



# Sustainability Plan

October 2022

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An artist's impression of Hunter Street Station.

## 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.

# Introduction

For Sydney Metro, 'sustainability' means planning, building and operating a metro system for current and future generations that optimises environmental, social and economic outcomes

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An artist's impression of Westmead metro Station.



**Demonstrate leadership**

- Set ambitious and transparent benchmarks
- Establish knowledge share forums to promote awareness and collaboration amongst our delivery partners



**Tackle climate change**

- Identify and embed opportunities to increase community resilience
- Adopt solar, battery storage, and other enabling and renewable technologies where appropriate



**Manage resources efficiently**

- Minimise the use of concrete and steel and encourage efficient structural design
- Set targets for the use of non-potable water in our works



**Drive supply chain best practice**

- Conduct due diligence to ensure supply of materials and equipment aligns with modern slavery legislation and environmental standards
- Drive uptake of products and services which have environmental product declarations or eco-labelling



**Value community and customers**

- Promote customer-centric design that delivers an easy experience for all Sydney Metro customers
- Incorporate nature-based design and biophilic design elements into stations, structures and associated infrastructure



**Respect the environment**

- Provide high-quality open public spaces and precincts
- Use native, endemic, drought-resistant species in landscaping that will require minimal irrigation beyond establishment



**Sustainability on Metro West**



Re-use of water during construction and operations



Reusing 100% of clean spoil



95% recycling target for construction and demolition waste



Prioritise products made with recycled content



Contributing to greener places and infrastructure



Zero emission electricity for Metro operations

**Figure 1.1** Key sustainability opportunities for the Sydney Metro West project



**Peter Regan**  
Chief Executive,  
Sydney Metro

This Sustainability Plan (the Plan) outlines key initiatives and targets, benchmarked against Sydney Metro's six guiding sustainability principles – demonstrate leadership, tackle climate change, manage resources efficiently, drive supply chain best practice, value community and customers, and respect the environment. These principles are set out in the Sydney Metro's Sustainability Framework and guide the organisation's approach to sustainability.

The Plan sets out a series of initiatives and targets that will be implemented to meet these principles across the Sydney Metro West project.

The initiatives and targets in this document are benchmarked against past Sydney Metro projects, and international best practice on similar infrastructure projects.

These initiatives and targets are embedded into contractual documents to drive sustainability outcomes, with performance to be reported publicly.

Sydney Metro is an organisation with a vision for the future – to transform Sydney with a world-class metro. We are committed to delivering that vision alongside improved wellbeing for the community, the environment and the economy. With the growing pressures of climate change, resource depletion and social inequities, we recognise the time imperative to tackle these challenges head on. We will continue to work collaboratively with industry to ensure Sydney Metro delivers best-practice sustainability outcomes at all stages of the project lifecycle.

Our Sustainability Plan shows how we have risen to that challenge, with a series of targets and initiatives that will be delivered by the Sydney Metro West project.



An artist's impression of Westmead metro station.

# 1.1 Project overview

The Sydney Metro West project will support a growing city and deliver world-class metro services to more communities.

This new underground railway line will connect Greater Parramatta and the Sydney central business district (CBD).

This once-in-a-century infrastructure investment will transform Sydney for generations to come, doubling rail capacity between the two CBDs, linking new communities to rail services and supporting employment growth and housing supply. The project is expected to create about 10,000 direct and 70,000 indirect jobs during construction.

Sydney Metro West is a new 24-kilometre metro line with stations confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont, and Hunter Street in the Sydney CBD.

Construction on Sydney Metro West commenced in 2020.



An artist's impression of Parramatta metro station.

# 1.2 Project delivery strategy

The Sydney Metro West project will be delivered through a series of contracts outlined in the delivery strategy below. The delivery strategy will be refined over time to best suit the ongoing needs of the project.

The Sydney Metro West Sustainability Plan identifies outcomes to deliver through these contracts. Sydney Metro will work with the NSW Department of Planning and Environment and delivery partners to ensure appropriate sustainability initiatives and measures are implemented, including BASIX, NABERS, Infrastructure Sustainability Council (ISC) rating scheme and Green Star ratings and other initiatives as appropriate.

An important aspect of an ISC rating is the assumptions made about the business-as-usual benchmark. This is developed and agreed in the Sydney Metro West base case framework, against which targets are measured. For transparency, this base case framework will be made available, and highlights of the ISC design and as-built base case framework are included in Appendix C.

**Figure 1.2** Application of ISC and Green Star rating schemes on the Sydney Metro West project

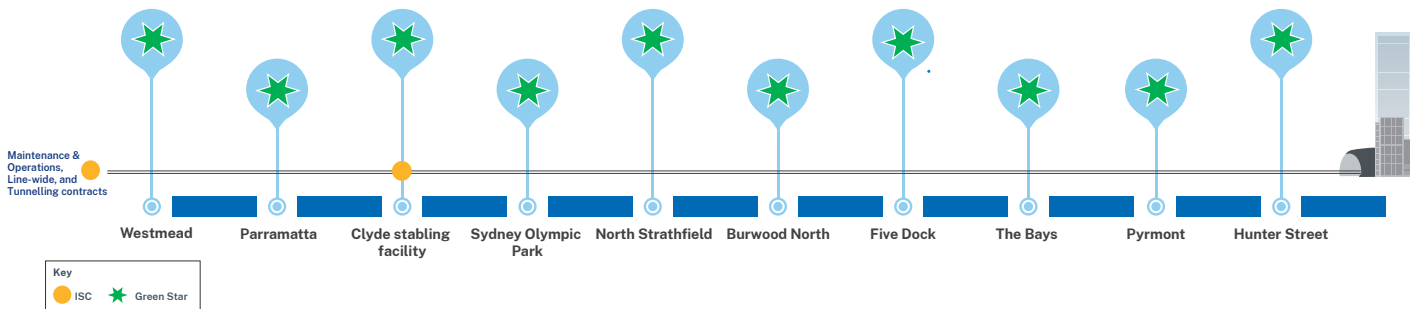
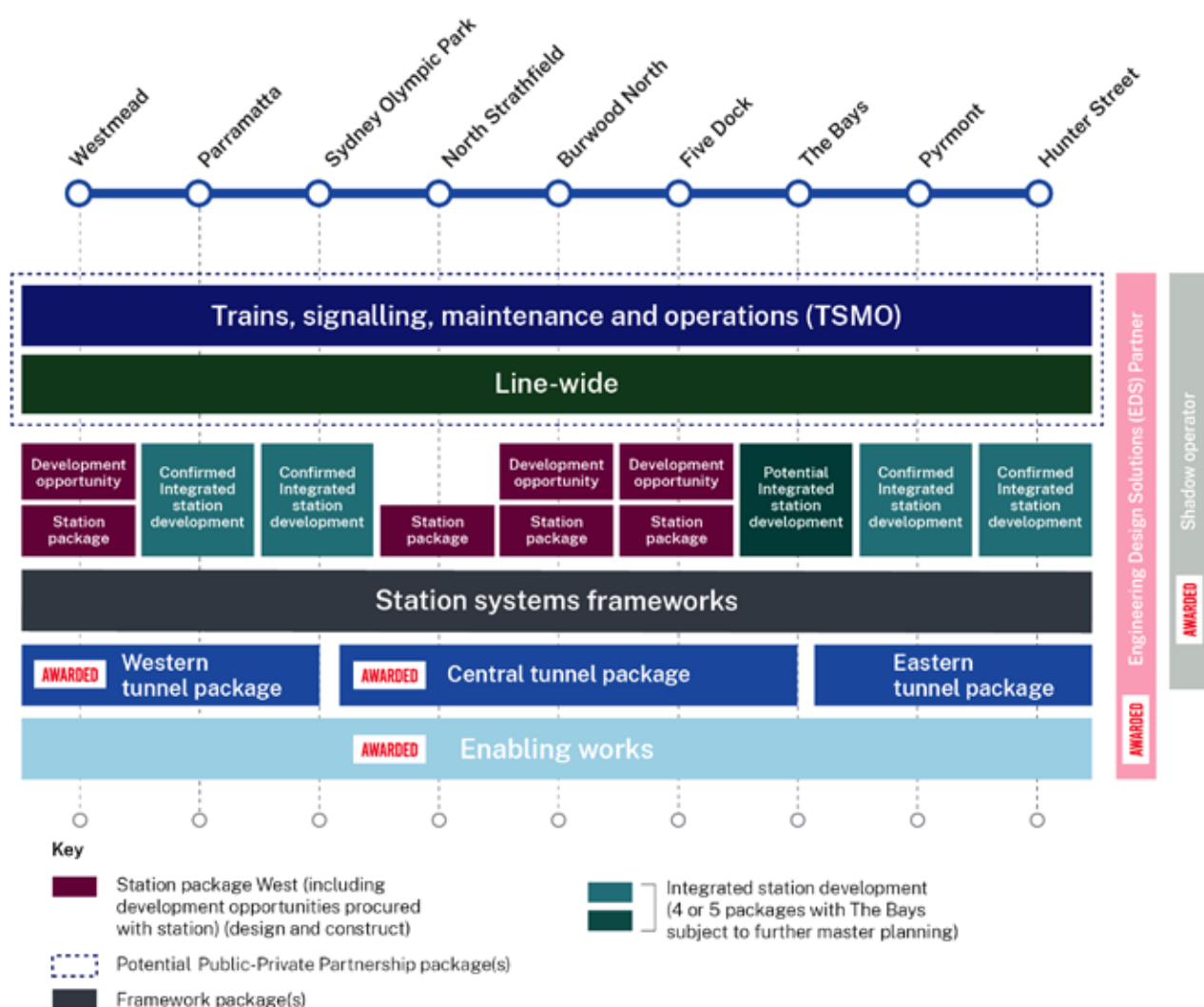




Figure 1.3 Sydney Metro West delivery strategy



# The biggest urban rail project in Australian history

## Metro North West Line

Opened 26 May 2019



13 stations



4000 commuter car parks



36 kilometres

## Sydney Metro City & Southwest

Opening 2024



18 stations



New CBD connections



30 kilometres, including under Sydney Harbour

## Sydney Metro West

Construction started 2020



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)

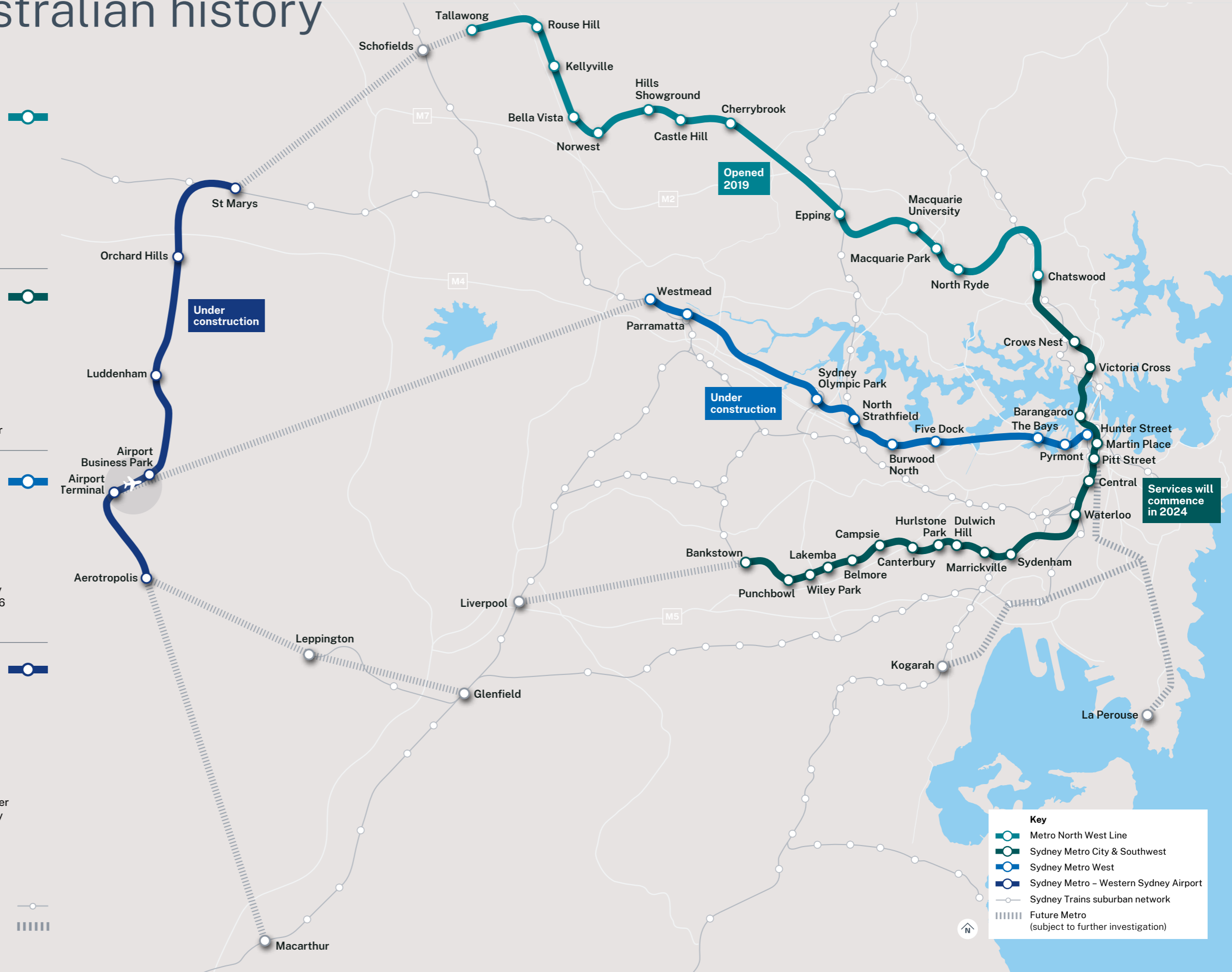


Figure 1.4 Sydney Metro West alignment

# SYDNEY OLYMPIC PARK





# Sydney Metro's approach to sustainability

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



Beryl solar farm, near Gulgong NSW, part of the electricity produced by Beryl offsets the entire operational electricity needs of the Metro North West Line.

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**The Sydney Metro sustainability governance framework (the Framework) is based on a number of key strategic drivers and themes, determined by the Australian and NSW governments.** The Framework establishes six guiding principles which show how sustainability is approached at an organisational and project level (See Figure 2.2).

These principles are the cornerstone of how sustainability commitments are embedded into the Sydney Metro West project.

This Plan responds to the principles within the Framework, using a data-based approach to drive improvement, define initiatives and identify targets for the project.

Initiatives to be undertaken, as well as specific targets measures of success, are detailed in the following section to define how each principle will be delivered throughout the project.

Figure 2.3 demonstrates the relationship between principles, initiatives and targets for the project.

**Figure 2.1 Sydney Metro West sustainability governance framework**

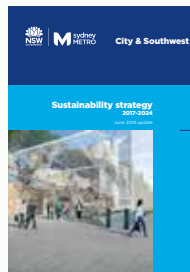
**Sydney Metro Environment and Sustainability Statement of Commitment** – publicly demonstrates Sydney Metro’s commitment to delivering positive environmental and sustainability outcomes.



**Sydney Metro Sustainability Framework** – establishes a consistent set of guiding principles and outlines key initiatives to streamline the delivery of sustainable outcomes across the business.



**Sydney Metro Project Sustainability Plans** – establish quantifiable objectives and targets that align to this Framework and are appropriate to the specific project context. Project sustainability plans have been used to inform project contract requirements since work commenced on the Metro North West Line in 2011.



**Figure 2.2 Sydney Metro sustainability principles.**

 <p><b>Demonstrate leadership</b> Deliver a world-class metro that is environmentally and socially conscious; share knowledge and demonstrate innovation in sustainability</p>	 <p><b>Tackle climate change</b> Integrate a comprehensive climate change response, and drive excellence in low carbon solutions</p>	 <p><b>Manage resources efficiently</b> Achieve whole-of-life value through efficient use and management of resources</p>
 <p><b>Drive supply chain best practice</b> Collaborate with key stakeholders to drive a lasting legacy in workforce development, industry participation and sustainable procurement</p>	 <p><b>Value community and customers</b> Respond to community and customer needs, promote heritage, liveable places and wellbeing for current and future generations</p>	 <p><b>Respect the environment</b> Minimise impacts and take opportunities to provide environmental improvement</p>

## 2.1 Demonstrate leadership

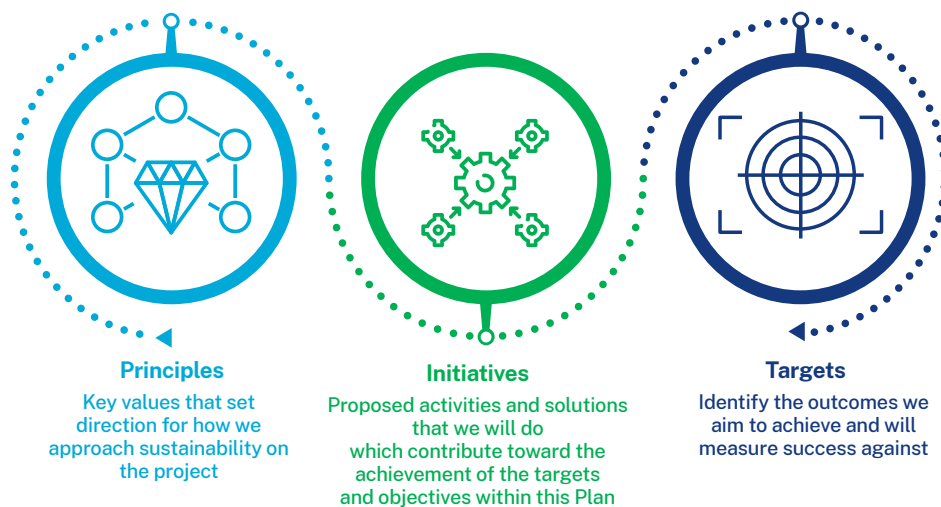
This principle recognises Sydney Metro’s commitment to embedding good sustainability governance practices in all processes for the Sydney Metro West project, and providing the resources required to ensure effective implementation of those practices. This also includes ongoing engagement with key internal and external stakeholders, and aligning project outcomes with industry best practice.

Sydney Metro West will focus on driving improvements on industry-leading benchmarks set by previous projects. This will include increasing transparency of business-as-usual assumptions and activities undertaken, and reporting progress achieved against targets.

The Sydney Metro West sustainability governance framework sets out the criteria to enable these improvements. The main components of this Framework are outlined in Figure 2.1.

The Sydney Metro West project will implement either the Infrastructure Sustainability Council (ISC) rating scheme or the Green Star Building rating on relevant infrastructure packages.

**Figure 2.3** Relationship between sustainability principles, initiatives and targets



**Table 2.1** Project initiatives and targets to demonstrate leadership in sustainability

What Sydney Metro will do	Measuring our success
<p><b>Ensure transparency of project sustainability outcomes</b></p> <ul style="list-style-type: none"> <li>Set ambitious and transparent benchmarks</li> <li>Develop and monitor targets across our sustainability focus areas</li> <li>Develop an assurance framework and reporting system to assist Sydney Metro and our Delivery Partners in reliably reporting against sustainability targets</li> <li>Assess the feasibility of carbon neutral certification for construction and operations</li> <li>Develop a streamlined outcomes-focussed approach to applying sustainability rating tools on the project</li> <li>Track and report on identified cost savings from sustainable design initiatives.</li> </ul>	<ul style="list-style-type: none"> <li>Publish performance benchmarks</li> <li>Publicly report on performance against targets</li> <li>Obtain an Infrastructure Sustainability v1.2 ‘Leading’ Design &amp; As-Built rating for relevant infrastructure or equivalent</li> <li>Obtain an Infrastructure Sustainability Operations rating or equivalent</li> <li>Obtain at least a 5 Star Green Star rating for stations and relevant buildings.</li> </ul>
<p><b>Encourage innovation that delivers sustainable outcomes</b></p> <ul style="list-style-type: none"> <li>Identify pathways to pilot new technology and approaches</li> <li>Engage with industry stakeholders and research organisations and look for opportunities to facilitate the uptake of new technologies and approaches</li> </ul>	<ul style="list-style-type: none"> <li>Deliver at least five industry-recognised innovations.</li> </ul>
<p><b>Facilitate knowledge sharing and collaboration</b></p> <ul style="list-style-type: none"> <li>Establish knowledge sharing forums to promote awareness and collaboration amongst our Delivery Partners</li> <li>Collaborate with our Delivery Partners to meet and exceed targets where appropriate</li> <li>Establish collaborative working relationships with stakeholders to drive an ambitious and aligned approach to environmental and social sustainability.</li> </ul>	<ul style="list-style-type: none"> <li>Deliver sustainability-related knowledge sharing sessions on a quarterly basis</li> <li>Engage and collaborate with stakeholders on sustainability-related matters on a bi-annual basis.</li> </ul>



An artist's impression of North Strathfield metro station.

## 2.2 Tackle climate change

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

There is widespread scientific consensus that the effects of climate change will be significant, globally, nationally and in the local area. The CSIRO, Bureau of Meteorology and NSW Department of Planning and Environment have undertaken considerable research into the predicted change in climate variables across Australia and resultant impacts to communities, environment and infrastructure. Corporations, financial institutions and governments and councils across Australia, and globally, are taking note and considering the effects of climate hazards in relation to future planning and investment decision making.

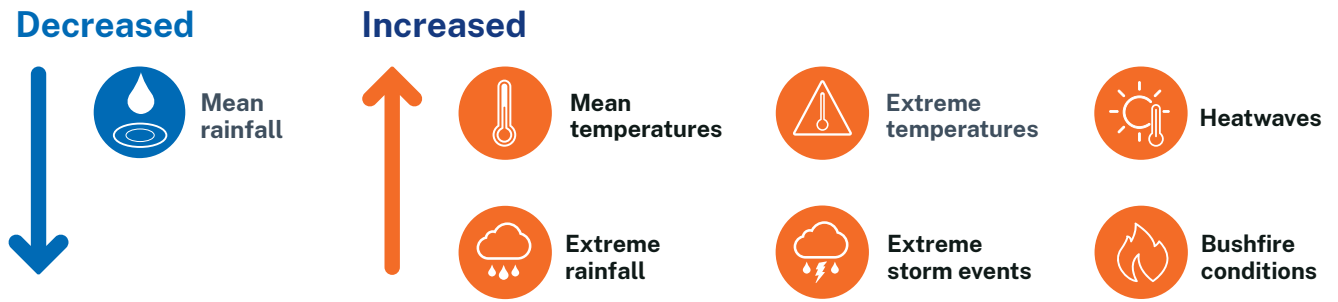
Sydney Metro West will tackle climate change, both in terms of adaptation (actions that help cope with the effects of climate change) and mitigation (efforts to reduce or prevent emission of heat-trapping gases).

### **Adapting to climate change**

During the 120-year design life of the Sydney Metro West project, hazards relating to changes in the climate will likely increase and worsen. The risks resulting from changes in these hazards are considered through the lens of the project-specific vulnerabilities and exposure in the project's climate change risk assessment framework. The framework informs understanding of the project's risks and allows for adequate planning and adaptive impacts.

Whilst the preliminary risk assessment has been undertaken to inform necessary adaptive measures (that are within the project's control) for early design, this assessment and the resulting adaptive measures will be updated and refined throughout the project life-cycle. Climate change risks are included in the project risk register and will be managed through a project-wide risk management process. This will ensure the functionality of the asset on day one of operations and resilience into the future, with minimal disruption to the customer and community.

The risk assessment responded to the best available climate change data for the project location (including far future projections out to 2100) under a worst case climate scenario, and identified potential changes to relevant climate variables, as shown in Figure 2.4.



**Figure 2.4** Identified changes in relevant climate variables

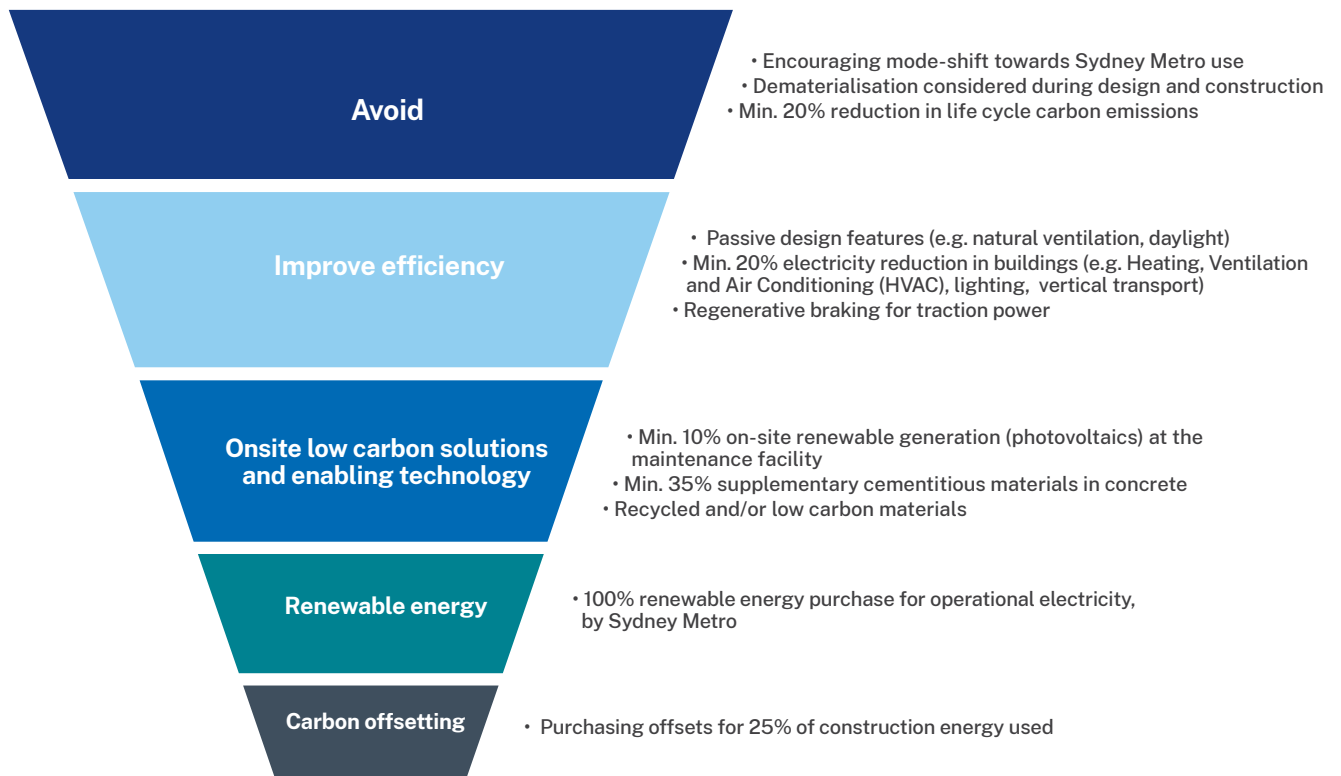
## Mitigating climate change

Construction and operation of a new metro system is energy intensive and has the potential to result in significant quantities of climate change-contributing carbon (greenhouse gas) emissions being released from materials production and fuel and electricity use. Sydney Metro is committed to minimising the project’s carbon footprint through reducing energy intensity, improving energy efficiency, using onsite and offsite renewables and offsetting residual carbon, to strive towards a net-zero emissions approach.

Primary mitigation measures will involve minimising electricity use and carbon emissions associated with the construction and operation of the project by adopting the carbon management hierarchy outlined in Figure 2.5.

- at a project-wide level, where the business case for the project takes into account whole-of-life costs
- in assessing project options, where evaluations consider capital and operating costs.

**Figure 2.5** Carbon management hierarchy for the Sydney Metro West project





An artist's impression of Burwood North Station.

**Table 2.2** Project initiatives and targets developed to tackle climate change

What Sydney Metro will do	Measuring our success
<b>Deliver and operate infrastructure that is resilient to the impacts of climate change</b>	
<ul style="list-style-type: none"> <li>Identify all relevant climate change risks</li> <li>Ensure flood modelling accounts for appropriate climate change impacts and where relevant equipment and structures are designed to be resilient to projected climate change</li> <li>Ensure ventilation and air-conditioning equipment is designed to be resilient to projected climate change within its design life</li> <li>Ensure emergency procedures adequately address change in extreme weather events throughout the project life cycle</li> <li>Identify and embed opportunities to increase community resilience</li> <li>Continue engagement with key stakeholders to develop and implement appropriate responses to interdependent risks</li> <li>Review and update climate change projections throughout the project lifecycle to identify and address any changes in climate-related risks</li> <li>Protect sensitive construction equipment from the effects of extreme weather</li> </ul>	<ul style="list-style-type: none"> <li>Identify and implement adaptation measures to reduce 100 per cent of all very high and high climate risks (to at least a medium)</li> <li>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</li> <li>Capture data on the impacts of, and response to climate-related events on customers, staff, service and infrastructure</li> </ul>
<b>Establish and implement energy efficiency measures</b>	
<ul style="list-style-type: none"> <li>Inclusion of passive design features and energy efficient equipment</li> <li>Establish targets for rail system (non-building) operational electricity whilst meeting service frequency and customer comfort expectations</li> <li>Adopt 25kV AC traction system</li> <li>Use an Under Platform Supply (UPS) system</li> <li>Use energy efficient equipment, methods, and practices in construction</li> </ul>	<ul style="list-style-type: none"> <li>Achieve at least 20 per cent improvement on the minimum performance requirements stipulated in the National Construction Code (NCC) for stations and relevant buildings</li> <li>Report on operational electricity consumption</li> </ul>
<b>Establish and reduce carbon footprints</b>	
<ul style="list-style-type: none"> <li>Undertake carbon footprint analysis at each stage to identify and prioritise areas where the greatest reductions in whole-of-life carbon can be achieved</li> <li>Adopt solar, battery storage, and other enabling and renewable technologies where appropriate</li> <li>Provision for battery storage wherever on-site renewable energy technologies are established for the project</li> <li>Develop an electricity and offsets procurement strategy and develop capacity to support implementation</li> <li>Facilitate electrifying all building systems to eliminate use of gas</li> </ul>	<ul style="list-style-type: none"> <li>Achieve at least a 20 per cent reduction in carbon emissions across the infrastructure lifecycle, when compared to business as usual</li> <li>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</li> <li>Source at least 10 per cent of operational low voltage electricity from on-site renewable energy sources</li> <li>Offset 100 per cent of the greenhouse gas emissions associated with consumption of electricity during operation</li> </ul>

## 2.3 Manage resources efficiently

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

According to the United Nations ‘should the global population reach 9.6 billion by 2050, the equivalent of almost three planets could be required to provide the natural resources needed to sustain current lifestyles’. The economic and social benefits associated with the construction and operation of Sydney Metro West must be achieved with a minimum impact on the environment. This will require a change in the consumption, production and waste generation patterns typically associated with large infrastructure projects.

The Sydney Metro West project will aim to minimise the environmental footprint of materials consumed and waste generated. This will be achieved through minimising the quantity of material required and selecting materials with lower embodied impacts, as well as selecting materials with good durability to reduce replacement needs, using recycled materials where possible and recovering materials from waste throughout construction and operation. Along with reducing emissions associated with waste, this will help reduce construction costs and result in less material being sent to landfill. Local sourcing of materials will also be prioritised where this reduces transport emissions and allows for increases in recycled content, such as steel.

Analysis undertaken during early design phases and validated through comparison to previous Sydney Metro projects has clearly identified concrete and steel as having the largest embodied impact, together accounting for approximately 90 per cent of the embodied carbon in construction. Hence a focus is being placed on the reduction of the embodied carbon on these two key materials.

During construction, the project will generate a substantial volume of spoil. Delivery Partners will be required to divert all clean reusable spoil from landfill, and reuse 100 per cent of usable spoil from the excavation of the tunnels and station caverns, in accordance with the spoil management hierarchy outlined in Figure 2.6.

Water is an increasingly scarce resource. Potable (drinking water quality) and non-potable water will be required for the construction and operation of Sydney Metro West, and a water balance study will be completed to estimate the quantities, types and potential sources of water. This will enable the identification of the best opportunities to use non-potable water instead of potable water and minimise the quantities of both potable and non-potable water that will be consumed.

\* United Nations Sustainable Development Goals, Goal 12 Responsible Consumption and Production, Facts and figures, [www.un.org/sustainabledevelopment/sustainable-consumption-production](http://www.un.org/sustainabledevelopment/sustainable-consumption-production)

**Figure 2.6** Spoil Management Hierarchy



**Table 2.3** Project initiatives and targets developed to ensure efficient use of resources

What Sydney Metro will do	Measuring our success
<b>Minimise the use of potable water and maximise opportunities for reuse of non-potable water sources</b>	
<ul style="list-style-type: none"> <li>Integrate current best-practice water-efficient features, equipment and appliances at stations, stabling facility, and construction sites</li> <li>Avoid use of potable water for non-potable purposes where non-potable water is available</li> <li>Set and implement targets for the use of non-potable water in concrete</li> <li>Undertake a water balance study to inform feasibility for reuse initiatives</li> <li>Identify and implement opportunities for treatment and reuse on the project, including water from tunnelling works, concrete batching and casting facilities</li> <li>Connect to district recycled water networks where feasible and provision for future district recycled water networks where appropriate</li> <li>Harvest and reuse rainwater at permanent and temporary facilities, including provision of an appropriately sized rainwater tank at each station and stabling facility</li> </ul>	<ul style="list-style-type: none"> <li>Reduce potable water use by at least 10 per cent compared to business as usual, and monitor consumption throughout construction and operations</li> <li>Demonstrate a minimum 33 per cent of water used in construction is from non-potable sources and maximise non-potable water use in operations</li> <li>Reuse at least 80 per cent of concrete production operation water in concrete production at on-site and off-site batching plants</li> <li>Reuse at least 85 per cent of 'train wash' water at the stabling facility</li> </ul>
<b>Minimise waste throughout the project lifecycle</b>	
<ul style="list-style-type: none"> <li>Implement source separation and quality control measures to increase recycling rates, including regular reporting and auditing</li> <li>Enable recycling of customer waste streams</li> <li>Use modular, prefabricated and precast structural and finishing materials where available</li> <li>Adopt circular economy principles and practices, including increased use of recycled, innovative and non-toxic materials in the construction supply chain</li> <li>Plan for final disposal of temporary facilities and operational assets, such as train carriages</li> <li>Do not mix or blend waste class types and control stockpiling of waste materials</li> </ul>	<ul style="list-style-type: none"> <li>Beneficially reuse 100 per cent of reusable spoil, in accordance with the spoil management hierarchy</li> <li>Recycle or beneficially reuse at least 95 per cent of construction and demolition waste</li> <li>Recycle or beneficially reuse at least 60 per cent of office waste</li> <li>Recycle or beneficially reuse at least 40 per cent of customer waste</li> <li>Recycle or beneficially reuse at least 80 per cent of operational maintenance waste</li> </ul>
<b>Reduce materials consumption, reduce the embodied carbon and increase the use of recycled materials</b>	
<ul style="list-style-type: none"> <li>Undertake lifecycle assessments and minimise the embodied impacts of materials through the selection of low-carbon alternatives, such as engineered timber, and the consideration of durability and local sourcing</li> <li>Maximise the use of engineered timber for structural elements</li> <li>Prioritise products made from recycled content</li> <li>Retain and reuse materials on site and at source locations wherever possible</li> <li>Engage with industry bodies to identify best practice low-impact alternative materials</li> <li>Minimise the use of concrete and steel and encourage efficient structural design</li> <li>Encourage the dematerialisation of components and finishes</li> <li>Ensure efficiency and durability of built infrastructure that requires minimum expenditure in maintenance and upkeep</li> <li>Electrify and grid connect all on site construction equipment where possible and use a minimum of 5% and up to 20% biodiesel blends in construction equipment where electrification via the grid is not possible</li> </ul>	<ul style="list-style-type: none"> <li>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 alternate binder systems on non-structural elements</li> <li>Prioritise products made from recycled content with a minimum of six products used in the construction phase</li> </ul>
<b>Implement environmentally responsible sourcing practices</b>	
<ul style="list-style-type: none"> <li>Prioritise local sourcing of materials from Australia, where feasible</li> <li>Minimise the embodied impacts of steel manufacture through maximising the use of recycled steel and steel produced using energy-reducing processes</li> <li>Maximise the use of Australian manufactured steel including concrete reinforcing and structural steel</li> <li>Source only polyvinyl chloride (PVC) that is compliant with Green Building Council of Australia (GBCA) Best Practice Guidelines<sup>‡</sup></li> <li>Source only low volatile organic compounds (VOC) paints, finishes, sealants and adhesives</li> </ul>	<ul style="list-style-type: none"> <li>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</li> <li>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</li> <li>Use at least 20 per cent recycled steel across the project during the construction phase</li> </ul>

<sup>‡</sup> Best Practice Guidelines for PVC /<https://new.gbca.org.au/pvc/>





Bella Vista Station, Metro North West Line.

## Considering whole-of-life costs

Understanding the monetary and non-monetary benefits of the project's sustainability approach is critical to demonstrate the value of delivering environmental and social initiatives. These are considered in whole-of-life costs for the project.

Whole-of-life costs for a project include the costs of construction, operation, maintenance, renewal, disposal and replacement, plus, where relevant: non-construction costs (such as land), asset income (but not revenue) and externalities, such as the cost of carbon emissions.

Whole-of-life costing is being adopted:

- at a project-wide level, where the business case for the project takes into account whole-of-life costs
- in assessing project options, where evaluations consider capital and operating costs





FIVE DOCK

Express Store

FRESH FRUIT & VEG TABLES



An artist's impression of Five Dock Station.



Construction work on the Sydney Metro City & Southwest project.

## 2.4 Drive supply chain best practice

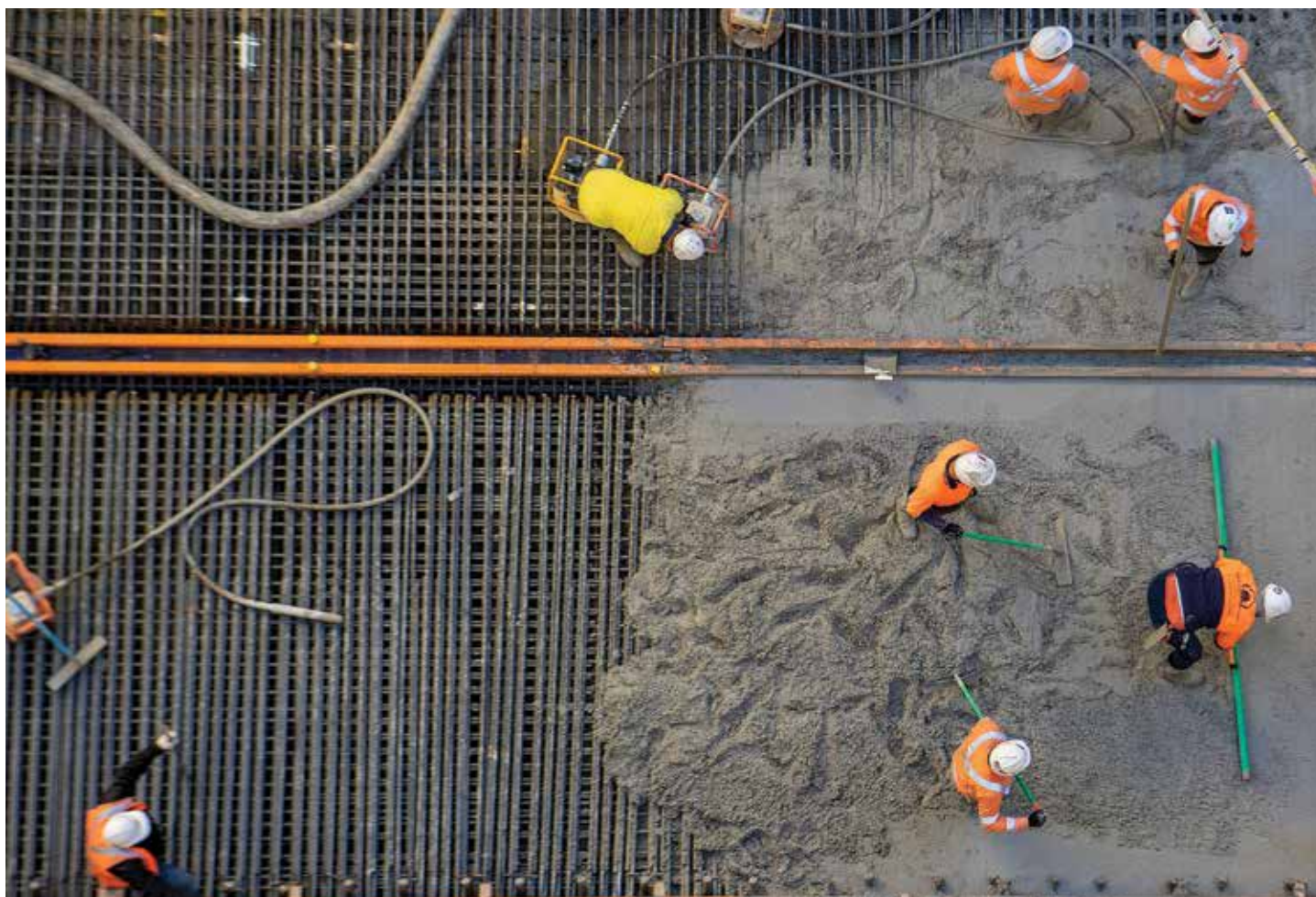
Collaborate with key stakeholders to drive a lasting legacy in workforce development, industry participation and sustainable procurement

Sydney Metro West will use its purchasing power to drive market transformation, aiming to improve sustainable procurement practices and industry participation. With the publication of an international standard on sustainable procurement (ISO 20400: Sustainable procurement), as well as Australian Government and State legislation responding to modern slavery, the complexities of the modern supply chain have never been in more focus.

To enable sustainable procurement throughout the project, Sydney Metro and Delivery Partners will work to ensure that these objectives are adopted downstream. This includes undertaking due diligence and obtaining information from suppliers on social and environmental aspects of the supply chain.

Sydney Metro projects are also an opportunity to drive outcomes for a diverse workforce and supply chain. Workforce development and industry participation, including Aboriginal participation and engagement of social enterprises, continue to be key focus areas for the NSW Government and Sydney Metro.

The workforce development priorities and objectives outlined separately to this plan in the Sydney Metro Workforce Development and Industry Participation Plan, and the Sydney Metro Aboriginal Participation Plan. The plans set a vision, objectives and initiatives relating to workforce development to reflect industry skills requirements, local demographics, regulatory drivers and wider government priorities around skills, employment, diversity and business growth.



Concrete being poured at Barangaroo Station, part of Sydney Metro City & Southwest project.



An artist's impression of The Bays Station.

Sydney Metro's under-harbour tunnel construction, part of the Sydney Metro City & Southwest project.



**Table 2.4** Project initiatives and targets developed to drive supply chain best practice

What Sydney Metro will do	Measuring our success
<b>Influence Delivery Partners, subcontractors and materials suppliers</b>	
<ul style="list-style-type: none"> <li>• Ensure procurement strategies are consistent with ISO 20400:2017 Sustainable Procurement – Guidance</li> <li>• Ensure supply chain sustainability objectives are adopted downstream</li> <li>• Integrate sustainability requirements, key performance indicators and assessment criteria into the selection of contractors</li> </ul>	<ul style="list-style-type: none"> <li>• Provide sustainability training to high-impact suppliers (those that potentially have significant environmental, social or socio-economic impacts)</li> </ul>
<b>Increase supply chain transparency and responsibility</b>	
<ul style="list-style-type: none"> <li>• Conduct due diligence to ensure supply of materials and equipment aligns with human rights legislation and environmental standards</li> <li>• Drive the uptake of products and services that have environmental product declarations and eco-labelling</li> </ul>	<ul style="list-style-type: none"> <li>• All reported instances of actual or potential environmental or social risk in the supply chain will be investigated</li> <li>• Require environmental product declarations for trains</li> </ul>
<b>Deliver a positive workforce development and industry participation legacy</b>	
<ul style="list-style-type: none"> <li>• Provide employment opportunities across Sydney, with a targeted approach for Western Sydney</li> <li>• Increase opportunities for small to medium enterprises (SMEs) including Recognised Aboriginal Businesses to access the Sydney Metro supply chain and support industry to compete in home and global markets</li> <li>• Address immediate and future skills shortages locally and nationally through targeted and transferable skills development</li> <li>• Respond to changing job roles and increased skill requirements</li> <li>• Embed long-lasting transferable skills including health and safety culture, leadership, teamwork and promoting continuous improvement.</li> <li>• Increase participation of culturally and linguistically diverse (CALD) people and Aboriginal and Torres Strait Islander peoples, and increase female representation in non-traditional trades and leadership</li> <li>• Target long-term unemployed and underemployed, refugees and returned servicemen</li> <li>• Engage young people from all educational sectors, support vocational career development through apprenticeships and traineeships and collaborate with higher and vocational education and training (VET) institutions to provide opportunities in STEM related careers</li> </ul>	<ul style="list-style-type: none"> <li>• Support the delivery of the Sydney Metro West Workforce Development and Industry Participation Plan, and Sydney Metro West Aboriginal Participation Plan<sup>§</sup></li> <li>• Engage at least 100 social enterprises or social benefit organisations during construction and operations</li> </ul>

§ For further details, refer to the Sydney Metro West Workforce Development and Industry Participation Plan and the Sydney Metro West Aboriginal Participation Plan.

Metro Northwest Station.





Opening day for Tallawong Station on the Metro North West Line.

## 2.5 Value community and customers

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

Sydney Metro West will connect Greater Parramatta to Sydney CBD and in doing so will support planned land-use change – linking new communities to rail services and supporting employment growth and housing supply. There is an intrinsic link between public transport and land-use change. Public transport accessibility makes particular locations more attractive. Transport accessibility and amenity are critical to supporting employment, housing supply and urban renewal opportunities and ultimately to supporting Sydney’s economic and population growth.

The project is committed to respecting and celebrating Aboriginal cultural values. To facilitate meaningful consultation and collaboration, the NSW Government Architect’s Connecting with Country Framework is being trialled on the project. A key objective of this trial is to enable Country, community and culture to be respectfully and appropriately incorporated into the project through listening to Country and those who can speak for Country and culture.

The project has the ability to deliver a variety of community benefits including:

- providing new community gathering places around stations, which will create additional opportunities for social connections and cohesion
- enhancing access to the wider Sydney transport network and to social infrastructure, green infrastructure and active transport networks
- enabling the development of more liveable places and spaces that enhance wellbeing
- delivering tangible social outcomes to local communities through dedicated initiatives during construction and operations



Smoking Ceremony at Marrickville dive site.





Geotechnical work being carried out by Transport for NSW under Sydney Harbour.

**Table 2.5** Project initiatives and targets developed to ensure efficient use of resources

What Sydney Metro will do	Measuring our success
<b>Protect and promote Aboriginal and non-Aboriginal heritage and culture</b>	
<ul style="list-style-type: none"> <li>• Develop and implement an Aboriginal Engagement Strategy to ensure key Aboriginal stakeholders are meaningfully engaged</li> <li>• Identify and implement opportunities to enhance heritage and cultural values, including piloting of the NSW Government Architect’s Connecting with Country Framework and Sydney Metro West Connecting with Country Guide</li> <li>• Develop partnerships with relevant local knowledge-holders to identify and respect heritage and cultural places</li> <li>• Embed an Aboriginal cultural lens into the project design principles</li> <li>• Avoid or minimise impacts to heritage across the project</li> <li>• Provide opportunities for adaptive reuse of heritage items</li> <li>• Identify and assess heritage items and precincts during the planning phase of the project</li> <li>• Consider conservation outcomes for significant archaeological resources</li> <li>• Create opportunities for heritage interpretation</li> </ul>	<ul style="list-style-type: none"> <li>• Each station to include heritage interpretation</li> <li>• Develop a line-wide Heritage Interpretation Strategy</li> <li>• Prepare archival recording of all heritage items within our construction sites</li> </ul>
<b>Promote community and customer wellbeing</b>	
<ul style="list-style-type: none"> <li>• Design in accordance with the NSW Government Architect’s Better Placed Framework to provide improved public amenity</li> <li>• Incorporate Crime Prevention Through Environmental Design principles, for temporary and permanent works</li> <li>• Promote customer-centric design that delivers an easy experience for all Sydney Metro customers by understanding their needs at each stage of their journey</li> <li>• Provide new public spaces which are adaptable and appropriate for a range of uses by the community</li> <li>• Develop activation approaches for station precincts</li> <li>• Incorporate urban heat island mitigations into station, building and surrounding landscape designs</li> <li>• Incorporate nature-based and biophilic design elements into station structures and associated infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Report on customer-centric design at the completion of each design phase for stations, validating that the design meets customer needs, delivers an easy experience and addresses each of the nine Transport for NSW satisfaction drivers: timeliness, comfort, ticketing, convenience, accessibility, cleanliness, safety &amp; security, information, and customer service.</li> <li>• Use Opal data to monitor metro usage associated with activation approaches</li> </ul>
<b>Enable and promote active transport access and public transport usage</b>	
<ul style="list-style-type: none"> <li>• Provide secure access and covered bicycle parking and safeguard for future expansion</li> <li>• Integrate with surrounding active transport network, such as footpaths, public and green spaces, and bicycle paths, and provide tree canopy cover along active transport corridors</li> <li>• Station interchanges designed in accordance with the modal hierarchy to prioritise more equitable, safe and sustainable modes of transport and an enjoyable environment for users</li> </ul>	<ul style="list-style-type: none"> <li>• Each station to include safe and, where possible, weather-protected access to bicycle parking and safeguard for future expansion</li> </ul>
<b>Deliver community benefits</b>	
<ul style="list-style-type: none"> <li>• Ensure the community and local stakeholders are engaged and kept informed of project activities</li> <li>• Provide information in ways that are easily accessible, taking into consideration local literacy levels and dominant language groups</li> <li>• Deliver initiatives that benefit local communities and provide positive social outcomes</li> <li>• Optimise the use of residual land to benefit local communities and enhance precinct development</li> </ul>	<ul style="list-style-type: none"> <li>• Deliver at least 100 initiatives that benefit local communities and provide positive social outcomes during the project’s construction phase</li> <li>• Deliver at least 50 initiatives that continue to benefit local communities and provide positive social outcomes beyond the project’s construction phase</li> </ul>



## 2.6 Respect the environment

### Minimise impacts and take opportunities to provide environmental improvements

The construction and operation of Sydney Metro West has the potential to cause a variety of environmental impacts including noise and vibration, air quality, water quality, and biodiversity impacts. These impacts are primarily managed through the project planning process and pathway under the *Environmental Planning and Assessment Act 1979 (NSW)*, and implemented through the project's Construction Environmental Management Framework.

Significant effort has been made during the environmental assessment process and design process to reduce impacts to existing vegetation and disturbance to faunal movement.

Having native, endemic and/or drought-resilient green vegetation infrastructure supports a number of environmental and social outcomes and provides linkage to existing ecology corridors, supporting the green grids strategy set out by Department of Planning and Environment. This can be achieved through rejuvenation of the landscape, the re-establishment of riparian ecosystems and the utilisation of water-sensitive urban design to ensure water is held in the landscape.

**Table 2.6** Project initiatives and targets developed to ensure the environment is respected

What Sydney Metro will do	Measuring our success
<b>Provide and promote green infrastructure and biodiversity</b>	
<ul style="list-style-type: none"> <li>• Provide high-quality open public space at precincts that meet green infrastructure requirements</li> <li>• Consider connectivity of existing ecosystems and minimise impact on biodiversity and faunal movements</li> <li>• Preserve ecological function through appropriate planning, management and financial controls</li> <li>• Use native, endemic, drought-resistant species in landscaping that will require minimal irrigation beyond establishment and align with the guidance provided by the Sydney Metro West Connecting with Country Guide where appropriate</li> <li>• Provide green infrastructure at stations, the stabling and maintenance facility and precincts where feasible</li> <li>• Integrate water-sensitive urban design solutions</li> <li>• Including biodiverse green space areas within station precincts where possible.</li> </ul>	<ul style="list-style-type: none"> <li>• Restore and regenerate the ecological function of Duck and A'Becketts Creeks within the project boundary</li> <li>• Plant two trees for every tree removed by the project</li> <li>• Provide a net increase in canopy cover</li> </ul>
<b>Minimise environmental impact</b>	
<ul style="list-style-type: none"> <li>• Reduce pollution through the implementation of a Construction Environmental Management Framework</li> <li>• Avoid or minimise noise and vibration impacts</li> <li>• Appropriately manage soil, stormwater and groundwater contamination issues</li> <li>• Design to minimise light spill in accordance with standards</li> <li>• Reduce air pollution through environmental controls and the implementation of high pollution standards for long-term construction vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure environmental management plans are established, and demonstrate that works are in compliance with the plans</li> <li>• Target zero major pollution incidents</li> </ul>

# Implementation and monitoring

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



# 3

Expert train controllers at state-of-the-art Operations Control centre at Tallawong.

### 3.1 Roles and responsibilities

The responsibility for ensuring sustainability outcomes are met extends well beyond the Sydney Metro sustainability team to other work streams, functional groups, project executives, Delivery Partners and the operator. Whether it is ownership of initiatives or promotion of benefits and outcomes, sustainability is integrated across the project and is a shared responsibility.



An artist's impression of Pyrmont metro station.



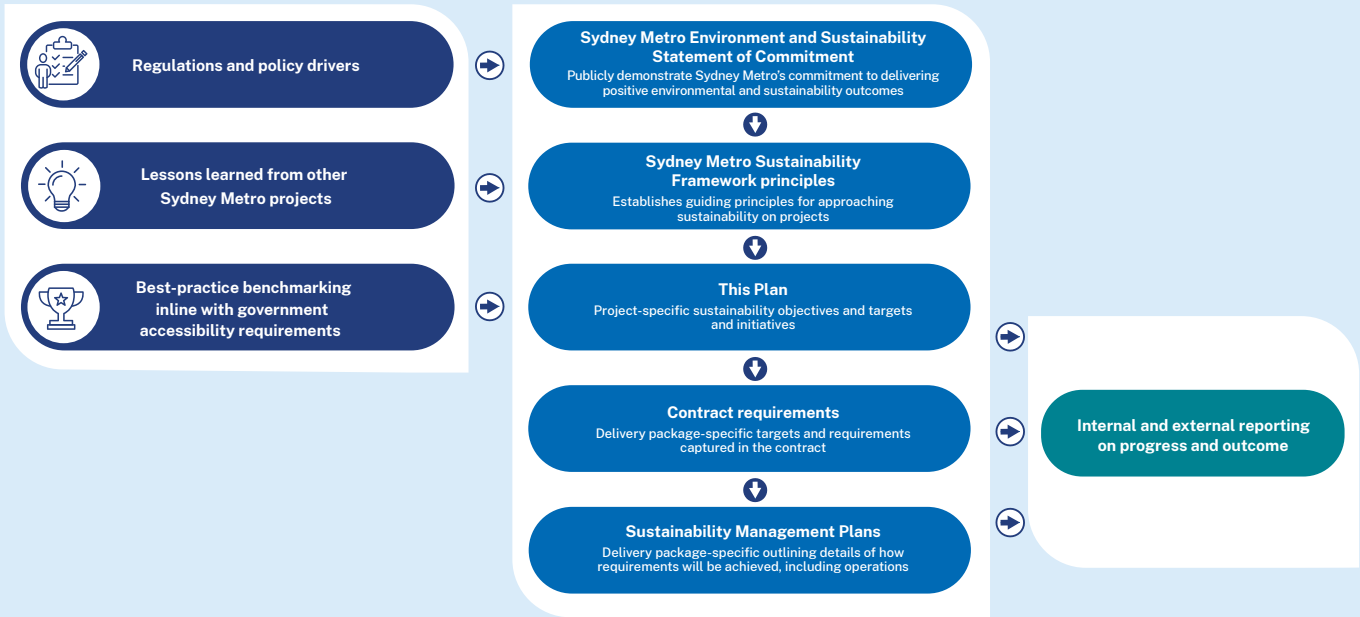
## 3.2 Embedding sustainability during planning

Sydney Metro has undertaken planning and early-stage design, with responsibilities passed to Delivery Partners to undertake detailed design, construction and operations. Sydney Metro and the Delivery Partners will work collaboratively during these stages to further the targets and initiatives set out in this Plan.

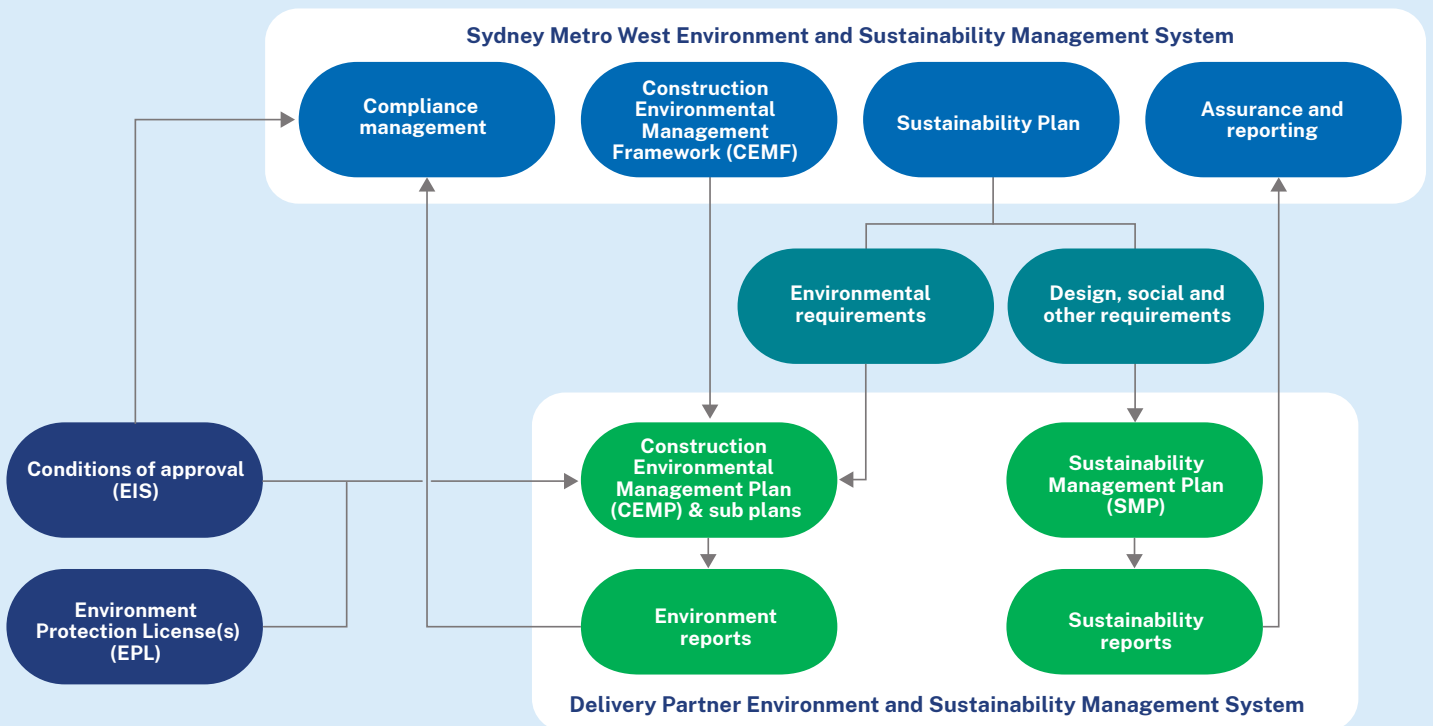
To ensure sustainability outcomes are met throughout detailed design, construction and operations, specific requirements are embedded into each contract package, with the development of a Sustainability Management Plan for each delivery package, as shown in Figure 3.1.



**Figure 3.1** Integrating sustainability into detailed design, construction, and operations



**Figure 3.2** Sydney Metro West project Environment and Sustainability Management System



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## 3.3 Detailed design and construction

Detailed design and construction are critical project stages for sustainability; many of the initiatives and targets developed during the planning stage are implemented or realised during these stages, with long-lasting impacts to be gained from success. The Environment and Sustainability Management System (E&SMS) ensures that the required outcomes are achieved through a collaborative process. Sydney Metro's Environment and Sustainability Statement of Commitment (refer to Appendix A) and Sustainability Framework have also been integrated into the E&SMS. Figure 3.2 outlines this system and shows the relationship between key documents within the Sydney Metro E&SMS and the Delivery Partner's E&SMS. These include the following:

- Sustainability Management Plans developed by each major construction package will capture governance and design requirements, translating project-wide targets and initiatives outlined in this Plan to package-specific requirements as per the contract requirements. These plans will vary in scope, responding to the specific features of the different delivery packages.
- The sustainability reports, provided at regular intervals by the Delivery Partners on each major construction package, will provide data and qualitative information for assessment progress against the planned initiatives and targets.
- The Construction Environment Management Plan (CEMP) will capture the construction environmental requirements emerging from the environmental impact statements (EIS) and subsequent planning approvals and this Plan.

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## 3.4 Reporting and auditing

Progress against sustainability objectives and targets during detailed design, construction and operations will be tracked through regular internal reviews, auditing, and internal and public sustainability reporting.

Data provided by the Delivery Partners will inform quantitative reporting where applicable. Corrective action will be undertaken, should it be required, through these processes.

Future procurement and design changes may affect the project's ability to meet all targets. If a target has not been met, commentary will be provided to outline future actions to address the target.



# Appendices

Detailed design and construction are critical project stages for sustainability

# 4



An artist's impression of Hunter Street Station.

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# Appendix A: Sydney Metro Environment and Sustainability Statement of Commitment



## Environment & Sustainability Statement of Commitment

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.
- 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

# Appendix B: Key strategic drivers and themes

## Federal



- Environmental protection
- Ecologically sustainable development
- Economic productivity
- Housing affordability and availability
- Planned accommodation of growth
- Transport capacity and connectivity
- Infrastructure resilience

## State



- Social responsibility
- Protection of the environment
- Climate resilience and net zero emissions
- Integration of land use and infrastructure planning
- Liveability, urban green cover and access to green space
- Resource efficiency
- Waste avoidance and resource recovery
- Workforce development (skills, capability and capacity)
- Increased workforce diversity
- Increase Aboriginal economic participation in the development of NSW
- Engagement of apprentices and trainees
- Sustainability in Business Case review
- Enhancement of the urban environment
- Value and respect Aboriginal cultural knowledge and people
- Address modern slavery in the supply chain
- Sustainable procurement

## Sydney Metro



- Sustainable, city-shaping transformation
- Safe, reliable and accessible transport
- Successful, vibrant places
- Future ready transport
- Leadership and accountability
- Financial, environmental and social responsibility
- Climate resilience and net zero emissions
- Resource management
- Biodiversity and heritage conservation

## Appendix C: Infrastructure Sustainability Council design and as-built base case framework

As discussed in Section 2.1 Demonstrate leadership, the project will implement the Infrastructure Sustainability Council (ISC) Infrastructure Sustainability (IS) Rating Scheme. The project will be improving upon previous Sydney Metro minimum requirements with a target of 75 points ('Leading') in design and as-built version 1.2. An important aspect of an IS rating is the assumptions made about the business-as-usual (BAU) benchmark. This is done in the form of a base case, used for measuring targets against. For transparency to the market, highlights of the project ISC design and as-built base case framework are made available in Table C1 below. This Base Case Framework has been verified by ISC.

**Table C1** ISC design and as-built base case framework

Description	Business-as-usual assumption
LED lighting	From recent project experience within Sydney Metro and across industry, LED lighting is now considered 'business as usual' (BAU) on all new infrastructure and building projects
Concrete and cement	From recent project experience from within Sydney Metro and across industry, a BAU assumption of 25 per cent supplementary cementitious material can be justified. Similarly, allowable cementitious content per concrete strength grade is included in the BAU assumptions
Recirculation of tunnelling cooling water	A new BAU assumption included is that tunnel boring machines (TBM) use recirculating cooling systems. That is, they recirculate cooling water with some potable water top up
25kV AC traction	Given that the new Sydney Metro projects are based upon the use of 25kV AC traction power, it is considered BAU
Exclusion of mandatory construction offset	Sydney Metro requires that its Delivery Partners offset at least 25 per cent of all scope 1 and 2 construction-related emissions. Given this is a BAU requirement for Sydney Metro Street Station, this offset has been included as a BAU assumption
Exclusion of Sydney Metro operational electricity offset	Sydney Metro is committed to offsetting 100 per cent of the operational electricity emissions. To drive energy efficiency and to reflect that this is not standard in industry, the emissions factor used to calculate Delivery Partners' IS ratings and associated emission related reduction credits are assumed to be the NSW grid emissions factors, as outlined in the 'National Greenhouse Accounts' publication. This reflects that the offset commitment is made by Sydney Metro, not passed through to the Delivery Partners.





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