

Chapter 25

Sustainability



25 Sustainability

This chapter describes the overall approach to sustainability through design, construction and operation of the project. A sustainability framework has been prepared for the project (refer to Section 25.2).

The Secretary's environmental assessment requirements as they relate to sustainability, and where in the environmental impact statement these have been addressed, are detailed in Table 25-1.

The proposed environmental management measures relevant to sustainability are discussed in Section 25.4.

Table 25-1 Secretary's environmental assessment requirements - Sustainability

Secretary's requirement	Where addressed in EIS
Sustainability	
1. The Proponent must assess the sustainability of the project in accordance with the <i>Infrastructure Sustainability Council of Australia (ISCA) Infrastructure Sustainability Rating Tool</i> and recommend an appropriate target rating for the project.	The assessment of the sustainability of the project in accordance with the ISCA. Infrastructure Sustainability Rating Tool is discussed in Section 25.2 . The Sustainability Management Plan will detail measures to meet the sustainability objectives and targets.
2. The Proponent must assess the project against the current guidelines including targets and strategies to improve Government efficiency in use of water, energy and transport.	Discussion of the sustainability framework and relevant documents is provided in Section 25.2.1 . The sustainable use of water and energy resources is discussed in Chapter 24 (Resource use and waste management).

25.1 Overview

Sustainable development refers to “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987).

The Infrastructure Sustainability Council of Australia provides a definition specific to sustainable infrastructure development, being that which is “designed, constructed and operated to optimise environmental, social and economic outcomes over the long term” (Infrastructure Sustainability Council of Australia, 2016).

This chapter describes how sustainability principles have been applied to the design, construction and operation of the project including:

- The sustainability framework that has been developed for the project, including the application of the Infrastructure Council of Australia's Infrastructure Sustainability rating scheme to the project
- Legislation and policies relevant to the project
- Application of the principles of ecologically sustainable development to the project.

25.2 Western Harbour Tunnel and Warringah Freeway Upgrade sustainability framework

A sustainability framework has been developed for the project. The sustainability framework has been prepared to ensure that sustainability is embedded in project planning, design, construction and operation. The sustainability framework provides the overarching vision, objectives, targets and implementation approaches for the project.

Figure 25-1 shows the key elements of the sustainability framework. Each element is described in detail in the sections below.

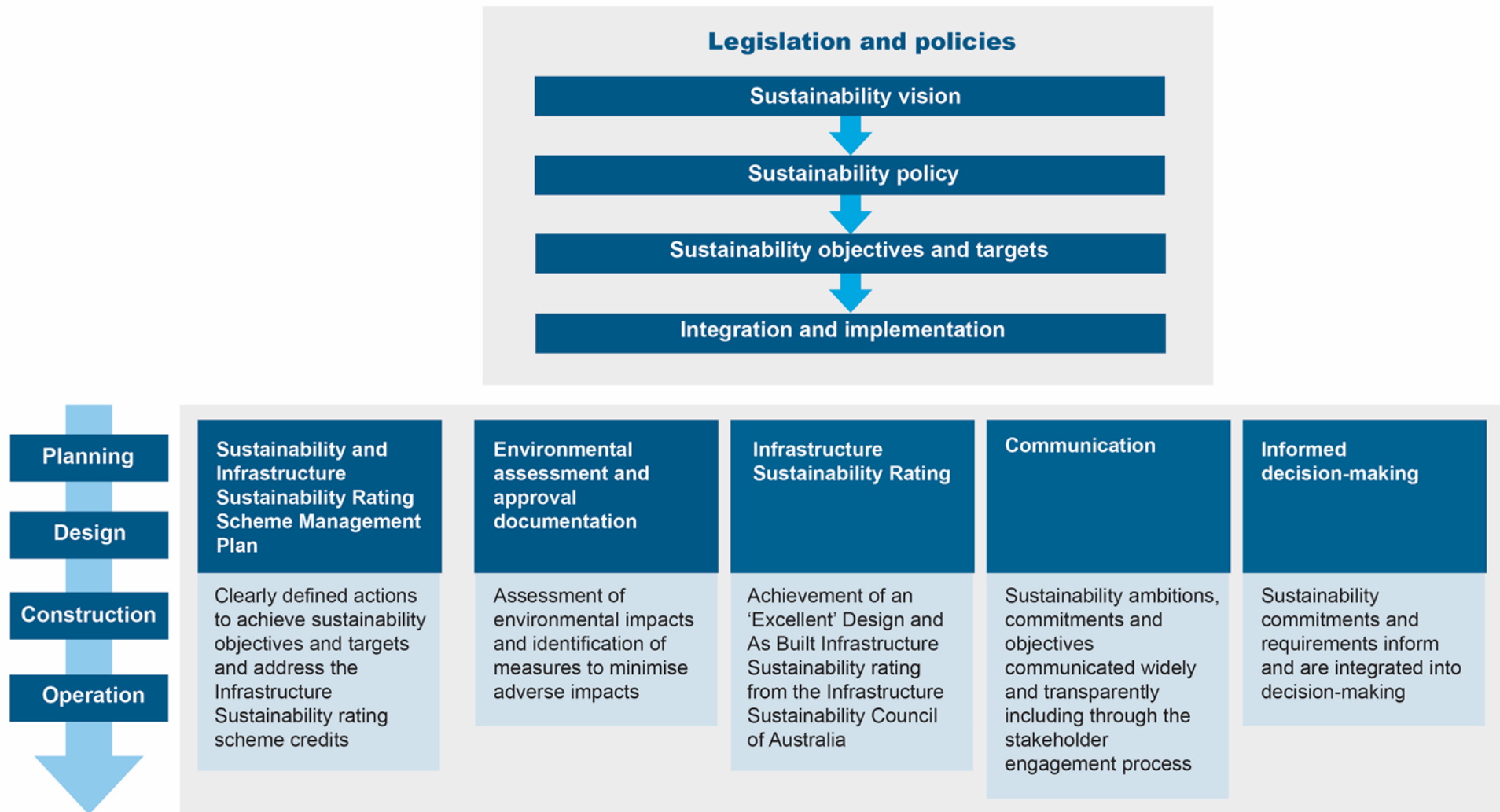


Figure 25-1 Western Harbour Tunnel and Warringah Freeway Upgrade sustainability framework

25.2.1 Legislative and policy framework












































































































The sustainability framework is underpinned by sustainability principles outlined in applicable legislation, policies and guidelines. The NSW Government, Transport for NSW and the Infrastructure Sustainability Council of Australia each set sustainability principles, objectives and targets within their respective policies.

Key legislation, policies and guidelines that have directed the consideration and integration of sustainability in the project design and assessment are summarised in Table 25-2. Other relevant legislation, policies and guidelines that include sustainability outcomes relevant to the project are outlined in Table 25-3. Table 25-3 shows the recurring sustainability themes found in these documents and where specific principles, objectives and targets are set.

Table 25-2 Key legislation, policies and guidelines

Legislation, policy or guideline	Overview
<i>Environmental Planning and Assessment Act 1979</i>	The <i>Environmental Planning and Assessment Act 1979</i> facilitates ecologically sustainable development in NSW by integrating relevant economic, environmental and social considerations in decision making about environmental planning and assessment. As an object of the Act, ecologically sustainable development must be incorporated in the planning of the project (refer to Section 25.3).
<i>Transport Environment and Sustainability Policy Framework and Statement</i> (Transport for NSW, 2015)	The <i>Transport Environment and Sustainability Policy Framework</i> provides a collective and coordinated approach to deliver the NSW Government's environmental and sustainability agenda across the transport network. The framework outlines the commitment of Transport for NSW and key transport agencies to deliver transport projects and services in a manner that balances economic, environmental and social issues.
<i>Environmental Sustainability Strategy 2019-23</i> (Roads and Maritime, 2019)	The <i>Environmental Sustainability Strategy 2019-2023</i> (Roads and Maritime, 2019) aligns with the <i>Transport Environment and Sustainability Policy Framework</i> and outlines specific focus areas for integrating sustainability into Transport for NSW projects and services.
<i>Infrastructure Sustainability Rating Tool v1.2</i> (Infrastructure Council of Australia, 2016a)	The Secretary's environmental assessment requirements for the project require the assessment of the project in accordance with the Infrastructure Sustainability Rating Tool and recommendation of an appropriate target rating. The Infrastructure Sustainability rating scheme was developed by the Infrastructure Sustainability Council of Australia as a comprehensive process for evaluating sustainability across the design, construction and operation of infrastructure.
<i>Sustainable Design Guidelines v4.0</i> (Transport for NSW, 2017)	The Transport for NSW <i>Sustainable Design Guidelines v4.0</i> are aimed at embedding sustainability initiatives across seven key themes into the planning, design, construction, operations and maintenance of infrastructure projects. The Secretary's environmental assessment requirements for the project reference the <i>Sustainable Design Guidelines v4.0</i> as the current guidelines to be considered as part of the preparation of this environmental impact statement.

Table 25-3 Relevant sustainability legislation, policies and guidelines

Sustainability theme	NSW Government legislation, policies and guidelines								Transport for NSW's policies and guidelines				Roads and Maritime's policies and guidelines	Infrastructure Sustainability Council of Australia	
 Principle  Objective  Target	<i>Environmental Planning and Assessment Act 1979</i>	NSW Long Term Transport Master Plan	NSW Sustainable Design Guidelines v4.0	NSW Government Resource Efficiency Policy	NSW Waste avoidance and Resource recovery Strategy	NSW Government Training Management Guidelines	Aboriginal Participation in Consultation Guidelines	Aboriginal Participation in Construction Policy	Transport Social Procurement Policy	Transport Environment and Sustainability Policy Framework	Sydney's Cycling Future, Cycling for everyday transport	Sydney's Walking Future, Connecting people and places	Roads and Maritime Services Sustainability Strategy	Beyond the Pavement	
Management and participation		 	 							 			 	 	 
Energy, carbon and materials	 		 	 						 			 		 
Resources and waste			 												 
Climate change		 	 										 		 
Communities and liveability			  							 	 	  	 	 	 
Water			 							 					 
Pollution and emissions	 		 							 			  		 
Ecology			 												 
Employment and opportunities						  	  	  							

25.2.2 Sustainability vision and policy

The sustainability framework establishes the sustainability vision and policy for the project (refer to Figure 25-2). The sustainability vision and policy set the overall direction for implementing sustainability initiatives during the delivery of the project. The vision and policy reflect and align with State and Transport for NSW strategic sustainability policies (refer to Section 25.2.1). The policy acknowledges the need to deliver services and infrastructure that benefit the community and minimise negative environmental, social and economic impacts while maximising positive outcomes. The vision and policy may continue to be refined as the project progresses.

Vision

The Western Harbour Tunnel and Warringah Freeway Upgrade project is committed to improving quality of life for current and future generations by maximising social, economic and environmental value. The project will achieve excellence in sustainability, and embed sustainability thinking across all stages, moving industry forward by setting the bar higher for both the process and delivery of sustainability.

Policy

The Western Harbour Tunnel and Warringah Freeway Upgrade project is committed to:

- Aligning with, supporting and, wherever feasible, exceeding the ambitions of the Roads and Maritime Services Environmental Sustainability Strategy 2019-23
- Optimising sustainability outcomes, transport service quality, and cost effectiveness
- Being environmentally responsible by avoiding pollution, enhancing the natural environment and maintaining or reducing the project ecological footprint
- Using resources (energy, water and materials) efficiently and reducing waste
- Providing a safe and accessible motorway integrated into the urban environment and transport system
- Raising awareness of environmental issues and sharing sustainability knowledge with the community and broader industry
- Creating desirable places, promoting liveability and cultural heritage, and optimising both community and economic benefit

To deliver these commitments, the Western Harbour Tunnel and Warringah Freeway Upgrade project will:

- Establish robust sustainability objectives and targets
- Ensure balanced consideration of environmental, social and economic costs and benefits during decision making
- Encourage innovation and setting high environmental and sustainability standards
- Establish positive relationships with community and stakeholders to maximise opportunities to add value to local communities
- Develop and maintain an environmental management framework to embed best practice pollution management and sustainable outcomes during construction
- Apply effective assurance processes to monitor performance against the project environment and sustainability objectives and identify appropriate reward or corrective action, as required
- Integrate environment and sustainability-specific processes into the procurement of delivery activities and suppliers
- Hold employees and contractors accountable for proactively meeting their environmental and sustainability responsibilities
- Provide local training, education, apprenticeships and employment opportunities

The project will comply with environmental legislation and regulations, and proactively support initiatives that go beyond compliance requirements. The project will also exhibit leadership in environmental practices and sustainability, supporting innovation, creating beneficial social and environmental impacts, and creating a positive economic legacy.

Figure 25-2 Western Harbour Tunnel and Warringah Freeway Upgrade sustainability vision and policy

25.2.3 Sustainability objectives and targets

To achieve the sustainability vision for the project and to contribute to the desired outcomes of the relevant State and Transport for NSW policies and guidelines (refer to Section 25.2.1) the project would establish robust sustainability objectives and targets. The process being followed to develop the objectives and targets is shown in Figure 25-3.

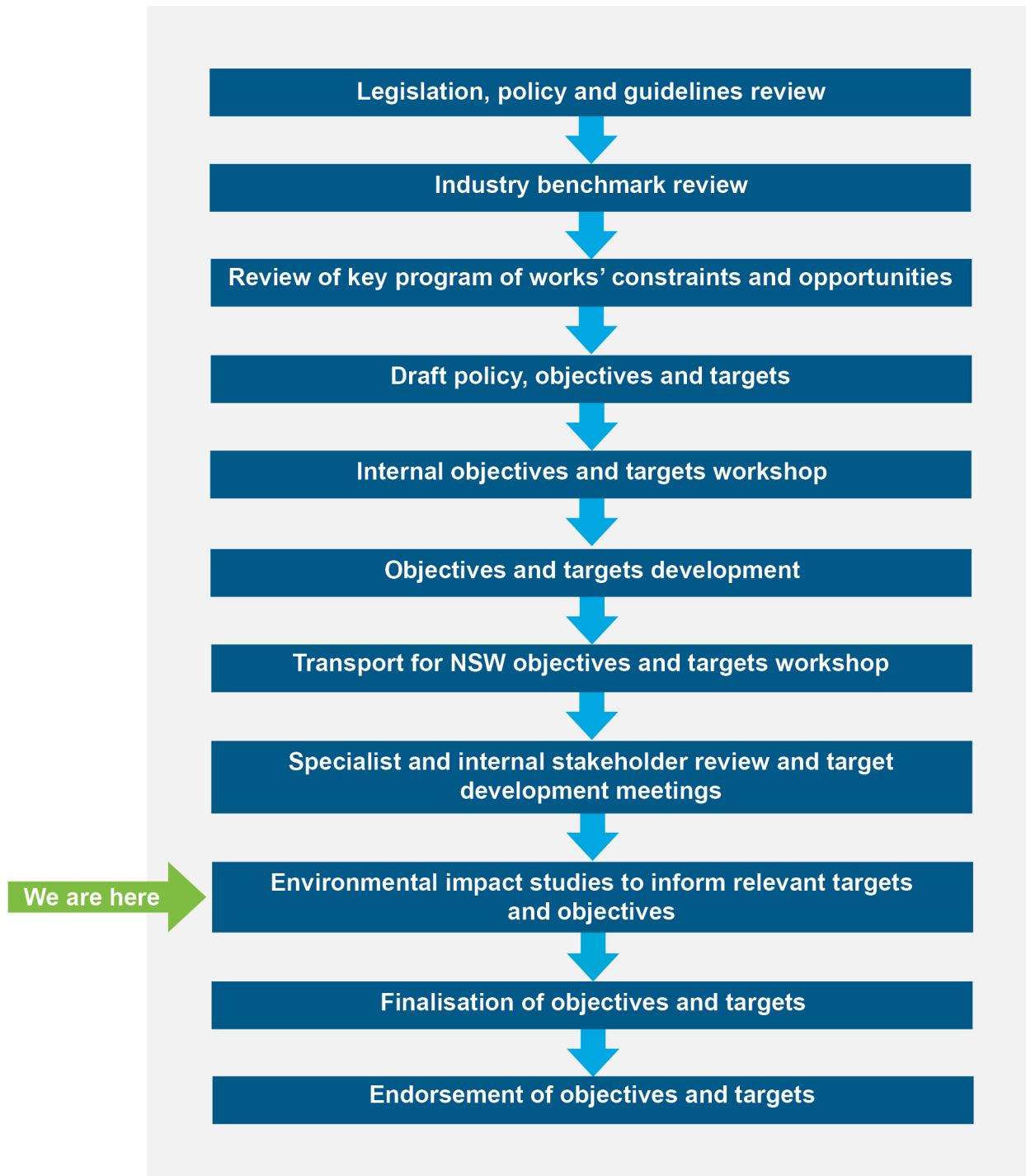


Figure 25-3 Western Harbour Tunnel and Warringah Freeway Upgrade sustainability objectives and targets development process

The outcomes from this environmental impact statement, including any relevant conditions that may be applied to the project by the Minister for Planning and Public Spaces, would be used to finalise the sustainability objectives and targets for the project. Indicative objectives and targets (subject to later refinement to allow for incorporation of any relevant approval conditions) are outlined in Table 25-4.

Table 25-4 Indicative sustainability objectives and target themes

Objective	Target themes
Maximise sustainability knowledge and awareness	<ul style="list-style-type: none"> • Sustainability commitments (including procurement commitments) • Sharing of sustainability outcomes with the community/stakeholders and industry • Sustainability awareness training.
Minimise energy use and greenhouse gas emissions	<ul style="list-style-type: none"> • Operational greenhouse gas emissions • Construction greenhouse gas emissions • Embodied energy within construction materials • Energy efficient lighting.
Optimise resource efficiency and waste management	<ul style="list-style-type: none"> • Resource recovery of virgin excavated natural material • Reuse of topsoil • Diversion of office waste from landfill • Resource recovery of concrete and reclaimed asphalt • Cementitious substitution materials • Recycled content in road base • Recycling of other waste and wastewater • Recycled paper use • Avoidance of single use kitchen items.
Maximise resilience to climate change impacts	<ul style="list-style-type: none"> • Climate change risk mitigation and/or adaptation measures.
Enhance liveability of local communities	<ul style="list-style-type: none"> • Heritage values • Community benefit initiatives • Public open space • Urban design.
Maximise employment and training opportunities for young people, Aboriginal and Torres Strait Islanders, disadvantaged groups, long term unemployed and people who live along the project's alignment	<ul style="list-style-type: none"> • Apprenticeships • Training and development • Workforce participation.
Efficiently manage water	<ul style="list-style-type: none"> • Water use during construction • Water use during operation • Use of non-potable water.
Minimise pollution generated by the project	<ul style="list-style-type: none"> • Air quality • Noise and vibration • Water quality • Reporting and tracking of environmental incidents.

Objective	Target themes
Minimise impacts on biodiversity	<ul style="list-style-type: none"> • Ecological value and biodiversity.
Maximise sustainable procurement	<ul style="list-style-type: none"> • Sustainability and social aspects selection criteria • Labour practices • Procurement of sustainable timber.

25.2.4 Integration and implementation of sustainability framework

The sustainability framework would continue to be developed and refined in future phases of the project's delivery. The key implementation tools and processes that have been, and would continue to be, applied to the delivery of the sustainability framework are shown in Figure 25-1.

Activities to implement the sustainability framework, including requirements from the Infrastructure Sustainability rating scheme, would be implemented through a Sustainability Management Plan. The management plan would detail measures to meet the sustainability objectives and targets and Infrastructure Sustainability rating scheme credit requirements (refer to Section 25.4).

The project would seek to achieve an 'Excellent' Design and 'As Built' Infrastructure Sustainability rating under Version 1.2 of the Infrastructure Sustainability Council of Australia rating scheme.

25.3 Ecologically sustainable development

Facilitating ecologically sustainable development is adopted as an object of the *Environmental Planning and Assessment Act 1979*. This object requires the integration of 'relevant economic, environmental and social considerations in decision making about environmental planning and assessment'.

Ecologically sustainable development is defined under the *Protection of the Environment Administration Act 1991* (NSW) and includes four principles:

- The precautionary principle
- Intergenerational equity
- Conservation of biological diversity and ecological integrity
- Improved valuation and pricing of environmental resources.

The principles of ecologically sustainable development have been an integral part of the design and assessment of the project. This has included the integration of relevant economic, environmental and social considerations in project design and assessment decisions, as summarised in Table 25-5.

Table 25-5 Application of the principles of ecologically sustainable development to the project

Principle	Application to the project
<p>Precautionary principle</p> <p>If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.</p>	<p>Applied during the design and development of the project:</p> <ul style="list-style-type: none"> • Potential environmental impacts associated with the project considered in the alternatives and options analysis • Opportunities identified to avoid and minimise surface disturbance • Sustainability workshops and meetings held during design development with planning and design teams to develop draft sustainability targets and objectives for the project. <p>Applied during the preparation of this environmental impact statement:</p> <ul style="list-style-type: none"> • Prepared with a conservative approach, including assessment of worst case impacts and scenarios • Carried out using the best available technical information and has adopted best practice environmental standards, goals and measures • Potential environmental risks associated with the project identified and considered, with safeguards and management measures developed to manage and reduce identified risks • Sustainability workshops and meetings held during the development of the environmental impact statement with planning and design teams to inform relevant sustainability targets and objectives for the project.
<p>Intergenerational equity</p> <p>The present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.</p>	<ul style="list-style-type: none"> • Project designed to meet with needs of both current and future generations with a design life of about 100 years • Support for Sydney's long term economic growth through improved motorway access and connections across Sydney's Global Economic Corridor, particularly the strategic centres of Sydney CBD and North Sydney • Contribution to improving the capacity, functionality and safety of Sydney's transport network for motorists, buses and freight • Contribution to the increased resilience of the Sydney transport network through the provision of an additional harbour crossing west of the CBD • Reduction of operational greenhouse gas emissions on Sydney's road network when compared to the project not being built • The project's resilience to future climate change is considered in Chapter 26 (Climate change risk and adaptation), which identifies potential climate change risks to the project, and adaptation measures incorporated into the design or options for further consideration during further design development • Management measures for potential environmental impacts have been provided throughout this

Principle	Application to the project
	<p>environmental impact statement to protect the future health, diversity and productivity of the environment</p> <ul style="list-style-type: none"> • During construction and operation of the project, opportunities would be taken to reduce material use and maximise the use of materials with low embodied environmental impact, where feasible • The mainline tunnel ventilation system has been designed for coordinated operation with adjacent and connecting tunnel projects, including the M4-M5 Link and the Beaches Link and Gore Hill Freeway Connection project. The tunnel ventilation would meet the in-tunnel air quality criteria and would be operated in accordance with licensing requirements.
<p>Conservation of biological diversity and ecological integrity</p> <p>Conservation of biological diversity and ecological integrity should be a fundamental consideration of the project.</p>	<ul style="list-style-type: none"> • Project designed and assessed with the aim of identifying, avoiding, minimising and mitigating impacts • Residual impacts to native plant community types would be offset • Detailed terrestrial and marine biodiversity assessments provided, which identify potential impacts on biodiversity and provide a range of mitigation measures to further avoid and minimise potential impacts • About seven hectares of vegetation would be removed however no vegetation consistent with any plant community types or threatened ecological communities would be impacted • Impacts to marine habitats would not be significant and would recover quickly through natural processes • Identified impacts to potential foraging and sheltering habitat for Grey-headed Flying-fox, Eastern Bent-wing Bats, threatened microbats and threatened marine species would not be significant.
<p>Improved valuation and pricing of environmental resources</p> <p>Environmental factors should be included in the valuation of assets and services.</p>	<p>Value placed on avoiding and minimising environmental impacts demonstrated by:</p> <ul style="list-style-type: none"> • The opportunities identified in the design development to improve local amenity, improve public transport access and active transport connections, and create additional green spaces • The opportunities identified to avoid and minimise environmental impacts in the project development and alternatives analysis • The extent of environmental investigations carried out to inform this environmental impact statement • The measures developed to further avoid and minimise potential impacts of the project in this environmental impact statement • The inclusion of costs associated with planning, design and implementation of avoidance and mitigation measures in the overall project costs.

25.4 Environmental management measures

Environmental management measures relating to sustainability are outlined in Table 25-6.

Table 25-6 Environmental management measures – Sustainability

Ref	Phase	Impact	Environmental management measure	Location
SU1	Design	Project sustainability outcomes	Project sustainability objectives and targets will be finalised during further design development, informed by the requirements of the project planning approval.	WHT/WFU
SU2	Construction	Project sustainability outcomes	Activities to implement the sustainability framework, including requirements from the Infrastructure Sustainability rating scheme, will be implemented through a Sustainability Management Plan. The management plan will detail measures to meet the sustainability objectives and targets as well as achieving 'Design' and 'As Built' ratings of Excellent under the Infrastructure Sustainability Council of Australia rating scheme.	WHT/WFU

WHT = Western Harbour Tunnel, WFU = Warringah Freeway Upgrade

