



Transport for NSW

# Beaches Link and Gore Hill Freeway Connection



## Building on land

### Tunnelling

We will be tunnelling using roadheaders. Roadheaders are extremely powerful and advanced rock-cutting machines designed to excavate tunnels and caverns. They are almost always used for tunnelling on major road projects in Sydney including the recently completed WestConnex M8, New M4 tunnels and NorthConnex.

Rock hammering and rock saws may be used in some areas for excavation of the tunnels, cross passages and areas of sandstone within the cut and cover and trough structures.

Controlled underground blasting may also be used, subject to confirmation during detailed design construction planning.

### Cut and cover

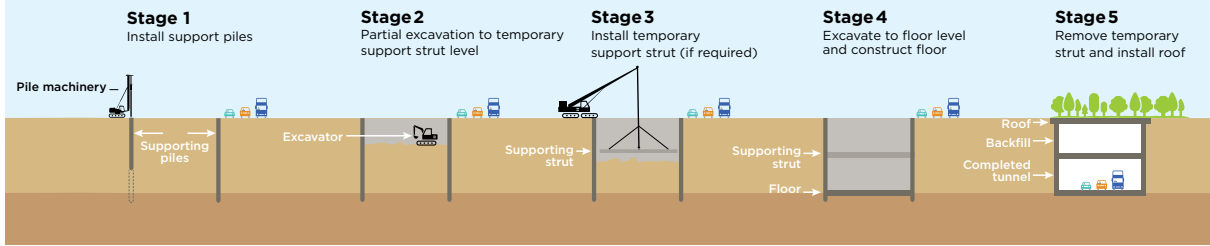
We will be building cut and cover tunnels when there is not enough rock cover to support the construction of the tunnels from underground. This is generally where the tunnels come to the surface.

Cut and cover is a tunnelling method generally involving excavating downwards from the surface of the ground, and installing a tunnel structure including a base, walls and a roof. Once the roof is in place, the tunnels are generally covered with fill and re-vegetated.

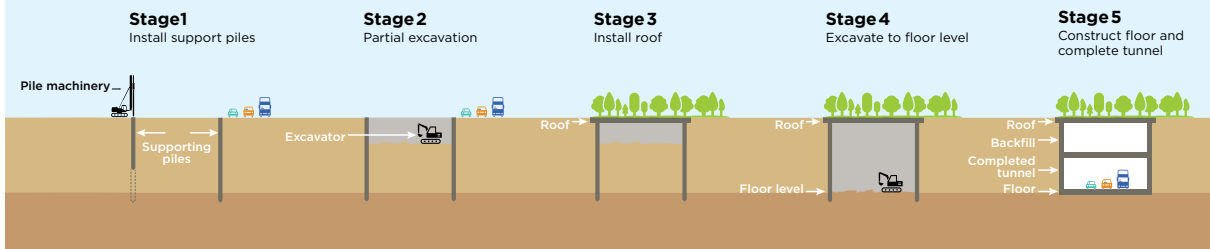
Cut and cover tunnels will be built where the Beaches Link tunnel:

- emerges within the Warringah Freeway, to the north of the Ernest Street bridge
- emerges within Gore Hill Freeway, to the east and west of Hampden Road bridge
- off ramp to Reserve Road emerges from beneath Gore Hill Freeway
- emerges within Burnt Bridge Creek Deviation, to the north of Sydney Road
- emerges within Wakehurst Parkway, to the north of Kirkwood Street

## Bottom-up construction



## Top-down construction



## Tunnelling stages

### Stage 1. Excavation

We will be excavating road tunnels and building on ramps and off ramps. The depth of the tunnels varies across the alignment (please see pages 28 and 29 for more details on indicative tunnel depths in your local area).

At our deepest point we will be around 108 metres (33 storeys) underground and will come to the surface for the on ramps and off ramps. Also, we will start building the permanent operational facilities.

### Stage 2. Fitout work

Once sections of the tunnel are excavated, we will commence the fitout work for the tunnels. This includes:

- installing drainage systems
- installing pavement
- installing barriers
- construction of buildings for operational equipment
- installing electrical conduits (plastic pipes for electrical cables to be pulled through), road signage.

### Stage 3. Finishing

Following the fitout work, we will then install the electrical equipment and systems within the tunnel and carry out the final finishing work. This includes:

- installing:
  - electrical cabling
  - signage and lighting
  - ventilation, tolling, safety and control systems within the tunnel and operational facilities
  - water treatment equipment
- pavement work to connect to surface roads
- line marking.

### Stage 4. Testing and commissioning

We have a strong history of designing and building some of the safest tunnels in the world. We will carry out extensive testing before we open to traffic to make sure the motorway is safe for road users and the community.



## Surface roads

We will be building some new roads and upgrading a number of existing roads as part of the project.

The main areas of surface road work will include:

- integration work to connect the new tunnels into the Warringah Freeway
- upgrade and integration work along the Gore Hill Freeway and within the Artarmon industrial area
- upgrade and integration work at Balgowlah
- upgrade and integration work along Wakehurst Parkway, between Seaforth and Frenchs Forest.

This work also includes new and upgraded public transport, pedestrian and cyclist infrastructure at Artarmon, Balgowlah, Killarney Heights and Frenchs Forest.

Work will vary depending on the type of work required, but may include activities such as:

- traffic staging to safely carry out work on the surface road while minimising our impacts on traffic
- removing existing kerbs and pavement
- managing any contaminated materials encountered during the work
- relocating and protecting utilities like power and water
- earthworks including excavation and preparing the foundations of the road by placing and compacting materials and rock
- building retaining walls, noise barriers, traffic barriers and flood walls
- building and diverting drainage including adjusting existing and building new drains and pits, and installing pipes and culverts
- laying pavement, which generally includes a couple of layers of base foundations with a top of either asphalt or concrete
- building fauna crossing infrastructure
- carrying out finishing work (including line marking, installing signage and road furniture like lights and landscaping).

## Bridges

We will be building, upgrading, modifying and replacing a number of bridges across the project including modifying the existing Reserve Road bridge and Hampden Road bridge in Artarmon, and replacing the existing pedestrian bridge across Wakehurst Parkway south of Aquatic Drive. Work will vary depending on the type of bridge being built, but may include activities such as:

- relocating and protecting utilities like power and water
- relocating and managing traffic, pedestrian and cyclist lanes and installing traffic and environmental controls
- construction of the foundations, such as piling and pier installation
- using cranes to place pre-built concrete or steel beams to form the bridge
- modifying or upgrading the existing bridge structures
- laying asphalt or concrete on the top of the bridge
- marking lines, installing barriers, drainage and road furniture as required.

## Operational facilities

We will be building permanent operational facilities for the ongoing management and operation of the tunnel. These facilities will be located at Cammeray, Artarmon, Balgowlah, Killarney Heights and Frenchs Forest.

The facilities will include:

- a motorway control centre (Artarmon)
- tunnel ventilation systems
- tunnel support facilities
- an operational wastewater treatment plant
- substations.



*Artist's impression of operational facilities and entry and exit points at Artarmon*

## Contact us



[nswroads.work/blportal](https://nswroads.work/blportal)



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



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



## Translating and Interpreting Service

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

### Chinese (simplified)

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

### Italian

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

### Portuguese

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

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