



Australian Government



**Sydney Metro –
Western Sydney Airport**

Sustainability Plan

January 2022



The background features a large, dark grey, irregular shape that frames the text. This shape is bordered by a thick, vibrant orange line with a white dotted pattern. The rest of the page is filled with abstract, colorful patterns: light blue wavy lines at the top, dark blue wavy lines on the right, and pink wavy lines at the bottom.

Acknowledgement of Country

Sydney Metro pays respect to Aboriginal peoples as the Traditional Owners and Custodians of the land on which we work and live, we acknowledge Elders past and present and recognise the continued connection to the land and water ways.

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An artist's impression of Orchard Hills station – part of the Sydney Metro – Western Sydney Airport line.

1. Introduction

Sydney Metro has a clear vision for Sydney Metro – Western Sydney Airport (the Project) to demonstrate best-practice sustainability in delivery and operation.

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

This Sustainability Plan (the Plan) outlines key objectives aligned to the six sustainability principles set out in the **Sydney Metro Sustainability Framework**, and the initiatives and targets which will be implemented to achieve these across the project life cycle.

The Plan demonstrates how sustainability objectives for Sydney Metro – Western Sydney Airport support the vision for the new Western Parkland City and Western Sydney International Airport and respond to the Conditions of Planning Approval.

The initiatives and targets in this document are benchmarked against past Sydney Metro projects, and international best-practice on similar infrastructure projects. These are embedded into contract documents to drive sustainability outcomes, with performance to be reported publicly.

Sydney Metro is an organisation with vision for the future. This once-in-a-century infrastructure investment will shape the future growth of Australia’s biggest city for generations to come. Not only transforming Sydney with a world-class metro, but working to revitalise communities, transform places and make our great city more liveable and connected. We are committed to delivering this 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 life cycle. 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 – Western Sydney Airport project.



Peter Regan PSM
Chief Executive,
Sydney Metro

Key sustainability opportunities for Sydney Metro – Western Sydney Airport in shaping the Western Parkland City

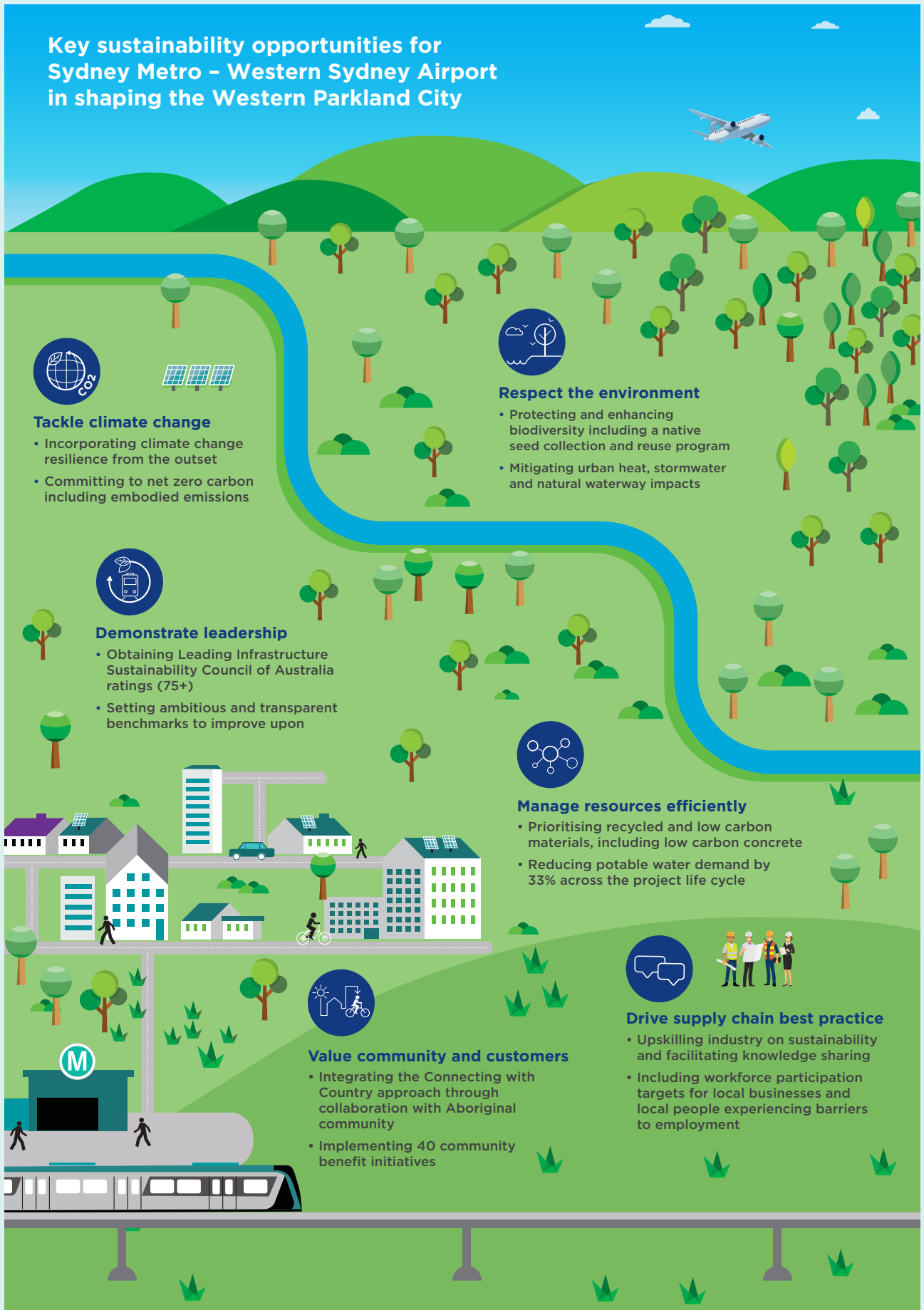


Figure 1.1 Key sustainability opportunities for the Project

2. Project overview

Sydney Metro – Western Sydney Airport is the new railway line that will service the Western Parkland City and the new Western Sydney International (Nancy-Bird Walton) Airport (WSI Airport), see Figure 2.2.

The new railway will become the transport spine for the Western Parkland City’s growth for generations to come, connecting communities and travellers with the rest of Sydney’s public transport system via a fast, safe and easy metro service. Sustainability is a key part of the Project, reflecting the importance of sustainability in the objectives of the **Greater Sydney Region Plan** and the **Western City District Plan**, both key plans for the Greater Sydney Commission’s vision of a metropolis of three cities.

Sydney Metro has been working with stakeholders and industry to create a project that will deliver a fast, safe and reliable metro and support the success of the future Western Parkland City.

The project includes six new metro stations at:

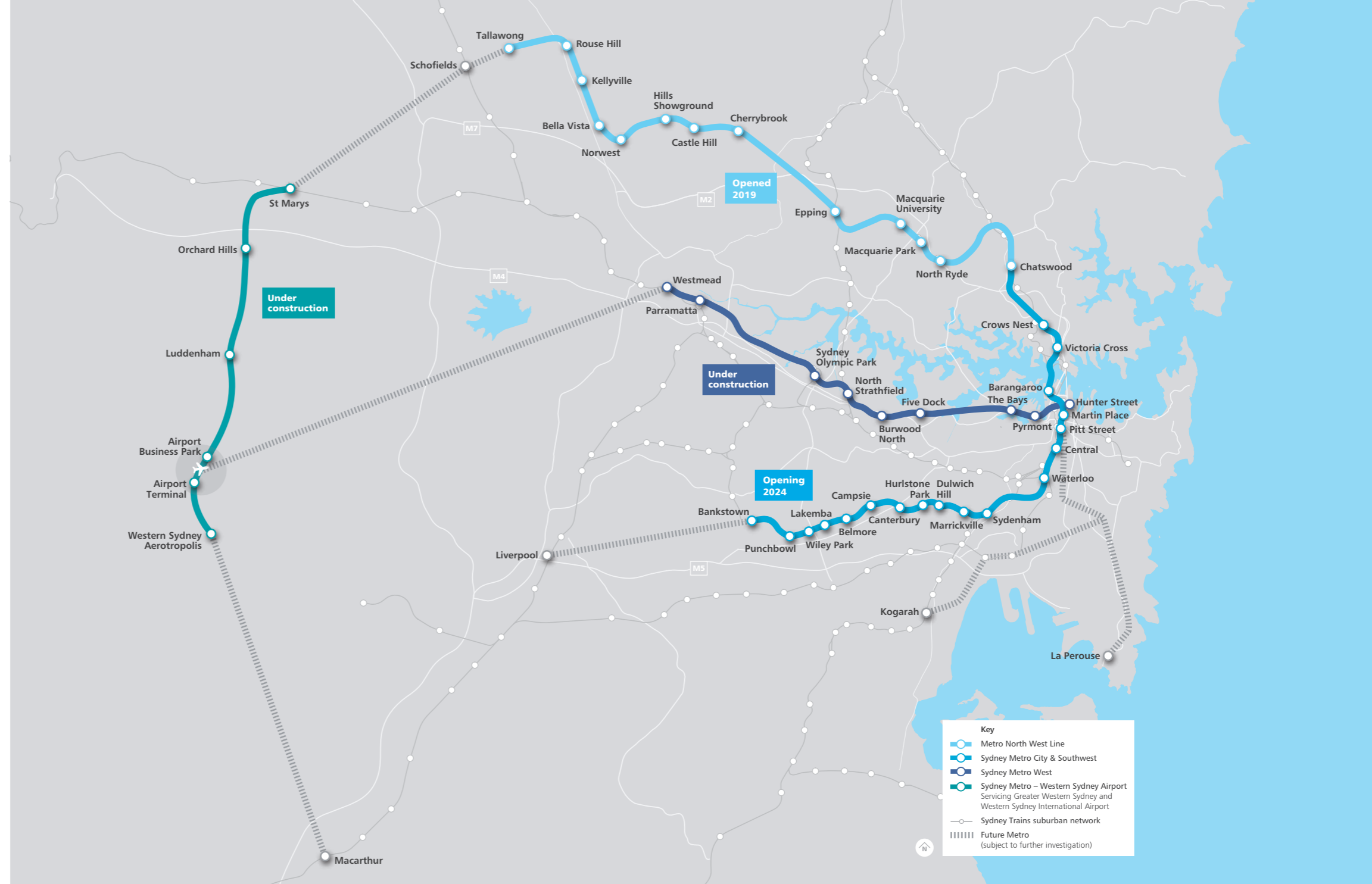
- St Marys, interchanging with the existing suburban railway station and connecting customers with the rest of Sydney’s rail system
- Orchard Hills, to service a future commercial and mixed-use precinct
- Luddenham, to service a future education, innovation and commercial precinct
- Two stations within the airport site, at the airport terminal and at the airport business park
- the commercial heart of the Western Sydney Aerotropolis (the area proposed to be named Bradfield).

Sydney Metro – Western Sydney Airport will have:

- Precinct development and placemaking activities at station locations
- Fully-automated trains, like the rest of the Sydney Metro system, with fast, frequent services – customers won’t need a timetable, they’ll just turn up and go.

The Australian and NSW Governments have a shared objective of having the rail line built when Western Sydney International Airport is open for passenger services.

The Project will be delivered via a series of contract packages. The proposed contract packaging and delivery strategy is shown in Figure 2.1. This strategy is subject to review and refinement by Sydney Metro.



Sydney Metro alignment map.



An artist's impression of Sydney Metro - Western Sydney Airport's Aerotropolis Station.

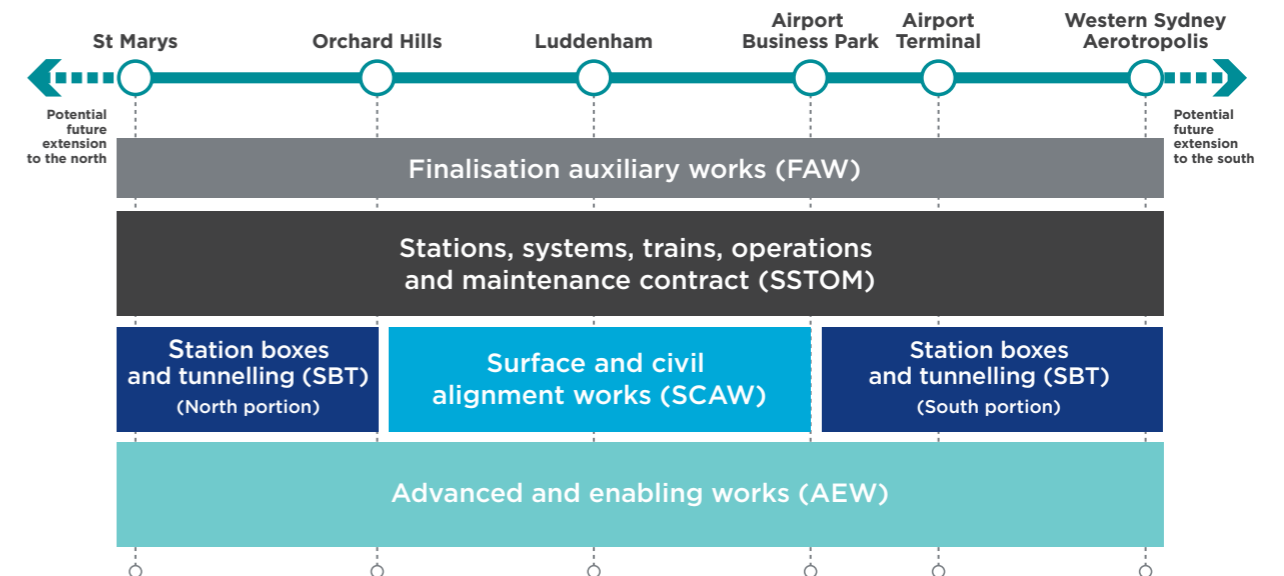


Figure 2.1 Sydney Metro – Western Sydney Airport delivery strategy

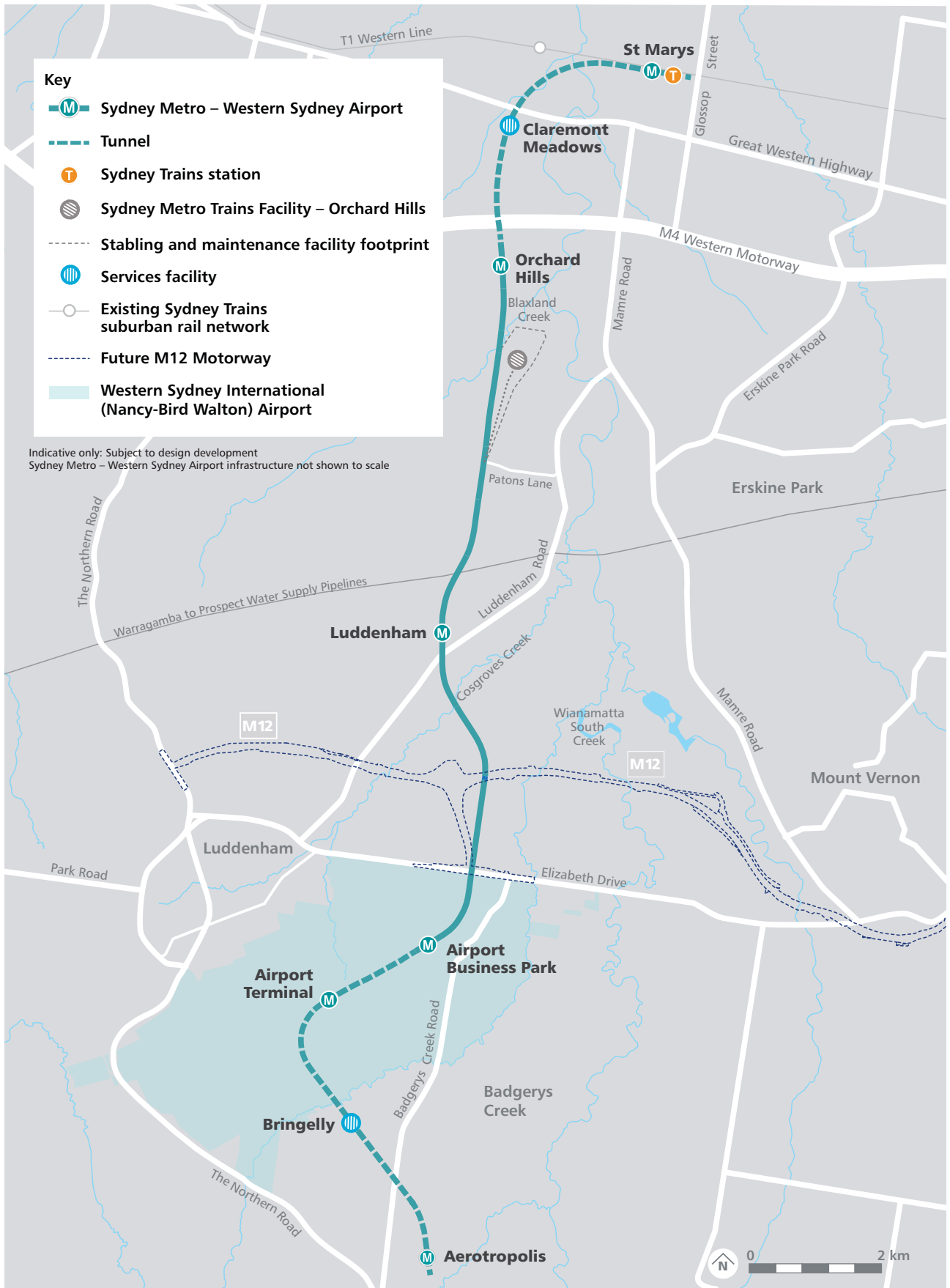


Figure 2.2 Sydney Metro – Western Sydney Airport – Project alignment

3. Sustainability principles

The **Sydney Metro Sustainability Framework** (the Framework) establishes six guiding principles, Figure 3.2, for how sustainability is approached at an organisational and project level. These principles are the cornerstone of how sustainability commitments are embedded and delivered on the Project.

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

Project-specific objectives have been developed to outline the goals underpinning each principle. Activities and solutions which will be undertaken, as well as specific measures of success, are detailed in the following sections to outline how each objective will be delivered throughout the Project.

Alignment of these principles to the United Nation's Sustainable Development Goals is outlined in the Framework.

Figure 3.1 Hierarchy of sustainability principles, objectives, targets and initiatives.

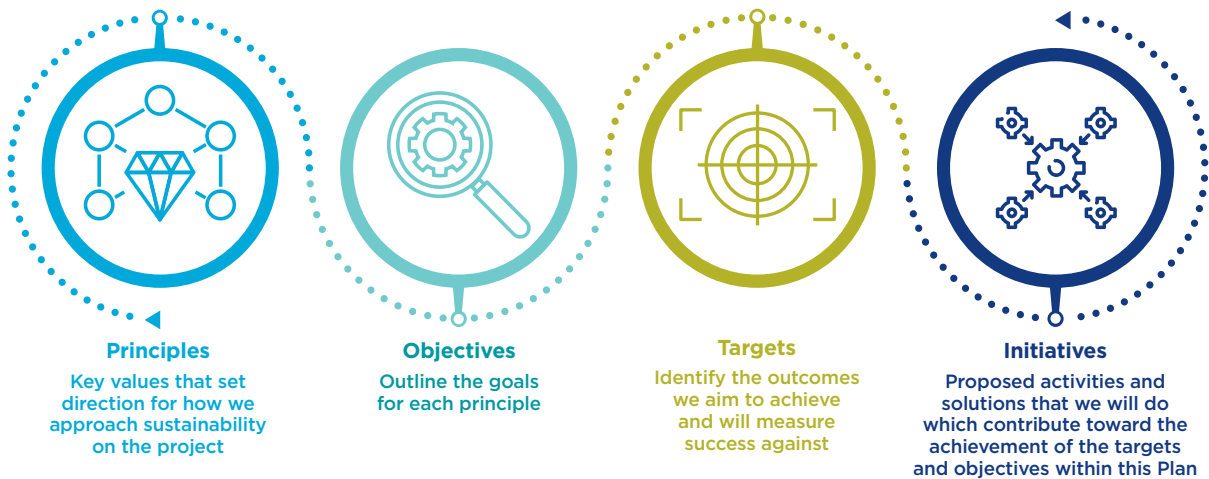


Figure 3.2 Sydney Metro Sustainability Principles.

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



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.



3.1 Demonstrate leadership

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

This principle drives and underpins the other five. It recognises Sydney Metro’s commitment to embedding good sustainability governance practices in all processes for Sydney Metro – Western Sydney Airport 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 – Western Sydney Airport will focus on driving improvements on industry-leading benchmarks set by previous projects. This will include increasing transparency on business-as-usual assumptions, activities undertaken and reporting progress against targets.

The main components of the governance framework to enable this are outlined in Figure 3.3 opposite. This Plan also responds to the **Transport for NSW Environment and Sustainability Policy** and the key strategic drivers outlined in Appendix B.

The Project will implement the Infrastructure Sustainability Council (ISC) Infrastructure Sustainability Rating Scheme, improving upon previous minimum requirements with a target of 75 points (“Leading”) in Design and As-Built, and 65 points (“Excellent”) in Operations. 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 – Western Sydney Airport Base Case Framework, which is used for measuring targets. For transparency, this Base Case Framework will be made available, with highlights included in Appendix E.

Sydney Metro as an organisation has an ongoing collaborative relationship with the Green Building Council Australia and will consider Green Star ratings for stations and operational buildings based on location-specific feasibility and eligibility.

Figure 3.3 Sydney Metro – Western Sydney Airport sustainability governance framework



Table 3.1 Project objectives, initiatives, and targets to demonstrate leadership in sustainability

What we will do	Measuring our success
Ensure transparency and assurance of project sustainability outcomes	
<ul style="list-style-type: none"> Set ambitious and transparent benchmarks to improve upon Develop and monitor targets across all sustainability focus areas Develop an assurance framework and reporting system to assist Sydney Metro and Delivery Partners in reliably reporting against sustainability targets Develop a streamlined outcomes-focused approach to applying sustainability rating tools on the project 	<ul style="list-style-type: none"> 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
Encourage innovation that delivers sustainability benefits	
<ul style="list-style-type: none"> Identify pathways to pilot new technology and approaches Engage with industry stakeholders and research organisations and look for opportunities to facilitate the uptake of new technologies and approaches 	<ul style="list-style-type: none"> Deliver at least five industry recognised innovations
Facilitate knowledge sharing and collaboration	
<ul style="list-style-type: none"> Collaborate with Delivery Partners to exceed targets Establish collaborative working relationships with stakeholders to drive an ambitious and aligned approach to environmental and social sustainability 	<ul style="list-style-type: none"> Sydney Metro to facilitate sustainability-related knowledge share sessions within the Project on a quarterly basis Engage and collaborate with stakeholders (e.g. other local projects, councils, industry bodies) on sustainability-related matters on a bi-annual basis





Windsor Road Bridge in Rouse Hill, part of the 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 the 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.





3.2 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, both on a global and local scale. The Commonwealth Scientific and Industrial Research Organisation, the Bureau of Meteorology and NSW Department of Planning, Industry and Environment have undertaken considerable research into the projected change in climate variables across Australia and resultant impacts to communities, the environment and infrastructure. Corporations, financial institutions and Governments 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 – Western Sydney Airport will tackle climate change, both in terms of adaptation (actions that address 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 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’s specific vulnerabilities and exposure in the Project’s climate change risk assessment framework. This framework informs understanding of the Project’s risks and allows for adequate planning and adaption to the impacts.

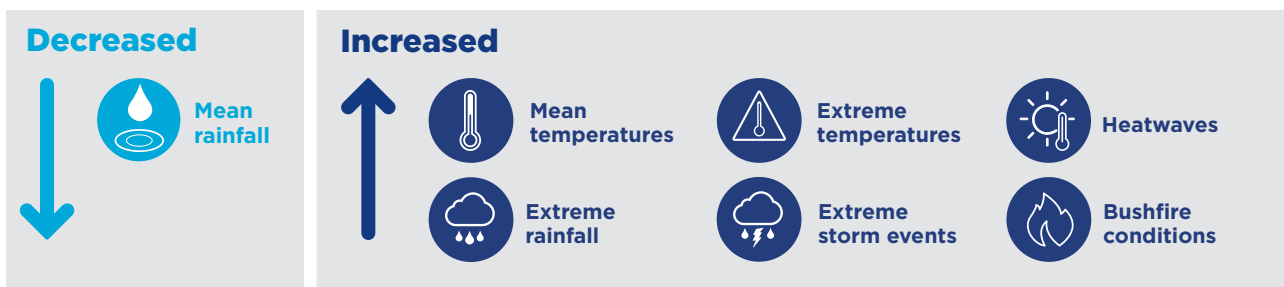
Whilst a preliminary risk assessment has been undertaken to inform necessary adaptive measures (that are within the Project’s control) for early design, this assessment and the resulting adaptive measures will be updated and refined throughout the project life cycle. Climate change risks are included 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 3.4.

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 on-site and off-site renewables and offsetting residual carbon, to strive towards a net zero carbon emissions approach.

Figure 3.4 Identified changes in relevant climate variables



Towards net zero carbon emissions



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

For the Project, net zero carbon emissions can be defined as no net change in carbon (greenhouse gas) emissions in the atmosphere as a result of the infrastructure existing. In practice this means to design, construct and operate the infrastructure in a way which does not result in a net addition of carbon emissions to the atmosphere, including emission generated in activities undertaken and embedded within materials used throughout the Project's life cycle.

The Project will develop a net zero carbon emissions commitment, based on the management hierarchy set out in Figure 3.5, and will seek third party certification to validate this achievement. This builds upon the existing commitment to offset all operational electricity emissions through the purchase of renewable energy, which alone accounts for about a 70 per cent reduction in whole-of-life emissions (construction + 120 years of operations).

Figure 3.5 Carbon emissions management hierarchy

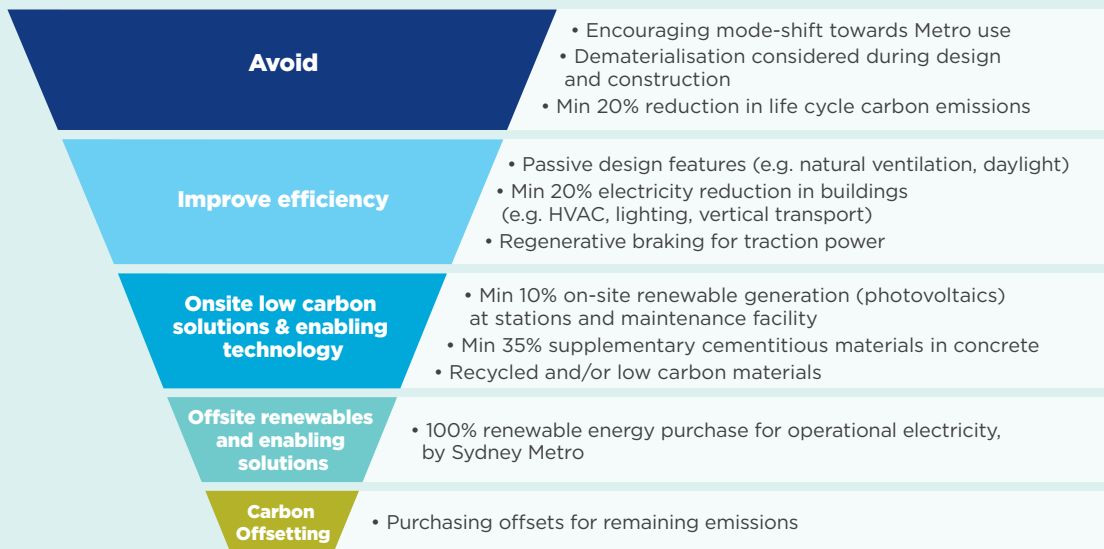


Table 3.2 Project objectives, initiatives and targets developed to tackle climate change

What we will do	Measuring our success
Deliver and operate infrastructure that is resilient to the impacts of climate change	
<ul style="list-style-type: none"> • Identify all relevant climate change risks • Ensure flood modelling accounts for appropriate climate change impact and relevant equipment and structures are designed to be resilient to projected climate change • Ensure ventilation and air conditioning equipment is designed to be resilient to projected climate change within design life • Ensure emergency procedures adequately address change in extreme weather events throughout the project life cycle • Protect sensitive construction equipment from the effects of extreme weather • Review and update climate change projections throughout the project life cycle to identify and address any changes in climate-related risks 	<ul style="list-style-type: none"> • Identify and implement adaptation measures to reduce 100 per cent of all very high and high climate risks (to at least a 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
Establish and implement energy efficiency measures	
<ul style="list-style-type: none"> • Inclusion of passive design features and energy efficient equipment • Establish targets for rail system (non-building) operational electricity efficiency whilst meeting service frequency and customer comfort expectations • Use energy efficient equipment, methods, and practices in construction 	<ul style="list-style-type: none"> • Report on operational electricity consumption • Achieve at least 20 per cent improvement on the minimum performance requirements stipulated in the National Construction Code (NCC) for stations and relevant buildings
Facilitate knowledge sharing and collaboration	
<ul style="list-style-type: none"> • Develop a net zero carbon emission commitment inclusive of scopes one (e.g. fuels, refrigerants, land clearing), two (e.g. electricity) and three (e.g. waste, materials) • Undertake carbon footprint analysis at each stage to identify and prioritise areas where the greatest reductions in whole-of-life carbon can be achieved • Consider battery storage, and other enabling and renewable technology, implementing where or when feasible and beneficial • Develop an electricity and offsets procurement and management strategy and develop capacity to support implementation 	<ul style="list-style-type: none"> • 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 • 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 • 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 • Offset 100 per cent of the carbon emissions associated with consumption of electricity during operation • Report on carbon emissions from construction and operations





3.3 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' ¹. The economic and social benefits associated with the construction and operation of Sydney Metro – Western Sydney Airport 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.

Water is an increasingly scarce resource. Potable (drinking water quality) and non-potable water will be required for construction and operation of the Project, and a water balance study will be completed to estimate the quantities, types and potential sources of this 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.

The Project will aim to reduce 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. Materials with good durability to reduce replacement needs will be selected. Recycled materials will be used where possible and recovered materials from waste throughout construction and operation will be utilised. Along with reducing emissions associated with waste, this will also 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 with steel.

Analysis undertaken during the early design phases, and validated through comparison to previous Sydney Metro projects, have clearly identified concrete and steel as having the largest embodied impact, together accounting for over 90 per cent of the embodied carbon in construction. Hence a focus is being placed on the reduction of the embodied carbon of 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 3.6.

Figure 3.6 Spoil management hierarchy



Towards net zero water

The goal of net zero water is to preserve the quantity and quality of natural water resources with minimal deterioration, depletion, and rerouting by utilising potential alternative water sources and water efficiency measures to minimise the use of supplied fresh water.

To work towards the goal of net zero water, the Project will develop a project-wide water balance and monitor water consumption and discharge.

Key targets and initiatives include maximising the efficiency of water-using equipment, capturing and reusing rainwater and stormwater, implementing green infrastructure solutions, recycling wastewater and ensuring any discharges meet relevant quality requirements throughout design, construction and operations. Refer Table 3.3 and Table 3.6 for more details.

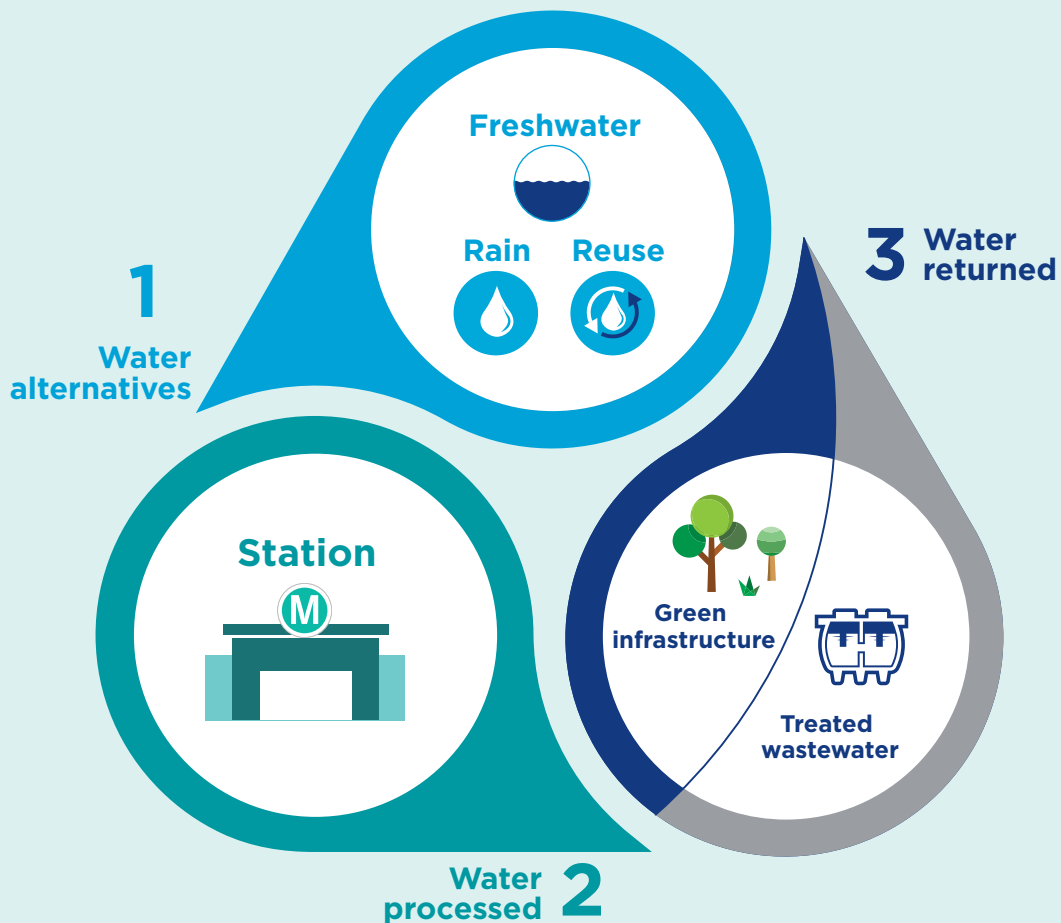


Table 3.3 Project objectives, initiatives and targets developed to ensure efficient use of resources

What we will do	Measuring our success
Minimise the use of potable water and maximise opportunities for reuse of non-potable water sources	
<ul style="list-style-type: none"> • Integrate current best-practice water-efficient features, equipment and appliances at stations, stabling facility and construction sites • Avoid use of potable water for non-potable purposes if non-potable water is available • Undertake a water balance study to inform feasibility for reuse initiatives • Identify and implement opportunities for treatment and reuse on the Project, including water from tunnelling works, concrete batching and casting facilities • Provision for connection to future district recycled water networks • Develop net zero water pathway inclusive of water discharges into the environment • Harvest and reuse rainwater at permanent and temporary facilities, including provision of an appropriately sized rainwater tank at each station and stabling facility 	<ul style="list-style-type: none"> • Reduce potable water use by at least 10 per cent compared to business-as-usual, and monitor consumption throughout construction and operations • Demonstrate at least 33 per cent of water used is from non-potable sources 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
Minimise waste throughout the project life cycle	
<ul style="list-style-type: none"> • Adopt circular economy principles and practices, including increased use of recycled and innovative materials in the construction supply chain, and the implementation of a materials tracking system for materials transferred between construction sites • Minimise construction waste by using modular, prefabricated and precast structural and finishing materials where feasible and limiting materials packaging • Plan for final disposal of temporary facilities and operational assets, such as train carriages • Implement quality control measures to improve segregation of waste streams and increase recycling rates, including regular reporting and auditing 	<ul style="list-style-type: none"> • 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 • Recycle or beneficially reuse at least 60 per cent of office 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
Reduce materials consumption, reduce the embodied carbon and increase use of recycled materials	
<ul style="list-style-type: none"> • Minimise the use of concrete and steel and encourage efficient structural design • Encourage the dematerialisation of components and finishes • Undertake life cycle assessments and minimise the embodied impacts of materials, through the selection of low carbon alternatives, such as engineered timber, consideration of durability and local sourcing • Ensure durability and efficiency of built infrastructure that requires minimum expenditure in maintenance and upkeep 	<ul style="list-style-type: none"> • 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 • Prioritise products made from recycled content, with a minimum of six products used in the construction phase
Implement environmentally responsible sourcing practices	
<ul style="list-style-type: none"> • Prioritise local sourcing of materials from Australia, where feasible • Avoid the use of toxic and harmful materials in construction of buildings, manufacture of trains and during operations, where possible 	<ul style="list-style-type: none"> • Minimise the embodied impacts of steel through the use of at least 50 per cent Australian steel, including concrete reinforcing and structural steel • 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



Apprentice from the Sydney Metro project.



3.4 Drive supply chain best-practice

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

Sydney Metro - Western Sydney Airport 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), as well as federal 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, continues to be key focus areas for the NSW Government and Sydney Metro.

The workforce development priorities and objectives are outlined separately to this Plan, in the Project's Workforce Development and Industry Participation Plan and 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. Key priorities of this plan are shown in Figure 3.7

Figure 3.7 Workforce Development and Industry Participation Plan key priority areas



Industry and jobs participation

Increase opportunities for employment of local people, participation of small and medium enterprises including Recognised Aboriginal business and support industry to compete in home and global markets through active participation in client led programs.



Workforce skills development

Enable targeted and transferable skills development in areas with local and national skills shortages, support changing job roles and increased skill requirements, and embed transferable skills in the workforce.



Diversity and inclusion

Establish initiatives to increase diversity within the workforce and supply chain through collaborative partnerships.



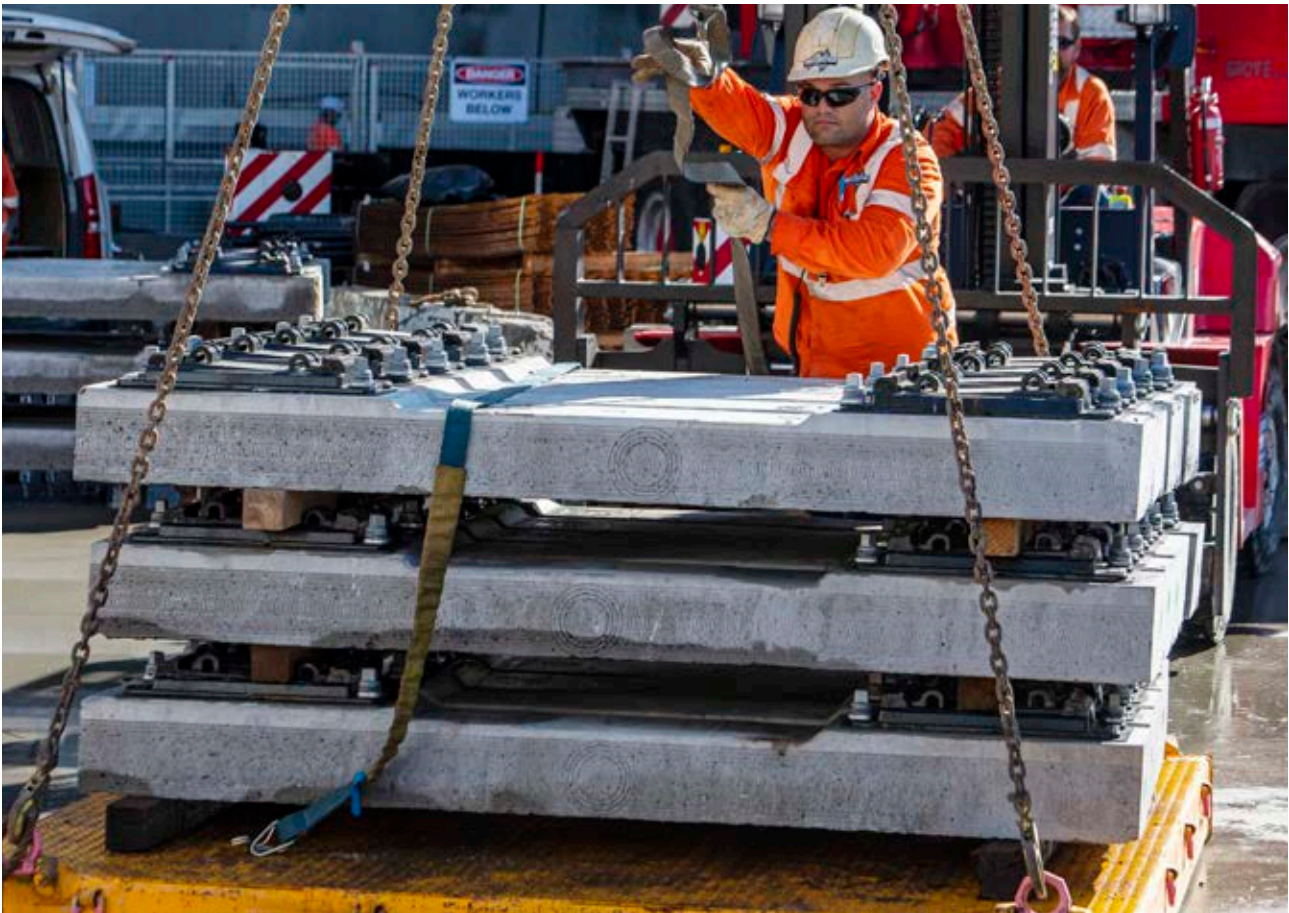
Inspiring future talent and developing capacity

Engage young people via education and work experience through higher and vocational education and institutions to encourage interest in STEM and infrastructure related careers.



Collaboration

Sydney Metro will continue to be collaborative with organisations that have a shared interest in driving skills, diversity, jobs and industry capacity through infrastructure projects.



Railway sleepers are delivered for use in the tunnel that runs under Sydney Harbour.

Table 3.4 Project objectives, initiatives and targets developed to drive supply chain best-practice.

What we will do	Measuring our success
Influence Delivery Partners, subcontractors and materials suppliers	
<ul style="list-style-type: none"> • Ensure procurement strategies are consistent with ISO:20400 Sustainable Procurement Guidelines • Ensure supply chain sustainability objectives are adopted downstream 	<ul style="list-style-type: none"> • Provide sustainability training to all high impact suppliers (those that potentially have significant environmental, social or socio-economic impacts)
Increase supply chain transparency and responsibility	
<ul style="list-style-type: none"> • Conduct due diligence to ensure supply of materials and equipment aligns with human rights legislation and environmental standards • Drive the uptake of products and services which have environmental product declarations and eco-labelling 	<ul style="list-style-type: none"> • All reported instances of actual or potential environmental or social risk in the supply chain will be investigated • Require environmental product declarations for trains
Deliver a positive workforce development and industry participation legacy	
<ul style="list-style-type: none"> • Establish initiatives to increase diversity within the workforce and supply chain through collaborative partnerships • Enable targeted and transferable skills development in areas with local and national skill shortages • Increase local employment and participation of small and medium enterprises, including recognised Aboriginal businesses • Inspire young people to consider STEM and infrastructure-related careers through engagement via education and work experience 	<ul style="list-style-type: none"> • Engage at least 15 social enterprises or social benefit organisations during construction and operations

Refer to the Project's Workforce Development and Industry Participation Plan and Aboriginal Participation Plan for further details



3.5 Value community and customers

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

Sydney Metro – Western Sydney Airport will become the transport spine for the growing region, connecting communities with the new airport, jobs and services and delivering better access to employment opportunities, health and education facilities and leisure activities across Greater Sydney. The Project focuses on delivering this infrastructure in a way which improves community and customer wellbeing and values the heritage and culture of the area and its people.

The Project is committed to respecting and celebrating Aboriginal cultural values in Western Sydney. To facilitate meaningful consultation and collaboration, the 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 will deliver a range of community benefits including:

- Providing a high quality, customer-centred transport option to the Western Sydney International Airport and within the Western Parkland City
- Enhancing access to the wider Sydney transport network and to social infrastructure, green infrastructure and active transport networks
- Enabling the development of more liveable and affordable places
- Delivering tangible social outcomes to local communities through dedicated initiatives during construction and operations.



Children at the Bella Vista community day, one of the stations on the Metro North West Line.

Table 3.5 Project objectives, initiatives and targets to ensure customer and community needs are valued

What we will do	Measuring our success
Protect and promote Aboriginal and non-Aboriginal heritage and culture	
<ul style="list-style-type: none"> • Develop and implement an Aboriginal Engagement Strategy to ensure key Aboriginal stakeholders are meaningfully engaged • Identify and implement opportunities to enhance heritage and cultural values, including piloting of the Government Architect’s “Connecting with Country” Framework • Develop partnerships with relevant local knowledge holders and stakeholders to identify and respect heritage and cultural places • Embed an Aboriginal cultural lens into the project design guidelines • Avoid or minimise impacts to heritage across the alignment • Create opportunities for heritage interpretation 	<ul style="list-style-type: none"> • Each station to include heritage interpretation • Engage with Aboriginal knowledge holders to develop corridor landscaping approach
Promote community and customer wellbeing	
<ul style="list-style-type: none"> • Design in accordance with the Government Architect’s “Better Placed” Framework to provide improved public amenity • Promote customer-centric design that delivers an easy travel experience for all Metro customers by understanding their needs at each stage of their journey • Provide new public spaces which are adaptable and appropriate for a range of uses by the community • Develop interim activation approaches for station precincts 	<ul style="list-style-type: none"> • 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 & security, information and customer service • 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 • Use Opal data to monitor Metro usage associated with precinct activation approaches
Enable and promote active transport access and public transport usage	
<ul style="list-style-type: none"> • Integrate with surrounding active transport network, such as footpaths, public and green spaces, and cycle paths, and provide tree canopy cover along active transport corridors • Station interchanges designed in accordance with the modal hierarchy to prioritise more equitable, safe and sustainable modes of transport and enjoyable environment for users 	<ul style="list-style-type: none"> • Each station to include safe and, where possible, weather protected access to bicycle parking and safeguard for future expansion
Deliver community benefits	
<ul style="list-style-type: none"> • Ensure the community and local stakeholders are engaged and kept informed of project activities • Provide information in ways that is easily accessible, taking into consideration dominant language groups • Optimise the use of residual land to benefit local communities and enhance precinct development 	<ul style="list-style-type: none"> • 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



3.6 Respect the environment

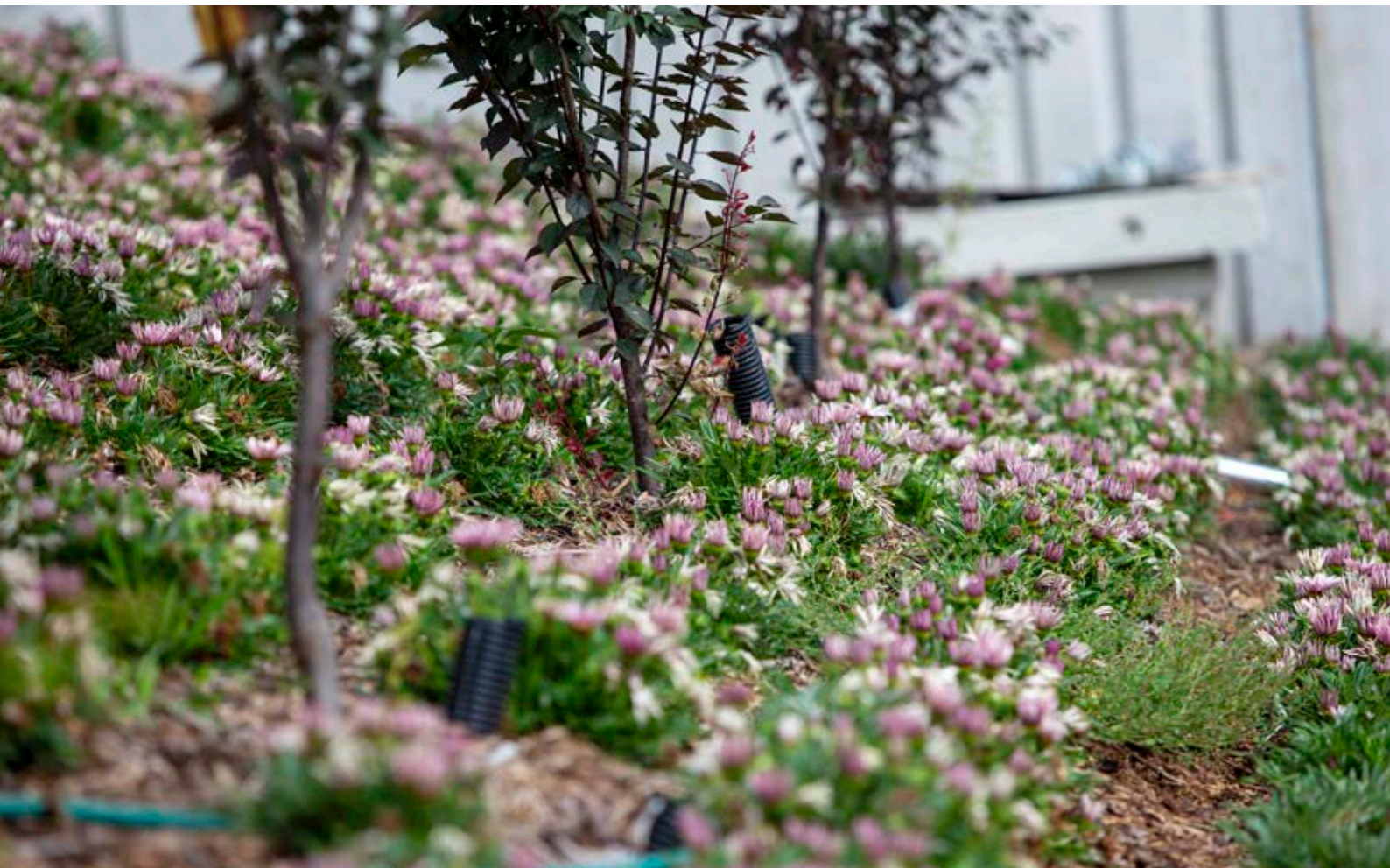
Minimise impacts and take opportunities to provide environmental improvements

The construction and operation of Sydney Metro – Western Sydney Airport 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 *NSW Environmental Planning and Assessment Act 1979* and the Commonwealth Environment Protection and *Biodiversity Conservation Act 1999*, and governed through the **Project’s Construction Environmental Management Framework**.

Potential impact on biodiversity through the clearing of vegetation and habitat is a key consideration for the Project. Significant effort has been made during the environmental assessment process and design process to reduce impacts to existing vegetation and disturbance to faunal movement.

Biodiversity conservation priorities will be highlighted throughout Project decision making and seed from impacted vegetation will be collected and preserved for reuse.

As the spine of the Western Parkland City, the Project presents an opportunity to enhance the environmental condition of the corridor and contribute to the blue and green grid of the city. This includes contributing to the Premier’s Priority target of 40 per cent tree canopy cover and the Greater Sydney Commission’s efforts to reduce Urban Heat Island effect. This will be achieved through the incorporation of native and endemic vegetation, the rejuvenation of the landscape and re-establishing riparian ecosystems, and the utilisation of water-sensitive urban design to ensure water is held in the landscape.



Cherrybrook Station garden, one of the stations on the Metro North West Line.



Wianamatta South Creek, along the alignment.

Table 3.6 Project objectives, initiatives and targets developed to ensure the environment is respected

What we will do	Measuring our success
Provide and promote green infrastructure and biodiversity	
<ul style="list-style-type: none"> • Provide high quality open public space at precincts which meet green infrastructure requirements • Avoid or minimise impacts to biodiversity, particularly with regards to endangered, vulnerable and threatened species, habitats and communities • Consider connectivity of existing ecosystems and provide opportunities for cross-corridor wildlife movement • Contribute to the restoration and conservation of local ecological communities, through collection of endemic seed from vegetation impacted by construction and reuse in project landscaping 	<ul style="list-style-type: none"> • 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 cent canopy cover across the project area* • At least 50 per cent of station and plaza landscaping to use Australian native species* • 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* • 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

*Landscaping must comply with WSI Airport wildlife hazard and landscaping requirements where relevant

Table 3.6 Project objectives, initiatives and targets developed to ensure the environment is respected

What we will do	Measuring our success
Minimise environmental impact	
<ul style="list-style-type: none"> • Reduce pollution through the development and implementation of a Construction Environmental Management Framework • Avoid or minimise noise and vibration impacts • Design to minimise light spill in accordance with standards • Reduce air pollution through environmental controls and the implementation of high pollution standards for long-term construction vehicles • Appropriately manage stormwater and groundwater contamination and runoff, informed by Sydney Water's Urban Typologies and Stormwater Solutions for the Western Parkland City 	<ul style="list-style-type: none"> • Ensure environmental management plans are established, and demonstrate works compliant with these plans • Target zero major pollution incidents

4. Implementation and monitoring

4.1 Roles and responsibilities

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

4.2 Embedding sustainability during planning

Planning and early-stage design has been undertaken by Sydney Metro, with responsibilities passed on to Delivery Partners to undertake detailed design, construction and operations. Sydney Metro and our Delivery Partners will work collaboratively during these stages to exceed the minimum targets 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 4.1.

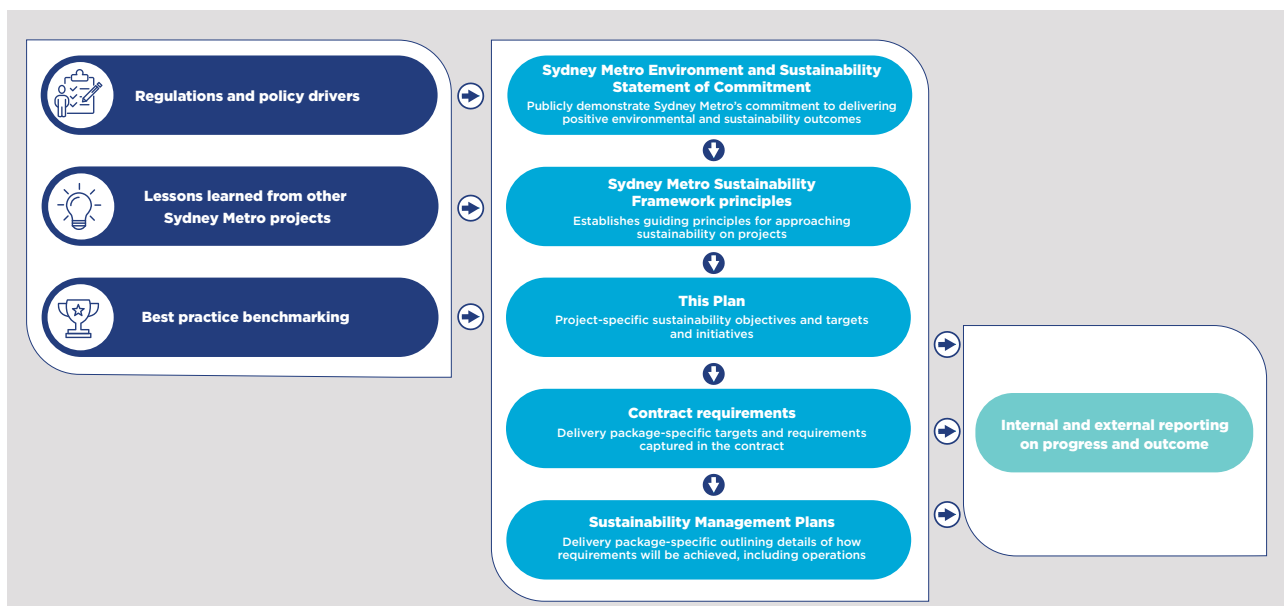
4.3 Detailed design and construction

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 positive impacts to be gained from successes. The Environmental 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 and Sustainability Framework have also been integrated into the E&SMS. Figure 4.2 outlines this system and shows the relationship between key documents within the Sydney Metro E&SMS and the Delivery Partner’s E&SMS; notably:

The Sustainability Management Plans, developed for each major construction package by the Delivery Partner, 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 assessing progress against the planned initiatives and targets.

Figure 4.1 Integrating sustainability into detailed design, construction and operations





Construction work at Crows Nest Station, one of the new stations being built for Sydney Metro City & Southwest.

- The Construction Environment Management Plan (CEMP) will capture the construction environmental requirements emerging from the Environmental Impact Statement (EIS) and subsequent planning approvals and this Plan.

4.4 Operations

Sydney Metro – Western Sydney Airport will be operated by a Sydney Metro Delivery Partner. As part of the overall operational requirements, the Delivery Partner’s responsibilities include implementing and achieving sustainability-related management processes and targets. The Delivery Partner will develop an Operational Sustainability Management Plan and submit quarterly with annual reporting on their progress against targets to ensure the required outcomes are being met.

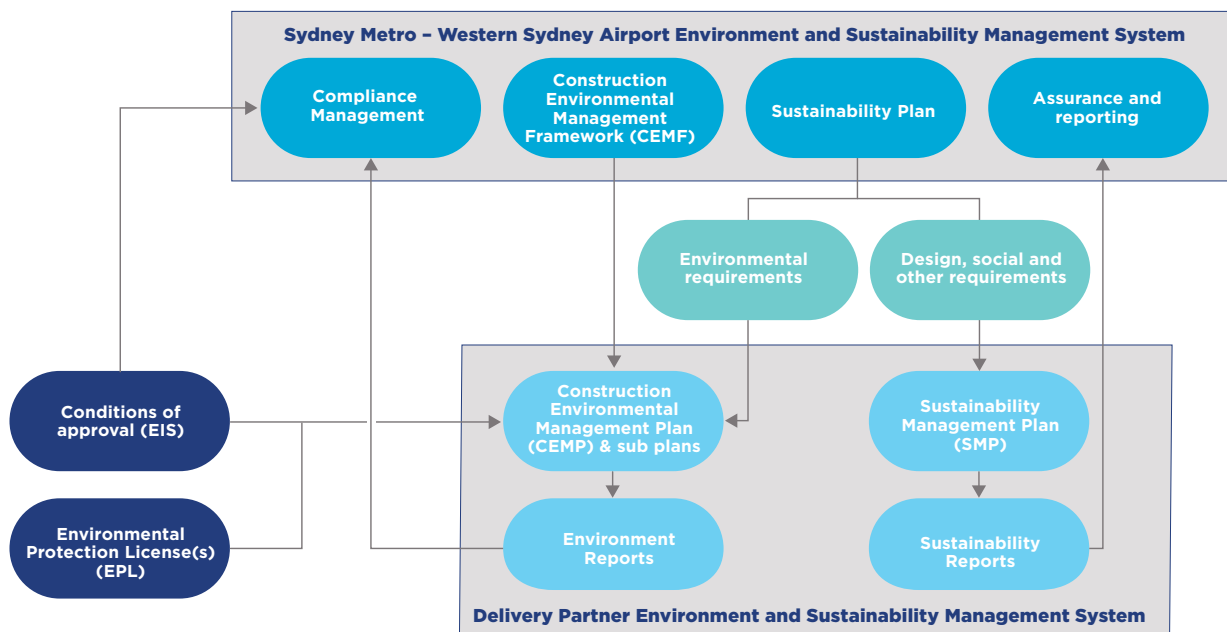
4.5 Reporting and auditing

Progress against sustainability objectives and targets during detailed design, construction and operations will be tracked through regular auditing and internal and public sustainability reporting. Data provided by the Delivery Partners will inform quantitative reporting where applicable.

Corrective action will be undertaken if found to be required through these processes.

Future 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.

Figure 4.2 Sydney Metro – Western Sydney Airport Environment and Sustainability Management System





Sydney Metro construction at Central Station's northern concourse.

Appendices

Appendix A Sydney Metro objectives and commitments

 <p>Delivery commitments</p>	 <p>Successful engagement</p>	 <p>Operational excellence</p>	 <p>Financial responsibility</p>	 <p>Organisational capability</p>
<p>We will deliver high quality Metro infrastructure and places - safely, on time and on budget.</p>	<p>We will collaborate with our communities and our partners to drive sustainable, city-shaping transformation.</p>	<p>We will work with partners, keeping customers at the centre of everything we do, to deliver a world-class, integrated metro.</p>	<p>Our financial and commercial focus will drive value-for-money outcomes, and overall business success.</p>	<p>We will attract, nurture and develop a talented, diverse and innovative workforce who are enabled by fit-for-purpose systems and processes, and highly capable delivery partners.</p>

Figure A.2 Sydney Metro Environment & 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

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

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Appendix B

Key strategic drivers and themes

International



United Nation's Sustainable Development Goals:

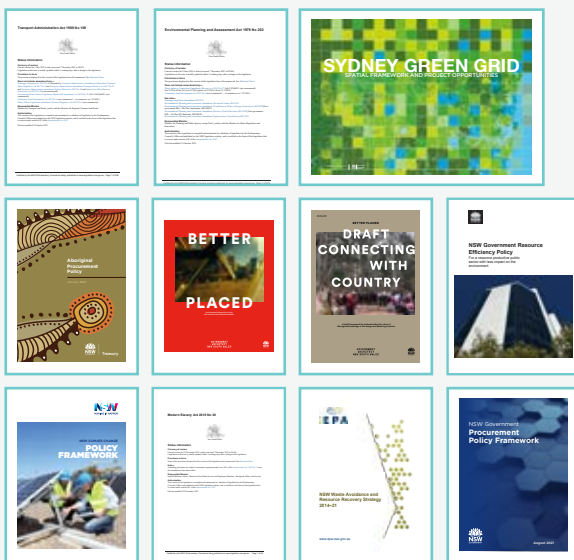
- Good health and well-being
- Decent work and economic growth
- Industry innovation and infrastructure
- Reduced inequalities
- Sustainable cities and communities
- Climate action
- Life on land
- Peace, justice and strong institutions

Federal



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

State



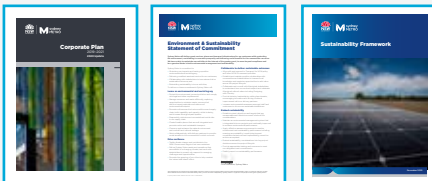
- Social responsibility
- Protection of the environment
- Climate resilience and net zero emissions
- Integration of land use and infrastructure planning
- Liveability, urban green cover and access to green space
- Resource efficiency
- Waste Avoidance and Resource Recovery
- Workforce development (skills, 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

Transport for NSW



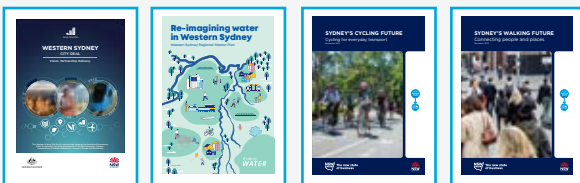
- Improved liveability and successful places
- Climate resilience and net zero emissions
- Enhancing communities and their environments
- Delivering for the greater good
- Genuine leadership
- Genuine Reconciliation
- Beyond compliance
- Whole of life considerations
- Sustainable procurement
- Awareness and communication
- Strong economy and quality of life
- Innovation

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

Western Sydney region













- Vision for a connected, green and advanced Western Parkland City
- Coordinated water management response specific to Western Sydney
- Improve bicycle network through major transport projects
- Increase active transport options









Appendix C












Alignment with Western Sydney International Airport Sustainability Plan

Table C.1 Alignment between Western Sydney Airport Sustainability Plan (v03) Targets and This Plan

Western Sydney Airport Sustainability Plan				Sydney Metro – Western Sydney Airport alignment & reference in this Plan	
Relevant Target	SDG	Objective	Min Target		
Climate Change Adaptation		100% of extreme and high rated climate change risks are identified, assessed and appropriate measures implemented, with no extreme residual risks after treatment	100%		Identify all relevant climate change risks
		Adaptation options to treat a percentage of all medium priority climate change risks are identified, assessed and appropriate measures implemented	25 – 50%		Identify and implement adaptation measures to reduce 100 per cent of all very high and high climate risks (to at least a medium)
					Identify all relevant climate change risks
					Identify and implement adaptation measures to reduce all medium climate risks as low as reasonably practicable, with at least 25 per cent reduced to low
Reduced Electricity Use		Design and construct for reduction in electricity use compared to a base case (IS Rating protocol)	15%		Achieve at least 15 per cent improvement on the minimum performance requirements stipulated in the National Construction Code (NCC) for stations and relevant buildings
					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
Reduced Fuel Non-aviation Fuel Use		Reduce non-aviation fuel use by designing for electric air-side vehicles and incorporating recharging infrastructure	The minimum target is currently being considered in design phase.		Target minimum 20 per cent of parking spots safeguarded for electric vehicle (EV) charging points and provision for electric bus charging in suitable locations
Reduced Water Consumption		Reduction in total water use compared to a base case footprint (IS Rating protocol)	5%		Reduction in total water use compared to a base case footprint (IS Rating protocol)
		Water use from non-potable sources, from reclaimed or recycled waste water or harvested water	33%		Avoid use of potable water for non-potable purposes if non-potable water is available, demonstrating at least 33 per cent of water used is from non-potable sources throughout construction and operations
Environmental Labelling		Material or products have an ISCA ¹ approved environmental label	At least 1 product/material		Drive the uptake of products and services which have environmental product declarations and eco-labelling

¹ The Infrastructure Sustainability Council (ISC) was known as the Infrastructure Sustainability Council of Australia (ISCA) at the time of release of the Western Sydney Airport Sustainability Plan (v03)

Western Sydney Airport Sustainability Plan				Sydney Metro – Western Sydney Airport alignment & reference in this Plan	
Relevant Target	SDG	Objective	Min Target		
Recycled Content in Construction Materials		Mandatory optimisation of recycled content in concrete, steel and asphalt construction products, including as a minimum, compliance with Green Star Life Cycle Impact credits (19B.1, 19B.2, 19B.3 and 19B.4)	The optimised targets are currently being considered in design phase 3		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
					Prioritise products made from recycled content, with a minimum of six products used across construction
					Undertake life cycle assessments and minimise the embodied impacts of materials, through the selection of low carbon alternatives, such as engineered timber, consideration of durability and local sourcing
Reduced Emissions		Reduction in greenhouse gas emissions compared to a base case footprint (IS Rating protocol) including scope 1, scope 2 and land clearing emissions	10%		Achieve at least a 20 per cent reduction in carbon emissions across the infrastructure life cycle, when compared to business as usual
Quantity of Waste to be Recycled		Percentage of spoil waste diverted from landfill for recycling or reuse	80%		Beneficially reuse 100 per cent of reusable spoil, in accordance with the Spoil Management Hierarchy
		Percentage of surplus VENM or ENM spoil to be reused on or off site	100%		Beneficially reuse 100 per cent of reusable spoil, in accordance with the Spoil Management Hierarchy
		Percentage of inert or non-hazardous waste diverted from landfill for recycling or reuse	80%		Recycle or beneficially reuse at least 95 per cent of construction and demolition waste
		Percentage of office waste diverted from landfill for recycling or reuse	70%		Recycle or beneficially reuse at least 60 per cent of office waste
Biodiversity & Landscaping		Plantings to be Australian Natives	70%		At least 50 per cent of station and plaza landscaping to use Australian native species
		Plantings to be indigenous native plants to preserve Cumberland Plains identity in the Western Sydney region	50%		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

Western Sydney Airport Sustainability Plan				Sydney Metro – Western Sydney Airport alignment & reference in this Plan	
Relevant Target	SDG	Objective	Min Target		
Workforce Diversity		Representation of work-force through learning workers by 2025 (including trainees, apprenticeships and workers training to upgrade their qualifications and skills)	20%		Specific Workforce Diversity targets are addressed in the Sydney Metro Western Sydney Airport Workforce Development and Industry Participation Plan, not in this Plan. Broad targets can be found in Section 3.4.
					
		Percentage of the workforce locally employed during construction	30%		
		Percentage of overall workforce diversity. Broken down into:	10%		
		Indigenous workforce (during construction)	2.4%		
		Women in non-traditional roles, socially and economically disadvantaged people and people with a disability	7.6%		
		Percentage of contracts awarded to indigenous businesses	3%		
People		Number of priority community health and wellbeing issues to be identified and measures implemented to positively contribute to these issues	Min of 1		This Plan outlines several measures which positively impact the health and wellbeing of the community, as outlined in Section 3.5
					
Innovation		Sustainability innovations implemented	Min of 3		This Plan outlines several initiatives, in Section 3.1 and throughout the rest of Section 3, which are or will be considered throughout the Project

Appendix D







Consistency with planning approvals

The Project Conditions of Approval (CoA), revised mitigation measures and revised environmental outcomes relating to sustainability and where they are addressed to demonstrate compliance are outlined below. This is not an exhaustive list.

Table D.1 Consistency with the Rail Environmental Impact Assessment Performance Outcomes (Table 8-2)

EPBC Act Final Environmental Impact Assessment of on-airport proposed action (EPBC 2019/8541)		Where addressed in this Plan	
Table 8-2 Project performance outcome	Phase		
Sustainability, climate change and greenhouse gas			
The project achieves a minimum 'Design' and 'As built' rating score of Leading +75, using the Infrastructure Sustainability Council of Australia Infrastructure Sustainability Rating Scheme Version 1.2 or equivalent	Operation		Section 3.1 Demonstrate leadership
Sustainability initiatives are incorporated into the planning, design and construction of the project	Construction and operation		Section 4 Implementation and monitoring
100 per cent of the greenhouse gas emissions associated with consumption of electricity during operation are offset	Operation		Section 3.2 Tackle climate change
25 per cent of the greenhouse gas emissions associated with consumption of electricity during construction are offset	Construction		Section 3.2 Tackle climate change
The project is designed to withstand known impacts associated with climate change to year 2100	Construction and operation		Section 3.2 Tackle climate change
Resource management			
100 per cent of useable spoil is reused in accordance with the spoil reuse hierarchy	Construction		Section 3.3 Manage resources efficiently
A minimum 95 per cent recycling target is achieved for construction and demolition waste	Construction		Section 3.3 Manage resources efficiently
Products made from recycled content are prioritised	Construction		Section 3.3 Manage resources efficiently
The use of potable water for non-potable purposes is avoided if non-potable water is available	Construction and operation		Section 3.3 Manage resources efficiently
The reuse of water is maximised, either on-site or off-site	Construction and operation		Section 3.3 Manage resources efficiently

Table D.2 Consistency with Rail Environmental Impact Assessment Mitigation Measures (Table 8-3)

EPBC Act Final Environmental Impact Assessment of on-airport proposed action (EPBC 2019/8541)			Where addressed in this Plan	
Ref	Table 8-3 Consolidated list of on-airport mitigation measures	Applicable location(s)		
Sustainability, climate change and greenhouse gas – construction				
SUS1	<p>A Sustainability Plan would be developed and implemented during construction of the project. The Sustainability Plan would identify the sustainability, climate change and greenhouse gas objectives, initiatives and targets which would be implemented during further design development and construction of the project. The Sustainability Plan would be developed to be consistent with the <i>Western Sydney Airport Sustainability Plan</i> for on-airport works</p> <p>The Sustainability Plan would also inform the preparation of Sustainability Management Plans for each off-airport construction work package</p>	All		This Plan
SUS2	Protect sensitive construction equipment from the effects of extreme weather, such as direct exposure to the sun on extreme heat days and flooding	All		Section 3.2 Tackle climate change
SUS3	Address climate change impacts in emergency management procedures for the construction of the project, such as consideration of impacts of flash flooding on evacuation procedures	All		Section 3.2 Tackle climate change
GHG1	<p>Carry out an iterative process of greenhouse gas assessments and design refinement prior to construction to identify opportunities to minimise greenhouse gas emissions</p> <p>Performance would be measured in terms of a percentage reduction in greenhouse gas emissions, and assessed against a business as usual project benchmark verified by Infrastructure Sustainability Council of Australia or equivalent independent industry body</p>	All	 	<p>Section 3.2 Tackle climate change</p> <p>And</p> <p>“Reduce the embodied carbon and increase use of recycled materials” in Section 3.3 Manage resources efficiently</p>
Sustainability, climate change and greenhouse gas – operation				
OSUS1	Performance would be measured in terms of a percentage reduction in greenhouse gas emissions, and assessed against a business as usual project benchmark verified by Infrastructure Sustainability Council of Australia or equivalent independent industry body	All		This Plan, which may be further updated closer to operations phase.
OSUS2	Climate change risk treatments would be confirmed and incorporated during further design development	All		Section 3.2 Tackle climate change
OGHG1	Carry out an iterative process of greenhouse gas assessments and design refinement during detailed design to identify opportunities to minimise greenhouse gas emissions	All		Section 3.2 Tackle climate change











EPBC Act Final Environmental Impact Assessment of on-airport proposed action (EPBC 2019/8541)			Where addressed in this Plan	
Ref	Table 8-3 Consolidated list of on-airport mitigation measures	Applicable location(s)		
Resource management – construction				
WR1	Construction waste would be minimised by accurately calculating materials brought to the site and limiting materials packaging	All		Section 3.3 Manage resources efficiently
WR2	Waste streams would be segregated to avoid cross-contamination of materials and maximise reuse and recycling opportunities	All		Section 3.3 Manage resources efficiently
WR3	A materials tracking system would be implemented for material transferred between construction sites	All		Section 3.3 Manage resources efficiently
Resource management – operation				
OWR1	<p>Generation of waste would be minimised and reused where possible in line with the waste hierarchy and the sustainability objectives outlined in a Sustainability Plan. In addition:</p> <ul style="list-style-type: none"> bins would be provided for general waste and recyclables and collection would be undertaken by an authorised contractor for off-site recycling or disposal at a licenced waste facility waste from maintenance activities, including containers holding grease and lubricants, would be stored in designated areas for collection by an authorised contractor for off-site disposal waste oil and oil filters would be stored in recycling bins and collected by an authorised contractor, and recycled off-site, where feasible wastewater, sewage and grey water would be disposed to stormwater, sewer, recycled wastewater system or transported to an appropriately licenced liquid waste treatment facility (if water quality does not meet requirements for discharge to the stormwater/sewer system) 	All		Section 3.3 Manage resources efficiently

Table D.3 Consistency with the Conditions of Approval

Conditions of Approval – Infrastructure approval SSI-10051 (23 July 2021)		Where addressed in this Plan
Ref	Condition or Commitment	
E101	A Sustainability Plan must be prepared to achieve an Infrastructure Sustainability Council of Australia (ISCA) Infrastructure Sustainability rating of +75 (Version 1.2) (or equivalent level of performance using a demonstrated equivalent rating tool) or a 5-Star Green Star rating (or equivalent level of performance using a demonstrated equivalent rating tool).	 <p>Section 3.1 Demonstrate leadership</p>
E101	A Sustainability Plan must be prepared to achieve an Infrastructure Sustainability Council of Australia (ISCA ²) Infrastructure Sustainability rating of +75 (Version 1.2) (or equivalent level of performance using a demonstrated equivalent rating tool) or a 5-Star Green Star rating (or equivalent level of performance using a demonstrated equivalent rating tool).	This Plan
E102	<p>A Water Reuse Strategy must be prepared, which sets out options for the reuse of collected stormwater and groundwater during construction and operation. The Water Reuse Strategy must include, but not be limited to:</p> <ul style="list-style-type: none"> (a) evaluation of reuse options; (b) details of the preferred reuse option(s), including volumes of water to be reused, proposed reuse locations and/or activities, proposed treatment (if required), and any additional licences or approvals that may be required; (c) measures to avoid misuse of recycled water as potable water; (d) consideration of the public health risks from water recycling; and (e) time frame for the implementation of the preferred reuse option(s). <p>The Water Reuse Strategy must be prepared based on best-practice and advice sought from relevant agencies, as required. The Strategy must be applied during construction.</p> <p>Justification must be provided to the Planning Secretary if it is concluded that no reuse options prevail.</p> <p>A copy of the Water Reuse Strategy must be made publicly available.</p> <p>Note: Nothing in this condition prevents the Proponent from preparing separate Water Reuse Strategies for the construction and operational stages of the CSSI.</p>	 <p>Section 3.3 Manage resources efficiently</p>
E122	<p>Waste generated during construction and operation must be dealt with in accordance with the following priorities:</p> <ul style="list-style-type: none"> (a) waste generation must be avoided and where avoidance is not reasonably practicable, waste generation must be reduced; (b) where avoiding or reducing waste is not possible, waste must be reused, recycled, or recovered; and (c) where reusing, recycling or recovering waste is not possible, waste must be treated or disposed of. 	 <p>Section 3.3 Manage resources efficiently</p>

2 The Infrastructure Sustainability Council (ISC) was known as the Infrastructure Sustainability Council of Australia (ISCA) at the time of release of the Conditions of Approval

Table D.4 Table D.4 Consistency with the Revised Mitigation Measures

Revised Mitigation Measures		Applicable location(s)	Where addressed in this Plan
Ref	Mitigation measure		
Sustainability, climate change and greenhouse gas – construction			
SUS1	<p>A Sustainability Plan would be developed and implemented during construction of the project. The Sustainability Plan would identify the sustainability, climate change and greenhouse gas objectives, initiatives and targets which would be implemented during further design development and construction of the project. The Sustainability Plan would be developed to be consistent with the Western Sydney Airport Sustainability Plan for on-airport works</p> <p>The Sustainability Plan would also inform the preparation of Sustainability Management Plans for each off-airport construction work package</p>	All	This Plan
SUS2	Protect sensitive construction equipment from the effects of extreme weather, such as direct exposure to the sun on extreme heat days and flooding		 <p>Section 3.2 Tackle climate change</p>
SUS3	Address climate change impacts in emergency management procedures for the construction of the project, such as consideration of impacts of flash flooding on evacuation procedures	All	 <p>Section 3.2 Tackle climate change</p>
GHG1	<p>Carry out an iterative process of greenhouse gas assessments and design refinement prior to construction to identify opportunities to minimise greenhouse gas emissions</p> <p>Performance would be measured in terms of a percentage reduction in greenhouse gas emissions, and assessed against a business as usual project benchmark verified by Infrastructure Sustainability Council of Australia or equivalent independent industry body</p>	All	 <p>Section 3.2 Tackle climate change</p> <p>And</p>  <p>“Reduce the embodied carbon and increase use of recycled materials” in Section 3.3 Manage resources efficiently</p>
Sustainability, climate change and greenhouse gas – operation			
OSUS1	A Sustainability Plan would be developed and implemented during operation of the project. The Sustainability Plan would identify the sustainability, climate change and greenhouse gas objectives, initiatives and targets which would be implemented during further design development and operation of the project. The Sustainability Plan would be developed to be consistent with the <i>Western Sydney Airport Sustainability Plan</i> for on-airport works	All	This Plan, which may be further updated closer to operations phase.
OSUS2	Climate change risk treatments would be confirmed and incorporated during further design development		 <p>Section 3.2 Tackle climate change</p>
OGHG1	Carry out an iterative process of greenhouse gas assessments and design refinement during detailed design to identify opportunities to minimise greenhouse gas emissions		 <p>Section 3.2 Tackle climate change</p>






















Revised Mitigation Measures			Where addressed in this Plan	
Ref	Mitigation measure	Applicable location(s)		
Resource management – construction				
WR1	Construction waste would be minimised by accurately calculating materials brought to the site and limiting materials packaging	All		Section 3.3 Manage resources efficiently
WR2	Waste streams would be segregated to avoid cross-contamination of materials and maximise reuse and recycling opportunities	All		Section 3.3 Manage resources efficiently
WR3	A materials tracking system would be implemented for material transferred between construction sites	All		Section 3.3 Manage resources efficiently
Resource management – operation				
OWR1	<p>Generation of waste would be minimised and reused where possible in line with the waste hierarchy and the sustainability objectives outlined in a Sustainability Plan. In addition:</p> <ul style="list-style-type: none"> bins would be provided for general waste and recyclables and collection would be undertaken by an authorised contractor for off-site recycling or disposal at a licenced waste facility waste from maintenance activities, including containers holding grease and lubricants, would be stored in designated areas for collection by an authorised contractor for off-site disposal waste oil and oil filters would be stored in recycling bins and collected by an authorised contractor, and recycled off-site, where feasible wastewater, sewage and grey water would be disposed to stormwater, sewer, recycled wastewater system or transported to an appropriately licenced liquid waste treatment facility (if water quality does not meet requirements for discharge to the stormwater/sewer system) 	All		Section 3.3 Manage resources efficiently

Table D.5 Consistency with the relevant Secretary’s Environmental Assessment Requirements (SEARS) desired performance outcomes

Secretary’s Environmental Assessment Requirements (SEARS) desired performance outcomes			Where addressed in this Plan	
SEARS desired performance outcome	Project performance outcome	Phase		
Design, place and movement				
The project contributes to greener places through supporting the enhancement and provision of green infrastructure	The number of trees within the project area is increased at a ratio of 2:1 (for vegetation removal not subject to biodiversity offset); and tree canopy coverage is increased, using a range of local species, subject to the constraints on tree planting associated with safe airport operations	Operation		“Provide and promote green infrastructure” in Table 3.6, Section 3.6 Respect the environment
Transport				
Network connectivity, safety and efficiency of the transport system in the vicinity of the project are managed to minimise impacts	The local community and relevant authorities are informed of transport, access and parking changes/impacts to minimise inconvenience to the public	Construction		Section 3.2 Tackle climate change
The safety of transport system customers is maintained	Transport interchange facilities provided at station precincts are designed in accordance with the modal access hierarchy	Operation		Section 3.2 Tackle climate change
Impacts on network capacity and the level of service are effectively managed				
Noise and vibration				
Construction noise and vibration (including airborne noise, ground-borne noise and blasting) is effectively managed to minimise adverse impacts on acoustic amenity	Construction noise and vibration impacts on local communities (including airborne noise and ground-borne noise and vibration) are managed in accordance with the Construction Noise and Vibration Standard, the <i>Interim Construction Noise Guideline</i> , and the Airports (Environment Protection) Regulations 1997	Construction		“Minimise environmental impact” in Table 3.6, Section 3.6 Respect the environment
Construction noise and vibration (including airborne noise, ground-borne noise and blasting) are effectively managed to minimise adverse impacts on the structural integrity of buildings and items including Aboriginal places and environmental heritage				

Secretary's Environmental Assessment Requirements (SEARS) desired performance outcomes			Where addressed in this Plan	
SEARS desired performance outcome	Project performance outcome	Phase		
Increases in noise emissions and vibration affecting nearby properties and other sensitive receivers during operation of the project are effectively managed to protect the amenity and wellbeing of the community	Operational noise and vibration levels from rail operations are managed in accordance with the Rail Infrastructure Noise Guidelines and Airports (Environment Protection) Regulations 1997	Operation		"Minimise environmental impact" in Table 3.6, Section 3.6 Respect the environment
	Operational noise levels for the stabling and maintenance facility, stations and other fixed infrastructure are managed in accordance with the <i>Noise Policy for Industry 2017</i>			
Biodiversity				
The project design considers all feasible measures to avoid and minimise impacts on terrestrial and aquatic biodiversity	Minimise or where possible avoid impacts on threatened flora and fauna species, and ecological communities listed under the Biodiversity Conservation Act 2016 (NSW) and <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth)	Construction		"Minimise environmental impact" in Table 3.6, Section 3.6 Respect the environment
	Maintain integrity and functionality of rail corridor fencing to minimise wildlife-train collision while providing opportunities for cross-corridor wildlife movement	Operation		
Non-Aboriginal heritage				
The design, construction and operation of the project facilitates, to the greatest extent possible, the long term protection, conservation and management of the heritage significance of items of environmental heritage	Impacts on non-Aboriginal heritage items and archaeology are minimised or where possible avoided	Construction		"Protect and promote Aboriginal and non-Aboriginal heritage and culture" in Table 3.5, Section 3.5 Value community and customers
	The design of the project incorporates non-Aboriginal heritage interpretation	Operation		

Secretary's Environmental Assessment Requirements (SEARS) desired performance outcomes			Where addressed in this Plan	
SEARS desired performance outcome	Project performance outcome	Phase		
Aboriginal heritage				
The design, construction and operation of the project facilitates, to the greatest extent possible, the long term protection, conservation and management of the heritage significance of items of Aboriginal objects and places	The heritage significance of Aboriginal objects and places are protected, conserved and/or managed in order to ensure the project does not diminish the story and cultural understanding associated with the objects and places of Aboriginal people in New South Wales	Construction		"Protect and promote Aboriginal and non-Aboriginal heritage and culture" in Table 3.5, Section 3.5 Value community and customers
	Impacts on areas of archaeological sensitivity and significance are avoided or minimised, where practical	Construction		
The design, construction and operation of the project avoids or minimises impacts, to the greatest extent possible, on the heritage significance of Aboriginal objects and places	The design of the project incorporates Aboriginal heritage interpretation and Aboriginal cultural design principles in consultation with Aboriginal knowledge holders	Operation		"Protect and promote Aboriginal and non-Aboriginal heritage and culture" in Table 3.5, Section 3.5 Value community and customers
Sustainability, climate change and greenhouse gas				
The project reduces the NSW Government's operating costs and ensures the effective and efficient use of resources	The project achieves a minimum 'Design' and 'As built' rating score of Leading +75, using the Infrastructure Sustainability Council of Australia Infrastructure Sustainability Rating Scheme Version 1.2 or equivalent	Operation		Section 3.1 Demonstrate leadership
	Sustainability initiatives are incorporated into the planning, design and construction of the project	Construction and operation		This Plan, and particularly Section 3.1 Demonstrate leadership
Conservation of natural resources is maximised	100 per cent of the greenhouse gas emissions associated with consumption of electricity during operation are offset	Operation		"Reduce carbon emissions and offset" in Table 3.2, Section 3.2
	25 per cent of the greenhouse gas emissions associated with consumption of electricity during construction are offset	Construction		"Reduce carbon emissions and offset" in Table 3.2, Section 3.2
The project is designed, constructed and operated to be resilient to the future impacts of climate change	The project is designed to withstand known impacts associated with climate change to year 2100	Construction and operation		Section 3.2 Tackle climate change

Secretary's Environmental Assessment Requirements (SEARS) desired performance outcomes			Where addressed in this Plan	
SEARS desired performance outcome	Project performance outcome	Phase		
Resource management				
Conservation of natural resources is maximised	100 per cent of useable spoil is reused in accordance with the spoil reuse hierarchy	Construction		"Spoil management" in Table 3.3, Section 3.3 Manage resources efficiently
	A minimum 95 per cent recycling target is achieved for construction and demolition waste	Construction		"Minimise the use of potable water" in Table 3.3, Section 3.3 Manage resources efficiently
	Products made from recycled content are prioritised	Construction		"Reduce the embodied carbon and increase use of recycled materials" in Table 3.3, Section 3.3 Manage resources efficiently
	The use of potable water for non-potable purposes is avoided if non-potable water is available	Construction and operation		"Minimise the use of potable water" in Table 3.3, Section 3.3 Manage resources efficiently
	The reuse of water is maximised, either on-site or off-site	Construction and operation		"Maximise opportunities for reuse of non-potable water sources" in Table 3.3, Section 3.3 Manage resources efficiently

Appendix E

ISC Design and As-Built Base Case Framework

As discussed in Section 3.1 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, the proposed Project ISC Design and As-Built Base Case Framework will be made available with highlights included in Table E.1 below. This Base Case Framework has been verified by ISC.

Table E.1 ISC Design and As-built Base Case Framework Highlights

Description	Business as Usual assumption
LED lighting	Recent project experience with Sydney Metro and across industry, demonstrates LED lighting is now considered BAU on all new infrastructure and building projects.
Concrete and cement	From recent project experience with Sydney Metro and across industry, a BAU assumption of 25 per cent Supplementary Cementitious Materials 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 use recirculating cooling systems. That is, they recirculate cooling water with some potable water top up.
25 kV AC traction	Given that the new Sydney Metro projects are based upon the use of 25 kV AC traction power, it is considered BAU.
Exclusion of mandatory construction offset	Sydney Metro requires the Delivery Partners offset at least 25 per cent of all scope one and two construction related emissions. Given this is a BAU requirement for Sydney Metro, 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.

