridor (including areas surrounding project infrastructure)
- determine appropriate tree species and potential quantities for additional corridor planting
- develop detailed planting layouts and tree schedules
- work with project contractors to determine the most appropriate process and timing for procurement and installation of additional corridor trees
- adjust tree supply contract or initiate separate contract
- agree on maintenance responsibilities for additional corridor trees
- planting by project contractor or separate contractor, as agreed in collaboration with North Sydney Council.

Roles and responsibilities for the above will be decided in collaboration between Transport and Council.

10.6 Progress evaluation

Utilising recent learned experience on significant and similarly scaled projects in NSW, Transport will work collaboratively with North Sydney Council to monitor and evaluate each stage of the tree replacement process.

A successful recent approach in tree replacement across projects includes provision of an identification tag to help track health and development of replacement trees.

Tags or survey tags will be used where appropriate to identify replacement trees to assist with maintenance.

Transport will continually update documentation on tree replacement to assist in tracking the progress throughout the course of the projects and to assist in development and implementation of the Place, Design and Landscape Plans and the Landscape Strategy Report.

Progress will be monitored throughout the course of the projects including at regular meetings and in interface forums with North Sydney Council.

Where project or local circumstances change during the course of delivery, Transport commits to working with Council to develop adaptive solutions or refinements to ensure the continued progressive replacement of trees, to the benefit of the environment and the local community.

10.7 Engagement approach

This strategy is being developed alongside North Sydney Council to facilitate in-principle agreement on replacement objectives, locations, timing phases and species.

Transport expects that during the course of project construction over several years, opportunities may be identified to partner with community groups to deliver tree replacement options over and above those identified in the early stages of delivery including in this strategy.

Transport and the project teams will continue to work with North Sydney Council in 2023 and beyond regarding tree removal and replacement in the LGA and will work with Council to develop the agreed Landscape Strategy Report.

Transport will also work with North Sydney Council to investigate initiatives to engage with local communities and community groups to identify opportunities for planting replacements including investigating options with land care and bush care groups.

Options to the benefit of the environment and community relating to the reuse of tree materials may also be identified during the tree removal and replacement approach.

Community groups and relevant agencies may be offered timber, foliage and root-balls of cleared vegetation to be reused appropriately. The project teams are also providing timber and foliage for reuse at wildlife parks and koala sanctuaries around Greater Sydney.

As is the case across the Western Harbour Tunnel and Warringah Freeway Upgrade projects, Transport will continue to keep local communities informed of work in their local area. As tree replacement initiatives take place across the projects local communities will be kept informed.

10.8 Implementing the strategy

Transport for NSW is in the early stages of implementing an overarching tree replacement program across the Western Harbour Tunnel and Warringah Freeway Upgrade projects. Where early works on the Warringah Freeway Upgrade project have taken place, we have already commenced tree replacement. This has included at or near key locations such as around noise mitigation walls, early works sites and with significant tree replacement having taken place in the Cammeray Golf Course.

The substantive tree replacement program around major works sites for the Warringah Freeway will follow as each site is completed and prepared for return to the community from 2024 to the conclusion of the project. Tree replacement will take place around Western Harbour Tunnel sites as they are progressively demobilized later in the lifecycle of the project.

Table 6 – Tree Replacement Strategy Implementation Timeline

Key action	Timing
Finalise Tree Replacement Strategy and communicate with the community	Mid-2023
Consult with the community and North Sydney Council on the Warringah Freeway Upgrade Place, Design and Landscape Plan	Mid-2023
Implement Tree Replacement Working Group with Transport for NSW, North Sydney Council and project delivery team	July 2023
Early tree replacement / maintenance at key locations (Cammeray Golf Course / Amhurst Street noise wall)	Replacement commenced – maintenance ongoing
Consult with the community and North Sydney Council on the Western Harbour Tunnel Place, Design and Landscape Plan	Late 2024 – subject to confirmation of program
Commence substantial roll out of replacement tree planting as work sites are completed along the corridor	2024 – 25
Progressively replace trees and monitor / maintain replanted trees to ensure successful growth	2025 to end of project

Transport for NSW will keep the community updated as the projects continue and as the tree replacement approach for the projects is progressively implemented.





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