SKANSKA COSTAIN STRABAG Working in partnership with HS2

Northolt Tunnel East

Update – March 2024

Delivering HS2 London Tunnels

What we are doing

Skanska Costain STRABAG Joint Venture (SCSJV) are working in partnership with HS2 Ltd to build 16.4 miles (26.4 kilometres) of the high-speed railway between Euston and West Ruislip.

This includes 13 miles (21 kilometres) of tunnels and the associated ventilation (vent) shafts and headhouses to provide access to the tunnels for maintenance and emergency services, ventilation and power supply.

Northolt Tunnel East

The twin-bore Northolt Tunnel East will be approximately 5.5 km (3.4 miles) between the Victoria Road Crossover Box and Ancillary Shaft site in Park Royal and the Greenpark Way Vent Shaft located in Greenford. The depth of the Northolt Tunnel East between Park Royal and Greenford will vary between 12 metres and 40 metres to the top of the tunnel.

1 Greenpark Way Vent Shaft

2 Westgate Vent Shaft

3 Victoria Road Crossover box Site

Twin-bore Northolt Tunnel East

Programme update

The Government updated Parliament on their transport capital investment programme in March 2023. The statement included an update on the HS2 project, recognising significant inflationary pressures facing all parts of the UK economy. In line with direction from the Government, we are pausing some construction activities between Euston and Old Oak Common which will be rephased along with other sections of the HS2 project. This includes the construction of the twin-bore Euston Tunnel and ventilation shafts at Adelaide Road and Canterbury Works.

The Northolt Tunnel East programmes will continue as planned.

Below is the indicative construction dates below

Construction Activity	Date
TBMs delivered	May 2023
Construction of the Northolt Tunnel East (Downline)	Launched 23 February 2024
Construction of the Northolt Tunnel East (Upline)	March 2024*
Construction completion	Early 2025*
Cross passages and walkways	Until spring 2025*

*Dates mentioned are subject to change, we will provide updates at hs2.org.uk

Tunnelling Methods

Tunnel boring machines or TBMs are giant machines used to build tunnels. In the Old Oak and Park Royal area, five TBMs will be used to build the Northolt Tunnel East, Euston Tunnel and Atlas Road Logistics Tunnel.

How does a TBM work?

TBMs operate as a self-contained factory and will run 24/7, deep beneath the ground. As well as digging the tunnel, the TBM lines it with precast concrete segments and grouts the space between the tunnel wall and the surrounding ground.

The TBMs are fully built for testing at the factory, then broken up into numerous sections and transported to London. They're reassembled on site like a giant jigsaw puzzle before starting to build the tunnels.

Each TBM is made up of thousands of parts including:

- a rotating cutterhead
- a screw conveyor
- conveyor belts
- a tunnel segment erector

Tunnelling Methods

A sprayed concrete lining method of tunnelling will be used to build about 1km of the tunnels in the Old Oak and Park Royal area, including a 360-metre section of tunnels between the Victoria Road Crossover Box and the Old Oak Common Station site.

What is the sprayed concrete lining method?

The sprayed concrete lining method is also known as a cyclic excavation and support method. The steps involved in constructing a tunnel using this method are:

- Excavation using an excavator
- Spraying of primary concrete lining
- Installation of waterproofing
- Installation of secondary concrete lining

Why are we using this method?

This tunnelling method involves rapidly spraying the excavated ground with concrete to stabilise it and form the permanent tunnel lining. Unlike bored tunnels, which are built using a tunnel boring machine, this method allows variation in the tunnel shape and diameter of the tunnels.
The width of the tunnels varies as they approach Old Oak Common Station to allow for track separation as trains are changing tracks when travelling to and from the station.

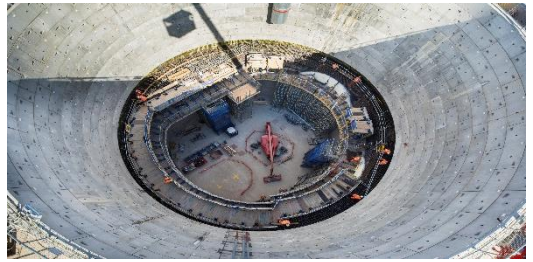
Sprayed concrete lining steps

SCSJV has used a sprayed concrete lining method at some of our sites to build tunnel cross passages and ventilation shafts. The images below show the steps involved in the sprayed concrete lining

Step 1: Excavation of a tunnel using an excavator

Step 2: Installation of primary sprayed concrete at the start of a tunnel

Step 3: Installation of waterproofing in a ventilation shaft



Step 4: Installation of secondary concrete lining in a ventilation shaft

Moving excavated materials

HS2's construction partners, BBVS and SCSJV, have constructed a conveyor system in the Old Oak and Park Royal area to reduce construction traffic on local roads while we build HS2. It will move excavated materials from Old Oak Common Station, Victoria Road Crossover Box and the HS2 tunnels to Willesden Euroterminal site.

Installation of conveyor system in Atlas Road site in August 2022

Installation of conveyor belt and dust covers in Flat Iron site in September 2022

Installation of conveyor in the Willesden Euroterminal site in September 2022

Operation of the conveyor system

The SCSJV section of the conveyor system is now operational until approximately 2027. Dates are subject to change; we will provide updates at hs2.org.uk

Managing impacts during tunnelling

Construction activities generate physical vibration and noise, which may cause temporary disruption to local properties.

Managing noise and vibration

We're designing and building HS2 in ways that reduce noise and vibration from our construction works as much as possible. The **HS2 Code of Construction Practice** outlines the measures we will implement to control and reduce noise and vibration during the construction of HS2.

Protecting your property

The **High Speed Rail Act 2017** automatically protects your property from damage as a result of our work. We offer property owners within 30 metres (m) of excavation work a settlement deed, and we will write to you if your property is eligible.

Managing noise and vibration at the location of our construction activities ('at source')

Using 'Best Practicable Means' and keeping our construction methods under review

Constant monitoring of noise and vibration during our works

Our TBMs have been named

Much like ships, it is traditional to name Tunnel Boring Machines (TBMs) before they are launched and it is a long-held tunnelling tradition to give them female names.

Prior to their launch in 2024 we have named the Northolt Tunnel East TBMs.

We asked the local community to choose two inspirational women with a connection to Ealing from a shortlist of five names. We received over 500 votes and Emily Sophia Taylor and Lady Anne Byron were selected.

Lady Anne Byron established the Ealing Grove School in 1834 – a school for the working classes - in an era when education was mainly for the wealthy.

Emily Sophia Taylor was Ealing's first female mayor, she was an active member of the Education Committee and the Child Welfare Committee.

Next steps

Indicative engagement plan for the Northolt Tunnel East

We are starting to increase the engagement for the Northolt Tunnel East which will include the below:

Engagement type	Planned engagement dates*
Pop-ups	Monthly
Drop-ins	Monthly
Information events	Every three months
FAQs	Every three months
Factsheet	Every three months
3 and 12 month lookahead	Every three months
Advance notification letters	When required

You can find the below engagement materials already available online at hs2.org.uk

Engagement type	Location / residents	Document location
Euston Tunnels FAQs	Between Old Oak and Euston	Available on hs2.org.uk
Northolt East Tunnels FAQs	Between Old Oak and Greenford	Available on hs2.org.uk
Factsheet (future tunnelling works)	Old Oak and Park Royal	Available on hs2.org.uk
Presentation (future tunnelling works)	Old Oak and Park Royal	Available on hs2.org.uk
Presentation (future tunnelling works)	Euston Tunnel	Available on hs2.org.uk
Presentation (future tunnelling works)	Northolt Tunnel East	Available on hs2.org.uk
Notification (Atlas Road Logistics Tunnel)	Old Oak and Park Royal	Available on hs2.org.uk