SUSTAINABLE URBAN MOBILITY

SYDNEY'S COMMITMENT TO A GREENER FUTURE HAS BEEN POWERFULLY DEMONSTRATED THROUGH THE USE OF INNOVATIVE PRECAST CONCRETE SOLUTIONS IN UPGRADES TO THE SYDNEY METRO STATION, A PROJECT THAT HAS RESHAPED THE ICONIC T3 BANKSTOWN LINE.

PROJECT: Sydney Metro Station upgrades

LOCATION: Sydney Metro, NSW

CONTRACTOR: Downer EDI Works Pty Ltd

PRECASTER: Ozcast

This transformative initiative not only elevates urban mobility but also champions sustainability in public transport, setting new benchmarks for environmentally responsible infrastructure.

At the heart of this modernisation is Dulwich Hill Station, a flagship example of how historical legacy and contemporary design can coexist. The station upgrade introduces cutting-edge features designed to enhance efficiency and reduce the carbon footprint of daily commutes.

With air-conditioned metro trains now scheduled to arrive every four minutes during peak times – delivering up to 15 trains per hour – the revamped station encourages the shift from private vehicles to public transport, ultimately lowering overall greenhouse gas emissions.

By improving service frequency and accessibility, the project plays a key role in decreasing traffic congestion and promoting a more sustainable urban environment. Enhanced facilities, such as new lifts, level access between platforms and trains and state-of-the-art platform screen doors ensure that every journey is safe, efficient and environmentally friendly.

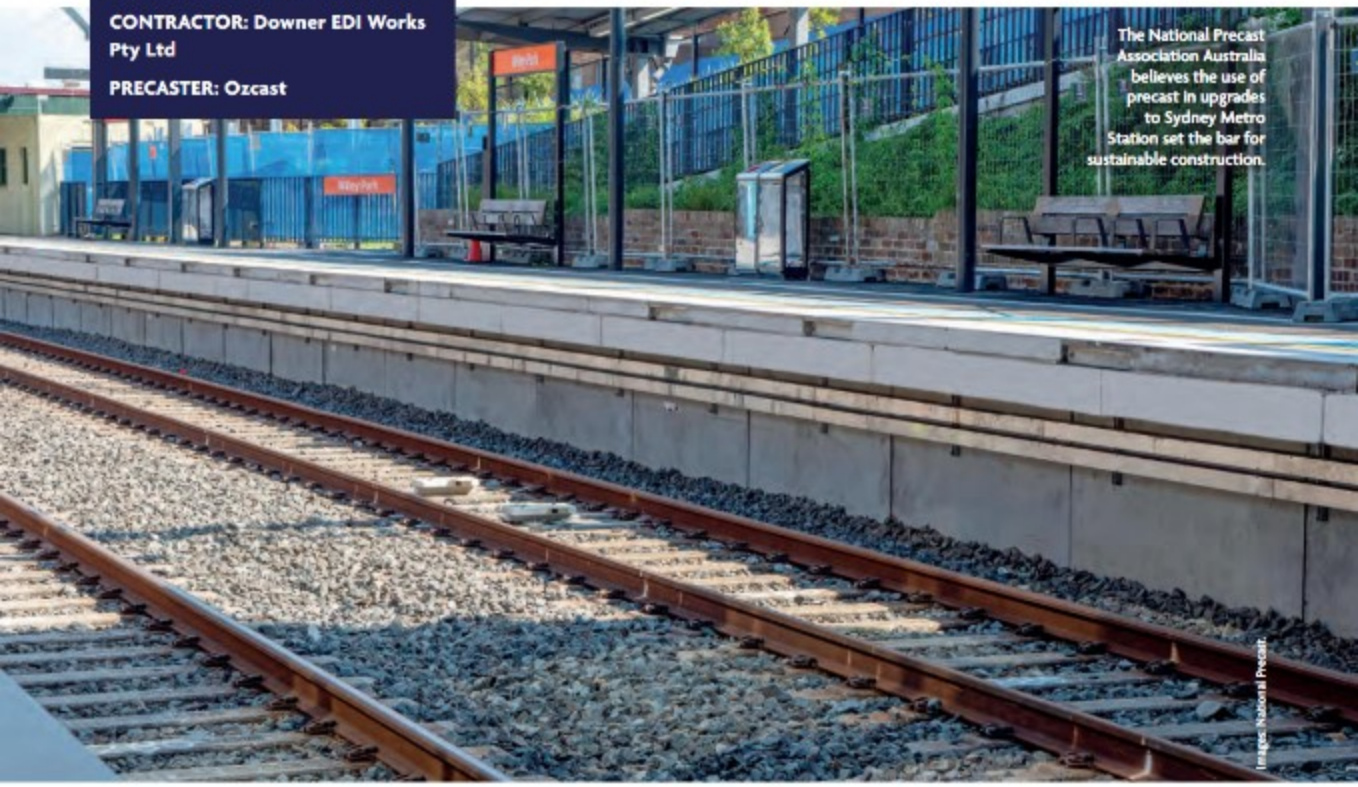
SUSTAINABLE ENGINEERING IN PRACTICE

The project's sustainability credentials are further enhanced through the strategic use of precast elements that have been manufactured by National Precast member Ozcast.

This includes products such as transfloor slabs, precast slabs, stairs, culverts and footings, which were selected for their durability, efficiency and minimal environmental impact.

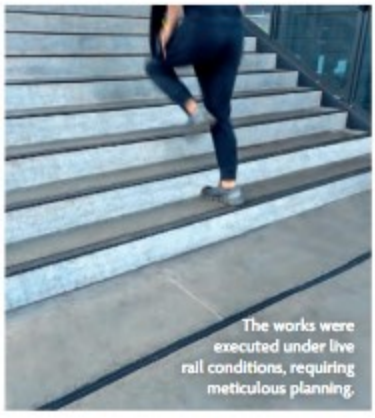
According to National Precast CEO Sarah Bachmann, using precast provides economic, social and environmental benefits that make it the first choice for future-proofing the built environment.

"Precast concrete is a low-waste,



The National Precast Association Australia believes the use of precast in upgrades to Sydney Metro Station set the bar for sustainable construction.

Image: National Precast.



The works were executed under live rail conditions, requiring meticulous planning.

high-efficiency solution that reduces the environmental footprint of infrastructure projects," she says.

"Compared to traditional in-situ construction methods, using precast minimises on-site waste by manufacturing offsite in controlled environments, reduces embodied carbon by optimising material use while also reducing energy consumption, and improves durability, leading to lower maintenance requirements and longer asset lifespans."

Using precast also enables faster project delivery, reducing labour costs and time required on site. Additionally, because precast structures are durable and require less maintenance and fewer repairs, it has a lower lifecycle cost. Beyond cost and carbon, precast infrastructure delivers real benefits to communities.

Precasting improves worker safety with manufacturing taking place in a controlled factory environment, resulting in fewer site disruptions and reduced exposure to hazards.

Urban improvements are delivered much quicker, enhancing accessibility and liveability in less time, on top of the infrastructure components being resilient by withstanding extreme weather conditions and reducing long-term environmental impact.

ENVIRONMENTAL STEWARDSHIP IN PRACTICE

Downer EDI Works, the contractor responsible for the upgrade, executed the project under live rail conditions, with meticulous planning. Every element was delivered and installed to exacting standards, minimising disruption while maximising efficiency and sustainability.

Such a rigorous approach requires reliability of supply and reflects a broader commitment to environmental stewardship in the construction industry.

Using precast as a construction method improves worker safety with manufacturing taking place in a controlled factory environment, reducing exposure to hazards.

A BLUEPRINT FOR SUSTAINABLE REGENERATION

The Sydney Metro Station upgrades offer a forward-thinking model for sustainable urban regeneration. By reducing travel times to key destinations such as Central, Pitt Street, Barangaroo, Victoria Cross and Chatswood, the project not only enhances commuter convenience, but also supports a reduction in energy use and carbon emissions across the network.

This integration of modern engineering with sustainable practices illustrates that preserving historical infrastructure and innovating for the future are not mutually exclusive. Instead, they are complementary forces that drive the evolution of a more resilient, accessible and eco-friendly public transport system.

Bachmann says that if governments and developers are serious about sustainability, efficiency and resilience, precast concrete must be a priority in infrastructure planning.

"By choosing precast solutions from industry leaders such as Ozcast, developers and government bodies can achieve faster construction timelines, superior quality control and reduced environmental impact, aligning with the growing demand for sustainable development in Australia's construction sector," she says.

"The Sydney Metro Station upgrades are a blueprint for the future – proving that sustainable infrastructure isn't just a concept, but is a reality." ■

SUSTAINABILITY FIRST

The Sydney Metro Station Upgrades are redefining urban transport by blending heritage conservation with cutting-edge sustainable technologies. Through the collaborative efforts of Downer EDI Works and Ozcast, this initiative sets a high standard for environmental responsibility and operational excellence. As cities around the world seek to build greener futures, Sydney's approach serves as an inspiring blueprint for creating transport networks that are as sustainable as they are efficient.