



Precast concrete segments stored at Eastern Creek precast facility.

Segment production underway at Eastern Creek precast facility

June 2023

The NSW Government is delivering Sydney Metro West, a new underground metro railway which will double rail capacity between Parramatta and the Sydney CBD, with a target travel time of about 20 minutes between the two centres.

Sydney Metro West stations have been confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street in the Sydney CBD.

Sydney Metro has been granted planning approval to construct twin underground rail tunnels between Westmead and Hunter Street in the Sydney CBD for Sydney Metro West.

Acciona Ferrovia Joint Venture (AFJV) will deliver 11 kilometres of twin metro rail tunnels between The Bays and Sydney Olympic Park and Gamuda Australia and Laing O'Rourke Consortium (GLC) will deliver nine kilometres of twin metro rail tunnels between Sydney Olympic Park and Westmead.

Operation

The southern precast facility which is operated by AFJV started segment production in late 2022 and the northern precast facility which is operated by GLC started segment production in April 2023. Both precast facilities will be operational for the duration of tunnelling work and will operate **24 hours a day, five days a week (Monday to Friday) and 7am to 6pm on Saturdays.**

The facilities are not expected to generate much noise and operation will involve:

- Delivery of raw materials including sand, aggregate and cement
- Storage of materials
- Making and storing the concrete segments
- Loading and transporting the concrete segments to the Sydney Metro West tunnelling sites at The Bays and Clyde.



Eastern Creek precast facility.

Construction update

AFJV has started segment production in the large shed in the southern precast facility. All gantry cranes are now installed and work in the smaller shed continues with carousel installation which will be used by the Eastern Tunnelling Project contractors.

Over 16,500 segments have already been produced and are being stored on site before being loaded onto trucks and transported to The Bays site. It is expected that approximately 360 segments per day will be delivered to The Bays during the peak period.

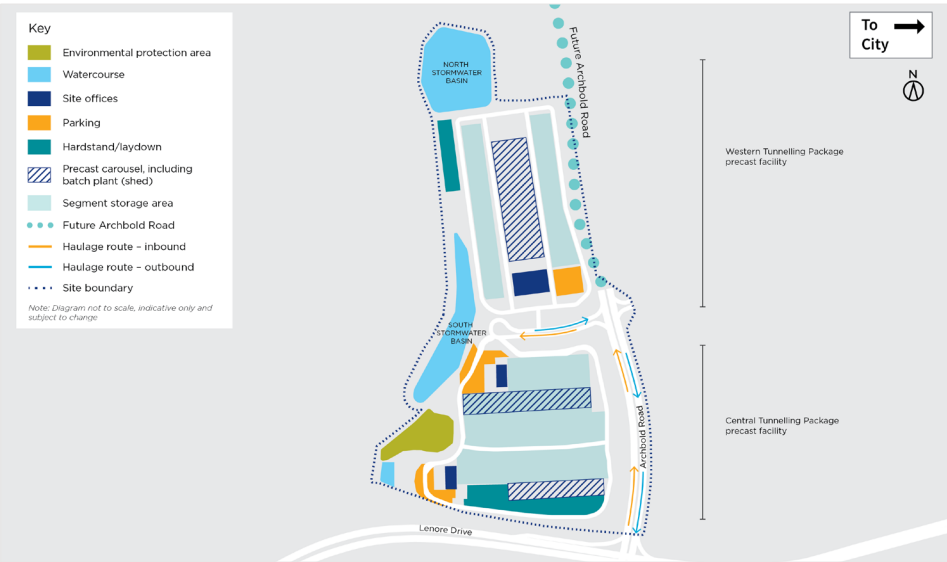
Each segment is then loaded into the tunnel boring machine (TBM). The rear of the TBM has a mechanism that inserts the concrete lining segments that seal the tunnel as the TBM moves slowly along the route. Two tunnel boring machines have started tunnelling from The Bays Station site and are expected to reach Sydney Olympic Park by late 2024.

A list of activities planned for the precast facility over the next six months is provided in the table below.

Six month construction look ahead

Activity (subject to change)	Jun	Jul	Aug	Sep	Oct	Nov
Segment production	●	●	●	●	●	●
Carousel installation	●	●				
Deliveries of raw materials	●	●	●	●	●	●
Transporting concrete segments to construction	●	●	●	●	●	●

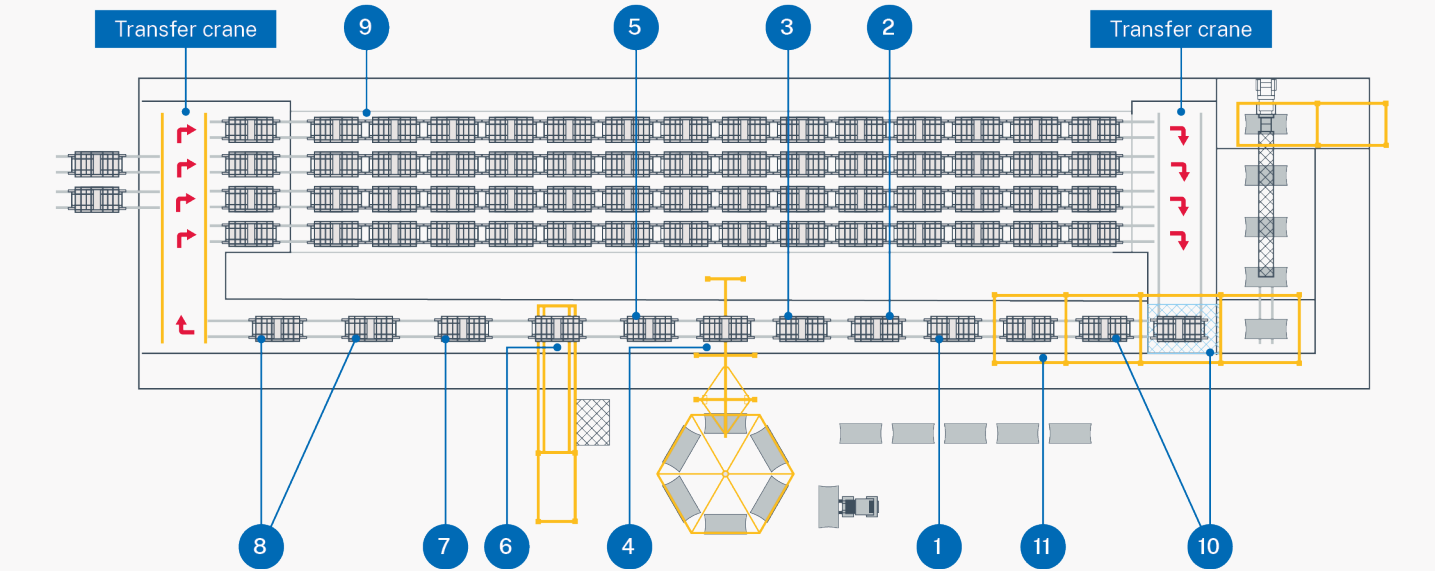
Construction activity ●



Precast facility.

Concrete segment production process

The below diagram demonstrates the path each concrete segment mould travels through the carousel from the demoulding station to the casting chamber and into the curing chamber. Each station has a specific task to be performed for the process to run seamlessly.



1. Station 1 – clean / oil / close moulds

Cleaning will be carried out following the demoulding of a complete segment at Station 11.
2. Station 2 – install fitments

Cast-in items are fitted, these include grout sockets and guide rod studs.
3. Station 3 – install gaskets

Gaskets are fitted into each mould individually. Rubber gaskets are installed to provide a water tight tunnel.
4. Station 4 – reinforced cages

Cages are installed inside the mould. These special segments will be used for cross passages only.
5. Station 5 – quality control station

Quality checks are conducted on the gasket and cast-in items to ensure they are fitted correctly.
6. Station 6 – casting chamber

Concrete is carried along the overhead track in a bucket. The carousel operator slowly releases the concrete from the pouring hopper until the mould is full.
7. Station 7 – washing

The concrete will be hand finished using a screed bar at either end, working the screed back and forth across the span.
8. Station 8 – finishing station

Once the segment has been finished and the mould washed clean, the part covers are sprayed with mould oil, and the lids are closed and tightened.
9. Station 9 – curing chamber

Each segment mould is in the curing chamber between five and six hours. There are three distinct temperature zones inside the chamber 60°C, 65°C and 60°C again.
10. Station 10 – open mould

Rattle guns are used to open the lids and scrapers are used to remove any excess hardened concrete.

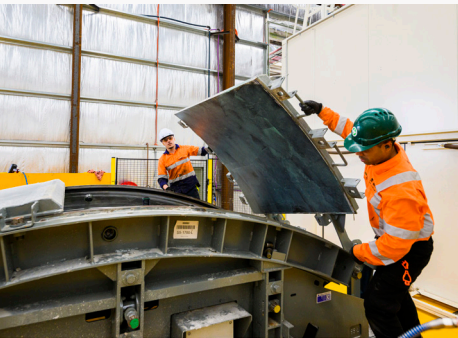


Concrete segments are moved using transfer cranes.

11. Station 11 – auto demoulding station

The auto demoulding crane vacuum lifter applies suction to the segment and removes it from the mould.

Transfer crane
Transfer cranes are used to move the segments into the curing chamber, out of the curing chamber and onto the working line.



Left to right: quality checks are carried out prior to concrete pour, concrete segment leaving curing chamber and opening the mould and using scrapers to remove any excess hardened concrete.



Gantry crane lifting concrete segments.

Segment production begins at the northern precast facility

At the adjacent Western Tunnelling Package precast facility, operated by GLC, construction of the facility has been completed and full segment production has begun.

The facility is expected to produce more than 60,000 segments to line the tunnels between Sydney Olympic Park and Westmead, as well as an additional 3,600 segments to line the spur tunnels, which will link the main metro tunnels with the stabling and maintenance facility in Clyde. Delivery of segments to Clyde will start in July 2023.

Two TBM's are expected to start tunnelling from Clyde towards Sydney Olympic Park in late 2023.



Segment production at the Western Tunnelling Package precast facility.

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If you have any questions or would like more information please contact our project team:

1800 612 173 Community infoline open 24 hours

MetrotunnelsAFJV@transport.nsw.gov.au

Sydney Metro West

PO Box K659, Haymarket NSW 1240



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