SYDNEY GATEWAY

A Joint Venture Project

JOHN HOLLAND SEYMOUR WHYTE

Sydney Gateway Stages 1 & 3

Sustainability Management Plan

Document Number: JHSW-ENV-PLN-SUST

Revision No.: E

Issue Date: 16/04/2021

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Appendices

Document Control Record

Project:	Sydney Gateway Stages 1 & 3
Document Title:	Sustainability Management Plan
Document Number:	SGWPW-JHSW-NWW-PM-PLN-051221
Current Revision:	E

JHSW Review Process

Rev	Date	Prepared by	Reviewed by	Approved by
Rev A	2020.12.10	Thiru Jallendran	Matt Dimarco	Ivan Karaban
Rev B	2020.12.22	Thiru Jallendran	Matt Dimarco	Ivan Karaban
Rev C	2021.02.17	Thiru Jallendran	Matt Dimarco	Ivan Karaban
Rev D	2021.03.16	Thiru Jallendran	Matt DiMarco	Ivan Karaban
Rev E	2021.04.16	Thiru Jallendran	Matt DiMarco	Ivan Karaban
				

Definitions & Abbreviations

Definitions and abbreviations to be applied to this Sustainability Management Plan are listed in Table 1.

TABLE 1: TERMS AND DEFINITIONS

Term/Abbreviation	Definition
ABC	**Airport Building Controller**
AEO	**Airport Environment Officer**
AUDP	Australian Urban Design Protocol
BaU	Business as Usual
CCMP	Collaborative Contracting Management Plan
CCRA	Climate Change Risk Assessment
CERT	Carbon Estimate Reporting Tool
CMP	Contract Management Plan
CPTED	Crime Prevention Through Environmental Design
CSF	Credit Summary Forms
DMP	Design Management Plan
EPD	Environmental Product Declaration
GHG	Greenhouse Gas
GREP	Government Resource Efficiency Policy
IS	Infrastructure Sustainability
ISAP	Infrastructure Sustainability Accredited Professional
ISCA	Infrastructure Sustainability Council of Australia
ISP	Independent Sustainability Professional
IWG	Innovation Working Group
LV	Low voltage
MCA	Multi-criteria analysis
PPW	Project Pack Web
SDGs	United Nations Sustainable Development Goals
SMP	Sustainability Management Plan
SQP	Suitably Qualified Professional
SWTC	Scope of Works and Technical Criteria
TfNSW	Transport for NSW (Includes the former Roads and Maritime)
UN	United Nations

1. Introduction

This Sustainability Management Plan (SMP) specifies the management approach the Sydney Gateway Stages 1 & 3 (SG) Project will adopt to meet and exceed its sustainability requirements.

1.1. Purpose

The purpose of this SMP is to provide the John Holland Seymour Whyte Joint Venture (JHSWJV) team with a structured approach to:

- Successfully implementing sustainability initiatives.
- Achieving the IS rating of "Excellent" (in accordance with Version 1.2 of ISCA Technical Manual) for the design and as-built phases.
- Optimising the environmental, social and economic (the triple bottom line) performance of the asset over its life.

Consistent with the Project's Sustainability Policy (Appendix A), the intended outcomes of the SMP with regards to sustainability include:

- Fulfilment of compliance obligations.
- Achievement of sustainability objectives.
- Minimising impacts to the environment through design, construction and maintenance.
- Reinforcing inherent sustainability benefits.
- Driving sustainability through recognised rating tools.
- Maximising renewables and greenhouse gas reduction.
- Advocating for sustainable communities.
- Reporting on Project performance against targets.

The SMP will guide the SG Project team to manage sustainability in a systematic manner and is applicable to the Sydney Gateway Program.

1.2. Compliance

JHSWJV have determined its compliance obligations related to sustainability, how these obligations apply, and taken these compliance obligations into account when establishing this SMP. The key Project sustainability compliance obligations are derived from JHSWJV systems and from the following documents:

- Sydney Gateway Stage 1 Scope of Works and Technical Criteria – Appendix D.5 Sustainability Requirement.
- Sydney Gateway Stage 3 Scope of Works and Technical Criteria – Appendix D.5 Sustainability Requirement.
- Sydney Gateway Stage 1 Scope of Works and Technical Criteria – Appendix C.1 Project Plan Requirements.
- Sydney Gateway Stage 3 Scope of Works and Technical Criteria – Appendix C.1 Project Plan Requirements.
- IS Technical Manual version 1.2.
- The combined Environmental Impact Statement (EIS) / Major Development Plan (MDP) prepared for the Sydney Gateway Project – Stages 1 & 3.

- Conditions of Approval for SSI 9737 issued by the Minister for Planning and Public Spaces (NSW), on 27 August 2020.
- Updated/Revised Environmental Management Measures (REMM's) detailed in the Response to Submissions Report.

Tables 2 and 3 below detail how the above compliance obligations are addressed in this SMP . Note, further compliance obligations will be identified as the Project progresses. In some instances, 'derived' obligations will be generated by fulfilling the initial compliance obligations. For example, the completion of a Climate Change Risk Assessment (CCRA) as required by the Clause 2.3 (a) of the Stage 1 & 3 SWTC Appendix D.5, may identify further obligations in relation to high-risk items.

As detailed further in section 3.1, the Project will also plan to achieve an Excellent IS Rating (>60 points). To achieve this outcome, compliance with the IS Technical Manual version 1.2 will be required. A consolidated list of compliance obligations including combining both the SWTC requirements as well as IS Technical Manual version 1.2 is provided within **Appendix C SG Sustainability Requirements Register**. Compliance obligations have then been integrated within the applicable management plans as listed in Section 1.3

TABLE 2: COMPLIANCE WITH THE CONDITIONS OF APPROVAL AND REMMS

Minister's Conditions of Approval – Part E Key Issue Conditions		
E50	A Sustainability Strategy must be prepared to achieve a minimum excellent 'Design' and 'As built' rating under the Infrastructure Sustainability Council of Australia infrastructure rating tool.	This Plan
E51	The Sustainability Strategy must be submitted to the Planning Secretary for information one: (1) month before the commencement of construction and must be implemented throughout construction and operation.	This Plan
Updated/ Revised Environmental Mitigation Measures		
Su1	A sustainability management plan will be developed to ensure that sustainability considerations are implemented during the detailed design, construction and operation phases of the Project. The plan will include Project-specific sustainability initiatives and implementation protocols to support achievement of the Project's target excellent 'Design' and 'As Built' rating under the Infrastructure Sustainability rating tool (v1.2) and to ensure ongoing consistency with the Environmental Sustainability Strategy 2019–2023 (Roads and Maritime, 2019b).	This Plan
	Prior to the commencement of operation, the sustainability management plan and sustainability initiatives will be reviewed and updated.	This Plan
CC1	A detailed climate change risk assessment, considering both direct and indirect risks, will be undertaken during detailed design in accordance with AS 5334-2013 Climate change adaptation for settlements and infrastructure – A risk based approach and the draft Technical Guide: Climate Change Adaptation for the State Road Network (Roads and Maritime, 2015c). Adaptation measures will be confirmed and actions implemented to address extreme and high risks where reasonable and feasible. Adaptation measures for medium risks will be considered and implemented where reasonable and feasible. Progress against implementation of confirmed adaptation measures and actions will be tracked. The assessment will include further modelling to optimise the design and reduce the impacts of climate change scenarios.	Section 6.3

Minister's Conditions of Approval – Part E Key Issue Conditions		
CC2	The flood mitigation strategy (measure HF1) will include consideration of future climate change related flood risks, the potential impacts of future climate change on flooding, and adaptive measures for implementation.	Appendix C and Design Management Plan
CC3	The urban design and landscape plan for the Project will include consideration of appropriate landscape designs and species to reduce the impacts of urban heat island effect. Other measures to mitigate the impacts of the urban heat island effect will be investigated during detailed design and included in the urban design and landscape plan. Measures will include using light coloured pavements and shading structures for public spaces.	UDLP
CC4	Operational procedures for emergency planning and management will be prepared to consider the increased risk of flooding and storm surges on the road and active transport link.	Appendix C and Design Management Plan
GHG1	The sustainability management plan (measure SU1) will include measures and targets to reduce greenhouse gas emissions during construction and operation. The plan will include targets to reduce the Project's carbon footprint during construction and operation, considering scope 1, scope 2 and scope 3 emissions.	Section 4
GHG2	The final design will incorporate LED lighting in preference to fluorescent fittings or high-pressure sodium lights where fit for purpose, feasible and cost-effective.	Design Management Plan
GHG3	The surface road network will be designed for long term performance and durability of materials, increasing asset design lives and reducing the frequency of maintenance activities.	Design Management Plan
GHG4	An appropriate portion of construction phase energy will be purchased from an accredited GreenPower provider.	Section 4
GHG5	A minimum of six per cent of operational phase energy will be purchased from an accredited GreenPower product.	Section 4

TABLE 3: SCOPE OF WORKS AND TECHNICAL CRITERIA SUSTAINABILITY PLAN REQUIREMENTS

Requirement		Plan Reference
SWTC Appendix C.1 Project Plan Requirements		
16(a)	The Sustainability Plan must identify how the Contractor will comply with the sustainability requirements of the D&C Deed, the SWTC, and the Environmental Documents.	Section 1.2 Appendix C
(b)	The Sustainability Plan must contain, as a minimum:	
(i)	the contents specified for the Sustainability Plan in the SWTC, including this Appendix C.1 and Appendix D.5	Whole document
(ii)	demonstrate how sustainability commitments and overarching sustainability objectives and targets will be achieved;	Section 6.1
(iii)	detail the sustainability management team structure, including key personnel, authority and roles of key personnel, lines of responsibility and communication, minimum skill levels of each role and interfaces with the overall Project organisation structure;	Section 5.2.2.
(iv)	include a sustainability policy statement and associated strategies for adaptation to climate change, resource management, workforce development and biodiversity enhancement;	Section 5.1 Appendix A
(v)	provide a description of the overall approach to the identification and assessment of sustainability opportunities;	Section 7.2; Appendix B
(vi)	detail the sustainability initiatives to be implemented during the performance of the Contractor's Activities and milestones for key sustainability initiatives;	Section 7.2 Appendix B
(vii)	detail the processes and methodologies for tracking and assigning responsibility for the identification and whole-of-life assessment of potential sustainability initiatives;	Section 6.1. Section 9.
(viii)	detail the processes and methodologies for embedding sustainability initiatives into design, procurement and construction processes;	Section 5.2
(ix)	detail the processes and methodologies for assurance, monitoring auditing, corrective action and reporting on sustainability performance (including performance against sustainability targets);	Section 9.
(x)	provide a description of the overall approach to the identification of opportunities to reduce carbon emissions, energy use and embodied lifecycle impacts during the Contractor's Activities;	Section 7.2 Appendix B
(xi)	demonstrate how the Contractor will achieve the minimum 'As Built' Infrastructure Sustainability (IS) rating level required by Appendix D.5, for the design and construction of the Project Works and Temporary Works (including proposed contingency measures to ensure that a rating level of 'Excellent' is achieved).	Section 4.2
(xii)	detail the approach to sustainable procurement including: A. the processes and procedures that will be used to enhance the whole-of-life environmental, social and economic sustainability outcomes of the Project through the supply chain (including subcontractors); B. the processes and evaluation criteria (specifying the environmental, social and economic criteria and weightings) that will be used for the selection of subcontractors; and C. the processes and procedures for assurance, monitoring, auditing, corrective action and reporting on sustainability performance of subcontractors	Section 5.

Requirement		Plan Reference
(xiii)	provide an outline of the systems that will be used to support sustainability management;	Whole document
(xiv)	detail the interfaces with other Project plans	Section 1.2
(c)	The Sustainability Plan must describe how the Contractor will achieve the Sustainability Objectives listed within Appendix D.5.	Section 4.2 Section 6.1
(d)	The Contractor must prepare an ISCA IS Rating Management Plan, included as a sub-plan of the Sustainability Plan, that guides the achievement of the IS Design and IS As-Built Rating scores identified in Table D.5-2 in Appendix D.5. The sub-plan must detail implementation protocols including:	Section 3.2.
(i)	ISCA IS assessment and registration process and timeframes;	Section 6.9
(ii)	proposed consultation and engagement with ISCA and other stakeholders;	Section 5.2.2.
(iii)	the IS rating process and requirements for the provision of documentation to ISCA;	Section 3.2.
(iv)	key sustainability management roles and responsibilities;	Section 5.2.2.
(v)	the Contractor's nominated sustainability requirements which must be equal to or greater than the minimum requirements, if stated, listed in Table D.5-2 in Appendix D.5; and	Section 4.2.
(vi)	how the Contractor will achieve the nominated sustainability requirements.	Whole document
(e)	The Contractor must develop and implement an Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan, included as a sub-plan of the Sustainability Plan, which identifies processes and methods to: (i) improve energy efficiency; and (ii) reduce greenhouse gas emissions for the construction and operational stages.	Appendix F
(f)	Further to the requirements of the D&C Deed and this Appendix, the Contractor must undertake the ongoing development, amendment and updating of the Sustainability Plan throughout the duration of the Contractor's Activities to incorporate: (i) new elements of the Project Works and Temporary Works not covered by the existing Sustainability Plan (ii) changes in construction sequencing or methodology; and (iii) lessons learnt, improvements/enhancements in accordance with continual improvement.	Section 9.3.3.

1.3. Management System Integration

The SMP will form one part of an integrated management system that will be deployed by the Project. This integrated management system will be described in a series of management plans, where applicable relevant sustainability content will also be included. These plans include:

- Air Quality Management Plan (SGWPW-JHSW-NWW-PM-PLN-00051009)
- Communication Strategy
- Construction Environmental Management Plan (CEMP) (SGWPW-JHSW-NWW-PM-PLN-000508)
- Construction Management Plan
- Construction Noise and Vibration Management Plan (SGWPW-JHSW-NWW-PM-PLN-000516)
- Construction Soil and Water Management Plan (SGWPW-JHSW-NWW-PM-PLN-000515)
- Design Management Plan
- Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan
- Flora and Fauna Management Plan (SGWPW-JHSW-NWW-PM-PLN-000514)
- Aboriginal Heritage Management Plan (SGWPW-JHSW-NWW-PM-PLN-000513)
- Non- Aboriginal Heritage Management Plan (SGWPW-JHSW-NWW-PM-PLN-000517)
- Project Management Plan (SGWPW-JHSW-NWW-PM-PLN-000100)
- Workplace Safety Management Plan (SGWPW-JHSW-NWW-PM-PLN-000700)
- Risk Management Plan (SGWPW-JHSW-NWW-PM-PLN-000300)
- Site Establishment Management Plan (SGWPW-JHSW-NWW-PM-PLN-000511)
- Urban Design and Landscape Plan (SGWPW-JHSW-NWW-PM-PLN-000300)
- Waste and Resource Management Plan (SGWPW-JHSW-NWW-PM-PLN-000510)

2. Context

2.1. Need for the Project

Sydney Gateway is a critical element of the NSW Government's long-term strategy to invest in an integrated transport network and make journeys easier, safer and faster. By 2036, the Project would provide capacity for an additional 60,000 vehicles per day.

2.2. Understanding the Project's context

2.2.1. Background

Transport for NSW (TfNSW) have gained approval to deliver a high capacity road connection linking the Sydney motorway network at St Peters interchange with Sydney Airport's domestic and international terminals and the Port Botany Precinct. The Project is located on both State and Commonwealth land.

For areas on State land, the Project was declared to be critical State significant infrastructure (CSSI) under the Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act) and was approved by the NSW Minister for Planning and Public Spaces on 27 August 2020.

Commonwealth approval under the Airports Act 1996 (the Airports Act) was granted by the Australian Minister for Infrastructure, Transport and Regional Development on 23 September 2020.

John Holland Seymour White Joint Venture (JHSWJV) have been contracted by Transport for New South Wales (TfNSW) for the Design and Construction of Sydney Gateway Stage 1 & Stage 3 (the Project).

2.2.2. Project Objectives

The primary objective of Sydney Gateway is to support sustainable growth in the economy and cater for projected increases in passengers and freight demand. This will be achieved by improving connectivity between the regional growth and freight distribution centres in western Sydney and the Sydney Airport and Port Botany area. The objectives of the Sydney Gateway road project are to:

- Improve connectivity to Sydney Airport terminals by providing high capacity direct road connections that cater for forecast growth in passenger and air freight volumes.
- Support the efficient distribution of freight to and from Sydney Airport and Port Botany to logistic centres in Western Sydney.
- Improve the liveability of Mascot town centre by reducing congestion and heavy vehicle movements on the local road network.

2.2.3. Detailed Description

The Project is located about eight kilometres south of the Sydney Central Business District, in the suburbs of Tempe, St Peters and Mascot. It sits within the boundaries of the Inner West, City of Sydney and Bayside local government areas.

The key features of the Project are illustrated in **Figure 1**, which include:

- Road links to provide access between the Sydney motorway network and Sydney Airport's terminals, consisting of the following components:
    - St Peters interchange connection – a new elevated section of road extending from St Peters interchange to the Botany Rail Line, including an overpass over Canal Road.

  - Terminal 1 connection – a new section of road connecting Terminal 1 with the St Peters interchange connection, including a bridge over Alexandra Canal and an overpass over the Botany Rail Line.
  - Qantas Drive upgrade and extension – widening and upgrading Qantas Drive to connect Terminals 2/3 with the St Peters interchange connection, including a high-level bridge over Alexandra Canal.
- Terminal links – two new sections of road connecting Terminal 1 and Terminals 2/3, including a bridge over Alexandra Canal.
- Terminals 2/3 access – a new elevated viaduct and overpass connecting Terminals 2/3 with the upgraded Qantas Drive.
- Road links to provide access to Sydney Airport land:
  - A new section of road and an overpass connecting Sydney Airport's northern lands on either side of the Botany Rail line (the northern lands access)
  - A new section of road, including a signalised intersection with the Terminal 1 connection and a bridge, connecting Sydney Airport's existing and proposed freight facilities on either side of Alexandra Canal (the freight terminal access)
- An active transport link, about 3 kilometres long and located along the western side of Alexandra Canal and section along Qantas Drive, to maintain connections between Sydney Airport, Mascot and the Sydney central business district.
- Intersection upgrades and/or modifications.
- Construction of operational ancillary infrastructure including maintenance bays, new and upgraded drainage infrastructure, signage and lighting, retaining walls, noise barriers, flood mitigation basin, emplacement mounds, utility works and landscaping.

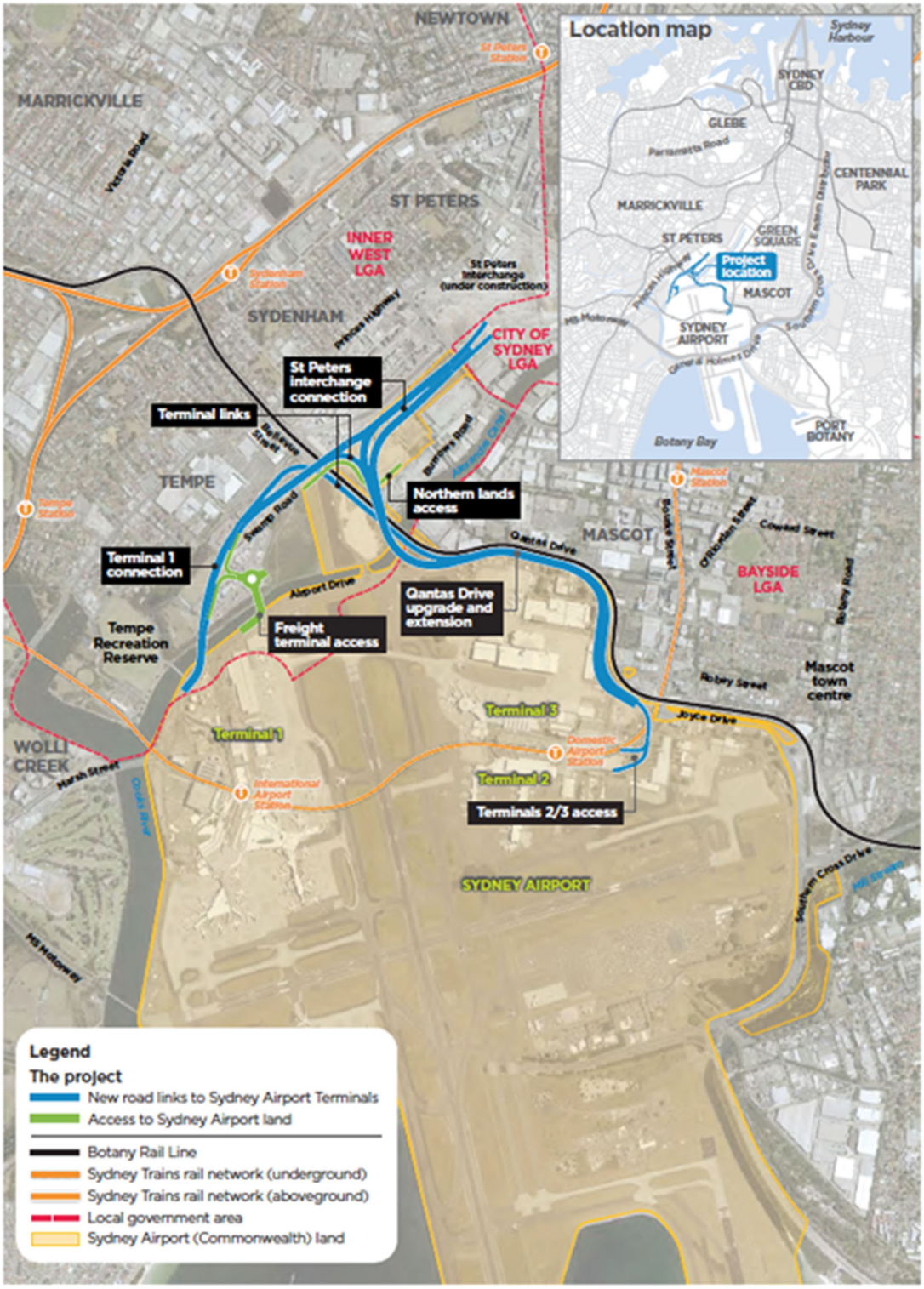


Figure 1-1 Project overview

FIGURE 1: PROJECT OVERVIEW

JHSWJV have assessed critical sustainability milestones for the Project. These have been identified below:

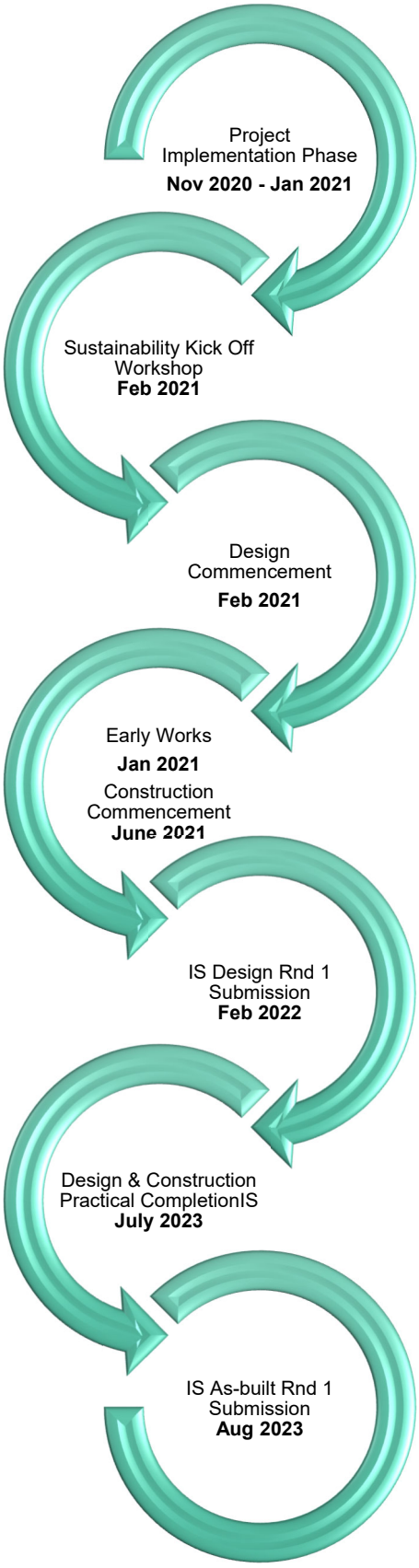


FIGURE 2: PROJECT SUSTAINABILITY MILESTONES

3. Strategy

JHSWJV has determined external and internal stakeholders (please see **Section 5.2.2** Roles and Responsibilities for a list of Key Stakeholders of the Project) that are relevant to its purpose and that influence its ability to achieve its intended sustainability outcomes. Key cultural, social, political, legal, regulatory, financial, technological, economic, natural and competitive circumstances are detailed below:

- The client is TfNSW, a state government agency whose role is to lead the development of a safe, efficient, integrated transport system in NSW. Their culture and values include:
  - Customer focus – placing the customer at the centre of everything they do
  - Collaboration – valuing each other and creating better outcomes by working together
  - Integrity – taking responsibility and communicating openly
  - Safety – prioritising safety for their people and customers
  - Solutions – delivering sustainable and innovative solutions to meet NSW's transport needs.

- TfNSW's sustainability ambition has been understood, as discussed within:
  - Transport Environment and Sustainability Policy 13 Jan 2020 (Included in Appendix A of this SMP)

- The landowners/leaseholders that the Project will engage with in the delivery of the Project are Sydney Airport, Australian Rail Track Corporation, WestConnex Trustees.

JHSWJV is committed to incorporating participant John Holland's Sustainability Framework (**Figure 3**) into the Sydney Gateway Project, while keeping focus of TfNSW's Transport Environment and Sustainability Policy. The Framework is designed to leverage our people and diverse expertise by encouraging a thoughtful, collaborative, interconnected approach to decision making, centering around building *resilience*. Each component of the framework is interconnected – each of the *4 pillars* and their *12 elements* define our inclusive and thoughtful approach to decision-making that we see as a 'whole of business' challenge – that is one we are all working towards together.

WHY RESILIENCE?

Delivering the Sydney Gateway Project using a sustainability approach enables JHSWJV to work with TfNSW to build resilience in the Sydney Network, for TfNSW and its customers, and for JHSWJV's people and supply chain. TfNSW's assets and their value chains need to be resilient to the larger social-technical-ecological system, so they know they have assets which best serve their community for the long-term.

FIGURE 3: PARTICIPANT JOHN HOLLAND'S SUSTAINABILITY FRAMEWORK

3.1. Infrastructure Sustainability Council of Australia (ISCA) rating

ISCA is a not-for-profit industry council with the mission to 'improve the productivity and liveability of industry and communities through sustainability in infrastructure'. ISCA has developed an Infrastructure Sustainability (IS) rating scheme which provides a consistent evaluation of sustainability across the design, construction and operation of infrastructure.

To achieve an IS rating, the infrastructure project or asset is assessed based on a variety of Sustainability themes including:

- Management and Governance.
- Using Resources.
- Emissions.
- Pollution and Waste.
- Ecology.
- People and Place.
- Innovation.

Within each theme are multiple categories in which credits may be achieved based on how successfully the infrastructure supports or achieves sustainable guidelines. Credits then contribute to an overall score or rating out of 100 which places the infrastructure into either Commended (25 to <50), Excellent (50 to <75) or Leading (75 to 100) rating levels.

TfNSW requires the Project to use the IS Rating tool Version 1.2 to achieve IS Design and As-built ratings for the design and as-built stages of the Project Works and Temporary Works

3.2. Sustainability rating tool

The SWTC (App D5) has mandated an IS Design & As-built Rating score of 60 (Excellent). The Project has nominated a minimum IS Design and IS As-Built Rating score of 65 (Excellent) as indicated in **Table 7**, with a stretch target of 75 (Leading). This SMP provides the framework through which JHSW will meet its ISCA targets. The SMP illustrates the extent to which Project plans integrate sustainability into governance, design, procurement, construction and other functional areas to optimise value for money outcomes over the Project's lifecycle. There are four main stages in the IS rating process as outlined below.

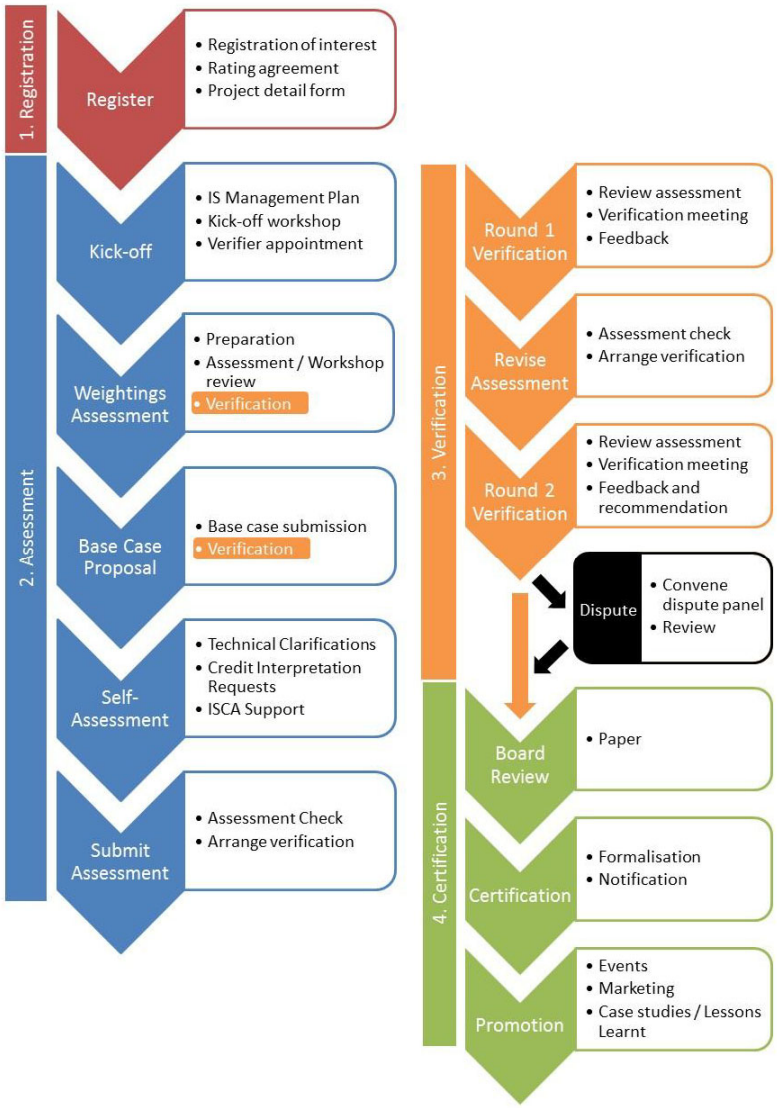


FIGURE 4: THE IS RATING PROCESS

3.2.1. Kick off workshop

Once the Project is registered for the IS rating with ISCA, the Project will liaise with the ISCA Project Manager to confirm timing and agenda of a kick-off workshop. The kick off workshop provides the opportunity for ISCA and the project/asset management team to sit down, engage with each other and discuss the Project rating as a whole. A good cross section of the Project team shall be represented at the workshop to promote internal buy-in and ownership of the IS rating targets and infrastructure sustainability more generally.

Senior Project leadership shall be participating in the kick off workshop and as a minimum will comprise of the following Project personnel and stakeholders:

- Project Director.
- Sustainability Manager.
- Design Managers.
- Environmental Manager.
- Procurement Manager.
- Commercial Manager.
- Planning Manager.
- Construction Manager.
- HR Manager.
- Training Manager.
- Safety Manager.
- Quality Manager.
- Interface Manager.
- TfNSW Representatives.
- ISCA Chief Executive Officer (if available).
- IS Project Manager.
- Area Managers.
- Community and Stakeholder Manager.
- Senior Engineers.

Key agenda items for this workshop may include:

- A presentation by ISCA staff of an overview of the IS ratings scheme, trends and traction, and the IS rating process.
- A presentation by the Sustainability Manager to describe some of the drivers for pursuing a rating, how the IS rating aligns with other key sustainability targets/contract requirements, how the IS rating is going to be delivered and managed within the Project/asset team.
- Discussion of the Project scope and boundaries, schedule, and roles and responsibilities.
- Team break-out sessions.

Break-out session are typically held during the second half of the workshop and consist of the various disciplines breaking up into small groups and working through various aspects of the IS rating scheme. The focus of this sessions is to:

- Have the teams identify key risks/challenges and opportunities (refer to Section for further details on the identification of sustainability risks and opportunities)
- Complete the Weightings Assessment (see **Section 3.2.2**)

3.2.2. IS Scorecard and weightings assessment

The weightings assessment identifies the most important (material) sustainability issues for the Project. Adjustments are made to the weightings of each category within the IS rating tool to best reflect the Projects context.

A preliminary IS weightings assessment has been completed for this Project. The categories currently identified as 'Very high materiality' include;

- Climate Change.
- Air Quality.
- Stakeholder Engagement.
- Urban Design.
- Energy and Carbon.
- Materials.

The preliminary Weightings Assessment is included in **Appendix D** and the IS Scorecard is included in **Appendix E**.

The full weightings assessment will be conducted during the kick-off workshop discussed in **Section 3.2.1** and the process will involve the following steps:

1. Preparation.
2. Assessment.
3. Verification.

For more information of the weightings assessment process, please refer the IS Technical Manual V1.2.

3.2.3. Base case proposal

In the Energy & Carbon, Water and Materials categories, several of the credits adopt an approach of modelling and measuring the performance of the project or asset (in terms of resource consumption or greenhouse gas emissions) and comparing it to a business as usual (BAU) Footprint. See the Base Case Approach section within the IS v1.2 Technical Manual for details. The Base Case Proposal will be proposed using the form and procedure available through the IS rating site. The IS Project Manager will review the Base Case Proposal and issue the proposal and the weightings assessment to a Verifier(s) for verification.

3.2.4. IS Design and As-built ratings

The Design rating may be awarded based on the inclusion of design elements and construction requirements for sustainability in the Project documentation. The rating is typically awarded after completion of design. This is an 'interim' rating and must be replaced by an As Built rating after construction.

The As-built rating may be awarded for the inclusion of design elements, and construction requirements for sustainability in the Project documentation along with the measured sustainability performance during construction and built into the infrastructure asset. The rating is typically awarded after practical completion of the Project. This rating supersedes the Design rating.

4. Objectives & targets

4.1. Project wide

The main objectives of the Project are to improve the quality of service, improve liveability and support economic growth and productivity. Within each of these goals or 'themes' there is certain alignments with sustainability obligations within **Section 1.2** of this plan. Objectives and targets and broad initiatives have been identified as relevant to the Project within **Table 4**.

TABLE 4: SYDNEY GATEWAY PROJECT OBJECTIVES

Item	Objectives
Cost	▪ To demonstrate and ensure Value for Money (VfM) / best in class to deliver the Project objectives with acceptable risk.
Safety	▪ Safely deliver the Project.
	▪ Manage risks in a brownfield environment to meet the Project schedule.
Social Outcomes	▪ Continually drive social and environmental outcomes through delivery of the Project.
	▪ Develop long term sustainable industry partnerships, through long term certainty of work, delivering innovative solutions.
	▪ Meet or exceed our 'end customer' outcomes through: ▪ minimising disruption; and ▪ optimising road usage and access.
	▪ Minimise impact to the community (business, residents, customers), e.g. Disruptions, efficient road occupancies.
	▪ To attract, retain and develop skilled and critical resources to deliver the Project.
Innovation	▪ Drive innovative approaches to attracting, retaining and developing resources to achieve efficient use of both public and industry resources (critical and general).
Program	▪ Safely deliver the Project on schedule to achieve the customer outcomes as outlined in the business case.
Sustainability	▪ To establish, within the Project, long-term tangible sustainable outcomes (environmental, social and training).

4.2. Project sustainability objectives and targets

The Project has established sustainability objectives, considering risks and opportunities and compliance obligations. The sustainability objectives as detailed in the head contract are detailed in the table below.

- The Project is required to achieve the IS rating of “Excellent” (in accordance with Version 1.2 of IS Technical Manual) for the design and as-built phases.
- Supporting the IS Design and As-Built rating are several specific minimum and aspirational objectives and targets identified and listed in Table D.5-2 Sustainability Requirements of Appendix D.5 of the Sydney Gateway Stage 1 and Stage 3 Scope of Works and Technical Criteria (SWTC) and duplicated in **Table 5**. All objectives have been determined in direct response to the commitments articulated in the sustainability policies detailed in **Appendix A** and overall Project objectives detailed in **Section 4.1**. The Project will always aspire to significantly exceed the minimum stipulated score. These objectives have been designed to encompass and exceed similar sustainability obligations detailed elsewhere within the contract documents. This has been done to rationalise the number of objectives the Project needs to report against.
- Priority community health and wellbeing objectives have been developed with due regard to the SG Communication Strategy which explains the following Greater Sydney key community priority issues for the area. These priority issues align with the *Sydney Gateway Road Project Environmental Impact Statement/ Preliminary Draft Major Development Plan - Chapter 20 Socio-economic impacts* and *Technical Working Paper 11 Socio-economic Impact Assessment*.
- As per the *EIS/MDP Chapter 20 Socio-economic impacts* and *Technical Working Paper 11 Socio-economic Impact Assessment,* these community priority issues include:
  - Infrastructure adapts to meet future needs
  - Greater Sydney’s communities are culturally rich with diverse neighbourhoods
  - Environmental heritage is identified, conserved and enhanced
  - Economic sectors are targeted for success: Education & Training
  - Effective community and stakeholder engagement
  - Enhance ecological value
  - People and places adapt to climate change and future shocks and stresses.

TABLE 5: OBJECTIVES AND TARGETS

	Objective	Target	Minimum	Aspirational	Environment	Social	Economic	Strategy
1	Achieve an IS Design Rating	Excellent	>60	>75				This plan
2	Achieve an IS As-Built Rating	Excellent	>60	>75				This plan
3	Eliminate labour exploitation and champion human rights	% of suppliers and supply chain applying sound labour practices *Note: The Project must address relevant requirements of the Modern Slavery Act (NSW) 2018 and the Modern Slavery Act (Cth) 2018. At a minimum, human rights and labour practices must be considered in alignment with ISO 20400.*	100	100		✓	✓	The Project scope of work
4	Decrease Energy / Greenhouse Gas (GHG) Emissions produced by the Project	% of construction electricity consumption sourced from renewable energy generated onsite and/or accredited Green Power	20	>20	✓		✓	This plan
		% of construction stage energy use offset (in accordance with the Australian Government National Carbon Offset Standard)	6	>6	✓			
		% LED light sources in street lighting and other permanent area lighting installed for public amenity or safety purposes	100	100	✓		✓	
		% improvement in supply chain carbon emissions intensity (including embodied energy in materials) versus a business-as-usual baseline *Note: Supply Chain emissions are to be estimated using methodologies consistent with the World Resources Institute Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard.*	10	30	✓		✓	
		% improvement in construction energy efficiency versus a business-as-usual baseline	10	30	✓		✓	

	Objective	Target	Minimum	Aspirational	Environment	Social	Economic	Strategy
		% improvement in operational energy intensity versus a business-as-usual design	15	30	✓		✓	
5	Reduce water use	% of water (rainwater, stormwater, wastewater, groundwater) generated/collected during operation which is reused, recycled or reclaimed	5	20	✓		✓	This plan and Soil and Water Management Plan
		% of water (rainwater, stormwater, wastewater, groundwater) generated/collected during construction which is reused, recycled or reclaimed	15	30	✓		✓	
		% of non-potable water demand which is sourced from non-potable water sources during operation	15	>30	✓		✓	
		% of non-potable water demand which is sourced from non-potable water sources during construction	15	>30	✓		✓	
6	Reduce materials lifecycle impacts	% of cement replacement material, measured by mass, used in concrete during the construction stage	10	>30	✓			This plan
		% of timber to be sourced from either reused/recycled timber or from sustainably managed forests that have obtained Forest Management Certification (FMC)	100	100	✓			
		% of recycled material used in road base and sub-base during the construction stage	10	30	✓			
7	Reduce, reuse and recycle waste to support a circular economy	% of usable spoil (uncontaminated surplus excavated material) reused/ recycled (not including Virgin Excavated Natural Material (VENM))	95	100	✓		✓	Waste Management Plan

	Objective	Target	Minimum	Aspirational	Environment	Social	Economic	Strategy
		% of construction and demolition waste (overall uncontaminated material excluding spoil) reused/ recycled	80	>90	✓		✓	
		% of office paper used on the Project site that is high recycled content paper (50 per cent or more recycled content)	100	100	✓			
		% of single use and/or non-recyclable kitchen items supplied to on-site facilities	0	0	✓			
		% clean asphalt pavement reclaimed	100	100	✓			
		% clean concrete beneficially reused	100	100	✓			
		% of VENM reused/ recycled	100	100	✓		✓	
8	Enhance ecological value	% of tree canopy cover; calculated from pre-Project total area versus final design total area *Note: Excludes areas subject to existing biodiversity offsetting requirements and the selection and positioning of trees must meet the requirements of the Roads and Maritime Landscape Design Guideline (2018).*	100	100	✓	✓		Flora and Fauna Management Plan

5. Leadership and commitment

Ultimate responsibility for managing sustainability sits with the JHSWJV Project Director. However, the Project team understands that achieving the best outcomes during delivery requires whole-of-Project buy in and action. As such, sustainability duties have been incorporated into the roles of all key leaders in critical disciplines, including design, procurement, construction, environment, community stakeholder engagement, workforce development and industry participation leads.

In demonstrating leadership and commitment, sustainable outcomes and solutions shall be delivered on the Project through:

- Engaging appropriately experienced skilled and qualified personnel.
- Having the Sustainability Manager on-boarded early and involved at Project kick-off.
- Training and awareness program rolled out across the Project team with allocation of sustainability responsibilities.
- Embedding sustainability assumptions from tender to design phase to facilitate material outcomes in delivery.
- Embedding sustainability into procurement process.
- Setting up and designing reporting systems to capture metrics and evidence.
- Involving ISCA in the dialogue to ensure Project efforts are focused on improving outcomes.
- Adopting a whole of life approach to ensure best economic, environmental and social outcomes are realised in the short, medium and long-term.
- Using the Life Cycle Assessment to drive decision making process.
- Knowledge sharing using internal as well as industry-wide forums.

5.1. Sustainability policy

JHSWJV considers sustainability as important to a successful business. This commitment is enshrined in the Project's Sustainability Policy and sets the foundation for creating long-term value through achieving Project sustainability ratings schemes and is aligned to United Nations Sustainable Development Goals as well as the Global Reporting Index. A Project specific Sustainability Policy has been developed to define high level commitments and drive leadership in sustainability. The Project Sustainability Policy can be found in **Appendix A**.

Table 6 below provides a mapping of the Sydney Gateway Stages 1 & 3 Sustainability Policy against the Projects objectives and targets.

TABLE 6: POLICY COMMITMENTS LINKED TO OBJECTIVES / TARGETS

Policy Commitment	Linked Objective	Linked Target
Create a sense of place for communities, by making a positive and meaningful difference by collaborating with the community and stakeholders	Support communities that are culturally rich with diverse neighbourhoods	• Minimum 8% of the total workforce under 25 years old. • Minimum 2% of the total workforce are women in non-traditional roles. • Minimum 1.5% of the total estimated value of the contract spent supporting Aboriginal participation. The allocation of this spend must include: • Minimum 50% allocated to employment and education activities directly related to Stage 1's planning, design, or delivery • Minimum 50% of the targeted Project spend allocated to expenses that are indirectly related to Stage 1, but that contribute to the education and employment goals outlined the NSW Government's Plan for Aboriginal affairs: education, employment, accountability.
	Identify, conserve and enhance environmental heritage	• Interpretation and/or Enhancement of heritage values identified on the Project.
	Engage with the community and stakeholders effectively	• Implement a collaborative approach to minimise impacts to key Stakeholders and streamline Approvals processes and deliver best practice outcomes.
Via stakeholder engagement ensure solutions are resilient to Projected climate change scenarios, adaptable to emerging technologies, and sensitive to changing community needs	Assist people and places adapt to climate change and future shocks & stresses	• A climate change risk assessment to be developed and adaptation measures identified and implemented.
	Engage with the community and stakeholders effectively	• Implement a collaborative approach to minimise impacts to key Stakeholders and streamline Approvals.
Use sustainability management frameworks (e.g. ISCA) to enhance the overall governance and performance of the Project	Achieve an IS Design Rating Achieve an IS As-Built Rating	• Excellent (> 65 points)
Adopt a whole of life approach to ensure best economic, social and environmental outcomes are realised in the short, medium and long-term, future proofing the asset	Consider whole of life costing of the asset throughout the Program	• Development of a Life Cycle Cost Analysis to decrease the whole of life impact of the asset
Adopt the circular economy philosophy in relation to materials, water and waste and implementing a circular economy initiative on the Project.	Reduce water use	• Minimum 5% of water (rainwater, stormwater, wastewater, groundwater) generated/collected during operation which is reused, recycled or reclaimed. • Minimum 15% of water (rainwater, stormwater, wastewater, groundwater) generated/collected during construction which is reused, recycled or reclaimed.

Policy Commitment	Linked Objective	Linked Target
		• Minimum 15% of non-potable water demand which is sourced from non-potable water sources during operation. • Minimum 15% of non-potable water demand which is sourced from non-potable water sources during construction.
	Reduce materials lifecycle impacts	• Minimum 10% reduction material lifecycle impacts compared to a base case footprint. • Minimum 10% of cement replacement material, measured by mass, used in concrete during the construction stage. • Minimum 3% of materials/ products by value have ISCA approved environmental labels. • Minimum 10% of recycled material used in road base and sub base during the construction stage.
	Reduce, reuse and recycle waste to support a circular economy	• Minimum 95% of all topsoil (by volume) retains its productivity and is beneficially re-used on or nearby to the Project or asset. • 100% of usable spoil (uncontaminated surplus excavated material) reused/ recycled (not including Virgin Excavated Natural Material (VENM)). • Minimum 80% of inert and non-hazardous waste is diverted from landfill (construction and demolition waste (overall uncontaminated material excluding spoil) reused/ recycled). • Minimum 40% of office waste is diverted from landfill. • 100% of office paper used on the Project site that is high recycled content paper (50 per cent or more recycled content). • 100% clean asphalt pavement reclaimed. • 100% clean concrete beneficially reused. • 100% of VENM reused/ recycled. • Minimum 5% by value of components or pre-fabricated units used can be easily separated on disassembly/ deconstruction into material types suitable for recycling or reuse.
Address environment considerations in a manner that is sensitive to the needs of our stakeholders and the environment, creating enhanced environmental outcomes where practical	Assist people and places adapt to climate change and future shocks & stresses	• A climate change risk assessment to be developed and adaptation measures identified and implemented.
	Engage with the community and stakeholders effectively	• Implement a collaborative approach to minimise impacts to key Stakeholders and streamline Approvals.
Be recognised as an industry leader in making our workplaces safer through innovation, collaboration and	Pursue and implement innovative practices	• Development of a Decision Making Framework • Implementation of at least 1 innovation to be submitted for verification as per Inn-1 within the IS v1.2 Technical Manual.

Policy Commitment	Linked Objective	Linked Target
effective planning and management of risks		
	Engage with the community and stakeholders effectively	• Implement a collaborative approach to minimise impacts to key Stakeholders and streamline Approvals.
Enhance workforce health and wellbeing and inclusion and diversity, through employee empowerment to deliver sustainable outcomes	Support communities that are culturally rich with diverse neighbourhoods	• Minimum 8% of the total workforce under 25 years old. • Minimum 2% of the total workforce are women in non-traditional roles. • Minimum 1.5% of the total estimated value of the contract spent supporting Aboriginal participation. The allocation of this spend must include: • Minimum 50% allocated to employment and education activities directly related to Stage 1's planning, design, or delivery. • Minimum 50% of the targeted Project spend allocated to expenses that are indirectly related to Stage 1, but that contribute to the education and employment goals outlined the NSW Government's Plan for Aboriginal affairs: education, employment, accountability.
Nourish relationships with organisations that specialise in workforce development, industry participation and training	Target economic, education and training sectors for success	• Minimum 8% of the total trades position as apprentices. • Minimum 20% of the total labour force made up of 'learning workers'.
Source sustainably and ethically, including prioritising local industry participation, social procurement initiatives and a commitment to avoiding modern slavery	Eliminate labour exploitation and champion human rights	• 100% of suppliers and supply chain applying sound labour practices • *Note: The Project must address relevant requirements of the Modern Slavery Act (NSW) 2018 and the Modern Slavery Act (Cth) 2018. At a minimum, human rights and labour practices must be considered in alignment with ISO 20400.*
Encourage innovation amongst our delivery teams and supply chain to achieve sustainable outcomes	Pursue and implement innovative practices	• Development of a Decision Making Framework. • Implementation of at least 1 innovation to be submitted for verification as per Inn-1 within the IS v1.2 Technical Manual.
Decision making will integrate economic, social, environmental and governance aspects, and seek to achieve positive outcomes in each	Facilitate knowledge sharing to raise/ improve industry benchmarks	• As per see S*ection 8.2 Knowledge sharing* of this plan.
Manage activities ethically, measuring and reporting sustainability performance of the Project	Eliminate labour exploitation and champion human rights	• 100% of suppliers and supply chain applying sound labour practices • *Note: The Project must address relevant requirements of the Modern Slavery Act (NSW) 2018 and the Modern Slavery Act (Cth) 2018.*

Policy Commitment	Linked Objective	Linked Target
		At a minimum, human rights and labour practices must be considered in alignment with ISO 20400. • As per *Section 9. Performance evaluation* of this plan
Govern for sustainability by implementing Project systems and processes to ensure the effective and efficient delivery and operation of the Project	Whole Plan	• Whole Plan
Adopting best practice urban and landscape design, pursuing opportunities to achieve green infrastructure, ecological enhancement, heritage interpretation, water quality improvement, flood mitigation and community well-being	Whole Plan	• Whole Plan
	Enhance ecological value	• 100% of tree canopy cover; calculated from pre-Project total area versus final design total area • *Note: Excludes areas subject to existing biodiversity offsetting requirements and the selection and positioning of trees must meet the requirements of the Roads and Maritime Landscape Design Guideline (2018).*
	Identify, conserve and enhance environmental heritage	• Interpretation and/or Enhancement of heritage values identified on the Project.

5.2. Sustainability resources

The Project has determined and made provision for the resources needed for the establishment, implementation, maintenance and continual improvement of the sustainability management system on the Project.

All items detailed in the SG Sustainability Requirements register has been mapped and integrated within the Project's management plans, design packages, procurement packages and construction packages as appropriate.

5.2.1. Organisational structure

The Sustainability team will engage with the Project delivery team to ensure that the Project sustainability requirements and aspirations are embedded into all relevant design and works packages. The relationship and the overall structure of the SG sustainability team is shown below.

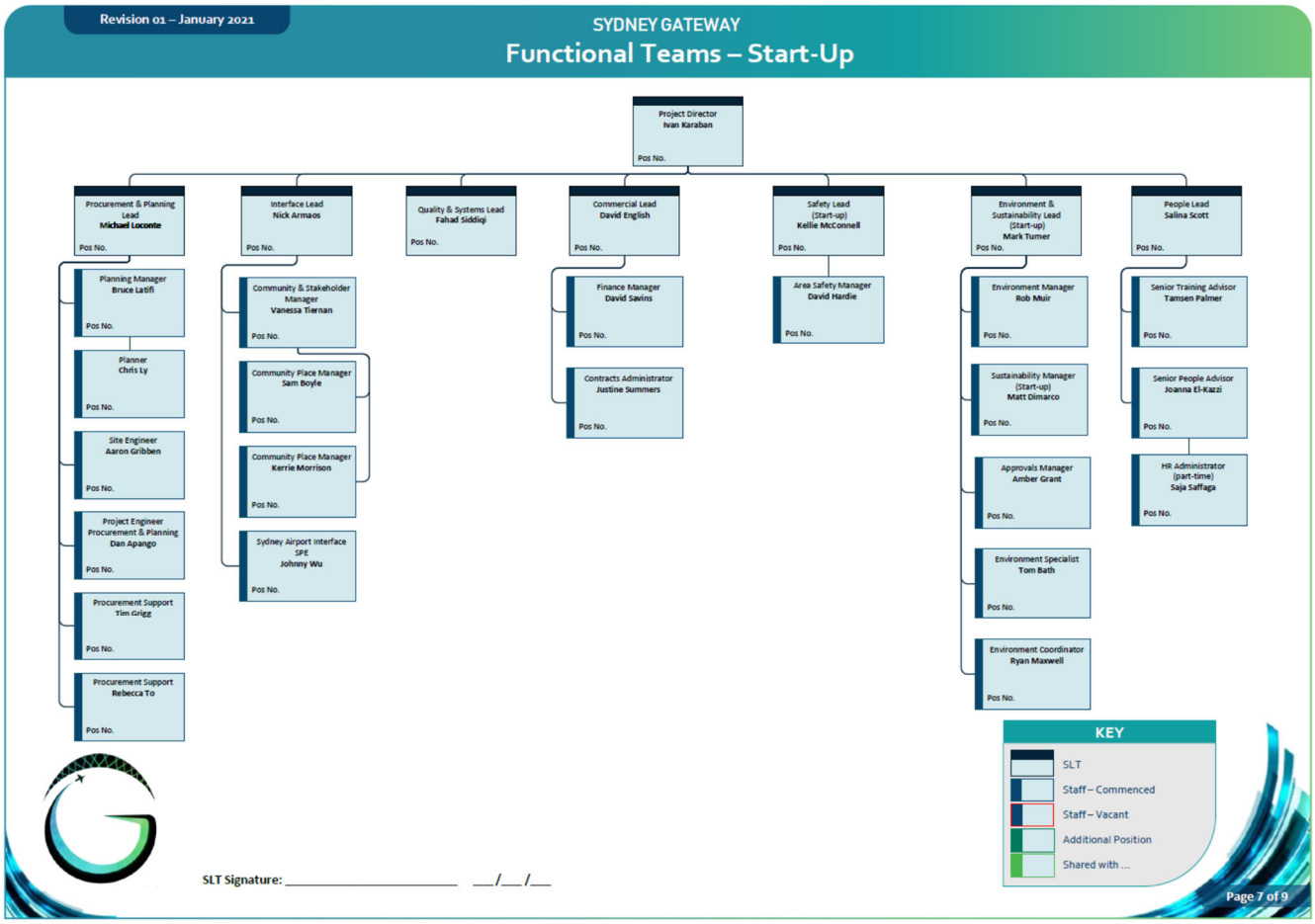


FIGURE 5: SYDNEY GATEWAY PROJECT DELIVERY ORGANISATIONAL STRUCTURE

5.2.2. Roles and responsibilities

The Project Director will ensure that the responsibilities and authorities for relevant roles are assigned and communicated within the Project. Sustainable infrastructure cannot be delivered by one person or one discipline, it requires a whole of Project response. To ensure informed decision making on the Project, the Sustainability Manager will report directly to the Environmental and Sustainability Lead, and the Environmental and Sustainability Lead is a member of the Senior Leadership Team and reports directly to the Project Director. Details of the Sustainability Manager's role and responsibilities, as well as other key Project personnel with sustainability responsibilities, is detailed in the table below.

TABLE 7: OVERVIEW OF SUSTAINABILITY ROLES

Role	Responsibility
Project Director	▪ Develop and promote a performance-based culture for sustainability in line with the Sydney Gateway approach ▪ Consult regularly with the Environment & Sustainability Lead and Sustainability Manager and encourage performance improvement ▪ Communicate performance and lessons learned to the Project Leadership Team, Client Delivery Team and Parent Companies' Leadership Teams ▪ Encourage cross-pollination of sustainability innovation across projects managed by the respective parent companies ▪ Overall responsibility and authority for: – Ensuring that the management of sustainability conforms to the requirements of this SMP – Reporting on the performance of the Project with regards to sustainability, to top management and interested parties. ▪ Competencies: – Possess a recognised qualification relevant to the position and the Contractor's Activities and be experienced in the design, construction and project management of similar large projects
Sustainability Manager	▪ Day to day oversight and authority for: – Ensuring that the management of sustainability conforms to the requirements of this SMP – Reporting on the performance of the Project with regards to sustainability, to project management – Be available full time as the Project's primary contact on sustainability matters – Ensuring sustainability risks & opportunities, compliance obligations, and objectives are understood by the Sustainability team ▪ Be responsible for the completion of the IS rating tool scorecard using the ISCA verified Materiality Assessment ▪ Be responsible for the preparation of the Base Case proposal, self-assessment submission, compilation of evidence documents required for IS rating submission and score ▪ Be responsible for the coordination with ISCA in relation to matters associated with the IS rating scheme and include the Superintendent and the Principal's nominated sustainability representatives to participate in the workshops and meetings associated with the IS Rating scheme process ▪ Be involved in all phases of the design process and lead the sustainability design ▪ Competencies: – Have at least five years' sustainability management experience, with previous experience in the provision of sustainability advice on the design and construction and operations and maintenance contracts – IS Assessor – Infrastructure Sustainability Accredited Professional (ISAP)
Sustainability Coordinator	▪ Assist the Sustainability Manager: – To deliver Design and As-built IS ratings

Role	Responsibility
	– To implement innovations on the Sydney Gateway Project ▪ Competencies: – Secondary IS Assessor – Infrastructure Sustainability Accredited Professional (ISAP)
Environmental & Sustainability Lead	▪ Assist the Sustainability Manager to drive and deliver the environment and sustainability management components of the design and as-built ISCA rating ▪ Day to day responsibility and authority for ensuring that the EMS (as applied on the Project) conforms to the requirements of the John Holland EMS and ISO14001 ▪ Day to day responsibility and authority for reporting on the performance of the EMS (as applied on the Project) to top management ▪ Ensure correct and ongoing implementation of Construction Environmental Management Plan (CEMP) ▪ Liaise with Project staff for ongoing monitoring and maintenance of environmental controls ▪ Ensure reporting of incidents and practices that are non-conforming ▪ Conduct and report regular inspections, monitoring and reporting ▪ Ensure actions relating to environmental non-conformances, incidents and/or inspections are actioned and closed out in a timely manner ▪ Actively participate in and facilitate Safety, Quality and Environment (SQE) Risk Management workshops ▪ Assist with updating of CEMP as required ▪ Prepare Project monthly environmental reports as required ▪ Liaise with client environmental representative ▪ Manage and track compliance with all environmental approvals, licences, and permits relating to the Project ▪ Identifying and documenting environment system problems ▪ Reviewing environmental activities in Inspection and Test Plans ▪ Liaising with the Environment assurance representative from the client, stakeholders and Interested Parties ▪ Assisting in the auditing/assessment of suppliers/subcontractors; ▪ Responsibility for ensuring compliance will all applicable statutory requirements, including but not limited to the Projects Planning Approvals and Environment Protection Licence (EPL) ▪ Training and awareness ▪ Competencies: – Have at least ten years' environmental management experience, with extensive experience in the preparation and implementation of environmental management systems and plans
Independent Sustainability Professional (ISP)	▪ As per IS Technical Manual v1.2 requirements (Man-3 & Man-4), the ISP will be engaged to monitor, review and audit sustainability performance ▪ Must not work directly on the Project or asset. ▪ Must be engaged to act independently of the Project or asset ▪ May also be involved in other independent review and/or audit activities including: – Management system external audits (Man-5) – Energy auditing (Ene-1) – Contaminated site auditing (Lan-3) – Waste auditing (Was-1) – Stakeholder engagement strategy review (Sta-1) – Urban design review (Urb-1) and urban and landscape design management audit (Urb-2) – Independent Review of the IS rating submission. ▪ Competencies: – Qualifications in an environmental, social or economic field. – At least 10 years' experience practicing in one or more of these aspects including at least 5 years' experience providing sustainability advice.
Suitably Qualified Professionals (SQP)	▪ SQPs will be required to complete obligations specific to the following IS v1.2 Technical Manual credits: ▪ Energy & Carbon – Ene-1 & Ene-2

Role	Responsibility
	▪ Discharges to Air, Land and Water – Dis-1 ▪ Water – Wat-1 & Wat-2 ▪ Materials – Mat-1 ▪ Land – Lan-3 & Lan-4 ▪ Ecology – Eco-1 & Eco-2 ▪ Heritage – Her-1 & Her-2 ▪ Stakeholder Participation – Sta-1, Sta-2, Sta-3 & Sta-4 ▪ Urban and Landscape Design – Urb-1 & Urb-2 ▪ Competencies: Dependent on the role and as required in the IS Technical Manual v1.2
Sustainability Experts	• Personnel from Participants John Holland and Seymour Whyte will support the Sustainability Manager in addition to external sustainability experts' advice. This support will be particularly significant during the early phases of the Project but will be ongoing throughout. • Competencies: – Possess a recognised qualification relevant to the position and the Contractor's Activities and be experienced in the sustainable design, construction and Project management of similar large Projects
Commercial Manager	▪ Assist the Sustainability Manager: – To deliver the procurement and management components of the design and as-built ISCA rating ▪ Competencies: – Possess a recognised qualification relevant to the position and the Contractor's Activities and have at least fifteen years' experience in commercial management on Projects
Procurement and Contracts Managers	▪ Assist the Sustainability Manager: – To deliver the procurement and management components of the Design and As-built IS ratings ▪ Competencies: – Possess a recognised qualification relevant to the position and the Contractor's Activities and have at least fifteen years' experience in commercial management on Projects
HR & Training Manager	▪ Assist the Sustainability Manager: – To deliver the procurement and management components of the a design and as-built ISCA rating – To implement innovations over the Sydney Gateway Stages 1 & 3 Project. ▪ Competencies: – Possess a recognised Human Resources qualification relevant to the position and the Contractor's Activities and have recent relevant experience in workforce development on similar Projects in relation to the Contractor's Activities; – Have at least five years' experience developing human resources strategies and action plans
Design Manager	▪ Assist the Sustainability Manager: – To deliver a design ISCA rating, by identifying design risks and opportunities and implementing these opportunities within the design – To implement innovations over at the Sydney Gateway Stages 1 & 3 Project. ▪ Competencies: – Possess a recognised engineering qualification relevant to the position and the Contractor's Activities and have at least fifteen years' experience in the overall management and co-ordination of multi-disciplinary design teams on large Projects

Role	Responsibility
Community and Stakeholder Manager	▪ Assist the Sustainability Manager deliver the stakeholder components of the Design and As-built IS ratings ▪ Develop and implement the Communication Strategy as well as issue specific sub plans as required ▪ Address strategic communication issues and act in accordance with TfNSW's policies and procedures as well as the Project's CoA and SWTC conditions ▪ Manage stakeholder expectations, enquiries and complaints. ▪ Upload Project interaction, complaints and enquiries into the TfNSW Consultation Manager database ▪ Manage an effective external communications and community relations program ▪ Ensure community consultation lead times are incorporated into the Project programs ▪ Develop, produce and disseminate the Project communications material ▪ Be responsible for managing community and key external stakeholders ▪ Identify and manage opportunities for community and stakeholder engagement / community information sessions / events ▪ Manage the 24-hour Construction Response Line and Infoline response process and respond to complaints and enquiries for the Project work area ▪ Manage the day-to-day community engagement requirements ▪ Competencies: – Have at least fifteen years' communications and community relations experience with extensive experience in the management of community liaison, consultation and communications on major infrastructure Projects

Also noteworthy are critical roles undertaken by personnel external to the Project team. They have been identified in **Table 7** as key personnel which JHSWJV will proactively seek to work with. The Project will also seek to collaborate with key stakeholders to review sustainability performance and identify risk and opportunities, they are detailed in the **Table 8** below.

TABLE 8: KEY EXTERNAL ROLES AND RESPONSIBILITIES

Role	Responsibility
IS Project Manager	An ISCA staff member assigned to the Project providing the first point of contact for the assessor and support for the Project
ISCA Verifier(s)	Verifiers are independent specialists assigned to the Project during the assessment stage to provide independent verification of the weightings assessment, the base case proposal, and the self-assessment.
Principal's Representative	Overall responsibility and authority for: ▪ Ensuring that Sydney Gateway's management of sustainability conforms to TfNSW requirements ▪ Reporting on the performance of the Project/with regards to sustainability, to TfNSW top management and interested parties
TfNSW Environment and Planning Lead	Responsibility and authority for: ▪ Reviewing Project/asset sustainability performance addressing environmental, social and economic aspects ▪ Consulting with the team and key stakeholders ▪ Acting independently and objectively, challenge conventional thinking and providing a 'fresh set of eyes' ▪ Making findings and provide useful recommendations in a manner that demonstrates objectivity, transparency and absence of bias.
TfNSW Technical Specialists	Day to day responsibility and authority for ensuring that the Sydney Gateway's management of sustainability (including in relation to innovations) conforms to the technical requirements of TfNSW within their area of expertise (e.g. lighting)

To create a 'no-surprises' environment and streamlined design and delivery review process, JHSWJV proposes to co-locate members of TfNSW and the Independent Verifiers with the design team and engage them in the design development process.

The Community and Stakeholder Manager will manage liaison with external stakeholders in consultation with the Design team, to ensure that community and customer insights are considered and incorporated into the design. The Community and Stakeholder Manager will also be invited to attend design meetings on a regular basis, to convey customer and community insights to the JHSWJV design team, to allow incorporation into the design. The Communication Strategy will provide more details on engagement protocols.

Stakeholder inputs will be received and managed through the design review process. JHSWJV will capture the requirements of key stakeholders through meetings and include them in the relevant design reports.

The Design Manager or a delegate shall be responsible for identifying all third party interfaces relevant to design including TfNSW, Local Council contacts, Utility Owners, local, state and federal Government agencies with an interest or approval control over activities in and around the Project site, Environmental Review Groups (ERG), Aboriginal Focus Groups, operators and other stakeholders such as users, neighbours and the wider community.

The Design Manager or delegate shall be required to consider the role that these third parties play in the design review and approval processes and ensures that the documentation is provided as necessary to the relevant third parties.

Table 9 and **Figure 6** below diagrammatically represents the key stakeholders involved in the design and delivery process of the Sydney Gateway Stages 1 & 3 Project.

TABLE 9: OVERVIEW OF KEY STAKEHOLDERS

Stakeholder Groups	Details
Client	Transport for New South Wales (TfNSW)
Landowners/ Leaseholders	Sydney Airport, Australian Rail Track Corporation, WestConnex Trustees
Commonwealth Government	Airport Environment Officer (AEO)
Regulators	NSW Environment Protection Authority (EPA), NSW Office of Environment and Heritage, NSW Department of Planning, Industry, and Environment
Verifiers	Independent Certifier/Verifier, Infrastructure Sustainability Council of Australia
Emergency Services	Emergency Services (Office of Emergency Management)
Contractor	John Holland, Seymour Whyte
Operator	Transport for New South Wales
Aboriginal Land Council	Metropolitan Local Aboriginal Land Council
Users (or representatives of)	Travelling public, Public transport (including school and general bus/coach operators), Freight and transport unions, Transport and heavy vehicle operators, Cyclists, Taxi companies, Motorist groups, Uber, GoGet Carshare, Bicycle NSW, Bicycle Network, Pedestrian Council of NSW, Road Freight Industry Council, Australian Logistics Council, NSW Taxi Council, Uber, NatRoad, NRMA, Sydney Airport, Planning Institute of Australia, Urban Taskforce, National Trust, Warren Centre, Committee for Sydney, NSW Business Chamber
Local Government	City of Sydney Council, Bayside Council, Inner West Council
State Government	NSW Premier, Minister for Transport and Infrastructure, Minister for Planning, Minister for Environment, Federal Member for Sydney, State member for Sydney, Transport for NSW, Roads Maritime Services, Environment Protection Authority (EPA), NSW Health, Port Authority of NSW, DPIE Water, Infrastructure NSW, EESG (Environment Energy Science Group_, Landcom, Fire and Rescue NSW, NSW State Emergency Service, Customer Journey Plannning, Service NSW – Customer Journey Management, Greater Sydney Commission, Department of Premier and Cabinet, Sydney Metro, NSW Police Force
Utilities	Telstra, Ausgrid, Sydney Water, Jemena, Optus, TPG (APPT), Nextgen, PIPE Networks, AARNet, NBN, Sydney Desalination Plant, Caltex, Viva Energy, Vocus
Neighbours / Commercial Properties	Residents and businesses in and around Mascot, St Peters, Tempe and Wolli Creek. Businesses represented by Bayside Chamber of Commerce, Sydney Business Chamber. Schools and educational institutions including Arncliffe Public School, St Francis Xavier's Catholic Primary School, Arncliffe Preschool, Al Zahra College, North Brighton Preschool, Kyeemagh Infants School, Kenrick School and Maeves School Ferncourt, QUBE, Tyne Containers, Boral
Community Groups	Community Reference Group, Kogarah Golf Club, Robyn Webster Sports Centre, Kyeemagh RSL & Community Club, Mascot Library
Media	Metropolitan and suburban newspapers, radio and television, including: Bayside Leader, Sydney Morning Herald, News Local, The Australian, Primary television news programs on ABC, SBS, Channels 7, 9 and 10, Travel, trade and motorist publications. Community language media including: SBS Radio, Aust Chinese Daily, Epoch Times Sydney, The Indian Telegraph, The Greek Herald, La Fiamma Italian Newspaper, The Sydney Korean Herald, The Vietnamese Herald, The Vietnamese Tribune

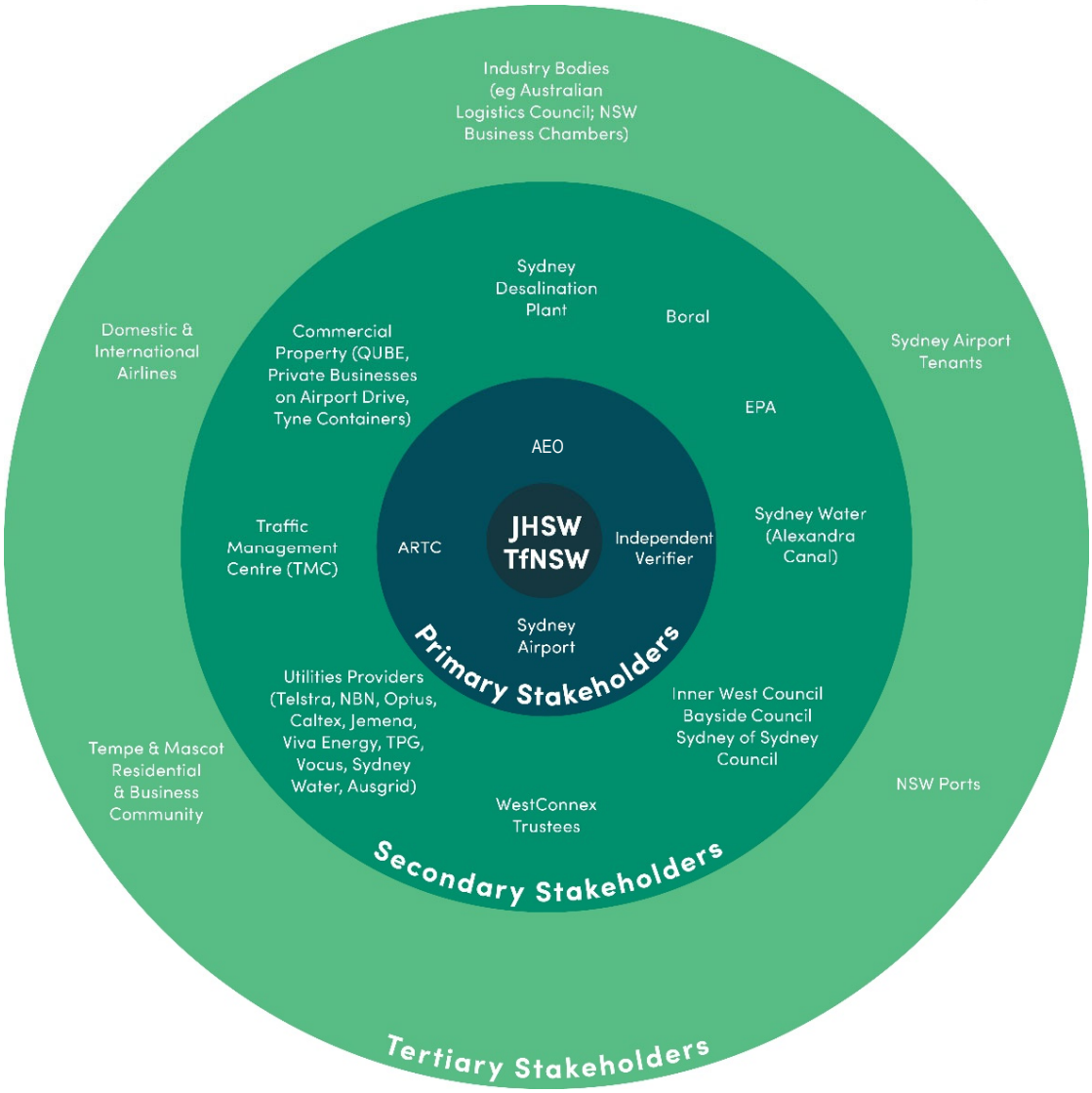


FIGURE 6: SG STAKEHOLDER MAP

6. Planning

6.1. Planning action

The Project has planned to take actions to address sustainability risks, opportunities, compliance obligations and objectives. The Project has determined what will be done, what resources will be required, who will be responsible, when it will be completed and how the results will be evaluated. Fulfilment of all compliance obligations (as detailed in Appendix C) will ensure achievement of the 'minimum' objectives.

Effective management of risks and opportunities in accordance with the Project Risk Management Plan will increase the likelihood of the 'aspirational' objectives being achieved. Accordingly, decision making in relation to risks and opportunities shall be undertaken systematically.

6.2. Risk and opportunities

The Project risks and opportunities shall be managed in accordance with the Risk Management Plan. Direct and indirect governance, economic, environmental and social risks and opportunities will be assessed, and treatment options and implementation actions will be identified and implemented such that there are no residual high priority risks or opportunities. The risk and opportunity criteria to be applied will be informed by ISO:31000.

Treatment options will potentially be determined considering the optimal scale and timing, and costs and benefits via the involvement affected external stakeholders (see the Project Communication Strategy). A consolidated list of opportunities identified to date will be provided within the Sustainability Risk & Opportunity Register as detailed in **Section 7.2.**

6.3. Climate resilience

Climate change and natural hazard risks shall be managed in accordance with the Risk Management Plan. Related direct and indirect risks and opportunities will be assessed, and treatment options and implementation actions will be identified and implemented such that there are no residual extreme or high priority risks or opportunities. The risk and opportunity criteria to be applied will be informed by ISO:31000 and AS:5334-Climate Change Adaptation for Settlements and Infrastructure: A Risk Based Approach.

Risks and treatment options will be determined using readily available and current natural hazard data and climate change projections considering the optimal scale and timing, and costs and benefits via the participation of:

- a multidisciplinary internal team
- government representatives
- a comprehensive set of affected external stakeholders (see the Communication Strategy).

A Climate Change Risk Assessment Workshop was held with the relevant Project stakeholders on 03 February 2021 and a copy of the Climate Change Risk Register (Draft – work in progress) is attached in **Appendix K**.

6.4. Sustainability in design

Sustainability compliance requirements for the Project are clearly documented in Section 1.2 and Appendix C of this Plan. This includes sustainability rating benchmarks being targeted, as well as specific design deliverables (for example, % materials reduction or incorporation of climate adaptation measures).

The Project will ensure that sustainability requirements are appropriately captured within design roles and that consultant resources are appropriate for targeted sustainability outcomes. Sufficient provisions will be included in design consultant scopes to ensure clear accountability for contributing to the achievement of sustainability compliance requirements and identification of opportunities. Sustainability expectations and, where relevant, KPIs, will be defined in consultant contracts.

Design packages which have material influence on how sustainability requirements will be defined and communicated. Sustainability requirements for key Design Packages will be articulated and communicated with the Design Manager. This will involve:

- Developing a Sustainability in Design Matrix which identifies the key sustainability deliverables, targets, and requirements relevant to those Design Packages.
- Interfacing with the Design Managers to discuss requirements and identify potential sustainability opportunities for each Design Package.
- Categorising Design Packages (e.g. Civil, structural, Urban Design, etc.) and providing a summary of material sustainability requirements and/or targets for each category to relevant Design Manager.
- Reviewing relevant Design Management Plans and ensuring that the required sustainability content is addressed and included.

Specific records and documentation which are required during design phase to evidence the delivery of sustainability requirements (e.g. Sustainability details captured in the Design Report for each Design Package), will be defined and agreed.

6.5. Resources (energy, materials and water) and ecology

Typically Resources along with Ecology make up around 35% of the IS scorecard, underscoring the impact infrastructure projects have on the environment and the need to focus on the responsible use of resources in recognition of its finite nature. A summary of key actions supporting the achievement of the resources and ecology objectives and targets on the Sydney Gateway is provided in **Table 100** below.

TABLE 10: KEY ACTIONS FOR RESOURCES AND ECOLOGY

Sustainability Theme	Key Actions	Applicable Targets/ Rating Credits	Lead	Secondary Stakeholder
Resource Efficiency	**Energy** • Lifecycle assessment of energy efficient devices and renewable energy sources • Monitoring of energy use and GHG emissions in construction and operation • Energy modelling to assist in energy avoidance and reduction strategies • Use of alternative renewable fuels • Promote shared transport use and sustainable modes of transport • Use of LED lights - reducing energy use, and operation and maintenance cost • Importing fill material preconditioned prior to site delivery with recycled water, thus reducing truck movements • Scheduling of materials delivery and waste haulage at night to reduce fuel consumption	Ene-1 to Ene-2 Wat-1 & Wat-2 Mat-1 & Mat-2	Sustainability Manager	Design Managers Construction Managers

Sustainability Theme	Key Actions	Applicable Targets/ Rating Credits	Lead	Secondary Stakeholder
	• Sourcing low embodied carbon materials **Materials** • Application of waste hierarchy (avoid; reduce; reuse; recycle; disposal) • Sourcing blended cement containing supplementary cementitious materials (SCMs) • Sourcing low carbon concrete • Sourcing recycled steel, including reinforcing • Reusing spoil generated on-site • Maximising recycling of office waste, and inert and non-hazardous construction waste • Maximising use of existing asphalt on upgrade road projects • Minimising packaging waste • Reusing spoil, topsoil and cleared vegetation as mulch • Procurement of certified sustainable materials **Water** • Assessment of impacts to stormwater flow • Prevention of pollution of water resources during construction through site layout design and environmental controls • Lifecycle assessment of water efficient devices, potable water sources and water efficient facilities • Opportunities to enhance water quality will be included in the risk and opportunities register			
Ecology	• Development and implementation of Urban Design and Landscape Plan • Protection zones will be established to prevent impacts to flora and fauna • Topsoil quality will be preserved and/or enhanced • Controls will be implemented to prevent environmental impacts (noise, vibration, air quality, light pollution, water) • Any exceedance of noise, vibration, air quality or light limits	Eco-1 Eco-2	Design Manager Construction Manager	Sustainability Manager Environment & Sustainability Lead

Sustainability Theme	Key Actions	Applicable Targets/ Rating Credits	Lead	Secondary Stakeholder
	will be managed in accordance with the environment management plans and relevant subplans and reported as an incident via the Project Event Tracker • Opportunities to enhance soil quality, ecological values and/or habitat connectivity will be included in the risk and opportunities register			

6.6. Sustainable procurement and workforce development

In part to address the SWTC requirements included in **Table 3** of **Section 1.2** of this SMP, the Project's Training Management Plan (TMP) shall be developed to outline the approach to be taken to the training and development of all personnel involved in the delivery of Sydney Gateway Stages 1 and 3. The TMP shall demonstrate JHSWJV's philosophy and commitment to training and development by promoting and facilitating ongoing improvement in the skills and expertise of those employed on the Project. The TMP details how the SWTC Appendix D.5 Sustainability Requirements – 3.0 Workforce Development and Social Procurement outcomes will be achieved, in line with obligations under the NSW Government Training Management Guidelines July 2020.

Fulltime Workforce Development resources will be allocated to fulfil applicable sustainability requirements in accordance with the Project's Training Management Plan.

Relevant sustainability risks and opportunities, requirements and objectives will be mapped to applicable roles and procurement packages whereby they shall inform future workforce development activities, being suitably addressed in applicable workforce development briefings, workforce development management processes and workforce documentation.

6.7. Handover requirements at completion

Due to the length and complexity of the Project, it is likely that there will be a staged completion process. Following commissioning and prior to demobilisation from a particular area or package, the Sustainability Lead will identify the sustainability issues associated with the finalisation of works such as finalisation of all data collation and evidence required as part of the IS Rating Submission. Where risks or aspects continue into operation, these items will be incorporated into the Operational Maintenance Manual (or similar). In collaboration with the Quality & Completions Manager, the following completion practices shall be performed for all Project areas and packages:

- Confirmation that significant resource consumption and waste production activities have ceased, and that all associated data is available to use within the IS Rating Submission
- Collation of all other sustainability management evidence (e.g. As Built Reports and Drawings) are available to use within the IS Rating Submission
- Undertake a Lessons Learned workshop, and communicate findings to relevant stakeholders, and
- Provide relevant content for Project Completion Report.

The Sustainability Lead will ensure all aspects interfacing with O&M phase will be handed over to the Operational Phase Sustainability Manager prior to commencement of O&M activities.

7. Processes and systems

7.1. IS v1.2 technical manual requirements

As detailed in **Section 3.1**, the Project plans to achieve an Excellent (minimum) IS Rating. To achieve this outcome, compliance with the IS version 1.2 Technical Manual will be required. **Appendix C SG Sustainability Requirements Register** outlines the IS v1.2 Technical Manual obligations. These requirements will be integrated into each Design Report This will ensure that ISCA requirements are fully integrated into the Project along with all other design and contractual requirements.

7.2. Sustainability risk and opportunities register

A sustainability risk & opportunities (R&O) workshop will be completed as part of the Sustainability Kick Off Workshop. Risk management is a key contributor to Project success and is an important tool to facilitate infrastructure sustainability risk management. The identification of opportunities both early in design and during the construction phase can be a powerful tool for providing positive benefits to the community, stakeholders, the environment and the economy, and can have cost benefits for both the contractors and clients. The assessment of opportunities can facilitate the inclusion of aspects into a Project which can have considerable positive impacts for the both the environment and community and can push the Project beyond just business-as-usual.

All opportunities (including initiatives / innovations) to optimise the design and construction and provide an environment, social and economic benefit will be documented in this register. A traffic light system will be used to identify whether the opportunity is included in design / construction, under consideration or abandoned. The decision-making process in **Section** Error! Reference source not found. will be used to assess its implementation. The Sustainability R&O register will be reviewed by the Project Sustainability Team on a monthly basis.

The sustainability R&O workshop will align with Man-2 credit requirements of the IS v1.2 Technical Manual. This resulting sustainability R&O register can be used as evidence to meet this credit. Level 1 can be achieved if the Project considers and documents environmental, social and economic risks in this register. Level 2 can be achieved if the Project considers and documents environmental, social and economic risks and opportunities.

7.3. Share Point

Share Point is a web-based document and submission management framework that will be used for all credit benchmark deliverables associated with the IS Rating. It is specifically designed to assist and manage the large number of deliverables that accompany a submission for an IS sustainability rating. Share Point shall be a key item reviewed as part of the Man-4 audit requirements and will be informed by the following systems described below.

7.4. Sustainability & environment reporting register (SERR)

The Sustainability & Environment Reporting Register (SERR) houses all data obtained from consumption of resources and waste created during construction of the Project. The SERR will be used to track usage of:

- Waste.
- Water.
- Materials.
- Energy (including electricity and fuel).

7.5. Project pack web

Project pack web (PPW) is an online database that will service and monitor the following key sustainability processes:

- Procurement, including subcontractor information and purchase requisitions.
- Subcontractor reporting of (social & NGER data) as per **Section 7.7.**
- Water quality targets.
- Air quality targets.
- Noise and vibration targets.
- Contamination / remediation options analysis.
- Vegetation clearing.
- Fauna sightings.
- Site Inspections.

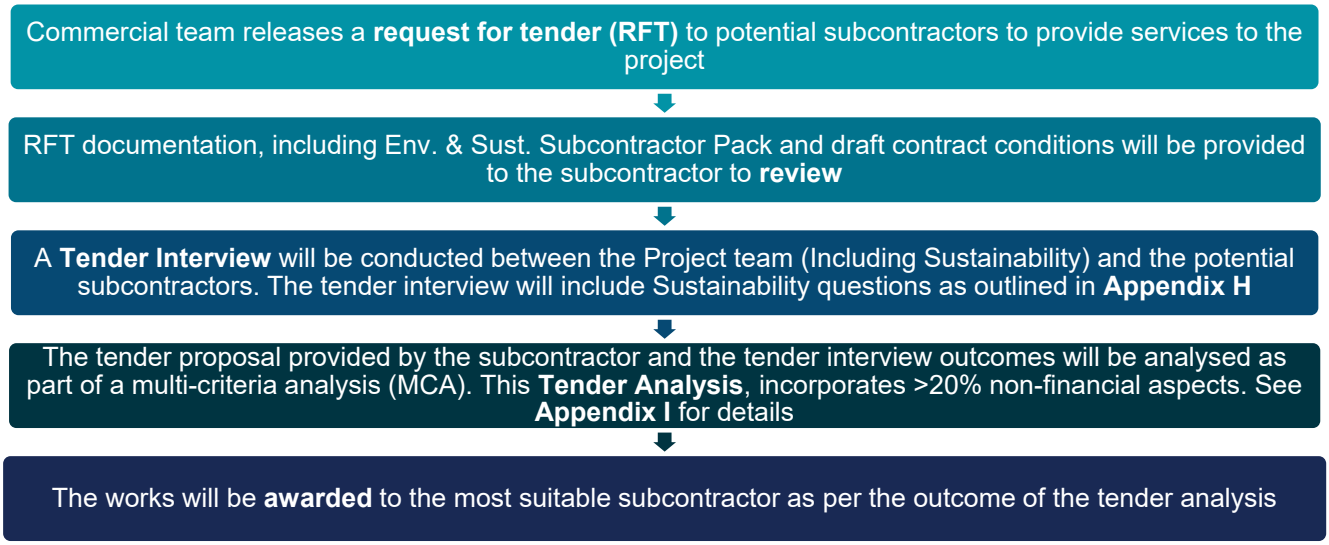
PPW will be reviewed as part of the ISP review process detailed in section 9.3.

7.6. Subcontractor sustainability management

JHSWJV have developed specific subcontractor requirements to ensure each subcontractor engaged to deliver work as part of the Project is aligned with the Project's objectives and targets. There are two (2) key management tools that outline these requirements to subcontractors, being:

1. Specific subcontractor contract input (including labour and supply only contracts) (**Appendix G**)
2. Subcontractor sustainability requirements pack.

These tools will be embedded into the Project procurement process as detailed in the Procurement Strategy. The Sustainability Lead for the Project will be involved throughout the procurement process in conjunction with the Procurement & Contracts Manager. When subcontractors (including suppliers) are engaged by the Project, the following process will be completed by the Procurement & Contracts Team.



Note, all registers/trackers detailed within this section will be live documents and will be regularly reviewed and adapted as new information comes to hand. Where possible, registers/trackers will centralise information from multiple management plans, removing duplication and providing improved management flexibility, enhanced efficiency, performance and outcomes.

7.7. Subcontractor portal

Subcontractors and suppliers will be required to report on specific measures as outlined within section 9.1 and within the subcontract. Subcontractors and suppliers will be sent an automated link to a reporting template to be completed monthly. The data within the completed online report will be captured by the PowerBI system and generated into a dashboard that will be used by the Project to assess and review sustainability performance.

7.8. PowerBI

The Project intends to use Power BI to collate and report sustainability performance during the Project duration. Power BI is a business analytics service by Microsoft. It aims to provide interactive visualisations and business intelligence capabilities with an interface simple enough for end users to create their own reports and dashboards.

8. Support

8.1. Competence and awareness

JHSWJV will:

- Use training needs analysis to determine the necessary competence of persons doing work under its control that affects its sustainability performance and its ability to fulfil its compliance obligations;
- Obtain records of suitable education, training, experience and verification of competency to ensure that these persons are competent based on appropriate education, training or experience;
- Determine any further training needs associated with sustainability; and
- Where applicable, take actions to acquire the necessary competence, and evaluate the effectiveness of the actions taken

The Management Team will ensure, via the workshops, project induction, specific training, tool box talks and pre-start meetings (or similar), that persons doing work under the Project's control are aware of the:

- Sustainability Policy.
- The significant sustainability issues and related actual or potential impacts associated with their work.
- Their contribution to the effectiveness of the sustainability management system, including the benefits of enhanced sustainability performance.
- The implications of not conforming with the sustainability management system requirements, including not fulfilling the organisation's compliance obligations.
- The opportunities to identify innovations and efficiencies and report these to the Sustainability Lead. These workshops will aim to empower the Project team to innovate and see efficient methods as well as those that enhance social and environmental outcomes.

8.2. Knowledge sharing

Effective and ongoing sustainability knowledge sharing will occur on the Project Knowledge sharing will take many forms: informal and formal, spoken and written. It will always be encouraged and will involve the Sustainability Lead in order to foster mutually beneficial relationships with key stakeholders and subject matter experts. As per Man-6 of the IS Technical Manual, knowledge sharing will be undertaken in a timely and targeted manner to enable enhanced outcomes to be achieved. The table below outlines the type of knowledge shares that will be required to be performed throughout the Project.

TABLE 11: EXAMPLE KNOWLEDGE SHARING

Knowledge share type (as per MAN-6)	Example	Number of knowledge shares required
Sustainability knowledge is shared within the Project	Toolbox talks Inductions	1
Sustainability knowledge is shared beyond Project boundaries to parent organisations and/or other key stakeholders	HSES Valuation process with parent organisation senior management Parent organisation forum events	2

Knowledge share type (as per MAN-6)	Example	Number of knowledge shares required
Sustainability knowledge is shared from outside the Project onto the Project	Industry demonstration / information sessions Other Project innovation knowledge sessions or lessons learnt presentations presented onto the Project	2
Sustainability knowledge is shared beyond the Project and key stakeholder boundaries to the wider industry.	Communicating innovation success or lessons learnt to industry partners. Promotion of initiatives to other Projects and industry partners.	3
Sustainability knowledge sharing includes 'lessons learn' (that had negative consequences) as well as 'good practices'.	Lessons learnt presentation parent organisation.	1

8.3. Decision making

The Project will ensure that decision making in relation to significant issues is characterised by:

- A consideration of options including business-as-usual and other proven approaches taken in comparable situations;
- An evaluation of options that considers environmental, social and economic aspects through multi-criteria analysis or other scored means; and
- An evaluation of options based on the useful forecast life of the infrastructure asset.

*The most significant decisions have been made during earlier phases (i.e. planning and tendering and community engagement). These significant decisions related to road and structure alignment, type and size. These decisions had wide-ranging ramifications for many other economic, social and environmental issues, including those that were most commonly raised within submissions to the EIS/MDP, they are listed below in order of total number of issues raised:

- Environmental.
- Active Transport.
- Freight.
- Parking.
- Property and access.
- Public Transport.
- Traffic and road safety.
- Heritage.
- Contamination.

A range of above ground and tunnel road connection options were developed by RMS (TfNSW), John Holland and Seymour Whyte and others. These options were reviewed by TfNSW and the preferred option has now been contracted for delivery. Where possible, TfNSW will assist with the provision of evidence that these significant decisions were evaluated by considering environmental, social and economic aspects by incorporating their value into cost-benefit analysis.

During the delivery of the Project, significant design and construction issues will be identified (as per the R&O workshop described in **Section 7.2**). Significant issues are defined as issues that have an impact upon the following aspects:

- Departures from the design
- Cost efficiency
- Product performance
- Program efficiency
- Environmental outcomes

- Stakeholder impacts
- Social outcomes (community, workforce, diversity).
- Customer satisfaction.
- Reputation.
- Safety.

Once these significant issues have been identified, they will be analysed against other options as described above through the utilisation of an MCA (See Appendix J).

Accordingly, once decision making in relation to opportunities has occurred, the opportunities' status, as per **Section 7.2**, will be updated in the R&O Register as either 'Included' or 'Abandoned'. If the answers to the relevant questions within the MCA are unclear, the opportunity status will remain 'Under consideration' and further information will be sought.

8.4. Communication

The Project shall establish the processes needed for internal and external communications relevant to sustainability in accordance with the Communication Strategy, including:

a) A list of the community stakeholders and the potential impacts by the construction activities.
b) On what it will communicate.
c) When to communicate.
d) With whom to communicate.
e) How to communicate.

When establishing the Communication Strategy, the Project shall

- Take into account its sustainability risks and opportunities, compliance obligations and objectives.
- Ensure that sustainability information communicated is consistent with information generated within the sustainability management system and is reliable.

The Project shall respond to relevant communications on sustainability. The Project shall retain documented information as evidence of its communications, as appropriate.

8.4.1. Internal Communication

The Project shall:

a) Internally communicate information relevant to sustainability among the various levels and functions of the Project, including suggested changes to this SMP, as appropriate.
b) Ensure its communication processes enable persons doing work under the Project's control to contribute to continual improvement.

Internal communication will include meetings such as Pre-start Meetings, Toolbox Talks, Project Team Meetings, HSEQ Team Meetings, Client Meetings, Subcontractor Meetings, and HSEQ System Review Meetings. Meetings shall include appropriate sustainability information and shall be in minutes and recorded.

Internal communication will also include written instructions, this may include drawings, specifications, method statements, risk assessments, contracts and sub-contracts. Internal communication of The Project's performance will also be undertaken via monthly environmental reporting.

8.4.2. External Communication

The Project shall externally communicate information relevant to sustainability in accordance with the Communication Strategy and as required by its compliance obligations and contract.

The Communication Strategy shall:

- Demonstrate a high level of commitment to stakeholders and that the engagement processes are valued;
- Detail objectives that determine the level of engagement appropriate to the needs of the Project;
- Detail applicable regulations and requirements;
- Summarise previous community engagement activities;
- Analyse stakeholders including a table that identifies all relevant stakeholders and indicates their likely level of interest in the Project and their specific issues;
- Identify negotiable and non-negotiable issues, as they relate to specific stakeholders and ensure a level of participation of at least 'collaborate' or higher on the IAP2 spectrum for negotiable items.
- A community engagement program including a description of Project specific stakeholder engagement techniques that respond to the objectives, level of engagement and the stakeholder analysis;
- A timetable including key community engagement milestones that demonstrate early engagement activities and milestones for reviewing and responding to feedback;
- Detail resources and responsibilities;
- Detail a community feedback and complaints procedure;
- Detail monitoring and reporting;
- Detail management functions; and
- Describe an evaluation process that is linked to the stakeholder engagement objectives for the Project. Including the identification and implementation of any required corrective action(s).

An overview of the Project's stakeholders is provided in **Table 9** of Section **5.2.2**. Outlined in **Table 12** below is an overview of negotiable stakeholder issues and the stakeholder groups that are considered to participate at an "Involve" or higher level on the IAP2 spectrum.

TABLE 12: OVERVIEW OF NEGOTIABLE STAKEHOLDER ISSUES

Stakeholder Issues	"Involve" or Higher Participation Stakeholder Groups
Strategic Direction	Client, Operator, Local Government, Sydney Airport
Inter-agency Collaboration	Client, Regulators, Emergency Services, Aboriginal Land Council, Local Government, State Government, Utilities, Sydney Airport
Ministerial Liaison	Client, State Government, Sydney Airport
Concept Development	Client, State Government, Sydney Airport
Project Scope	Client, Local Government, Utilities, Sydney Airport
Performance Measurement	Client, Regulators, Sydney Airport
Operational Decisions	Client, Operator, Utilities, Sydney Airport
Project Development	Client, Local Government, Sydney Airport
Project Management	Client, Local Government, Community Groups, Sydney Airport
Technical Inputs and Outputs	Client, Operator, Utilities, Regulators, Aboriginal Land Council, Sydney Airport
Noise and Vibration	Client, Regulators, Community Groups, Sydney Airport
Air Quality	Client, Regulators, Community Groups, Sydney Airport
Groundwater and Surface Water	Client, Regulators, Community Groups, Sydney Airport
Urban Design	Client, Local Government, Community Groups, Sydney Airport
Heritage	Client, Local Government, Regulators, Aboriginal Land Council, Community Groups, Sydney Airport
Traffic, Transport and Access	Client, Local Government, Emergency Services, Sydney Airport
Safety	Client, Regulators, Emergency Services, Sydney Airport
Utility Works	Client, Operator, Utilities, Local Government, Sydney Airport

9. Performance evaluation

9.1. Monitoring, measurement and analysis

The Project team will monitor, measure, analyse and evaluate the Project's sustainability performance. The Project has determined:

- what needs to be monitored and measured;
- the methods for monitoring, measurement, analysis and evaluation, as applicable, to ensure valid results;
- the criteria against which the organisation will evaluate its environmental performance, and appropriate indicators;
- when the monitoring and measuring shall be performed; and
- when the results from monitoring and measurement shall be analysed and evaluated.

An overview of the proposed sustainability monitoring is detailed in

Table 13**3** below.

TABLE 13: OVERVIEW OF SUSTAINABILITY MONITORING

Item	Details	Responsibility
IS Ratings	Overdue sustainability deliverables Identified non-compliances Score	Sustainability
Sustainability Opportunities	Total identified (No.) % included/under-consideration/abandoned	Sustainability
Spoil Management	Total volume % contaminated/uncontaminated % reused onsite/reused offsite/disposed to landfill	Sustainability
Topsoil	Total volume % contaminated/uncontaminated % enhanced % reused onsite/reused offsite/disposed to landfill	Sustainability
Waste	Types, office, inert construction & demolition (C&D) Total volume % reused onsite/reused offsite/recycled offsite/waste to energy offsite/disposed to landfill	Sustainability
Energy & Emissions	Total (electricity + fuel) % renewable/non-renewable Total (tCO_2e) % offset	Sustainability
Water Use	Total volume % potable/non-potable % sourced onsite/offsite % recycled water	Sustainability
Water Generated	Total volume % rainwater/stormwater/wastewater/groundwater/ % used/disposed	Sustainability
Materials used	Total quantity Lifecycle impacts (tCO_2e) % Environmental labels	Sustainability

Item	Details	Responsibility
Concrete	Total volume (in situ + pre-cast + piling) % Portland cement replacement	Sustainability
Aggregates	Total volume % recycled content	Sustainability
Weekly Sustainability Inspection	Suitable checklists covering environmental and social issues. Completed by managers, environmental and sustainability professionals.	Sustainability
Discharges	Exceedances, non-compliances water quantity/quality/noise/vibration/air quality/light pollution	Environment
Contamination	Exceedances, non-compliances	Environment
Ecological	Conservation (before and after), non-compliances	Environment
Heritage	Conservation (before and after), non-compliances	Environment
Community Health and Wellbeing	Total (No.) under consideration and implemented	Sustainability & Community
Stakeholder engagement	% community support for Project	Community
Local industry participation	Percentage of total contract value (%) Spend on % aboriginal/social enterprise/local/small and medium sized/Australian enterprises	Commercial
Workforce development and diversity	Total (No.) % participation rates for women in non-traditional roles % participation rates for 'learning workers' % participation rates for apprentices % participation rates for workers under 25 years % spend on supporting Aboriginal participation*	Workforce

9.2. Reporting

9.2.1. Reporting and data collection requirements

The Project shall communicate relevant environmental performance information both internally and externally via regular reporting, as required by its compliance obligations. These reports shall be used by the Project to evaluate fulfilment of its compliance obligations.

An overview of the proposed sustainability monitoring is detailed in **Table 144** below.

TABLE 14: OVERVIEW OF SUSTAINABILITY REPORTING

Item	Details
Monthly Sustainability Progress Reports	• Will include: • the performance of the Contractor against the targets identified in the SMP summarised within a compliance table and a dashboard showing the status of compliance with the sustainability requirements and specified targets of the Contractor's Activities; • progress towards achieving the "Design" and "As Built" ISCA IS rating tool v1.2, including completed and updated checklists and scorecards; • data to support reporting on targets, and a commentary / analysis of trends including actions to be undertaken to improve performance, for the following:

Item	Details
	○ current and cumulative level of energy use and greenhouse gas emissions and performance against the target identified in the energy and carbon management section of the SMP; ○ electricity consumption and generation, including any on-site renewable energy generation, renewable energy sources and offsets for the Contractor's Activities, and performance against the targets in the SMP; ○ fuel consumption and performance against fuel consumption targets; ○ volume and percentage of potable and non-potable water consumed for the Contractor's Activities, and performance against targets; ○ quantities of waste generated, recycled, beneficially re-used or disposed of and performance against waste targets, including spoil targets; ○ volume weighted average of substitute cementitious content in concrete used for the Contractor's Activities, and the substitute materials specified and categorised; ○ details of sustainable training and inductions provided to major subcontractors and suppliers including sustainable procurement; ○ details where low carbon and greenhouse gas reduction initiatives have been implemented in the design and construction of the Project Works and Temporary Works; ○ climate change risk assessments undertaken and details of where the assessments have influenced the design and construction for the Project Works and Temporary Works; ○ life cycle assessments undertaken, and details of environmental impact reduction initiatives which have been implemented in the design and construction of the Project Works and Temporary Works; and ○ details of any innovative sustainable design initiatives.
Monthly Workforce Development and Social Procurement Delivery	Will include; • a summary of Code of Practice compliance and implementation issues. • a summary of Aboriginal participation and achievements as well as performance against the Aboriginal Participation Plan. • a summary of achievements against the Infrastructure Skills Legacy Employment and Training targets. • a summary of management activities related to workforce training, development, and social procurement that was undertaken in the current month, and the projection for future months. • details of the indicative workforce numbers and vacancies, including a breakdown of participation from; aboriginals, women in non-traditional roles, apprentices, trainees, learning workers, long-term unemployed, people with a registered disability, humanitarian, new entrants, other disadvantaged or underrepresented groups and workers from Greater Western Sydney. • Details of the number of small to medium enterprises participating in the supply chain. • Details of the workforce participating in cultural awareness training. • The number of ambassador sessions conducted. • The number of work placements per annum for people over 16 years of age currently in school. • The number of graduate placements per annum for university undergraduates or recent graduates. • Expenditure with social and disability enterprises. • Expenditure with Aboriginal-owned businesses. • The number and visa qualification of all non- Australian residents employed by the Contractor and all sub-contractors.

Item	Details
Annual Public Sustainability Report	Will include: • details regarding performance against sustainability objectives • areas for improvement • demonstrate and detail performance in sustainability in relation to the SMP and include progress against sustainability goals and targets over the last year including annual sustainability reporting metrics in line with the "NSW Government Resource Efficiency Policy (last updated in 2019)". • Align with the requirements and intent of AG Sustainability Reporting Guidelines (Global Reporting Initiative, Version 3)

9.3. Audit, inspections and reviews

9.3.1. Audit, Review and Verification

The Project will be audited at planned intervals in accordance with Man-3 & Man-4 IS v1.2 Technical Manual requirements to provide information on whether the Project:

- Is meeting its compliance obligations
- Conforms to the SMP
- Determine if the SMP is effectively implemented and maintained.

The Sustainability Team will establish, implement and maintain an audit program for the Project within PPW, including the frequency, methods, responsibilities, planning requirements and reporting of its audits. Sustainability audits will be conducted at least quarterly with at least one per year being 'independent' as shown in **Table 155**.

The scope of the audits may vary but the most material issues will be audited regularly during the rating period. Sustainability audits should cover the most material environmental, social and economic issues. 'Regularly' needs to be described and justified for each Project. The audit reports must demonstrate that these requirements have been fulfilled.

TABLE 15: AUDITS & REVIEW

Scope	Frequency	Lead	Lead Organisation	Other Participants	IS v.1.2 Credit Reference
Weightings Assessment Verification	Design Stage	Sustainability Manager	JHSWJV	ISCA	NA
Base Case Verification	Design Stage	Sustainability Manager	JHSWJV	ISCA	NA
ISP Review	Quarterly	ISP	JHSWJV	Sustainability Manager	Man-3
External (ISP) Sustainability Management System Audit	Quarterly	ISP	JHSWJV	Sustainability Manager	Man-4
Senior Management Review of Sustainability Performance (as per section 9.3.1)	Quarterly	Sustainability Manager	JHSWJV	Project Senior Leadership Team (SLT) TfNSW Sydney Airport Inner West City Council	Man-5

Scope	Frequency	Lead	Lead Organisation	Other Participants	IS v.1.2 Credit Reference
				Bayside Council	
Stakeholder & Senior Management Review of Annual Report	Annually	Sustainability Manager	JHSWJV	Project Senior Leadership Team (SLT) TfNSW Sydney Airport Inner West City Council Bayside Council	Man-5
Supplier Sustainability Performance Review	6 Monthly	Sustainability Manager	JHSWJV	Suppliers	Pro-4
Review/Audit Energy and GHG Management	Annually	SQP	JHSWJV	Sustainability Manager	Ene-1
Waste Auditing to Final Destination	6 Monthly	Environment Manager	JHSWJV	Waste Servicing Facilities	Was-1
Communication Strategy Independent Review	Yearly	Community and Stakeholder Manager	JHSWJV	TfNSW	Sta-1, 3 & 4
Independent Review of the Urban and Landscape Design Plan	Design stage	Urban Design Manager	JHSWJV	TfNSW	Urb-1
Sustainability Risk and Opportunity Register Review	Quarterly	Sustainability Manager	JHSWJV	Design Lead Construction Manager	Man-2
Independent Reviews of Stakeholder Participation Performance	Annually	SQP	JHSWJV	Community & Stakeholder Manager	Sta-1, 2, 3 & 4
Contamination Assessment	As required	SQP	JHSWJV	Env. & Sust. Manager	Lan-3

9.3.2. Management review

The Project Leadership will review the implementation of the SMP at a Project level, at planned intervals, to ensure its continuing suitability, adequacy and effectiveness. The management reviews shall incorporate community participation (e.g. record of minutes from community meetings being input to management review).

The management review will include consideration of:

- The status of actions from previous management reviews.
- Changes in:
  - External and internal issues that are relevant to sustainability.
  - The needs and expectations of interested parties, including compliance obligations.
  - Risks and opportunities.
- The extent to which sustainability objectives have been achieved.
- Information on the Project's sustainability performance, including trends in:

- Nonconformities and corrective actions.
- Monitoring and measurement results.
- Fulfilment of its compliance obligations.
- Audit results.

- Adequacy of resources.
- Relevant communication(s) from interested parties, including the community.
- Opportunities for continual improvement.

The outputs of the management review will include:

- Conclusions on the continuing suitability, adequacy and effectiveness of the SMP.
- Decisions related to continual improvement opportunities.
- Decisions related to any need for changes to the SMP, including resources.
- Actions, if needed, when sustainability objectives have not been achieved.
- Opportunities to improve integration of the SMP with other Project processes, if needed.
- Any implications for the strategic direction of the Project.

9.3.3. Continuous improvement

When a nonconformity occurs, JHSW will:

- React to the nonconformity and, as applicable:
  - Take action to control and correct it.
  - Deal with the consequences, including mitigating adverse sustainability impacts.

- Evaluate the need for action to eliminate the causes of the nonconformity, in order that it does not recur or occur elsewhere, by:
  - Reviewing the nonconformity.
  - Determining the causes of the nonconformity.
  - Determining if similar nonconformities exist or could potentially occur.

- Implement any action needed.
- Review the effectiveness of any corrective action taken.
- Make changes to the SMP, if necessary.

Corrective actions will be appropriate to the significance of the effects of the nonconformities encountered, including the sustainability outcome(s).

The Project will retain documented information as evidence of:

- The nature of the nonconformities and any subsequent actions taken.
- The results of any corrective action.

John Holland and Seymour Whyte will retain documented information as evidence of the results of management reviews.

Appendix A: Sustainability policies

DESIGN AND CONSTRUCTION OF SYDNEY GATEWAY STAGES 1 AND 3

JOHN HOLLAND | SEYMOUR WHYTE

Sustainability Policy

John Holland Seymour Whyte (JHSWJV) is committed to integrating economic growth, environmental resilience, and social progress as priorities into decision-making at every level of the Joint Venture (JV), with the ambition to create long-term value.

Our Approach

JHSW will undertake its business in a manner that maximises positive environment, social and economic impact for our people and stakeholders. We are adopting a resilient and enduring strategic approach to meet and mitigate the existing and emerging challenges for society and our infrastructure environment. JHSW acknowledges that sustainability enables long-term economic resilience.

Sustainability Policy in practice

- Create a sense of place for communities, by making a positive and meaningful difference by collaborating with the community and stakeholders
- Via stakeholder engagement ensure solutions are resilient to projected climate change scenarios, adaptable to emerging technologies, and sensitive to changing community needs
- Decision making will integrate economic, social, environmental and governance aspects, and seek to achieve positive outcomes in each
- Use sustainability management frameworks (e.g. ISCA) to enhance the overall governance and performance of the project
- Adopt a whole of life approach to ensure best economic, social and environmental outcomes are realised in the short, medium and long-term, future proofing the asset
- Adopt the circular economy philosophy in relation to materials, water and waste and implementing a circular economy initiative on the project.
- Address environment considerations in a manner that is sensitive to the needs of our stakeholders and the environment, creating enhanced environmental outcomes where practical
- Be recognised as an industry leader in making our workplaces safer through innovation, collaboration and effective planning and management of risks
- Enhance workforce health, wellbeing, inclusion and diversity through employee empowerment to deliver sustainable outcomes
- Nourish relationships with organisations that specialise in workforce development, industry participation and training
- Source sustainably and ethically, including prioritising local industry participation, social procurement initiatives and a commitment to avoiding modern slavery
- Encourage innovation amongst our delivery teams and supply chain to achieve sustainable outcomes
- Manage activities ethically, measuring and reporting sustainability performance of the project
- Govern for sustainability by implementing project systems and processes to ensure the effective and efficient delivery and operation of the project
- Adopting best practice urban and landscape design, pursuing opportunities to achieve green infrastructure, ecological enhancement, heritage interpretation, water quality improvement, flood mitigation and community well-being

Ivan Karaban
Project Director
JHSWJV Sydney Gateway Project – January 2021

Transport Environment and Sustainability Policy

Transport is a key enabler of economic and social activity. We are committed to delivering transport which contributes to economic prosperity and social inclusion in an environmentally responsible and sustainable manner, consistent with the Future Transport Strategy 2056.

Transport for NSW's activities cover the whole State and its infrastructure will last for generations to come. We have a duty to undertake our activities in the interest of the greater good, moving beyond compliance, and being a genuine leader in environment and sustainability performance.

We will work towards achieving this for NSW by:

- Leadership – contributing to and influencing the strategic environment and sustainability agenda of the NSW Government
- Environmental protection – being accountable for addressing and minimising the environmental impacts of our activities to satisfy the expectations and legislative requirements of the NSW Government and community
- Energy and carbon – improving energy efficiency and working towards net zero carbon emissions
- Resilience – embedding climate risk and resilience considerations in our activities
- Sustainable procurement – procuring and delivering sustainable, efficient and cost effective transport options, including responsible supply chains
- Whole of life – considering whole of life benefits and impacts from our activities across all life cycle stages - demand/need, plan, acquire, operate/maintain and disposal
- Social – recognising the social impacts and benefits of our activities, and working for healthy liveable communities
- Awareness – raising the awareness and capacity of our workforce to be accountable for implementing the Policy through their activities to achieve enhanced environmental outcomes and a culture of environmental responsibility
- Communication – communicating openly, responsively and empathetically with our customers, partners and stakeholders on environmental matters and report on our performance

This Policy applies to the agencies listed below:

- Transport for NSW
- Department of Transport
- Sydney Trains
- NSW Trains
- RailCorp
- State Transit Authority
- Sydney Metro

This Policy applies to permanent, temporary and casual staff of the above agencies, staff seconded from another organisation and contingent workers including labour hire, professional services contractors and consultants.

Rodd Staples
Secretary
13 January 2020

Transport for NSW T 8202 2200 | F 8202 2209
18 Lee Street, Chippendale NSW 2008 | PO Box K659, Haymarket NSW 1240

P20000

Appendix B: Sustainability Opportunities Register (Work in Progress)

Sydney Gateway

Stages 1 & 3

# of Environment Opportunities	23
# of Social Opportunities	15
# of Economic Opportunities	1
# of Environment & Social Opportunities	5
# of Environment & Economic Opportunities	16
# of Economic & Social Opportunities	2
# of Environnment, Social & Economic Opportunities	4
Total	66

* An Environmental Aspect is an element of the organisations activities or products or services that can interact with the environment (AS/NZS ISO14001:2016); a Sustainability Aspect is an element which can involve environment, community and economy
** An Environmental Impact is defined as any change to the environment or a component of the environment, whether adverse or beneficial, wholly or partially resulting from an organisations environmental aspects.(AS/NZS ISO14001:2004). This is also true for sustainability although involves community/social and financial aspects as well
*** Risk or opportunity description . This is the articulation of the resultant risk or opportunity given the aspect and impact at the site.

Environment & Sustainability Opportunities																Opportunity analysis and evaluation using existing standard controls and			Risk Management	Responsibility and Monitoring				Comments
Ref #	Status	Aspect	Scope	Opportunity Description	Impact	Benefits - i.e. What is the reduction / change? (Quantify it)	Likely Cost Saving for D&C?	What is the estimated cost benefit	Location	Design Report/Package Reference (Report Number, Section, Page Number)	Design Drawing Number Reference	Opportunity Phase	Impact Category (relevant to ISCA v1.2 credits)	Beneficial Category (Environmental, Economic and/or Social)	Significant Decision Potential?	Consequence	Likelihood	Rating	Additional Project or Site Specific Management Actions	Responsibility (Opportunity Owner)	Action Due Date	Interval / Milestone Check	Status (active or closed) as at:	Comments
example 1.1a	Under Consideration	Materials		Reduce track form width	Decreased material usage (i.e.concrete)	Reduction of 30m3 of 40MPa concrete	Yes	$5,000	Project Wide			Design	Material Reduction	Environment.	Yes / No	C6 Insi	L4 Unl	Sli ght	Ensure Heritage assessment has been undertaken by qualified specialist and that search results and all site maps have been	John Smith (TfD SME)	1.01.01	Prior to start of earthworks	Active	Discussion required with Sydney Trains Heritage consultant upon completion of Heritage Assessment
1	Under Consideration	Materials	Program	Geopolymer concrete / low carbon concrete for use in non-structural concrete members, i.e. R53, namely shared path/ATL concrete.	Less energy intensive material, long-term durability (less shrinkage), reduction in scope 3 emissions.	TBC after modelling.	Yes	Unknown at this stage	Program			Design	Material Reduction	Environment				0		Design Lead				23.02.21: Non-compliant product –performance up to standards – @Matt Dimarco-JHG to send new specs of geopolymer (80% complete) AAJV to develop Technote on Geopolymer for 100m ATL by Wed 24/2
2	Under Consideration	Materials	Program	Use of 100% recycled content pipes in lieu of plastic (PVC) pipes.	Less energy intensive material, supports circular economy in diverting and reusing waste.	TBC after modelling.	Unknown	Unknown at this stage	Program			Design	Material Reduction	Environment				0		Design Lead				23.02.21: Separate meeting – will proceed to use HDPE pipes but not recycled
3	Under Consideration	Materials	Program	Use of Tonerplas as supplementary binder.	Less energy intensive material, supports circular economy in diverting and reusing waste.	TBC after modelling.	Unknown	Unknown at this stage	Program			Design	Material Reduction	Environment				0		Design Lead				23.02.21: AAJV to review and advise
4	Under Consideration	Materials	Program	Use of polymer fibres, i.e. E-mesh, instead of steel mesh for ATL.	Less energy intensive material, cost-effective alternative to steel, reduction in scope 3 emissions.	TBC after modelling.	Unknown	Unknown at this stage	Program			Design	Material Reduction	Environment				0		Design Lead				23.02.21 adds to this request by adopting recycled plastic mesh + explore in combination with Geopolymer concrete. AAJV to proceed with E-mesh along the ATL not in conjunction with Geopolymer – Incl in tech note 1
5	Under Consideration	Materials	Program	Use of recycled crumb rubber in concrete noise walls.	Less energy intensive material, supports circular economy in diverting and reusing waste.	TBC after modelling.	Unknown	Unknown at this stage	Program			Design	Material Reduction	Environment				0		Design Lead				up more sustainable alternatives including just a simple brick wall/sandstone wall etc which also has more aesthetic appeal, would welcome CM+ to explore further, refer example below from RMS FBB D&C project, where blocks were used adjacent to Kangaroo valley Road.
6	Under Consideration	Materials	Program	Use of Run of Station (ROS) Fly Ash for use in subbase and subgrade layers in a pavement, or for engineered fill applications in say bridge abutments.	Less energy intensive material, supports circular economy in diverting and reusing waste.	TBC after modelling.	Yes	Unknown at this stage	Program			Design	Material Reduction	Environment				0		Design Lead				23.02.21 (Email from BG&E dated 17.02.21): In total there would be some nearly 100 million tonnes of this material in ash dams or repositories owned and operated by the above groups. This would make a great sustainability opportunity for us given the types of construction required in the Gateway project and there may be cost and engineering benefits as well.
7	Included	Energy	Program	Use of Greenpower for project office - currently purchasing energy (electricty, heatinng and cooling water) from Clean Peak's Trigeneration facility in Mascot. SWTC: Greenpower - 20% & Energy offset - 6%	Increase in renewables - reduction in energy demand	Quantum TBC after meeting with Clean Peak representatives and modelling. From a cursory review, a 30% reduction in GHG is anticipated throught the use of this SSHP Plant. Benefits: Environment: Provides a reliable source of renewable energy for the project. Economic: a fixed, low price for clean energy. Social: use of local supplier as opposed to buying from the grid, supporting local employment	Yes	To be determined	Main Project Office	NA	NA	Design	Renewable Energy	Environment	Yes			0		NA				
8	Under Consideration	Energy	Program	Use of Greenpower for site office sheds (C1, C2, C3). Currently considering the use of Powershop SWTC: Greenpower - 20% & Energy offset - 6%	Increase in renewables - reduction in energy demand	TBC after modelling and once Powershop has been contracted. Provides a reliable source of renewable energy for the project. Economic: Secure a fixed, low price for clean electricity.	No	Unknown at this stage	Program			Construction	Renewable Energy	Environment & Economic				0						
9	Under Consideration	Community Health and Wellbeing	Program	Community outreach program including forums, local business engagement, Aboriginal participation, local schools and university programs	Provide benefit to the project and society as a whole through tangible goals in procurement, education and training.	TBC	Unknown	Unknown at this stage	Program			Construction	Community Health & Wellbeing	Economic & Social				0						
10	Under Consideration	Workforce	Program	Collaborate with the Department of Education/smart skills funding to deliver additional workforce training	Increased skilled employees for greater construction industry workforce	TBC	Yes	Unknown at this stage	Program			Construction	Workforce	Economic & Social				0						
11	Under Consideration	Materials	Program	Bridge design optimisation to reduce steel quantities	Reduction in materials quantities and impacts, cost saving.	TBC after modelling.	Yes	Unknown at this stage	Program			Design	Material Reduction	Environment & Economic				0						
12	Under Consideration	Materials	Program	Use of Reconophalt (asphalt with high recycled content)	Supports circular economy in diverting and reusing waste from landfull.	TBC after modelling. Reductions in waste. Reductions in scope 3 emissions.	Unknown	Unknown at this stage	Program			Design	Material Reduction	Environment & Economic				0						
13	Under Consideration	Materials	Program	Replacing noise walls with noise mounds using spoil	Reuse of spoil, reduction in material quantities	TBC after modelling.	Yes	Unknown at this stage	Program			Design	Material Reduction	Environment, Social & Economic				0						
14	Under Consideration	Materials	Program	Reduction in the extent of retaining walls	Reduction in materials quantities and impacts, cost saving.	TBC after modelling.	Yes	Unknown at this stage	Program			Design	Material Reduction	Environment & Economic				0						
15	Under Consideration	Materials	Program	Increased CMC spacing and reduced number	Reduction in materials quantities and impacts, cost saving.	TBC after modelling.	Yes	Unknown at this stage	Program			Design	Material Reduction	Environment & Economic				0						
16	Under Consideration	Water	Program	Sourcing of non-potable water from Sydney Water, Airport sediment basins, local/private services, etc	Reduced potable water demand	TBC after modelling.	Yes	Unknown at this stage	Program			Construction	Water Reduction	Environment & Economic				0						
17	Under Consideration	Materials	Program	Use of warm mix asphalt instead of hot mix	Less energy intensive material	TBC after modelling.	Yes	Unknown at this stage	Program			Construction	Material Reduction	Environment				0						
18	Under Consideration	Materials	Program	Use of FSC or PEFC certified materials for noise walls	Responsibly sourced materials	TBC after modelling.	Unknown	Unknown at this stage	Program			Design	Material Reduction	Environment				0						
19	Under Consideration	Materials	Program	Use of HDPE/plastic pipes instead of concrete for drainage	Less energy intensive material	TBC after modelling.	Unknown	Unknown at this stage	Program			Design	Material Reduction	Environment				0						
20	Under Consideration	Energy	Program	Use of lighting sensors to control lights and reduce energy consumption	Reduced energy use	TBC after modelling.	Yes	Unknown at this stage	Program			Design	Energy Reduction	Environment				0						
21	Under Consideration	Energy	Program	Solar lighting	Reduced energy use	TBC after modelling.	Yes	Unknown at this stage	Program			Design	Renewable Energy	Environment				0						
22	Under Consideration	Community Health and Wellbeing	Program	Built in bike pump area	Improved community amenity through access to facilities	TBC.	Unknown	Unknown at this stage	Program			Design	Community Health & Wellbeing	Social				0						
23	Under Consideration	Materials	Program	Use of coal wash for select material in backfilling applications	Less energy intensive material, supports circular economy in diverting and reusing waste.	TBC after modelling.	Yes	Unknown at this stage	Program			Construction	Material Reduction	Environment				0						
24	Under Consideration	Materials	Program	Use of bolted splices instead of in-situ welding	Decreased installation time, safer construction method	TBC after modelling.	Yes	Unknown at this stage	Program			Design	Material Reduction	Environment				0						
25	Under Consideration	Materials	Program	Use of combined services trenches to reduce materials use/excavation	Reduction in materials quantities and impacts, cost saving.	TBC after modelling.	Yes	Unknown at this stage	Program			Design	Material Reduction	Environment & Economic				0						
26	Under Consideration	Water	Program	Selection of drought-tolerant native plant species	Reduction in water use, improved ecological outcomes	TBC after modelling.	Yes	Unknown at this stage	Program			Design	Water Reduction	Environment & Economic				0						
27	Under Consideration	Materials	Program	Use of grass swales instead of concrete-lined channels	Material reduction, improved water quality	TBC after modelling.	Yes	Unknown at this stage	Program			Design	Material Reduction	Environment				0						
28	Under Consideration	Management & Governance	Program	Propose life cycle costing approach that takes advantage of overlap with IS Rating 'Resource and Waste Modelling'.	Process efficiencies, maximise value add of the study and the potential for its onward application	Environmental & Financial - maximising consideration of life cycle approach across the project will result in greater potential environmental benefit and cost reduction. Reduced costs through duplication of efforts i.e. not having to commission additional/duplicate study.	Yes	Unknown at this stage	Program			Design	Energy & Carbon, Materials, Water & Waste Reduction	Environment & Economic				0						
29	Under Consideration	Discharges	Program	Use of 'Site Hive' environmental monitoring device	Improved understanding of noise and dust impacts, improved exceedance investigation.	Improved understanding of noise and dust impacts, improved exceedance investigation.	Unknown	Unknown at this stage	Program			Construction	Discharges	Environment & Social				0						
30	Under Consideration	Materials	Program	Use of MatX goods and materials exchange to source recycled materials from other projects and divert waste materials from landfill. Assist in identifying reuse options for assets being extracted/demolished	Sourcing lower cost and less energy intensive recycled materials, supports circular economy in diverting and reusing waste.	TBC after modelling.	Yes	Unknown at this stage	Program			Construction	Material Reduction	Environment, Social & Economic				0						
31	Under Consideration	Materials	Program	Use of Diamond Grid concrete reinforcement to reduce concrete and reinforcement quantities	Reduction in materials quantities and impacts, cost saving.	TBC after modelling.	Yes	Unknown at this stage	Program			Design	Material Reduction	Environment & Economic				0						
32	Under Consideration	Materials	Program	Use of precast pits with Emesh reinforcement (as approved on WCX3B)	Less energy intensive material, supports circular economy in diverting and reusing waste.	TBC after modelling.	Yes	Unknown at this stage	Program			Design	Material Reduction	Environment				0						
33	Under Consideration	Energy	Program	Installation of portable solar PV to power construction facilities	Provides an alternative to diesel generators leading to a reduction in energy demand, potential noise benefits, and reductions in pollutants from refueling.	TBC after modelling. Reduction in noise pollution and localised air pollution. Supports the uptake of renewable energy within the construction industry. Abates health and safety risks associated with diesel generators.	Unknown	Unknown at this stage	Program			Construction	Renewable Energy	Environment				0						
34	Under Consideration	Workforce Sustainability	Program	Implement ISv2.0 Wfs-5 Innovation Challenge - Sustainable Site Facilities	Reduced site compound energy/water use and improved facilities for staff.	Improvements in site facility energy efficiency, reductions in energy costs, and improved wellbeing and heath of workers	Unknown	Unknown at this stage	Program			Construction	Sustainable Site Facilities	Environment & Social				0						
35	Under Consideration	Energy	Program	Installation of solar PV on permanent structures to generate power for lighting	Generate power for lighting, reduction in energy demand, and increase in renewables.	TBC after modelling. Reduction in emissions.	Unknown	Unknown at this stage	Program			Design	Renewable Energy	Environment & Economic				0						
36	Under Consideration	Energy	Program	Use of B20 biodiesel for plant and equipment	Reduction in GHG emissions, more cost-effective and fuel-efficent alternative than standard diesel fuel.	TBC after modelling.	Yes	Unknown at this stage	Program			Construction	Renewable Energy	Environment & Economic				0						
37	Under Consideration	Energy	Program	Use of high efficiency air conditioning systems	Greater energy efficency and reduction in emissions	Ongoing energy savings and maintenance savings through high efficient aircon unit. Possible noise benefits from using a smaller unit.	Unknown	Unknown at this stage	Program			Design	Energy & Carbon Reduction	Environment & Economic				0						
38	Under Consideration	Materials	Program	Retain existing infrastructure where possible. (Excavate less, reuse more)	Minimising construction, reduction of material and waste, and overall reduction in scope 3 emissions.	TBC after modelling.	Yes	Unknown at this stage	Program			Design	Material Reduction	Environment & Economic				0						
39	Under Consideration	Materials	Program	Use of 'Green Steel' for structures (see BHP 'Green Steel' usage for more information).	Less energy intensive material, cost-effective alternative to steel, reduction in scope 3 emissions.	TBC after modelling. Reduction in resource consumption leading to overall scope 3 emission reductions.	Unknown	Unknown at this stage	Program			Design	Material Reduction	Environment				0						
40	Under Consideration	Materials	Program	Soft plastic recycling scheme - Plastic Police Program	Reduction of waste sent to landfill, supports the broader circular economy model, staff sustainability engagement and education.	Recycling of soft-plastics, educating and empowering staff to be more sustainable. Supporting broader circular economy goals (eg NSW Government Metropolis Plan - Objective 35).	Unknown	Unknown at this stage	Program			Construction	Material Reduction	Environment & Social				0						
41	Under Consideration	Materials	Program	Use of crushed recycled glass sand for bedding material	Reduction of materials and scope 3 emissions	TBC after modelling. Reuse of recycled materials leading to overall scope 3 emission reductions.	Yes	Unknown at this stage	Program			Construction	Material Reduction	Environment & Economic				0						
42	Under Consideration	Energy	Program	Use of electric powered plant to reduce air emissions and noise where situated next to sensitive receivers – CO2 saving	Reduction of energy demand. Reduction of noise pollution. Reduction in air pollution.	TBC after modelling.	Yes	Unknown at this stage	Program			Construction	Energy & Carbon Reduction	Environment, Social & Economic				0						
43	Under Consideration	Heritage	Program	Integration of Indigenous or European heritage artworks/enhancement options.	Increase surrounding heritage values, visual amenity of construction site, support local Indigenous artists and increase social perception of the project.	TBC. Increase the visual amenity and hertiage connections. Increase the social perception of the project. Support local indigenous artists.	Unknown	Unknown at this stage	Program			Design	Heritage Assessment & Management	Social				0						

44	Under Consideration	Management & Governance	Program	Sharing construction materials, resources, knowledge / templates generated with other nearby projects.	Increase knowledge sharing and reducing the amount of work being duplicated across the industry	Increase knowledge sharing and reducing the amount of work being duplicated across the industry	Yes	Unknown at this stage	Program			Design	Knowledge Sharing	Environment & Social				0								
45	Under Consideration	Waste	Program	Use of tablets to reduce paper use.	Waste/paper reductions.	Reductions in waste. Digital records are more effective for storing and sharing project information.	Yes	Unknown at this stage	Program			Construction	Waste	Environment				0								
46	Under Consideration	Water	Program	Collection of rain water around site and rainwater harvesting.	Conserve potable water use. Rainwater harvesting supports WSUD (water sensitive urban design).	TBC after modelling. Reduce potable water use and cost savings. Reduce stormwater runoff and pollutants from reaching waterways.	Yes	Unknown at this stage	Program			Construction	Water Reduction	Environment				0								
47	Under Consideration	Heritage / Urban and Landscape Design	Program	Tubestock from local Indigenous suppliers for revegation areas.	Increase surrounding heritage values, enhance local biodiversity, reduce project vegetation clearing by meeting a net postive replanting goal.	TBC. Supporting Indigenous suppliers, enhance local biodiversity and ecosystem functions, reduce projects vegetation clearing impacts, mitigates climate change impacts through providing shade and reducing urban heat island.	Unknown	Unknown at this stage	Program			Design	Heritage, Ecology	Environment, Social & Economic				0								
48	Under Consideration	Waste	Program	Reuse excavated spoil where possible - decreasing transport requirements and diversion from landfill.	Reduces quantity of waste produced and negates the need to purchase spoil.	TBC after modelling. Reduces material demand. Decreases transport exgenses, potential scope 3 emission savings, and diverts the waste from landfill.	Yes	Unknown at this stage	Program			Design	Waste	Environment & Economic				0								
49	Under Consideration	Workforce Sustainability	Program	Supporting indigenous and social procurement businesses to join the approved project supply chain	Increase the experience & knowledge of indigeneous and social procurement businesses increases public perception	Improves economic and social outcomes for First Nations peoples and the wider community. Drives industry partnerships with Indigenous suppliers. Improves supply chain disclosures and transparency around supplier diversity.	Unknown	Unknown at this stage	Program			Construction	Procurement	Social				0								
50	Under Consideration	Procurement	Program	Reward and recognition scheme for subcontractor management	Increases good subcontractor behaviour and employee moral	Social benefits due to improved relationships with supply chain and encourage sustainability with suppliers industry wide.	Unknown	Unknown at this stage	Program			Construction	Procurement	Social				0								
51	Under Consideration	Stakeholder Participation	Program	Communicate in community languages	Provides a broader range of public understanding of Project information and resources	Facilitates public understanding of project information including sustainability goals and performance. Enhance connections between community and the project.	Unknown	Unknown at this stage	Program			Construction	Effective Communication	Social				0								
52	Under Consideration	Stakeholder Participation	Program	Plant a tree day at a local public school	Increases surrounding heritage values Decreases the Project's GHG footprint Increases community perception of Project	Environmental education to local schools. Enhance local biodiversity and ecosystem functions, reduce projects vegetation clearing impacts, mitigates long-term climate change impacts through providing shade and reducing urban heat island.	Unknown	Unknown at this stage	Program			Construction	Level of Engagement	Environment & Social				0								
53	Under Consideration	Workforce Sustainability	Program	Flexible working arragements (ability to work remotely). Extend COVID-19 plan beyond health requirements.	Increases employee morale. Increases work/life balance.	Reduced time, emissions and fatigue associated with travel. Improved work - life balance for workers. Enhanced public perception of the program.	Unknown	Unknown at this stage	Program			Design	Workforce Culture & Wellbeing	Social				0								
54	Under Consideration	Water	Program	Install smart water metering / timers	Improve water use and efficiency. Increases analysis capabilities of the Project. Saves time and removes ambiguity from reporting.	TBC after modelling. Improve water consumption and efficiency. Prevent incidents that can arise from leaking systems. Save time and improve reporting flows.	Unknown	Unknown at this stage	Program			Construction	Water Reduction	Environment				0								
55	Under Consideration	Energy	Program	Pre-cast concrete instead of insitu pours	Reduction of materials scope 3 emissions, savings from construction off-site, safety benefits, waste savings	TBC after modelling. Pre-casting concrete prevents the need to manufacture on site. Improves quality control, safety and reduces wastage. Leads to reductions in scope 3 emissions.	Unknown	Unknown at this stage	Program			Construction	Energy & Carbon Reduction	Environment				0								
56	Under Consideration	Workforce Sustainability	Program	Grow capabilities through learning worker programs (apprentices, trainees)	Increased skilled employees for greater construction industry workforce	TBC. Supplement and support aging workforce. Training and employement in areas where where skill gaps exist such as signalling. Industry benefits from upskilling of young/aging workforce.	Unknown	Unknown at this stage	Program			Construction		Social				0								
57	Under Consideration	Workforce Sustainability	Program	Supplier awareness strategy (Engagement Forum)	Collaboration with other projects and boost the sustainability knowledge of the industry	Forum with with the Supply Chain Sustainability School and Transport for NSW to facilitate sustainable values/focus	Unknown	Unknown at this stage	Program			Construction	Procurement	Economic				0								
58	Under Consideration	Community Health and Wellbeing	Program	Provide benefits to identified community and social priority issues	Provide benefit to the project and society as a whole through tangible goals in procurement, education and training.	Societal benefits - workforce and industry reflects the diversity of the community. Increased awareness in diversity. Good public perception of the poject.	Unknown	Unknown at this stage	Program			Construction	Community Health & Wellbeing	Social				0								
59	Under Consideration	Waste	Program	Return and Earn scheme rolled out across the project, with bottles and cans collected for recycling. Money returned donated to charity.	Increases employee morale. Divert waste from landfill.	Sustainability education and engagement for workers. Employee morale increases from reward. If money is donated public perception of project increased.	Unknown	Unknown at this stage	Program			Construction	Waste	Social				0								
60	Under Consideration	Community Health and Wellbeing	Program	Implement CPTED Principles on the Project design and incorporate environmental sensitivity into design (eg. warmer light rather than cool light, take into account surrounding environment)	Increases public safety during construction and after infrastructure is built.	Benefits depend on the elements adopted. Broadly, community safety protected and enhanced. The use of graffiti artists to contribute leads to reduced illegal graffiti while enhancing visual amenity of facilities.	Unknown	Unknown at this stage	Program			Design	Crime Prevention Through Environmental Design	Social				0								
61	Under Consideration	Workforce Development & Social Procurement	Program	Education for men on domestic violence and gender equity. Encourage males in female led disciplines' such as admin and communications.	Fosters gender equality in the workforce and environment where domestic violence is prevented, identified and responded to.	Training ensures the project is equiped to manage and respond to DV situations. Fosters an environment of support within the project and company.	Unknown	Unknown at this stage	Program			Construction	Workforce	Social				0								
62	Under Consideration	Urban & Landscape Design	Program	Promote habitats for pollinators	increase surrounding heritage values, enhance local biodiversity, reduce project vegetation clearing by meeting a net postive replanting goal.	Increase surrounding heritage values, enhance local biodiversity, reduce project vegetation clearing by meeting a net postive replanting goal.	Unknown	Unknown at this stage	Program			Design	Ecology	Environment				0								
63	Under Consideration	Community Health and Wellbeing	Program	Educational program for secondary students - project management experience. develop concept, pitch, and project manage hoarding design; present to project team, sustainability training, females in STEM talks	Increases community perception and 'buy in' of the Project activities	TBC. Community/industry benefits from long-term investment into young talent.	Unknown	Unknown at this stage	Program			Construction	Community Health & Wellbeing	Social				0								
64	Under Consideration	Workforce Sustainability	Program	Internal and external communications on the value of diversity & workforce development to the business, to build understanding and inclusion of associated work	Increases community perception and 'buy in' of the Project activities	TBC.	Unknown	Unknown at this stage	Program			Construction		Social				0								
65	Under Consideration	Workforce Sustainability	Program	Days of significance: Weard Purple (LGBTI+ Awareness Training) R U OK Day Womens Health NAIDOC Mental Health Month EID	Workforce morale, diversity & Inclusion	TBC. Staff awarrness and engagement with signigicant diversity groups. Employee inclusion and morale increases.	Unknown	Unknown at this stage	Program			Construction	Workforce	Social				0								
66	Under Consideration	Workforce Sustainability	Program	Unacceptable behaviour in the workplace - Training	Workforce culture & behaviours, diverse inclusive workforce	TBC.	Unknown	Unknown at this stage	Program			Construction	Workforce	Social				0								
67																		0								
68																		0								
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Appendix C: Sustainability Requirements Register

See John Holland SharePoint - https://johnholland.sharepoint.com/sites/SG/ESA/Forms/AllItems.aspx?viewid=137925be%2Dd476%2D47f0%2Dbfd6%2D2016c62284d6&id=%2Fsites%2FSG%2FESA%2F24%20%20Sustainability%20%26%20Innovation%2F2%2E%20Registers

(Enviro/Sustainability /Approvals > 24. Sustainability & Innovation > 2. Registers)

Parent Document	Section	Sub-section	Obligation	Responsibility	Discipline to be communicated to	Evidence of communication (Name, Date, Other)	Where Captured	Section Where Addressed	Additional Output / Deliverable?	Timing	Comments	Compliance Status	Compliance Details
D&C Deed			**NONE**										
Sydney Gateway Stage 1 & 3 Scope of Works and Technical Criteria Appendix C.1 Project Plan Requirements	16	(a)	The Sustainability Plan must identify how the Contractor will comply with the sustainability requirements of the D&C Deed, the SWTC, and the Environmental Documents.	Sustainability Manager	All	NA	Sustainability Management Plan	Section 1.2 Compliance; Appendix C Sustainability Obligations Register	Sustainability Requirements Register	Design			
		(b)	The Sustainability Plan must contain, as a minimum:	NA	NA		NA	NA	NA	NA	NA	NA	NA
			(i) the contents specified for the Sustainability Plan in the SWTC, including this Appendix C.1 and Appendix D.5;	Sustainability Manager	All		Sustainability Management Plan	Whole document	NA	Design			
			(ii) demonstrate how sustainability commitments and overarching sustainability objectives and targets will be achieved;	Sustainability Manager	All		Sustainability Management Plan	Section 6.1 Planning Action	IS Rating Management Plan	Design			
			(iii) detail the sustainability management team structure, including key personnel, authority and roles of key personnel, lines of responsibility and communication, minimum skill levels of each role and interfaces with the overall project organisation structure;	Sustainability Manager	All		Sustainability Management Plan	Section 5.2.2. Roles and Responsibilities	NA	Design			
			(iv) include a sustainability policy statement and associated strategies for adaptation to climate change, resource management, workforce development and biodiversity enhancement;	Sustainability Manager	All		Sustainability Management Plan	Section 5.1 Sustainability Policy; Appendix A Sustainability Policies	Sustainability Policy	Design			
			(v) provide a description of the overall approach to the identification and assessment of sustainability opportunities;	Sustainability Manager	All		Sustainability Management Plan	Section 7.2 Sustainability Risks and Opportunities Register; Appendix B Sustainability Opportunities Register	Sustainability Requirements Register	Design			
			(vi) detail the sustainability initiatives to be implemented during the performance of the Contractor's Activities and milestones for key sustainability initiatives;	Sustainability Manager	All		Sustainability Management Plan	Section 7.2 Sustainability Risks and Opportunities Register; Appendix B Sustainability Opportunities Register	Sustainability Requirements Register	Design			
			(vii) detail the processes and methodologies for tracking and assigning responsibility for the identification and whole-of-life assessment of potential sustainability initiatives;	Sustainability Manager	All		Sustainability Management Plan	Section 6.1. Planning Action; Section 9. Performance Evaluation	Sustainability Requirements Register	Design			
			(viii) detail the processes and methodologies for embedding sustainability initiatives into design, procurement and construction processes;	Sustainability Manager	All		Sustainability Management Plan	Section 5.2 Sustainability Resources	Sustainability Requirements Register	Design			

			(ix) detail the processes and methodologies for assurance, monitoring auditing, corrective action and reporting on sustainability performance (including performance against sustainability targets);	Sustainability Manager	All		Sustainability Management Plan	Section 9. Performance Evaluation	Sustainability Requirements Register	Design			
			(x) provide a description of the overall approach to the identification of opportunities to reduce carbon emissions, energy use and embodied lifecycle impacts during the Contractor's Activities;	Sustainability Manager	All		Sustainability Management Plan	Section 7.2 Sustainability Risks and Opportunities Register; Appendix B Opportunities Register	Sustainability Requirements Register	Design			
			(xi) demonstrate how the Contractor will achieve the minimum 'As Built' Infrastructure Sustainability (IS) rating level required by Appendix D.5, for the design and construction of the Project Works and Temporary Works (including proposed contingency measures to ensure that a rating level of 'Excellent' is achieved).	Sustainability Manager	Engineers	09/12/20 - Angus Jolly - SEMP	Sustainability Management Plan	Section 4.2. Project Sustainability Objectives and Targets	ISCA IS Score Card	Design			
			(xii) detail the approach to sustainable procurement including: A. the processes and procedures that will be used to enhance the whole-of-life environmental, social and economic sustainability outcomes of the project through the supply chain (including subcontractors); B. the processes and evaluation criteria (specifying the environmental, social and economic criteria and weightings) that will be used for the selection of subcontractors; and C. the processes and procedures for assurance, monitoring, auditing, corrective action and reporting on sustainability performance of subcontractors; and	Sustainability Manager	All		Sustainability Management Plan	Section 5. Leadership and Commitment; Section 7.6 Subcontractor sustainability management	NA	Design			
			(xiii) provide an outline of the systems that will be used to support sustainability management; and	Sustainability Manager	All		Sustainability Management Plan	Whole document	NA	Design			
			(xiv) detail the interfaces with other project plans.	Sustainability Manager	All		Sustainability Management Plan	Section 1.3 Management System Integration	NA	Design			
		(c)	The Sustainability Plan must describe how the Contractor will achieve the Sustainability Objectives listed within Appendix D.5.	Sustainability Manager	All		Sustainability Management Plan	Section 4.2 Project Sustainability Objectives and Targets; Section 6.1 Planning Action	ISCA IS Score Card	Design			
		(d)	The Contractor must prepare an ISCA IS Rating Management Plan, included as a sub-plan of the Sustainability Plan, that guides the achievement of the IS Design and IS As-Built Rating scores identified in Table D.5-2 in Appendix D.5. The sub-plan must detail implementation protocols including:	Sustainability Manager	All		Sustainability Management Plan	Whole document	ISCA IS Score Card	Design			

			(i) ISCA IS assessment and registration process and timeframes;	Sustainability Manager	All		Sustainability Management Plan	Whole document	ISCA IS Score Card	Design			
			(ii) proposed consultation and engagement with ISCA and other stakeholders;	Sustainability Manager	All		Sustainability Management Plan	Whole document	ISCA IS Score Card	Design			
			(iii) the IS rating process and requirements for the provision of documentation to ISCA;	Sustainability Manager	All		Sustainability Management Plan	Whole document	ISCA IS Score Card	Design			
			(iv) key sustainability management roles and responsibilities;	Sustainability Manager	All		Sustainability Management Plan	Whole document	ISCA IS Score Card	Design			
			(v) the Contractor's nominated sustainability requirements which must be equal to or greater than the minimum requirements, if stated, listed in Table D.5-2 in Appendix D.5; and	Sustainability Manager	All		Sustainability Management Plan	Whole document	ISCA IS Score Card	Design			
			(vi) how the Contractor will achieve the nominated sustainability requirements.	Sustainability Manager	All		Sustainability Management Plan	Whole document	ISCA IS Score Card	Design			
		(e)	The Contractor must develop and implement an Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan, included as a sub-plan of the Sustainability Plan, which identifies processes and methods to:	Sustainability Manager	All		Sustainability Management Plan	Appendix F Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Design			
			(i) improve energy efficiency; and	Sustainability Manager	All		Sustainability Management Plan	Appendix F Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Design			
			(ii) reduce greenhouse gas emissions for the construction and operational stages.	Sustainability Manager	All		Sustainability Management Plan	Appendix F Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Design			
		(f)	Further to the requirements of the D&C Deed and this Appendix, the Contractor must undertake the ongoing development, amendment and updating of the Sustainability Plan throughout the duration of the Contractor's Activities to incorporate:	Sustainability Manager	All		Sustainability Management Plan	Section 9.3.3 Continuous Improvement	NA	Design			
			(i) new elements of the Project Works and Temporary Works not covered by the existing Sustainability Plan	Sustainability Manager	All		Sustainability Management Plan	Section 9.3.3 Continuous Improvement	NA	Design			
			(ii) changes in construction sequencing or methodology; and	Sustainability Manager	All		Sustainability Management Plan	Section 9.3.3 Continuous Improvement	NA	Design			
			(iii) lessons learnt, improvements/enhancements in accordance with continual improvement.	Sustainability Manager	All		Sustainability Management Plan	Section 9.3.3 Continuous Improvement	NA	Design			

Sydney Gateway Stage 1 & 3 Scope of Works and Technical Criteria Appendix D.5 Sustainability Requirements	1	(a)	The Contractor must comply with the requirements of the Roads and Maritime Environmental Policy Statement 2016 and address the sustainability objectives described in the Roads and Maritime Environmental Sustainability Strategy 2019-2023 throughout the performance of the Contractor's Activities.	Project Director	All		Sustainability Management Plan	Section 1.2 Compliance; Appendix C Sustainability Requirements Register	NA	Design			
		(b)	The Contractor must ensure that sustainability is embedded into the design, construction, operation and maintenance of Stage 1 & 3 to enhance the whole-of-life environmental, social, economic and sustainability outcomes.	Project Director	All		Sustainability Management Plan	Section 6.1 Planning Action	NA	Design			
		(c)	The impact, including but not limited to, whole-of-life social, environmental and economic costs and benefits, program impacts, risks and opportunities, of each proposed sustainability initiative options nominated in Table D.5-1 must also be addressed in the Sustainability Plan required by section 16 of Appendix C.1 (Project Plan	Project Director	All		Sustainability Management Plan	Whole document	NA	Design			
		(d)	The Contractor's Activities, and the Project Works and Temporary Works, must meet and comply with the targets identified in Table D.5-2.	Project Director	All		Construction Management Plan	TBA	NA	Design			
		(e)	The Contractor must manage the design and construction of Stage 1 & 3 to achieve the minimum Infrastructure Sustainability Rating (IS Rating), as defined in Infrastructure Sustainability Council of Australia (ISCA) Version 1.2, with a score of 60 across the Design and As-Built components of Stage 1 & 3 as identified in Table D.5-2.	Project Director	All		Sustainability Management Plan	Section 4.2 Project Sustainability Objectives and Targets; Section 6.1 Planning Action	NA	Design			
	2.1	(a)	The Contractor must develop, implement and maintain governance structures, processes and systems that ensure integration of all sustainability considerations, including but not limited to, vision, commitments, principles, objectives and targets, initiatives, knowledge sharing, monitoring and reporting.	Sustainability Manager	All		Sustainability Management Plan	Whole document	NA	Design			
		(b)	A member of the Contractor's senior management team is to have central responsibility for managing sustainability and be responsible for achieving the IS Rating.	Project Director	All		Project Management Plan	TBA	NA	Design			

		(c)	The Contractor must appoint a sustainability representative with sufficient and relevant sustainability experience to provide sustainability advice and guide the achievement of the IS rating, sustainability considerations (vision, commitments, principles, objectives and targets), initiatives, knowledge sharing, monitoring and reporting requirements. Sufficient and relevant experience means having provided the same or a similar role in at least one other project.	Project Director	NA		Sustainability Management Plan	Section 5.2.2 Roles and Responsibilities	NA	Design			
		(c)	The sustainability representative must be an Infrastructure Sustainability Accredited Professional having achieved this accreditation from the Infrastructure Sustainability Council of Australia.	Project Director	NA		Sustainability Management Plan	Section 5.2.2 Roles and Responsibilities	NA	Design			
		(c)	The sustainability representative must be engaged for 100% of the time throughout the design and As-Built phases of Stage 1.	Project Director	NA		Sustainability Management Plan	Section 5.2.2 Roles and Responsibilities	NA	Design			
		(d)	The Contractor's appointed sustainability representative must work in collaboration with the Principal's Representative to facilitate ongoing reporting, knowledge sharing and continual improvement.	Project Director	NA		Sustainability Management Plan	Section 5.2.2 Roles and Responsibilities	NA	Design			
		(e)	The Contractor must develop, implement and document compliance with a procedure to ensure that for significant Stage 1 & 3 issues, the Contractor's Activities considers the related whole-of-life environmental, social and economic costs and benefits.	Project Director	All		Sustainability Management Plan	Whole document	TBA	Design			
		(f)	The Contractor must develop, implement and maintain a sustainability assurance framework to track compliance with policy, objectives, targets and requirements in accordance with the items in sections 2.1(a) to section 2.1(i) as well as the sustainability requirements contained within the D&C Deed, the SWTC (including this Appendix) and the nominated sustainability targets included in the Contractor's Sustainability Plan.	Project Director	All		Sustainability Management Plan	Section 6.1 Planning Action	Sustainability Policy	Design			

		(g)	A suitably qualified person is to be based onsite during the construction stage with responsibility for managing the day to day activities required to execute the Sustainability Plan. This person must demonstrate that a minimum of 50% of their time is utilised on implementing the Sustainability Plan. This person may also fulfil the role of sustainability representative if desired.	Project Director	All		Sustainability Management Plan	Section 5.2.2 Roles and Responsibilities	NA	Design			
		(h)	A sustainability reviewer is to be engaged. The sustainability reviewer is to be an independent sustainability professional, engaged to monitor and review sustainability performance. This person must be a current member of the ISCA verifier panel but cannot be an ISCA appointed verifier.	Project Director	NA		Sustainability Management Plan	Section 5.2.2 Roles and Responsibilities	NA	Design			
		(i)	The Contractor must convene or participate in regular sustainability knowledge sharing workshops (to be arranged with the Principal's Representative) during the design and construction stages of Stage 1 & 3. The frequency of such workshops is to be agreed with the Principal's Representative and must meet the ISCA requirements.	Sustainability Manager	NA		Sustainability Management Plan	Section 8.2 Knowledge sharing	TBA	Design			
		(j)	Sustainability objectives, targets and requirements must be clearly articulated in the Contractor's Design Documentation and specifically addressed in:	Design Manager	Design Management		Design Management Plan	TBA	TBA	Design			
			(i) design briefings for all personnel involved in the preparation of Design Documentation;	Design Manager	Design Management		Design Management Plan	TBA	TBA	Design			
			(ii) formal sustainability knowledge sharing workshops (to be arranged with the Principal's Representative) at least once during each of the design and construction stages of Stage 1 & 3;	Sustainability Manager	All		Sustainability Management Plan	Section 8.2 Knowledge sharing	TBA	Design			
			(iii) processes for the development of Design Documentation;	Design Manager	Design Management		Design Management Plan	TBA	TBA	Design			
			(iv) procurement briefings and preparation of procurement documentation;	Procurement Manager	All		Contract Management Plan	TBA	TBA	Design			
			(v) site inductions for all the Contractor's personnel and subcontractor personnel engaged in the Contractor's Activities; and	HR & Training Manager	Design Management		Training Management Plan	TBA	TBA	Design			
			(vi) design and construction project plans.	Design Manager	Design Management		Design Management Plan	TBA	TBA	Design			
	2.2	(a)	The Contractor must register Stage 1 & 3 for an IS Design and As-Built Rating within 40 Business Days of the date of the D&C Deed.	Sustainability Manager	Project Management	ROI submitted - 03.12.21; RA received - 09.02.21	Sustainability Management Plan	Appendix C Sustainability Requirements Register	Executed Rating Agreement	Design			

		(b)	The Contractor must review and note the weightings as developed for Stage 1 & 3 with the ISCA.	Sustainability Manager	NA		Sustainability Management Plan	Section 6.1 Planning Action	ISCA IS Score Card	Design			
		(b)	The Contractor must use the IS Rating tool Version 1.2 to demonstrate how the IS Rating score for the design and As-Built stages of the Project Works and Temporary Works (the IS As-Built Rating) will be achieved.	Sustainability Manager	All		Sustainability Management Plan	Section 4.2 Project Sustainability Objectives and Targets; Appendix E ISCA IS Score Card	ISCA IS Score Card	Design			
		(d)	The Contractor must use the IS Rating tool to demonstrate how the IS Rating score for the design of the Project Works and Temporary Works (IS Design Rating) will be achieved.	Sustainability Manager	All		Sustainability Management Plan	Section 4.2 Project Sustainability Objectives and Targets; Appendix E ISCA IS Score Card	ISCA IS Score Card	Design			
		(d)	The Contractor must use the IS Rating tool to demonstrate how the IS Rating score for the design of the Project Works and Temporary Works (IS Design Rating) will be achieved. Within three months of the commencement of any design the Contractor must complete sections 2.2(d)(i) to section 2.2(d)(iii) below, and submit them via the PDCS to the Principal's Representative:	Sustainability Manager	All		Sustainability Management Plan	Section 4.2 Project Sustainability Objectives and Targets; Appendix E ISCA IS Score Card	ISCA IS Score Card	Design			
			(i) use the IS Rating tool to calculate an updated IS Design Rating score for the design of the Project Works and Temporary Works;	Sustainability Manager	All		Sustainability Management Plan	Section 4.2 Project Sustainability Objectives and Targets; Appendix E ISCA IS Score Card	ISCA IS Score Card	Design			
			(ii) identify the key steps required to achieve each IS Credit and IS Credit Level; and	Sustainability Manager	All		Sustainability Management Plan	Section 4.2 Project Sustainability Objectives and Targets; Appendix E ISCA IS Score Card	ISCA IS Score Card	Design			
			(iii) nominate responsibility for the achievement of each IS Credit.	Sustainability Manager	All		Sustainability Management Plan	Section 4.2 Project Sustainability Objectives and Targets; Appendix E ISCA IS Score Card	ISCA IS Score Card	Design			
		(e)	Within three months of the commencement of any construction, the Contractor must complete sections 2.2(e)(i) to section 2.2(e)(iii) below, and submit them via the PDCS to the Principal's Representative:	Sustainability Manager	All		Sustainability Management Plan	Section 4.2 Project Sustainability Objectives and Targets; Appendix E ISCA IS Score Card	ISCA IS Score Card	Design			
			(i) use the IS Rating tool to calculate an interim IS As-Built Rating score for the design and construction of the Project Works and Temporary Works;	Sustainability Manager	All		Sustainability Management Plan	Appendix E ISCA IS Score Card	ISCA IS Score Card	Design			
			(ii) identify the key steps required to achieve each targeted IS Credit and IS Credit Level; and	Sustainability Manager	All		Sustainability Management Plan	Appendix E ISCA IS Score Card	ISCA IS Score Card	Design			
			(iii) nominate responsibility for the achievement of each IS Credit.	Sustainability Manager	All		Sustainability Management Plan	Appendix E ISCA IS Score Card	ISCA IS Score Card	Design			

		(f)	The Contractor must achieve an IS Design Rating score for the design of the Project Works and Temporary Works within six months of the last Substantial Detailed Design Stage Design Documentation submission.	Sustainability Manager	All		Sustainability Management Plan	Section 1.2 Compliance Obligations; Appendix C Sustainability Requirements Register	Sustainability Requirements Register	Design			
		(f)	The IS Design Rating score must meet or exceed the score identified in Table D.5-2.	Sustainability Manager	All		Sustainability Management Plan	Section 3.2.2 IS Scorecard and weightings assessment; Appendix C Sustainability Requirements Register	ISCA IS Scorecard	Design			
		(g)	The Contractor must submit the first-round assessment for the IS As-Built Rating of the design and construction of the Project Works and Temporary Works to ISCA within one month of the Date for Completion.	Sustainability Manager	All		Sustainability Management Plan	Section 3.2.2 IS Scorecard and weightings assessment; Appendix C Sustainability Requirements Register	ISCA IS Scorecard	Construction			
		(g)	The Contractor must achieve an IS As-Built Rating score for the design and construction of the Project Works and Temporary Works within six months of the Date for Completion.	Sustainability Manager	All		Sustainability Management Plan	Section 3.2.2 IS Scorecard and weightings assessment; Appendix C Sustainability Requirements Register	ISCA IS Scorecard	Construction			
		(g)	The IS As-Built Rating Score must be independently verified in accordance with the IS Rating process described in the IS Rating scheme which is administered by the ISCA.	Sustainability Manager	All		Sustainability Management Plan	Section 3.2.2 IS Scorecard and weightings assessment; Appendix C Sustainability Requirements Register	ISCA IS Scorecard	Construction			
		(g)	The IS As-Built Rating score must meet or exceed the score identified in Table D.5-2.	Project Director	All		Sustainability Management Plan	Section 3.2.2 IS Scorecard and weightings assessment; Appendix C Sustainability Requirements Register	ISCA IS Scorecard	Construction			
		(h)	A sustainability review must be undertaken by the sustainability reviewer engaged in accordance with the requirements of section 2.1(h).	Sustainability Manager	Quality Management		Sustainability Management Plan	Section 9.3 Audit, inspections and reviews	NA	Design & Construction			

			(i) The sustainability review must address the following as a minimum: A. assess and report on progress against the Sustainability Plan; B. provide a provisional update to the interim IS Ratings submitted under sections 2.2(d)(i) and 2.2(e)(i); and C. Identify opportunities or deficiencies to be addressed to meet the IS Rating requirement nominated in sections 2.2(f) and 2.2(g).	Sustainability Manager	All		Sustainability Management Plan	Section 9.3 Audit, inspections and reviews	NA	Design & Construction			
			(ii) The minimum frequency of the sustainability reviews are to be as follows: A. two audits in the design phase; and B. three audits and/or a minimum frequency of one per year in the Construction Phase.	Sustainability Manager	Quality Management		Sustainability Management Plan	Section 9.3 Audit, inspections and reviews	NA	Design & Construction			
			(iii) The Sustainability Reviewer's report must be submitted to the Principal's Representative within two weeks of the completion of the sustainability review. As a minimum, the Sustainability Reviewer's report must address and document the requirements as detailed in section 2.2(h)(i).	Sustainability Manager	Quality Management		Sustainability Management Plan	Section 9.3 Audit, inspections and reviews	NA	Design & Construction			
		(i)	The Contractor must also achieve the sustainability requirements in Table D.5-2.	Project Director	All		Sustainability Management Plan	Section 4.2 Project Sustainability Objectives and Targets; Appendix C Sustainability Requirements Register	Sustainability Requirements Register	Design & Construction			
	2.3	(a)	The Contractor must undertake a climate change risk assessment for the construction and operational stage of Stage 1 in accordance with the standard AS 5334-2013 (Climate change adaptation for settlements and infrastructure – A risk based approach).	Design Manager; Sustainability Manager	All		Risk Management Plan; Sustainability Management Plan	TBA	Climate Change Risk Assessment	Design			
		(b)	The Contractor must identify and implement adaptation measures to comprehensively address 'extreme' and 'high' rated risks identified in the climate change risk assessment.	Design Manager; Sustainability Manager	All		Risk Management Plan; Sustainability Management Plan	TBA	Climate Change Risk Assessment	Design			
	2.4	(a)	The Contractor must demonstrate that opportunities to maximise operational energy efficiency have been identified and analysed. Whole-of-life costs and benefits must be estimated for each opportunity identified.	Design Manager; Sustainability Manager	Design Management		Design Management Plan; Sustainbality Management Plan	Sustainability Opportunities Register	Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan; Sustainability Opportunities Register	Design			
		(b)	The Contractor must demonstrate that opportunities to maximise construction energy efficiency have been identified and analysed.	Construction Director	Construction Management		Construction Management Plan; Sustainability Management Plan	TBA	Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Design & Construction			

		(c)	The Contractor must demonstrate that opportunities to use renewable energy or lower carbon energy during the construction and operational stages have been fully investigated.	Sustainability Manager	Design Management		Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	TBA	NA	Design & Construction			
		(d)	The Contractor must ensure that all non-road diesel plant and equipment complies with the European Union or US EPA air emission standards.	Construction Director	Construction Management		Construction Management Plan	TBA	Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Design & Construction			
		(e)	The Contractor must undertake a greenhouse gas assessment to estimate construction and operational emissions and demonstrate that opportunities to minimise emissions during the construction and operational stages have been identified, analysed and adopted. These must be undertaken in accordance with the Greenhouse Gas Assessment Workbook for Road Projects, Transport Authorities Greenhouse Group for at least scope 1 and 2 emissions.	Sustainability Manager	All		Sustainability Management Plan	Appendix F Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Design & Construction			
		(f)	The Contractor must monitor, record and report energy use and greenhouse gas emissions (at least scope 1 and 2 emissions) during the construction stage.	Sustainability Manager	All		Sustainability Management Plan	Section 9 Performance Evaluation; Appendix F Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Construction			
		(g)	At the Date of Completion, the Contractor must update the greenhouse gas assessment (for at least scope 1 and 2 emissions) for the operation of Stage 1 & 3 based on the As-Built Project.	Sustainability Manager	All		Sustainability Management Plan	Section 9 Performance Evaluation; Appendix F Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Construction			
		(h)	The Contractor must propose and analyse road designs to minimise energy consumed by vehicles using the Motorway.	Design Manager; Sustainability Manager	Design Management		Design Management Plan	TBA	TBA	Design			
	2.5	(a)	The Contractor must demonstrate that opportunities to reduce material use during construction have been identified and analysed. Whole-of-life costs and benefits must be estimated for each opportunity identified.	Sustainability Manager	All		Sustainability Management Plan	Appendix B Sustainability Opportunities Register	Sustainability Opportunities Register	Design & Construction			
		(b)	The Contractor must demonstrate that opportunities to use materials with low embodied environmental impact (e.g. recycled content) during construction have been identified and analysed. Whole-of-life costs and benefits must be estimated for each opportunity identified).	Sustainability Manager	All		Sustainability Management Plan	Appendix B Sustainability Opportunities Register	Sustainability Opportunities Register	Design & Construction			

		(c)	The Contractor must source all timber products used in Stage 1 & 3 from either reused timber, recycled timber, or from timber sustainably managed forests that have obtained Forest Management Certification (FMC). Acceptable FMC schemes include: (i) Programme for the Endorsement of Forest Certification; (ii) Forest Stewardship Council; and (iii) Australian Forest Certification Scheme.	Sustainability Manager	All		Sustainability Management Plan	Section 4.2 Project Sustainability Objectives and Targets; Appendix C Sustainability Requirements Register	Sustainability Requirements Register	Design & Construction			
		(d)	The Contractor must demonstrate that opportunities for the beneficial reuse of useable spoil excavated during construction have been identified and analysed (including consideration of the volumes of spoil to be generated by other projects).	Construction Director	Construction Management		Construction Management Plan	TBA	Sustainability Opportunities Register	Design & Construction			
		(e)	The Contractor must demonstrate that opportunities have been fully investigated to: (i) minimise waste generation; (ii) maximise waste segregation and storage for different waste streams; and (iii) maximise waste reuse; recycling; and landfill diversion.	Construction Director; Environment Manager	Construction Management		Waste and Resource Management Plan	TBA	Sustainability Opportunities Register	Design & Construction			
		(f)	The Contractor must negotiate and implement packaging take-back arrangements with suppliers.	Commercial Manager	Procurement / Commercial		Procurement Strategy	TBA	Sustainability Opportunities Register	Design & Construction			
		(g)	The Contractor must monitor, record and report on, in accordance with section 1.2.8(iii) of Appendix C.2 (Contractor Documentation Schedule), the following: (i) quantities of materials used (for each material type) during the construction stage; (ii) quantities of waste to be beneficially reused (for each waste material type, e.g. spoil, timber) during the construction stage; (iii) quantities of waste to be recycled (for each waste material type, e.g. steel) during the construction stage; (iv) quantities of waste unable to be recycled or beneficially reused in accordance with section 2.5(g)(i) and section 2.5(g)(ii) above during the construction stage.	Construction Director; Environment Manager	Construction Management		Construction Management Plan; Waste and Resource Management Plan	TBA	Sustainability Opportunities Register	Design & Construction			

	2.6	(a)	The Contractor must undertake and report on, in accordance with section 1.2.8(iii) of Appendix C.2 (Contractor Documentation Schedule), a water balance study to estimate the quantities of potable and non-potable water uses, volumes, sources that would be used and generated during the construction and operational stages of Stage 1 & 3.	Sustainability Manager	All		Sustainability Management Plan	Section 4.2 Project Sustainability Objectives and Targets;	Soil & Water Management Plan Water Usage Strategy	Design			
		(b)	The Contractor must demonstrate that opportunities to reduce water use (in particular potable water use) and reuse water (rainwater, stormwater, wastewater, and groundwater) during the construction and operational stages have been identified and analysed. Costs and benefits must be estimated for each opportunity identified.	Sustainability Manager	All		Sustainability Management Plan	Section 4.2 Project Sustainability Objectives and Targets;	Soil & Water Management Plan (CEMP) Water Usage Strategy (CEMP)	Design			
		(c)	The Contractor must monitor, record and report on, in accordance with section 1.2.8(iii) of Appendix C.2 (Contractor Documentation Schedule), the following during the construction stage: (i) quantities of water use (potable and non-potable); and (ii) quantities of water reuse, treatment and harvesting.	Sustainability Manager	All		Sustainability Management Plan	Section 9 Performance Evaluation	Soil & Water Management Plan (CEMP) Water Usage Strategy (CEMP)	Design & Construction			
		(d)	The Contractor must document in the relevant Design Documentation, estimates of the quantities of the following items that will be used during the operational stage of Stage 1 & 3: (i) water use (potable and non-potable); and (ii) water reuse, treatment and harvesting.	Sustainability Manager	All		Sustainability Management Plan	Section 9 Performance Evaluation	Soil & Water Management Plan (CEMP) Water Usage Strategy (CEMP)	Design & Construction			
	3.1	(a)	The Contractor must comply with all relevant legislative requirements that relate to workforce development and social procurement.	HR & Training Manager	All		Training Management Plan	TBA	TBA	Design & Construction			
		(b)	The Contractor must comply with:	HR & Training Manager	All		NA	TBA	TBA	Design & Construction			
			(i) the NSW Government Aboriginal Participation in Construction Policy 2018, available at: https://buy.nsw.gov.au/policy-library/policies/aboriginal-participation-construction;	HR & Training Manager	All		Aboriginal Participation Plan	TBA	TBA	Design & Construction			
			(ii) the NSW Procurement Directive PBD 2020-03: Skills, training and diversity in construction, available at: https://arp.nsw.gov.au/pbd-2020-03-skills-training-and-diversity-in-construction;	HR & Training Manager	All		Training Management Plan	TBA	TBA	Design & Construction			

			(iii) the Training Management Guidelines: Skills, training and diversity in construction (July 2020), available at: https://www.training.nsw.gov.au/forms_documents/programs_services/islp/training_management_guidelines.pdf;	HR & Training Manager	All		Training Management Plan	TBA	TBA	Design & Construction			
			(iv) the Australian Industry Participation Plan contained in Exhibit K of the D&C Deed; and	HR & Training Manager	All		Training Management Plan	TBA	TBA	Design & Construction			
			(v) TfNSW's Social Procurement Workforce Policy.	HR & Training Manager	All		Training Management Plan	TBA	TBA	Design & Construction			
		(c)	The Contractor is responsible for the achievement of these requirements both directly and through their supply chain.	Procurement Manager	All		Procurement Strategy	TBA	TBA	Design & Construction			
		(d)	The workforce to which these requirements apply are those engaged by the Contractor and throughout their supply chain in Australia.	HR & Training Manager	All		HR Management Plan	TBA	TBA	Design & Construction			
		(e)	The Contractor must assess current and future workforce skill needs.	HR & Training Manager	All		Training Management Plan	TBA	TBA	Design & Construction			
		(f)	The Contractor must:	NA	NA		NA	NA	NA	NA			
			(i) prepare the following documents using the templates provided by the Principal's Representative: A. 'Jobs and Skills Profile (V.1 TfNSW ES-FT-435 - 26.08.2020); and B. 'Workforce Development Output Delivery Profile (V.1 TfNSW ES-FT-435 - 26.08.2020);	HR & Training Manager	All		Training Management Plan	TBA	TBA	Design & Construction			
			(ii) prepare the following documents using the NSW Government templates: A. 'Aboriginal participation in Construction – Participation Plan' available at https://www.procurepoint.nsw.gov.au/documents/aboriginal-participation-construction-participation-plan-template.docx; and B. 'small and medium enterprise participation plan' available at https://www.procurepoint.nsw.gov.au/documents/sme-participation-plan.docx.	HR & Training Manager	All		Aboriginal Participation Plan	TBA	TBA	Design & Construction			
			(iii) include the documents identified in sections 3.1(f)(i) to (ii) in the Workforce Development Plan.	HR & Training Manager	All		Training Management Plan	TBA	TBA	Design & Construction			

		(g)	The Contractor must engage and deploy suitable resources to manage, coordinate and deliver the workforce development, Aboriginal participation, social procurement and industry participation requirements of the D&C Deed including this Appendix D.5. These personnel must have relevant experience and qualifications to establish, monitor, and implement strategies relating to workforce development, Aboriginal participation, social procurement, and industry participation;	HR & Training Manager	All		Training Management Plan	TBA	TBA	Design & Construction			
		(h)	The Contractor must ensure that employment conditions for the workforce, including apprentices and trainees, employed by the Contractor and throughout the Contractor's supply chain meet or exceed the obligations and expectations of the National Employment Standards as defined in the Fair Work Act 2013 (Cth) (NES), which provides a safety net for minimum wages;	HR & Training Manager	All		HR Management Plan	TBA	TBA	Design & Construction			
		(i)	The Contractor must participate in the Infrastructure Skills Legacy Program (administrated by Training Services NSW) in accordance with the NSW Procurement Board Direction PBD 2020-03: Skills, training and diversity in construction (Information in relation to the Infrastructure Skills Legacy Program is available at: https://www.training.nsw.gov.au/programs_services/funded_other/islp/index.html.	HR & Training Manager	All		Training Management Plan	TBA	TBA	Design & Construction			
		(j)	With regards to the Training Management Guidelines: Skills, training and diversity in construction (July 2020), the Contractor must: (i) meet all requirements relating to projects over $100 million including those requirements that apply to projects over $10 million; (ii) meet all requirements relating to construction contractors; and (iii) ensure its Subcontractors meet all requirements relating to Subcontractors.	HR & Training Manager	All		Training Management Plan	TBA	TBA	Design & Construction			
	3.2	(a)	The Contractor must ensure that by the Date of Completion, the workforce engaged for the Contractor's Activities by the Contractor and its Subcontractors, and throughout their supply chain has included a minimum of at least:	NA	NA		NA	NA	NA	NA			

			(i) 1.5% of the total estimated value of the contract was spent supporting Aboriginal participation. Consistent with the application of the NSW Government Aboriginal Participation in Construction Policy 2018; the allocation of this spend must include: A. at least 50% to be allocated to employment and education activities directly related to Stage 1 & 3's planning, design, or delivery; B. up to 50% of the targeted project spend allocated to expenses that are indirectly related to Stage 1 & 3, but that contribute to the education and employment goals outlined in the NSW Government's Plan for Aboriginal affairs: education, employment and accountability (http://www.aboriginalaffairs.nsw.gov.au/pdfs/OCHRE/AA_OCHRE_final.pdf);	HR & Training Manager	All		Aboriginal Participation Plan	TBA	TBA	Design & Construction			
			(ii) 20% of all trades positions were apprentices;	HR & Training Manager	All		HR Management Plan	TBA	TBA	Design & Construction			
			(iii) 8% of the overall workforce were aged under 25 years old at the date of engagement on Stage 1 & 3;	HR & Training Manager	All		HR Management Plan	TBA	TBA	Design & Construction			
			(iv) 20% of the total labour force were made up of 'learning workers'. Learning workers are defined in the Training Management Guidelines: Skills, training and diversity in construction (July 2020).. This may not include training otherwise required by legislation, associated regulations, standards and accreditations or in the various approvals, licences, and permits that may be necessary for commencement, implementation and control of the Infrastructure Works, Temporary Works and Contractor Activities; and	HR & Training Manager	All		Training Management Plan	TBA	TBA	Design & Construction			
			(v) 2% of the workforce were women in non-traditional roles/occupations as defined in the Training Management Guidelines: Skills, training and diversity in construction (July 2020). Note: excludes Traffic Controllers.	HR & Training Manager	All		HR Management Plan	TBA	TBA	Design & Construction			
		(b)	The Contractor must implement a system to record, track and report the Contractor's (including Subcontractors and other relevant entities in their supply chain) performance against the priority group targets in section 3.2(a) of this Appendix D.5.	HR & Training Manager	All		HR Management Plan	TBA	TBA	Design & Construction			

		(c)	In addition to the monthly reporting requirements in Appendix C.2 (Contractor Documentation Schedule), the Contractor must submit a quarterly report to the Principal detailing the Contractor's (including Subcontractors and other relevant entities in their supply chain) performance against the priority group targets in section 3.2(a) of this Appendix using the template provided in Attachment A to the Training Management Guidelines: Skills, training and diversity in construction (July 2020).	HR & Training Manager	All		HR Management Plan	TBA	TBA	Design & Construction			
	3.3	(a)	The Contractor must:	NA	NA		NA	NA	NA	NA			
			(i) work with local community groups, training providers and employment support organisations to maximise employment opportunities for people and businesses in the local area;	HR & Training Manager	All		HR Management Plan	TBA	TBA	Design & Construction			
			(ii) maximise opportunities for small to medium enterprises and social enterprises to participate in the delivery of the Contractor's Activities by providing services or supplies to the Contractor and the Contractor's supply chain;	Procurement Manager	All		Procurement Strategy	TBA	TBA	Design & Construction			
			(iii) alert small to medium enterprises of potential tenders and supply opportunities;	Procurement Manager	All		Procurement Strategy	TBA	TBA	Design & Construction			
			(iv) develop and implement programs for engagement with local universities including scholarships, cadetships and graduate opportunities; and	HR & Training Manager	All		HR Management Plan	TBA	TBA	Design & Construction			
			(v) identify and implement programs offering community benefits.	HR & Training Manager	All		HR Management Plan	TBA	TBA	Design & Construction			
Sydney Gateway Stage 3 Scope of Works and Technical Criteria Appendix D.5 Suatainability Requirements	2.1	(c)	The Contractor must appoint a sustainability representative with sufficient and relevant sustainability experience to provide sustainability advice and guide the achievement of the IS rating, sustainability considerations (vision, commitments, principles, objectives and targets), initiatives, knowledge sharing, monitoring and reporting requirements. Sufficient and relevant experience means having provided the same or a similar role in at least one other project. The sustainability representative must be an Infrastructure Sustainability Accredited Professional having achieved this accreditation from the Infrastructure Sustainability Council of Australia. The sustainability representative must be engaged for 100% of the time throughout the design and As-Built phases of Stage 3.	Project Director	NA		Sustainability Management Plan	Section 5.2.2 Roles and Responsibilities	NA	Design			

RMS Environment & Sustainability Strategy 2019-2023			Minimise energy use and reduce carbon emissions without compromising the delivery of services to our customers.	Sustainability Manager	All		Sustainability Management Plan	Appendix F Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Design			
			Design and construct transport infrastructure to be resilient or adaptable to climate change impacts.	Design Manager	All		Design Management Plan	TBA	TBA	Design			
			Minimise the air quality impacts of road projects and support initiatives that aim to reduce transport-related air emissions.	Design Manager	All		Design Management Plan	TBA	TBA	Design			
			Minimise the use of non-renewable resources and minimise the quantity of waste disposed to landfill.	Design Manager	All		Design Management Plan	TBA	TBA	Design			
			Minimise noise, water and land pollution from road and maritime construction, operation and maintenance activities.	Project Director	Project Management		Project Management Plan	TBA	TBA	Design			
			Improve outcomes for biodiversity by avoiding, mitigating or offsetting the potential impacts of road and maritime projects on plants, animals and their environments.	Project Director	Urban Design		Place Design and Landscape Plan	TBA	TBA	Design			
			Manage and conserve cultural heritage according to its heritage significance and contribute to the awareness of the past.	Project Director	All		Aboriginal Heritage Management Plan; Non-aboriginal Heritage Management Plan	TBA	TBA	Design			
			Provide high quality urban design outcomes that contribute to the sustainability and liveability of communities in NSW.	Design Manager	All		Place Design and Landscape Plan	TBA	TBA	Design			
			Procure goods, services, materials and works for infrastructure development and maintenance projects that over their lifecycle deliver value for money and contribute to the environmental, social and economic wellbeing of the community.	Project Director	All		Project Management Plan	TBA	TBA	Design & Construction			
			Communicate our sustainability objectives to employees, contractors and other key stakeholders, and foster a culture which encourages innovative thinking to address sustainability challenges.	Project Director	All		Project Management Plan	TBA	TBA	Design & Construction			
			All projects must address the requirements of the Roads and Maritime Technical Guide Sustainability in Infrastructure Design and Construction, and relevant targets in this strategy.	Project Director	All		Project Management Plan; Sustainability Management Plan	TBA	TBA	Design & Construction			

RMS Environment Policy Statement			**We are accountable** We take personal and collective accountability for addressing and minimising the environmental impacts of our activities and deliver our projects to satisfy the expectations and legislative requirements of the NSW and Federal governments and the NSW community.	Project Director	All		Project Management Plan	TBA	TBA	Design & Construction			
			We provide solutions We lead the management of environmental risks and incorporate innovative solutions to ensure that all our activities are undertaken to minimise our environmental footprint.	Project Director	All		Project Management Plan	TBA	TBA	Design & Construction			
			We collaborate We deliver our projects within a whole-of-government framework, by working in collaboration with our industry partners and regulatory stakeholders to achieve enhanced environmental outcomes and encourage a culture of environmental responsibility.	Project Director	All		Project Management Plan	TBA	TBA	Design & Construction			
			We listen and respond We communicate openly, responsively and empathetically with our customers, partners and stakeholders on environmental matters.	Project Director	All		Project Management Plan	TBA	TBA	Design & Construction			
			We improve We deliver continual improvement in environmental performance in all our activities.	Project Director	All		Project Management Plan	TBA	TBA	Design & Construction			
Environmental Impact Statement	Ch 25		A sustainability management plan will be developed to ensure that sustainability considerations are implemented during the detailed design, construction and operation phases of the project. The plan will include project-specific sustainability initiatives and implementation protocols to support achievement of the project's target excellent 'Design' and 'As Built' rating under the Infrastructure Sustainability rating tool (v1.2) and to ensure ongoing consistency with the Environmental Sustainability Strategy 2019–2023 (Roads and Maritime, 2019b).	Sustainability Manager	All		Sustainability Management Plan	Whole document	ISCA IS Score Card	Design			
			Prior to the commencement of operation, the sustainability management plan and sustainability initiatives will be reviewed and updated.	Sustainability Manager	Sustainability		Sustainability Management Plan	Whole document	NA	Construction			

	Ch26		CC1 A detailed climate change risk assessment, considering both direct and indirect risks, will be undertaken during detailed design in accordance with AS 5334-2013 Climate change adaptation for settlements and infrastructure – A risk based approach and the draft Technical Guide: Climate Change Adaptation for the State Road Network (Roads and Maritime, 2015c). Adaptation measures will be confirmed and actions implemented to address extreme and high risks where reasonable and feasible. Adaptation measures for medium risks will be considered and implemented where reasonable and feasible. Progress against implementation of confirmed adaptation measures and actions will be tracked. The assessment will include further modelling to optimise the design and reduce the impacts of climate change scenarios.	Design Manager	All		Design Management Plan; Sustainability Management Plan	SMP Section 6.3 Climate Resilience	Climate Change Risk Assessment	Design			
			CC2 The flood mitigation strategy (measure HF1) will include consideration of future climate change related flood risks, the potential impacts of future climate change on flooding, and adaptive measures for implementation.	Design Manager	All		Design Management Plan; Sustainability Management Plan	SMP Section 6.3 Climate Resilience	Climate Change Risk Assessment	Design			
			CC3 The urban design and landscape plan for the project will include consideration of appropriate landscape designs and species to reduce the impacts of urban heat island effect. Other measures to mitigate the impacts of the urban heat island effect will be investigated during detailed design and included in the urban design and landscape plan. Measures will include using light coloured pavements and shading structures for public spaces.	Design Manager	All		Place Design and Landscape Plan; Sustainability Management Plan	SMP Section 6.3 Climate Resilience	TBA	Design			
			CC4 Operational procedures for emergency planning and management will be prepared to consider the increased risk of flooding and storm surges on the road and active transport link.	Design Manager	All		Design Management Plan; Sustainability Management Plan	SMP Section 6.3 Climate Resilience	TBA	Design			
			CC5 Emergency management planning will be undertaken in consultation and collaboration with other key agencies and surrounding stakeholders, including Sydney Airport Corporation.	Design Manager	All		Design Management Plan	TBA	TBA	Design			

			GHG1 The sustainability management plan (measure SU1) will include measures and targets to reduce greenhouse gas emissions during construction and operation. The plan will include targets to reduce the project's carbon footprint during construction and operation, considering scope 1, scope 2 and scope 3 emissions.	Sustainability Manager	All		Sustainability Management Plan	Appendix F Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan	Design			
			GHG2 The final design will incorporate LED lighting in preference to fluorescent fittings or high-pressure sodium lights where fit for purpose, feasible and cost-effective.	Design Manager	All		Design Management Plan	TBA	TBA	Design			
			GHG3 The surface road network will be designed for long term performance and durability of materials, increasing asset design lives and reducing the frequency of maintenance activities.	Design Manager	All		Design Management Plan	TBA	TBA	Design			
			GHG4 An appropriate portion of construction phase energy will be purchased from an accredited GreenPower provider.	Procurement Manager	All		Procurement Strategy	TBA	TBA	Design			
			GHG5 A minimum of six per cent of operational phase energy will be purchased from an accredited GreenPower product.	Transport for NSW	NA		NA	NA	NA	Operation			

Appendix D: IS Weightings/Materiality Assessment

Infrastructure Sustainability Scorecard
Design and As Built v1.2

Australia New Zealand

? > Click in blue boxes and answer questions

Summary | Weightings Charts

	Credit	Credit Name	Aims	Question 1	Question 2	Question 3	Mat Score	Alt Mat Score	Justification	Mat Score	Adjusted points	Evidence Required	Evidence Supplied
Man	Man-1	Sustainability leadership and commitment	To integrate sustainability into management systems and approach. This has been assigned a default materiality score of 2.				2		None required	2	0.76	No	None required
	Man-2	Risk and opportunity management							None required	2	0.76		
	Man-3	Organisational structure, roles and responsibilities							None required	2	0.76		
	Man-4	Inspection and auditing							None required	2	0.76		
	Man-5	Reporting and review							None required	2	0.76		
	Man-6	Knowledge sharing							None required	2	1.71		
	Man-7	Decision making	To assess the requirements for incorporating sustainability aspects into decision making.	No			2		None required	2	2.48		
Pro	Pro-1	Commitment to sustainable procurement	To integrate sustainability into procurement systems. This has been assigned a default materiality score of 2.				2		None required	2	0.95	No	None required
	Pro-2	Identification of suppliers							None required	2	0.95		
	Pro-3	Supplier evaluation and contract award							None required	2	0.00		
	Pro-4	Managing supplier performance							None required	2	0.00		
Cli	Cli-1	Climate change risk assessment	To assess climate change risks and requirement for climate change adaptation measures.	Long (>50 years)	Yes		4		Project is sensitive to long and short term climate drivers as it is a major transport hub	4	3.81	Design life Location map showing proximity to natural hazards	SG Weightings- 1a Design/Works Brief (Design life) SG Weightings- 1b Location Map
	Cli-2	Adaptation options							Project is sensitive to long and short term climate drivers as it is a major transport hub	4	3.81		
Ene	Ene-1	Energy and carbon monitoring and reduction	To understand the potential for minimising energy use from non renewable sources and GHG emissions across the infrastructure lifecycle.	Road (surface)	Yes		3	4	Project is considered energy intensive as the Environmental Impact Statement (Table 26.3) indicates that a total GHG emissions of 422,970 tCO2e is expected during the construction stage. Operational emissions is also expected to be high if vehicular movement is considered.	4	13.71	Description of project/asset Construction/maintenance methodology	SG Weightings-1c SG EE & GHG Emissions Strategy & Management Plan
	Ene-2	Renewable energy							Given the expected design life of the project, any reduction/subsitution of electricity will have a profound impact in lowering the project's environmental footprint	3	1.71		
Wat	Wat-1	Water use monitoring and reduction	To understand the potential for minimising water use from potable sources across the infrastructure lifecycle.	No	Yes	Yes	3		Over 90% of the water used during the constrution and operational phase of the project is for dust suppression, cleaning, irrigation and other non-potable applications. The project is keen on exploring the substitution of potable water with non-potable sources.	3	5.14	Description of project/asset Construction/maintenance methodology Location map showing water sources	SG Weightings -1d Soil & Water Management Plan SG Weightings -1e Water sources location map
	Wat-2	Replace potable water							As above	3	2.86		SG Weightings -1d Soil & Water Management Plan
Mat	Mat-1	Materials footprint measurement and reduction	To identify the lifecycle environmental impacts of materials throughout the infrastructure lifecycle.	Medium (10%-50%)	Low (<10%)		2	4	Concrete, steel and asphalt are expected to account for 80% of the construction GHG (Emissions + embodied) footprint.	4	9.14	Construction/maintenance methodology	SG Weightings - 1e Sustainability Management Plan
	Mat-2	Environmentally labelled products and supply chains							The project will consider the use of products with Eco-labels to demonstrate product stewardship.	2	0.00		SG Weightings - 1e Sustainability Management Plan
Dis	Dis-1	Receiving water quality	To identify impacts on local receiving water quality across project/asset's lifecycle.	Yes	Yes	Yes	3		The project is adjacent to several watercourses and waterbodies bodies including the Alexandra Canal. There are also patches of Swamp Oak Floodplain forest and Mangrove forests within the project boundary as well as groundwater dependent ecosystems downstream of the project. There are potential impacts to sensitive receivers in the form of threatened, endangered or protected flora and fauna.	3	2.71	Environmental licence Risk register Location map showing receiving waters	SG Weightings - 1f Construction Environmental Management Plan SG Weightings - 1g Water Quality Management Plan SG Weightings - 1h Project Risk Register SG Weightings - 1i Receiving waters location map
	Dis-2	Noise	To identify noise impacts across project/asset's lifecycle.	Road (surface)	Yes	Adjacent	4	2	Major road projects such as this have the potential to generate a good amount of noise and vibration. As a result, noise and vibration assessments and monitoring will be a standard part of the project delivery strategy. Point to note here is that the noise environment on this project is highly inlfuenced by aircraft noise associated with the operation of Sydney Airport.	2	1.81	Construction/maintenance methodology Location map showing noise receivers	SG Weightings - 1f Construction Environmental Management Plan SG Weightings - 1j Noise and Vibration Management Plan SG Weightings - 1k Noise receivers location map
	Dis-3	Vibration	To identify vibration impacts across project/asset's lifecycle.	Yes	Adjacent		3		As above	3	2.71	Construction/maintenance methodology Location map showing vibration receivers	SG Weightings - 1f Construction Environmental Management Plan SG Weightings - 1j Noise and vibration management plan SG Weightings - 1l Vibration receivers location map
	Dis-4	Air quality	To identify air quality impacts across project/asset's lifecycle.	Road (surface)	Yes	Yes (urban)	4		All new road projects have the potential to result in the generation and emission of pollutants into the atmosphere during both construction and operation. Exhaust from construction vehicles and dust generated from unsealed exposed earth are common air quality issues during construction, which must be minimised to avoid nuisance impacts on surrounding sensitive receivers.	4	3.62	Location map showing surrounding population density	SG Weightings - 1f Construction Environmental Management Plan SG Weightings - 1m Air quality management plan SG Weightings - 1n Population density map
	Dis-5	Light pollution	To identify impacts across project/asset's lifecycle.	Road (surface)	Yes	Adjacent	4	3	Obstructions and lighting in the vicinity of an airport have the potential to create hazards to aviation and constrain the operation of the airport. The project site is located close to Sydney Airport.	3	1.14	Construction/maintenance methodology Location map showing light receivers	SG Weightings - 1f Construction Environmental Management Plan SG Weightings - 1o Light receivers location map
Lan	Lan-1	Previous land use	To identify land that has previously been developed and where it can be reused. This has been assigned a default materiality score of 2.				2		The majority of the project area has been heavily modified by past and ongoing disturbances associated with urban and infrastructure development and landfill activities. This has resulted in a high level of disturbance and degradation of vegetation.	2	1.90	No	None required
	Lan-2	Conservation of on-site resources	To identify where soil resources can be conserved.	Yes			2		Most of the project site is mapped as 'disturbed terrain'. Introduced fill, including dredged estuarine sand and mud, demolition rubble, industrial and household waste, is also found within the project site. The idea is to conserve as much of the undisturbed & uncontaminated soil found on site.	2	0.76	Construction/maintenance methodology	SG Weightings -1d Soil & Water Management Plan
	Lan-3	Contamination and remediation	To assess contamination risks and perform sustainable remediation.	Present and significant			4		The proposed alignment and construction depth of the Project carriageways across the former Tempe Tip and known previous land uses may introduce geotechnical and environmental challenges around managing and handling contaminated ground and water. The project intends to Investigate potential for on-site treatment options (such as blending) and potential re-use of contaminated soil.	4	3.05	Contamination study	SG Weightings - 1f Construction Environmental Management Plan SG Weightings - 1p Spoil Management Plan SG Weightings - 1q EIS Chap 13 Contamination and soils
	Lan-4	Flooding	To identify risks from flooding.	Yes	Yes		3		The project involves providing new infrastructure in an area subject to existing flooding.	3	1.71	Flood maps Location map showing potential flood impacts	SG Weighting - 1r Flood maps SG Weighting - 1s Potential flood impact location map
Was	Was-1	Waste management	To identify the potential for sustainable waste management plans and practices.	Medium (10%-50%)	Low (<10%)	Yes	2		Waste generated during construction would mainly be from works associated with site preparation, demolition, construction of road infrastructure and landscaping. The main waste stream would be excavated material (spoil) from earthworks and other activities. The main waste stream would be excavated material (spoil) from earthworks and other activities.	2	1.52	Construction/maintenance methodology	SG Weightings - 1f Construction Environmental Management Plan SG Weightings - 1p Spoil Management Plan SG Weightings - 1t Waste Management Plan
	Was-2	Diversion from landfill							As above	2	0.00	No	
	Was-3	Deconstruction/ Disassembly/ Adaptability	To understand the potential for design and planning for deconstruction, disassembly and adaptability of infrastructure in the future.	Long (>50 years)	Medium (10%-50%)	Yes	1		Many of the structural elements (eg, bridges, gantries, barricades) are precast units and can be designed for ease of disassembly. The Streetlights and ITS systems can be designed to consider disassembly as well as future upgrades	1	0.57	Deconstruction statement	SG Weightings - 1e Sustainability Management Plan

Eco	Eco-1	Ecological value	To identify impacts to local ecological value and habitat connectivity.	Low (<10%)	Adjacent		2		The project site crosses the Alexandra Canal and is adjacent to the Tempe Wetlands. There is a vegetated link between the canal and Tempe Wetlands. Additionally the Towra Point Estuarine is located 6.5 km downstream and the Botany Wetlands is 1 km south-east of the project.	2	5.71	Map showing construction footprint and ecological habitat Location map showing surrounding ecological habitats including sensitivity	SG Weightings - 1u EIS Chap 22 Biodiversity SG Weightings - 1v Flora & Fauna Management Plan
	Eco-2	Habitat connectivity							There is habitat connetivity through the vegetated link between the Alexandra Canal and Tempe Wetlands.	2	2.29		
Hea	Hea-1	Community health and well being	To identify the potential for making a positive contribution to community health and wellbeing. This has been assigned a default materiality score of 2.				2		None required	2	1.90	No	None required
	Hea-2	Crime prevention	To assess the impact to design and practice in response to the likelihood of crime.	Yes			2		The project site is located in a highly developed urban area, with a mix of transport, commercial, residential, industrial and recreational land uses. The consrution and design solutions will potentially be required to consider and embed aspects of CPTED	2	1.90		
Her	Her-1	Heritage assessment and management	To assess the management and monitoring of impacts on heritage.	Yes (or unknown)	Yes		4	3	The study area has a long history of settlement and development, with significant historical features and activities including agriculture, modification of the Cooks River and Shea's Creek, dredging and reclamation, Sydney's drinking water supply, development of Sydney Airport and other transport infrastructure, and residential and industrial development.	3	2.86	Location map showing heritage including value	SG Weightings - 1w EIS Chapters 17 Non-Aboriginal Heritage and 18 Aboriginal Heritage SG Weightings - 1x Heritage Management Plan
	Her-2	Monitoring of heritage						3	As above	3	0.00		
Sta	Sta-1	Stakeholder engagement strategy	To assess the level of risk atributed to the engagement, and consideration of stakeholders and their concerns, in the context of the project/asset operation and maintenance.	Yes			3	4	Residents and stakeholders are are concerned about noise, air pollution, access, connectivity, amenity, character, diversity, urban design, new public space, walking paths, cycleways, transport corridors and reduced congestion, among others.	4	1.90	Stakeholder analysis	SG Weightings - 1y Community Strategy
	Sta-2	Level of engagement						4	As above	4	1.90		
	Sta-3	Effective communication						4	As above	4	1.90		
	Sta-4	Addressing community concerns						4	As above	4	1.90		
Urb	Urb-1	Urban design	To identify the potential for adoption of best practice urban design principles.	Road (surface)	Yes (urban)		3	4	Communities living in Mascot value the heritage character, good quality urban design and the amenity of local residential areas.	4	6.10	Description of project/asset	SG Weightings - 1z Urban Design and Landscape Plan
	Urb-2	Implementation							As above	3	0.00		
Inn	Inn-1	Innovation	Bonus credit This has been assigned a default materiality score of 2.				2			2	10.00	No	None required

Appendix E: ISCA IS Score Card (Preliminary)

Infrastructure Sustainability Rating Summary

	Credit	Name of credit	Materiality Score	Score Possible	No. Levels	Target Level	Target Score	Working Level	Working Score
Σ		Total		110 pts			68.1 pts		68.1 pts
		Rating		Leading			Excellent		Excellent
Man	Man-1	Sustainability leadership and commitment	2	0.76	3	3	0.76	3	0.76
	Man-2	Risk and opportunity management	2	0.76	2	2	0.76	2	0.76
	Man-3	Organisational structure, roles and responsibilities	2	0.76	2	2	0.76	2	0.76
	Man-4	Inspection and auditing	2	0.76	2	2	0.76	2	0.76
	Man-5	Reporting and review	2	0.76	3	2	0.51	2	0.51
	Man-6	Knowledge sharing	2	1.71	3	3	1.71	3	1.71
	Man-7	Decision-making	2	2.48	3	2	1.65	2	1.65
Pro	Pro-1	Commitment to sustainable procurement	2	0.95	3	2	0.63	2	0.63
	Pro-2	Identification of suppliers	2	0.95	3	3	0.95	3	0.95
	Pro-3	Supplier evaluation and contract award	Scoped Out						
	Pro-4	Managing supplier performance	Scoped Out						
Cli	Cli-1	Climate change risk assessment	4	3.81	3	2	2.54	2	2.54
	Cli-2	Adaptation options	4	3.81	3	2	2.54	2	2.54
Ene	Ene-1	Energy and carbon monitoring and reduction	4	13.71	3	1.5	6.86	1.5	6.86
	Ene-2	Renewable energy	3	1.71	3	1.0	0.57	1.0	0.57
Wat	Wat-1	Water use monitoring and reduction	3	5.14	3	1.5	2.57	1.5	2.57
	Wat-2	Replace potable water	3	2.86	3	1.5	1.43	1.5	1.43
Mat	Mat-1	Materials footprint measurement and reduction	4	9.14	3	2	6.09	2	6.09
	Mat-2	Environmentally labelled products and supply chains	Scoped Out						
Dis	Dis-1	Receiving water quality	3	2.71	3	1	0.90	1	0.90
	Dis-2	Noise	2	1.81	3	1	0.60	1	0.60
	Dis-3	Vibration	3	2.71	3	1	0.90	1	0.90
	Dis-4	Air quality	4	3.62	3	1	1.21	1	1.21
	Dis-5	Light pollution	3	1.14	1	1	1.14	1	1.14
Lan	Lan-1	Previous land use	2	1.90	3	2.0	1.27	2.0	1.27
	Lan-2	Conservation of on site resources	2	0.76	3	2	0.51	2	0.51
	Lan-3	Contamination and remediation	4	3.05	3	2	2.03	2	2.03
	Lan-4	Flooding design	3	1.71	2	1	0.86	1	0.86
Was	Was-1	Waste management	2	1.52	2	2	1.52	2	1.52
	Was-2	Diversion from landfill	Scoped Out						
	Was-3	Deconstruction/ Disassembly/ Adaptability	1	0.57	3	0	0.00	0	0.00
Eco	Eco-1	Ecological value	2	5.71	3	2	3.81	2	3.81
	Eco-2	Habitat connectivity	2	2.29	3	1	0.76	1	0.76
Hea	Hea-1	Community health and well-being	2	1.90	3	2	1.27	2	1.27
	Hea-2	Crime prevention	2	1.90	2	2	1.90	2	1.90
Her	Her-1	Heritage assessment and management	3	2.86	3	2	1.91	2	1.91
	Her-2	Monitoring and management of heritage	Scoped Out						
Sta	Sta-1	Stakeholder engagement strategy	4	1.90	3	2	1.27	2	1.27
	Sta-2	Level of engagement	4	1.90	3	2	1.27	2	1.27
	Sta-3	Effective communication	4	1.90	2	2	1.90	2	1.90
	Sta-4	Addressing community concerns	4	1.90	2	2	1.90	2	1.90
Urb	Urb-1	Urban design	4	6.10	3	3	6.10	3	6.10
	Urb-2	Implementation	Scoped Out						
Inn	Inn-1	Innovation	2	10.00	10	4	4.00	4	4.00

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Appendix F: Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan

Sydney Gateway Stages 1 & 3

Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan

Document Number: JHSW-ENV-PLN-EEGHG

Revision No.: C

Issue Date: 16/04/2021

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Appendices

Document Control Record

Project:	Sydney Gateway Stages 1 & 3
Document Title:	Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan
Document Number:	JHSW-ENV-PLN-EEGHG
Current Revision:	C

JHSW Review Process

Rev	Date	Prepared by	Reviewed by	Approved by
Rev A	2021.1.15	Thiru Jallendran	Matt Dimarco	Ivan Karaban
Rev B	2021.3.16	Thiru Jallendran	Matt Dimarco	Ivan Karaban
Rev C	2021.4.16	Thiru Jallendran	Matt Dimarco	Ivan Karaban
				

Definitions & Abbreviations

Definitions and abbreviations to be applied to this Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan are listed in
Table 1.

TABLE 1: TERMS AND DEFINITIONS

Term/Abbreviation	Definition
AUDP	Australian Urban Design Protocol
BaU	Business as Usual
CCMP	Collaborative Contracting Management Plan
CCRA	Climate Change Risk Assessment
CERT	Carbon Estimate Reporting Tool
CMP	Contract Management Plan
CPTED	Crime Prevention Through Environmental Design
CSF	Credit Summary Forms
DMP	Design Management Plan
EIS	Environmental Impact Statement
EPD	Environmental Product Declaration
GHG	Greenhouse Gas
GREP	Government Resource Efficiency Policy
IS	Infrastructure Sustainability
ISAP	Infrastructure Sustainability Accredited Professional
ISCA	Infrastructure Sustainability Council of Australia
ISP	Independent Sustainability Professional
IWG	Innovation Working Group
LV	Low voltage
MCA	Multi-criteria analysis
NGER	National Greenhouse and Energy Reporting
PPW	Project Pack Web
SDGs	United Nations Sustainable Development Goals
SMP	Sustainability Management Plan
SQP	Suitably Qualified Professional
SWTC	Scope of Works and Technical Criteria
TfNSW	Transport for NSW (Includes the former Roads and Maritime)
UN	United Nations

1. Introduction

This Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan (GHGMP) is a subplan to the Sustainability Management Plan (SMP) and describes the systems and processes the Sydney Gateway Stages 1 & 3 (SG) Project will adopt to meet and exceed the legislated and targeted requirements with regards to energy efficiency and greenhouse gas emissions both in construction and operation.

1.1. Purpose

The purpose of this GHGMP is to provide the John Holland Seymour Whyte Joint Venture (JHSWJV) team with a structured approach to:

- Comply with contract and legal requirements relating to energy efficiency and greenhouse gas (GHG) emissions;
- Identify potential and actual sources of energy and GHG emissions;
- Measure and report energy use and GHG emission performance;
- Identify, assess and implement opportunities to reduce energy use, increase energy efficiencies, and reduce GHG emissions; and
- Drive continual improvement to meet or exceed its energy and GHG emission targets and objectives using the framework illustrated here:

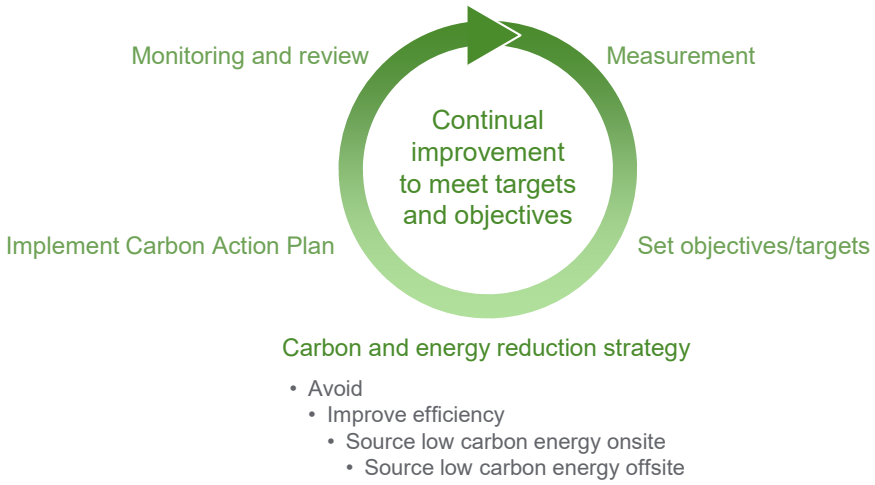

FIGURE 1 CONTINUAL IMPROVEMENT

The GHGMP will guide the SG Project team to manage the design and use of resources sustainability and in a systematic manner and is applicable to the Sydney Gateway Program.

1.2. Compliance

This Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan (GHGMP) supports the Sustainability Management Plan (SMP) in satisfying the sustainability requirements detailed within the Project Scope of Works and Technical Criteria (SWTC) Appendix C.1 Project Plan Requirements as well as Appendix D.5 Sustainability Requirements. The requirements are detailed in Table 1.

TABLE 1: SG COMPLIANCE WITH THE SCOPE OF WORKS AND TECHNICAL CRITERIA

Requirement		Plan Reference
SWTC Appendix C.1 Project Plan Requirements		
16 (b)	The Sustainability Plan must contain, as a minimum: (x) provide a description of the overall approach to the identification of opportunities to reduce carbon emissions, energy use and embodied lifecycle impacts during the Contractor's Activities;	Section 7
16 (e)	The Contractor must develop and implement an Energy Efficiency and Greenhouse Gas Emissions Strategy and Management Plan, included as a sub-plan of the Sustainability Plan, which identifies processes and methods to: (i) improve energy efficiency; and (ii) reduce greenhouse gas emissions for the construction and operational stages.	This Plan
SWTC Appendix D.5 Sustainability Requirements		
2.4 (a)	The Contractor must demonstrate that opportunities to maximise operational energy efficiency have been identified and analysed. Whole-of-life costs and benefits must be estimated for each opportunity identified.	Design Management Plan
(b)	The Contractor must demonstrate that opportunities to maximise construction energy efficiency have been identified and analysed.	Construction Management Plan
(c)	The Contractor must demonstrate that opportunities to use renewable energy or lower carbon energy during the construction and operational stages have been fully investigated.	This Plan
(d)	The Contractor must ensure that all non-road diesel plant and equipment complies with the European Union or US EPA air emission standards.	Construction Management Plan
(e)	The Contractor must undertake a greenhouse gas assessment to estimate construction and operational emissions and demonstrate that opportunities to minimise emissions during the construction and operational stages have been identified, analysed and adopted. These must be undertaken in accordance with the Greenhouse Gas Assessment Workbook for Road Projects, Transport Authorities Greenhouse Group for at least scope 1 and 2 emissions.	Section 6
(f)	The Contractor must monitor, record and report energy use and greenhouse gas emissions (at least scope 1 and 2 emissions) during the construction stage.	Section 6
(g)	At the Date of Completion, the Contractor must update the greenhouse gas assessment (for at least scope 1 and 2 emissions) for the operation of Stage 1 based on the As-Built Project.	Section 6
(h)	The Contractor must propose and analyse road designs to minimise energy consumed by vehicles using the Motorway.	Design Management Plan

1.3. Management System Integration

The GHGMP as a subplan to the SMP is part of an integrated management system that will be deployed by the Project and. This management plans most relevant to this subplan are:

- Construction Environmental Management Plan (CEMP).
- Construction Management Plan.
- Design Management Plan.
- Earthworks Plan.
- Flora & Fauna Management Sub Plan.
- Operational Environmental Management Plan (OEMP).
- Project Management Plan.
- Resource Management Plan.
- Site Establishment Management Plan.
- Soil & Water Management Sub Plan.
- Spoil Management Plan.
- Stockpile Management Plan.
- Urban Design and Landscape Plan.
- Waste & Resources Management Sub Plan.
- Water Usage Strategy.

2. Context

2.1. Need for the Project

Sydney Gateway is a critical element of the NSW Government's long-term strategy to invest in an integrated transport network and make journeys easier, safer and faster. By 2036, the Project would provide capacity for an additional 60,000 vehicles per day.

2.2. Understanding the Project's context

2.2.1. Background

Transport for NSW (TfNSW) have gained approval to deliver a high capacity road connection linking the Sydney motorway network at St Peters interchange with Sydney Airport's domestic and international terminals and the Port Botany Precinct. The Project is located on both State and Commonwealth land.

For areas on State land, the Project was declared to be critical State significant infrastructure (CSSI) under the Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act) and was approved by the NSW Minister for Planning and Public Spaces on 27 August 2020.

Commonwealth approval under the Airports Act 1996 (the Airports Act) was granted by the Australian Minister for Infrastructure, Transport and Regional Development on 23 September 2020.

John Holland Seymour White Joint Venture (JHSWJV) have been contracted by Transport for New South Wales (TfNSW) for the Design and Construction of Sydney Gateway Stage 1 & Stage 3 (the Project).

2.2.2. Project Objectives

The primary objective of Sydney Gateway is to support sustainable growth in the economy and cater for projected increases in passengers and freight demand. This will be achieved by improving connectivity between the regional growth and freight distribution centres in western Sydney and the Sydney Airport and Port Botany area. The objectives of the Sydney Gateway road project are to:

- Improve connectivity to Sydney Airport terminals by providing high capacity direct road connections that cater for forecast growth in passenger and air freight volumes.
- Support the efficient distribution of freight to and from Sydney Airport and Port Botany to logistic centres in Western Sydney.
- Improve the liveability of Mascot town centre by reducing congestion and heavy vehicle movements on the local road network.

2.2.3. Detailed Description

The Project is located about eight kilometres south of the Sydney Central Business District, in the suburbs of Tempe, St Peters and Mascot. It sits within the boundaries of the Inner West, City of Sydney and Bayside local government areas.

The key features of the Project are illustrated in Figure 1-1, which include:

- Road links to provide access between the Sydney motorway network and Sydney Airport's terminals, consisting of the following components:
    - St Peters interchange connection – a new elevated section of road extending from St Peters interchange to the Botany Rail Line, including an overpass over Canal Road.

  - Terminal 1 connection – a new section of road connecting Terminal 1 with the St Peters interchange connection, including a bridge over Alexandra Canal and an overpass over the Botany Rail Line.
  - Qantas Drive upgrade and extension – widening and upgrading Qantas Drive to connect Terminals 2/3 with the St Peters interchange connection, including a high-level bridge over Alexandra Canal.
- Terminal links – two new sections of road connecting Terminal 1 and Terminals 2/3, including a bridge over Alexandra Canal.
- Terminals 2/3 access – a new elevated viaduct and overpass connecting Terminals 2/3 with the upgraded Qantas Drive.
- Road links to provide access to Sydney Airport land:
  - A new section of road and an overpass connecting Sydney Airport's northern lands on either side of the Botany Rail line (the northern lands access)
  - A new section of road, including a signalised intersection with the Terminal 1 connection and a bridge, connecting Sydney Airport's existing and proposed freight facilities on either side of Alexandra Canal (the freight terminal access)
- An active transport link, about 3 kilometres long and located along the western side of Alexandra Canal and section along Qantas Drive, to maintain connections between Sydney Airport, Mascot and the Sydney central business district.
- Intersection upgrades and/or modifications.
- Construction of operational ancillary infrastructure including maintenance bays, new and upgraded drainage infrastructure, signage and lighting, retaining walls, noise barriers, flood mitigation basin, emplacement mounds, utility works and landscaping.

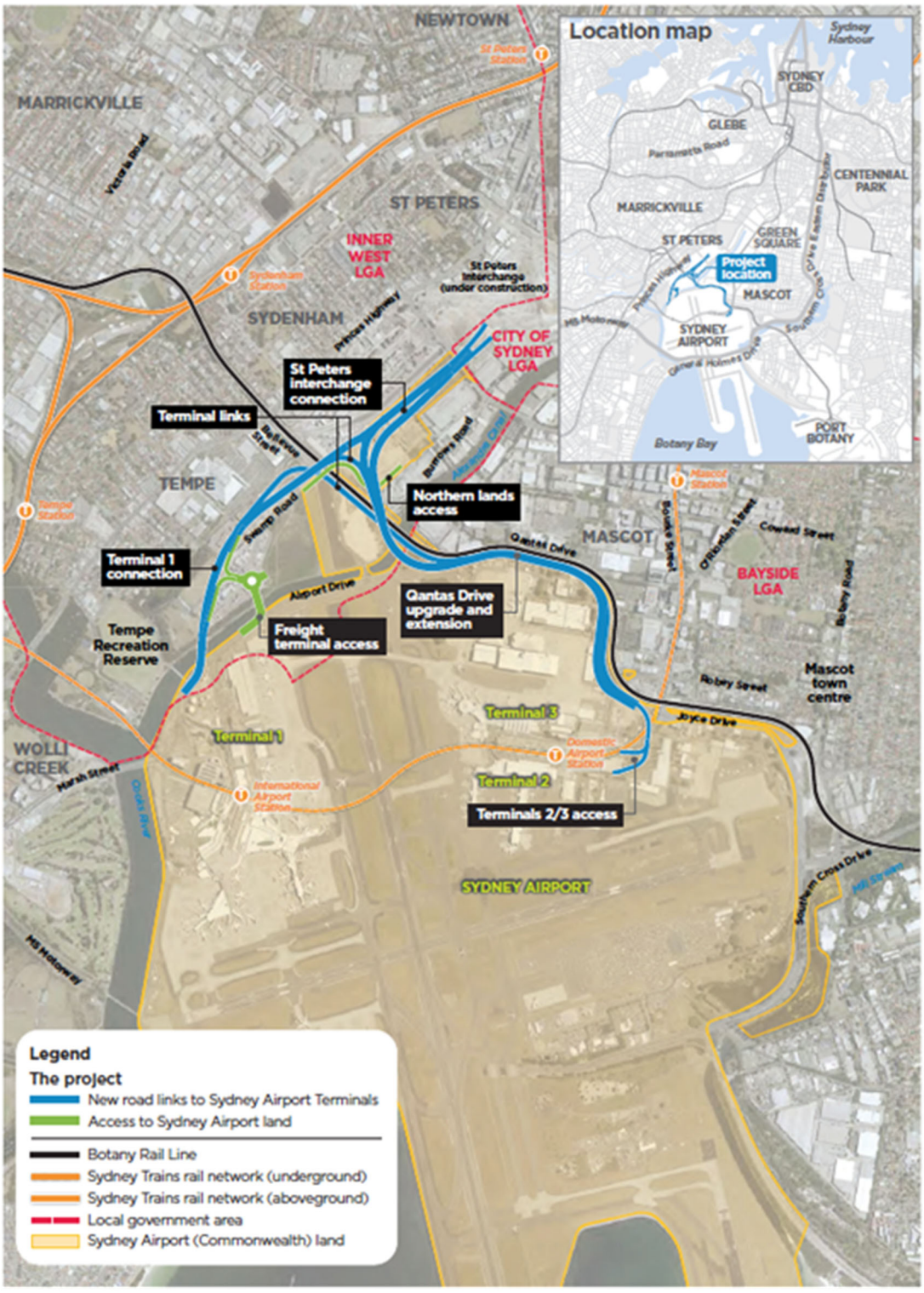

FIGURE 2 CONTINUAL IMPROVEMENT

3. Objectives & targets

3.1. Project wide

The main objectives of the Project are to improve the quality of service, improve liveability and support economic growth and productivity. The Project has established sustainability objectives, considering risks and opportunities and compliance obligations.

3.2. Construction and Operation GHG Emissions

In the Project EIS *Chapter 26 Climate Change and Greenhouse Gas*, the estimated construction emissions by source and scope are provided in Table 26.3 of the document. This table is reproduced in **Table 3** below for reference. The total greenhouse gas emissions for construction activities as per the EIS estimates is 422,970 tonnes of CO2-equivalent (tCO2-e) over a three-year period.

TABLE 2: ANNUAL GREENHOUSE GAS EMISSIONS BY EMISSION SOURCE AND SCOPE – CONSTRUCTION

Summary of activities	Scope 1 (tCO2-e/year)	Scope 2 (tCO2-e /year)	Scope 3 (tCO2-e /year)	Total (tCO2-e /year)	Percentage of total emissions (%)
Site office / general areas	250	-	20	270	0.2
Demolition and earthworks	1,910	-	100	2,010	1.4
Construction of pavements	350	-	3,050	3,400	2.4
Construction of structures	23,770	-	108,800	132,570	94
Construction of drainage	720	-	580	1,300	0.9
Construction of road furniture	20	-	1,420	1,440	1
Total (per year as an average)	**27,0201**	**-**	**113,970**	**140,990**	**100**
Total (3 years)	**81,060**	**-**	**341,910**	**422,970**	**100**

Note: 1. The Carbon Gauge calculator assumes all construction phase energy is from diesel sources such as generators. For this reason there are no scope 2 emissions from electricity use. The comparative greenhouse gas emissions between diesel fuel and electricity is a factor of about 3.5, with higher emissions associated per unit of grid electricity. Therefore if electricity was available for site offices, this would result in about a two per cent increase in total scope 1 and 2 emissions.

Table 26.4 of the EIS Chapter 26 (reproduced as **Table 4** below) provides the estimated annual operational greenhouse gas emissions by source and scope. The total operational greenhouse gas emissions (including maintenance activities but excluding road user emissions) is estimated to be 20,650 tCO2-e over a 50-year operational period (prescribed period in the TAGG workbook). This is equivalent to 413 tCO2-e per annum.

TABLE 3: ANNUAL GREENHOUSE GAS EMISSIONS BY EMISSION SOURCE AND SCOPE – OPERATION

Summary of activities	Scope 1 (tCO2-e/year)	Scope 2 (tCO2-e/year)	Scope 3 (tCO2-e/year)	Total (tCO2-e/year)	Percentage of total emissions
Lighting	-	260	50	310	75%
Traffic signals	-	10	3	13	3%
Maintenance of pavements	40	-	50	90	22%
Total (per year)	**40**	**270**	**103**	**413**	**100%**
Total (50 years)	**2,000**	**13,500**	**5,150**	**20,650**	**100%**

At the completion of the detailed design phase, construction and operational emissions will be re-estimated through whole-of-life modelling of resource use which in turn will be informed by a life cycle assessment.

3.3. Project Energy Efficiency and Greenhouse Gas Emission Objectives

Project Energy and Greenhouse Gas Emission Objectives

- Demonstrate sustainability leadership and continuous improvement;
- Achieve Contractual IS Design and As-built ratings;
- Protect and enhance the natural environment and local heritage;
- Optimise resource efficiency (materials, energy, water, land) and waste management;
- Decrease energy use and greenhouse gas (GHG) emissions on/by the Project;
- Increase resilience to climate change and future shocks and stresses.

3.4. Project Energy Efficiency and Greenhouse Gas Emission Targets

The Project has adopted the energy and greenhouse gas emission related targets shown below.

TABLE 4: ENERGY EFFICIENCY AND GREENHOUSE GAS EMISSIONS OBJECTIVES AND TARGETS

	Objective	Target	Minimum	Aspirational	Environment	Social	Economic	Strategy
1	Achieve an IS Design Rating	Excellent	>65	>75				This plan
2	Achieve an IS As-Built Rating	Excellent	>65	>75				This plan
5	People and places adapt to climate change and future shocks and stresses	A climate change risk assessment to be developed and adaptation measures identified and implemented.			✓	✓	✓	Climate Change Risk Assessment Report
7	Decrease Energy use and Greenhouse Gas (GHG) Emissions on/by the Project	% of construction electricity consumption sourced from renewable energy generated onsite and/or accredited Green Power	20	>20	✓		✓	This plan
		% of construction stage energy use offset (in accordance with the Australian Government National Carbon Offset Standard)	6	>6	✓			
		% LED light sources in street lighting and other permanent area lighting installed for public amenity or safety purposes	100	100	✓		✓	
		% improvement in supply chain carbon emissions intensity (including embodied energy in materials) versus a business-as-usual baseline *Note: Supply Chain emissions are to be estimated using methodologies consistent with the World Resources Institute Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard.*	10	30	✓		✓	
		% improvement in construction energy efficiency versus a business-as-usual baseline	10	30	✓		✓	
		% improvement in operational energy intensity versus a business-as-usual design	15	30	✓		✓	

JHSWJV are targeting the following Infrastructure Sustainability (IS) Rating benchmarks relating to the Energy and Carbon Category as part of achieving 'Excellent' Design and As-Built IS Ratings. Note that these targeted credits and levels may alter throughout the life of the Project.

TABLE 5: IS ENERGY CREDITS

IS Credit Ref	IS Credit Name	Levels Targeted	Benchmarks Targeted
Ene-1 (Energy abd carbon monitoring and reduction)	Energy and Carbon Monitoring and Reduction	2	Monitoring and modelling of energy use and GHG emissions, and actions taken to reduce them, is undertaken, covering at least Scope 1, Scope 2 and land clearing across the infrastructure lifecycle (Level 1). AND Monitoring and modelling demonstrates a reduction in GHG emissions compared to a base case footprint. For every reduction up to 30% for Level 3, fractions of Levels may be achieved on a sliding scale (i.e. Level 2 = reduction of min 15%).
Ene-2 (Use of Renewable Energy)	Use of Renewable Energy	1	Opportunities for use of renewable energy fully investigated (Level 1). For every substitution of energy from renewable sources up to 40% for Level 3, fractions of Levels may be achieved on a sliding scale (Level 2).

3.5. Approach to Achieving IS Energy Rating Targets

The Energy and Carbon related IS Credits reward the:

- Monitoring and minimising of energy use and GHG emissions across the infrastructure lifecycle;
- Identification and implementation of opportunities to reduce energy use and GHG Emissions; and
- The investigation of, and use of, renewable energy.

The general approach to how IS Rating credits are scoped and achieved for the Design and As-Built phases are described in the Project Sustainability Management Plan (SMP).

The extent to how these IS Rating credits will be targeted and achieved for the Design and As-Built phases are described in Section 6 of this Sub-Plan.

4. Roles and Responsibilities

Ultimate responsibility for managing sustainability sits with the JHSWJV Project Director. However, the Project team understands that achieving the best outcomes during delivery requires whole-of-project buy in and action. As such, sustainability duties have been incorporated into the roles of all key leaders in critical disciplines relevant to the implementation of this GHGMP.

<u>Project Director</u>

- Approve and ensure implementation of this Sub-Plan.
- Approve monthly Energy & GHG reports.
- Approve quarterly sustainability report for external issue.
- Secure nomination of JV partner with NGER Operational Control responsibility (i.e. NGER reporting entity).

Design Lead

- Ensure there are adequate resources for the implementation of this plan.
- Encourage a culture of innovation to adopt energy efficiency opportunities.
- Review Quarterly Sustainability Report for external issue.

Environmental and Sustainability Lead

- Ensure relationships with external stakeholders are effectively managed.
- Ensure relevant information from this sub-plan is incorporated into project inductions.
- Ensure all data is captured and reported according to project requirements.
- Support identified energy efficiency opportunities and their implementation.
- Review quarterly sustainability report for external issue.

Sustainability Lead

- Implement this plan from a day-to-day perspective.
- Prepare monthly energy reports and submit through internal reporting chain.
- Prepare quarterly sustainability reports and issue to Environmental and Sustainability Lead and Project Director for review
- Facilitate internal consultative forums with design and construction teams on an as-needs basis to identify energy efficiency opportunities and communicate the requirements of this sub plan.
- Ensure the requirements of this sub-plan are addressed.
- Identify the relevant legal, parent JV company, contractual, ISCA and other requirements as applicable to this sub plan and ensure they are addressed within this sub plan.
- Provide training and support to procurement and contract administration teams enabling their NGER data collection responsibilities from suppliers and subcontractors.
- Ensure subcontractor documentation captures the requirements of this sub plan.

Sustainability Coordinator

- Support the implementation of this plan in the field.

Contract Administrators

- Collate and maintain subcontractor documentation in accordance with this sub-plan.

Ensure timely and accurate NGER data entry into accounting systems as per project/parent company requirement.

5. Emission Sources and Initial Energy & GHG Assessments

5.1. Emission Sources

Project activities that have the potential to use material amounts of energy or emit significant quantities of GHG are:

TABLE 6: EMISSION SOURCES

Project Activities	Type of fuel/ emission
Vegetation Clearing	Diesel, Petrol
Utility relocations	Diesel, Electricity
Construction Compounds and Ancillary facilities	Diesel, Petrol, Greases, Paint, Oil, Electricity
Earthworks	Diesel, Petrol
Spoil and Material Haulage and Reuse	Diesel, Petrol, Electricity
Transportation of waste	Diesel
Piling	Diesel, Electricity
Concrete works	Diesel, Petrol
Structural Steel works	Diesel, Petrol, Greases, Paint, Oil, Electricity
Pavement Works	Diesel, Petrol
ITS Works	Diesel, Petrol, Greases, Oil, Electricity
Architectural Finishes	Paint, Diesel, Petrol
Landscaping	Diesel, Petrol, Oil and Greases

5.2. Initial GHG Assessment

An initial energy and greenhouse gas assessment was undertaken during the preparation of the Project EIS. The Project's reductions will be achieved against the reference base case based on the either the concept design (or the tender design with required back-casting, where appropriate and applicable) and will be developed in greater detail prior to construction commencing. The estimate of energy use and GHG emissions will cover Scope 1 and Scope 2 emissions, plus emissions from land clearing and potentially some aspects of Scope 3.

5.3. Emission Scope Definitions

Scope 1 emissions covers direct emissions from owned or controlled sources. Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed by the reporting company or project. Scope 3 includes all other indirect emissions that occur in a company or project's value chain. The definitions of GHG emissions scope types are provided in **Table 8** below for information.

TABLE 7: GREENHOUSE GAS SCOPE DEFINITION

Scope 1: Direct Emissions	Scope 2: Indirect Emissions	Scope 3: Other Emissions
The consumption of fuels, oils, greases, gases, and solvents on site. The combustion of fuel onsite leads to emissions being released within the site boundaries.	Consumption of electricity on site. Consumption occurs within the site boundaries, yet the emissions are generated elsewhere (at the power generation facility).	Broader upstream and downstream emissions where the energy consumed, and the emissions generated both occur outside of the site boundary.
Examples • Fuel used in heavy vehicles, plant, and equipment on site • Fuel used in light vehicles • Gas used on site • Oils, greases, and solvents used on site • Contractor vehicles and fuels etc. used on site.	Examples: • Electricity consumed within the site boundaries	Examples • Deliveries to site (including concrete trucks, materials, fuel, etc.) • Transportation of waste • Emissions generated in the production of materials • Fuel used by subcontractors and workers getting to and from site • waste disposal, including off-site waste generated in construction and operations

6. Measuring and Reporting of Energy and Greenhouse Gas Emissions

6.1. Detailed Greenhouse Gas Assessment

JHSWJV will undertake a greenhouse gas assessment of Scope 1 and Scope 2 emissions (and potentially Scope 3, where applicable) for the detailed design in accordance with the latest version of the Greenhouse Gas Assessment Workbook for Road Projects (Transport Authorities Greenhouse Group) (February 2013). This assessment will be undertaken to:

- Estimate construction and operational emissions; and
- Demonstrate that opportunities to minimise emissions during both the construction and operational stages have been identified and analysed.

This assessment will also satisfy evidential requirements for IS Rating Credit Ene-1 and be the subject of an internal and/ or external audit in accordance with ISCA requirements and the level being targeted.

A revised assessment will also be undertaken for the operation of the Project based on the as-built Project as part of the submission for the as-built IS Rating submission.

6.2. Energy Reference Base Case

The Project is targeting the achievement of IS Rating credit Ene-1 Level 2 which includes the provision of evidence demonstrating that modelling and monitoring of GHG emissions has achieved a reduction of between 15% and 30% below a reference base case. The preliminary IS scorecard for the Project has considered a minimum level of 1.5 for the Credit Ene-1 (Energy and carbon monitoring and reduction) which roughly relates to a 7% reduction in GHG emissions. An energy reference base case will be developed during detailed design building on data inputs from the initial GHG assessment undertaken during the concept/tender phase and adjusted according to subsequent changes in the scope of activities being undertaken by JHSWJV. This reference base case will also be developed in accordance with requirements nominated in the IS Technical Manual available on https://isca.org.au/Tools-and-Resources. It is worth noting that the reduction in GHG emissions for compliance against the Ene-1 credit will be influenced as a minimum construction as well as operational initiatives covered in **Table 5** above.

6.3. Monitoring & Data Collection

The Project's energy consumption and GHG emissions associated with its Scope 1, Scope 2 and land clearing will be monitored and reported throughout the delivery phase. **Table 9** identifies the data sources and collection method for each emission type and reporting parameter generated by the Project.

TABLE 8: EMISSION DATA SOURCES AND COLLECTION METHODS

Emission Sources	Fuel Combusted	Party	Data Collection Method
Liquid fuels by non-combustion methods	Solvents	Suppliers Subcontractors	Supplier Invoices. Monthly subcontractor NGER forms.
Gaseous fuels by non-combustion	Acetylene	Suppliers Subcontractors	Supplier Invoices. Monthly subcontractor NGER forms.
Electricity paid for by JHSWJV	Electricity	Suppliers	Utility Suppler invoices.
On-sell of any fuel (e.g. diesel, LPG, etc) to subcontractors and third parties	Diesel, biodiesel, petrol, LPG, grease, oil	TBC	Commercial Team invoicing subcontractors/ third parties.
Liquid fuel – stationary	Diesel, biodiesel, petrol, LPG, grease, oil	Suppliers Subcontractors	Supplier Invoices. Monthly subcontractor NGER forms.
Liquid fuel – transport	Diesel, biodiesel, petrol, LPG, grease, oil	JHSWJV Supplies Subcontractors Waste Contractors	Fuel Cards Supplier Invoices Monthly subcontractor NGER forms.
Gaseous fuel - stationary	Natural Gas, Acetylene	Suppliers Subcontractors	Supplier Invoices. Monthly subcontractor NGER forms.
Gaseous fuel - transport	LPG	JHSWJV Suppliers Subcontractor	Fuel Cards Supplier Invoices Monthly subcontractor NGER forms.

6.3.1. Data Collection from Subcontractors

All JHSWJV subcontractor agreements shall include standard provisions placing a responsibility on the subcontractor to report energy use and GHG emissions in accordance with requirements under the National Greenhouse and Energy Reporting (NGER) Act 2007 (Commonwealth). A Subcontractor NGER Form shall be included as an attachment to each agreement or contract.

An additional Subcontractor Reporting Help Guide with an sample calculation sheet shall also be provided to subcontractors seeking assistance and to improve the reliability of data received by the Project team.

During the construction/delivery phase of the Project, a list of subcontractors and work packages anticipated to consume material amounts of energy or generate GHG emissions from its activities will be maintained and updated each month.

Reporting materiality is determined by:

1. Activities that consume at least 200L of fuel/month on-site as well as generate Scope 1 emissions (e.g. piling contractors, Spoil Haulage contractors), and
2. Value of subcontract exceeds $100,000 pa.

6.3.2. Estimates

Where invoiced data is not available for a specific parameter, estimates may be made based on technical specifications of relevant plant and equipment. Any estimates will be conducted in line with guidance in the Greenhouse Gas Assessment Workbook for Road Projects, Transport Authorities Greenhouse Group or equivalent. Any estimates will be done in conjunction with assumptions made in the Sydney Gateway Stages 1 and 3 Project reference case.

6.4. Tracking, Reporting and Reviewing Energy & GHG Performance

The tracking and reviewing of energy and GHG emission performance will occur throughout the construction/delivery phase of the Project using informal and ad-hoc mechanisms as well as formal and structured review and reporting processes. The processes are detailed below:

6.4.1. Monthly NGER Reports to JHSWJV

An aggregate of each Scope 1 and 2 energy and emission source will be provided to the JHSW NGER Reporting Entity. This will be undertaken in accordance with the reporting company's procedure and reporting requirements.

6.4.2. Internal Monthly Sustainability Performance Reports

The Sustainability Manager will compile a succinct sustainability performance report each month for internal reporting purposes using a template that shall be established in due course. This will include at a minimum an update on the progress of each Project sustainability target for the month, its aggregated total for the Project duration to-date for each target (where relevant), and a comment on progress, issues or milestones reached for each target. Additional internal performance related issues, updates and challenges will also be included where relevant. The report will be provided to the Project Environment and Sustainability Manager who will distribute it to the Senior Leadership Team and the Project Director.

6.4.3. Quarterly Sustainability Reports

From the date of the contract until Construction Completion, the Sustainability Manager will draft quarterly sustainability reports for the Project Director's approval and facilitate its' distribution to the client's Principal Representative after the end of each quarter. The Quarterly Sustainability Report will be in the form of a dashboard for ease of reporting.

The following energy and GHG related metrics will be included in each quarterly sustainability report:

- Performance towards the achievement of Energy and Carbon IS Target Credits and other Project energy and GHG emission related objectives (including continual improvement initiatives and actions;
- Electricity use (including % of renewable energy purchased) and any electricity generated onsite;
- Fuel use by type (diesel, petrol);
- Energy use (in MJ/month); and
- Greenhouse gas emissions (in tonnes of Carbon Dioxide equivalents per month (tCO2-e/month)).

6.4.4. Annual Sustainability Reports

From the date of the deed until Construction Completion, the Sustainability Manager will draft annual sustainability reports for Project Director approval and facilitate its' distribution to the client's Principal Representative after the end of each reporting year.

6.4.5. Internal and External Auditing

In accordance with IS Rating credit Ene-1, the monitoring and modelling of energy and GHG emissions must be either managed by, reviewed by, or audited by a suitably qualified person. A suitably qualified person for the purposes of the credit Ene-1 is someone who has a formal qualification and a minimum of five years' experience in energy or GHG management. The internal/external review/audit requirements as per credit Ene-1 are as follows:

- Design submission – Modelled (based on detailed design) energy and carbon footprint report
- As-built submission – Monitored and modelled (for the operation phase based on as-built design) energy and carbon footprint report

The selection of an internal or external audit depends on the credit level being targeted. The scope of these audits is be defined by ISCA requirements in the IS Technical Manual supplemented by the most recent IS Ruling available on https://isca.org.au/Tools-and-Resources.

Energy performance will also fall within the scope of quarterly internal and external sustainability audits of the SG management system in accordance with IS Credit Man-5 (Reporting and Review).

6.4.6. Annual Review

From the date of the contract/deed, an annual sustainability performance review will be undertaken by JHSWJV to assess energy performance and strengthen targets driving continual improvement. The outputs of this review will be minuted formally (as evidence for the IS Rating submissions) and a summary included in the corresponding quarterly sustainability report. To achieve the targeted IS Credit (Level 1.5) this review will be undertaken by the Project's senior management team.

7. Identifying and implementing Opportunities

The Project utilises a risk based approach according to ISO31000 Risk Management – Principles and Guidelines to identify and mitigate against environmental, social and economic risks and capitalise on opportunities.

Risk management is integrated and embedded within general management of the Project and requires all decision making to explicitly consider risk (threat and opportunity) so that decisions are made on a best-for-project approach. Key decisions, such as those made during design and constructability analysis, will use value engineering or multi-criteria analysis techniques to assess design options and key factors such as cost, design (product), safety, sustainability and energy.

7.1. Sustainability Risk and Opportunities Register

The identification and tracking of sustainability risks, opportunities and initiatives is the responsibility of the Sustainability Manager and this process is integrated with the Project-wide risk management approach. Additionally, identified sustainability opportunities will be recorded in the *Sustainability Opportunities and Initiatives Register* in the *SG Sustainability Requirements Register*. Opportunities will be assessed on a ***feasible*** and ***reasonable*** basis considering whole of life Project impacts.

This register will be a 'live' document throughout Project delivery with opportunities that have been identified as part of the design process with regular updates capturing new opportunities identified during design and construction. The purpose of the *Sustainability Risk Opportunities Register* is to document identified sustainability risks, opportunities, their feasibility, Project impact and the progress of their implementation.

Throughout the life of the Project, the Environmental and Sustainability Manager will drive Project team engagement with the initiatives process through workshops, meetings, training and general awareness campaigns.

- **Feasible** relates to engineering considerations, what is practical to build and whether or not Project-specific technical criteria

- **Reasonable** requires judgment on the total cost of the initiative versus benefits provided as well as the nature and extent of potential improvements and value for money can be met

Once deemed feasible and reasonable, opportunities become initiatives for implementation. Responsibility for implementation will be assigned to a relevant manager within the Project team to ensure the initiative is implemented. This process will ensure that implemented initiatives align with Project objectives and provide whole of life value.

7.2. Energy and GHG Reduction Initiatives

A number of energy efficient initiatives and GHG reduction initiatives have been incorporated into the JHSWJV tender design and construction methodologies or were deferred pending further assessment during detailed design. These initiatives serve as a starting reference in the *Risks, Opportunities and Initiatives Register* described in section 7.1

7.2.1. Energy Efficiency & GHG Emissions Reduction Initiative – Design

- **Low carbon Concrete** – Specifying concrete products (ready mix, precast, piles, pipes & culverts, kerbs & barriers, etc.) with Supplementary Cementitious Materials (e.g. Pulverised Fuel Ash, Blast Furnace Slag) will help lower embodied carbon and result in GHG emissions reduction.
- **Lighting Design** – use of LED lighting combined with dimming technology, instead of fluorescent or High-Pressure Sodium (HPS) luminaires. Lower energy requirements, by virtue of being LED luminaires, but also because the automatic dimming technology adjusts the energy draw to the minimum amount required at any point in time. The lighting solution also includes integrated photoelectric cell technology, whereby luminaires automatically activate when the external luminance falls below a prescribed level, keeping road user safety as the top priority.
- **Lightweight Structures** – Wherever possible, slender structures have been developed, reducing the overall depth of beams and minimising vertical construction impacts. Signature bridges SB31 and SB51 are lightweight network arches, enhancing the Reference Design to facilitate faster and safer launching over the canal and eliminating the need for large cranes, thus reducing fuel burn.
- **Enhanced Pavement Design** – Enhanced vertical alignment of overlay and mill and re-sheet pavements to closely match existing pavement levels. This minimises interruption arising from reconstruction, reduces costs, reduces emissions, shortens time to opening and maximises worker safety.
- **Modular Construction** – Incorporating modular, durable materials and detailing across surface works will reduce the level of maintenance, repair or replacement.

7.2.2. Energy Efficiency & GHG Emissions Reduction Initiative – Construction

- **On-site Remediation** – The Project intends to Investigate potential for on-site treatment options (such as blending) and potential remediation and re-use of contaminated soil. This will result in reduced truck movements to licenced landfill and in doing so, a reduction in fuel used in the transport of waste to an offsite facility is anticipated.
- **Accredited Green Power** – Minimum 20% of construction energy to be 100% renewable either through onsite renewables or purchase of Accredited Green Power.
- **Energy Use Offset** – Minimum 6% of construction stage energy use offset (in accordance with the Australian Government National Carbon Offset Standard)
- **Non-potable Water** – Over 90% of the water used during the construction and operational phase of the Project is for dust suppression, cleaning, irrigation and other non-potable applications. The Project is keen on exploring the substitution of potable water with non-potable sources with a minimum target of 50% non-potable water use during construction for non-potable water applications. This will help in the reduction of Scope 3 emissions related to treatment and supply of potable water.
- **Transport of Materials** – Importing fill material preconditioned prior to site delivery with recycled water, thus reducing truck movements as well as scheduling of materials delivery and waste haulage at night to reduce fuel consumption
- **Biodiesel Generators** – The Project will consider the opportunity to reduce energy consumption required for powering site compound through the use of bio-diesel generators
- **RAP in Pavements** – The Project will consider an increased use (>30%) of Reclaimed Asphalt Pavement (RAP) in its specifications. The benefit of RAP is the reduced energy required to produce pavement construction materials. Recycled products are less energy intensive to produce than quarry materials. The Project is currently studying the use of the product Reconophalt™ in similar Projects for adoption on the Sydney Gateway Project. Reconophalt™ is the first road surfacing material in Australia incorporating high recycled content derived from waste streams, such as soft plastics, glass and toner, which would otherwise be bound for landfill or stockpiled.
- **Solar powered lighting towers** – Lighting towers fitted with solar panels, battery storage system and LED fixtures are now a viable alternative to diesel powered lighting towers.
- **Cement and Concrete** – Sourcing blended cement containing supplementary cementitious materials (SCMs) as well as using low carbon concrete products.
- **Biofuels** – An exploration of using B5 to B20 biodiesel and E10 unleaded petrol where fuel is provided directly on-site by JHSWJV will be made considering engine compatibility and warranties and biofuel availability.
- **Energy efficient cribs and temporary offices** – a number of opportunities will be examined to optimise energy use with the location, orientation and design of temporary buildings during construction: utilisation of existing shading (where possible), split system air conditioners/heaters, shading over north facing windows, maximise proportion of open plan layouts, light internal colours, good quality door openers, sliding windows (able to be opened during summer), LED light fixtures.
- **Team culture and discipline** – campaigns in workforce to encourage switching off lights, air conditioners and other whitegoods when not in use and appropriate to do so. Out of hours security patrols to also switch off non-essential lights as part of their scope.
- **Energy efficient appliances** – whitegoods to adopt a minimum 4 Star WELS Rating where available and economic, and computer hardware to be compliant with Energy Star requirements where available and economic.

7.2.3. Energy Efficiency & GHG Emissions Reduction Initiatives – Operation

- **Non-potable Water Use** – Non-potable water use in the irrigation of landscape elements as well as in the cleaning and maintenance of the infrastructure asset will result in the reduction of embodied carbon.
- **Native Landscaping** – Selection of appropriate plant species for the Australian climate, with groundcovers and mulch to suppress weeds and reduce frequency of maintenance, which contributes to reduction in fuel burn and GHG emissions.
- **Accredited Green Power** – Engagement with the client to consider the use of accredited green power during the operation of the infrastructure asset.
- **Lighting** – LED lighting solution with dimming technology instead of fluorescent or HPS luminaires (LEDs have a minimum design life of 20 years) and intelligent lighting control system which achieves luminance levels using sensors to control lighting and adjusts the energy draw to the minimum amount required at any point in time. This results in reduced energy consumption and lowers whole-of-life maintenance costs. Optimal amount of light will be delivered in accordance with ambient light conditions for efficient energy use and lower operating costs.
- **Modular Elements** – Using modular, durable materials and detailing across surface works to reduce the level of maintenance, repair or replacement.

8. Continuous Improvement

Continual improvement of this plan will be achieved by the continual evaluation of sustainability management performance against policies, objectives, and feedback from implementation.

Sustainability performance and processes will be regularly reviewed and areas for improvements identified and disseminated to the Project team to ensure they are implemented. Opportunities for improvement identified through audit results will also be implemented. Good news stories will be reported to the client and disseminated to the Project team through newsletters, toolbox talks and pre-starts as well as disseminated to joint venture partner businesses.

9. Review and Update

Where there is no increase in or introduction of new sustainability risks, minor revisions to this plan will be undertaken. This may include changes to clarify or improve sustainability practices or to add new obligations and associated controls. Minor revisions will be approved by the Sustainability Lead.

Where there is a change to work methods or scope that result in increased or new sustainability risks or impacts that still achieve the performance requirements and approval conditions, a major revision to this plan will be undertaken. Major revisions will be reviewed and accepted by the Client.

Appendix A: NGER Reporting Requirements

Appendix G: Specific subcontract sustainability input

1 Sydney Gateway Stage 1 and 3 Sustainability Requirements

1.1 Acknowledgment and application of sustainability requirements

John Holland has a commitment to sustainable outcomes and is required to enhance the whole-of-life environmental, social and economic outcomes of the project, including via subcontractors. Accordingly, the subcontract tender evaluation process may include a non-financial evaluation that considers health & safety, quality, environmental, sustainability and workforce impacts.

Subcontractors shall provide details of their commitment to human rights and international law, environmental management, sustainability credentials and opportunities and innovative products & processes.

The Subcontractor shall work with the Contractor to identify suitable sustainability objectives in relation to their works. Sustainability objectives are to be satisfactory to the Contractor and must be aligned with and ensure that all applicable Sustainability Objectives, Targets and Requirements are addressed throughout the performance of their work.

(1) The Contractor acknowledges that JHSW is, with respect to the Project:

(a) committed to optimising environmental, social and economic impacts, and achieving a positive legacy; and

(b) required to achieve and comply with certain sustainability requirements.

(2) The Contractor acknowledges and agrees that JHSW requires the Contractor to achieve and comply with the sustainability requirements set out in the following provisions of this clause [1] so that JHSW may achieve and comply with the sustainability requirements referred to in clause [1.1(1)(b)].

(3) For clarity, the sustainability requirements set out in clause [1.2] are generic requirements and some may not be relevant to the Work under the Contract or the Contractor's activities under this Contract. The Contractor is not required to comply with requirements in clause [1.2] that are not relevant to the Work under the Contract or the Contractor's activities under this Contract.

1.2 Sustainability requirements

Subject to clause [1.1(3)], the Contractor must, in carrying out the Work under the Contract and otherwise performing its obligations under this Contract:

Training

Sustainability Training is an obligation for High Impact Suppliers to increase their knowledge of sustainability principles and how these apply to the project works.

Suppliers and sub-contractors are required to undertake any training as advised by the Contractor and will be notified of specific training obligations through the tender process. This training will be delivered through the Australian Supply Chain Sustainability School (ASCSS) (or similar organisation) or the project team.

Developing Countries

(a) Confirmation from subcontractors and suppliers that where materials are sourced from a developing country the supplier's operations follow:

I. all relevant laws and regulations local to that country;

ii. the International Labour Organization's Fundamental Conventions; and

iii. the "Ten Principles" of the UN Global Compact.

(b) When sourcing materials from a developing country, evidence of the above is to be provided by the sub-contractor and their suppliers, in the form of:

1. Company policies & procedures that incorporate key human rights topics, including but not limited to:
    - Management systems and code of conduct, including evidence of implementation, audit & update of policies and procedures
    - Entitlement to work & regular employment
    - Freely chosen employment
    - Freedom of association
    - Health, Safety, Hygiene and Environment
    - Child Labour, Living Wage & Working Hours
    - Discrimination, bullying & harassment and dispute resolution processes
    - Business Ethics, bribery, anti-corruption and intellectual property rights
2. Ethical trade audit report (2nd or 3rd party) including the above topics as a minimum. Reports can be desktop or facility-based audits.

(c) If sufficient evidence cannot be provided to demonstrate compliance, the subcontractor and suppliers maybe requested to provide additional evidence in the form of:

1. Ethical trade audit report (2nd or 3rd party) to SMETA 4-pillar audit standard or demonstrated equivalent:
    - If non-compliances are identified in any audit findings, it will be the responsibility of the subcontractor to close out any non-conformances with their suppliers.

Modern Slavery

Confirmation of the following in relation to The Modern Slavery Act 2018 is required:

(d) 1. there are no outstanding investigations into the supplier/sub-contractors' operations and no convictions of any offence under the Modern Slavery Legislation; and

(e) 2. any actions or agreements held by the supplier/sub-contractor that will potentially cause the Project to breach the Modern Slavery Legislation".

Water

(f) reduce the consumption of potable water where possible by maximising non-potable water usage;

(g) (other than to the extent that where doing so would not enable the Contractor to comply with the performance requirements of this Contract) use a minimum of 30% reused, recycled or reclaimed water in the Work under the Contract;

Energy and carbon emissions

(h) minimise energy and carbon emissions associated with the Work under the Contract, including by:

(i) sourcing a minimum of 20% construction stage electricity from accredited Green Power (where power is not supplied by JHSW);
(ii) using alternative fuels, hybrid plant and/or solar lighting where possible; and
(iii) considering public transport or shared transport to/from Site for their workforce;

Sourcing of materials

(i) source materials with recycled content and/or from certified sources, including:

(i) concrete – the Contractor must use a concrete mix that has a minimum 30% cement replacement (unless doing so would not enable the Contractor to comply with the performance requirements of this Contract, in which case the Contractor must use a concrete mix that has a minimum 5% cement replacement);
(ii) quarry materials for road base/sub base – the Contractor must use a minimum of 10% recycled content (e.g. recycled glass);
(iii) timber – the Contractor must use 100% reused, recycled or sourced timber from sustainably harvested forests that have obtained a Forestry Management Certification such as:
(A) Forest Stewardship Council (FSC);
(B) Program for the Endorsement of Forest Certification (PEFC); or
(C) Australian Forest Certification Scheme/ Australian Forestry Standards (AFCS/AFS); and
(iv) steel – the Contractor must be certified under the Australasian Certification Authority for Reinforcing Steels (ACRS);
*certificates showing evidence of the above must be supplied to the JHSW Sustainability Team.

Waste generation

(j) reduce waste generation, by:

(i) investigating the reuse of materials, particularly the possibility of packaging take-back arrangements, such as formwork, transit packaging and other temporary works; and
(ii) diverting a minimum of >90% of construction and demolition waste, generated by the Work under the Contract, from landfill through reduction, reuse and recycling; and

Project sustainability requirements

(k) without prejudice to the foregoing provisions in this clause [1.2], comply with the "Project Sustainability Requirements" in the Subcontractor Pack provided to the Contractor.

1.3 Reporting requirements

(1) **Without prejudice to the obligations in clause XX of the Contract Conditions, the Contractor must, as part of the monthly report (due 7 business days after end of each month) required by clause XX of the Contract Conditions, set out (in the form, and in such detail, as JHSW requires) details of:**

(a) fuel (including diesel (L), unleaded (L) and biofuel(L)) and electricity consumption (kWH) in connection with the Work under the Contract (in accordance with the NGER Legislation);

(b) water usage (kL), potable (kL) and non-potable (kL), water captured and reused (kL), water saved (kL)) in connection with the Work under the Contract (but not including water supplied by JHSW);

(c) waste (including spoil) removed from the Site (if not removed by JHSW) in connection with the Work under the Contract, including stream, diversion rate from landfill and classification and receival reports. Specifically:

(i) Total waste generated (t)

(ii) Total waste recycled (t)

(iii) Total waste to landfill (t)

(iv) Site -

(v) Construction (inert & non-hazardous) waste to landfill (t)

(vi) Construction (inert & non-hazardous) waste recycled (t)

(vii) Spoil waste to landfill (t)

(viii) Spoil waste recycled (t)

(ix) Contaminated / Hazardous waste to landfill (t)

(x) Contaminated waste remediated (t)

(xi) Office -

(xii) Office waste to landfill (t)

(xiii) Office waste recycled (t);

(d) materials (including timber (t), steel (t), aggregates (t), asphalt (m3), glass (t), aluminium (t), plastic (t), coatings and finishes (L), composites (t), precast (m3) and insitu concrete (m3) (MPa, % recycled content, % cement replacement), piping (m3) (including PVC and HDPE) brought onto the Site in connection with the Work under the Contract, and recycled/reused content;

(e) the number and % value of products that have an accredited Environmental Label (i.e. Environmental Product Declaration (EPD), Good Environmental Choice Ecolabel, Green Building Council of Australia BEP, Ecospecifier Green Tag, ISEAL Alliance compliant whole supply chain Stewardship Scheme certification. The Contractor must provide copies of all relevant labels, declarations and/or other product certifications.

(f) sustainable procurement and workforce participation in the Work under the Contract (e.g. local suppliers and business, Aboriginal owned business, women in non-traditional roles, local employment, and Aboriginal and Torres Strait Islander employment), Specifically:

(i) % of learning workers amongst the total labour workforce
(ii) Number and % of employees under the 25 years of age
(iii) Number and % of Apprentices of all trade's positions
(iv) Number and % of women in trade related work
(v) Number of university undergraduates or recent graduates employed by the Contractor
(vi) Number of employees over 16 years of age currently in school employed by the Contractor
(vii) % of Aboriginal and Torres Strait Islander participation
(viii) % of Aboriginal and Torres Strait Islander employees been retained for greater than 12 months
(ix) % of employees from the Greater Sydney region
(x) Is the Contractor classified as a Social Enterprise? (if so, please provide relevant certifications)
(xi) Number and % of workforce from disadvantaged, disabled and under-represented groups
(xii) Does the Contractor employ people on the National Disability Incentive Scheme (NDIS)? If so, what is the number and % of employees that identify as having a disability
(xiii) Are you an Aboriginal and/or Torres Strait Islander Enterprise? (if so, please provide relevant certifications).

(g) Equipment details, including, type, engine power, make, model, year of manufacture, year of purchase, emission certificate, certificate number, and

(h) such other related matters as JHSW reasonably requests

Appendix H: Tender Interview / Questionnaire

Under development

Appendix I: Tender Analysis

Under development

Appendix J: Decision Making MCA

Decision Making and Multi Criteria Analysis (MCA) tool

Decision Title	[decision title]
Date	[date]
Project Phrase	[category]

1. Enter decision title
2. Enter date decision considered and made
3. Enter project phrase

	Option	Description
Option A – Business as Usual	[enter short name]	[description]
Option B – Alternative	[enter short name]	[description]
Option C – Other	[enter short name]	[description]

4. Identify two or more options. Specifically options that include:
- Business As Usual
- Other proven approaches
- Non-asset option - option that resides separate to the asset
- Technical limits - option of high technical status / cutting edge technology
- Approach to specifically address sustainability

Assessment of Significance

Date	[date]
Author(s)	

Impact of decision on the Project	
Could this decision trigger a departure of the contract	Yes
Does this decision have an impact on cost margins?	Yes
Does this decision have an impact on program?	Not
Does this decision have an impact on product performance?	Yes

5. Assess the impact of the decision on the Project

Additional criteria can be entered if relelvant

Non- Finiancial Outcomes	
Do any of the options have an impact on environmental performance?	Not
Do any of the options have an impact on social performance?	Yes
Do any of the options have an impact to stakeholders or customer satisfaction?	
Do any of the options have an impact on safety?	
Could this decision assist in market transformation or the development of innovative solutions?	

6. Assess if the decision will result in any non-finiancial outcomes (positive or negative)

Additional criteria can be entered if relelvant

Significance	Significant

A decision is deemed significant if it triggers at least one project impact and one non-finiancial outcome.

Decision Making and Multi Criteria Analysis (MCA) tool

Determining weighting and criteria

Date	[date]
Author(s)	

Aspect Weighting

1. Determine if MCA will be conduct by using Criteria Weighting of Aspect Weighting?
Refer to XXX for guidence guidence

	Criteria	Aspect Weighting	Comment
Environment	Resilience to Climate Change	15%	
	Energy and Carbon		
	Water		
	Ecology		
	Pollution		
Social	Community Health & Wellbeing	6%	
	Heritage		
	Crime / Security and Safety		
Economic	Capital Costs	79%	
	Lifecycle Costs		
	Reliability / Performance / Durability		
Other	xxx	-	
	XXX	-	
	XXX	-	
		100%	

2. Adjust weighting accordingly

If criteria is not relevant enter as "-"

Additional criteria can be add in the "Other Section"

Refer to XXX for additional guidence

Decision Making and Multi Criteria Analysis (MCA) tool

Multi-criteria analysis

Date	[date]
Author(s)	

	Criteria	Score [enter short name]	Score [enter short name]	Score [enter short name]	Comment
Environment	Resilience to Climate Change	1	0		
	Energy and Carbon	1	2		
	Water	1	2		
	Ecology	0	1		
	Pollution	1	2		
Social	Community Health & Wellbeing	1	2		
	Heritage	1	1		
	Crime / Security and Safety	1	2		
Economic	Capital Costs	1	2		
	Lifecycle Costs	1	1		
	Reliability / Performance / Durability	1	1		
Other	xxx	1	2		
	XXX				
	XXX				
Total		[enter short] 4.9	[enter short] 6.8	[enter short] 0.0	

1. Score each criteria out of two (2)
Reference below to determine score
Provide comment explaining scores.
Additional criteria can be added in "Other"

events)
0 - increases susceptability to a climate change risk
1 - maintains susceptability to climate change risks
2 - reduces susceptability to a climate change risk

0 - n/a does not have any bearing on lifecycle carbon (i.e. energy demand, energy type, material demand, material type)
0 - increases carbon footpint
1 - maintains existing carbon footprint
2 - reduces carbon footprint

0 - n/a does not have any bearing on lifecycle water (i.e. water demand, water type)
0 - increases potable water demand
1 - maintains existing potable water demand
2 - reduces potable water demand

extent)
0 - reduces value/connectivity
1 - maintains existing value/connectivity
2 - increases value/connectivity

0 - n/a does not have any bearing on pollution (i.e. water, noise, vibration, air quality, light pollution)
0 - increases pollution
1 - maintains existing levels of pollution
2 - reduces pollution

0 - n/a does not have any bearing on community health and wellbeing (i.e. connectedness, public transport, active transport, recreation facilities, education, local business, arts and culture)
0 - reduces health and wellbeing
1 - maintains existing health and well being
2 - improves health and well being

0 - n/a does not have any bearing on heritage (i.e. european and aboriginal conservation and enhancement)
0 - reduces heritage value
1 - maintains heritage value
2 - increases heritage value

0 - n/a does not have any bearing on lifecycle crime and safety
0 - increases crime and safety risks
1 - maintains crime and safety risks
2 - reduces crime and safety risks

0 - increases costs over budget allocation
1 - maintains costs at budget allocation
2 - reduces costs from budget allocation

0 - increases costs
1 - maintains costs
2 - reduces costs

0 - unproven altogether
1 - unproven in this context
2 - proven in this context

15. Identify the preferred option (highest score)

Socre are calculated out of 10

Appendix K: Climate Change Risk Assessment

Sydney Gateway Climate Change Risk Register (Work in Progress)

5/02/2021
A

Initial Risks		Reassessed Risks		% Reduction
Extreme	0	Extreme	0	
High	3	High	0	
Medium	10	Medium	0	100%
Low	8	Low	7	13%
Negligible	7	Negligible	8	

1. Review risks and existing controls - respond to comments in red

2. Review and update risk rating if needed using risk matrices

3. Review and update adaptations. Add additional. Provide justification if adaptation can't be implement or should be considered in the future.

4. Review and fil in residual likelihood post adaptation

5. Fill in evidence reference (ie design report

	Risk Identification			Risk Analysis and Evaluation			Adaptation		Revised Risk Rating			Responsibility and Evidence		
Risk ID	Climate Variable	Climate Risk	Existing Controls	Consequence	Likelihood	Risk Rating	Adaptation measure - Design	Adaptation measure - Operation	C2	L3	Risk Rating2	Responsibility (Discipline)	Person responsible	Evidence of adaptation
CC1	Increased rainfall intensity combined with sea level rise	Increase in rainfall intensity combined with sea level rise resulting in inundation of low points of the carriageways causing traffic delays, safety risks for road users and potential road closures disrupting access to the airport. At risk locations include: '-Eastbound terminal link -Airport Drive at Terminal 1 and the Freight Terminal -Qantas Dive upgrade and extension -Eastbound terminal link -Sydney Airport Corporation Ltd. access road (connecting Burrows Road to land of western side of Port Botany Rail Line). Other?	- Most locations immune to a 1% AEP flood event under ARR1987 (not accounting for climate change). Sensitivity testing against 2016 - changes negligable.	High	Medium	High	- Further modelling in detailed design to optimise raising impacted roads without breaching height restrictions (Adaptations to be documented once modelling has been completed and road levels agreed). - Engagement with surrounding asset owners for a coordinated approach to address potential flooding impacts and increase the resilience of the catchment area to climate change. -Implement urban sensitive design techniques such as grassed swales and natural detention and maximising vegetated areas to reduce the extent of impervious surfaces and reduce the rate of flood waters.	- Operational processes and procedures to be prepared by the operator to outlined triggers for update of Variable Messaging Systems (VMS) during periods of potential flooding. '-Operational procedures for emergency planning and management will be prepared to consider the increased risk of flooding and storm surges on the road and active transport link.Emergency management planning will be undertaken in consultation and collaboration with other key agencies and surrounding stakeholders, including Sydney Airport Corporation.	High			Hydrology	AAJV	
CC2	Increased rainfall intensity combined with sea level rise	Increase in rainfall intensity combined with sea level resulting in localised flooding at access to Terminal 2 and Terminal 3 causing minor surface flooding and potential traffic delays.	-Immune to a 1% AEP flood event under ARR2016 (not accounting for climate change) - confirm	Low	High	Medium	- Further modelling in detailed design to optimise raising impacted roads without breaching height restrictions (Adaptations to be documented once modelling has been completed and road levels agreed). - Engagement with surrounding asset owners for a coordinated approach to address potential flooding impacts and increase the resilience of the catchment area to climate change. - Implement water sensitive urban design initiatives such as swales, detention basins and maximising vegetated areas to reduce the extent of impervious surfaces and reduce the rate of flood waters.	- Operational processes and procedures to be prepared by the operator to outlined triggers for update of Variable Messaging Systems (VMS) during periods of potential flooding.	Low			Hydrology	AAJV	
CC3	Increased rainfall intensity combined with sea level rise	Increase in rainfall intensity combined with sea level rise exacerbating potential afflux impacts where the project could cause floodwaters to be moved into surrounding existing assets such as the Sydney Airport and industrial/ commercial land holders.		Medium	Medium	Medium	- Further modelling in detailed design to optimise raising impacted roads without breaching height restrictions (Adaptations to be documented once modelling has been completed and road levels agreed). - Engagement with surrounding asset owners for a coordinated approach to address potential flooding impacts and increase the resilience of the catchment area to climate change		Medium			Hydrology	AAJV	
CC4	Increased rainfall intensity combined with sea level rise	Increase in rainfall intensity combined with sea level causing the overtopping of the flood wall around the underpass on the shared cycle and pedestrian path at Nigel Love Bridge causing a potential hazard to cyclist and/or inconvience due to closures.	- Designed for a 5% AEP event - confirm	Medium	Medium	Medium	- Further modelling in detailed design to further reduce the impacts cause by climate change scenarios (Adaptations to be documented once modelling has been completed and road levels agreed).	- Operational procedures to be prepared for closure of cycle path during periods of extreme weather that is likely to result in flooding.	Medium			Hydrology	AAJV	
CC5	Increased rainfall intensity combined with sea level rise	Increase in rainfall intensity combined with sea level rise exacerbating the impacts of future upgrades in the surrounding area that may alter overland flow paths and drainage systems leading to an increased amount of flood waters on the road network.	-Is there any redundancy to say that if overland flow increased it could be tollerated?	High	Medium	High		-Operational procedures for emergency planning and management will be prepared to consider the increased risk of flooding and storm surges on the road and active transport link.Emergency management planning will be undertaken in consultation and collaboration with other key agencies and surrounding stakeholders, including Sydney Airport Corporation.	High			Hydrology	AAJV	
CC6	Extreme rainfall events	Reduced performance of surface drainage systems due to increased rainfall intensity causing water to pond on the roadway increasing the risk of aquaplaning which could result in an accident.		High	Medium	High	- increase pipe size/ capacity to account for climate change scenarios (increase in capacity to be agreed and included in register once modelling has been completed)		High			Drainage	AAJV	
CC7	Sea Level Rise	Increased exposure of the outfalls at Alexandra Canal and the wider drainage system to intermittent inundation and saline conditions due to sea level rise resulting in increased risk of corrosion and increased deposit of sediments.		Low	High	Medium	- Flood modelling to confirm outfalls at risk. - Select materials for these outfalls and drainage structures that are resillient to saline conditions (to be confirmed and agreed and register updated once agreed).	- Operational procedures to be prepared to increase maintenance inspections during operation.	Low			Drainage	AAJV	

	Risk Identification			Risk Analysis and Evaluation			Adaptation		Revised Risk Rating			Responsibility and Evidence		
Risk ID	Climate Variable	Climate Risk	Existing Controls	Consequence	Likelihood	Risk Rating	Adaptation measure - Design	Adaptation measure - Operation	C2	L3	Risk Rating2	Responsibility (Discipline)	Person responsible	Evidence of adaptation
CC8	Sea Level Rise	Sea level rise increasing the risk of storm surges causing scour damage to pavements and bridge piers and reducing the safety of running conditions for road users and increasing maintenance costs.	- Bridge piers will be located outside of the canal - Subsoil drainage provided to reduce overland flow	Medium	Medium	Medium	- Further modelling in detailed design to further assess these risks and determine if adaptation measures should be applied.	- Operational procedure to be prepared to assess the damage to pavements after flooding event.	Medium			Pavement	AAJV	
CC9	Extreme rainfall events	Increase in rainfall intensity combined with sea level rise (and storm surges) resulting in overtopping of bridges (terminal link bridge most at risk - confirm).	-Freeboard of XXX currently incorporated into the design (project responsibility holder to fill in)	High	Low	Medium	- Further modelling in detailed design to further assess these risks and determine if adaptation measures should be applied.		High			Structures	AAJV	
CC10	Sea Level Rise	Rise in permanent groundwater table due to sea level rise increasing the risk of leachate from Tempe Tip spreading into surrounding water sources.	-Existing leachate treatment plant and bentonite wall in the Tempe Tip.	Medium	Low	Low			Medium	Low	Low	Hydrology?	AAJV	
CC11	Increased rainfall intensity combined with sea level rise	Flooding as a result of an increase in rainfall intensity combined with sea level rise could cause the failure of electrical assets and power outages. This could result in increased confusion and congestion having flow on impacts to the wider Sydney road network and delaying access to the airport.	Project not designing any new substations only pillars connecting to existing substations. Existing substations include FJI and Beconsfield. -Substation and pillars required to be above the 1in 100yr flood level +300mm step. - Substations will have Uninterupted Power Supply (UPS) but not pillars in case their was a power outage.	High	Low	Medium	- Further modelling in detailed design to further assess risks and impacts of design changes (update once modelling is complete) - Locate electrical assets above projected climate change flood levels (TBC by flood modelling) - Engagement with surrounding asset owners for a coordinated approach to address potential flooding impacts and increase the resilience of the catchment area to climate change	- Implement flood protection barriers and/or pumps in the future when risks has a higher likelihood of occuring.	High			Electrical	AAJV	
CC12	Extreme temperature events	Increased temperatures and frequency and intensity of extreme heat events could lead to reduced durability of pavements	- Roads and Maritime pavement standards allow for resilience to extreme heat conditions.	Low	Low	Negligible	- This was rated as a low risk and therefore considered to be a tolerable risk.	**Future consideration** A review of climate change projections should be undertaken when pavement is replaced at the end of its design life. Design standards should then be reviewed to confirm whether these are appropriate for projected future climate conditions.	Low	Low	Negligible	Pavement	AAJV	
CC13	Extreme temperature events	Increased mean maximum temperature and frequency and intensity of extreme heat events may lead to greater material degradation and structural fatigue due to thermal expansion of steel elements.	- Roads and Maritime and Australian Standards structural standards (name standard and temperature requirements) allow for resilience to increases in temperature.	Medium	Low	Low			Medium	Low	Low	Structures	BGE	
CC14	Annual average temperature	Combined with lower rainfall, increases in temperatures could result in the loss/ stunted growth of many plant species. This could result in greater erosion, landslips, increased fire risk, issues with management of pest plants and animals, loss of landscape amenity		Medium	Medium	Medium	- Select endemic plant species with life spans of about 40 years, for the development of root structures, in accordance with RMS Landscape Guideline (RMS, 2008) -Select endemic plant species that are drought tolerant, tolerant to saline conditions, soil binding species and are proven to be resilient in hostile roadside environments.		Medium			Urban Design and Landscaping	CM+	
CC15	Extreme temperature events	Increase in extreme heat days exacerbating heat island effect that will likely occur as developments, such as the Gateway Project, in the area increases. This may impact user experience of the cycle/pedestrian pathway and Tempe recreational area and cause it to be unusable during certain times of the day during summer.		Low	High	Medium	- Maximise opportunities for tree planting, to provide shade and reduce surface temperatures (particularly on cycle/ pedestrian areas) -Investigate opportunities for the use of materials with reduced thermal mass and/ or absorptive capacity for example pavements along the cycle way. -Reduce the amount of hardstand where possible and replace with grass/ vegetation. -Implement urban sensitive design techniques such as grassed swales and natural detention basins to reduce the amount of hardstand areas.		Low			Urban Design and Landscaping	CM+	
CC16	Extreme temperature events	Extended periods of high temperatures could result in increased strain on electrical equipment, such as components in traffic control cabinets or LED's used in traffic and street lighting which could reduce the design life of electical equipment or result in power outages. This could result in increased confusion and congestion having flow on impacts to the wider Sydney road network and delaying access to the airport.	-Confirm ambient temperature requirements and design life for electrical equipment such as traffic control cabinets, lighting etc (Kon/designers to confirm). 'Project not designing any new substations only pillars connecting to existing substations.Pillars are off the shelf therefore minimal ability to change temperature parameters. - Substations will have Uninterupted Power Supply (UPS) but not pillars in case their was a power outage. -Reflective road markers and non electrical direction signage will be implemented for wayfinding if electrical signage goes out.	Medium	Low	Low	- Select equipment to ensure resilience to the projected temperature changes over the design life of the equipment, especially equipment that would likely be in use for more than 30 years - Position/enclose critical pieces of infrastructure to mitigate impacts from high temperature	- Active monitoring of road system through the motorway control centre to ensure operational procedure for safe running of the motorway during periods of system failure.	Medium	Low	Low	Electrical	AAJV	
CC17	Extreme temperature events	Extended periods of high temperatures may cause a high demand on the electricity grid causing blackouts and loss of traffic controls. This could result in increased confusion and congestion having flow on impacts to the wider Sydney road network and delaying access to the airport.	- AusGrid has dual supply for electrical supplied to the project in this location. Therefore redundancy in the network if one power supply was to go out. -Reflective road markers and non electrical direction signage will be implemented for wayfinding if electrical signage goes out.	Medium	Low	Low	- investigate Use of onsite renewable energy or backup generator or other power continuity systems (confirm and update register)	- Active monitoring of road system through the motorway control centre to ensure operational procedure for safe running of the motorway during periods of network power outage.	Medium	Low	Low	Electrical	Kon Maladakis	
CC18	Extreme temperature events	Extreme temperatures resulting in heat stress for operation/ maintenance staff. This could be further exacerbated by the impacts of urban heat island effect.	-TfNSW operational procedures would be implemented during days of extreme heat to minimise exposure of operations and maintenance staff to heat stress.	Low	Medium	Low		- Operational work, health and safety management plans and procedures should be updated to include greater awareness and education initiatives around personnel wellbeing and safety during extreme heat events.	Low	Low	Negligible	Other	AAJV	

	Risk Identification			Risk Analysis and Evaluation			Adaptation		Revised Risk Rating			Responsibility and Evidence		
Risk ID	Climate Variable	Climate Risk	Existing Controls	Consequence	Likelihood	Risk Rating	Adaptation measure - Design	Adaptation measure - Operation	C2	L3	Risk Rating2	Responsibility (Discipline)	Person responsible	Evidence of adaptation
CC19	Atmospheric CO2	Structural assets/ elements located below the tidal water table or groundwater table where sea water intrusion occurs (such as bridge piers) may be subject to accelerated corrosion due to changes in pH of saline water caused by increased atmospheric carbon dioxide levels.	- Australian Standards prescribe the calculation of cover depths for elements located in for saline conditions (project responsibility holder to confirm) -Bridge piers located outside Alexandra Canal (Materials engineering should review risk and rating).	Low	Low	Negligible	- Undertaken carbonation modelling that accounts of projected increases in atmospheric carbon and associated change in oceanic pH levels to confirm whether cover depth of concrete elements located below future tidal water table (update register once carbonation modelling has been completed to confirm if cover depths have been increased). '- Locate drainage structures above inter-tidal zone where feasible (considering sea level rise) - Consider potential increase in salinity during material the selection processes for outlets likely to become submerged under future climate change scenarios.		Low	Low	Negligible	Structures	BGE /AAJV	
CC20	Atmospheric CO2	Increased levels of atmospheric carbon resulting in increase rate of carbonation within exposed concrete elements. This can result in corrosion of steel reinforcement and reduce the design life of these elements.	- Australian Standards prescribe the calculation of cover depths for structural elements. (Materials engineering should review risk and rating).	Low	Low	Negligible	- Undertaken carbonation modelling that accounts of projected increases in atmospheric carbon to confirm whether cover depth of concrete elements are adequate (update register once carbonation modelling has been completed to confirm if cover depths have been increased)		Low	Low	Negligible	Structures	BGE	
CC21	Atmospheric CO2	Increased levels of atmospheric carbon increasing the risk of acid rain which could result in impacts to the durability of pavements, structures, culverts and roadside furniture (This was raised in workshop as new risk - I haven't found any evidence that increased CO2 results in increased acid rain - Matt D to confirm who raised this and if they can provide evidence of this).		Low	Low	Negligible			Low	Low	Negligible	Other	BGE	
CC22	Gales and extreme wind events	Increase in wind speeds may impact the structural integrity of long span bridges.	- Design wind speeds and wind load calculations are in accordance with AS1170.2-2011 and Road and Maritime standards for structures design and allow for projected increased in wind speed (responsibility holder to confirm risk and rating with design team).	High	Negligible	Low			High	Negligible	Low	Structures	BGE	
CC23	Gales and extreme wind events	Extreme wind can damage signs, traffic signals and street lights and become dangerous pieces of debris on the road network if pushed over.	- Design wind speeds and wind load calculations are in accordance with AS1170.2-2011 and Road and Maritime standards	High	Low	Medium		-Operational procedure to be prepared that includes the inspection of ancillary infrastructure after strong wind events to assess the structural integrity of these elements has been maintained.	High			Structures	AAJV	
CC24	Gales and extreme wind events	Wind damage to power lines may result in disruption to power supply and increase maintenance costs.	- Low and high volage cables are below ground. Street light cables are also below ground. - Substations will have Uninterupted Power Supply (UPS) but not pillars in case their was a power outage. -Reflective road markers and non electrical direction signage will be implemented for wayfinding if electrical signage goes out.	Medium	Negligible	Negligible			Medium	Negligible	Negligible	Electrical	Kon Maladakis	
CC25	Gales and extreme wind events	Extreme winds resulting in damage to landscaping vegetation which could become a hazard to drivers if blown onto roadways.		Medium	Negligible	Negligible	-Large canopy trees to be set back from the road corridor -Grasses, groundcover and small shrubs that produce minimal leaf litter.		Medium	Negligible	Negligible	Urban Design and Landscaping	CM+	
CC26	Bushfire	Increased frequency and intensity of bushfires could cause damage to the electricity grid which may result in black outs and loss of communication systems.	- AusGrid has dual supply for electrical supplied to the project in this location. Therefore redundancy in the network if one power supply was to go out. -Reflective road markers and non electrical direction signage will be implemented for wayfinding if electrical signage goes out.	Medium	Low	Low	- investigate Use of onsite renewable energy or backup generator or other power continuity systems (confirm and update register)		Medium	Low	Low	Electrical	Kon Maladakis / AAJV	
CC27	Bushfire	Increased frequency and intensity of bushfires in bushland areas could cause smoke to be blown towards the asset and lead to low visibility, increased traffic congestion on the road as well adverse health impacts for operational and maintenance staff and patrons using the cycle path.		Low	Low	Negligible	- Ensure signage can be visible under low visibility conditions where possible - Use of intelligent transportation system (ITS) to communicate with road users to increase awareness and minimise the risk of accidents.		Low	Low	Negligible	Other	AAJV	
CC28	Bushfire	Increased risk of combustion of onsite vegetation during periods of drought and extreme heat which could damage electrical assets. Points of electricity supply and high pressure gas are most at risk.	-Thermal protection around cabling connecting to electrical equipment	Medium	Low	Low	-Design to optimise location of vegetation surrounding critical electrical assets -Select endemic plant species that are drought tolerant, tolerant to saline conditions and are proven to be resilient in hostile roadside environments to reduce risks of fire.		Medium	Low	Low	Urban Design and Landscaping	CM+	