



PRECISION IN MOTION: RECORD-BREAKING PRECAST FOR SYDNEY METRO WEST

Sydney Metro West is one of Australia's largest and most transformative transport projects, delivering 24 km of new twin tunnels between The Bays and Westmead.

At the heart of this monumental build is a world-class precast facility at Eastern Creek, where ACCIONA and project partner Ferrovial have achieved an extraordinary feat in engineering, automation, and efficiency.

A WORLD-FIRST PRODUCTION MILESTONE

The Eastern Creek facility has produced more than 70,000 concrete tunnel lining segments to date, lining 11 km of twin tunnels between The Bays Station and Sydney Olympic Park.

Its standout achievement is a world record set during production. The team produced 1750 segments in just 120 hours – an average of one segment every four minutes and seven seconds, with the fastest cycle recorded at three minutes and eight seconds.

For an industry where the global benchmark sits around six minutes per segment, this milestone represents a remarkable balance of timing, precision, and process.

"Achieving a segment every few minutes isn't just about speed – it's about precision, planning and a commitment to excellence," said Carlos Sanabria, Project Manager at the Eastern Creek facility.

INSIDE THE PROCESS

Within the fully automated facility, concrete is transported to a precision casting line via a flying bucket system and poured into moulds using an automated hopper for consistent placement.

Each cast segment then moves through a presetting area, allowing the temperature to rise gradually before entering a curing chamber maintained at about 65 °C. This prevents thermal shock and ensures each segment achieves optimal strength and finish.



After roughly an hour in the curing chamber, the segments are automatically demoulded within a safety exclusion zone and transferred by trolley to storage, ready for delivery to the tunnelling site.

This finely tuned process ensures every segment meets strict dimensional tolerances, safety requirements, and sustainability standards. It also minimises waste and reduces manual handling.

"The process is designed so every operation happens within a defined sequence and exclusion zone," explained Carlos.

"That level of control lets us push performance without compromising safety."

This seamless integration of automation, data, and skilled oversight highlights how collaboration between industry and technology is reshaping infrastructure delivery across Australia.

SCALE AND SUSTAINABILITY

In total, 150,000 precast segments will be produced at Eastern Creek to line the Sydney Metro West twin tunnels. The use of precast concrete not only accelerates construction timelines but also enhances durability, consistency, and environmental performance.

Advanced automation, real-time monitoring, and strict quality control contribute to energy efficiency, material optimisation and reduced embodied carbon, aligning with Sydney Metro's sustainability goals and long-term resilience strategy.

HIGH VOLUME, HIGH PRECISION

At Eastern Creek, ACCIONA has redefined what's possible in precast manufacturing by producing more than 1700 tunnel segments in just five days. This world-record performance demonstrates how automation, accuracy and collaboration can deliver world-class results for one of Australia's most ambitious infrastructure projects.

PROJECT SNAPSHOT

Project: Sydney Metro West – Central Tunnelling Package

Location: Eastern Creek, NSW

Precaster: ACCIONA (in partnership with Ferrovial)

Client: Sydney Metro

Contributed by National Precast Concrete Association Australia

