NSW GOVERNMENT

Sustainability Report 2023

sydney METRO

sydneymetro.info

Acknowledgement of Country

Sydney Metro acknowledges the Traditional Custodians of the lands where we work and live. We celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands and waters of NSW.

We pay our respects to Elders past, present and emerging and acknowledge the Aboriginal and Torres Strait Islander people who contributed to the development of this document.

Cover: Barangaroo Station.

Contents

About this report

This is Sydney Metro's fifth Sustainability Report.

The Sydney Metro Sustainability Report 2023 covers our performance against our **sustainability framework** from 1 July 2022 to 30 June 2023, unless otherwise stated.

This report builds on previous Sustainability Reports from **2017**, **2018**, **2020** and **2022**.

Through the use of data, commentary and case studies, this report:

- presents the design and construction performance of the Sydney Metro City & Southwest project
- highlights early achievements for the Sydney Metro West and Sydney Metro – Western Sydney Airport projects
- reports operational outcomes of the Metro North West Line.

For the purposes of clarity and efficiency, this report focuses on the reporting period and seeks to avoid repetition of information that has been presented in other publications. Please refer to our **Sydney Metro sustainability webpage** for related information and links.

Sydney Metro measures success through tracking and reporting on performance against sustainability objectives and targets identified at the outset of a project, and verifying performance against industry benchmarks. Key achievements to date are outlined in Section 5 of this report.

A bird's-eye view: Sydney Metro's new metro station at Sydney Olympic Park.

01 Foreword from the Chief Executive

Peter Regan PSM
Chief Executive
Sydney Metro

On behalf of Sydney Metro, I am pleased to present the Sustainability Report 2023.

Sustainability is an integral part of Sydney Metro's values. This Sustainability Report outlines our recent achievements against key targets and initiatives, which have been benchmarked against international best practice and Sydney Metro's six sustainability principles. These are set out in the Sydney Metro Sustainability Framework and provide the foundation for this report:

- Demonstrate leadership
- Tackle climate change
- Manage resources efficiently
- Drive supply chain best practice
- Value community and customers
- Respect the environment.

We are committed to delivering a world-class metro alongside the wider NSW Government, our delivery partners and the community. Through our targets and initiatives, we aim to tackle the increasing pressures of climate change, natural resource depletion and social inequities, and deliver best-practice sustainability outcomes throughout the life of our projects. This Sustainability Report shows how we are rising to that challenge.

02 Delivery partners

Sydney Metro acknowledges the key role that our delivery partners play in supporting and implementing our sustainability objectives. We look forward to continuing our collaboration with industry to drive sustainable outcomes across our projects.

Acciona Ferrovial Joint Venture

AW Edwards

BESIX Watpac

Built

CPB Contractors Pty Ltd

CPB Contractors Pty Ltd and Ghella Joint Venture

CPB Contractors Pty Ltd and United Infrastructure Joint Venture

DT Infrastructure (Downer)

Gamuda Australia and Laing O'Rourke Consortium

Haslin Constructions Pty Ltd and Stephen Edwards Constructions Pty Ltd Joint Venture

John Holland

John Holland CPB Ghella Joint Venture

John Holland and Laing O'Rourke Joint Venture

Laing O'Rourke

Lendlease

Muru Mittigar

Parklife Metro

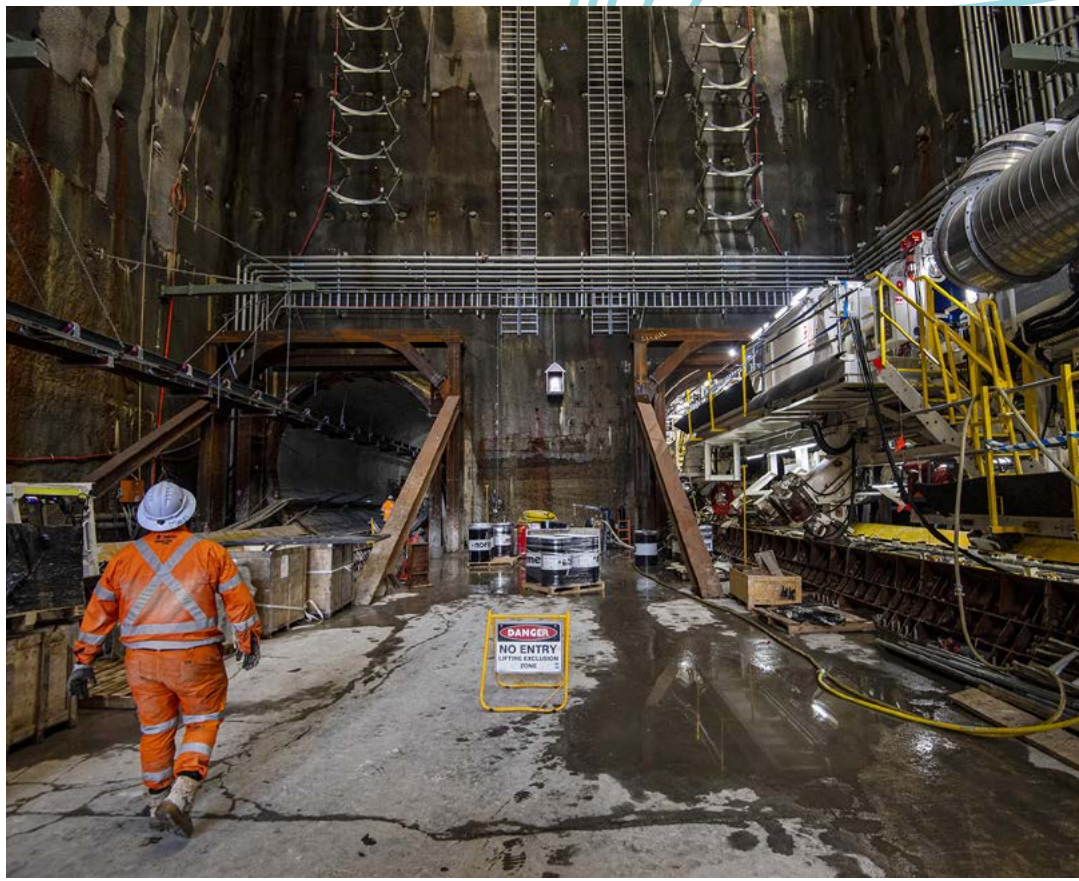
Metro Trains Sydney (MTS)

MTR Australia

Systems Connect

UGL

Note: This list refers to our contract partners active in the reporting period.



Tunnelling in progress: Part of the 11-kilometre twin tunnels from The Bays to Sydney Olympic Park.

03 Sustainability highlights

>95%
Sustainability targets on track

Sydney Metro – Western Sydney Airport **committed to carbon neutral certification**

100%
of clean spoil
reused

350kg of raw material
collected as part of Sydney Metro – Western Sydney Airport
seed collection program

4 Contractor Sustainability Forums held

48%
Portland cement
replacement in concrete

Infrastructure Sustainability Ratings
2 Leading Ratings achieved

Sydney Metro City & Southwest
Win Banksia Sustainability Award

2 Connecting with Country guides published to ensure Aboriginal influence on design
- Sydney Metro – Western Sydney Airport
- Sydney Metro West

Community Benefit Initiatives
39 completed

Zero-emission electricity
Metro North West Line
offset 64,355 tonnes of carbon dioxide emissions

47% of our workforce are local
to the Greater Western Sydney area

Public art
Central Station artwork
All Alongside of Each Other
unveiled

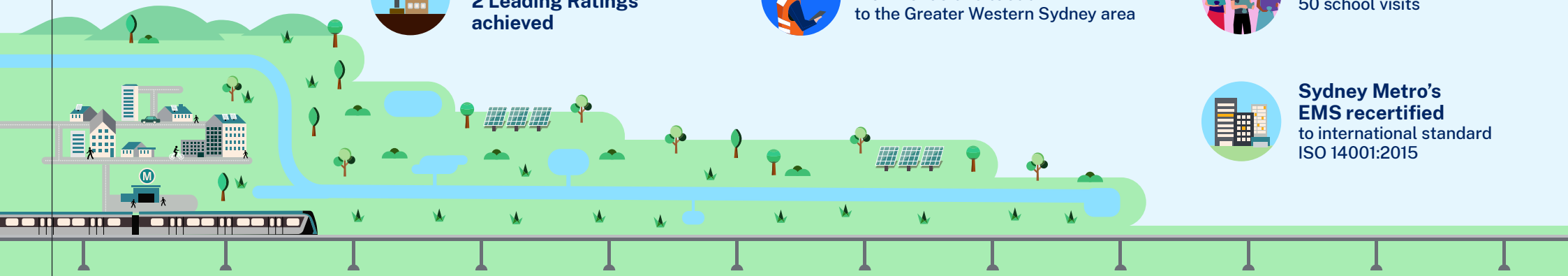
Sydney Metro West Sustainability Plan
published

4.5 stars
Metro North West Line
NABERS rating achieved

Sydney Metro Connect App
More than 8000 users

Metro Minds
50 school visits

Sydney Metro's EMS recertified
to international standard ISO 14001:2015



04 About Sydney Metro

We are building Sydney's new network of four metro lines, 46 stations and 113 kilometres of new metro rail

Metro North West Line

Opened 26 May 2019

- 13 stations
- 4000 commuter car parks
- 36 kilometres

Sydney Metro City & Southwest

Services to Sydenham begin in 2024, and to Bankstown in 2025

- 18 stations
- New CBD connections
- 30 kilometres, including under Sydney Harbour

Sydney Metro West

Construction started 2020

Under consideration

- Nine stations
- Connecting Greater Parramatta and the Sydney CBD
- Western Sydney population, 2036

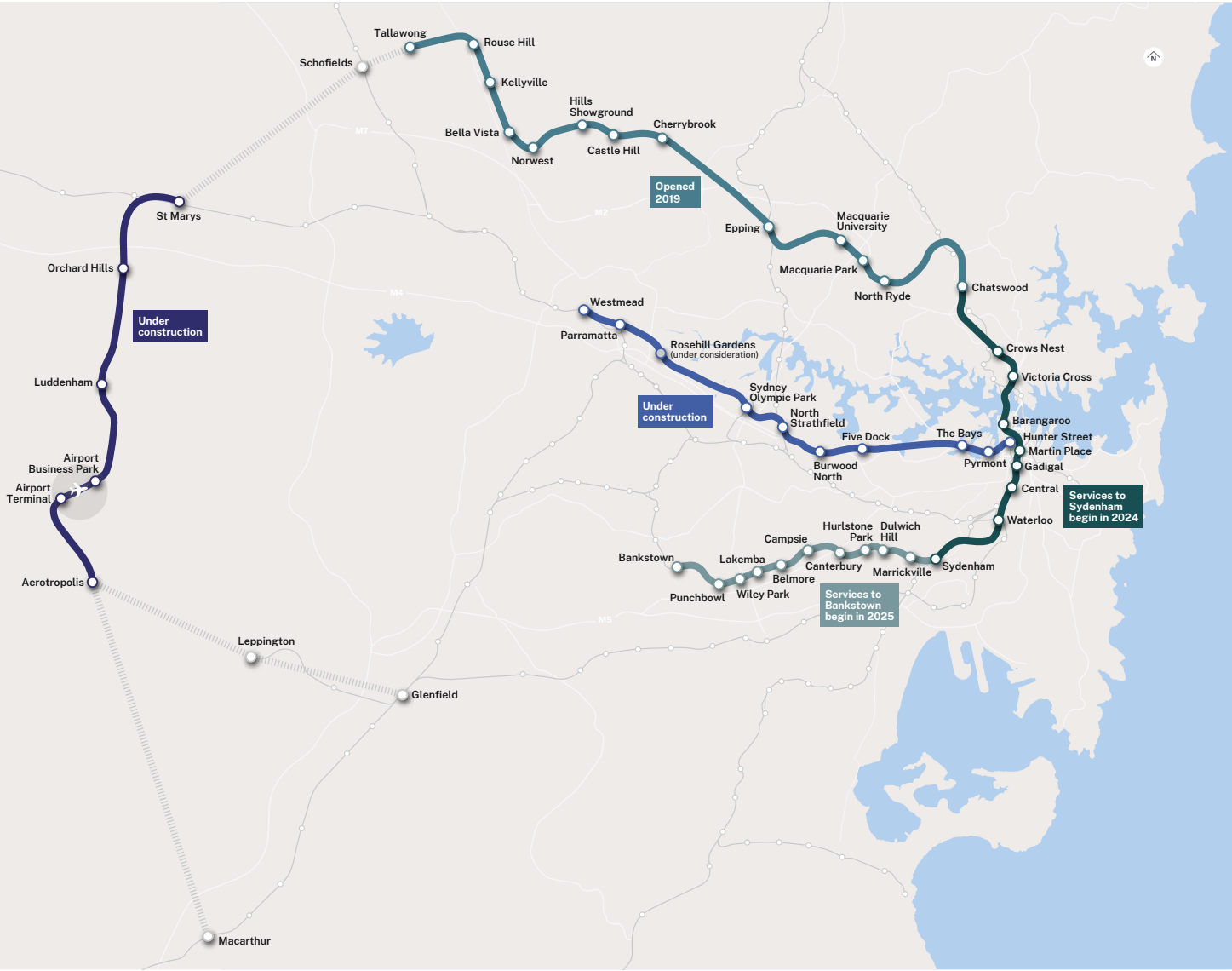
Sydney Metro – Western Sydney Airport

Construction started 2020

- Six stations
- Connecting Western Sydney International Airport to the rest of Greater Western Sydney
- Servicing Greater Western Sydney

Sydney Trains suburban network

Future metro
(subject to further investigation)



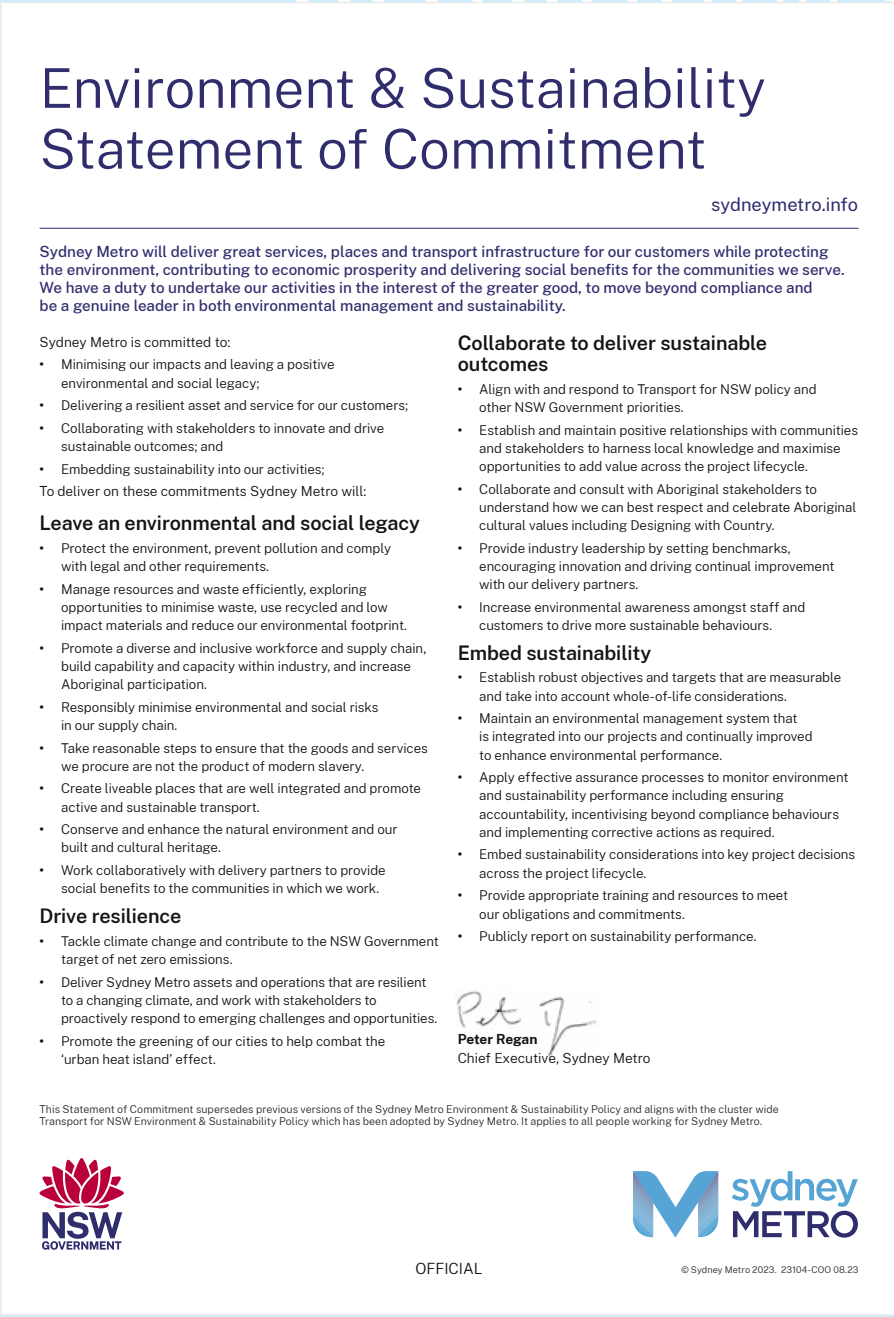
4.1 Our approach to sustainability

Sydney Metro's approach to sustainability is aligned to the **Transport for NSW (TfNSW) Environment and Sustainability Policy**, which provides a commitment to delivering transport that contributes to economic prosperity and social inclusion in an environmentally responsible and sustainable manner, consistent with the **Future Transport Strategy**.

The **Sydney Metro Environment and Sustainability Statement of Commitment** sets out our intent to:

- minimise our impacts and leave a positive environmental and social legacy
- deliver a resilient asset and service for our customers
- collaborate with stakeholders to innovate and drive sustainable outcomes
- embed sustainability into our activities.

Figure 1: Sydney Metro Sustainability Principles.



Environment & Sustainability Statement of Commitment

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Sydney Metro will deliver great services, places and transport infrastructure for our customers while protecting the environment, contributing to economic prosperity and delivering social benefits for the communities we serve. We have a duty to undertake our activities in the interest of the greater good, to move beyond compliance and be a genuine leader in both environmental management and sustainability.

Sydney Metro is committed to:

- Minimising our impacts and leaving a positive environmental and social legacy;
- Delivering a resilient asset and service for our customers;
- Collaborating with stakeholders to innovate and drive sustainable outcomes; and
- Embedding sustainability into our activities;

To deliver on these commitments Sydney Metro will:

Leave an environmental and social legacy

- Protect the environment, prevent pollution and comply with legal and other requirements.
- Manage resources and waste efficiently, exploring opportunities to minimise waste, use recycled and low impact materials and reduce our environmental footprint.
- Promote a diverse and inclusive workforce and supply chain, build capability and capacity within industry, and increase Aboriginal participation.
- Responsibly minimise environmental and social risks in our supply chain.
- Take reasonable steps to ensure that the goods and services we procure are not the product of modern slavery.
- Create liveable places that are well integrated and promote active and sustainable transport.
- Conserve and enhance the natural environment and our built and cultural heritage.
- Work collaboratively with delivery partners to provide social benefits to the communities in which we work.

Drive resilience

- Tackle climate change and contribute to the NSW Government target of net zero emissions.
- Deliver Sydney Metro assets and operations that are resilient to a changing climate, and work with stakeholders to proactively respond to emerging challenges and opportunities.
- Promote the greening of our cities to help combat the 'urban heat island' effect.

Collaborate to deliver sustainable outcomes

- Align with and respond to Transport for NSW policy and other NSW Government priorities.
- Establish and maintain positive relationships with communities and stakeholders to harness local knowledge and maximise opportunities to add value across the project lifecycle.
- Collaborate and consult with Aboriginal stakeholders to understand how we can best respect and celebrate Aboriginal cultural values including Designing with Country.
- Provide industry leadership by setting benchmarks, encouraging innovation and driving continual improvement with our delivery partners.
- Increase environmental awareness amongst staff and customers to drive more sustainable behaviours.

Embed sustainability

- Establish robust objectives and targets that are measurable and take into account whole-of-life considerations.
- Maintain an environmental management system that is integrated into our projects and continually improved to enhance environmental performance.
- Apply effective assurance processes to monitor environment and sustainability performance including ensuring accountability, incentivising beyond compliance behaviours and implementing corrective actions as required.
- Embed sustainability considerations into key project decisions across the project lifecycle.
- Provide appropriate training and resources to meet our obligations and commitments.
- Publicly report on sustainability performance.

Peter Regan
Chief Executive, Sydney Metro

This Statement of Commitment supersedes previous versions of the Sydney Metro Environment & Sustainability Policy and aligns with the cluster wide Transport for NSW Environment & Sustainability Policy which has been adopted by Sydney Metro. It applies to all people working for Sydney Metro.

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Figure 2: Sydney Metro Environment and Sustainability Statement of Commitment.

05 Demonstrate leadership

Deliver a world-class metro that is environmentally and socially conscious; share knowledge and demonstrate innovation in sustainability.

5.1 Sustainability targets

Each Sydney Metro project has a sustainability plan or strategy which outlines our targets for both construction and operation. Our targets and initiatives are embedded into contractual documents to drive sustainable environmental and socio-economic outcomes, with performance reported publicly. We are currently on track to achieve more than 95 per cent of our construction sustainability targets.

Examples of at-risk targets include those relating to recycling of construction office waste, and provision of on-site renewable energy, which are being addressed through collaboration with delivery partners. More detail is provided in **Appendix B**.

In action: Tallawong Station.

Sustainability target performance FY 2022–23

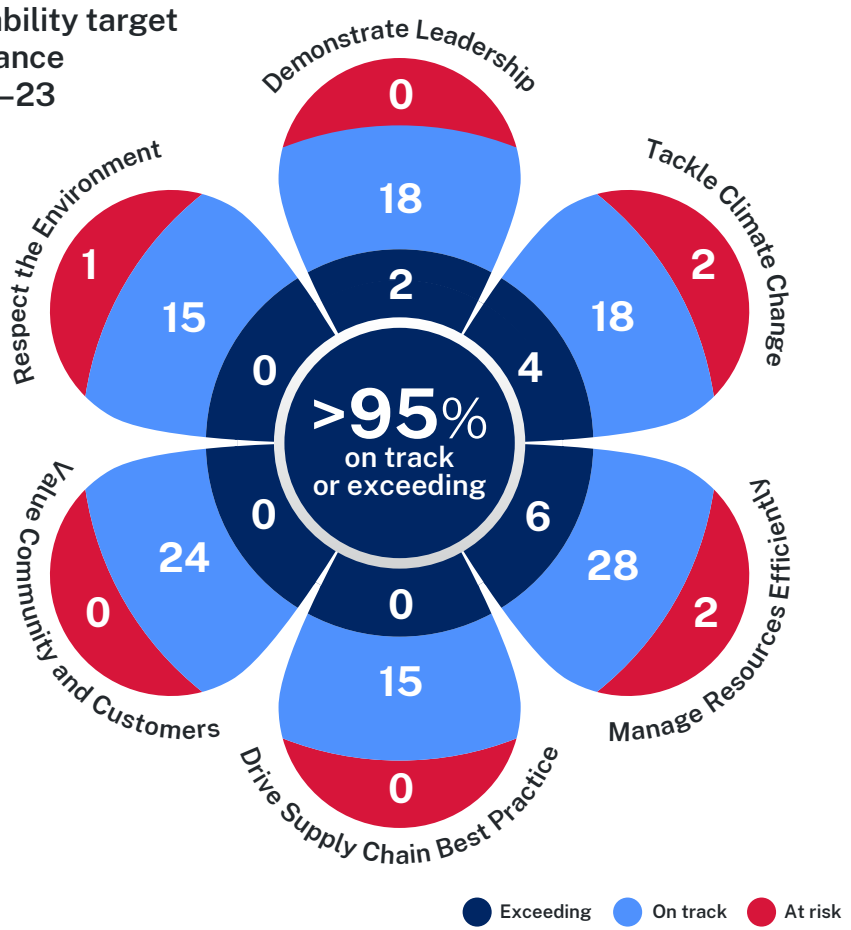


Figure 3: 2022–23 Performance against our sustainability targets.

5.2 Measuring our achievements

Using nationally recognised accreditation tools, we measure and verify the sustainability performance of our projects against best-practice industry standards for both construction and operations stages.

In October 2022, the Sydney Metro West Sustainability Plan was published. The Plan outlines initiatives and targets that are benchmarked against past Sydney Metro projects and international best practice on similar infrastructure projects.

Ratings achieved in the 2022–23 financial year

Metro North West Line

A National Australian Built Environment Rating System (NABERS) operational water rating of **4.5 stars** was achieved for the administration building of the Sydney Metro Trains Facility.

Sydney Metro City & Southwest project

Central Station achieved a **Leading Infrastructure Sustainability (IS) Design rating** (85 points)

Bankstown Early Works achieved a **'gold' rating** under TfNSW's Sustainable Design Guidelines

Sydenham Station and Junction Works achieved a **Leading IS As-Built rating** (86 points)

Artist impression: the new public plaza at Bankstown Station.

Awards and recognition

The 2022–23 financial year saw Sydney Metro City & Southwest and its delivery partners receive several awards and nominations for sustainability excellence.

ISC Sustainability Leadership – Excellence in Environmental Outcomes

Awarded September 2022

During the upgrade of Sydenham Station to Metro standards, John Holland and Laing O'Rourke Joint Venture closely collaborated with stakeholders on a sustainability-centred design approach. The value of this approach was demonstrated when design adjustments were made that led to excellent environmental outcomes for the project, including design innovations to reduce material, waste and construction time. This resulted in a total saving of 7500 tonnes of carbon dioxide equivalent (t CO2-e) and a total material life cycle reduction of 40 per cent when compared to business as usual.

ISC Sustainability Leadership – Excellence in Governance Outcomes

Awarded September 2022

Sydney Metro City & Southwest delivery partner John Holland and Laing O'Rourke Joint Venture created a working environment where the Sydney Metro Sustainability Strategy objectives flowed throughout all the teams involved, empowering all stakeholders to find ways to work better. This led to a reduction of 3460 t CO2-e compared to business-as-usual practices.

NSW Banksia Award winner 2022

Award winner: Sustainability Managers Brittany Vogel and Adrian White accepting the 'Future Cities' award on behalf of Sydney Metro.

Sydney Metro won the 'Future Cities' category at the Banksia Foundation's NSW Sustainability Awards. The award recognised the collaboration between Sydney Metro and the Green Building Council of Australia (GBCA) in creating and implementing a customised Green Star rating tool and achieving 'World Leadership' 6-star design ratings at Sydney Metro City & Southwest underground stations. Sydney Metro proceeded to the National Awards in March 2023, where we were finalists.

5.3 Collaboration for industry improvement

We seek to encourage collaboration and knowledge-sharing internally, as well as between our delivery partners and the wider community.

A significant initiative that commenced in this reporting period is the collaboration between Sydney Metro, TfNSW, the NSW Environment Protection Authority and Infrastructure NSW to apply and test a draft Protection of the Environment Policy (PEP) on the St Marys Station Footbridge project as part of Sydney Metro – Western Sydney Airport. The PEP will promote carbon reporting, and enable low-carbon design and construction and increased use of remanufactured waste in NSW public infrastructure projects.

Sustainability innovations and technology improvements are occurring constantly. To ensure we keep striving for best practice, Sydney Metro hosts Sustainability Forums where our delivery partners can collaborate, share lessons learned and discuss challenges. In 2022–23, four forums were held.

Another highlight has included the development of information guides intended to support the optimised usage of recycled and reused materials in rail and road infrastructure projects. The guides were developed by TfNSW in collaboration with Sydney Metro and Ecologiq, an initiative of Major Road Projects Victoria.

Sleepers

I	Geopolymer (in concrete)
I	Alternative composite sleepers (in low-risk areas)
I	>65% SCMs (in concrete)
A	Reuse #
A	65% SCMs (in concrete)
B	25% SCMs (in concrete)

#Subject to TfNSW approval.

I Innovation *Must be considered*

A Approved and preferred *Expected wherever practical*

B Approved and common *BAU minimum standard*

Official | 7

Geopolymer concrete sleepers with 60% lower carbon footprint than standard concrete sleepers at a Sydney Metro maintenance facility.

Recycled materials: extract from the joint Sydney Metro and TfNSW Recycled and Reused Material Opportunities in rail projects visual guide.

06 Tackle climate change

Integrate a comprehensive climate change response, and drive excellence in low-carbon solutions.

6.1 Embedding climate change resilience

Sydney Metro is aligned with the NSW Government's commitment to taking effective action on climate change and making NSW more resilient to a changing climate. Climate change risk assessments are carried out for all Sydney Metro projects, and findings are integrated into the design and construction of all new assets.

These assessments include:

- requirements to adopt, develop and address risks in pre-developed climate change risk registers
- integration of future climate tolerances into design specifications
- requirements to mitigate our contribution to climate change through efficient design, construction and operation.

Climate-related risks are proactively managed during operations through ongoing risk assessment reviews and the implementation of a severe weather response plan, which sets out clear procedures for before, during and after a severe weather event.

To deliver assets that are resilient to the increased shocks and stresses associated with climate change, we have adopted a high-carbon trajectory (RCP 8.5) for climate change model projections. This means that the design will consider the impacts of climate change in a high-emissions scenario, helping to futureproof these assets.

Designing for future temperatures

A key area of climate change adaptation involves the design of cooling systems and tunnel ventilation systems that will continue to operate into the future as the climate warms. This is particularly important in underground stations, where mechanical systems must be sized appropriately to ensure they fit within the constrained excavated areas, where there is little room for future expansion.

Mechanical engineers undertake statistical analysis of hourly historical data both to design mechanical systems that operate efficiently and to determine the critical temperature to ensure systems remain operational in extreme heat conditions.

To inform the temperature uplift for future climate scenarios, we partnered with the NSW Department of Planning and Environment and the University of NSW (UNSW) to generate hourly bias-corrected NSW and Australian Regional Climate Modelling (NARCliM) 1.5 data for the same location as the base ambient temperature calculations. Normally, this data isn't available in an hourly format. By generating this future hourly projection data, we were able to replicate the statistical calculations the mechanical engineers perform on historical data, providing a clear and linked uplift factor to use in design.

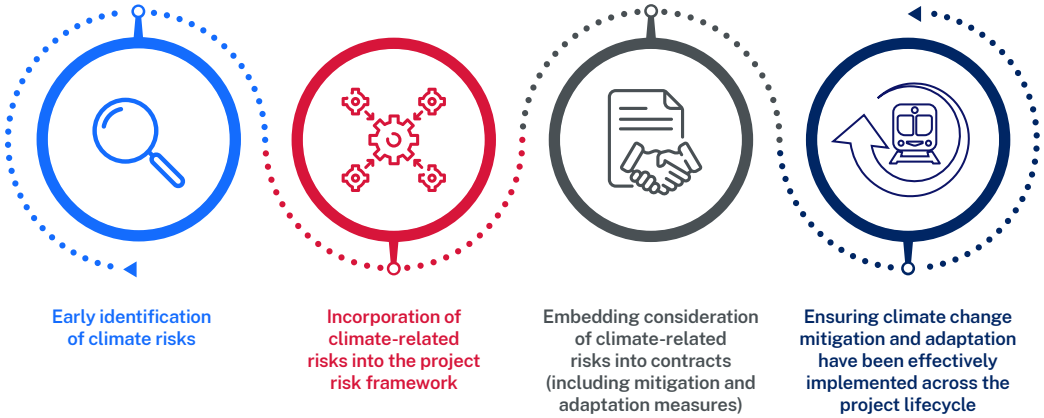


Figure 4: Sydney Metro's approach to addressing climate change.

6.2 Reducing carbon emissions

Sydney Metro has committed to reducing its carbon emissions during construction by using energy-efficient designs and low-carbon materials where possible, as well as using zero-emission electricity for operations.

To effectively monitor and reduce our embodied and construction carbon, emissions are tracked against carbon targets and are recorded monthly during project delivery. These include:

- Scope 1 (direct) emissions – for example, fuel use on site
- Scope 2 (indirect) emissions from the generation of purchased electricity
- Scope 3 (indirect) emissions, including embodied carbon in the extraction, manufacture and transport of materials, and the transport and disposal of waste.

Sydney Metro – Western Sydney Airport Carbon Neutral Commitment

In 2022, Sydney Metro announced that the Sydney Metro – Western Sydney Airport project committed to obtaining carbon neutral certification and gaining recognition under the Australian Government's Climate Active Carbon Neutral Service certification program.

It is the first rail infrastructure project in Australia to make this commitment. All carbon emissions generated during construction and operations will be reduced and offset. This includes carbon emissions from manufacturing materials like concrete and steel used to build tunnels and viaducts, the fuel used by excavators for earthworks, electricity in the site sheds, and even the emissions generated by waste breaking down in landfill.

The project will also use on-site solar panels and renewable energy as part of our commitment to using zero-emission electricity for Metro operations.

Sydney Metro West – Western Tunnelling Package GreenPower

The Western Tunnelling Package of Sydney Metro West has used GreenPower* for 100 per cent of the electricity used on site in the 2022–23 financial year. Additionally, the project has committed to 100 per cent GreenPower for all of its electricity use for the construction of the Sydney Metro West tunnel from Westmead to Olympic Park. This reduction in Scope 2 emissions will mitigate 76,000 t CO2-e.

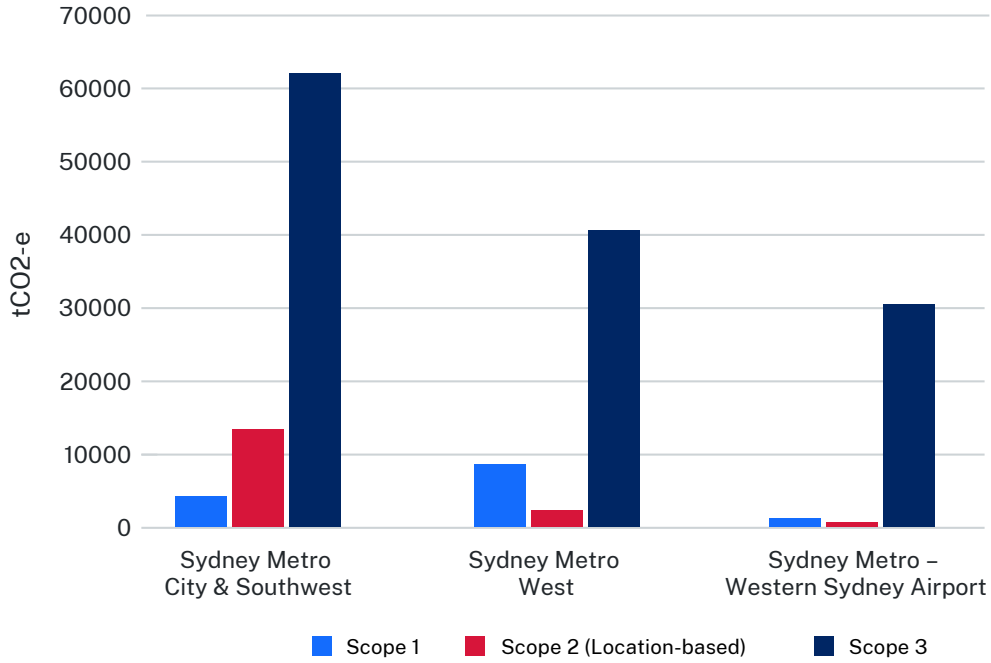


Figure 5: Total carbon emissions by each construction project in 2022–23.

*GreenPower is 100% renewable electricity. It independently accredited under a government-managed program.

Sydney Metro City & Southwest solar photovoltaic capability expansion

Renewable energy: Solar panels at Marrickville Station service building.

A total of 392 solar photovoltaic panels have now been installed on nine Sydney Metro service buildings* between Sydenham and Bankstown, with a combined capacity of 190 kilowatts. The power generated will be used for the low-voltage power at each of the stations to provide services, including lighting and lifts.

These new panels are in addition to the 288 panels that were installed at Sydenham Station in the 2021–22 financial year, as well as the 664 panels at Central Station and the 458 panels at the Sydney Metro Trains Facility.

Energy use on Metro North West Line

Sydney Metro uses zero-emission electricity for 100 per cent of Metro North West Line operations through the purchase and retirement of large-scale generation certificates (LGCs) on a calendar-year basis. In the reporting period, Sydney Metro procured LGCs under a long-term Green Products Purchase Agreement with the Beryl Solar Farm in regional NSW, and retired 85,605 LGCs equivalent to 100 per cent of 2022 operational electricity consumption.

Testing and commissioning

Zero-emission electricity has been used for the testing and commissioning of Sydney Metro City & Southwest, as part of the transition to operations phase, which has enabled Sydney Metro City & Southwest to exceed its target of 25 per cent renewable electricity in construction, reaching 43 per cent this reporting period.

*Service buildings located at Belmore, Campsie, Canterbury, Dulwich Hill, Hurlstone Park, Lakemba, Marrickville, Punchbowl and Wiley Park.

07 Manage resources efficiently

Achieve whole-of-life value through efficient use and management of resources.

7.1 Efficient use of materials

We continually work with our delivery partners to identify opportunities to reduce material quantities through lean design, and to specify environmental performance of products. This is reflected in our sustainability targets, including for the use of steel and concrete, which are significant contributors to our construction carbon emissions.

Table 1: Australian steel use in construction to date

Australian steel	% total steel
Sydney Metro City & Southwest	86%
Sydney Metro West	92%
Sydney Metro – Western Sydney Airport	91%
All projects in construction phase	88%

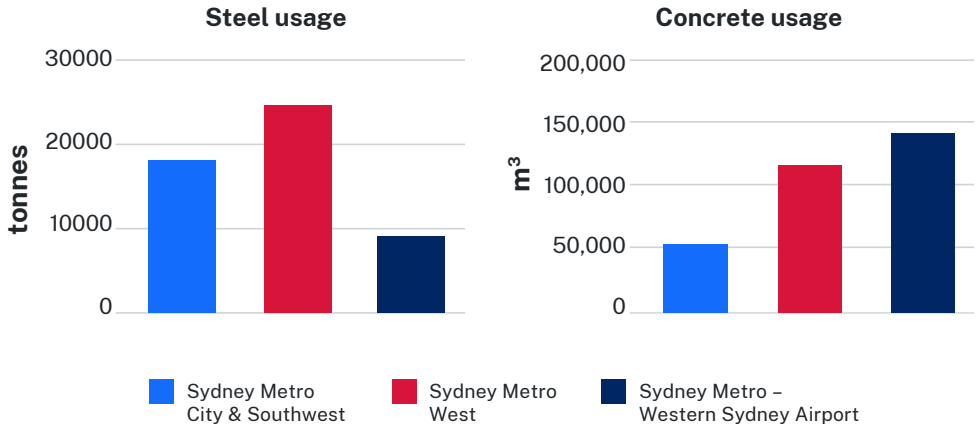


Figure 6: Steel and concrete usage, 2022–23 financial year.

Water

64 megalitres sourced from **non-potable sources**

or

26% of total water used this financial year

Total water used to date **2564 megalitres**

Materials

48% Portland cement **replacement** in concrete across all projects

Waste

98% of construction and demolition waste **recycled** or **reused**

100% of clean spoil beneficially **reused**

3.2 million tonnes of spoil beneficially **reused**

12 tonnes of office furniture **rehomed**

591 tonnes of innovative asphalt substitute used on Sydney Metro West

Low-carbon concrete

The production of Portland cement, an ingredient in concrete, is responsible for the bulk of the emissions associated with the use of concrete. Portland cement can be replaced with lower carbon supplementary cementitious materials (SCMs) such as fly ash, silica fume and blast furnace slag, which are by-products of other industries.

Through the incorporation of SCMs in the concrete used across Sydney Metro projects, we are reducing our carbon footprint. SCM use is achieved through our contracts, which include requirements for minimum proportions of SCMs and maximum cementitious content. There is also a provision for blended cements, which consist of a combination of Portland cement and SCMs: fly ash, slag, and silica fume. For construction on Sydney Metro projects for the 2022–23 financial year, 48 per cent of the Portland cement required was replaced with SCMs.

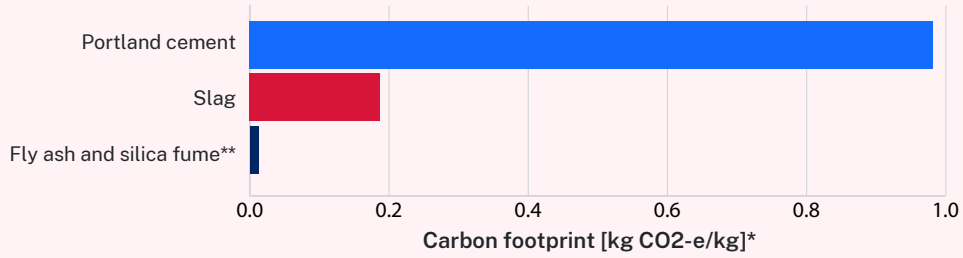


Figure 7: Carbon intensity of cementitious materials.

Bored piles

Bored piles are cylindrical bodies made of concrete (with or without reinforcement) which are installed in the ground to provide structural support. Tunnelling projects currently under construction have achieved high Portland cement replacement levels in the concrete mix designs used for piling. Using a triple blend of Portland cement, fly ash and slag, Sydney Metro West piles at Clyde and Westmead, and some of the piles on the Sydney Metro – Western Sydney Airport project, contain 56 per cent SCMs, a 21 per cent increase on Sydney Metro West and Sydney Metro – Western Sydney Airport minimum specifications of 35 per cent.

Shotcrete

Between The Bays and Olympic Park, the shotcrete used for the mined tunnels and the shafts includes mixes with SCM percentages of 35 to 42 per cent. The use of silica fume in combination with fly ash has allowed the design to achieve these high SCM replacement levels.

Precast tunnel segments

Sydney Metro tunnels are lined with precast concrete segments, which are produced at batching plants and then installed by tunnel boring machines.

Sydney Metro – Western Sydney Airport segments, produced by Wagners, include 48 per cent slag, a further improvement on the Sydney Metro City & Southwest tunnel, which was constructed in 2018 and included 34 per cent slag.

Sydney Metro West segments that form the tunnel structure from Westmead to Sydney Olympic Park use 49 per cent slag as well as 1 per cent Zep, a proprietary activated slag product from Boral, achieving a 50 per cent replacement of Portland cement.

Stations

City stations on Sydney Metro City & Southwest rapidly started to take shape in this reporting period, with a significant quantity of concrete poured to achieve station designs. As an example, a triple blend concrete mix containing fly ash and slag to achieve a 58 per cent SCM replacement for concrete was used in a selection of walls, columns, and suspended slabs for Barangaroo Station. These concrete mixes represented over 30 per cent of the concrete used in the station this financial year.

Manufacturing segments: Eastern Creek precast facility where over 60,000 segments will be manufactured.

*data taken from Australian National Life Cycle Inventory Database (AusLCI) shadow database.
**in lieu of an AusLCI carbon factor for silica-fume, Sydney Metro use the AusLCI factor for fly ash noting similarities in manufacturing.

Heritage and sustainability at Central Station

Reclaimed timber: A reclaimed timber bench located at the newly opened North–South Concourse of Central Station.

Timber bench seating has been installed into the newly opened North–South Concourse of Central Station, with more to be installed in Central Walk.

The benches have been constructed using reclaimed timber from the original canopies of Platforms 12 to 15 and use a mixture of ironbark and blackbutt planks that have been treated and refinished.

7.2 Use of recycled materials

Several examples of Sydney Metro's continued use of innovative recycled materials were applied on Sydney Metro West this reporting period, including drain filters, called GuardDog, made from 100 per cent recycled post-consumer and industrial waste. These have been installed over drains to help protect local waterways. The absorbent media has unique filtration abilities that effectively trap hydrocarbons and sediment with a minimum particle size of 53 microns. Each GuardDog drain filter can absorb up to 12 litres of hydrocarbons.

At Parramatta Station, our delivery partner applied an estimated 591 tonnes of Reconophalt, a substitute for asphalt, for a haul road site. Reconophalt contains high recycled content derived from waste streams and has a lower carbon footprint compared to a traditional asphalt mix. This created a saving of 4.4 t CO2-e and achieved significant waste diversion from landfill, including an estimated 69,873 plastic bags, 2044 printer cartridges, 296 tonnes of recycled asphalt, and 242,993 glass bottles.

7.3 Finding new uses for salvaged materials

Sydney Metro continued to explore opportunities this year to reuse material from buildings and archaeological sites. For example, sandstone exposed during archaeological excavations at Barangaroo is proposed to be used at the station to interpret the seawall constructed in the early 1800s. Similarly, sandstone blocks from another Sydney Metro site have been reused in landscaping works in Campsie. Timber from columns salvaged from Central Station is also being reused in seating at the station, and signs salvaged from some of the platforms affected by Sydney Metro's work were incorporated into the design of the new platforms.

Where we cannot find a new use on our projects, useful materials are offered to local councils and charities for reuse. In this reporting period, Hornsby, North Sydney, and Willoughby Councils reused more than 200 sandstone blocks in landscaping projects.

‘Waste not, want not’ – reuse of office fit-out materials

Mates On The Move: Salvaging office furniture for reuse.

Sydney Metro has an ambitious target to recycle or beneficially reuse at least 95 per cent of construction and demolition waste. Sydney Metro West has worked closely with its delivery partner to rehome 12 tonnes of office fit-out materials and keep them out of landfill. These materials were salvaged from office buildings in the Sydney CBD before demolition as part of the development of new Sydney Metro stations. Removal, transport and rehoming of the materials was coordinated by Mates On The Move, a social enterprise that provides employment opportunities for individuals leaving prison, creating 290 hours of employment.

The recipients were charities and social enterprises, who saved an estimated $120,000 in purchase costs. In total, 316 items and 3800 carpet tiles were rehomed. The carpet tiles went to a social and community housing apartment building and replaced its 12-year-old communal-area carpets. Other office items included tables, desks, chairs, workstations, cabinets, sofas, stools, whiteboards, plant pots, monitors, artworks, bins, televisions, coat racks and vacuums. They found new homes in a women’s shelter, a food relief program, several organisations offering training and employment opportunities, a community centre, a ‘free department store’ supporting people moving out of crisis into long-term stable housing, a charity providing housing and rehabilitation to girls and women, and Police Citizens Youth Clubs to refresh community meeting rooms and a space for at-risk youth.

08 Drive supply chain best practice

Collaborate with key stakeholders to drive a lasting legacy in workforce development, industry participation and sustainable procurement.

8.1 Ensuring ethical procurement

In accordance with the NSW *Modern Slavery Act 2018*, Sydney Metro reported in its 2022–2023 Annual Report on steps taken to ensure that goods and services procured by and for Sydney Metro were not the product of modern slavery. In summary, actions taken in the reporting period include:

- the completion of screening risk assessments
- an update of key policies, procedures and procurement documents
- the development and implementation of modern slavery contract clauses
- assessing the effectiveness of modern slavery prevention actions
- training.

No instances of unethical procurement were identified in the reporting period.

8.2 Leaving a workforce legacy

Sydney Metro provides a significant opportunity to support jobs and skills for a more diverse and inclusive workforce and supply chain. Our Workforce Development and Industry Participation Plan and our Aboriginal Participation Plan set out how these priorities will be delivered by addressing key Australian Government and NSW Government policies and skills challenges.

Sydney Metro's priorities include:

- industry participation
- workforce skills development
- diversity and inclusion
- inspiring future talent
- collaboration.

Sydney Metro's pre-employment programs provide employment pathways for long-term unemployed or underemployed individuals. The programs provide the skills, knowledge and tools to enable participants to transition to a role within the Sydney Metro supply chain.

In this reporting period, eight programs have been delivered, with 91 participants graduating from the program. Of the 91 participants:

- 89 per cent successfully completed the course
- 81 per cent gained employment
- 23 per cent were Aboriginal peoples
- 25 per cent were females participating in non-traditional trades and occupations
- 18 per cent were young people aged 25 years or younger.

The program supports ongoing learning and career development through apprenticeship and traineeship pathways.

Learn more about our **pre-employment program**.

Workforce legacy: Graduates of the Sydney Metro Pre-Employment Program.

8.3 Aboriginal business representation

Sydney Metro is committed to broadening opportunities for Aboriginal and Torres Strait Islander peoples on Sydney Metro projects and acknowledges the significant opportunities to positively impact Aboriginal and Torres Strait Islander peoples, businesses, and communities.

Through a number of initiatives, including implementing minimum requirements, bid-back mechanisms, collaborative forums and client-led programs, Sydney Metro has achieved up to 25 per cent representation of Aboriginal businesses in the supply chain.

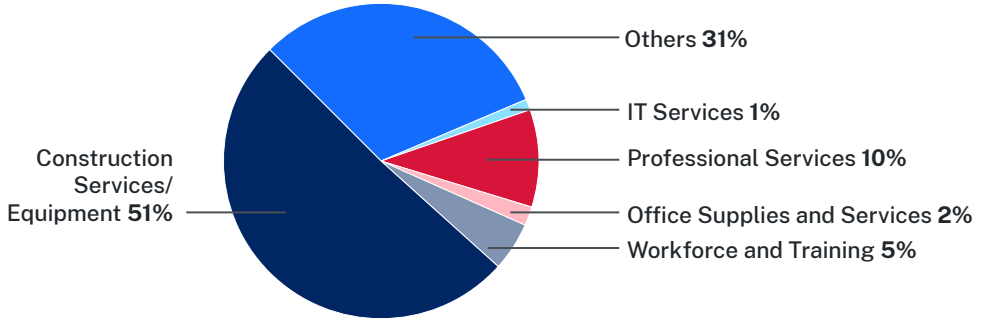


Figure 8: Outcomes of workforce initiatives for July 2022 – June 2023 for all Sydney Metro construction projects and operations.

Figure 9: Breakdown of Aboriginal businesses in the Sydney Metro supply chain by sector, as of June 2023.

Diversity and inclusion

Sydney Metro has engaged a diverse and inclusive workforce and supply chain, including:

- **4848** young people aged under 25
- **2419** women
- **74** people with disability
- **1324** long-term unemployed people
- **791** Aboriginal people working across our projects
- **52,896** people from culturally and linguistically diverse backgrounds
- **880** people who have completed cultural awareness training

Industry and jobs participation

- **28,549** people have worked across the Sydney Metro projects
- **454** small-to-medium enterprises have supported project delivery
- **430** graduates, interns and work experience placements
- **111** Aboriginal businesses have supported project delivery
- Over **$107** million spent on Aboriginal business engagement, workforce training, and employment
- **47** per cent of our workforce is from the Greater Western Sydney area

Workforce skills development

- More than **5727** people have undertaken accredited training and micro-credentials, supporting upskilling and mitigating skills shortages
- More than **561** people have participated in the Sydney Metro Industry Curriculum (SMIC)

Inspiring future talent and developing capacity

- **794** apprentices and trainees engaged on the project
- **9** forums held to support delivery partners and their supply chain, including Skills and Employment Advisory Group, Pre-Employment Advisory Group, and Industry Jobs and Skills Forums
- **8** pre-employment programs run

8.4 FastTracking the Future

FastTracking the Future is Sydney Metro's innovative education program, which connects school communities, teachers and students with Sydney Metro projects through its curriculum-aligned activities for Kindergarten to Year 10.

In 2022–23, Sydney Metro's public communications team coordinated and delivered 50 school visits and connected with more than 5000 students through its Metro Minds STEAM Challenge, inquiry-based teacher development, and school holiday programs.

Schools competition

The Metro Minds STEAM Challenge invites students from Years 7 to 10 to come up with an innovative solution to an authentic Sydney Metro challenge or opportunity.

A unique part of the Challenge is the opportunity for students to connect with people working on the Sydney Metro project – Metro Minds ambassadors – which allows students to share their ideas using the design thinking process. Students also receive additional support through virtual classroom webinars.

In 2022, almost a third of the submissions from students focused on ideas around sustainability.

On 18 August 2022, five finalist teams from Cranbrook School, Lucas Heights Community School, Our Lady of Mercy College Parramatta, Sefton High School, and Sydney Secondary College Leichhardt Campus were invited to pitch their innovations to a judging panel and live audience.

Congratulations to Deeya Vashi, Neha Sharma, Rhea Bindroo, Ruwindri Parndigamage, Tia Monga and Tiffany Jie from Our Lady of Mercy College Parramatta, the winners of our 2022 Metro Minds STEAM Challenge. The team presented an innovative idea to acknowledge the Traditional Owners of the lands on which Sydney Metro operates.

Congratulations: Our Lady of Mercy College Parramatta, winners of our 2022 Metro Minds STEAM Challenge.

Inquiry-based learning

Inquiry- based learning: More than 900 students from Jordan Springs Public School participated in inquiry-based learning with Sydney Metro. A Kindergarten student is shown here programming robots to move around her own 'Metro City'.

Engaging with schools: Daniel Powrie, Project Director Sydney Metro West, and Melvyn Bolus, Delivery Director – Trains, Systems, Operations and Maintenance at Granville Boys High School.

Sydney Metro's professional learning program for teachers on inquiry-based learning engaged with 23 teachers from eight schools across the project alignment. The program, delivered in partnership with Western Sydney University, continues to receive positive feedback from teachers, students and school leaders, indicating high levels of student engagement, motivation and interest in learning about real-life projects.

More than 900 students from Jordan Springs Public School from Kindergarten to Year 6 were involved – the first time an entire school has participated in the program.

In December 2022, Western Sydney University published a **report** based on research on the effectiveness and impact of the program. In addition to teachers reporting on their own growth as educators, teachers also indicated high levels of student interest and engagement.

Find out more about **how we engage students and teachers** with our project.

School holiday program

Sydney Metro continues to offer its popular school holiday program for primary school-aged students near Bankstown and Parramatta. The hands-on activities are STEM-based and are planned in accordance with the Kindergarten to Year 6 NSW syllabus outcomes.

09 Value community and customers

Respond to community and customer needs; promote heritage, liveable places and wellbeing for current and future generations.

9.1 Connecting with Country

Sydney Metro has engaged and worked with knowledge holders to enable Sydney Metro and its employees, contractors and staff to work respectfully and in a culturally appropriate way with Aboriginal communities and Country. We produced the **Connect with Country Guide** for Sydney Metro West and the **Connecting with Ngura (Country)** guide for Sydney Metro – Western Sydney Airport.

In addition, Aboriginal design advisers Djinjama are preparing Readings of Country for each station on Sydney Metro West and advising our contractors on Sydney Metro – Western Sydney Airport.

Connecting with Country: At Victoria Cross Station, our delivery partner has worked with local design company Balarinji and Aboriginal artist Bibi Barba to acknowledge the spiritual, physical and cultural connection of the project to Cammeraygal Country. To recognise the significance of connection to place, the artwork *My Country – Saltwater Dreaming* is now prominently displayed on the project's jump form – the working platform for constructing the main lift core and services risers – that will be progressively raised over the site.

9.2 Managing heritage

The land on which the Parramatta Metro Station is being constructed once contained wetlands, which provided a rich resource for the Burramattagal people. It is also located in the historic core of Parramatta, which was laid out circa 1790–1792. Ongoing archaeological work is providing new understandings of Parramatta's importance to Aboriginal peoples and the historical interactions between the Burramattagal and colonists following Parramatta's invasion in 1788. It is also providing new information about the early colonial settlement of Parramatta, including how colonists adapted to a new environment and their daily life. It is also revealing new stories of urbanisation during the nineteenth century, and the evolution of the township of Parramatta into the city it is today.

Sydney Metro is partway through the Sydney Metro West archaeological program, which is expected to continue through to 2025.

Archaeological finds: Ginger beer bottles found from the backfill of a cistern at Parramatta. The property was owned by shopkeepers George and Sarah Barton, who held a licence to brew and sell ginger beer in the 1840s.

Archaeological excavations: The Parramatta Station construction site.

9.3 Promoting walking and cycling

Sydney Metro is committed to delivering an integrated and robust walking and cycling network to the residents of the Western Parkland City.

Connecting Orchard Hills Metro Station to Warragamba Pipeline

Artist's impression of the Active Transport Corridor.

Concept designs and contract documents were completed this reporting period for a walking and cycling (active transport) corridor along the Sydney Metro – Western Sydney Airport line.

The Active Transport Corridor is divided into three stages: Stage 1 will include the development of a 4.4 kilometre corridor and will run from Orchard Hills Metro Precinct to the Warragamba Pipeline. It is expected to open in 2026, alongside the Sydney Metro – Western Sydney Airport line. Stages 2 and 3 are proposed future stages. Stage 2 will run from Luddenham Road to the M12 motorway, and Stage 3 from Warragamba Pipeline to Luddenham Road.

At Orchard Hills Metro Station, the Active Transport Corridor will connect to the existing shared path on Kent Road. This will allow for its integration into the wider walking and cycling network.

When expanded through Stages 2 and 3, the Active Transport Corridor will also connect to the M12 motorway, allowing for a southern connection to Bradfield city centre and Aerotropolis.

Frank Channon Walk extension

A key signalised pedestrian crossing along Mowbray Road has recently been resolved near the Chatswood dive site maintenance facility. This will connect a planned extension to Frank Channon Walk in Chatswood with a future bicycle network along Hampden Road, Mowbray Road and the new Pacific Highway shared path.

Detailed design and construction will be completed in 2024.

9.4 Integrating public art

The Sydney Metro Art Program is a legacy-building public art program that will elevate customers' experience of public transport in Sydney. Art will punctuate arrivals and departures and will be an engaging part of many thousands of journeys, transforming stations into lively cultural destinations.

Public art is a key part of Sydney Metro's placemaking approach and promotes inviting, welcoming stations that are connected to communities. Public art contributes to our understanding and appreciation of our cultural and natural heritage, enhances our built environment, and creates more-meaningful public spaces. It can also foster a sense of belonging, and connects stations with the community. The **Sydney Metro Art Masterplan** provides further detail on the Metro Art Vision, the program objectives and the commissioning process.

For the Sydney Metro City & Southwest project, the artworks respond to the theme 'Storyline'. This theme recognises the mosaic of vibrant places and diverse communities – including First Nations communities – along the line and encourages unique responses at each station relating to localities and cultural, urban and natural elements.

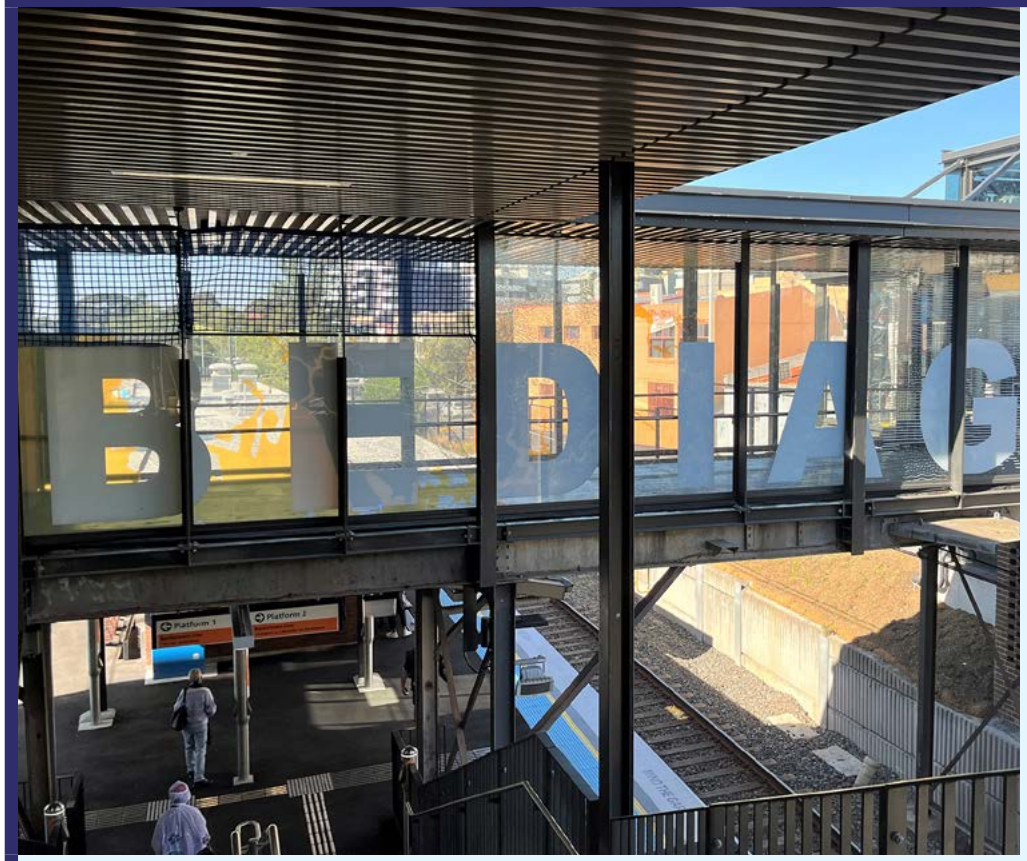
Central Station

***All Alongside of Each Other*, Rose Nolan, 2023, Central Station. Image credit:** Sydney Metro.

At Central Station, Rose Nolan's immersive artwork *All Alongside of Each Other* is a monumental terrazzo floor-work and a text-sculpture, located in the Sydney Metro concourse and Central Station's Northern Concourse. This contemporary public artwork celebrates the daily passage of commuters as they move through the Sydney Metro concourse. The artwork's bold colour, playful form and calming phrases combine to remind passengers of the simple shared pleasures to be experienced in everyday travel.

All Alongside of Each Other evokes the constant flow and circularity of daily life. As an artwork conceived for the public realm, it enjoins returning commuters to become participants in an unfolding experience as they move freely and effortlessly in and across the Sydney Metro concourse. *All Alongside of Each Other* encompasses location, journey and destination and is suggestive of the past, present and future, anchored in a persuasive and universal visual form.

Punchbowl Station



***Life/Blood: resistance and resilience*, Lucy Simpson, 2022, Punchbowl Station. Image credit:** Sydney Metro.

Forming part of the suite of transparent glass artworks across 10 of the Sydney Metro City & Southwest Metro stations, Lucy Simpson's *Life/Blood: resistance and resilience* weaves together Bediagal narratives of place. This artwork reflects the coming together of the many people who have, over time, come to call Punchbowl home. United once again by the theme 'Storyline', it tells a story that evokes experiences, memories and imaginings of our multifaceted contemporary lives through the important lens of the Aboriginal community.

Life/Blood speaks of resistance and resilience, ongoing relationships, and the strength of Aboriginal life and connection to Country. It celebrates connection, relationships, and exchange through moments of convergence and movement in everyday spaces. The large text of the artwork was created with the Canterbury Bankstown Aboriginal community, and the colourful letters were painted by children in the community. The final artwork brings together past, present and future.

9.5 Engaging community and customer

A new engagement landscape after COVID-19

Community and stakeholder engagement has rapidly evolved following the COVID-19 pandemic. Sydney Metro offers a variety of ways for our communities and customers to keep updated and stay connected, ranging from digital platforms to face-to-face engagement, dedicated place managers, and printed collateral. Our hybrid engagement allows people the ease and flexibility to choose how they wish to engage with our projects.

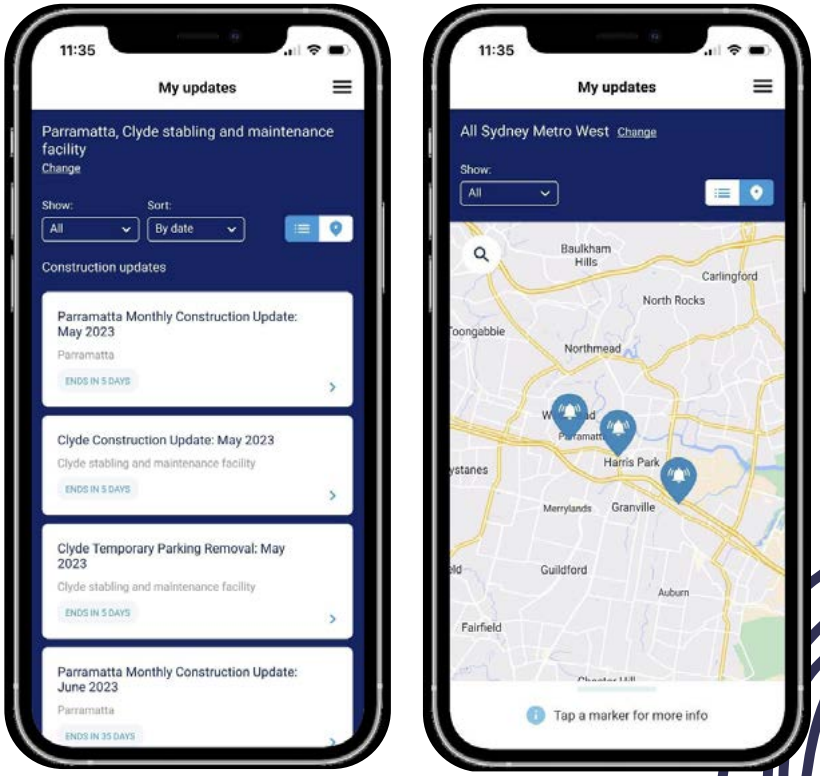
With social distancing restrictions no longer in place, Sydney Metro has been able to resume face-to-face engagement at community events, pop-ups and local markets, as well as holding community information events in line with key milestones across the projects.

On Sydney Metro City & Southwest, engagement sessions were held with residents, businesses and local interest groups across the alignment. This included events such as the quarterly Waterloo Community Connect, the Martin Place Community & Business Forum, and the Victoria Cross Aboriginal Business Forum. There was also a series of site visits and presentations for groups, including the National Association of Women in Construction, Young Engineers Australia, and Crows Nest Seniors. Sydney Metro City & Southwest also attended the Crows Nest Festival in October 2022, where members of the project team spoke with the local community about station operations, construction, improvements to the public domain and metro benefits.

Sydney Metro West hosted several information sessions in November and December 2022 for the public exhibition of Environmental Impact Statements for the Parramatta, Sydney Olympic Park and Hunter Street over-station and adjacent station developments. These information sessions allowed people to speak with our team directly, ask questions and find out more about the planned development for each site. Sydney Metro West also held community open days at The Bays and Parramatta, and attended various other local events, including Parramatta Farmers Markets and Ferragosto in Five Dock.

Our digital engagement methods continue to expand across the Sydney Metro projects. Sydney Metro West launched various 3D models for the Parramatta, Sydney Olympic Park and Hunter Street over-station and adjacent station developments. Users can see 3D models of the proposed developments and experience a 360-degree site tour of the area. The models were launched on the existing interactive portal in November and December 2022 and remain on the portal as part of Sydney Metro West's interactive map.

The **Sydney Metro Connect App** was launched in June 2021 and provides communities with construction updates in more than 100 languages. Following the successful uptake of the app on Sydney Metro West, the app was launched for Sydney Metro – Western Sydney Airport communities in May 2023. The app now has more than 8,000 users across both projects, with around 2,000 users from culturally and linguistically diverse backgrounds.



Community engagement: Sydney Metro Connect App interface.

9.6 Social outcomes and community benefits

Sydney Metro aims to leave a lasting positive legacy on the local community throughout the construction phase and beyond. Our delivery partners consistently implement and maintain valuable community initiatives, which in this reporting period included:

- supporting the St Marys Small Business Promotion Program – an ongoing project where vouchers are given to community members to promote local businesses
- participating in Clean Up Australia Day, collecting over 300kg of rubbish from the Cooks River
- partnering with Supertee, which provides specialised medical garments to children with life-threatening conditions. $10,000 was donated to the foundation, and 20 volunteers assisted Supertee with packing 192 garments
- collaborating with Youngster.co to provide tech help sessions to seniors over a 10-week program. Tech-savvy youth assisted seniors to gain confidence in using technology, helping them connect with family and friends
- providing funding to purchase a coffee cart for the Ebenezer Mission, a registered NDIS provider that provides skills, training and social outlets for people with disability
- supporting the Rozelle Neighbourhood Centre at 10 events over a period of five months. Volunteers assisted with organisation, packing food donation bags, cooking meals and delivering the food to people in need
- providing administrative and event management support for the Jazz on the Lawn Christmas event, proceeds of which supported the International Justice Mission
- providing funding for the painting of the Meals on Wheels building located in Concord. Meals on Wheels is a charity that provides food delivery services to people with disability and older people. They deliver meals to over 300 recipients in the Inner West area
- holding a charity soccer event to raise money for Youth Off the Streets. This event raised $7800, which will help Youth Off the Streets provide support and care to young people
- volunteering with the Mirabel Foundation, which works with children aged 0–17 who have been orphaned or abandoned due to parental drug abuse
- donating time to carry out basic tasks to prepare units for yourtown, an organisation which provides housing for those escaping domestic and family violence.

Seas the day

Seas the day: Tribal Warrior and Sydney Metro delivery partners collaborating.

In August 2022, Sydney Metro City & Southwest and Novo Rail's Redfern Station Upgrade project collaborated with one of Sydney's most respected and influential organisations – Tribal Warrior.

Driven to revitalise Aboriginal culture through economic and social stability, the founders of Tribal Warrior began maritime training as a way of offering their community members the dual opportunity of engaging in culture and finding employment.

Fifteen volunteers, including staff from Laing O'Rourke, John Holland, Sydney Metro, Redhill Construction and Civil, and Dulux collaborated to complete minor refurbishments to two Tribal Warrior vessels. In addition to delivering the scope, the day triggered conversations and knowledge-sharing between all the participants.

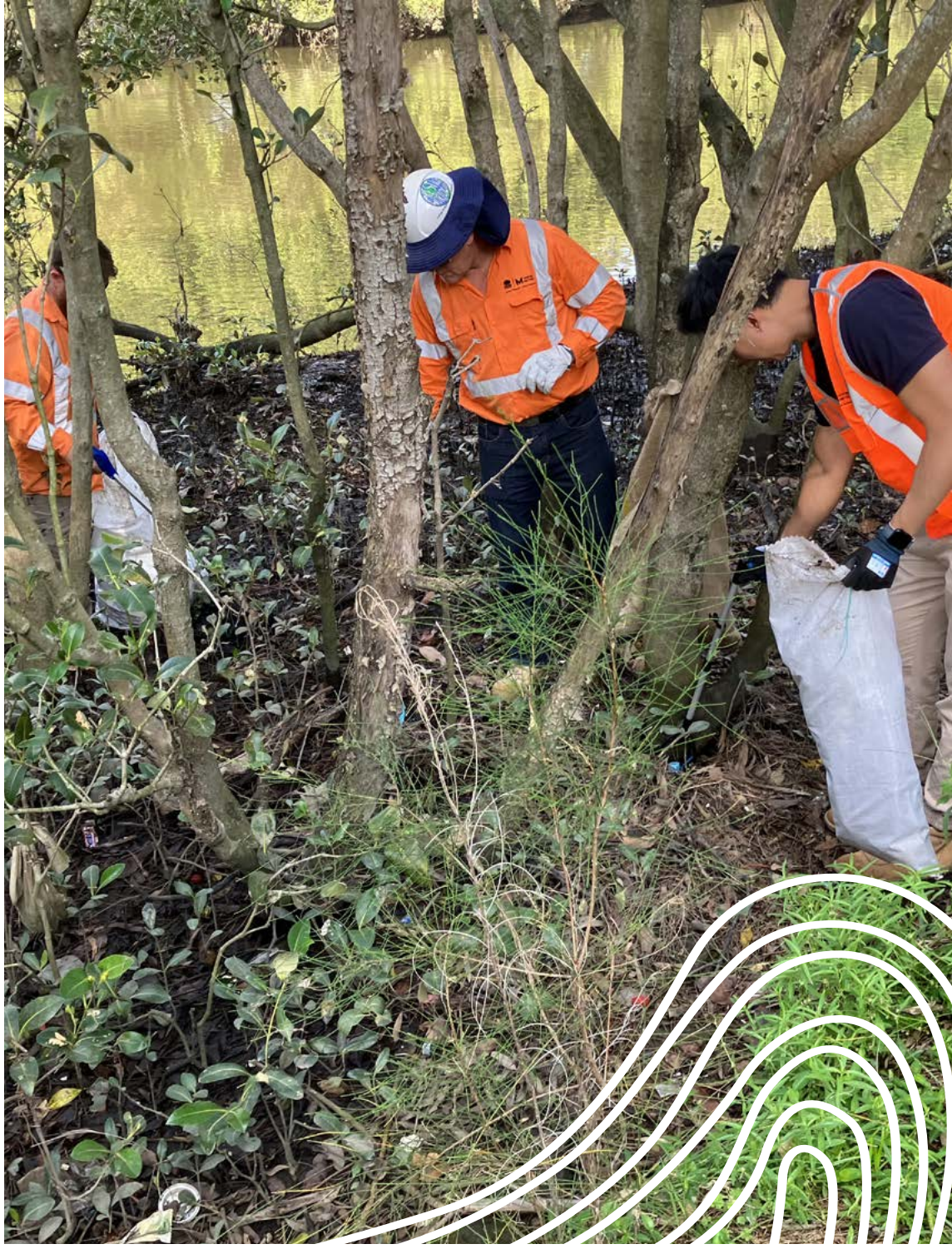
Storytime

Working with our community: Touched by Olivia Foundation's Storytime initiative.

Sydney Metro West project delivery partners provided funding to restart weekly Storytime at Timberell Park, Five Dock. The Storytime initiative is run by the Touched by Olivia Foundation and the funding has provided casual employment to three people with disability by engaging them to lead Storytime with local children and their families.

The program provides a range of community benefits, including:

- increasing awareness of barriers that exist within our society that affect people with disability
- providing an opportunity for friendships to be made and fostered in a welcoming environment
- providing employment opportunities to people with disability.



Cleaning up our environment: Sydney Metro City & Southwest delivery partners participating in Clean Up Australia Day 2023.

10 Respect the environment

Minimise impacts and take opportunities to provide environmental improvements.

10.1 Our approach to environmental management

To ensure we optimise environmental outcomes, Sydney Metro takes a life cycle approach to managing our environmental impacts, influencing our projects from early development through to construction and operation.

This ongoing commitment is evident through our sustainability principles, our environmental management system and construction frameworks, standards and our strategies, which all aim to minimise impacts to the environment and surrounding communities.

Environmental performance across the Sydney Metro program of works is monitored using environmental compliance monitoring software. Using this software, Sydney Metro records, tracks and reports on environmental performance, including environmental incidents, non-compliance with planning approvals, site inspections, and associated corrective and preventative actions. Using this information, Sydney Metro can identify performance trends and identify where surveillance activities and training are best directed to enable continual improvement across our sites.

Environmental Management System (EMS) certification

Sydney Metro's EMS was successfully recertified to international standard ISO 14001:2015 – *Environmental management systems – Requirements with guidance for use* through Intertek SAI Global in June 2023. This is the first recertification of Sydney Metro's EMS since its initial certification in July 2020.

The recertification process involved extensive review of Sydney Metro's standards, systems and procedures, in conjunction with two site inspections across Sydney Metro's program of works to determine compliance with the requirements of ISO 14001:2015. Through this process, Sydney Metro is pleased to report that no non-conformances were identified.

Sydney Metro is committed to regularly reviewing our EMS and ensuring actions are taken to continually improve our standards, systems, procedures and ongoing environmental performance.

10.2 Management of noise and vibration impacts

Due to the nature of Sydney Metro projects, noise and vibration can become an issue for local communities and our customers if not managed effectively. To continually improve our environmental performance across the project life cycle and further reduce noise and vibration impacts, Sydney Metro is working with:

- contractors to investigate and implement innovative techniques above and beyond standard mitigation measures
- the University of Technology Sydney to optimise the placement of noise mitigation material required in tunnels and to identify more economically viable and sustainable options.

10.3 Project environmental performance

Sydney Metro is committed to protecting the environment and embedding environmental best practice into our activities. Key environmental management outcomes over the reporting period are summarised below.

Environmental performance 2022–23

2216
Planning approval requirements

2216 planning approval conditions and mitigation measures were managed across Sydney Metro projects.

>96%
Compliance with planning approvals

85 non-compliances were reported (3.84 per 100 requirements), resulting in over 96 per cent compliance with planning approvals.

149
Environmental incidents

All incidents were categorised Class 3 incidents, as they caused no material harm to the environment.

446
Site inspections

446 site inspections were undertaken across the Sydney Metro program with an average 2.55 issues raised per inspection.

Figure 10: Environmental performance for July 2022–June 2023.

Sydney Metro – Western Sydney Airport seed collection

The Sydney Metro – Western Sydney Airport project is undertaking a seed collection program to preserve native and endemic vegetation, particularly the critically endangered Cumberland Plain Woodland ecological community, which is impacted by the project. The seeds collected from the project area will be used to restore and enhance biodiversity throughout the corridor once construction is complete, creating a legacy for the new Western Parkland City.

To date, over 350kg of raw material from 22 species of trees, shrubs and grasses has been cleaned and sorted down to over 20kg of pure seed, with over 150kg more to be cleaned. It is estimated that there will be more than 100 individual seeds per gram, meaning 20kg of seed could potentially yield 2 million individual plants.

In progress: View of construction work at the new Orchard Hills Station, part of Sydney Metro – Western Sydney Airport.

Tree replacement program

Tree replacement: The last tree planted in the Willoughby City Council area as part of the Sydney Metro tree replacement program. This turpentine (*Syncarpia glomulifera*) could grow up to 60 metres and live for up to 500 years.

Tree replacement: This tallowwood (*Eucalyptus microcorys*) is one of the first trees planted in the City of Sydney local government area as part of the Sydney Metro tree replacement program.

Sydney Metro retains every tree we can. Where this is not possible, we plant trees as part of station and trackside landscaping, and work with local councils to plant more trees in nearby areas. In this reporting period, 298 trees were planted in collaboration with Willoughby City Council and the City of Sydney. This has resulted in significantly more trees being planted than had to be removed as part of the construction works. Sydney Metro is also working closely with other local councils along its alignments to ensure projects leave a positive legacy of increased tree coverage.

Appendices

Appendix A: Sustainability data

		Sydney Metro City & Southwest project			Sydney Metro West			Sydney Metro – Western Sydney Airport			Metro North West Line		Sydney Metro
		In construction			In construction			In construction			Construction complete		
Data [1]	Unit of measure	Target	FY 2022–23	Cumulative to date	Target	FY 2022-23	Cumulative to date	Target	FY 2022–23	Cumulative to date	Target	Total in completion	Cumulative to date
Scope 1 construction carbon emissions	Tonnes CO_2-e		4216	46,513		8527	12,591		1141	1220		–	N/A
Scope 2 (location based) construction carbon emissions[2]	Tonnes CO_2-e		13,345	99,117		2205	2450		571	593		–	N/A
Scope 2 (market based) construction carbon emissions[2]	Tonnes CO_2-e		6447	59,554		1602	1830		532	552		–	N/A
Scope 3 construction carbon emissions[3]	Tonnes CO_2-e		62,081	550,321		40,623	52,422		30,516	30,527		–	N/A
Total construction carbon emissions (using location based scope 2)	**Tonnes CO_2-e**		**79,642**	**695,951**		**51,355**	**67,463**		**32,228**	**32,340**		**536,667**	**1,332,421**
Renewable construction electricity or offsets[4]	% of construction electricity offset	25%	64%[8]	43%[8]	25%	22%[5]	21%[5]	25%	100%[6]	100%[6]	20%	20%	N/A
Renewable construction fuel or offsets	% of construction fuel offset	N/A	N/A	N/A	25%	1%[5]	1%[5]	25%	100%[6]	100%[6]	N/A	N/A	N/A
Total construction and demolition waste generated	**Tonnes**		**26,109**	**253,944**		**64,929**	**123,862**		**32,313**	**32,393**		**134,924**	**545,123**
Construction and demolition waste reused/ recycled	Tonnes		24,315	244,681		64,531	120,932		31,860	31,933		128,518	526,064
	% of total waste generated	90%	93%	96%	95%	99%	98%	95%	99%	99%	95%	95%	97%
Usable spoil generated	Tonnes		8940	5,113,218		1,260,399	1,761,946		1,955,392	1,960,412		6,416,099	15,251,675
Usable soil beneficially reused	Tonnes reused		8926	5,113,124		1,260,399	1,761,946		1,955,392	1,960,412		6,416,099	15,251,581
	% of usable spoil generated	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total water consumption	**kL**		**65,298**	**1,465,845**		**95,411**	**120,298**		**87,310**	**88,111**		**889,283**	**2,563,537**
Water sourced from non-potable sources	kL		3265	512,596		4399	8027		56,426	57,122		227,738	805,483
	% of total water consumption	33%	5%	35%	33%	5%	7%	33%	65%	65%		26%	31%
Steel use	Tonnes		18,200	97,068		24,909	27,015		9130	9130		60,308	193,521
Concrete use	Cubic metres		55,262	738,637		117,902	130,652		143,536	143,549		613,592	1,626,430
% Portland cement replacement	% replaced using supplementary cementitious materials (SCM)	25%	42%	38%	35%	48%	47%	35%	51%	51%	25%	38%	48%
Major pollution incidents	No. of major pollution incidents	0	0	0	0	0	0	0	0	0	0	0	0

[1] Data is correct at time of publication. Some historical data (including carbon emissions) has been refined following data reconciliation exercises and other updates have occurred since publication of the 2022 Sydney Metro Sustainability Report.

[2] Scope 2 emissions associated with electricity use are presented using both the location-based electricity accounting method, which reflects the average emissions intensity of grids on which energy consumption occurs, and the market-based methods aligned with the Climate Active Electricity Accounting Rules and the Greenhouse Gas (GHG) Protocol Scope 2 Guidance. Market-based calculated emissions reflect emissions from electricity that companies have purposefully chosen and capture the use of voluntary purchases of renewable energy such as GreenPower and large-scale generation certificates (LGCs). Dual reporting with both market-based and location-based methods is considered current best practice and has been provided for all current projects in construction. Scope 2 emissions data for the Metro North West Line is only reported using the location-based method. This was common practice at the time of construction and, while market-based emissions data is not available, carbon emissions were partially mitigated using both GreenPower and LGCs.

[3] From an organisational perspective for Sydney Metro as defined by the GHG Protocol, all of the emissions associated with the construction of projects which are undertaken by third-party contractors would generally be seen as Scope 3 emissions. It is common practice, however, for the definition of emissions scopes for an individual project to be defined with a view of the proponent and its contractors as equivalent to a single organisation, to better distinguish between emissions sources and the relative level of influence and control. This approach has been adopted when referring to Scope 1, 2 and 3 sources herein.

[4] Offsets are only purchased and retired if projects are not powered by renewable electricity to the extent required by the target.

[5] Scope 2 offset percentages are much higher than Scope 1 offset percentages due to projects currently utilising GreenPower; however, they have not yet purchased Scope 1 offsets.

[6] Sydney Metro – Western Sydney Airport is committed to offsetting 100 per cent of Scope 1 and 2 emissions resulting from on-site energy consumption in line with the Carbon Neutral Commitment.

[7] These figures are inclusive of Scope 2 and Scope 3 emissions.

[8] Percentages are significantly higher than reported in the 2022 Sydney Metro Sustainability Report due to the permanent power supply being connected for Sydney Metro City & Southwest. This is 100% offset by Sydney Metro's purchase and retirement of LGCs.

Operational data

		Metro North West Line			Sydney Metro
Data	Unit of measure	Target	FY 2022–23	Cumulative to date	Cumulative to date
Operational electricity consumption	kWh		84,139,273	343,423,899	343,423,899
Operational zero emission electricity	kWh		84,139,273	343,423,899	343,423,899
	% of total operational electricity consumption	100%	100%	100%	100%
Carbon emissions savings[7]	Tonnes CO_2-e		64,355	285,524	285,524

Appendix B: Sustainability targets

Sydney Metro City & Southwest targets

Target performance

Demonstrate leadership	Tackle climate change	Manage resources efficiently	Drive supply chain best practice	Value community and customers	Respect the environment
Exceeding • A high level of attainment (minimum ISCA IS Rating of 65 'Excellent') for relevant infrastructure. • 5-star Green Star ratings for relevant buildings.	**Exceeding** • Offset 25 per cent of the electricity needs for the construction phase of the project. • Mitigate a minimum of 25 per cent of medium-level risks.	**Exceeding** • Use concrete which has an average Portland cement replacement level of more than 25 per cent. • Recycle or reuse 90 per cent of recyclable construction and demolition waste.	**On track** • All principal contractors develop and implement sustainable procurement strategies. • Increase opportunities for employment of local people, participation of local businesses and participation of SMEs. • Enable targeted and transferable skills development, which resolves local and national skills shortages, supports industry to compete in home and global markets, and embeds a health and safety culture within all induction and training activities, promoting continuous improvement. • Increase workforce diversity and inclusion: – Target Aboriginal workers and businesses. – Target female representation in non-traditional trades. – Target long-term unemployed people. • Inspire future talent and develop capacity in the sector: – Engage young people via education and work experience. – Collaborate with higher education institutions to provide programs responding to rapid transit and other infrastructure requirements. – Support vocational career development through apprenticeships and traineeships.	**On track** • Prepare a Heritage Strategy, including stakeholder engagement with relevant stakeholders. • Implement the Heritage Strategy during design and delivery, to conserve and activate. • Maximise opportunities for archaeological research and future interpretation of archaeological finds. • Opportunities for heritage interpretation identified and implemented at appropriate station precincts. • Station interchanges designed in accordance with the Interchange Access Plans and modal hierarchy. • Stations and precincts designed in accordance with the Sydney Metro Design Guidelines. • Promote access by cycling, through provision of bicycle parking, and safeguard for future expansion of bicycle facilities. • Implement initiatives that will provide tangible benefits to local community groups during the construction period. • Implement initiatives that will provide tangible benefits to the broader local community beyond the construction period. • Identify key drivers for affordable housing and work with other lead agencies to identify opportunities and develop an appropriate response.	**On track** • Minimise vegetation clearing. • Native landscaping targets to be established. • Zero major pollution incidents. **At risk** • New emission standards will be identified and applied to diesel equipment and vehicles during construction.
On track • Align with a high rating using the TfNSW Sustainable Design Guidelines. • Consider adopting a whole-of-life costing model to maximise sustainability benefits. • Optimise development opportunities for residual land. • Capture sustainability benefits in the business case for the projects.	**On track** • Achieve at least a 20 per cent reduction in carbon emissions associated with construction, when compared to business as usual.[i] • Maximise the capture and reuse of energy generated from braking trains. • Design buildings (stations and stabling buildings) to achieve at least a 15 per cent improvement over performance requirements set out in Section J of the National Construction Code. • Mitigate all extreme and high-level risks.	**On track** • Reduce the environmental footprint of materials used on the project by at least 15 per cent compared to business as usual.[i] • 100 per cent beneficial reuse of usable spoil. • Recycle or reuse 60 per cent of office waste during the construction phase. • 60 per cent of reinforcing steel is produced using energy-reducing processes in its manufacture. • Source 100 per cent reused, recycled timber or responsibly sourced timber.[ii] • Reduce water use by at least 10 per cent compared to business as usual.[i] • Source at least 33 per cent of the water used in construction from non-potable sources. • Implement rainwater harvesting and reuse systems at construction sites and feasible above-ground stations. • Source at least 33 per cent of the water used in operations from non-potable sources.			
	At risk • Source 5 to 20 per cent of the low-voltage electricity required at above-ground stations from on-site renewable energy sources where feasible.				
	N/A Operational commitments • Offset 100 per cent of the electricity needs for the operational phase of the project. • Achieve at least a 20 per cent reduction in carbon emissions associated with operations, when compared to business as usual.[i]	**N/A Operational commitments** • Recycle or reuse 80 per cent of the waste generated during operations. • Recycle or reuse 65 per cent of office waste during operations.			

[i] 'Business as usual' (BAU) is defined as that which is used in the applicable rating scheme for the respective target (for example, IS Ratings, Green Star Ratings and TfNSW Carbon Estimate and Reporting Tool (CERT)).

[ii] 2020 Sustainability Report reported one non-compliance in relation to timber, with one contractor being unable to confirm compliance for a small quantity of timber used on site. The timber was from an Australian sustainably managed forest; however, the chain of custody was incomplete. This accounts for <1% of total timber used to date.

Sydney Metro West targets

Demonstrate leadership	Tackle climate change	Manage resources efficiently	Drive supply chain best practice	Value community and customers	Respect the environment
Target performance					
On track	**Exceeding**	**Exceeding**	**On track**	**On track**	**On track**
• Publish performance benchmarks. • Publicly report on performance against targets. • Deliver sustainability-related knowledge-sharing sessions on a quarterly basis. • Obtain an Infrastructure Sustainability v1.2 'Leading' Design and As-Built rating for relevant infrastructure or equivalent. • Engage and collaborate with stakeholders on sustainability-related matters on a biannual basis. • Obtain at least a 5-star Green Star rating for stations and relevant buildings or equivalent. • Deliver at least five industry-recognised innovations.	• Offset at least 25 per cent of the greenhouse gas emissions associated with consumption of fuel and electricity during construction, through the purchase of approved offsets or renewable energy.[ii]	• Minimise the embodied impacts of concrete through the use of at least 35 per cent supplementary cementitious materials project-wide and prioritise the use of alternative binder systems on non-structural elements.	• All reported instances of actual or potential environmental or social risk in the supply chain will be investigated. • Support the delivery of the Sydney Metro West Workforce Development and Industry Participation Plan, and the Sydney Metro West Aboriginal Participation Plan. • Provide sustainability training to high-impact suppliers (those that potentially have significant environmental, social or socio-economic impacts). • Enable targeted and transferable skills development which resolves local and national skills shortages, supports industry to compete in home and global markets, and embeds a health and safety culture within all induction and training activities, promoting continuous improvement. • Require environmental product declarations for trains. • Engage at least 100 social enterprises or social benefit organisations during construction and operations.	• Each station to include Heritage Interpretation. • Develop a line-wide Heritage Interpretation Strategy. • Prepare archival recording of all heritage items within our construction sites. • Report on customer-centric design at the completion of each design phase for stations. • Each station to include safe and, where possible, weather-protected access to bicycle parking and safeguard for future expansion. • Deliver at least 100 initiatives that benefit local communities and provide positive social outcomes during the project's construction phase. • Deliver at least 50 initiatives that continue to benefit local communities and provide positive social outcomes beyond the project's construction phase.	• Restore and regenerate the ecological function of Duck and A'Becketts Creeks within the project boundary. • Plant two trees for every tree removed by the project. • Provide a net increase in canopy cover. • Ensure environmental management plans are established, and demonstrate that works are in compliance with the plans. • Target zero major pollution incidents.
N/A Operational commitments	**On track**	**On track**		**N/A Operational commitments**	
• Obtain an Infrastructure Sustainability Operations rating or equivalent.	• Identify and implement adaptation measures to reduce 100 per cent of all very high and high climate risks (to at least medium). • Identify and implement adaptation measures to reduce all medium climate risks as low as reasonably practicable, with at least 50 per cent reduced to low. • Capture data on the impacts of, and response to, climate-related events on customers, staff, service and infrastructure. • Achieve at least 20 per cent improvement on the minimum performance requirements stipulated in the National Construction Code (NCC) for stations and relevant buildings. • Achieve at least a 20 per cent reduction in carbon emissions across the infrastructure life cycle, when compared to business as usual.[i] • Source at least 10 per cent of the low-voltage electricity required from on-site renewable energy sources.	• Reduce potable water use by at least 10 per cent compared to business as usual and monitor consumption throughout construction and operations. • Demonstrate a minimum 33 per cent of water used in construction is from non-potable sources and maximise non-potable water use in operations. • Reuse at least 80 per cent of concrete production operation water in concrete production at on-site and off-site batching plants. • Reuse at least 85 per cent of 'train wash' water at the stabling facility. • Beneficially reuse 100 per cent of reusable spoil, in accordance with the Spoil Management Hierarchy. • Recycle or beneficially reuse at least 95 per cent of construction and demolition waste. • Prioritise products made from recycled content, with a minimum of six products used in the construction phase. • Minimise the embodied impacts of steel manufacture through the use of at least 50 per cent Australian manufactured steel, including concrete reinforcing and structural steel in stations. • Use at least 20 per cent recycled steel across the project during the construction phase.		• Use Opal data to monitor metro usage associated with activation approaches.	
	N/A Operational commitments	**At risk**			
	• Report on operational electricity consumption. • Offset 100 per cent of the greenhouse gas emissions associated with consumption of electricity during operation.	• Recycle or beneficially reuse at least 60 per cent of office waste.			
		N/A Operational commitments			
		• Recycle or beneficially reuse at least 80 per cent of operational maintenance waste. • Recycle or beneficially reuse at least 40 per cent of customer waste.			

[i] 'Business as usual' (BAU) is defined as that which is used in the applicable rating scheme for the respective target (for example, IS Ratings, Green Star Ratings and TfNSW CERT).

ii Sydney Metro West is committed to purchasing offsets for at least 25% Scope 1 and Scope 2 emissions across all projects. This target is currently being exceeded as some contract packages are committed to and achieving greater than 25%.

Sydney Metro – Western Sydney Airport targets

Target performance

Demonstrate leadership	Tackle climate change	Manage resources efficiently	Drive supply chain best practice	Value community and customers	Respect the environment
On track	**Exceeding**	**Exceeding**	**On track**	**On track**	**On track**
• Publish performance benchmarks. • Publicly report on performance against targets. • Obtain an Infrastructure Sustainability Rating for relevant infrastructure: 'Leading' for Design and As-Built; 'Excellent' for Operations. • Obtain at least a 5-star Green Star rating for relevant buildings and precincts. • Deliver at least five industry-recognised innovations. • Sydney Metro to facilitate sustainability-related knowledge-sharing sessions within the project on a quarterly basis. • Engage and collaborate with stakeholders (other local projects, councils, industry bodies) on sustainability-related matters on a biannual basis.	• Offset at least 25 per cent of the carbon emissions associated with consumption of fuel and electricity during construction through the purchase of approved offsets or renewable energy. **On track** • Identify and implement adaptation measures to reduce 100 per cent of all very high and high climate risks (to at least medium). • Identify and implement adaptation measures to reduce all medium climate risks as low as reasonably practicable, with at least 50 per cent reduced to low. • Capture data on the impacts of, and response to, climate-related events on customers, staff, service and infrastructure to enable continuous improvement. • Achieve third-party net-zero carbon emissions certification. • Achieve at least a 20 per cent reduction in carbon emissions across the infrastructure life cycle, when compared to business as usual.[i] • Source at least 10 per cent of the low-voltage electricity required at stations and the stabling facility from on-site renewable energy sources. • Target minimum 20 per cent of parking spots safeguarded for electric vehicle (EV) charging points and provision for electric bus charging in suitable locations. • Report on carbon emissions from construction and operations. **At risk** • Achieve at least 20 per cent improvement on the minimum performance requirements. **N/A Operational commitments** • Report on operational electricity consumption. • Offset 100 per cent of the carbon emissions associated with consumption of electricity during operation.	• Demonstrate at least 33 per cent of water used is from non-potable sources throughout construction and operations. • Minimise the embodied impacts of concrete through the use of at least 35 per cent supplementary cementitious materials project-wide and prioritise the use of alternative binder systems on non-structural elements. • Minimise the embodied impacts of steel through the use of at least 50 per cent Australian steel, including concrete reinforcing and structural steel. **On track** • Reduce potable water use by at least 10 per cent compared to business as usual, and monitor consumption throughout construction and operations. • Reuse at least 80 per cent of concrete production operation water in concrete production at on-site and off-site batching plants. • Reuse at least 80 per cent of train wash water at the stabling. • Beneficially reuse 100 per cent of reusable spoil, in accordance with the Spoil Management Hierarchy. • Recycle or beneficially reuse at least 60 per cent of office waste. • Recycle or beneficially reuse at least 95 per cent of construction and demolition waste. • Recycle or beneficially reuse at least 40 per cent of customer waste. • Recycle or beneficially reuse at least 80 per cent of maintenance waste. • Prioritise products made from recycled content, with a minimum of six products used in the construction phase. • Source 100 per cent of all timber products from either reused timber, post-consumer recycled timber, Forest Stewardship Council or Programme for the Endorsement of Forest Certification certified sources. **At risk** • Recycle or beneficially reuse at least 60 per cent of office waste.	• Provide sustainability training to all high-impact suppliers (those that potentially have significant environmental, social or socio-economic impacts). • Investigate all reported instances of actual or potential environmental or social risk in the supply chain. • Require environmental product declarations for trains. • Engage at least 15 social enterprises or social benefit organisations during construction and operations.	• Each station to include heritage interpretation. • Engage with Aboriginal knowledge holders to develop corridor landscaping approach. • Target 75 per cent of the project surface area (excluding track) to comprise elements which reduce the urban heat island effect, including vegetation and permeable or lighter-coloured surfaces. • Each station to include safe and, where possible, weather-protected access to bicycle parking and safeguard for future expansion. • Deliver at least 20 initiatives that benefit local communities and provide positive social outcomes during the project's construction phase. • Deliver at least 20 initiatives that continue to benefit local communities and provide positive social outcomes beyond the project's construction phase. • Ensure delivery of at least 5 per cent affordable housing at precincts with residential development. **N/A Operational commitments** • Report on customer-centric design at the completion of each design phase for stations, validating that the design meets customer needs, delivers an easy travel experience and addresses each of the nine Transport for NSW satisfaction drivers: timeliness, comfort, ticketing, convenience, accessibility, cleanliness, safety and security, information, and customer service. • Use Opal data to monitor metro usage associated with precinct activation approaches.	• Demonstrate a minimum 5 per cent improvement in ecological value in the corridor area. • Target at least 25 per cent tree canopy cover in precinct areas, and aspire to 40 per canopy cover across the project area.[ii] • At least 50 per cent of station and plaza landscaping to use Australian native species.[ii] • At least 90 per cent and aspiring to 100 per cent of corridor landscaping to use Australian native species, prioritising endemic plants to preserve Cumberland Plains identity in the Western Sydney region.[ii] • Integrate water-sensitive urban design solutions, including the provision of vegetated swales where feasible, and at least 40 per cent surface area around stations and corridor (excluding track) to be permeable. • Ensure environmental management plans are established, and demonstrate works compliant with these plans. • Target zero major pollution incidents.

[i] Business as usual' (BAU) is defined as that which is used in the applicable rating scheme for the respective target (for example, IS Ratings, Green Star Ratings and TfNSW CERT).

[ii] Landscaping must comply with Western Sydney International Airport wildlife hazard and landscaping requirements where relevant.

Sustainability Report 2023

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