AW EDWARDS

Sustainability Management Plan

PROJECT	Sydney City & Southwest Metro – Crows Nest Station and Crows Nest Over Station Development	**REVISION**	04
DOCUMENT NUMBER	SMCSWSCN-AWE-SCN-SU-PLN-000080	**DATE**	13/02/2024
CLIENT	Sydney Metro	**STATUS**	For Construction

DOCUMENT INFORMATION

	PREPARED BY	REVIEWED BY	APPROVED BY
Name	[redacted]	[redacted]	[redacted]
Company	Edge Impact	A W Edwards Pty Ltd	A W Edwards Pty Ltd
Project Role	Sustainability Manager	Environment & Sustainability Coordinator	Project Director
Signature	[redacted]		
Date	14 Jan 2024	14 Jan 2024	14 Jan 2024

DOCUMENT APPROVAL

A W EDWARDS PTY LIMITED

A W EDWARDS HEAD OFFICE 131 SAILORS BAY ROAD | PO BOX 99 | NORTHBRIDGE NSW 1560 AUSTRALIA | P 02 8036 7200 | E nsw@awedwards.com.au
MID NORTH COAST OFFICE UNIT 6/35 MERRIGAL RD PORT MACQUARIE NSW 2444 AUSTRALIA | P 02 6581 5755 | www.awedwards.com.au
| ABN 76 000 045 849 | ACN 000 045 849

REVISION

REVISION	DATE	STATUS	AUTHOR	APPROVED BY	COMMENTS
A	23.12.2020	For Review	[redacted]		Initial version for review
B	11.02.2021	For Review			Updated in response to Sydney Metro comments.
C	04.03.2021	For Review			Updated in response to Sydney Metro comments.
D	19.04.2021	For Review			Updated in response to Sydney Metro comments.
E	21.05.2021	For Review			Updated in response to Sydney Metro comments.
00	30.06.2022	For Construction			Update Contact details.
01	28.07.2022	For Construction			Update to include for Site C OSD.
02	20.06.2023	For Construction			Updated in response to Sydney Metro comments
03	10.10.2023	For Construction			Issued following discussion with Sydney Metro
04	13.02.2024	For Construction			Updated with Sydney Metro comments

AW EDWARDS acknowledges the Traditional Owners of Country throughout Australia and recognises the continuing connection to lands, waters and communities.
We pay our respect to Aboriginal and Torres Strait Islander people and culture, and to their Elders past and present.

"COMMUNITY"
Artwork by Raechel Saunders

CONTACTS

STAKEHOLDER	NAME	CONTACT DETAILS
Project Director	[redacted]	
Health and Safety Manager		
Interface Manager		
Construction Manager		
Project Manager		
Senior Site Manager		
Senior Site Manager		
Community Engagement Manager		
Training & Competency Coordinator		
Planning & Environment Manager		
Sustainability and Environment Coordinator		
Sydney Metro Delivery Director		
Sydney Metro Environment Manager		
Sydney Metro Sustainability Manager		
Sydney Metro Senior H&S Manager		
Sydney Metro Senior Communications Manager		
Independent Environmental Representative		
Sydney Metro Engineering Assurance Manager		
Sydney Metro Safety Assurance Manager		
ISA Coordinator		
SESA Manager		
North Sydney Council		(02) 9936 8100
EPA Environment Line		131 555
SafeWork NSW		131 050
NSW Health		(02) 9391 9939 (office hours) or 0491 227 423 (after hours)
Fire and Rescue NSW		1300 729 579 (or 000 if an emergency)
WIRES Wildlife Rescue		1300 094 737

CONTENTS

1 INTRODUCTION

1.1 PURPOSE

The purpose of this Sustainability Management Plan (SMP) is to describe how A W Edwards will consider and apply the principles of sustainable development during delivery of the Crows Nest Station Works package (SCN project).

This package includes the following two sites:

- Crows Nest Station OSD Site.
- Crows Nest Over Station Development - Site C.

This SMP specifies the sustainability requirements that the project must meet to enhance sustainability performance. Consistent with the Sydney Metro Environment & Sustainability Statement of Commitment, the SMP has been prepared in accordance with:

- Sydney Metro City & Southwest Sustainability Strategy 2017-24.
- Sydney Metro Construction Environmental Management Framework – Chatswood to Sydenham (CEMF).

This SMP enables A W Edwards to manage sustainability in a systematic manner, and is applicable to the project, all construction activities, and the products and services that can either be controlled or influenced considering a life cycle perspective. It is based on following documents:

- General Specification Management of the Project (SM-19-00124184) (GS MP).
- Particular Specification Crows Nest (SM-19-00147258).
- Crows Nest Station Construction Specification Green Star Specification (SMCSWSCN-SMC-SCN-SU-SPC-000001).
- Construction Environmental Management Plan (SMCSWSCN-AWE-SCN-EM-PLN-0000017).
- Green Star Design & As-Built Sydney Metro (GSDABSMRT) v1.1.

1.2 INTEGRATED APPROACH

Applicable sustainability actions have also been integrated into the following project plans:

Table 1: Summary of project scope of work.

DOCUMENTATION DESCRIPTION	DOCUMENT REFERENCE
Contract Management Plan	SMCSWSCN-AWE-SCN-SE-PLN-000077
Systems Engineering Management Plan	SMCSWSCN-AWE-SCN-SE-PLN-000078
Assurance and Governance Management Plan	SMCSWSCN-AWE-SCN-QA-PLN-000079
Construction Environmental Management Plan	SMCSWSCN-AWE-SCN-EM-PLN-000017
Construction and Site Management Plan	SMCSWSCN-AWE-SCN-CM-PLN-000069
Community Communications Strategy	SMCSWSCN-AWE-SCN-CL-PLN-000034

2 PROJECT OVERVIEW

2.1 SYDNEY METRO CITY & SOUTH WEST – CROWS NEST STATION

The Sydney Metro City & Southwest is a 30-kilometre metro rail between Chatswood and Bankstown, including:

- 17 kilometres of new tunnel from Chatswood, travelling under the harbour to Sydenham and connecting seven new underground stations at Crows Nest, Victoria Cross (North Sydney), Barangaroo, Pitt Street, Martin Place, Central and Waterloo.
- The upgrade of 13 kilometres of the Bankstown line and 11 existing stations, including Sydenham, Marrickville, Dulwich Hill, Hurlstone Park, Canterbury, Campsie, Belmore, Lakemba, Wiley Park, Punchbowl and Bankstown, plus southern service facilities.

The SCN package is a core component of the Sydney Metro City & Southwest project. It will:

- Create a new transport focus on the southern side of the St Leonards specialised centre.
- Maximise access to, and connectivity with, the local urban structure.
- Integrate the station with local improvement plans and make a positive contribution to the community's sense of place.

2.2 OVERALL PROJECT SCOPE

The ISD and Over Station Development projects comprise approximately 6,000m², and are located beside the Pacific Highway, to the south of Oxley Street. Buildings on the site have been demolished and the site has been excavated to tunnel depth (the box).

2.2.1 Crows Nest Station ISD

The project comprises construction of the station within the box, as summarised in Table 2 below.

Table 2: Summary of project scope of works.

COMPONENT	DESCRIPTION OF WORK ACTIVITIES
Station Works	▪ Excavation of sumps, on-site detention tanks and foundations to support the structural works. ▪ All structural works including station box, station entrance, concourse, platform, and over-track exhaust. ▪ All station fit-out, including cladding, façade and external skin up to the over station development (OSD) Transfer Level. ▪ Structure drainage system and waterproofing. ▪ Permanent road deck reinstatement on Hume Street. ▪ Track invert slab including underline crossings, earthing mats and drainage. ▪ Plant and equipment rooms. ▪ Public and staff toilets. ▪ Architectural fit-out. ▪ Low-voltage electrical, earthing, fire, hydraulics, lighting and mechanical systems. ▪ Building management control system. ▪ Provisions for works by Interface Contractors. ▪ Provisions for advertising, ATMs and vending machines.

COMPONENT	DESCRIPTION OF WORK ACTIVITIES
	▪ Lifts and escalators. ▪ Signage and wayfinding. ▪ External façade to the OSD Transfer Level including over street awnings. ▪ Landscaping (hard and soft), public plaza and precinct activation works. ▪ Bicycle parking facilities. ▪ Public art. ▪ Loading dock and waste collection facility.
Electrical and Communication Systems	▪ Signalling and train control systems. ▪ Traction power system. ▪ Track and tunnel services. ▪ Platform screen doors. ▪ Sydney Metro central control system. ▪ Sydney Metro communications system. ▪ Passenger information display systems. ▪ Public address systems. ▪ Audio frequency induction loop system. ▪ Sound system and intercom system for emergency purposes. ▪ Closed circuit television systems. ▪ Help point systems. ▪ Electronic access control systems. ▪ Local area networks. ▪ UHF radio systems. ▪ UHF distributed antenna system. ▪ Train radio communication systems. ▪ Precise clocks system. ▪ Electronic access system. ▪ Fibre and copper backbone. ▪ High voltage power supply and distribution system. ▪ Tunnel Ventilation System. ▪ Tunnel ventilation nozzles. ▪ Electronic ticketing system (ETS).
OSD Enabling Works	▪ Foundations and structures to support the OSDs for Sites A, B & C. ▪ The OSD lobbies. ▪ The OSD Site A loading dock, OSD Sites A & B vehicular and pedestrian access enabling. ▪ Space allocation for OSD plant rooms. ▪ The required structures, including columns, slabs, penetrations, set downs, retaining wall and deflection structures space. ▪ Temporary structures and waterproofing. ▪ Storm water and drainage requirements (including temporary connections and diversions). ▪ Utilities connections, services ducts and risers (including temporary connections and diversions). ▪ Activation or hoarding of unoccupied facades. ▪ Egress and any other Building Code of Australia compliance required to support the OSD Works.
Local Area Works (conducted by third parties)	▪ Resurfacing or reconstruction of affected roads, footpaths, cycle ways or other public amenities, signage. ▪ Traffic control signals, street lighting and traffic and transport management adjacent to the station site.

COMPONENT	DESCRIPTION OF WORK ACTIVITIES
Utility Works (conducted by third parties)	▪ Identification, protection, diversion, reconstruction or repair of affected utility services and new utility service connections.
Property Works (conducted by third parties)	▪ Protection and adjustments to affected existing buildings and property, including demolition of built features.

2.2.2 Crows Nest Over Station Development - Site C Scope of Works

The Crows Nest Over Station Development (OSD) project is located at 14 Clarke Street and is bound by Clarke Lane to the west, Hume Street to the south, Clarke Street to the east and 20 Clarke Street to the north. Site C has a total area of 608m² and consists of airspace located above the eastern entrance of the Crows Nest Station. The site does not contain any local or State Heritage items. All previous structures, including any vegetation on the site have been cleared.

Construction of Crows Nest Station is underway at the site. The application for the Crows Nest Over Station Development for Site C was lodged by Sydney Metro as a State Significant Development on 10 June 2021 (reference SSD- 13852803), and was approved by the Minister in December 2021. The project is described in the approval (hereafter referred to as the SSD Approval) as:

- Construction of an eight (8) storey commercial office building above the metro station.

A W Edwards has been awarded the tender to construct Site C (the OSD project).

The main components of the OSD are highlighted below:

- Construction of an 8-storey commercial building above the station (totalling 9 storeys) and integration with the ISD project.
- A total gross floor area of 3,097m², excluding floor space that is part of the ISD project.
- Commercial premises is the primary land use.
- No vehicle parking.
- 21 bicycle parking spaces for tenants, and 7 spaces for visitors.
- Lay-by space on Clarke Lane for loading. Site C service vehicles and deliveries will have access to the Site A loading dock upon its completion.

2.3 CONSTRUCTION ACTIVITIES

Table 3 describes the broad schedule for activities that will occur during construction.

Table 3: Crows Nest Station and OSD indicative schedule of construction phases.

PHASE	ACTIVITIES	DURATION
Pre-construction minor works	▪ SMP and sub-plan preparation, review, endorsement and approval. ▪ Site establishment and other activities that are not defined as "construction" by the project approval.	November - January 2021
Construction of SCN	Construction of the station including: ▪ Structure. ▪ Fitout. ▪ Services. ▪ External works. ▪ Landscaping. ▪ OSD enabling works. ▪ Testing and commissioning.	January 2021 - February 2024
Operational readiness and handover	-	February - August 2023
Construction of the OSD project	Construction of the building including: ▪ Structure. ▪ Fitout. ▪ Services. ▪ External works.	September 2022 - April 2024

3 A W EDWARDS APPROACH TO SUSTAINABILITY

Our approach to sustainability management for the SCN project is covered in three key documents as follows:

- A W Edwards Sustainability Policy.
- Alignment with Sydney Metro City & Southwest Sustainability Strategy.
- Sustainability Management System.

3.1 SUSTAINABILITY POLICY

Achieving sustainability is an integral part of A W Edwards' Corporate Vision. A W Edwards' Sustainability Policy, which will be implemented on the SCN Project is attached as Appendix A.

The Sustainability Policy lists the following principles as demonstrating commitment towards environmentally sustainable work sites:

- Incorporating sustainability principles into A W Edwards projects where required.
- Identifying alternative and sustainable courses of action to minimise the environmental impact of A W Edwards activities.
- Creating and promoting an environmentally sustainable and responsible culture across the company.
- Identify opportunities for incorporation of sustainability principles into project procurement.
- Committing to continuous improvement of environment performance.

All sub-contractors engaged by A W Edwards will be required to work under the Sustainability Policy; this arrangement will be described in tender documentation and confirmed in subcontracts issued by the SCN Project.

3.2 ALIGNMENT WITH SYDNEY METRO CITY & SOUTHWEST SUSTAINABILITY STRATEGY

The Sydney Metro City & Southwest Sustainability Strategy 2017-2024 seeks to define sustainability as:

- “For Sydney metro 'sustainability' means optimizing environmental and social outcomes, transport service quality, and cost effectiveness.”

Within the context of SCN project, this SMP provides the following governance framework in Table 4 to assist the delivery of the Sydney Metro City & Southwest Project Sustainability Strategy (2017-2024).

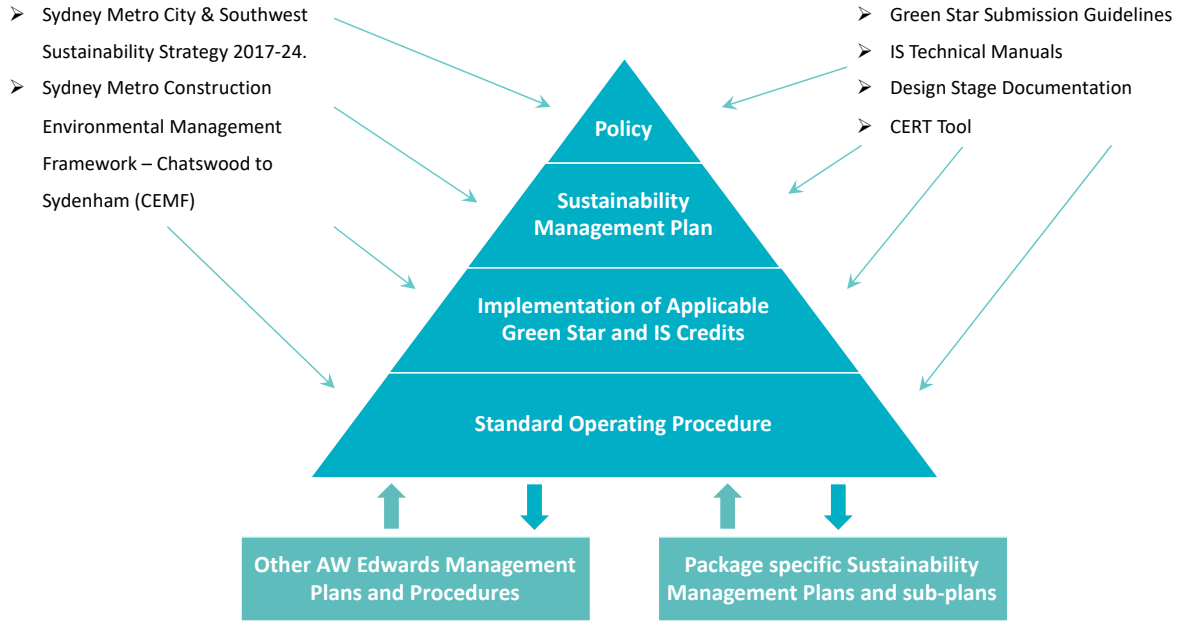
Table 4: Governance framework for the delivery of the Sydney Metro City & Southwest Project Sustainability Strategy (2017-2024).

STRATEGIC THEME	STRATEGIC OBJECTIVES
Governance	▪ Demonstrate leadership by embedding sustainability objectives into decision-making. ▪ Demonstrate a high level of performance against objectives and appropriate benchmarks.
Climate Change Resilience	▪ Development to be resilient to the impacts of climate change.
Carbon and Energy Management	▪ Improve the shift toward lower carbon transport. ▪ Reduce energy use and carbon emissions during construction. ▪ Support innovative and cost-effective approaches to energy efficiency, low carbon / renewable energy sources and energy procurement.
Environmental Performance	▪ Reduce sources of pollution and optimise control at source to avoid environmental harm. ▪ Comply with environmental obligations outlined in applicable project planning approvals.
Water Efficiency	▪ Minimize use of potable water. ▪ Maximize opportunities for reuse of rainwater, stormwater, wastewater and groundwater.
Waste & Materials consumption	▪ Minimize waste through the project lifecycle. ▪ Reduce materials consumption. ▪ Consider embodied impacts in materials selection. ▪ Maximize beneficial reuse of spoil.
Biodiversity Conservation	▪ Protect and create biodiversity through appropriate planning, management and financial controls.
Community benefit	▪ Make a positive contribution to community health and well-being. ▪ Ensure community and local stakeholder engagement and involvement in the development of the project. ▪ Create opportunities for local business involvement during the delivery and operations phases. ▪ Optimize community benefit of residual land development. ▪ Minimize negative impacts on the community and local businesses during construction and operation.
Workforce Development	▪ Increase opportunities for employment of local people, participation of local businesses, and participation of small and medium sized enterprises (SME's). ▪ Enable targeted and transferable skills development, which resolves local and national skills shortages, supports industry to compete in home and global markets, and embeds a health and safety culture within all induction and training activities, promoting continuous improvement. ▪ Increase workforce diversity and inclusion, targeting indigenous workers and businesses, female representation in non-traditional trades, and long term unemployed. ▪ Inspire future talent and develop capacity in the sector, engaging young people via education and work experience.
Supply Chain	▪ Influence subcontractors, and materials suppliers to adopt sustainability objectives in their works and procurement.
Economic	▪ Consider adopting a whole-of-life costing model to maximize sustainability benefits.

3.3 SUSTAINABILITY MANAGEMENT SYSTEM

The Sustainability Management System (SMS) as shown in Figure 1 will provide clear guidance on the management and implementation of sustainability measures, ranging from high level policy objectives to standard operating procedures. This will enable consistency and compliance with requirements across all levels of documentation of the SCN project.

Figure 1: Sustainability Management System.



Appendix B provides the compliance requirements of the aspects highlighted in the SMP, with reference to the General Specification Section 5.1.4.5 Plans and Reporting.

This SMP has been developed in accordance with the Conditions of Approval (CoA) and Revised Environmental Mitigation Measures (REMMs). Table 5 highlights the corresponding sections that address the CoA requirements, whilst Table 6 outlines the REMMs.

Table 5: Compliance to CoA for Station and Over Station Development.

Conditions of Approval Compliance Matrix		
E71	The proponent must seek to achieve a best practice level of performance for the CSSI using market leading sustainability ratings tools (including a minimum 'Design' and 'As built' rating score of 65 using the Infrastructure Sustainability Council of Australia infrastructure rating tool, or an equivalent level of performance using a demonstrated equivalent rating tool).	Appendix C
E72	The Proponent must prepare a Sustainability Strategy to be submitted to the Secretary within six (6) months of the date of this approval, or within another timeframe agreed with the Secretary, which must be implemented throughout design, construction and operation of the CSSI. The Sustainability Strategy must include: ▪ (a) details of the sustainability objectives and targets for the design, delivery and operation of the CSSI; ▪ (b) details of the sustainability initiatives which will be investigated and / or implemented; and	Section 5 and 6

Conditions of Approval Compliance Matrix		
	▪ (c) a description of how the strategy will be implemented for the CSSI.	
E73	Opportunities to reduce operational greenhouse gas emissions must be investigated during detailed design. The sustainability initiatives identified must be implemented, reviewed and updated regularly throughout design development and construction, and annually during operation.	Section 6.4
Over Station Development Condition B25	The Applicant shall submit to the satisfaction of the Certifier evidence demonstrating the development incorporates all design, construction and operation measures as identified in the Ecologically Sustainable Development Report and Sustainability Strategy.	This Document
Over Station Development Condition B26	The Applicant shall demonstrate that Ecologically Sustainable Development is being achieved by achieving a minimum 5 Star Green Star rating in accordance with the Green Star Design & As Built v1.3 (Green Building Council of Australia) and minimum 5 star rating under NABERs Energy Base Building. Details demonstrating compliance with this condition must be submitted to the Certifying Authority.	Section 7
Over Station Development Condition B27	The Applicant shall submit to the satisfaction of the Certifier evidence demonstrating: ▪ (a) All toilets installed must be of water efficient dual-flush capacity with at least a 4-star rating under the Water Efficiency and Labelling Scheme (WELS) ▪ (b) All taps and shower heads installed must be water efficient with at least a 3-star rating under the Water Efficiency and Labelling Scheme (WELS) ▪ (c) New urinal suites, urinals and urinal flushing control mechanisms may use waterless technology. Where it is submitted that this is not feasible, it must be demonstrated that products have been selected with at least a 4-star rating under the Water Efficiency and Labelling Scheme (WELS) ▪ (d) Systems must include “smart controls” to reduce unnecessary flushing. Continuous flushing systems are not approved.	Section 6.1.3
Over Station Development Condition B48	The Applicant shall: ▪ (a) amend, or prepare an addendum to, the Construction Waste Management Sub-Plan (CWMP) applicable to the CSSI station works (CSSI 7400) to apply to the development. The amended CWMP must be submitted to the Planning Secretary and Certifier, or ▪ (b) prepare a Construction Waste Management Sub-Plan (CWMP) for the development, independent of the CWMP approved with the CSSI station works. A copy of the CWMP must be submitted to the Planning Secretary and Certifier. The Sub-Plan must include, as a minimum, the following elements: ▪ (i) require that all waste generated during the project is assessed, classified and managed in accordance with the EPA’s “Waste Classification Guidelines Part 1: Classifying Waste” ▪ (ii) demonstrate that an appropriate area will be provided for the storage of bins and recycling containers and all waste and recyclable material generated by the works	Section 6.1 - 6.3

Conditions of Approval Compliance Matrix		
	▪ (iii) procedures for minimising the movement of waste material around the site and double handling ▪ (iv) waste (including litter, debris or other matter) is not caused or permitted to enter the waters of Sydney Harbour ▪ (v) any vehicle used to transport waste or excavation spoil from the site is covered before leaving the premises ▪ (vi) the wheels of any vehicle, trailer or mobilised plant leaving the site and cleaned of debris prior to leaving the premises ▪ (vii) details in relation to the transport of waste material around the site (on-site) and from the site, including (at a minimum): ○ a traffic plan showing transport routes within the site; ○ a commitment to retain waste transport details for the life of the project to demonstrate compliance with the Protection of the Environment Operations Act 1997; and ○ the name and address of each licensed facility that will receive waste from the site (if appropriate).	

Table 6: Compliance to REMMs.

Revised Environmental Mitigation Measures (REMMs) Compliance Metric		
SUS1	Sustainability initiatives would be incorporated into the detailed design and construction of the project to support the achievement of the project sustainability objectives.	Sections 5, 6 & 7
SUS2	A best practice level of performance would be achieved using market leading sustainability rating tools during design and construction.	Appendix C
SUS3	A workforce development and industry participation strategy would be developed and implemented during construction.	Appendix C - Innovation Category
SUS4	Climate change risk treatments would be incorporated into the detailed design of the project including: ▪ Ensuring that adequate flood modelling is carried out and integrated with design ▪ Testing the sensitivity of air-conditioning systems to increased temperatures, and identify potential additional capacity of air-conditioning systems that may be required within the life of the project, with a view to safeguarding space if required ▪ Testing the sensitivity of ventilation systems to increased temperatures and provide adequate capacity.	Section 5.2
SUS5	An iterative process of greenhouse gas assessments and design refinements would be carried out during detailed design and construction to identify opportunities to minimise greenhouse gas emissions.	Section 6.4

Revised Environmental Mitigation Measures (REMMs) Compliance Metric		
	Performance would be measured in terms of a percentage reduction in greenhouse gas emissions from a defined reference footprint.	
SUS6	25 per cent of the greenhouse gas emissions associated with consumption of electricity during construction would be offset.	Section 6.4
SUS7	Sustainability initiatives would be incorporated into the operation of the project to support the achievement of the project sustainability objectives.	Appendix C - Building Information Criteria
SUS8	Periodic review of climate change risks would be carried out to ensure ongoing resilience to the impacts of climate change.	Section 5.2
SUS9	A workforce development and industry participation strategy would be developed and implemented during operation.	Appendix C - Building Information Criteria
SUS10	100 per cent of the greenhouse gas emissions associated with consumption of electricity during operation would be offset.	Section 6.4

4 OBJECTIVES, TARGETS & INITIATIVES

The Sydney Metro Sustainability Strategy - Themes and Objectives are summarised in Table 4 above. The SCN project targets have been aligned with the sustainability targets in the General Specification-Management of the Project [SM-19-00124184] and have been set out in Table 7 below.

Table 7: Sustainability targets.

THEME	OBJECTIVES	TARGETS AND KPI	KEY INITIATIVES
Governance	▪ The Contractor must use the Green Star Design & As Built Sydney Metro Rating Tool (GSDABSMRT) v1.1 for the Station to calculate the 'As Built' rating scores. ▪ The Contractor must provide all required documentation to support the achievement of the As Built Rating score to the Principal's Representative upon request.	▪ Minimum 5 Star As-Built Green Star Rating for the Station and OSD, using the Green Building Council of Australia Green Star Design & As Built Sydney Metro Rating Tool. ▪ Aspiration to achieve 6 Star (as per Design Review Rating).	Refer to Appendix C
Carbon Management	▪ Enable reduction in energy use and carbon emissions during construction. ▪ Support innovative and cost-effective approaches to energy efficiency and renewable energy. ▪ Promote the transition towards low carbon transport. ▪ Support innovative and cost-effective approaches to energy efficiency, renewable energy sources and energy procurement.	For both the Station and OSD: ▪ Wherever possible, use a minimum 5% bio diesel mix for all diesel-powered plant and equipment and a minimum 10% blended ethanol mix for all petrol-powered plant and equipment. ▪ Offset at least 25% of the total electrical needs of the Contractor's activities. ▪ Reduce greenhouse gas emissions from the Contractor's activities by at least 25% from the project baseline greenhouse gas footprint, determined using the Infrastructure Sustainability (IS) Materials calculator and up to date National Green House Gas Energy Reporting (NGER) emission factors.. ▪ Develop and implement "Green Travel Plans". ▪ Greenhouse gas emissions must be less than the Carbon Emission Target stated in Appendix E during the Contractor's Activities.	Refer to Section 6.4

THEME	OBJECTIVES	TARGETS AND KPI	KEY INITIATIVES
		This target considers Scope 1, Scope 2, and Scope 3 emissions.	
Resources - Water	▪ Minimise the use of potable water. ▪ Maximise opportunities for the reuse of rainwater, stormwater, wastewater, and groundwater.	For both the Station and OSD: ▪ Minimise the use of potable water consumption, as well as the overall water consumption wherever possible by using water efficient fixtures, rainwater harvesting, water from recycled water networks and reuse of stormwater. ▪ Explore the use of recycled operation water for onsite and offsite batching plant concrete production, ensuring compliance with codes and standards. Maintain the suspended solid content of recycled concrete production water to less than 1.01g/ml and the suspended solid content not to exceed 15000 ppm. ▪ Ensure implementation of the operational water efficiency measures specified in design phase and implement construction stage water efficiency initiatives if feasible. ▪ Use the maximum total construction water demand stated in Appendix D and meet its corresponding potable and non-potable targets. ▪ Achieve the 'Innovation Technology Process' innovation credit with regards to rainwater harvesting to reduce the use of potable water.	Section 6.1
Resource - Materials	▪ Minimise waste through project lifecycle. ▪ Reduce material consumption. ▪ Consider embodied impacts in materials selection. ▪ Maximise beneficial reuse of spoil.	For both the Station and OSD: ▪ Demonstrate prior to completion that the project has achieved a minimum 15% reduction in the environmental footprint of the materials used for the Contractor's Activities, compared to a business-as-usual case. ▪ Recycle or reuse at least 95% of inert and non-hazardous construction and demolition recyclable waste, excluding spoil.	Section 6.3

THEME	OBJECTIVES	TARGETS AND KPI	KEY INITIATIVES
		▪ 60% of reinforcing bar and mesh used during construction to be produced through energy reduction processes. ▪ Recycle or reuse 60% of office waste. ▪ Reduce Portland cement content in concrete by an average of at least 30% through the use of supplementary cementitious materials (SCM) such as fly ash or slag. ▪ Ensure Polyvinyl-Chloride (PVC) is compliant with GBCA Best Practices guide for polyvinyl chloride (PVC). ▪ Prioritise the use of reusable formwork and responsibly sourced timber. ▪ Use low VOC paints, finishes, sealants, and adhesives. ▪ Use composite wood products with low formaldehyde content that meet Green Star requirements.	
Climate Change Resilience	Infrastructure will be resilient to the impacts of climate change.	▪ Identify all necessary adaptation measures that comprehensively address risks classified as "extreme", "high" and "medium" in the project's Climate Adaptation Plan. ▪ Implement measures to mitigate all climate change risks classified as "extreme" and "high" and at least 25% of all climate change risks classified as "medium", where relevant to the Contractor's scope of works.	Section 5.2
Environmental Performance	▪ Reduce sources of pollution and optimise control to avoid environmental harm. ▪ Reduce impacts on receiving waterways. ▪ Reduce noise and vibration impacts. ▪ Comply with environmental obligations outlined in applicable project planning approvals.	▪ Implement measures to mitigate pollution, noise and vibration impacts.	Section 5 in CEMP

5 IMPLEMENTATION

The following sections of this report will elaborate on the details of key processes to ensure effective delivery of the SMP.

5.1 SUSTAINABILITY OPPORTUNITIES REGISTER

To access and capture potential sustainability opportunities pertaining to Life Cycle Analysis (LCA), energy, water, material, and innovation efficiencies identified during construction, a Sustainability Opportunities Register will be utilised.

Workshops with relevant project team members will be conducted to evaluate the cost, benefits and overall feasibility of the potential sustainability opportunities that have been identified. The Sustainability Opportunities Register will also document the project risk and opportunity management process undertaken for the evaluation.

5.2 CLIMATE CHANGE RISK ASSESSMENT

Climate Change Impact Assessments were prepared for the Crows Nest Station [SMCSWSCN-SMC-SCN-SU-REP-0000002] and OSD [SMCSWSCN-SMC-SCN-SU-REP-000009] projects at the design stage. The risk assessment reports identified the climate change risks and adaptations relevant to the wider City & Southwest project.

A W Edwards has committed to implement specific design responses to all risk items identified as ‘high’ or ‘extreme’ and 25% of risk items identified as ‘medium’ in the climate change risk assessment, as documented in the Climate Adaptation Plan.

A W Edwards will document climate mitigations in As Built documentation as part of required Green Star evidence.

5.3 SUSTAINABILITY IN PROCUREMENT

The sustainability team will work closely with the procurement team to incorporate all sustainability conditions, opportunities, and forward commitments in the Procurement Management System to ensure subcontracts and suppliers meet minimum requirements, generate opportunities, and solve project challenges through innovation.

The sustainability team will be involved in package reviews prior to release to the market to ensure all Green Star procurement requirements are adhered to by the suppliers and subcontractors throughout the duration of the works.

5.3.1 Sustainable Procurement Policy

A Sustainable Procurement Policy has been developed for the project. Prior to this, the Sustainability Policy attached in Appendix A was used as a guide for the strategic objectives of the project and its supply chain.

This Sustainability Procurement Policy is consistent with ISO 20400:2017 Sustainable Procurement guidance and is implemented and maintained by the A W Edwards procurement team.

5.3.2 Sustainable Procurement Process

The framework within which the policy, procedures, and process will be established will be derived from the Green Star Rating V1.1 for procurement, the ISO 20400:2017 Sustainable Procurement Standard and with the guidance included in Infrastructure Sustainability

Council of Australia IS Rating Tools v1.2 credits (Level 2 for Pro 1, Level 3 for Pro 2 and Pro 3 & Level 2 for Pro 4).

Early and effective procurement planning is essential to achieve the sustainability procurement objectives and the sustainability team will engage in project's procurement and commercial teams in early stages to:

- Engage with project team members to communicate their roles and responsibilities in the procurement process.
- Undertake heatmap analysis of procurement schedule to identify high impact and risk packages.
- Provide sustainability guidance and training to the High impact Suppliers.
- Review and finalise project procurement documentation to ensure sustainability requirements are incorporated.

5.3.3 Sustainability Requirements

Sustainability requirements will be included in the contract or supply agreement of each sub-contractor. These will include the required sustainability scope, along with the reporting requirements for each subcontractor and supplier.

Depending on the nature of the subcontract or supply agreement, relevant clauses will be extracted from the sustainability performance specification and inserted into scope of works, or the specification will be issued in its entirety as a contract schedule.

5.3.4 Assessment of Subcontractor Tenders

The tasks below will be completed when engaging subcontractors and suppliers through early expression of interest, prequalification or directly into a competitive tender.

Subcontractors will be:

- Requested to provide a Sustainability Policy (noting that this must include environmental, social, and economic aspects).
- Requested to provide environmental, health, safety and quality management systems and policies.
- Provided with a ‘prequals’ document at a relevant stage in the procurement process which will address all relevant aspects of sustainability, as well as the SWTC and management requirements for sustainability. This document will form part of the scope of works to be delivered by the subcontractor.
- Assessed for suitability using a mix of financial and non-financial scoring criteria where sustainability will form part of this scoring and the total non-price component will be no less than 20%.
- During pre-award and pre-start meetings, there will be discussion of the sustainability aspects of the tendered scope of works and surety gained on the tenderers ability to deliver that work. Sustainability reporting and requirements will form part of the tenderers contract, whereby non-delivery can be managed and addressed with that subcontractor.

Following the strategic review and detailed development of the sustainable procurement framework, the tasks above will be refined and employed in a manner that most efficiently addresses the material risks and opportunities in the supply chain. This is also consistent with the successful achievement of the Green Star procurement credits.

Additionally, as required in the SWTC, the Sydney Metro CEMF, and to confirm compliance with Modern Slavery Act 2018, suppliers and subcontractors will be required in the tender evaluation process to confirm that:

- There are no outstanding investigations into their operations, and they have not been convicted of any offence under Modern Slavery Legislation.
- Any actions or agreements held by the supplier/subcontractor will potentially cause the project to breach the Modern Slavery Legislation.

And where high impact materials will be sourced from a developing country, suppliers will be required to supply additional information to ensure their operations follow:

- All relevant laws and regulations local to that country.
- The International Labour Organization's Fundamental Conventions.
- The "Ten Principles" of the UN Global Compact.

5.3.5 Reporting, Review and Management

The process of the ongoing monitoring of subcontractors and suppliers will be managed through the monthly progress claims process by contract administration and sustainability team members. Evaluation of the achievement of the contracted sustainability targets will be evaluated for each subcontractor and supplier.

If obligations are not met, corrective action will be taken as necessary by Project Director. Additional support will be provided to allow effective reporting and meeting the procurement obligations.

5.4 COMMUNITY SUSTAINABILITY

The Contractor will deliver community benefit initiatives which provide demonstrable and tangible benefits to local community groups during the construction period, along with initiatives that will provide benefit beyond the construction period of SCN Works. The Community Communication Strategy (SMCSWSCN-AWE-SCN-CL-PLN-000034) for SCN project documents the community engagement and consultation plan for the project.

Furthermore, the Contractor is committed to identifying and implementing three social sustainability initiatives that address the identified community needs in each of the following categories:

- Local community groups during construction period.
- Broader local community beyond the construction period.

The Contractor is also committed to engaging five social enterprises as part of its supply chain for the project works. The procurement team will seek to collaborate with the social enterprises, prioritising their engagement over other enterprises.

The needs of the local and broader community will be identified, and social sustainability initiatives will be implemented in accordance with the SWTC requirements.

The process to investigate these initiatives for community benefits is highlighted in Figure 1Figure 2 below:

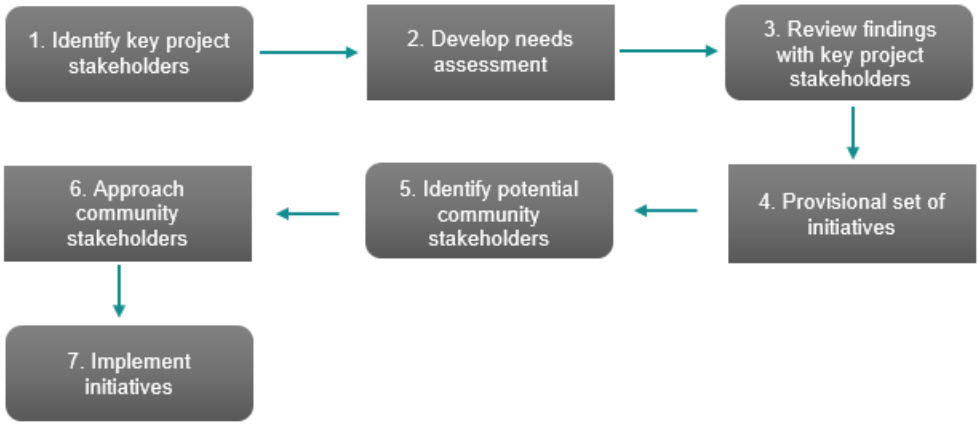


Figure 2: Process to investigate community initiatives.

A Quarterly Sustainability Report (QSR) will be issued to the Principal's Representative every three months that will detail the implementation and progress towards sustainability initiatives. The projects' sustainability team will work with key project stakeholders to develop a process around the selection of appropriate initiatives, including:

- Identify community needs and potential opportunities.
- Develop and agree criteria for 'demonstrable and tangible'.
- Review, screen and select potential initiatives.
- Develop a program for implementation of initiatives.

5.5 SUSTAINABILITY IMPLEMENTATION DURING CONSTRUCTION

The project team has determined and made provision for the resources needed for the establishment, implementation, maintenance, and continual improvement of the sustainability management system for the Station and OSD projects.

Targeted awareness sessions will be conducted to ensure that the construction team is aware of the project requirements and key sustainability aspects as required by GSD&BSMRT v1.1. The sustainability team will work with the construction team to identify and implement initiatives in procurement and construction as described in section 5.1 of this SMP.

5.5.1 Leadership and collaboration

The following table outlines the roles and responsibilities of the SCN and OSD projects' team to deliver the targeted sustainability outcomes.

Table 8: Roles and responsibility of key personnel with respect to sustainability management on the SCN works project.

POSITION	RESPONSIBILITY
Project Director	▪ Managing delivery of the SCN works including overseeing implementation of sustainability initiatives. ▪ Acting as the Contractor's representative. ▪ Championing and promoting sustainability by embedding it in management systems and processes to drive outcomes.
Construction Manager	▪ Working collaboratively with the Sustainability Manager and Sustainability Coordinator to ensure

POSITION	RESPONSIBILITY
	sustainability aspects are implemented and targeted compliance is achieved. ▪ Ensuring sustainability requirements are communicated to those responsible in construction teams. ▪ Managing the sustainability initiatives register.
Sustainability Manager	▪ Providing specialist sustainability advice to the Project Director and project teams to allow them to facilitate sustainability initiatives. ▪ Developing, assessing, and verifying sustainability measures for the project. ▪ Overseeing the sustainability induction and training program. ▪ Leading and managing the Sustainability Management System for the project, including reviews and continual improvement. ▪ Communicating sustainability requirements to project teams and ensuring compliance with the targeted rating level. ▪ Liaising with Sydney Metro to discuss sustainability performance and ensuring continual improvement.
Environment & Sustainability Coordinator	▪ Working collaboratively with the Sustainability Manager to implement sustainability requirements and achieve targeted compliance. ▪ Assisting the Sustainability Manager with the implementation of sustainability aspects on the project, including collection and submission of sustainability evidence. ▪ Communicating sustainability requirements to project teams and ensuring compliance with the targeted rating level. ▪ Liaising with Sydney Metro to discuss sustainability performance and ensuring continual improvement. ▪ Data collection from subcontractor works.
Commercial Manager	▪ Ensuring relevant sustainability requirements are considered in procuring materials and services. ▪ Ensuring tenders and contract documentation includes sustainability requirements (including the reporting requirements). ▪ Supporting data collation from subcontractor works.
Communications Manager	▪ Supporting the identification and implementation of community benefit initiatives.
All Staff	▪ Providing data to the project's Sustainability Manager for sustainability reporting. ▪ Ensuring relevant sustainability requirements are reflected in subcontracts. ▪ Participating in the review of sustainability performance and other relevant sustainability meetings and programs.

5.5.2 Sustainability Team Roles and Responsibilities

Error! Reference source not found. outlines the sustainability team structure in the wider c ontext of the project team.

Figure 3: Sustainability team structure and reporting lines.

Table 9 outlines the sustainability team's roles and responsibilities.

Table 9: Sustainability team roles and responsibilities.

ROLES AND RESPONSIBILITIES	(MINIMUM) SKILL LEVELS
SUSTAINABILITY MANAGER	
▪ Providing specialist sustainability advice to the Project Director and project teams to allow them to facilitate sustainability initiatives. ▪ Developing, assessing, and verifying sustainability measures for the project. ▪ Overseeing the sustainability induction and training program. ▪ Leading and managing the Sustainability Management System for the project, including reviews and continual improvement. ▪ Communicating sustainability requirements to project teams and ensuring compliance with the targeted rating level. ▪ Liaising with Sydney Metro to discuss sustainability performance and ensuring continual improvement.	▪ Possess a recognised qualification relevant to the position and the project activities. ▪ Have at least 5 years' recent experience in sustainability management on projects similar to the Crows Nest Station and OSD works. ▪ Have recognised and demonstrated competence in sustainability management in the construction of sustainable infrastructure and buildings. ▪ Possess a Green Star Accredited Professional (GSAP) certification.
ENVIRONMENT AND SUSTAINABILITY COORDINATOR	
▪ Working collaboratively with the Sustainability Manager to implement sustainability requirements and achieve targeted compliance. ▪ Assisting the Sustainability Manager with the implementation of sustainability	▪ Possess a recognised qualification relevant to the position and the project activities. ▪ Have recent relevant experience in assessing as-built construction projects to a 5 Star Green Star standard.

ROLES AND RESPONSIBILITIES	(MINIMUM) SKILL LEVELS
aspects on the project, including collection and submission of sustainability evidence. ▪ Communicating sustainability requirements to project teams and ensuring compliance with the targeted rating level. ▪ Liaising with Sydney Metro to discuss sustainability performance and ensuring continual improvement. ▪ Data collection from subcontractor works.	

The Sustainability Manager and Environment and Sustainability Coordinator will be engaged in the sustainability management and coordination roles for the delivery of the project at a resourcing level which collectively exceeds 1.5 full time equivalent.

5.5.3 Collaboration with Sydney Metro and other Stakeholders

The Sustainability Manager and senior management team will work collaboratively with Sydney Metro and other relevant stakeholders to deliver the overarching Sydney Metro City and Southwest sustainability objectives.

5.6 TRAINING AWARENESS AND COMMUNICATION

The sustainability team will deliver general and 'topic specific' training, briefing sessions, workshops, and toolbox talk packages to communicate to personnel from various technical disciplines (including subcontractors) through the procurement and construction phase of the Station and OSD projects. The following initiatives will be undertaken to ensure effective sustainability training, awareness and communication is provided throughout the duration of the project.

5.6.1 Project Inductions

Sustainability aspects will be included in inductions and will cover project targets and obligations to achieving Sydney Metro's sustainability objectives. All project staff, including subcontractors, will participate in inductions. The project's inductions will focus on how everyone can contribute to achieving sustainability objectives, targets and requirements.

5.6.2 Training

The sustainability team will include a Green Star Accredited Professional (GSAP), who will provide training to the key project staff to assist in the delivery of the targeted Green Star credits.

Training will also be required for all 'High Impact Suppliers' to increase their knowledge of sustainability principles and project requirements. The Supply Chain Sustainability School will be utilised for this training.

5.6.3 Internal and External Communication

Effective and ongoing knowledge sharing is critical to ensuring that sustainability information from a range of diverse sources is captured, disseminated, built upon and applied.

Internal knowledge sharing will be undertaken throughout the duration of the project through project newsletters, training, inductions, and formal knowledge sharing sessions in consultation with the project's communications team.

All external knowledge sharing will be arranged through the project communication team and Sydney Metro.

Knowledge sharing will continue with other key stakeholders and wider industry where appropriate.

5.6.4 Contractor Sustainability Forums

The Sustainability Manager or Sustainability Coordinator will attend the Sydney Metro Contractor Forums to share sustainability performance updates and lessons learnt. These will occur quarterly.

5.7 REPORTING AND REVIEW

The project team will monitor, measure, analyse, and evaluate the project's sustainability performance. The following section of the SMP contains details of A W Edwards' data capture, reporting and review processes associated with the project.

5.7.1 Reporting

Technical and process requirements will be monitored, implemented, and verified using the sustainability pathway provided in Appendix C of this SMP. This pathway has been developed for the Crows Nest Station and OSD projects in line with the Green Star Design and As-Built Sydney Metro rating tool.

Resource consumption data related to energy, water, materials and waste generation will be captured monthly. This data will be validated by sustainability team members and presented in the project's monthly and quarterly sustainability reports.

Sustainability reporting will be provided in compliance with the requirements of the SWTC:

- Monthly report: a summary of performance towards meeting and achieving the project's sustainability targets will be provided. The Sydney Metro City & Southwest Sustainability Reporting Template will be utilised to report data on carbon emissions, waste disposal, concrete and steel quantities.
- Quarterly Sustainability Report (QSR): performance updates towards sustainability implementation onsite, updates on compliance with the targeted credits, procurement updates and corrective actions taken for NCRs will be included in this report.

5.7.2 Review and Corrective Actions

The SMP will be reviewed annually to provide an opportunity to update processes and systems as the project progresses. It will be also updated for Sustainability NCRs and corrective actions as required.

6 SUSTAINABILITY INITIATIVES

The project team will ensure that the relevant activities are assessed and ultimately ensure the rating scores are verified by the GBCA in accordance with the Green Star rating system.

Following sections of this SMP elaborate on the sustainability aspects undertaken by A W Edwards on this project.

6.1 WATER MANAGEMENT

With an intent to reduce the potable water consumption during construction, temporary works will be designed and managed with water sensitive urban design consideration. Water reuse and discharge will be managed in accordance with the TfNSW Water Discharge and Reuse Guidelines 7TP-SD-024.

A water balance study will be undertaken (and submitted to the Principal's Representative) prior to the commencement of construction works that will identify the sources, uses and the estimated quantities of potable and non-potable water which will be either created or used in the performance of the SCN works. An estimated construction water balance for both the Station (ISD) and OSD are attached as Appendix D.

6.1.1 Construction Stage Water Management Initiatives

The following water management initiatives will be implemented during the construction stage:

- Dewatering systems will be planned and monitored to avoid spills, overflows, and pollution.
- Where possible, water required for use onsite will be sourced from non-potable sources.
- Incorporation of water efficient controls, fixtures, and fittings in temporary facilities.
- Use of water efficient construction methods and equipment.

6.1.2 Surface Water Monitoring

- Water entering the site will be collected in the sump and pumped to the water treatment plant located at Chatswood for processing.
- Fortnightly water quality samples will be taken to ensure that water released from site meets the prescribed pH and TSS and doesn't contain visible signs of oil and grease.
- All rainwater will be collected in a sump and pumped into the water treatment plant for processing.

Reporting of potable, non-potable, surface, and recycled water usage will be undertaken monthly throughout the construction works and the water data collected will be reported in the monthly sustainability reports.

6.1.3 Supporting Design and Operations Phase Initiatives

As well as construction stage initiatives, A W Edwards will implement design initiatives that aim to improve the performance of the development during operation.

This includes:

- Installation of the water efficient fixtures and fittings outlined in the project's Architectural Specification (see Table 10).

- Control of condenser cooling water open systems water chemistry to maintain total dissolved solids by manual intervention or automatically bleed off with a maximum of 10 cycles of concentration.
- Cooling towers to be installed as per the Mechanical Services Specification.

Table 10: WELS ratings specified for the Station ISD and OSD development.

PRODUCT TYPE	WELS RATING	FLOW RATE
Toilets	4 Star	3 L/flush, 4.5 L/flush
Basin taps (customer use, non-public and disabled bathroom)	6 Star	4.5 L/min
Sink taps (other)	4 Star	7.5 L/min
Staff showers	3 Star	9 L/min
Hose taps	N/A	18 L/min

6.2 WASTE MANAGEMENT & RECYCLING

Waste reduction and recycling opportunities during construction will be aligned with the key objectives of Sydney Metro CEMF and Green Star submission guidelines to:

- Minimise waste throughout the project life-cycle.
- Implement waste management strategies in accordance with the Waste Avoidance and Resource Recovery Act 2001.
- Targets for the recovery, recycling or reuse of construction waste, and beneficial reuse of spoil:
  - Recycled or reuse at least 95% of inert and non-hazardous construction and demolition recyclable waste excluding spoil.
  - Beneficially reuse 100% of reusable spoil.
  - Recycle or reuse 60% of office waste.

Construction waste management forms part of the Construction Environmental Management Plan (CEMP) for the project and was prepared in accordance with:

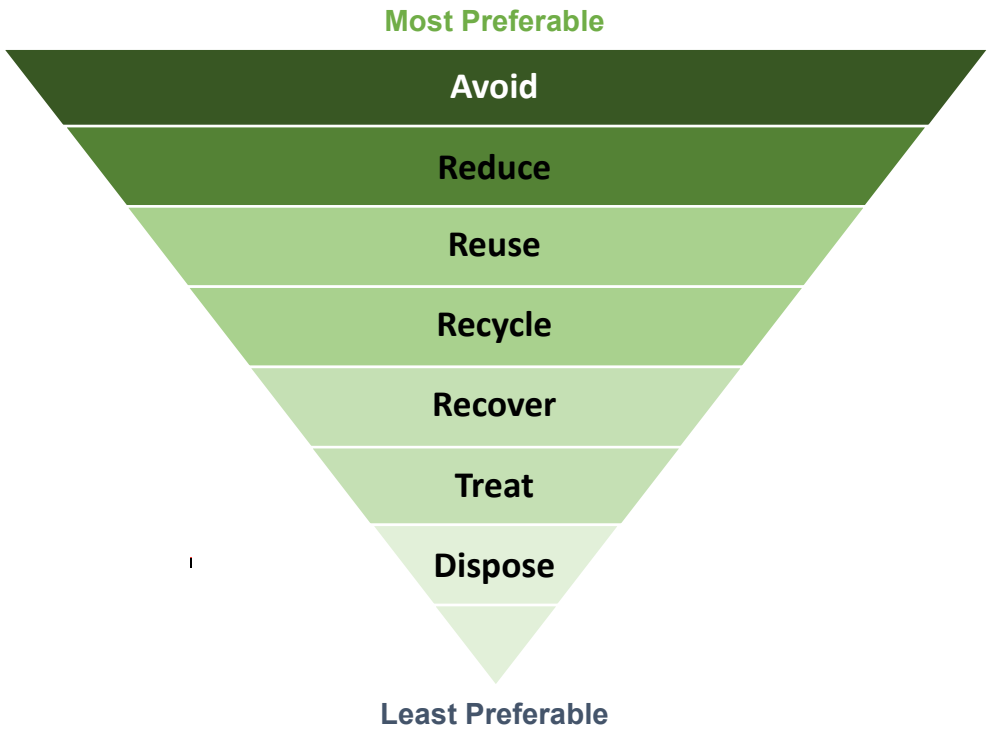
- The relevant planning approvals and conditions of approval (CoA) for the project (refer to Chapter 3).
- Applicable legislation and regulatory requirements.
- Sydney Metro Construction Environmental Management Framework – Chatswood to Sydenham (CEMF).
- Revised Environmental Mitigation Measures (REMMs).
- Sydney Metro contractual requirements, including the Project Deed and Scope of Work and Technical Criteria.
- Green Star Design & As-Built v1.1.

6.2.1 Waste Classification and Hierarchy

The Waste Avoidance and Resource Recovery Act 2001 ensures that resource management options are considered against a hierarchy of:

- Avoidance of unnecessary resource consumption.
- Resource recovery (including reuse, recycling, reprocessing, and energy recovery).
- Disposal.

The approach to the steps in the waste hierarchy most relevant to the project is briefly described below and illustrated in Figure 3.



6.2.2 Waste Streams, Classification and Management Options

The types of waste that may be generated during construction are outlined in Table 10. This table also identifies preferred reuse, recycling, and disposal methods for each waste stream.

The classification of waste will be undertaken in accordance with the NSW Waste Classification Guidelines Part 1: Classifying Waste (EPA, 2014). This document identifies six classes of waste: Special, Liquid, Hazardous, Restricted Solid, General Solid (putrescible) and General Solid (non-putrescible) and describes a six-step process to classifying waste.

Table 11: Waste streams, classification, and management options.

CONSTRUCTION ACTIVITY	WASTE TYPE	WASTE CLASSIFICATION	PROPOSED STORAGE AND RE-USE/RECYCLING/DISPOSAL METHODS
General demolition	Concrete, bricks, ceramics	General solid waste (non-putrescible)	Reuse onsite - If suitable, crush and use as backfill/road base. Storage/Collection – General solid wastes are to be stored within designated skip bins on-site for collection by an appropriately licenced waste management contractor. Resource recovery off site – the waste contractor would collect the skip bin and transport to a licenced waste management facility for reuse, recycling, reprocessing or energy recovery in accordance with the Waste Classification Guidelines. Reuse off site – apply concrete to land where there is full compliance with The Recovered Aggregate Exemption.
	Asphalt	General solid waste (non-putrescible)	Reuse onsite - If suitable, crush and use as backfill/road base. Storage/collection – General solid wastes are to be stored within designated skip bins on-site for collection by an appropriately licenced waste management contractor. Resource recovery off site – the waste contractor would collect the skip bin and transport to a licenced waste management facility for reuse, recycling, reprocessing or energy recovery in accordance with the Waste Classification Guidelines. Reuse off site – apply asphalt to land where there is full compliance with The Recovered Aggregate Exemption.
	Concrete slurry	Liquid waste	Storage/collection – Concrete slurry is to be extracted via sealed wet vacuum or vacuum tanker by an appropriately licenced contractor. Disposal – the licenced contractor would transport the material to an appropriately licenced facility permitted to accept liquid waste for appropriate disposal.

CONSTRUCTION ACTIVITY	WASTE TYPE	WASTE CLASSIFICATION	PROPOSED STORAGE AND RE-USE/RECYCLING/DISPOSAL METHODS
	Scrap metal	General solid waste (non-putrescible)	Storage/collection – General solid wastes are to be stored within designated skip bins on-site for collection by an appropriately licenced waste management contractor. Resource recovery off site - the waste contractor would collect the skip bin and transport to a licenced waste management facility for reuse, recycling, reprocessing or energy recovery in accordance with the Waste Classification Guidelines.
	Glass	General solid waste (non-putrescible)	Storage/collection – General solid wastes are to be stored within designated skip bins on-site for collection by an appropriately licenced waste management contractor. Resource recovery off site - the waste contractor would collect the skip bin and transport to a licenced waste management facility for reuse, recycling, reprocessing or energy recovery in accordance with the Waste Classification Guidelines.
	Asbestos	Special waste	Storage/collection – Asbestos waste is to be left in-situ and adequately secured for collection by an appropriately licenced asbestos removal contractor. Disposal off-site – the licensed contractor is to collect, transport and dispose the waste at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence. The asbestos waste is to be tracked and all dockets and receipts retained.
Building and construction waste	Steel reinforcing	General solid waste (non-putrescible)	Storage/collection – Steel waste is to be stored within designated large skip bins on-site for collection by an appropriately licenced waste management contractor. Resource recovery off site - the waste contractor would collect the skip bin and transport to a licenced waste management facility for reuse, recycling, reprocessing or energy recovery in accordance with the Waste Classification Guidelines.
	Conduits and pipes	General solid waste (non-putrescible)	Storage/collection – General solid waste is to be stored within designated skip bins on-site for collection by an appropriately licenced waste management contractor.

CONSTRUCTION ACTIVITY	WASTE TYPE	WASTE CLASSIFICATION	PROPOSED STORAGE AND RE-USE/RECYCLING/DISPOSAL METHODS
			Resource recovery off site - the waste contractor would collect the skip bin and transport to a licenced waste management facility for reuse, recycling, reprocessing or energy recovery in accordance with the Waste Classification Guidelines.
	Timber formwork	General solid waste (non-putrescible)	Storage/collection – General solid waste is to be stored within designated skip bins on-site for collection by an appropriately licenced waste management contractor. Resource recovery off site - the waste contractor would collect the skip bin and transport to a licenced waste management facility for reuse, recycling, reprocessing or energy recovery in accordance with the Waste Classification Guidelines.
	Packaging materials (including wood, plastic, metal and cardboard)	General solid waste (non-putrescible)	Storage/collection – General solid waste is to be stored within designated skip bins on-site for collection by an appropriately licenced waste management contractor. Resource recovery off site - the waste contractor would collect the skip bin and transport to a licenced waste management facility for reuse, recycling, reprocessing or energy recovery in accordance with the Waste Classification Guidelines.
Sediment control maintenance	Geotextile and sandbags	General solid waste (non-putrescible)	Storage/collection – General solid waste is to be stored within designated skip bins on-site for collection by an appropriately licenced waste management contractor. Resource recovery off site - the waste contractor would collect the skip bin and transport to a licenced waste management facility for reuse, recycling, reprocessing or energy recovery in accordance with the Waste Classification Guidelines.
	Sediment removed from sediment controls once they reach capacity.	General solid waste (non-putrescible)	Reuse on-site - If suitable, re-use non-contaminated sediment in backfill. Storage/collection – Excess accumulated sediment is to be stored within designated skip bins or segregated stockpiles) on-site for chemical assessment/waste classification, and later

CONSTRUCTION ACTIVITY	WASTE TYPE	WASTE CLASSIFICATION	PROPOSED STORAGE AND RE-USE/RECYCLING/DISPOSAL METHODS
			collection by an appropriately licenced waste management contractor. Reuse off site – where there is full compliance with the VENM criteria and/or ENM resource recovery exemption, the waste contractor would transport the VENM/ENM material to an appropriately licenced receiving facility permitted to accept VENM/ENM as engineering fill via an Environmental Protection Licence (EPL), or Council DA. Disposal off-site – In the event the spoil does not satisfy the VENM and ENM exemption, the material is to be analysed and classified as general solid waste (or higher classification) and disposed by the contractor at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence.
Site compound and office	Drained oil filters, rags and oil-absorbent materials that only contain non-volatile petroleum hydrocarbons and do not contain free liquids.	General solid waste (non-putrescible)	Storage/collection – General solid waste is to be stored within designated skip bins on-site for collection by an appropriately licenced waste management contractor. Resource recovery off site - the waste contractor would collect the skip bin and transport to a licenced waste management facility for reuse, recycling, reprocessing or energy recovery in accordance with the Waste Classification Guidelines. Waste oil reclaimed can be recovered through the Product Stewardship for Oil Scheme (PSO).
	Containers, previously containing dangerous goods, from which residues have been removed by washing or vacuuming	General solid waste (non-putrescible)	Storage/collection – General solid waste is to be stored within designated skip bins on-site for collection by an appropriately licenced waste management contractor. Resource recovery off site - the waste contractor would collect the skip bin and transport to a licenced waste management facility for reuse, recycling, reprocessing or energy recovery in accordance with the Waste Classification Guidelines.

CONSTRUCTION ACTIVITY	WASTE TYPE	WASTE CLASSIFICATION	PROPOSED STORAGE AND RE-USE/RECYCLING/DISPOSAL METHODS
	Food waste	General solid waste (non-putrescible)	Storage/collection – Food waste is to be stored within designated bins on-site for collection by an appropriately licenced waste management contractor. Resource recovery off site - the waste contractor would collect the bin and transport to a licenced waste management facility for reuse, recycling, reprocessing or energy recovery in accordance with the Waste Classification Guidelines.
	Wastewater from amenities	Liquid waste	Storage/collection – Sewage is to be extracted via sealed vacuum tanker by an appropriately licenced contractor. Disposal – the licenced contractor would transport the material to an appropriately licenced facility permitted to accept sewage/liquid waste for appropriate disposal.
	Paper, cardboard and plastic, glass, aluminium cans	General solid waste (non-putrescible)	Storage/collection – General office waste is to be stored within designated bins on-site for collection by an appropriately licenced waste management contractor. Resource recovery off site - the waste contractor would collect the bin and transport to a licenced waste management facility for reuse, recycling, reprocessing or energy recovery in accordance with the Waste Classification Guidelines.
	Unwanted liquid chemicals	Liquid waste	Storage/collection – Chemicals are to be stored in original containers in a designated bunded and secure are for collection by an appropriately licenced contractor. Disposal – the licenced contractor would transport the material to an appropriately licenced facility permitted to accept liquid waste for appropriate disposal.

Further details of waste management and recycling practices can be found in the CEMP (SMCSWSCN-AWE-SCN-EM-PLN-0000017) including:

- Potential waste management issues during construction.
- Management and mitigation measures to be implemented to ensure appropriate management of generated waste.
- Responsibility of key personnel with respect to the implementation of the mitigation measures.
- Compliance record generation and management.
- Waste management risk assessment and mitigation measures.

6.3 MATERIALS MANAGEMENT

This section describes how A W Edwards will manage materials and resource impacts during construction for the project. It aims to align with SCN Green Star Specification and Sydney Metro General Specification-Management of the Project [SM-19-00124184] to address sustainability requirements related to materials management.

The following material management objectives, consistent with those described in the GS MP, will be applied to the project:

- Reduce material use throughout the project life-cycle.
- Minimise embodied impacts in materials selection.
- Use recycled materials.
- Recycle and reuse materials onsite.
- Influence subcontractors and materials suppliers to adopt sustainability objectives in their works and procurement.

The Station and OSD projects are seeking a 5-star rating under the Green Star Design and As-Built Sydney Metro v1.1 tool and Green Star Design & As Built v1.3 respectively, with an aspiration to reach 6-stars. As a part of this, the materials category is being targeted. Appendix C highlights the points targeted for the credits in the materials category, and Table 12 outlines the sustainability criteria and compliance measures for materials on the project.

The Stage 3 Sustainable Design Report Section 3.1.4 (SMCSWSCN-SMC-SCN-SU-REP-000384) contained an ISCA Materials Calculator for design stage, which will be updated at project completion to reflect as-built status and an overall minimum 15% reduction in the environmental footprint of the materials used compared to the Business As Usual case provided in the ISCA Materials Calculator.

Table 12: Sustainable materials criteria and measures

SUSTAINABILITY CRITERIA	COMPLIANCE MEASURES
Design LCA	Based on the LCA done during design for credit 23 of the Green Star Design & As Built: Sydney Metro 1.1 tool, the Crows Nest Station will be targeting a cumulative impact reduction of 130% throughout its lifecycle. Based on the LCA done during design (by NDY) for credit 19 of the Green Star Design & As Built v1.3 tool, OSD will be targeting a cumulative impact reduction of 86% considering all lifecycle stages.
Final LCA	A final LCA will be undertaken at project completion for both the Station and OSD developments. This will be based on the as-built documentation and in line with Green Star requirements.
Reduce material impacts In line with the LCA process, material selection to include, as a minimum:	▪ Procure 60% of reinforcing bar and mesh used during construction produced through energy reduction processes. ▪ Reduce materials use through hotspot analysis, materials avoidance and reduction strategies and minimise construction materials volumes through delivery refinement, construction planning and construction methods. ▪ Use where applicable: ○ Aggregate containing recovered products such as glass, plastic and concrete. ○ Recycled steel, including in concrete reinforcing. ○ Spoil generated on-site.
	Liaise with concrete contractors during the procurement phase and establish design mixes that reduce Portland Cement content by an average of at least 30% across all project concrete mixes.
Reduce material impacts In line with the LCA process, material selection to include, as a minimum:	Investigate use of following products where possible: ▪ Recycled or reused steel. ▪ Flooring, wall lining and glazing products with EPDs and recycled content.
Reporting	Provide an updated copy of the ISCA Materials Calculator provided in the Stage 3 Sustainable Design Report Section 3.1.4 (SMCSWSCN-SMC-SCN-SU-REP-000384) at project completion.
CONCRETE PROCUREMENT	
	Procurement team to procure: ▪ Blended cement that contains waste industrial products such as fly ash and ground granulated blast furnace slag. ▪ Low carbon concrete. ▪ Concrete from members of Cement Concrete & Aggregates Australia or a “similar” association or organisation by agreement with the Principal’s Representative.
STEEL PROCUREMENT	
	Target to procure steel that has:

SUSTAINABILITY CRITERIA	COMPLIANCE MEASURES
	▪ At least 95% (by mass) sourced from a responsible steel maker. ▪ At least 60% (by mass) of all reinforcing bar, mesh and cages produced using energy-reducing processes.
Credentials of structural and reinforcing steel supplier.	Procurement team to request certification compliance documentation from suppliers for: ▪ The Australian Certification Authority for Reinforcing and Structural steels, or similar. ▪ Membership of the World Steel Association's (WSA) Climate Action Programme (CAP). ▪ Current ISO 14001 certification of its environmental management system (EMS). ▪ Record of percentage of steel sourced from Australian manufacturers. ▪ Compliance to AS 5131:2016 Structural Steel Work. ▪ Compliance to energy reducing processes.
TIMBER	
Responsibly sourced and certified timber products.	Procurement team will consult timber suppliers to ensure that products supplied comes complete with Chain of Custody (CoC) certification from one of the following organisations: ▪ FSC (Forest Stewardship Council). ▪ AFS (Australian Forestry Standard). ▪ PEFC (Programme for the Endorsement of Forest Certification).
Reused timber.	A W Edwards' to investigate the use of reused timber to be used on the Project. The procurement is to keep records of all timber products procured.
PVC	
Products such as pipes, conduits, cables, blinds, flooring, permanent formwork.	
Ensure 90% of all common uses of plastic (by cost) are from best practice procured supplier.	Procurement team to purchase PVC that conforms to the best practice requirements of Green Star.
Reused PVC materials.	▪ Investigate the use of reused PVC to be used on the project. ▪ The procurement will keep records of all PVC products.
SUSTAINABLE PRODUCTS	
Sustainably procured products and materials.	Procurement team to procure following where possible: ▪ Reused products. ▪ Products with recycled content. ▪ Third party certifications. ▪ EPDs. ▪ With stewardship contracts. ▪ Products that are pre-existing on site or procured from second hand source. ▪ Products containing post-consumer recycled materials. ▪ Products that can be leased, reused or recycled after their use.

SUSTAINABILITY CRITERIA	COMPLIANCE MEASURES
INFRASTRUCTURE SUSTAINABILITY COUNCIL REQUIREMENTS	
Pro 1 - Commitment to Sustainable Procurement Pro 2 - Identification of Suppliers Pro 3 - Supplier Evaluation and Contract Award Pro 4 - Managing Supplier Performance	IS Accredited Professional will be engaged to achieve the following levels of Australia IS Rating Tool v1.2: ▪ Level 2 compliance for Pro 1 and Pro 4 credits ▪ Level 3 compliance for Pro 2 and Pro 3 credits Through the following activities: ▪ Pro-1 Ensuring commitments to sustainability in the contractor's procurement policy cover sustainability aspects, not only environmental. ▪ Pro-2 Identifying commitments of suppliers and ensuring policies are provided. ▪ Pro-2 Ensuring engagement of potential suppliers and explanation requirements to stimulate innovations is happening. ▪ Pro-3 ensuring subcontractor evaluation using multicriteria analysis or other scored means is happening. ▪ Pro-4 ensuring commitments of suppliers are monitored against the objectives and/or targets and poor performance is actively managed.

6.3.1 Monitoring and Tracking

The site and procurement team will be responsible for the monitoring and tracking of materials data requirements as described in Table 13. Materials procured will be monitored and reported in the monthly sustainability report.

Table 13: Materials monitoring and tracking requirements.

CATEGORY	REQUIREMENT	EVIDENCE
Concrete	Quantity	Supplier report (materials tracker)
Concrete	Supplementary material %	Supplier report (materials tracker)
Structural steel	Quantity	Supplier report (materials tracker), invoices, ISO 14001 certificate and WSA membership certificate
Reinforcing steel	Quantity	Supplier report (materials tracker), invoices, ISO 14001 certificate and WSA membership certificate

Additionally, data will be collected for the following materials to demonstrate compliance with the SWTC and Green Star requirements.

Table 14: Green Star and SWTC materials requirements.

CATEGORY	REQUIREMENT	EVIDENCE
Concrete	Australian Membership - Cement Concrete & Aggregates	▪ Certificates. ▪ Concrete volumes, use, and mix (materials tracker). ▪ Supplementary Cementitious Material (SCM) content.
Concrete	Water content and quality	▪ Supplier report. ▪ Concrete volumes, use, and mix (materials tracker)

CATEGORY	REQUIREMENT	EVIDENCE
Paints, sealants, adhesives and carpets	GS TVOC limits	▪ Test certificates. ▪ Quantities (materials tracker). ▪ Invoices.
Paints	APAS VOC limits	▪ Test certificates. ▪ Quantities (materials tracker). ▪ Invoices.
Engineered wood products	Formaldehyde content	▪ Test certificates. ▪ Quantities (materials tracker). ▪ Invoices.
PVC products, permanent formwork, pipes, flooring, blinds and cables	GBCA BEP or EPD	▪ Certificates. ▪ Quantities (materials tracker). ▪ Invoices.
Structural and reinforcing steel	ISO 14001 Certified and WSA Climate Action Member	▪ ISO 14001 certificate. ▪ WSA certificate. ▪ Energy reducing methods report (reinforcing steel only). ▪ Quantities (materials tracker). ▪ Invoices.
Fabricated steel	Certified to National Structural Steelwork Compliance Scheme	▪ Certificates. ▪ Quantities (materials tracker). ▪ Invoices.
Timber	FSC or PEFC	▪ Certificates. ▪ Quantities (materials tracker). ▪ Invoices.
Loose furniture, fixed furniture, internal partitions, assemblies, joinery, flooring, wall coverings and ceilings	Sustainable Products credit	▪ Certificates. ▪ Quantities (materials tracker). ▪ Invoices.
Vehicle emissions	Annual inventory of non-road diesel powered vehicles	▪ TfNSW Air Emission Data Collection Workbook 9TP-FT-439.

6.4 CARBON & ENERGY

The purpose of the Carbon and Energy Management Plan (C&EMP) is to describe how A W Edwards will consider and apply processes, procedures, and initiatives to reduce carbon and energy use during the construction works on the Crows Nest ISD (Station) and OSD (Site C) projects.

In doing so, the plan addresses the relevant requirements of Sydney Metro's Construction Environmental Management Framework (CEMF), the Revised Environmental Mitigation Measures (REMMs), the Project Planning Approval, applicable legislation, and Scope of Work and Technical Criteria (SWTC).

The following points describe the carbon and energy management objectives that will apply to construction:

- Reduce energy use and carbon emissions during construction.
- Support innovative and cost-effective approaches to energy efficiency, low carbon/renewable energy sources and energy procurement.

- Reduce embodied energy carbon emissions.
- Greenhouse gas emissions for the project should be lower than the estimated below or than those estimated using actual construction data and BAU assumptions.

6.4.1 ISD Greenhouse Gas Estimate Emissions

The greenhouse gas estimate for Scope 1, Scope 2 and Scope 3 emissions for the ISD project's construction are summarized in the table below.

Table 15: Scope 1,2 and 3 greenhouse gas estimates for OSD

Item	Scope 1 (tCO2-e)	Scope 2 (tCO2-e)	Scope 3 (tCO2-e)	Total (tCO2-e)
Project Office	-	1,150	-	1,150
Site offices/amenities	-	1	-	1
Cranes / Lifts	986	-	-	986
Excavators	365	-	-	365
Generators	386	-	-	386
Concrete-related Plant	1,780	-	-	1,780
Compactors	85	-	-	85
Transport	825	-	-	825
Piling	3	-	-	3
Electric equipment	-	500	-	500
Materials and transport	-	486	36,114	36,600
Waste	-	-	43	43
TOTAL - Construction				
	4430			2,137

Scope 1 and scope 2 emissions have been calculated using the National Greenhouse Accounts Factors August 2020. Materials emissions have been calculated using the IS Materials calculator v2.0 as per the requirements. Details for scope 1, scope 2 and scope 3 calculations can be found in Appendix E.

6.4.2 Over Station Development - Site C Greenhouse Gas Estimate Emissions

The greenhouse gas estimate for Scope 1, Scope 2 and Scope 3 emissions for the OSD project's construction are summarized in the table below.

Table 16: Scope 1,2 and 3 greenhouse gas estimates for OSD (Site C)

Item	Scope 1 (tCO2-e)	Scope 2 (tCO2-e)	Scope 3 (tCO2-e)	Total (tCO2-e)
Project Office	-	5	-	5
Site office	-	-	-	-
Cranes / Lifts	111	-	-	111
Concrete-related Plant	3	-	-	3
Electric equipment	-	5	-	5

Item	Scope 1 (tCO2-e)	Scope 2 (tCO2-e)	Scope 3 (tCO2-e)	Total (tCO2-e)
Materials and transport	-	-	2,329	2,329
Construction and demolition waste to landfill		-	2	2
Office waste			0.3	0.3
Exterior lighting	-	6		6
TOTAL - Construction	114	16	2,331	2,461

Scope 1 and scope 2 emissions have been calculated using the National Greenhouse Accounts Factors, August 2023. Materials emissions have been calculated using the IS Materials calculator v2.0 as per the requirements. Details for scope 1, scope 2 and scope 3 calculations can be found in Appendix E.

6.4.3 Energy Reduction Initiatives

Energy reduction initiatives will be implemented during the construction phase of the projects by A W Edwards. Areas that may be considered to reduce the carbon and energy footprint are as follows:

- The project office and associated works.
- Construction energy usage.
- Making subcontractors aware of the activities they need to undertake to reduce energy and carbon emissions.

The following measures will be undertaken to reduce construction fuel consumption:

- All plant and machinery operators will be advised to turn off equipment when not in use to reduce idling for excessive periods of time.
- Lights will be switched off when not in use.
- Light vehicle operators will be advised to drive in a manner that minimises emissions, i.e. no excessive revving, gentle braking and slow, even acceleration.
- Vehicles, where possible and reasonable, will be fitted with catalytic converters, diesel particulate filters or equivalent devices.
- All plant and vehicles will be well maintained and serviced in accordance with relevant equipment maintenance documentation to reduce emissions.

The use of a 5% bio-diesel mix for all diesel-powered plant and equipment, and a minimum of 10% blended ethanol mix for all petrol-powered plant and equipment will be considered, where possible.

A W Edwards has also committed to offset at least 25% of the electrical energy consumed in carrying out the Contractor activities through purchase of large-scale generation certificates (LGCs) or by purchase of the renewable energy from an Australian Government accredited renewable energy supplier on both Crows Nest Station and OSD.

6.4.4 Energy efficiency of all new plug-in electrical equipment within the site facilities will meet the minimum standards outlined in the NSW Government

Resource Efficiency Policy 2019 requirement E3 "Minimum standards for new electrical appliances and equipment".Energy Monitoring and Reporting

The reporting of fuel and emissions will be undertaken throughout the construction works in accordance with the National Greenhouse and Energy Reporting Act 2007. Fuel and emissions data that will be collected and used is summarised in Table 17 below.

Table 17: Energy data monitoring and tracking.

DATA PARAMETER	DATA SOURCE
Electricity consumption and generation, including any on-site renewable energy generation and any renewable energy sourced for the construction.	▪ Metering and bills.
Quantity of greenhouse gas emissions associated with electricity consumption which have been offset, and method of offset.	▪ Metering and bills (GHG conversion achieved using latest NGERS approved Factors). ▪ Offset certificates.
Fuel consumption from plant and equipment used on site.	▪ Bills and monthly payment claims from subcontractors.
Biodiesel, Ethanol Blends, diesel and unleaded	▪ Supplier invoices. ▪ Fleet car Invoices. ▪ Fuel cards.

A W Edwards will prepare and submit a 'Greenhouse Gas Inventory Report' using the CERT tool, including a carbon footprint assessment undertaken in accordance with ISO14064-1, ISO IF064-2 and ISO14064-3. The report will be provided every six months and at project completion.

6.4.5 Green Travel Plan

A Green Travel Plan will be developed and implemented to promote car-pooling, the use of public transport, and cycling. The plan will be developed by a committee and will include the following:

- Definition of purpose, scope, key actions, and outcomes of the plan.
- A review of workplace accessibility.
- A survey of employees on their mode of commute to work.
- A review of best practices in work related travel.
- A Green Travel Plan that will be circulated throughout the project team.

Based on the above actions, it is expected that the initial Green Travel Plan will be ready for distribution within 6 months of contract execution and will be updated over the course of the project.

6.4.6 Green Star Energy Use Baseline and Target

The ISD (Crows Nest Station) is targeting a 5-Star Green Star rating under the Design and As Built - Sydney Metro v1.1 tool and has done a Design submission. The energy modelling undertaken for the Station during design estimates that the Station will achieve a 40% GHG emissions reduction compared to a Reference Building. Due to the timing of this project, GHG emissions have been calculated using the Building Code of Australia (BCA) 2016.

The OSD (Site C) is targeting a 5-Star rating under the Green Star Design and As Built v1.3 tool and has also undertaken a Design submission. The JV3 energy modelling undertaken for OSD during design estimates that the OSD design will achieve a 3% energy reduction compared to a Reference Building. As this project commenced later than the ISD, GHG

emissions for Site C have been calculated using the Building Code of Australia (BCA) 2019. Thus the target and method of measuring emissions compared to the reference building differ across the two projects in line with the revised approach between BCA versions.

A W Edwards will implement the energy efficiency measures identified during design that contribute to the 40% reduction in greenhouse gas emissions. The measures to be implemented on the Station and OSD are described in the energy simulation reports prepared for Green Star Submissions and would have already been included in the documentation provided to AW Edwards for construction. In addition, the Particular Specification outlines a requirement for GHG Emissions from contractor emissions to be reduced by 20% throughout the construction of the project.

7 GREEN STAR STRATEGY AND PATHWAY

The ISD (Station) and OSD (Site C) projects are required to achieve a minimum of 5-Star Green Star Design and As-Built ratings. The ISD will use the Green Building Council of Australia's (GBCA) Green Star Design and As-Built Sydney Metro v1.1 rating tool, and the OSD will use the Green Star Design and As-Built v1.3 tool.

A W Edwards will undertake compliance measures to achieve sustainability targets for the Contractor's activities identified in the Green Star Specifications, as shown in Figure 4.

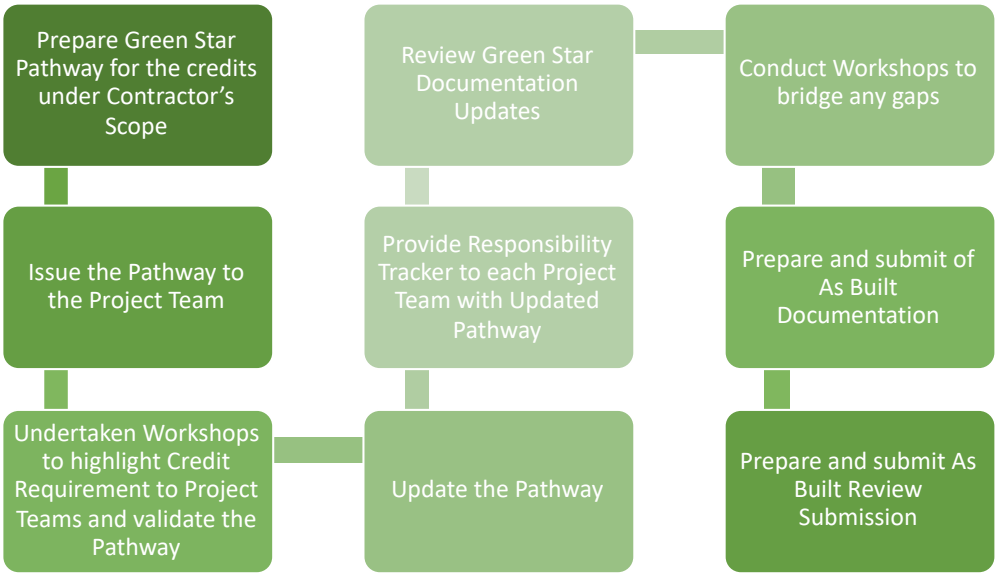


Figure 4: Green Star management process.

The Green Star pathways for both the ISD (Station) and OSD (Site C) have been prepared in line with the Contractor's scope, as attached in Appendix C.

APPENDIX A - A W EDWARDS ENVIRONMENTAL SUSTAINABILITY POLICY

AW EDWARDS

ENVIRONMENTAL SUSTAINABILITY POLICY

A W Edwards Pty Limited is committed to excellence, quality and leadership in all of its activities. This includes the implementation of a sustainable approach and commitment to the concept of maintaining a sustainable environment.

A W Edwards demonstrates this commitment to environmental responsibility by:

- Complying with all relevant environmental legislation;
- Setting and communicating meaningful environmental objectives and targets for all aspects of A W Edwards activities, so as to continue to reduce natural resource use, and minimise adverse environmental impacts;
- Incorporating environmental sustainability principles, awareness and understanding into all areas of its work;
- Integrating principles of ecologically sustainable development into all activities;
- Membership and support of key environmental organisations including the Green Building Council of Australia (GBCA);
- Educating A W Edwards staff so that they are qualified to oversee the implementation of effective environmentally sensitive initiatives, both in the design of projects and in construction processes; and
- Managing all its construction activities so as to minimise waste, minimise pollution, and optimise the protection of soil, air and water quality.

The following principles underpin the A W Edwards Sustainability Policy in undertaking our commitment towards environmentally sustainable work sites:

- Incorporating sustainability principles into A W Edwards projects where required;
- Identifying alternative and sustainable courses of action to minimise the environmental impact of A W Edwards activities;
- Creating and promoting an environmentally sustainable and responsible culture across the company;
- Identify opportunities for incorporation of sustainability principles into project procurement and
- Committing to continuous improvement of environment performance

GREG D'ARCY
Chief Executive Officer
A W Edwards Pty Limited

01/07/2020

IMAGE: SYDNEY TRAINS ENGINEERING & MAINTENANCE HUB

APPENDIX B - COMPLIANCE WITH SMP REPORTING REQUIREMENTS

REPORTING REQUIREMENTS	REFERENCE
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. ▪ Interfaces with the overall project organisation structure.	Section 5.5
Sustainability policy statement.	Section 3.1
Carbon and energy mitigation measures as detailed in the environmental approval documentation that are applicable to the design of the project works.	Section 6.4
Low carbon strategies and initiatives that will be implemented to minimise the carbon emissions in the project works.	Section 6.3
Energy efficiency strategies and initiatives that will be incorporated into the project works to minimise energy use.	
Strategies and initiatives that will be implemented to maximise the use of recycled materials.	
Strategies and initiatives to prioritise the use of materials with a lower embodied impact.	
Strategies and initiatives to prioritise the use of low volatile organic compound (VOC), low emission materials.	
Use of sustainably sourced and certified timber and wood products.	
Development of deconstruction plans to enable recycling and reuse at end-of-life.	
Strategies and initiatives that will be implemented to minimise overall water use, maximise the availability and use of non-potable water sources in the project works.	Section 6.1
Strategies and initiatives that will be implemented to enhance biodiversity.	Appendix L of CEMP
Processes and methodologies which will be used to achieve the required scores under rating systems identified in the sustainability requirements.	Appendix C
Strategy and methodology for incorporating climate change adaption in designs in response to the climate change risks and baseline adaptation measures allocated to the project works.	Section 5.2
Estimates of the quantity of mains water which will be consumed during construction (Mains Water Consumption Target) and the quantity of water from non-potable sources which will be consumed during construction (Non-Potable Water Consumption Target).	Section 6.1
Portland cement reduction which will be achieved in concrete (averaged across all mixes), compared to a reference case	Section 6.3
Scope 1', 'Scope 2', 'Scope 3' and total carbon emissions (Carbon Emission Targets) that incorporates direct and indirect emissions associated with electricity and fuel consumption, on-site process emissions and embodied emissions for all main materials used in Contractor's activities.	Appendix E
Fuel consumption (Fuel Consumption Target).	Appendix E
Electricity consumption (Electricity Consumption Target) for the Contractor's activities.	Appendix E

APPENDIX C - GREEN STAR PATHWAY FOR CROWS NEST STATION AND OSD (INCLUDED SEPARATELY)

APPENDIX D - CONSTRUCTION WATER BALANCE

Crowsnest Station Site offices and site sheds water demand

Building	Fixture/appliance	# equipments or EFTE	uses/day/(equipment or EFTE)	Average uses/day	L/day	Days on site	kL/year	Total potable water use (kL)
Site Office	male toilets	156	0.3	46.8	163.8	961	157.4	414.4
	urinals	156	2	312	468.0	961	449.7	1,184.1
	shower	260	1	26	2,340.0	961	2,248.7	5,920.7
	female toilets	104	2.3	239.2	837.2	961	804.5	2,118.3
	water Bubbler	260	2	520	260.0	961	249.9	657.9
	sink taps	260	2.5	650	731.3	961	702.7	1,850.2
	water boil unit	260	2	520	130.0	961	124.9	328.9
Site Shed	male toilets	88	0.3	26.4	92.4	730	67.5	134.9
	urinals	88	2	176	264.0	730	192.7	385.4
	shower	110	1	11	990.0	730	722.7	1,445.4
	female toilets	22	2.3	50.6	177.1	730	129.3	258.6
	ice machine	110	1	110	715.0	730	522.0	1,043.9
	water bubbler	110	2	220	110.0	730	80.3	160.6
	sink taps	110	2.5	275	309.4	730	225.8	451.7
	water boil unit	110	2	220	55.0	730	40.2	80.3
	basin taps	110	2.5	275	247.5	730	180.7	361.4
Total								16,796.6

Crowsnest station dust suppression water demand

Description	Land (m2)	Water-use rate (L-year/m2)	Total Demand (kL/month)	Potable Water (kL)	Non Potable Water (kL)*	Total Water Demand (kL)	Water-use rate reference
Removal of TSC slab	1,100	105.00	9.63	11.55	2.89	14.44	Victoria Roads - IntegratedWaterManagementGuidelinesJune2013
Trimming of capping beam/Hume St bridge	240	105.00	2.10	0.63	0.63	3.15	Victoria Roads - IntegratedWaterManagementGuidelinesJune2014
Total			11.73	12.18	3.52		

Vehicle washing water demand for the Station

Description	Number of washes	Number of years	Number of vehicles (#)	Water Use Rate (L/operation)	Total Non-Potable Water Demand (kL)*	Assumptions	Source
Vehicle washing (Site Office)	1	2.63	8	50	55	- Vehicles washed 1/week for 52 weeks - Rain water harvesting	- TfNSW toolkit -AW Edwards Estimate
Vehicle washing (Site Shed)	1	2.00	8	50	42	- Vehicles washed 1/week for 52 weeks - Rain water harvesting	- TfNSW toolkit -AW Edwards Estimate
Total					96		

Construction water demand summary for the Station

Potable Water				Non-potable Water				Total
Water use	Site offices (kL)	Dust suppression (kL)	Total Potable Water Use (kL)	Site offices (kL)	Vehicle washing water use (kL)	Dust suppression (kL)	Total Non-Potable Water Use (kL)	Total water demand (kL)
	16,797	12	16,809		96	4	100	16,909

Construction water demand summary for the OSD

Water use	AW Edwards Description	Monthly potable water use (kL)	Monthly non-potable water use (kL)	Number of months	Total Potable water (kL)	Total Non-potable water (kL)	Assumptions	Source
Office and site office water use	Same office space as for CSSI. 10% of office staff assigned to Site C1 would be conservative.	13.37	0.38	12	162.23	5	Assumed 10% of average monthly water use at Crows Nest Station construction.	AW Edwards Estimate
Façade testing for leaks	10 tests for 1 hr at 35psi. Assuming 10l/m or 600l/h this would be 6000 litres. Even overestimating at 10,000L or 10kL would be 10% of monthly consumption.	6.00	0.00	10	60.00	-	Assumed 10 tests, 1 hr long, at 600l/h.	AW Edwards Estimate
Landscape establishment irrigation	Assume potable water during construction, 4l/h but programming is yet to be confirmed by CNDC. This could be as little as 1hour per week for 3-4months.	0.016	0.00	4	0.06	-	Assumed 4l/h 4 times per month.	AW Edwards Estimate
Total					222.30	4.58		

Dust suppression water use is not expected for the OSD.
Vehicle washing water use is not expected for the OSD.

APPENDIX E - BASE CASE SCOPE 1, 2 AND 3 EMISSIONS CALCULATIONS

Crows Nest Station Construction equipment energy use (Scope 1 and 2)

Activity	Equipment Use	Classification	Qty	Duration	Total Months	Plant use rate	Total Hours	Burn Rate (L/hr)	Electricity use rate (kWhr)	Total Fuel (L)	Total non renewable Electricity (kWh)
Demolition	Concrete Saw	Electric equipment	1	6	6	0.25	396		3	-	743
Demolition	Concrete Saw	Electric equipment	1	6	6	0.25	396		3		743
	Excavator Hammer	Excavators	1	6	6	0.50	792	16		12,276	-
	Excavator (20 ton)	Excavators	1	6	6	0.50	792	13		10,494	-
Piling	Bored Piling Rig	Piling	1	1	1	0.25	66	15		990	-
	Concrete Pump	Concrete-related Plant	1	1	1	0.25	66	22		1,426	-
	Concrete agitator	Concrete-related Plant	2	1	2	0.25	132	6		739	-
	Concrete Vibrator	Concrete-related Plant	1	1	1	0.25	66	12		792	-
Excavation	Concrete Saw	Electric equipment	2	3	6	0.25	396		3		743
	Excavator Hammer	Excavators	6	12	72	0.25	4,752	16		73,656	-
	Excavator (10 ton)	Excavators	2	12	24	0.50	3,168	4		12,302	-
	Excavator (20 ton)	Excavators	2	3	6	0.50	792	13		10,494	-
	Excavator (40 ton)	Excavators	2	3	6	0.50	792	9		7,366	-
	Haulage truck (40 ton)	Transport	4	1	4	0.50	528	42		22,000	-
	Loader - skid steer (track type)	Transport	1	3	3	0.50	396	5		2,112	-
Tanking and Waterpoofing	Scissor Lift (EWP)	Electric equipment	2	2	4	0.75	792		18		10,549
	Boom Lift (25m)	Cranes / Lifts	2	2	4	0.25	264	10		2,561	-
Structural Works	Scissor Lift (EWP) - 8m	Electric equipment	2	16	32	0.25	2,112		18		28,132
	Concrete Placing Boom	Electric equipment	2	16	32	0.50	4,224		12		38,016
	Concrete Vibrator	Concrete-related Plant	18	16	288	0.50	38,016	12		456,192	-
	Scissor Lift (EWP)	Electric equipment	4	14	56	0.50	7,392		18		98,461
	Scissor Lift (EWP)	Electric equipment	4	10	40	0.50	5,280		18		70,330
	Concrete Pump	Concrete-related Plant	2	16	32	0.50	4,224	22		91,238	-
	Concrete agitator	Concrete-related Plant	8	16	128	0.50	16,896	6		94,618	-
	Frana crane (20 Ton)	Cranes / Lifts	2	6	12	0.50	1,584	33		51,480	-
	Oversize vehicles delivery (PC items)	Transport	6	17	102	0.50	13,464	10		134,640	-

Activity	Equipment Use	Classification	Qty	Duration	Total Months	Plant use rate	Total Hours	Burn Rate (L/hr)	Electricity use rate (kWhr)	Total Fuel (L)	Total non renewable Electricity (kWh)
	Oversize vehicles delivery (Rebar)	Transport	2	17	34	0.50	4,488	33		145,860	-
FitOut Works	Boom Lift - 16m	Cranes / Lifts	6	10	60	0.25	3,960	10		38,412	-
	Boom Lift - 20m	Cranes / Lifts	6	10	60	0.25	3,960	10		38,412	-
	Boom Lift - 35m	Cranes / Lifts	2	10	20	0.25	1,320	10		12,804	-
	Scissor Lift (EWP) - 8m	Electric equipment	10	20	200	0.25	13,200		18	-	175,824
	Scissor Lift (EWP) - 12m	Electric equipment	10	20	200	0.25	13,200		18	-	175,824
Public Domain Works	Excavator (6 ton)	Excavators	2	16	32	0.25	2,112	4		8,202	-
	Concrete Saw	Electric equipment	1	16	16	0.25	1,056		3	-	1,980
	Road compactor (vibratory)	Compactors	1	16	16	0.25	1,056	8		8,395	-
	Roller (vibratory)	Compactors	1	16	16	0.25	1,056	20		21,120	-
	Concrete agitator	Concrete-related Plant	2	16	32	0.25	2,112	6		11,827	-
	Plate compactor	Compactors	1	16	16	0.25	1,056	2		1,690	-
General Services	Luffing Tower Crane - 330 ton	Cranes / Lifts	2	16	32	0.50	4,224	33		137,280	-
	Mobile Cranes - 100 tons	Cranes / Lifts	2	6	12	0.50	1,584	33		51,480	-
	Mobile Cranes - 50 tons	Cranes / Lifts	3	3	9	0.50	1,188	26		31,284	-
	Generator	Generators	1	30	30	1.00	7,920	18		142,560	-
	Scissor Lift	Electric equipment	2	15	30	0.25	1,980		18	-	26,374
	Telehandler (12 ton)	Electric equipment	2	15	30	0.25	1,980		30	-	44,550
	Man & Material Hoists (20 men)	Electric equipment	2	24	48	0.25	3,168		64	-	152,064
	Water Treatment Plant (40m3)		1	24	24	-	-	-		-	
Total fuel and electricity use for construction equipment used on the Station										1,634,701	823,589
								Total non-renewable electricity			617,692

Site C OSD Construction equipment energy use (Scope 1 and 2)

Activity	Equipment Use	Classification	Qty	Total Months	Plant use rate	Total Hours	Burn Rate (L/hr)	Electricity use rate (kWhr)	Total Fuel (L)	Total Electricity (kWh)
Structural Works	Concrete Placing Boom	Concrete-related Plant	1	1	50%	90	12		1,080	-
	Frana crane (20 Ton)	Cranes / Lifts	1	1	60%	72	33		2,340	-
FitOut Works	Boom Lift - 20m	Cranes / Lifts	1	1	80%	96	10		931	-
	Scissor Lift (EWP) - 12m	Electric equipment	2	7	25%	640		18	-	8,525
	Hand tools	Electric equipment	6	7	30%	2,304		1	-	2,419
General Services	Mobile Cranes - 100 tons	Cranes / Lifts	1	7	90%	1,152	33		37,440	-
	Man & Material Hoists (20 men)	Electric equipment	1	4	60%	384		64	-	18,432
Total fuel and electricity use for construction equipment used on OSD									41,791	29,376
							Total non-renewable electricity			22,032

Crows Nest Station Office energy use

	Item	Quantity	Unit
Project office (28-34 Clarke Street, Crows Nest, NSW 2065)	Building Postcode	2065	
	Project Office area	1,708	NLA
	Laptop + desktop	260	computers
	kwhr per annum	719,186	kWh per annum
	Site office occupation	961	days
	Hours of occupation each week	66	hours
	Greenpower	473,382	kWh
	Total project office electricity use	1,893,528	kWh
Site Office/AMENITIES (Within Crows Nest Station Site Boundary)	Building Postcode	2065	
	Site Office area	228	m2
	Net lettable area	162	NLA (m2)
	Laptop + desktop	0	
	kwhr per annum	47,797	kWh per annum
	Site office occupation	961	days
	Hours of occupation each week	66	hours
	Greenpower	288	kWh
	Total site offices electricity use	1,150	kWh
Total offices and amenities energy use		1,894,678	kWh
Total offices and amenities emissions		1,151	(tCO2-e)

Site C OSD Project Office electricity use calculation using Station's Site Office - Level 5 electricity bills

Data	Energy Use	Unit	Notes
Electricity in Station Bill (per month)	8,455.15	kWh	Monthly average for the Station last year (CY2022) in Level 5 Clarke St
Total electricity for Site C	10,123.94	kWh	Assumed 12 month construction duration (assuming 10% of average electricity used by Station in Level 5 would be used for OSD)
Site C office non renewable electricity use	7,592.95	kWh	25% GreenPower assuming 12 month construction duration
Site C office renewable electricuty use	2,530.99	kWh	25% GreenPower assuming 12 month construction duration

Crows Nest Station Materials use and impacts

MATERIAL	QUANTITY	UNIT	TRANSPORT TYPE	TRANSPORT DISTANCE (KM)	EMISSIONS (T CO2-E)	SOURCE
Aggregates	259	m3	Articulated truck	14	3	IS Materials calculator v2.0
Aluminium	69	t	Articulated truck	9	1,523	IS Materials calculator v2.0
Asphalt	1,025	t	Rigid truck	50	48	IS Materials calculator v2.0
Cabling	17	t	Articulated truck	50	49	IS Materials calculator v2.0
Coatings and finishes	2	t	Rigid truck	50	4	IS Materials calculator v2.0
Composites	183	t	Articulated truck	50	228	IS Materials calculator v2.0
Concrete	37,597	m3	Concrete agitator truck	4	10,246	Concrete Compliance check list - 09/03/21
Glass	108	t	Articulated truck	25	107	IS Materials calculator v2.0
Other products	9,451	t	Articulated truck	50	1,633	IS Materials calculator v2.0
Piping	110	t	Articulated truck	50	44	IS Materials calculator v2.0
Plastics	57	t	None, On-Site	0	146	IS Materials calculator v2.0
Precast concrete	4,420	m3	Articulated truck	50	212	Concrete Compliance check list - 09/03/21
Steel	11,044	t	Articulated truck	44	22,026	IS Materials calculator v2.0
Timber	59	t	Articulated truck	50	57	IS Materials calculator v2.0
Total materials and material transport emissions (tCO2-e)					36,114	

Site C OSD Materials use and impacts

MATERIAL	QUANTITY	UNIT	TRANSPORT TYPE	TRANSPORT DISTANCE (KM)	EMISSIONS (T CO2-E)	SOURCE
Aluminium	25	t	Articulated truck	50	500	IS Materials calculator v2.0
Concrete	1,654	m3	Concrete agitator truck	50	596	IS Materials calculator v2.0 - 30% SCM
Glass	20	m3	Articulated truck	50	50	IS Materials calculator v2.0
Precast concrete	282	m3	Articulated truck	50	5	IS Materials calculator v2.0
Steel	607	t	Articulated truck	50	1,090	IS Materials calculator v2.0
Timber	7	t	Articulated truck	50	2	IS Materials calculator v2.0
Masonry block	345	t	Articulated truck	50	86	AusLCI for Brick, at plant + IS Materials calculator v2.0 for transport
Total materials and material transport emissions (tCO2-e)					2,329	

Crows Nest Station Scope 1, 2 and 3 emissions summary

Item	Scope 1 (tCO2-e)*	Scope 2 (tCO2-e)**	Scope 3 (tCO2-e)	Total (tCO2-e)
Project Office	-	1,150	-	1,150
Site Office	-	1	-	1
Cranes / Lifts	986	-	-	986
Excavators	365	-	-	365
Generators	386	-	-	386
Concrete-related Plant	1,780	-	-	1,780
Compactors	85	-	-	85
Transport	825	-	-	825
Piling	3	-	-	3
Electric equipment	-	500	-	500
Materials and transport	-	-	36,114	36,120
Construction and demolition waste to landfill	-	-	43	43
Exterior lighting		22		
TOTAL - Construction	4,430	1,674	36,157	42,260
Monthly target (32 months duration)				1,319

* Biodiesel usage and associated emissions are being investigated
** 25% greenpower has been considered

Site C OSD Scope 1, 2 and 3 emissions summary

Item	Scope 1 (tCO2-e)*	Scope 2 (tCO2-e)**	Scope 3 (tCO2-e)	Total (tCO2-e)
Project Office	-	5	-	5
Site Office	-	-	-	-
Cranes / Lifts	111	-	-	111
Concrete-related Plant	3	-	-	3
Electric equipment	-	5	-	5
Materials and transport	-	-	2,329	2,329
Construction and demolition waste to landfill		-	2	2
Office waste			0.3	0.3
Exterior lighting	-	6		6
TOTAL - Construction	114	16	2,331	2,461
Monthly target (12 months duration)				206