

Sydney Harbour Tunnel

Asset Management Services

Annual Sustainability Report



September 2023

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Abbreviations

Term, Abbreviation	Definition
AM Deed	Asset Management Deed
AM Team	Asset Management Team
BAU	Business As Usual
CCRA	Climate Change Risk Adaption
CM	Corrective Maintenance
E&S Team	Environment and Sustainability Team – consisting of an Environment and Sustainability Manager and a Sustainability Coordinator and falling under the wider SHEQ team
GHG Emissions	Greenhouse Gas Emissions
ISCA/ ISC	Infrastructure Sustainability Council of Australia
LED	Light-emitting diode
NMI	National Meter Identifier
NPS	North Portal Switch
PVS	Pylon Ventilation Station
SME	Subject Matter Expert
SMP	Sustainability Management Plan
SPS	South Portal Switch Room
TACF	Tunnel Administration and control Facility Building
TfNSW	Transport for New South Wales
TVS	Tunnel Ventilation Station

1. Executive Summary

Ventia commenced Asset Management Services on the Sydney Harbour Tunnel (SHT) on September 1st, 2022. This report summarizes SHT's sustainability performance from commencement, through to 30th June 2023. Performance over these ten months has been measured against the Sustainability Management Plan (SMP) delivered by Ventia.

Ventia's Asset Management Services Contract with Transport for NSW (TfNSW) includes the provision of Asset Management (AM), Operations and Maintenance (O&M) and lifecycle refurbishment services for the SHT. This report highlights Ventia's consideration and application of sustainability in all aspects of the contract to date, as well the application of sustainability in all future implementations.

Objectives and requirements in the SMP which have been implemented, managed and measured, highlight SHT's improved sustainability performance. Using good governance and aligning to the Infrastructure Sustainability Council (ISC), Ventia have developed an emissions portfolio, creating a sound data base which allows for analysis and key strategic decisions to be made. Emissions are reported to the TfNSW on a monthly basis, highlighting performance trends and any potential operational anomalies.

Energy and resource efficiency has been identified as key target areas. As electricity contributes to 97% of SHT's emissions portfolio, multiple initiatives have been identified for implementation, including energy efficient Emergency and Exit lighting, LED replacement program and an energy review to better understand SHT electricity consumption.

Prior to Ventia taking over operational control of SHT, all waste ended up in landfill. Ventia introduced interim landfill diversion measures which has enabled Ventia to divert 18 tonnes of recycling from landfill by the end of the reporting period.

Following a waste audit completed in April 2023, recommendations have been made to the SHT for consideration. If key recommendations from the waste audit are implemented, the current waste diversion rate of 38% could be improved to 72% or more.

A water reuse strategy was delivered to TfNSW which outlined a number of potential avenues for future implementation. Currently Ventia are trialling a reduction in water intensive maintenance activities, for example wall-washing, which has been reduced from a frequency of every two months to quarterly.

Monthly innovations workshops, with Subject Matter Experts (SMEs) across the SHT contract, are being implemented to drive innovation. Thus far, some of the ideas from these workshops have been deemed feasible and have been implemented, including introducing more recycling streams, a procurement evaluation criteria document and trialling reducing wall washing activities. All of which have contributed positively to the project.

Ventia have accomplished a number of sustainability successes over the first ten months of operations and asset management along with acquiring and consolidating performance data to create a solid base line. The Environment and Sustainability team (E&S team) are dedicated to the SHT's continuous sustainability development.

2. Corporate Ventia

2.1 About Ventia

Ventia is a leading essential infrastructure services provider. We deliver services to over 100 clients across Australia and New Zealand, and more than 40% of our work is in regional and rural areas. With over 35,000 talented employees and subcontractors, we are a significant employer and are very proud of our achievements in Indigenous employment and broader community engagement.

We have extensive and expert capabilities across the full asset lifecycle including Operations & Maintenance, Soft Facilities Management, Hard Facilities Management, Environmental Services, Minor Capital Works and other solutions.

Our business is structured across four key sectors: Defence and Social Infrastructure, Infrastructure Services, Telecommunications, and Transport, each including several business units. We provide expertise across diverse industry segments through long-term contracts, partnering with a range of government agencies and blue-chip organisations.



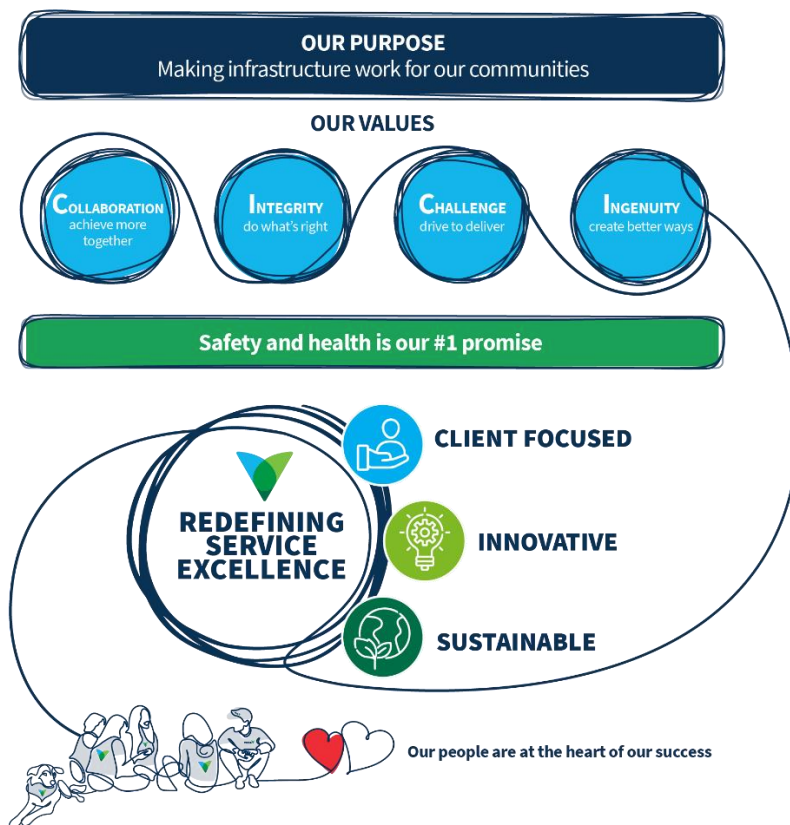
2.2 Ventia's strategy: Redefining service excellence

Ventia's purpose is making infrastructure work for its communities.

Guided by our values and committed to our number one promise of safety and health above all else, we recognise that every decision and action we take is an opportunity to improve the lives of people living in the communities we serve.

We bring our purpose to life by delivering on our strategy, to Redefine Service Excellence. We will achieve this through our simple and common-sense approach to be client focused, innovative and sustainable.

Our approach to sustainability encompasses the social impact we have with our employees, our communities, the environment, and the way we conduct our business.



2.3 Ventia's commitment to sustainability

Our Sustainability Strategy is to create a healthier planet, be people and community focused, and be ethical and accountable for everything we do.

The Sustainability Strategy has three pillars of focus:

- Environment
 - Achieve net zero emissions and reduce our clients' emissions
 - Manage climate resilience for developing a pathway to net zero emissions for us and our clients
 - Leading in environmental protection and enhancement solutions.
- Social
 - Our people are safe and healthy and are as diverse as our communities.

- We engage and respect the communities we work in.
- We create value through our local and diverse supply chain.
- Governance
 - Sustainability is embedded in our decision-making.
 - Trusted for our sustainable business practices.
 - Advancing sustainable and ethical procurement.

2.4 Ventia's Sustainability Report 2022

2022 Highlights

- Environment
 - 10.6% reduction in emissions from 2021
 - 109 EV and hybrid vehicles added to Ventia's fleet
- Social
 - 4.1% increase in female participation in the Executive Leadership Team
 - 27.8% increase in indigenous spend
 - 14% increase in TRIFR improvement
- Governance
 - 'Excellent' Infrastructure Sustainability Operations rating awarded for Western Roads Upgrade
 - 5-star GRESB sustainability rating achieved at EastLink
 - 93% completion of Code of Conduct training by full time employees

Future Focus

- Environment
 - Set our science based targets and create a detailed plan to achieve our emissions reduction goals
 - Continue to raise awareness of the work, skills and capabilities required for a Healthy Planet
 - Further mapping of Ventia's waste profile and execution of targeted reduction initiatives
- Social
 - Elevate culture by focusing on leadership behaviour
 - Continue to improve health and safety outcomes by simplifying processes, lifting governance, and investing in capability
 - Manage risks by fostering ownership at all levels
- Governance
 - Work closely with our partners to identify and target significant risks
 - Increase transparency and verification in data and reporting
 - Enhance data protection and information security

3. About SHT

The Sydney Harbour Tunnel (SHT) is the eastern bypass of the Sydney CBD. Figure 1 displays the asset network within its locality plan.

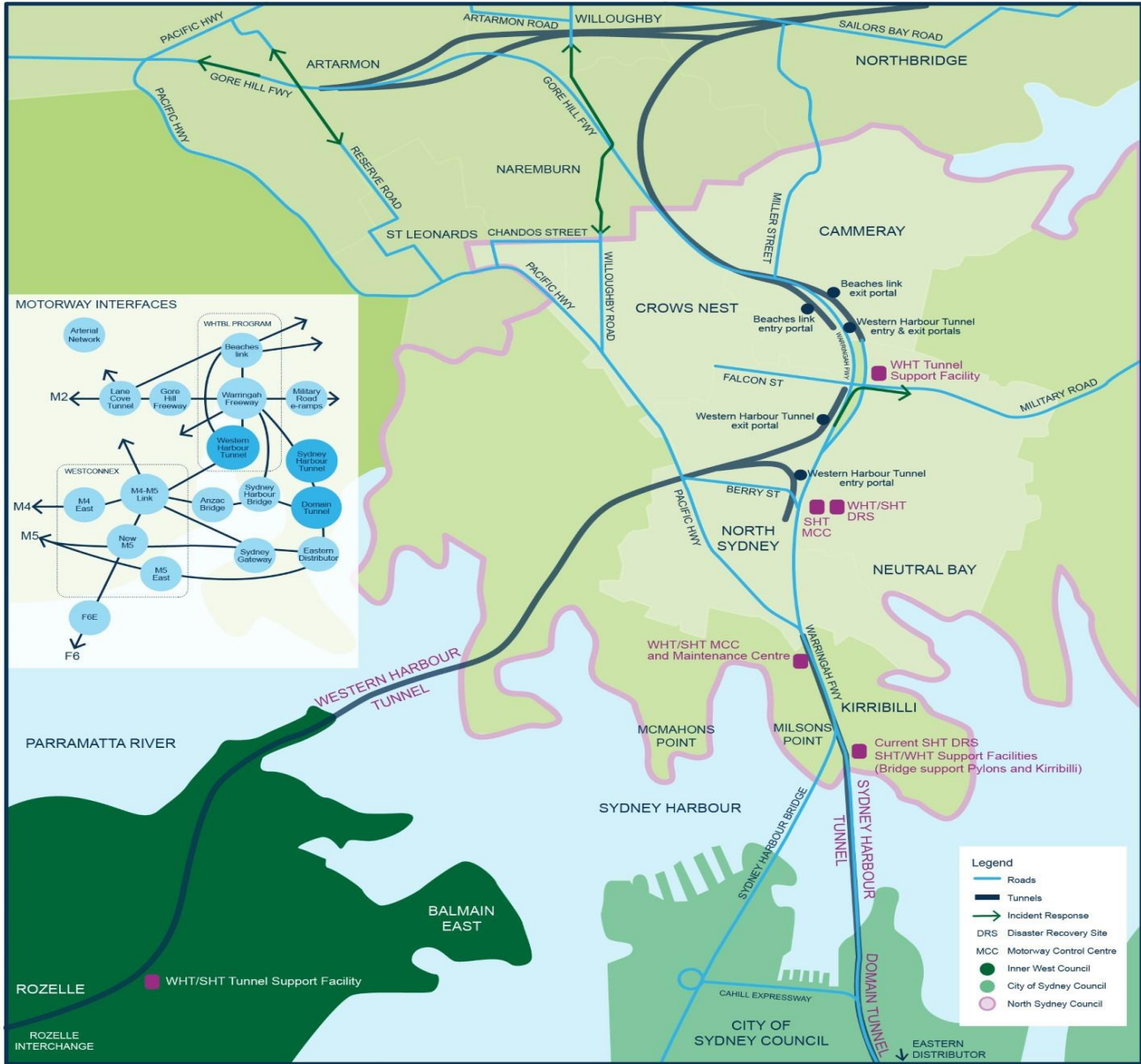


Figure 1 SHT locality map

The first under-harbour crossing, the SHT opened in 1992 and has a transverse ventilation system and bespoke control systems. The tunnel is approximately 2,300m from portal to portal. It consists of two Carriageways, each carrying two lanes of unidirectional traffic. The northern portals are located on the Warringah Expressway near High Street and the southern portals connect with the Cahill Expressway north of the Domain Tunnel. As illustrated in Figure 2, tunnel construction consists of cut and cover tunnel sections, driven land tunnel sections, tunnel ventilation station and transition sections and immersed tube (IMT) units.

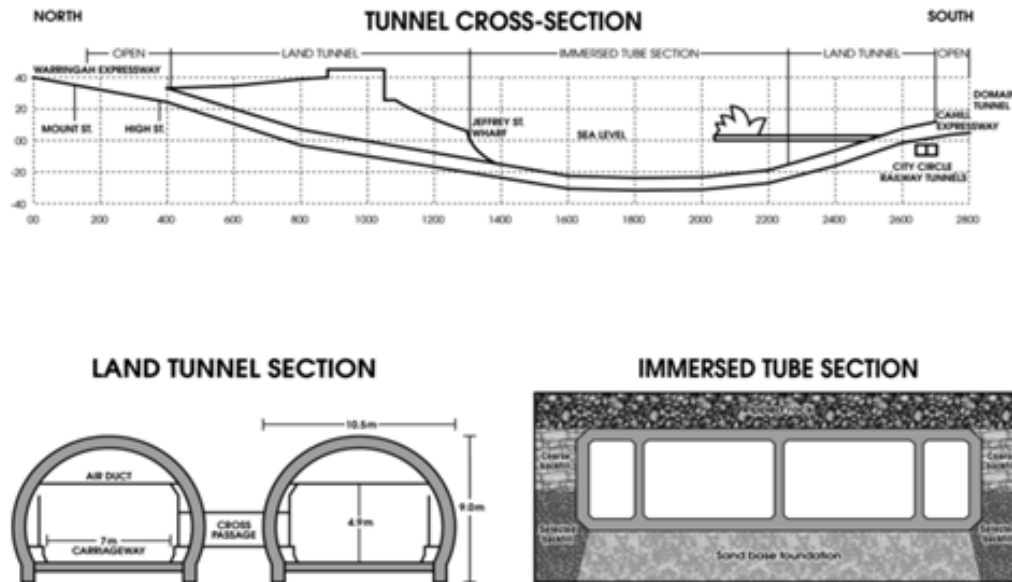


Figure 2 SHT Tunnel Construction

SHT Ancillary Structures & Facilities associated with the tunnel include:

- A Tunnel Ventilation Station (TVS)
- A Pylon Ventilation Station (PVS)
- North and South Portal Switch Rooms (NPS and SPS)
- Valve houses
- Tunnel Administration and Control Facility (TACF)

3.1 Purpose and Scope

The purpose of this report is to inform TfNSW of Ventia's sustainability performance over the past ten months of delivery. This report has been written in compliance with Condition E.8 of the AM services Contract.

This report covers the operational period from 1st September 2022 (First day of the Contract) until 30th June 2023.

3.2 Objectives and Deliverables

The Sustainability Objectives as described in the Asset Management (AM) Services Deed Schedule (E1.b) are used across the contract to ensure that sustainability is embedded in the AM Services to enhance environmental, social and economic outcomes across the project. These objectives are:

- Demonstrate sustainability leadership and continual improvement;
- Protect and enhance the natural environment and local heritage;
- Contribute to liveable communities (ease congestion, connect communities, integrate land use and transport planning and facilitate urban revitalisation);
- Optimise resource efficiency (materials, energy, water, land) and waste management;
- Increase resilience to future climate;
- Design allows for future transport needs (transport modes, connectivity for multi-modal extensions, access points);
- Sustainable procurement – whole of life environmental, social and economic considerations; and
- Maximise equitable training and employment opportunities.

The primary themes which dictate the deliverables of sustainability for the SHT are:

- Support the NSW Government's objective of cutting 50% of greenhouse gas emissions by 2030, compared to 2005 levels;
- Define a pathway to Net Zero emissions; and
- Obtain ISC Certification.

The deliverables which support the successful outcome of the above objectives and themes are highlighted below in Table 1.

Table 1 Sustainability Deliverables Tracker - ES2

Sustainability Deliverables	Progress (Sept 22-June 23)
Sustainability Management Plan (SMP)	<ul style="list-style-type: none"> Reviewed commentary and held workshops to work through documents KPI Roadmap delivered
Energy Efficiency & Greenhouse Gas (GHG) Emission Reduction Action Plan (Sub-Plan to the SMP)	<ul style="list-style-type: none"> Plan draft sent to TfNSW Scope 1 and 2 emissions included Detailed methodology and boundaries Initiative identification
Water Reuse Strategy	<ul style="list-style-type: none"> Strategy draft sent to TfNSW Water Balance Assessment Water Reuse Optioneering and Initiatives
Climate Change Adaption Implementation Plan	<ul style="list-style-type: none"> Climate Change Risk Assessment Workshop with leadership teams from SHT AM Team and TfNSW
Climate Change Risk Assessment and Climate Change Risk Register and Report	<ul style="list-style-type: none"> Climate Change Risk Assessment Workshop with leadership teams from SHT AM Team and TfNSW
SHT - Registered with Infrastructure Sustainability Council (ISC)	<ul style="list-style-type: none"> Expression of Interest and Registration forms complete SHT ISC Rating Registered ISC Rating Kick-off Workshop with SHT AM Team
ISC Certification Rating - 50 Points	<ul style="list-style-type: none"> Held ISC Project Strategy Meeting Weightings Assessment Drafted Procurement Pre-qualification Desktop Heritage Assessment Waste Audit and Final Destination Waste Audit with reports completed Energy Efficiency and GHG Emissions Reduction Action Plan
Sustainability Champions of the AM Team	<ul style="list-style-type: none"> Embed sustainability into Sustainability Champions Position Descriptions
Maintain ISO 14001 at Venita	<ul style="list-style-type: none"> ISO14001 Certificate
Tunnel Lighting LED Replacement Program	<ul style="list-style-type: none"> Initial Meeting with potential contractors Design briefs with contractors Trial product implemented
Monthly Environmental Reports	<ul style="list-style-type: none"> Monthly Reports delivered as a part of Reporting suite

4. Performance Overview

4.1 Governance

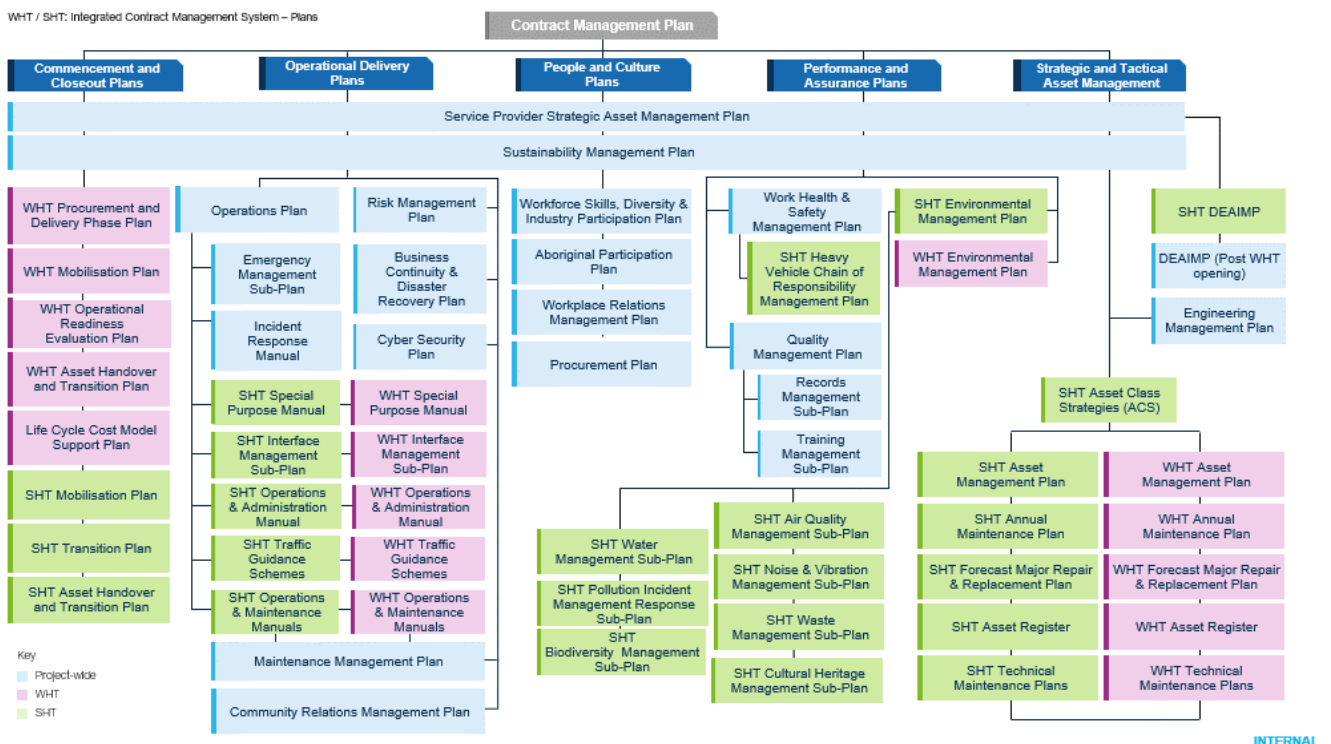
Internal

Key mechanisms that underly the SHT internal governance are detailed in the Contract Management System framework which includes the Contract Management Plans displayed below. Other internal mechanisms used on the contract include a Risk and Opportunities Document, Internal Audits, KPIs and in-field assurance.

Sustainability Management Plan

The Sustainability Management Plan (SMP) is the framework for managing sustainability objectives, requirements, and initiatives for the SHT. The SMP is one of two Management Plans including the Strategic Asset Management Plan which interface with other management plans and encompasses all aspects of the project, as shown in Figure 3. The SMP outlines how these objectives and requirements will be implemented, managed, measured, and reported throughout the life of the Contract. The SMP also includes a process for obtaining and maintaining the Contract-prescribed Infrastructure Sustainability Council (ISC) Operations Rating Certifications.

Figure 3 Organisational Plan structure at the SHT



Leadership

Ventia has nominated sustainability champions in key leadership positions, including the Environment and Sustainability Manager, Strategic Asset Manager, Operations Manager, Project Delivery Manager amongst others. These leaders champion sustainability development and delivery on the project and assist the E&S Team to ensure that sustainability is acknowledged, discussed and applied, at all levels and in all aspects of the project. Sustainability has been embedded into the Position Descriptions (PDs) of all roles across the project.

Sustainability and environmental training is embedded in as part of the project induction and targeted sustainability and environmental training is provided continually as required on the project. Currently, for the reporting period, over 82% of SHT staff have completed the Sustainability and Environmental Awareness Training.

Weekly Ventia E&S Team Meetings

Weekly internal sustainability meetings are held to discuss all matters relating to sustainability.

Regular attendees include:

- Ventia Sustainability Director
- Ventia SHT Network Manager
- Ventia SHT Manager
- Ventia Strategic Asset Manager
- Ventia Environment and Sustainability Manager
- Ventia Sustainability Co-ordinator
- Ventia ICMS Quality Manager

The Agenda for each meeting consists of but is not limited to the following items:

- General Buisness
- ISC Deliverables
- Key Sustainability Developments
- WHT Updates
- Sustainability updates
- Other

External

Below are several of the external mechanisms of governance implemented for the SHT.

Project Review Group

A monthly Project Review Group (PRG) is held at the TACF with TfNSW. The PRG is used to discuss progress over the recent month and escalate any issues, including future risks.

SME Meetings with TfNSW

Ventia hold a monthly meeting for all sustainability SMEs at the SHT and their counterparts at TfNSW. Monthly progress, risks and opportunities are discussed as well as any other matters arising.

Contractor Forum

A Contractor Forum occurred 20th April 2023 for contractors engaged on the SHT. A substantial portion discussed Sustainability requirements. This forum invited all contractors and sub-contractors to a morning tea to enhance relationships, discuss education and provide a space for collaboration. The event was well regarded and will continue into the future.



Figure 4 SHT's E&S Manager speaking at the Contractor forum in April 2023

Audits

External audits of the SHT are undertaken in accordance with the Audit Schedule. These include:

- ISO14001 audit – Annually
- Ventia sector audits – Annually
- Manangement Audits – for the ISC accreditation – Scheduled for early August 2023

The feedback received from these audits allows for progress and continual improvement at the SHT.

4.2 ISC

The Infrastructure Sustainability Council (ISC) is an organisation dedicated to promoting and advancing sustainability within the infrastructure sector. Founded with the aim of fostering environmentally, socially, and economically responsible practices, the ISC provides a framework and certification system that evaluates and rewards sustainable initiatives across infrastructure projects.



Figure 5 ISC logo

As per table R1 (3a/b) of the AM Deed, Ventia must; *register the operation and management of the WHT Motorway and SHT Motorway with the Infrastructure Sustainability Council (ISC), obtain ISC Certification for the SHT Motorway and achieve an ISC Operations Rating of 50 points within 3 years from contract commencement, 65 points by 2029, and 75 points by 2032.*

Ventia have made great progress towards the operations rating for the SHT. In the few short months since operating the SHT, Ventia have registered a One Year rating with ISC. Below outlines some of the work the E&S Team have achieved thus far which will contribute to the overall accreditation:

- Registration – including ROI, ISC Rating Agreement, and an Operations rating registered
- Internal ISC readiness audit – two internal audits have been completed over the past ten months
- Draft ISC Weightings Assessment
- Scope Proposal Form

- Base Case Development – developing a business as usual case to demonstrate enhancements to the SHT
- Scheduled External Audit and Workshop for the Management Credits (Man-4), August 2023
- Participated in knowledge sharing workshops at Ventia and sector level with TfNSW
- Nominated an Independent Sustainability Professional (ISP)

Related ISC events that will be occurring over the next period are detailed below.

Climate Change Risk Assessment Workshop

The Climate Change Risk Assessment (CCRA) Workshop has been scheduled for 4 August 2023.

CCRA measures are a focus of the E&S Team. A CCRA Workshop is currently under development and will include Ventia SHT Project SMEs and the management team to ensure all aspects of climate change are considered. The CCRA Workshop will be consistent with Australian Standard AS5334-2013 (Climate Change Adaptation for Settlements and Infrastructure – A risk-based approach).

The CCRA Workshop will also include participation of SMEs from TfNSW and external stakeholders.

Training

Nominated leaders within the SHT AM team are enrolled to participate in the IS Rating Skills Training, and the 2.1Vs Design and As-Built Training. These courses are offered and delivered by ISC to assist participants to gain a better understanding of the requirements and processes built into the accreditation. These courses are intended to enhance the knowledge base of sustainability on the project and ensure sustainability is always considered in every aspect of the SHT AM contract.

Team members to participate in the training will be:

- Ventia Network Manager
- Ventia SHT Manager
- Ventia ICMS Quality Manager
- Ventia Sustainability Coordinator



IS Rating Skills

Participant Guide

Figure 6 Participant Guidebook issued as part of the IS Rating Skills Training

4.3 Resource Efficiency

Fuel

Stationary and Transport fuel is sourced from three different suppliers for the SHT:

- Shell AU
- Caltex AU/Ampol AU
- LeasePlan AU

Ventia’s fuel suppliers invoice data is collectively received and managed by the Ventia Fuel Team. The Fuel Team save excel reports each month per supplier on a Sharepoint, accessible to the E&S Team. The E&S Team then duplicate these reports to accommodate validation and data manipulation.

Stationary

The SHT, to date, has consumed approximately 418L of Stationary Diesel since September 2022. Stationary Diesel is used for three backup generators that service the tunnel. Figure 7 illustrates the usage over past the ten months.

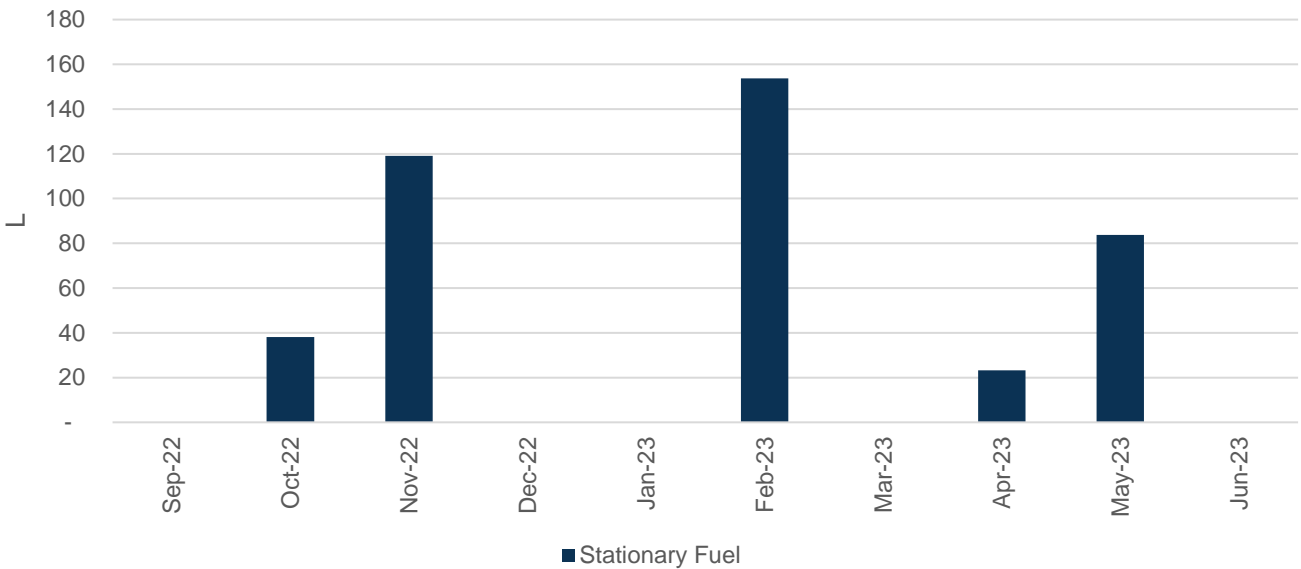


Figure 7 Stationary Fuel Consumption

Transport

All vehicles servicing the SHT Contract accept diesel fuel only. Over the reporting period, approximately 6,920L of Transport Diesel has been consumed. The total fuel captured is shared across four SHT uses, six onsite trucks and one scissor lift. Figure 8 below illustrates the consumption of diesel over the ten months.

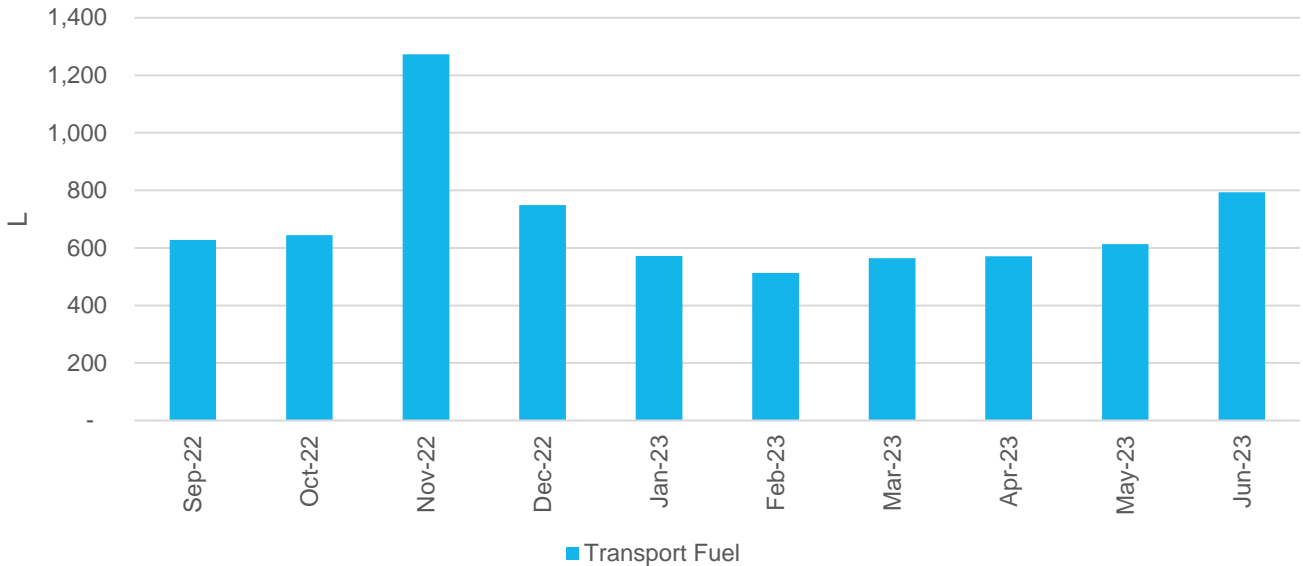


Figure 8 Transport Fuel Consumption

Electricity

Electricity is supplied to the SHT by a single retailer, Shell Energy. As part of the electricity agreement, 6% of all purchased electricity must be sourced from Greenpower. There is one National Meter Identifier (NMI) with five sub meters (present in the buildings footprint of the SHT - TVS, SPS, NPS and one in each of the two PVS's) at the Sydney Harbour Tunnel, which can show what buildings are consuming the most power and the breakdown of the electricity usage portfolio on site.

Electricity usage over the reporting period has remained fairly consistent since Ventia started managing the operations of the SHT. The average electricity usage per month is 371,227kWh. A total of 3,722,270kWh has been consumed since the beginning of September.

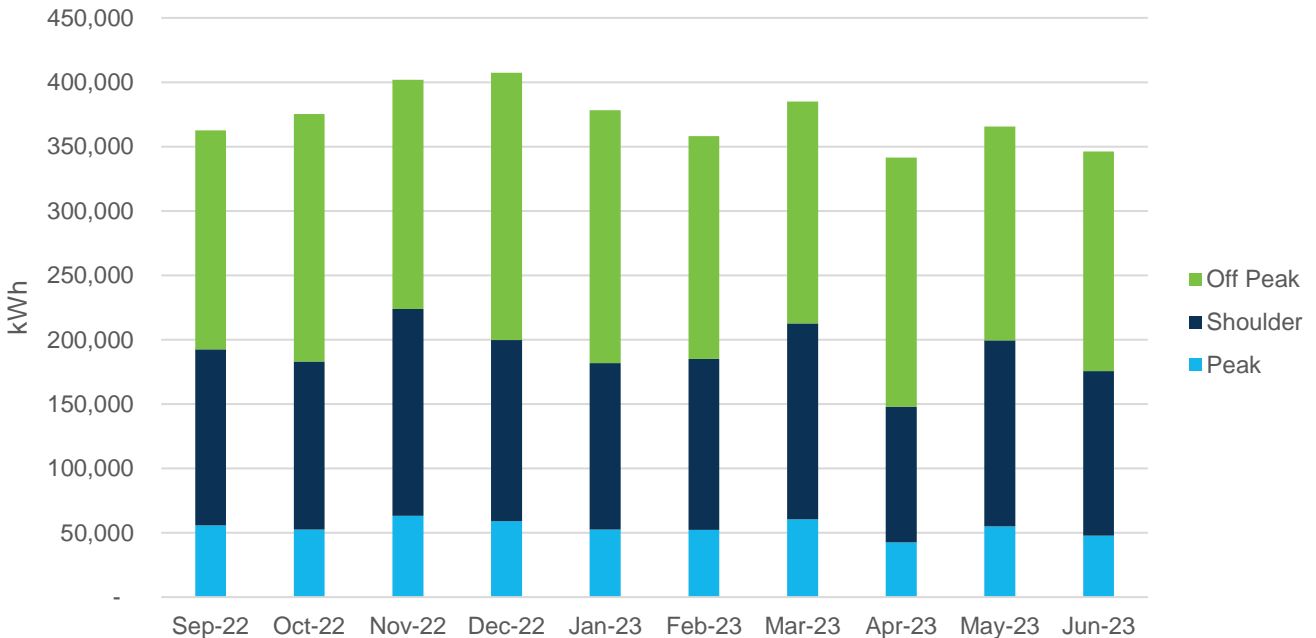


Figure 9 Electricity Consumption

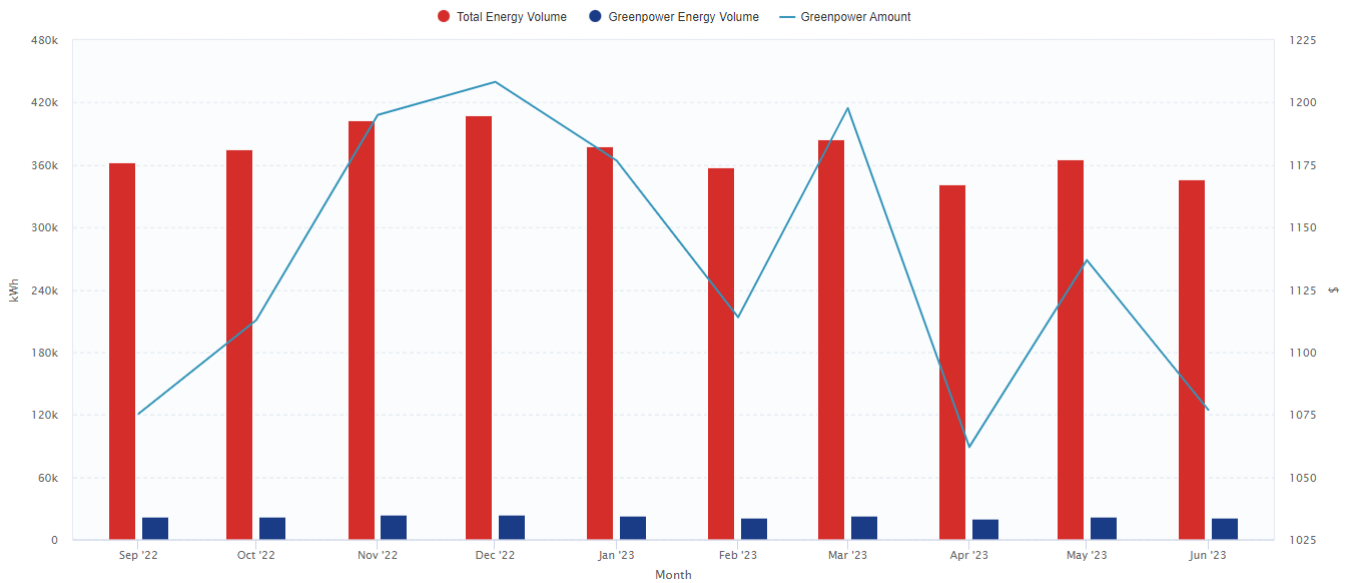


Figure 10 kWh of Greenpower used per month (Source: Shell Energy Portal)

Figure 10 shows the Greenpower usage compared to the non-Greenpower volume of energy per month. TfNSW’s commitment to 6% Greenpower is a strong initiative demonstrating the contracts GHG emissions reductions. Figure 10 illustrates dollar (\$) spend per month since September 2022.

As the SHT’s electricity consumption triggers the Large Market threshold (or commercial and industrial), monthly invoices are unbundled, providing a transparent breakdown of charges. These charges include energy charges, network charges, metering charges, service charges, environmental charges and market charges. Refer to Figure 11 below for a full breakdown of these monthly charges.

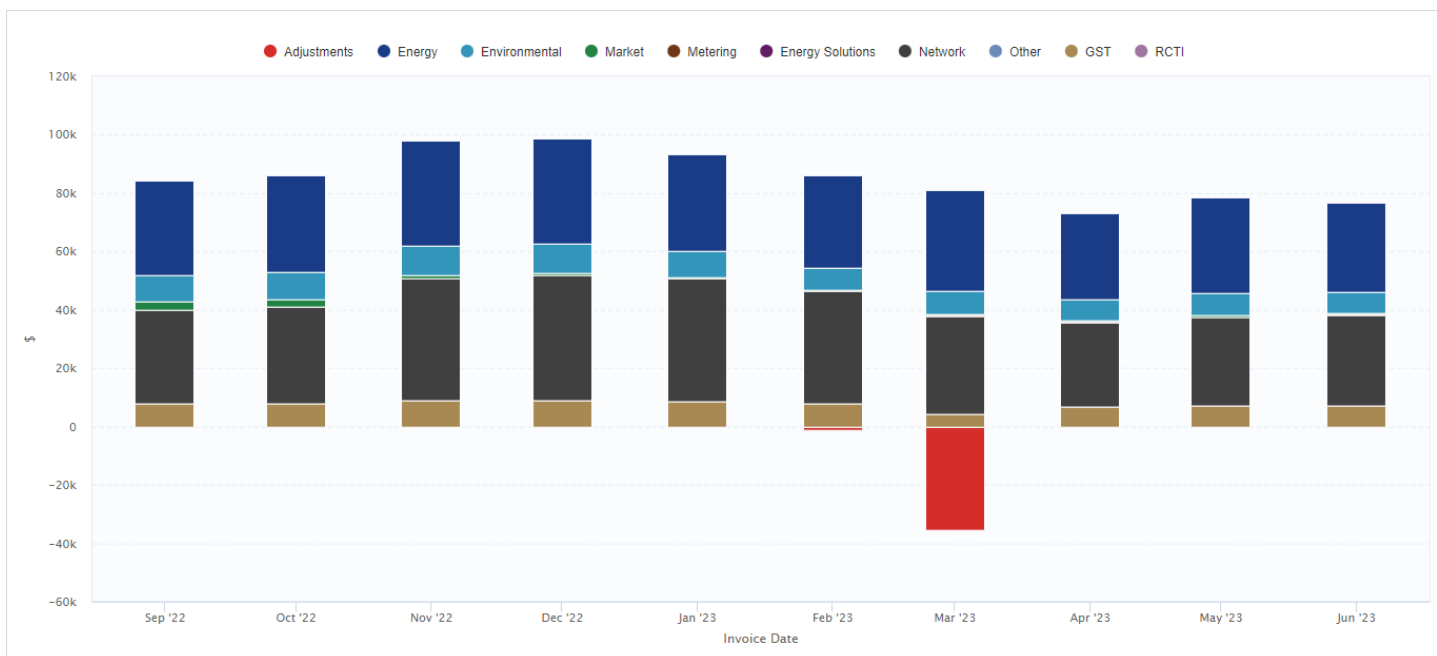


Figure 11 Monthly spend on electricity (Source: Shell Energy Portal)

Waste

Prior to Ventia servicing the SHT, all waste was sent to landfill, including recyclables such as cardboard and glass. Ventia have since introduced waste segregation for multiple waste streams to divert waste from landfill and limit waste to landfill.

Cleanaway is the waste contractor responsible for the collection of three waste streams; general municipal waste, paper & cardboard recycling and commingled recycling. Ventia has established the collection, sorting and removal of various items which had previously been incorrectly sent to landfill. Through this introduced process, items such as scrap steel, fluorescent tubes and batteries have been appropriately collected and recycled, diverting these materials from being sent to landfill.

Currently, only waste bin volume data is being provided within monthly reports, with limited resources available to provide waste collected weights. Cleanaway intend to install scales in their waste removal vehicles, thereby enabling the collection of weight data for collected waste (ETA November 2023). Discussions with Cleanaway are ongoing to expedite the installation of scales into waste removal vehicles.

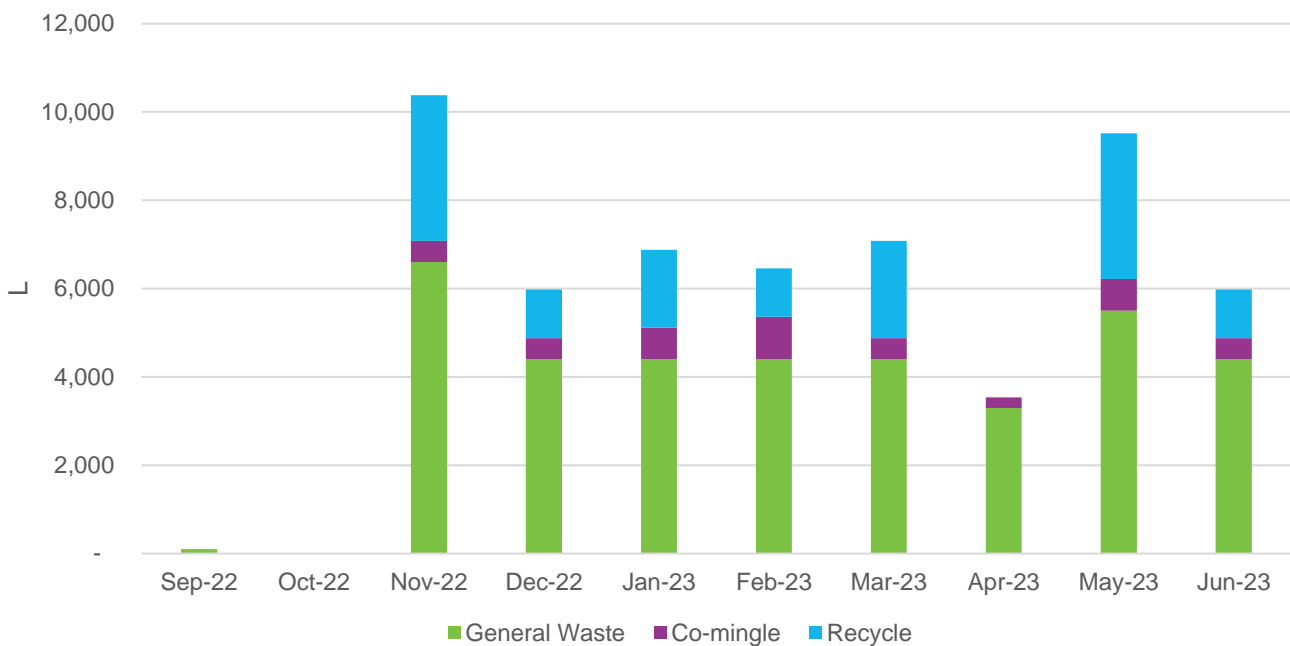


Figure 12 Consumption split into waste streams

Prior to November 2022, all waste produced at the TACF was taken directly to the Artarmon Resource Recovery Centre via an SHT truck, this was due to the lack of collection service available to staff at the TACF.

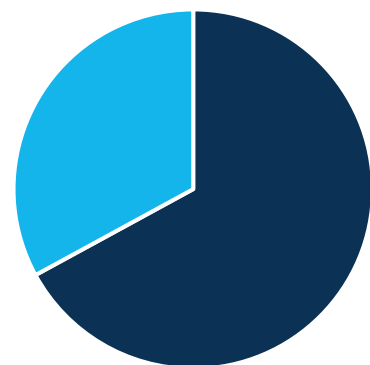


Figure 13 Percentage of waste ending up at landfill and recycling facilities

■ Landfill ■ Recycle

Recycling Rate

Within the reporting period of operations, Ventia has diverted over 18,000L from landfill, with approximately 33% of the total volume of waste now being diverted to recycling facilities. The data shows an upward trend in the Recycling Rate for the TACF at 130 Mount Street.

During a Waste Audit completed in April 2023, it was determined that the recycling rate has the potential to increase, and thereby reducing total waste sent to landfill, by simply reducing contamination across all diversion waste streams through education and improving staff awareness.

Recommendations addressed in the Waste Audit, combined with a follow-up meeting with the asset team and office staff at the TACF, produced the following next steps, which will be implemented over the next reporting period:

- Remove all under desk bins
- Implement additional stream bins per level of the TACF
- Revising the waste schedule (increase recycling collections to weekly rather than current fortnightly collections)
- Increase staff education – toolbox/emails
- Everyday Zero technology (Refer to Initiatives section below)
- Bins for ad-hoc streams - batteries, HVAC filter mats, fluorescent lights
- Set SHT Waste Targets

Ventia are also working on procuring recycled (non-virgin) items and materials to be used throughout the SHT. These initiatives are being explored and a number of items will be introduced over the next reporting period, as well as data on materials avoided. Some additional procurement focuses will be towards recycled paper and PPE. In the Initiatives section below, there is a more comprehensive look into the Sustainable PPE.

Emissions

Electricity Emissions

The SHT produced a total of 2,799 tco2-e emissions generated from the purchasing of electricity from the grid during the reporting period. Of that figure, 91% (2,554 tco2-e) of these emissions are comprised of scope 2 emissions, whilst the remaining 9% (245 tco2-e) of emissions were scope 3.

Scope 2 emission factors used to calculate tco2-e are obtained from the National Greenhouse and Energy Reporting (NGER) Determination annually. The scope 3 emissions factors used to calculate tco2-e are obtained from the National Greenhouse Reporting (NGA) Factors. In NSW for FY 2022, the Emissions Factors are 0.73 and 0.06 respectively.

As 6% of electricity is purchased as Greenpower, only 94% of the electricity consumption has associated emissions. This is due to the fact that no emissions are generated with the purchase of certified Greenpower. Total emissions therefore are only calculated on electricity which was purchased using non-renewable sources from the grid like brown coal.

Table 2 Scope 2 and 3 emissions associated with electricity usage monthly

Month	Scope 2 (tco2-e)	Scope 3 (tco2-e)
2022 - September	249	24
2022 - October	258	25
2022 - November	276	26

2022 - December	280	27
2023 - January	260	25
2023 - February	246	24
2023 - March	264	25
2023 - April	234	22
2023 - May	251	24
2023 - June	238	23
Total (t CO2-e)	2,554	245

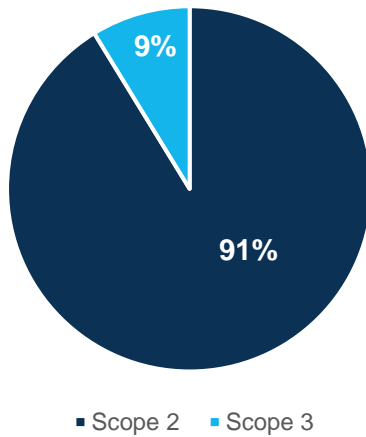


Figure 14 Breakdown of scope 2 and scope 3 electricity emissions

Fuel Emissions

The SHT generated a total of 20.07 tco2-e scope 1 emissions through the consumption of vehicle fuel during September 2022 through to June 2023. The combustion of stationary fuel produced 1.071 tco2-e of emissions, whilst transport fuel combusted the remaining 19 tco2-e emissions.

Scope 3 emissions for stationary and transport fuel totalled 0.06 and 0.96 tco2-e, respectively.

Scope 1 emission factors used to calculate tco2-e are obtained from the National Greenhouse and Energy Reporting (NGER) Determination, FY22. The scope 3 emissions factors used to calculate tco2-e are obtained from the National Greenhouse Reporting (NGA) Factors. Stationary fuel and Transport fuel require different emission factors for scope 1, due to end usage, whilst scope 3 factors remain the same for both types. For FY 2022, the emission factors were 70.2 and 70.41 respectively, and 17.3 for Scope 3.

Table 3 Scope 1 and 3 emissions associated with fuel consumption monthly

Date	Stationary		Transport	
	Scope 1 (tco2-e)	Scope 3 (tco2-e)	Scope 1 (tco2-e)	Scope 3 (tco2-e)
2022 - September	-	-	2	0.087
2022 - October	0.103	0.005	2	0.089
2022 - November	0.323	0.016	3	0.177
2022 - December	-	-	2	0.104
2023 - January	-	-	2	0.079
2023 - February	0.417	0.021	1	0.071
2023 - March	-	-	2	0.078
2023 - April	-	-	2	0.082

2023 - May	0.228	0.012	2	0.085
2023 - June	-	-	2	0.110
Total (t CO2-e)	1.071	0.054	19	0.962

Waste Emissions

The SHT generated a total of 60 tco2-e scope 3 emissions from September 2022 through to June 2023.

Scope 3 emissions factors used to calculate tco2-e are obtained from the National Greenhouse Reporting (NGA) Factors. The emissions factor for general waste for the 2022 FY is 1.6. Emissions associated with waste are only generated through the breakdown of solid wastes in landfill (as well as the incineration and burning of waste), generating methane which is released into the atmosphere. Therefore, there are no associated emissions with waste diverted from landfill (recycled waste).

Refer to Table 4 below for a full breakdown of monthly waste emissions.

Table 4 Scope 3 emissions associated with Waste

Year/Month	Scope 3 (tco2-e)
2022 - September	0.16
2022 - October	*
2022 - November	10.56
2022 - December	7.04
2023 - January	7.04
2023 - February	7.04
2023 - March	7.04
2023 - April	5.28
2023 - May	8.8
2023 - June	7.04
Total (t CO2-e)	60

*No waste was collected in Oct-22; therefore no associated emissions are included for that month.

Total Emissions

Total Emissions generated by the SHT, from September 2022 through to the end of June 2023, equate to **2,880 t CO2 -e**.

Scope 2 emissions were by far the largest contributor to total emissions, accounting for 91% of all emissions as shown in Table 5 and Figure 15.

Table 5 below shows the breakdown of total emissions generated by the SHT. Emissions produced through the purchasing of electricity contributes to 97% of the total emissions portfolio.

Table 5 Breakdown of emissions per resource

Sept 22 – Jun 23	Scope 1	Scope 2	Scope 3	Total Emissions
Electricity	-	2,554	245	2,799
Stationary Fuel	1.071	-	0.054	1
Transport Fuel	19	-	0.962	20

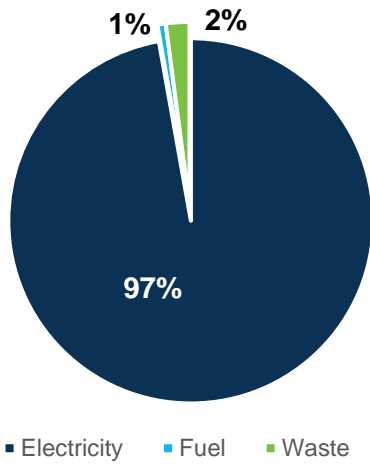


Figure 15 Breakdown of emissions per resource.

Water

Currently, the sole source of water at the SHT is potable water (mains water) supplied by a single retailer, Sydney Water. An invoice is provided to Ventia quarterly for data capture and analysis.

Two buildings receive water invoices from Sydney Water. The TACF at 130 Mount Street accounts for the majority of the potable water used. The other, the Macquarie Street Valve House is connected to a water supply due to it having a Fire Indicator Panel inside. This forms part of the Fire Deluge system. All invoices from September onwards have shown that this building only is charged for the minimum usage of 1KL a quarter.

As potable water is currently the only water used throughout the SHT; Ventia are exploring options for other water sources and water reuse on the SHT. This is outlined in the Water Reuse Strategy, which was delivered to TfNSW in June 2023.

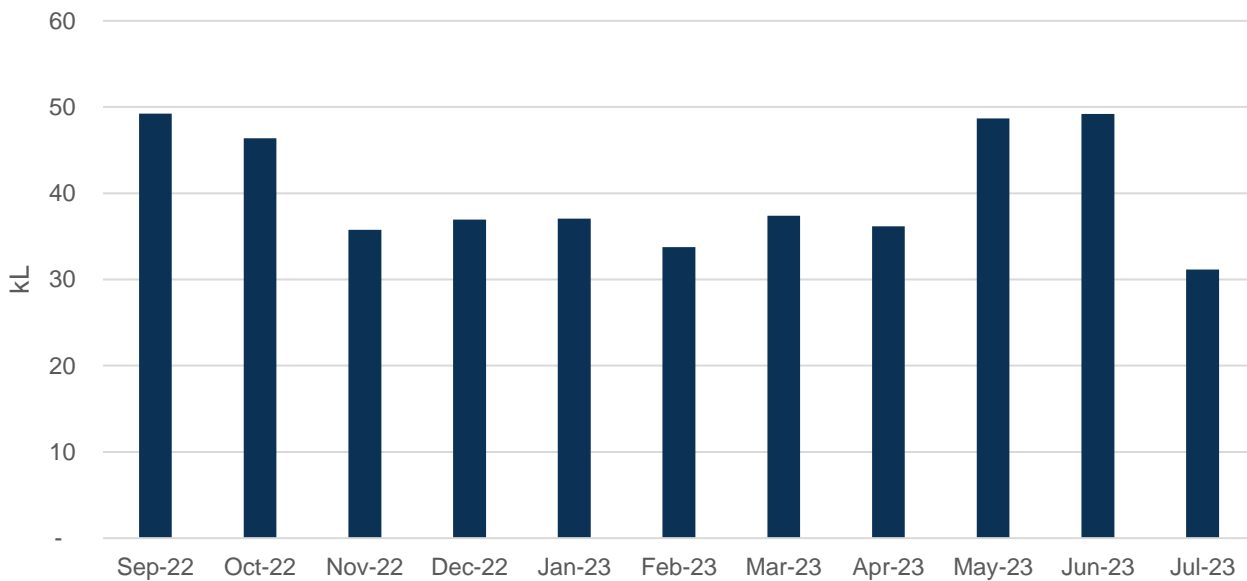


Figure 16 Monthly breakdown of potable water consumption

4.4 Initiatives

Energy

Energy Efficiency and Greenhouse Gas Emissions Reduction Action Plan

In June 2023, Ventia created an Energy Efficiency and Greenhouse Gas Emissions Reduction Action Plan (EEGHG), to detail initiatives to assist TfNSW move towards Net Zero emissions by 2050. This plan will support the identification of feasible initiatives, and provide guidelines for the ongoing maintenance of the SHT's GHG emissions and resource reporting. The Action Plan additionally provides energy efficiency measures for SHT specific projects, including refurbishing and refitting Motorway facilities.

The presentation of initiatives to TfNSW allows the client to review and query proposals that are designed to lower energy and related greenhouse gas emissions, consistent with the NSW Climate Change Policy Framework and Future Transport Strategy.

Energy Review and Sensor technology

An energy review, beginning with a type one audit (Desktop) will increase the knowledge of electricity consumption per classification across the asset. This will allow future innovations to be more accurate and targeted to products or systems that can enhance the entire asset. The E&S team are currently working with a renewable energy engineer to provide expertise. Once the audit is complete, the SHT AM team can provide more direction with potentially advancing Internet of Things technologies including sensor upgrades.

LED Lighting Upgrade

Reducing electricity consumption is a key focus for the SHT, as total emissions produced are generated primarily from purchasing electricity from the grid. The SHT AM team have met with potential contractors for the replacement of the current lighting fixtures and discussed design briefs. Two trial products are currently in the tunnel to aid assessing the feasibility of the upgrade. A tender is being drafted and will go out within the coming months.

The upgrade will have many benefits to users and the SHT such as:

- improve safety for motorists, by making the driving task easier
- control room benefits from higher quality CCTV images
- incident response personnel and emergency services benefit from brighter, whiter lighting
- LED luminaires produce less GHG emissions
- reduction in overall total lighting tubes needed due to their much higher Lux (luminous flux per unit area) (see Figure 17). As such, only every second light tube needs to be installed.



Figure 17 Trial lights currently in the SHT

Energy Efficient Emergency and Exit Lighting

Ventia have invited a number of contractors to the SHT for site visits to understand the scope of works for a potential upgrade of emergency and exit lighting. The E&S Team have also conducted a factory visit to a producer of this life saving technology to understand the benefits and life cycle analysis. The switch to lithium batteries and connected network technology in the lighting can increase the life span exponentially. There can be significant reduction in maintenance and energy costs, service life (from 4 years to 10 years+) and reducing batteries and fittings ending up in landfill. Ventia's E&S team are exploring this option as a potential initiative to bring forward to TfNSW as part of the EEGHG plan. This will be the first initiative summary submission, put to TfNSW before the end of 2023.



Figure 18 E&S team tour of energy efficient LED company factory, Clevertronics

Electric Vehicles

The E&S team are working with other SMEs in the AM team and Ventia Group to understand current and future opportunities to replace diesel across all plant and equipment types. 4.0% of all Ventia plant and vehicles are now electric, hybrid or hydrogen-fuelled. Electrifying the SHT fleet presents some challenges, including the availability of electric models to replace plant and equipment that are suitable for the operations as well as ensuring availability and proximity of charging infrastructure. However, transitioning to an all-electric fleet will ultimately be important for delivering on our commitments to TfNSW and the community. A high level Transition Plan will be submitted to TfNSW in FY23/24.



Figure 19 Ventia's fully electric TMA on another project (Source: Ventia.com)

Solar Feasibility Assessment

A solar feasibility assessment expected to be completed by August 2023. The study will assess feasibility of installing a solar photovoltaic (PV) system for the SHT.

Water

Water Reuse Strategy

A Water Reuse Strategy has been developed by Ventia and forwarded to TfNSW in June 2023. This strategy includes a water balance study and assessed the quantity of water potentially available, stored, used, and lost in the SHT infrastructure system. It also contributes to the rating delivery process for obtaining and maintaining contract prescribed ISC Operations Rating Certifications.

The Water Balance study undertaken as part of the Strategy will assist the future development of initiatives for improving water conservation and efficiency on the asset.

Waste

Waste Audit

A waste audit was completed by Ventia in April 2023. This audit helped expatiate on the waste regimen and processes currently prevailing at the SHT and identify areas where improvements could be made. A desktop assessment, on-site audit and final destination off-site waste audit were completed as a part of this process.

The desktop assessment analysed 13 months of data for the site as supplied by the waste services provider Cleanaway. The assessments included the frequency and service arrangements of each waste stream.

The second phase of the audit included an assessment of internal and external facilities and where applicable, staff behaviours. A visual inspection of the office floor waste stations, site signage and an assessment of staff utilisation of current infrastructure was conducted simultaneously to the weighed audit.

The third phase of the audit was to physically verify the final destination of waste collected (the facility where the waste is transformed into another product or material or to landfill).

Two final destinations were inspected:

- Lucas Heights Resource Recovery Centre (General Waste)
- Smithfield Paper Mill (Paper & Cardboard)

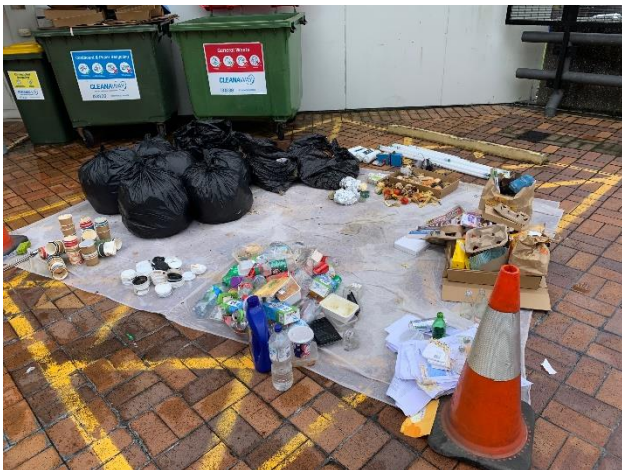


Figure 20 Sorting the TACF general waste bins



Figure 21 Waste Auditing Team visiting the final destinations, Lucas Heights Resource Recovery Centre

Everyday Zero

THE SHT project team are currently exploring trialling a new AI technology by Everyday Zero to assist in the reduction of waste contamination of waste stream bins. The Everyday Zero system, when placed behind a set of bins, identifies the waste and provides education on how to correctly dispose of the waste item based on its materials. The technology has the ability to recognise when waste is incorrectly placed into the wrong waste stream bin.

The SHT team are investigating the potential waste diversion improvements through this technology and product, as well as the added education this technology provides to staff. Following this investigation, and analysis on waste trends from pre installation to post installation, this initiative could lead to potential engagement with local suppliers, demonstrating Ventia's corporate procurement strategy.

Ventia are currently setting up the groundwork to work with the team at Everyday Zero and the TACF staff to implement this great technology over the next reporting period.

Other

Sustainable Procurement

As the initial vendor contracts approach expiry, the next round of procurement will commence. In this cycle, the procurement process will actively seek a broader selection of vendors, ensuring they can meet a range of environmental and social criteria in addition to economic (price and delivery requirements).

A robust process to assess responses to packages of work (e.g. fire protection services) has been developed along with standard assessment criteria, which the vendors' submission will be assessed against. Sustainability assessment criteria have been developed and will be incorporated into the vendor assessment process in the form of a weightings assessment. Some of the criteria requirements include a Sustainability Policy, Strategies or a Sustainability Plan, Sustainability Performance Monitoring and Sustainability Training.

The potential for Power BI and data analytics applications to supply chain management, specific to the asset management operations, will also continue to be explored. Insights from this analytics process will be applied in formulating new frameworks to optimise sustainable procurement for the asset.

Innovation Workshops

The E&S Team commenced monthly workshops to drive innovation within the wider team at the beginning of the contract, September 2022. The attendees included in the workshops are from all aspects of the SHT AM team, including office staff, managers and leaders of maintenance crews. Sustainability innovations can be found in every sector of the contract and having these meetings has already brought about a few great ideas that we are working with to turn into business cases. Some of these have included:

- EV Charging Station and EV fleet vehicles (explored above)
- Solar Panels and cool roofs (discussed above)
- Recycling excess scrap steel off-site
- Rain Water Harvesting
- Power factor correction units (PCF units)
- Recycling products – ink cartridges, PPE, office materials
- Strategic changes to maintenance activities – frequency and work methods

Sydney Institute of Marine Sciences

Ventia are exploring collaboration opportunities with the Sydney Institute of Marine Sciences (SIMS) as a custodian of the Sydney Harbour. The Institute invited some SMEs onsite to showcase some of their past, current and future projects. Ventia have also extended invites to key members of SIMS to the North Sydney and TACF offices to discuss future collaborations. As part of initial collaboration efforts, a few employees of the SHT undertook 'Storm Squad' duties in July 2023. This involved collecting Posidonia (sea grass) fragments after a recent storm event as part of SIMS 'Operation Posidonia' efforts. Ventia Storm Squad, will continue to help gather fragments of Posidonia Australis for replanting. The re-planting of the sea grass has shown to bring native water animal and fish species to the areas. The goal is to re-plant seagrass in significant numbers within the Sydney Harbour. A number of meetings have occurred between SIMS and the SHT team to explore some other ways to enhance the natural environment of the harbour and embrace being custodians of the harbour.



Figure 22 SHT SMEs visiting SIMS in May 2023

Ocean Watch

OceanWatch are another partner Ventia are excited to join forces with over the next reporting period. A number of meetings occurred in the interim to understand some of the potential projects the SHT team can help undertake. The Glebe Wetland Restoration at the Fish Markets has been identified as a promising project. Ventia are currently assessing feasibility of this project and will liaise with OceanWatch further over the coming months.



OCEANWATCH
AUSTRALIA

Figure 23 OceanWatch logo

Desktop Heritage Study

A desktop heritage study was completed to reassess the historical and cultural heritage of the SHT's surrounding area, studying different registers and lists to better understand the different aspects of heritage thriving in Sydney. Additionally, it aimed to examine the asset management's activities in the tunnel and their potential effects on cultural heritage items.

Two study areas were identified for assessing potential impacts: a 50m radius for the Direct Impact Zone and a 2.5km radius at the tunnel entrances and exits for Indirect Impact Zone.

To enhance comprehension of the cultural significance, the historical natural, Indigenous, and post-European settlement histories were explored. This endeavor aimed to provide the AM team with a comprehensive understanding of the importance of the sites and their proximity to the SHT.

Key lists and registers explored were:

- UNESCO Registry

- Australian EPBC Act
- The (Australian) National Heritage List
- Aboriginal Heritage Information Management System (AHIMS)
- NSW State Heritage List
- Australian Natural Heritage Charter
- The Burra Charter

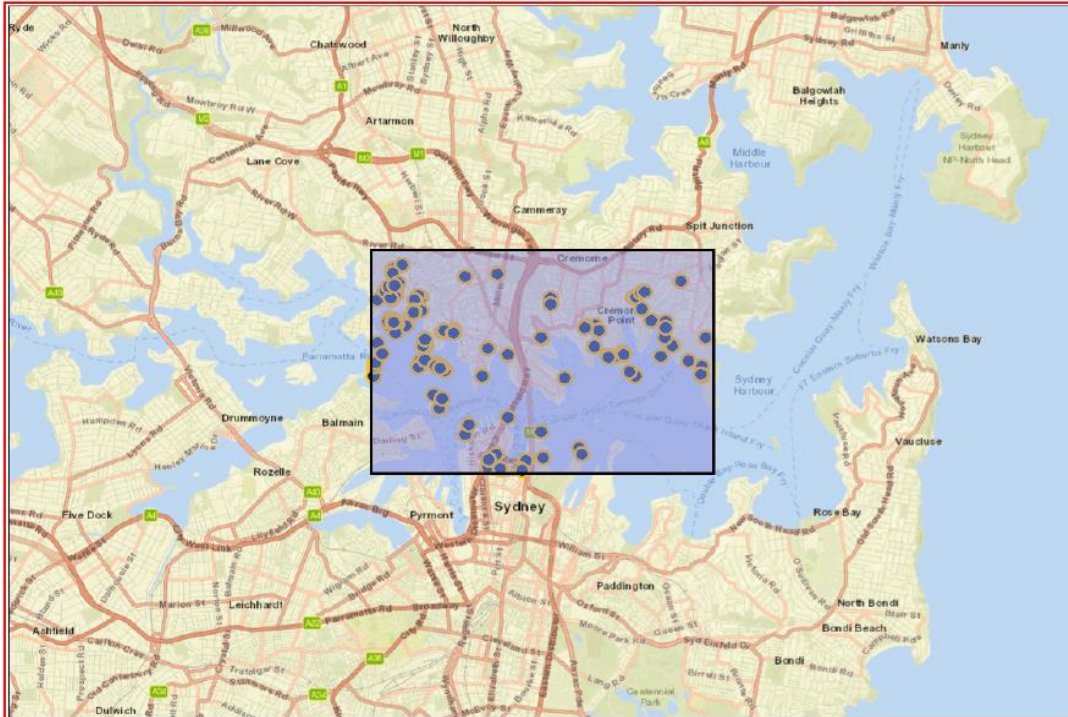


Figure 24 AHIMS basic search showing more than 119 recorded Aboriginal sites

Recycled PPE

Sustainable PPE (Bisley.positive) is being introduced at the Sydney Harbour Tunnel and will replace existing PPE over time, as new workwear is required. Our PPE supplier, Outback Global, are now stocking the Bisley.positive range and are also a SupplyNation certified business.

Bisley began a great journey, in 2019, to transform their business and lead the charge in sustainable PPE. Their goal is to have zero virgin plastics in their supply chain by 2024. To help create their workwear they are using certified recycled polyester yarn, made from plastic bottles, that has been shredded, melted and then spun into yarn.

The Bisley.positive range are also aligned with four UN Sustainable Development Goals (9,10,12 and 15), have developed a Modern Slavery Statement and are focused on creating a circular economy.

Everything from recycled buttons to the packaging of the clothes has been considered. Bisley have teamed up with Arch and Hook to upcycle approximately 38 tonnes of marine waste into hangers. As well as introducing the POLLASTIC packaging which is made from 100% recycled ocean-bound, post-consumer poly bags.



Figure 25 New Recycled PPE range



BP6088T

Bisley Recycle Taped
Biomotion Pant



BPCL6088T

Bisley Recycle Women's
Taped Biomotion Cargo
Work Pant



BSX7025

Bisley Recycle Reprave
Work Socks (3X Pack)



BK6902

Bisley Recycle Fix & Move™
Pullover Hoodie

Figure 26 Recycled items available

5. Forward Outlook

Venita's understanding of the SHT has grown significantly and after nearly one full year of operations we have come away with many lessons learnt. Below are some of the key events and activities to be undertaken over FY2023.

- Assessment of Embodied Carbon Tool (TfNSW Carbon Tool)
- Electric Vehicle Fleet Strategy Development – Report following
- Finalising a contractor for the Tunnel Lighting LED Replacement Program
- Climate Change Adaptation and Implementation Plan
- Continued Sub-contractor engagement
- Team collaboration with TfNSW and other SHT stewards
- Increase application of data analytics in sustainability management
- Energy Audits
- Continuing the IS Rating process

Appendix A – Waste Audit Executive Summary

1 EXECUTIVE SUMMARY

This report details the observations from the waste audit completed at 130 Mount St, North Sydney on 20th of April 2023, including current waste practices and features in place, and recommendations on how they can be improved.

Through inspecting and weighing the facilities internal bins, and the external skip bins, it was found that out of the 92.55 kg's of waste audited, 38% of total waste was incorrectly sent to landfill by staff instead of being recycled with the existing infrastructure available. Within the facility, there were no waste stream specific bins for staff to deposit recyclable waste, with majority of desks containing under desk bins. These under desk bins had no signs or rules dictating what waste was acceptable, and as a result any recyclable items placed in these bins were contaminated with general waste, which was evident in the external recycling skip bins. Food and Organic waste generated by staff contributed to 17% of the total waste generated, however there was no option for staff to dispose of this waste correctly, identifying a clear need for the introduction of a food and organics specific waste bin. Without adequate waste stream bins with clear signs provided, and the convenience of under desk bins, staff waste knowledge and behaviours reflect the current state of the waste management and behaviours within the facility. This is demonstrated through the poor recycling rate and significant contamination rate within all current waste streams.

The key findings of this audit demonstrated that while there is some basic waste management infrastructure in place such as separate external bins for the three major waste streams on site (general waste, commingled recycling and paper and cardboard recycling), there are also several areas for improvement.

These areas of improvement can be addressed through the addition of strategic measures such as a Waste Management Policy, Target Setting, staff education programs, as well as operational changes, including the introduction of communal office bins, food and organics bins and secure paper waste bins. Additionally, it is recommended that under desk bins are removed and the commingled waste bin schedule is altered. If these recommendations are implemented, the TACF could improve the current diversion rate of 38% to 72%. The recommendations contained within this report should be considered to improve the general waste management, staff education and the Recycling Rate at the site.

The recommendations in this report have been provided to Transport for New South Wales (TfNSW) and the Asset Management (AM) Team for the Sydney Harbour Tunnel (SHT) for consideration and implementation. Any waste projects and programs resulting from this Audit Report will be considered an additional service.