

Construction Compliance Report:

28 November 2022 – 22 June 2023

M4-M5 Link Mainline Tunnels



WestConnex M4-M5 Link Tunnels



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Document Control

Approval and authorisation

Title	M4-M5 Link Mainline Tunnels Construction Compliance Report: 28 November 2022 – 22 June 2023
Document No/Ref	M4M5-LSBJ-PRW-EN-GE01-RPT-0080-00
Document Path	

Version control

Revision	Date	Description
00	31/05/2023	Draft for WCX / TfNSW input
01	20/07/2023	Updated for distribution
02	11/08/2023	Final update

Internal review

	Name	Position	Date	Signed/Authorised
Review		Environment and Sustainability Manager		
Approval		DLP Manager		

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Abbreviations/Glossary

Abbreviation	Expanded text
AA	Acoustic Advisor
ASBJV	Acciona Samsung Bouygues Joint Venture
CCR	Construction Compliance Report
CEMP	Construction Environmental Management Plan
CNVMP	Construction Noise and Vibration Monitoring Program
CRCP	Continuously Reinforced Concrete Pavement
CSSI	Critical State Significant Infrastructure
CoA	Conditions of Approval
CTEAP	Compliance Tracking and Environmental Audit Program
DDMP	Depositional Dust Monitoring Program
DPE	Department of Planning and Environment
EC	Electrical Conductivity
EIS	Environmental Impact Statement
EMS	Environmental Management System
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence
Environmental Representative (ER)	A suitably qualified and experienced person independent of project design and construction personnel employed for the duration of construction. The principal point of advice in relation to all questions and complaints concerning environmental performance.
Environmental impact	Defined by AS/NZS ISO 14001:2015 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects.
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW)
EWMS	Environmental Work Methods Statements
GWMP	Groundwater Monitoring Program
HSS	Hawkesbury Sandstone
HV	Heavy Vehicle
Incident	An occurrence or set of circumstances that causes, or threatens to cause, material harm to the environment, community or any member of the community, being actual or potential harm to the health or safety of human beings or to threatened species, endangered ecological communities or ecosystems that is not trivial.
ISO	International Organisation for Standards
M&E	Mechanical and electrical

Abbreviation	Expanded text
Minister, the	Minister of the NSW Department of Planning and Environment (or delegate)
NCR	Non-Conformance
NSW	New South Wales
NZS	New Zealand Standard
NTU	Nephelometric Turbidity Units
NVMP	Noise and Vibration Management Sub-Plan
OBS	Observation
OFI	Opportunity for Improvement
PBR	Pymont Bridge Road civil and tunnel site
POEO Act	<i>Protection of the Environment Operations Act 1997 (NSW)</i>
PREW	Parramatta Road East and West civil sites
Project, the	M4-M5 Link Mainline Tunnels
Roads and Maritime	Roads and Maritime Services (now Transport for New South Wales)
SPIR	Submissions and Preferred Infrastructure Report
SSI	State Significant Infrastructure
SSTV	Site Specific Trigger Value
SWL	Standing Water Level
SWQMP	Surface Water Quality Monitoring Program
T&C	Testing and commissioning
TCR	Traffic Control Room
TfNSW	Transport for New South Wales
TTAMP	Traffic, Transport and Access Management Sub-Plan
WCX	WestConnex Transurban
WMCC	WestConnex Motorway Control Centre
WTP	Water Treatment Plant

1 Introduction

1.1 Background

WestConnex is one of the NSW Government's key infrastructure projects which aims to ease congestion, create jobs and connect communities. The 33-kilometre WestConnex motorway will link Sydney's west and south-west with the Sydney Central Business District, Sydney Airport and Port Botany. WestConnex is one component of an integrated solution to meet Sydney's growing transport and infrastructure needs and is consistent with NSW Government transport and planning policies and strategies.

The project was declared by Ministerial Order to be State Significant Infrastructure (SSI) and Critical State Significant Infrastructure (CSSI), under Section 5.12 (4) and Section 5.13 (previously referred to as 115U(4) and 115V prior to amendment of the *Environmental Planning and Assessment Act 1979* (EP&A Act)) as well as under clause 16 of the State Environmental Planning Policy (State and Regional Development) 2011. The project remains subject to assessment under the EP&A Act and requires the approval of the NSW Minister for Planning. The proposal is critical State significant infrastructure by virtue of Schedule 5, clause 4 of State Environmental Planning Policy (State and Regional Development) 2011.

An Environmental Impact Statement (EIS) (AECOM 2017) was prepared and placed on public exhibition from 18 August 2017 to 16 October 2017. Submissions were received from government agencies, organisations and the public in response to the project. A Submissions and Preferred Infrastructure Report (SPIR) was prepared by Roads and Maritime Services (now Transport for NSW (TfNSW)) in response to submissions received during the exhibition period. The Project was approved by the Minister for Planning on 17 April 2018.

Subsequently, a Project Modification Report for MOD 1 (AECOM, September 2018) was prepared and placed on public exhibition for 14 days from 12 September 2018. The Project Modification was approved by the Minister for Planning on 25 February 2019 and the Minister's Conditions of Approval (CoAs) were also modified.

A Modification Report for MOD 2 was prepared and placed on public exhibition between 21 August 2019 and 25 September 2019. A Response to Submissions Report was prepared to respond to submissions received during the public exhibition period. This report and a Design Amendment Report were lodged with the Department of Planning and Environment (DPE) in April 2020. The Modification was determined by the NSW Minister for Planning on 30 September 2020, along with modification to CoAs.

A Modification Report for MOD 3 was prepared and placed on public exhibition by between 20 November and 18 December 2019. The Modification was determined by the NSW Minister for Planning and Public Space on 28 July 2020, along with modification to CoAs.

A Modification Report for MOD 4 was prepared and lodged with DPE in June 2020. The Modification was determined by DPE on 28 July 2020, along with modification to CoAs.

A Modification Report for MOD 5 was prepared and lodged with DPE in October 2020. The Modification was determined by DPE on 17 November 2020, along with modification to CoAs.

A Modification Report for MOD 6 relating to Stage 2 of the approved project is still pending determination.

A Modification Report for MOD 7 relating to Stage 1 of the approved project was prepared and lodged with DPE in May 2022. The modification was determined by DPE on 14 October 2022, along with a modification to the CoAs.

On 20 January 2023, the tunnel officially opened to live traffic, commencing operation and project completion was formally achieved on 22 June 2023.

1.2 Project Description

The WestConnex M4-M5 Link project is being constructed in two stages:

- Stage 1 (the Project and subject of this document): M4-M5 Link Mainline tunnels
- Stage 2: Rozelle interchange.

WestConnex Transurban engaged Acciona Samsung Bouygues Joint Venture (ASBJV), formerly Lendlease Samsung Bouygues Joint Venture to design and construct Stage 1 of the project. The key features of the Mainline tunnel project include:

- Twin mainline motorway tunnels between the M4 at Haberfield and the M8 at St Peters. Each tunnel would be around 7.5 kilometres long and would generally accommodate up to four lanes of traffic in each direction
- Connections of the mainline tunnels to the M4 project, comprising:
 - A tunnel-to-tunnel connection to the M4 mainline stub tunnels east of Parramatta Road near Alt Street at Haberfield
 - Entry and exit ramp connections between the mainline tunnels and the Wattle Street interchange at Haberfield (which is currently being constructed as part of the M4 project)
 - Minor physical integration works with the surface road network at the Wattle Street interchange including road pavement and line marking
- Connections of the mainline tunnels to the M8 project, comprising:
 - A tunnel-to-tunnel connection to the M8 mainline stub tunnels north of the Princes Highway near the intersection of Mary Street and Bakers Lane at St Peters
 - Entry and exit ramp connections between the mainline tunnels and the St Peters interchange at St Peters (which is currently being constructed as part of the M8 project)
 - Minor physical integration works with the surface road network at the St Peters interchange including road pavement and line marking
- Construction of tunnel stubs to provide for future underground connection of the mainline tunnels to the Rozelle interchange and Iron Cove Link
- A motorway operations complex at St Peters (Campbell Road) (MOC5). The types of facilities that would be contained within the motorway operations complexes would include substations, water treatment plants, ventilation facilities and outlets (the Campbell Road ventilation facility), offices, on-site storage and parking for employees
- Tunnel ventilation systems, including ventilation supply and exhaust facilities, ventilation fans, ventilation outlets and ventilation tunnels
- Fit out (mechanical and electrical) of part of the Parramatta Road ventilation facility at Haberfield (which was constructed as part of M4 project) for use by the M4-M5 Link project
- Drainage infrastructure to collect surface and groundwater for treatment at dedicated facilities
- Water treatment would occur at the operational water treatment facility at the Campbell Road motorway operations complex
- Ancillary infrastructure and operational facilities for electronic tolling and traffic control and signage (including electronic signage)

- Emergency access and evacuation facilities, including pedestrian and vehicular cross and long passages and fire and life safety systems
- Utility works, including protection and/or adjustment of existing utilities, removal of redundant utilities and installation of new utilities
- Temporary construction ancillary facilities to facilitate construction of the project at the following locations:
 - Northcote Street civil and tunnel site (C3a), Haberfield
 - Haberfield civil site (C2b), Haberfield
 - Parramatta Road East civil site (C3b), Haberfield
 - Parramatta Road West civil site (C1b), Ashfield
 - Wattle Street civil and tunnel site (C1a), Haberfield
 - Pyrmont Bridge Road tunnel site (C9), Camperdown/Annandale
 - Campbell Road civil and tunnel site (C10), St Peters

An overview of the project footprint and ancillary facilities is presented in the Construction Environmental Management Plan (CEMP). Further detail of the project description is presented in Section 1.3 of the CEMP.

1.3 Purpose of this report

This Construction Compliance Report (CCR) has been prepared to address CoA A33 of the planning approval.

This CCR documents compliance for the reporting period for all works undertaken on the WestConnex M4-M5 Link Mainline Tunnels from 28 November 2022 – 22 June 2023.

As part of the Compliance Tracking and Environmental Audit Program (CTEAP), this CCR has been prepared in accordance with CoA A33 (refer to Table 1-1) to report on the compliance status of the Project every six months during the construction phase.

Table 1-1 CoA requirements for this CCR

CoA no.	Requirement	Reference
A33	Construction Compliance Reports must be prepared and submitted to the Secretary for information every six (6) months from the date of the commencement of construction for the duration of construction. The Construction Compliance Reports must include:	This Document
	(a) a results summary and analysis of environmental monitoring;	Section 5
	(b) the number of any complaints received, including a summary of main areas of complaint, action taken, response given and proposed strategies for reducing the recurrence of such complaints;	Section 4.4

CoA no.	Requirement	Reference
	(c) details of any review of, and minor amendments made to, the CEMP as a result of construction carried out during the reporting period;	Section 2.5
	(d) a register of any consistency assessments undertaken and their status;	Section 2.4.1
	(e) results of any independent environmental audits and details of any actions taken in response to the recommendations of an audit;	Section 4.3
	(f) a summary of all incidents notified in accordance with Conditions A40 and A42 of this approval; and	Section 4.1
	(g) any other matter relating to compliance with the terms of this approval or as requested by the Secretary.	Sections 3, 4.2

In accordance CoA A33(g), the Secretary requested additional information be included in all future CCRs. These additional requirements are specified in Table 1-2.

Table 1-2 Additional CCR information

Requirement	Reference
A Compliance Table consistent with the Compliance Table Template provided at Appendix C of the Compliance Reporting - Post Approval Requirements (Department, 2020).	Appendix A
An Action Summary Table that summarises all actions arising from previous Independent Audits and Construction Compliance Reports that had not been closed out in previous Construction Compliance Reports. See section 3.1.2 and Appendix B of the Compliance Reporting - Post Approval Requirements (Department, 2020).	Appendix B

2 Project Delivery

2.1 Staging

As stated in the EIS Chapter 6 (Construction Work) and previously in Section 1.2 the M4-M5 Link Project will be constructed and opened to traffic in two stages.

Stage 1 can be summarised to include:

- Construction of mainline tunnels between the M4 at Haberfield and the M8 at St Peters, stub tunnels to the Rozelle interchange (at the Inner West subsurface interchange) and ancillary infrastructure at Campbell Road motorway operations complex (MOC5)
- These works commenced in 2018 with the mainline tunnels to be opening to traffic on 19 January 2023. Minor construction remained beyond tunnel at the ancillary support sties. At opening of Stage 1, the mainline tunnels operate generally with two traffic lanes in each direction. This will increase to generally four lanes at the completion of Stage 2, when the full project is operational

Stage 2 can be summarised to include:

- Construction of the Rozelle interchange including:
 - Connections to the stub tunnels at the Inner West subsurface interchange (built during Stage 1)
 - Ancillary infrastructure at the Rozelle West motorway operations complex (MOC2), Rozelle East motorway operations complex (MOC3) and Iron Cove Link motorway operations complex (MOC4)
 - Connections to the surface road network at Lilyfield and Rozelle
 - Construction of tunnels, ramps and associated infrastructure as part of the Rozelle interchange to provide connections to the proposed future Western Harbour Tunnel and Beaches Link project
- Stage 2 works commenced in mid-2019 with these components of the project open to traffic in 2023.

The total construction period for the Project is programmed to occur across five years, which includes commissioning that would occur concurrently with the final stages of construction.

A more detailed description of how the Project would be constructed is provided in Chapter 6 (Construction Work) of the EIS and Section 1.3 of the CEMP.

ASBJV, TfNSW and WestConnex Transurban together are responsible for compliance with the requirements of the CoA and SPIR. However, ASBJV is responsible for maintaining the CTEAP for the Project and for the preparation of six-monthly Construction Compliance Reports throughout construction as required by CoA A33.

2.2 Project Update

During the reporting period all tunnel civil, mechanical and electrical (M&E) and testing and commissioning (T&C) works were completed, culminating in tunnel opening in January 2023. Following opening, demobilisation and reinstatement of the tunnelling support sites was completed, which generally consisted of completion of temporary dive backfill, remediation of hard stand surface and reinstatement of surface drainage. At the Pyrmont Bridge Road tunnel site, Bignell Lane was returned to its original alignment, while the Northcote Street pedestrian link approved under MOD 7 was also completed at the Northcote Street civil and tunnel site.



Figure 2-1 Official Tunnel Opening: Former NSW Premier Dominic Perrottet cutting the ribbon during the official tunnel opening on 20 January 2023



Figure 2-2 Campbell Road Ventilation Facility and tunnel portal

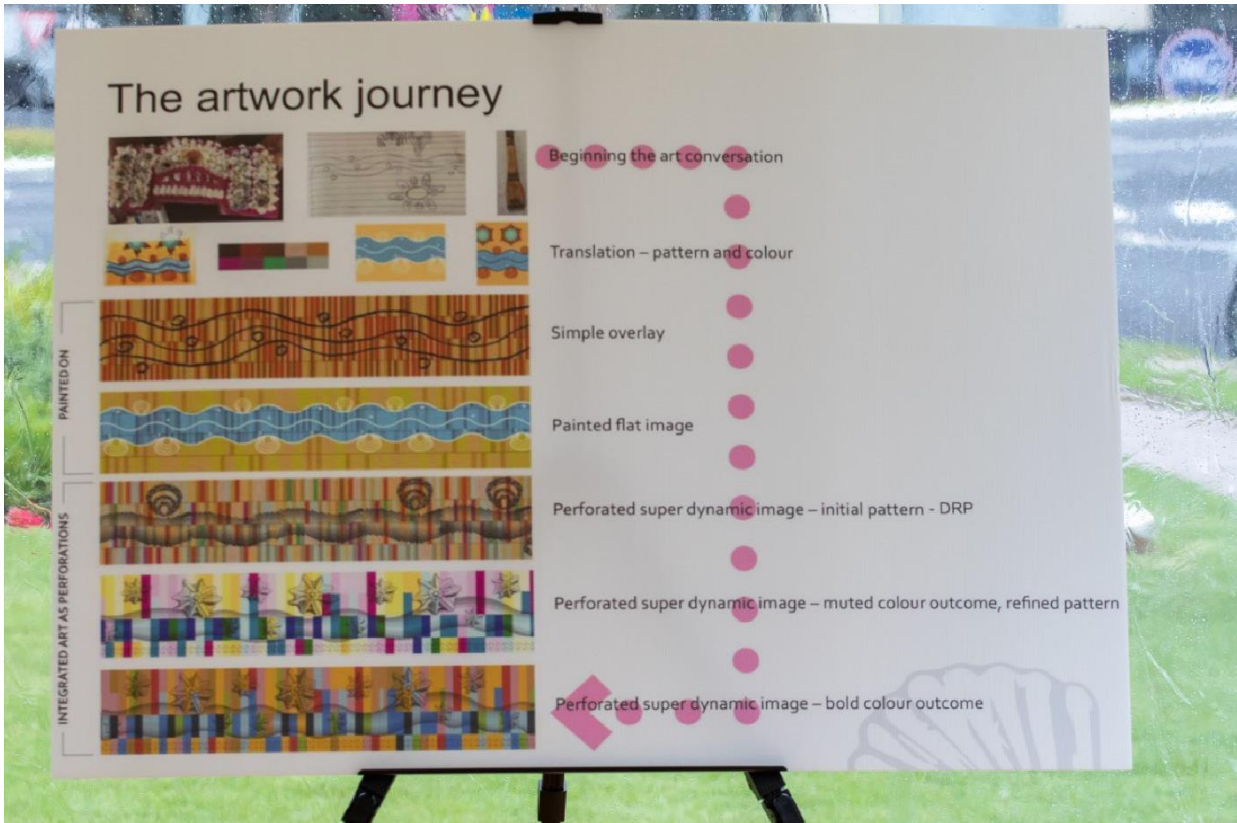


Figure 2-3 Artboard outlining development of Campbell Road Ventilation façade: “Movement of Shells, Movement of Time”

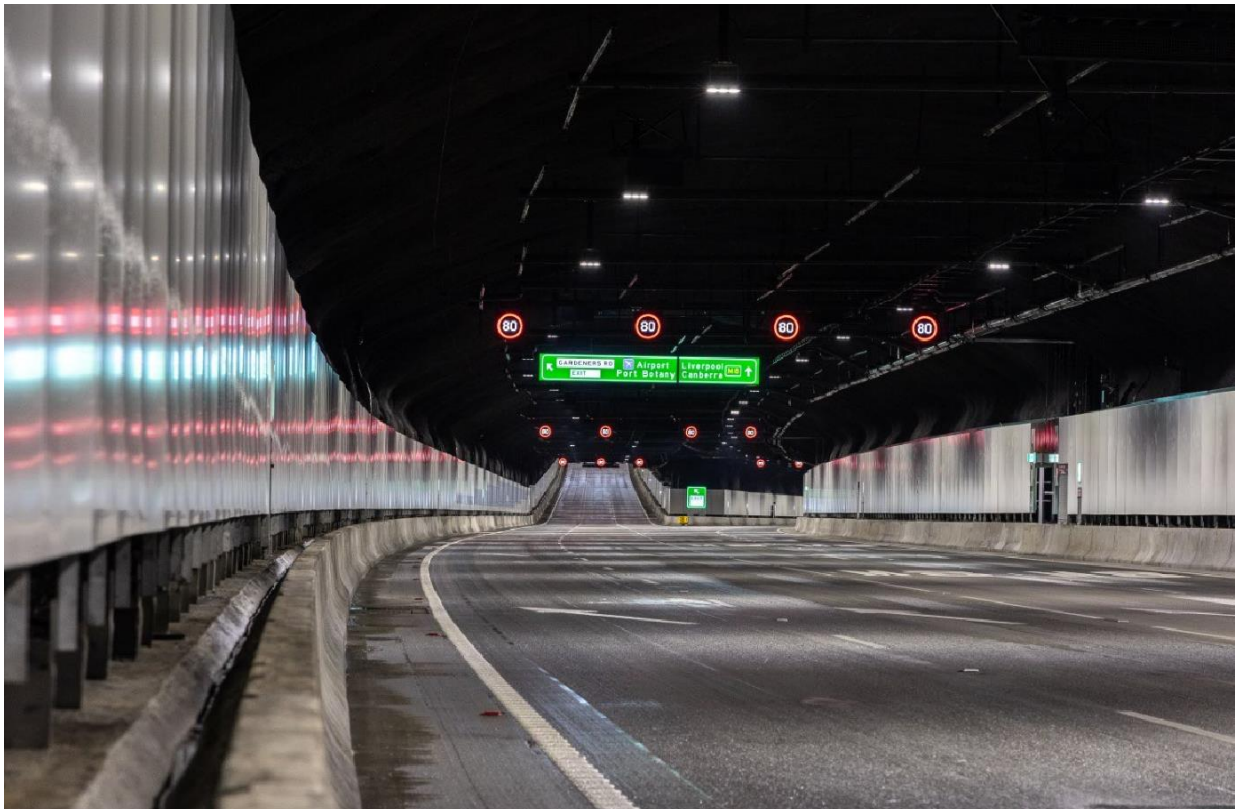


Figure 2-4 Tunnel interchange approaching St Peters



Figure 2-5 Northcote Street pedestrian link



Figure 2-6 Northcote Street site following reinstatement and demobilisation



Figure 2-7 Bignell Lane reinstatement, bisecting the former Pymont Bridge Road site



Figure 2-8 Pymont Bridge Road site following reinstatement and demobilisation



Figure 2-9 Campbell Road landscaping



Figure 2-10 St Peters Interchange site following reinstatement and demobilisation

2.3 Timing

Construction on the Project began in late November 2018 and was completed on 22 June 2023. Key aspects of the construction program included:

- Site establishment and construction commenced late 2018
- Tunnel construction commenced late Q1 2019
- Mechanical and electrical fit out work commenced Q3 2020
- Testing and commissioning commenced Q2 2021
- Project opening to traffic achieved Q1 2023
- Project completion (as defined by Project Deed) achieved 22 June 2023.

2.4 Planning Approvals

2.4.1 Consistency Assessments

No consistency assessments were determined by TfNSW under the CSSI project planning approval during the reporting period.

2.4.2 Project Modifications

No project modifications were prepared or determined during the reporting period.

The works approved under Modification 7 commenced in Q1 2023 and were completed by 22 June 2023.

2.5 Construction Environmental Management Plan Reviews/Amendments

Throughout the reporting period the CEMP and all sub plans were reviewed. One minor amendment was made:

- CEMP Revision 28, approved February 2023

Refer to Table 2-1 below.

Table 2-1 CEMP Update and Review

Relevant Plan	Revision	Updates	ER/DPE Approval Date
Construction Environmental Management Plan Main body	Revision 28	Update of site layout drawings following tunnel opening.	20 February 2023
Traffic and Transport Access Management Plan	Revision 39	Review conducted; no changes/ updates necessary	2 February 2022
Noise and Vibration Management Sub Plan	Revision 21	Review conducted; no changes/ updates necessary	1 September 2020
Flora and Fauna Management Sub Plan	Revision 7	Review conducted; no changes/ updates necessary	29 July 2020
Pollution Incident Response Management Sub Plan	Revision 05	Annual review conducted July 2022	17 July 2022
Air Quality Management Sub Plan	Revision 5	Review conducted; no changes/ updates necessary	1 March 2019
Soil and Surface Water Management Sub Plan	Revision 09	Review conducted; no changes/ updates necessary	28 April 2020
Groundwater Management Sub Plan	Revision 13	Review conducted; no changes/ updates necessary	10 June 2021
Non- Aboriginal Heritage Management Sub Plan	Revision 10	Review conducted; no changes/ updates necessary	1 September 2020
Aboriginal Cultural Heritage	Revision 5	Review conducted; no changes/ updates necessary	4 March 2019

Relevant Plan	Revision	Updates	ER/DPE Approval Date
Management Sub Plan			
Waste Management Sub Plan	Revision 8	Review conducted; no changes/ updates necessary	29 June 2020

3 Compliance Management

ASBJV, TfNSW and WestConnex Transurban are together responsible for compliance with the Project's requirements detailed in the CoA and SPIR. Refer to the CTEAP for further information on how ASBJV manages and tracks compliance with the planning approval throughout construction.

A variety of activities have been undertaken during construction to ensure that compliance is managed effectively on the Project. These compliance management activities are summarised in Table 3-1.

Table 3-1 Compliance Management Activities

Activity	Responsibility	Frequency (prior to asset operation)
Ongoing site surveillance	ASBJV	Daily
Site Inspections	ASBJV Environmental Representative (ER)	Weekly Fortnightly
Environmental compliance status update with relevant delivery owners	ASBJV	As required
Environmental risk assessment review	ASBJV	Annual
Environmental and sustainability auditing	ASBJV Independent Auditor ER	Annual Annual As requested by Secretary
Environmental management reviews	ASBJV	Six-Monthly CEMP Reviews

Following Project planning approval, compliance with the requirements contained in the CoA are regularly monitored by the ASBJV.

Regular meetings are held with the relevant Project CoA delivery owners to review applicable requirements and assess the environmental compliance status. These meetings allow ASBJV to ensure ongoing compliance. Where requirements are deemed to be compliant, evidence is collected and verified by ASBJV.

A summary of the Project’s compliance against each CoA during the reporting period is provided in Appendix A.

3.1 Construction Environmental Management System

The environmental management system (EMS) is the primary system to manage and control the environmental aspects of the Project during early works, site establishment and construction. It also provides the overall framework for the system and procedures to ensure environmental impacts are minimised and legislative requirements are fulfilled.

The strategies defined in the CEMP have been developed with consideration of the Project approval requirements, safeguards and mitigation measures presented in the environmental assessment and approval documents. The CEMP establishes the system for implementation, monitoring and continuous improvement to minimise impacts from the Project on the environment.

The ASBJV EMS is based on the Lendlease Engineering ISO 14001 Certified EMS which was adapted to address Project and joint venture requirements.

The CTEAP is part of a suite of environmental management documents prepared for the Project. The CTEAP is administered by the Environment and Sustainability Manager or delegate for the duration of the Project.

4 Compliance Performance

4.1 Incidents

In accordance with CoA A40 to A43, incidents which cause or threaten to cause material harm to the environment, community or health and safety will be notified to the EPA and Secretary. Actual and potential material harm incidents during the reporting period are detailed in Table 4-1.

Table 4-1 Material Harm Incidents during the reporting period

Incident Type	Description	Site	Immediate Actions / Control Measures	Corrective Actions
Nil	Nil	Nil	Nil	Nil

A total of 4 environmental incidents, as defined by the RMS Incident Reporting procedure and unrelated to COA A40 to A43, were reported across the Project during the reporting period. The most frequent incident issue was Spills (3) with Traffic (1).

All incidents were classified as a Category 2 incident.

Refer to Figure 4-1 for a breakdown of the incidents by issue.

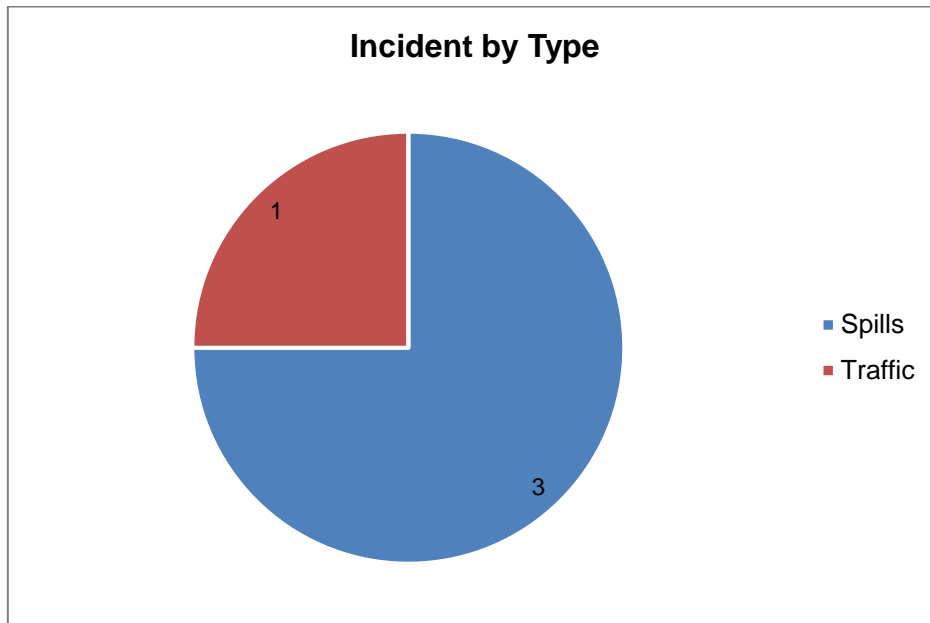


Figure 4-1 Environmental Incidents by Type

4.1.1 Spills

During the reporting period, spills comprised 75% of all incidents by type and involved minor to small spills which were immediately contained on site, cleaned up and disposed of appropriately. No actual environmental impact occurred as result of the spills.

4.1.2 Traffic

The traffic incident comprised 25% of all incidents.

The incident was regarding a heavy vehicle not adhering to the Projects Traffic and Transport Access Management Plan (TTAMP).

As detailed in Appendix A CoA E52 has been listed as non-compliant for this reporting period.

4.2 Environmental Representative Inspections

The Project Environmental Representative (ER) conducted five environmental inspections during the reporting period.

No issues were considered high-risk, and all inspections were classified as “Green” according to the Road and Maritime ‘traffic light’ status; an indicator of the overall environmental performance and effectiveness of site management measures. It’s of note that the ER inspection conducted on Thursday 18 May 2023 was nominated as the final ER Inspection for the construction phase of the project, in agreement with TfNSW and DPE officers in attendance.

The Environment Protection Authority (EPA) conducted one Project site inspections during the reporting period, with no items raised requiring rectification.

4.3 Environmental Audits

4.3.1 Independent Environmental Audit

No independent audits were undertaken during the reporting period.

The actions from the fourth independent environmental audit for the Project examining compliance against the CEMP and Noise and Vibration Management Sub-Plan (NVMP) and the Soil and Surface Water Management Sub- Plan (SSWMP), as detailed in the Construction Compliance Report 7 & 8 (CCR 7 and CCR 8), were closed out during the previous reporting period.

In response to an Opportunity for Improvement (OFI) raised in the Audit relating to real time noise monitoring, DPE issued a Warning Letter which identified a failure in the Construction Noise and Vibration Monitoring Program to account for absences during monitoring equipment calibration period.

4.3.2 ISO 14001:2015 EMS Audit

There has been no annual audit on the Project's EMS against the ISO14001 during this reporting period. The project's EMS is ISO 140001 certified until 30 November 2023.

4.4 Complaints

The Project received a total of 24 complaints during the reporting period.

Refer to Figure 4-2 for a breakdown of the complaints by month and issue.

18 out of the complaints received were attributed to noise (2 of which were identified as not related to the project), 4 were attributed to dust with the remaining 2 complaints regarding odour and vibration felt during tunnel operation.

An increase in noise complaints from the previous reporting period is likely to be attributed to the site demobilisation and demolition. With completion of construction activities, this work has now ceased.

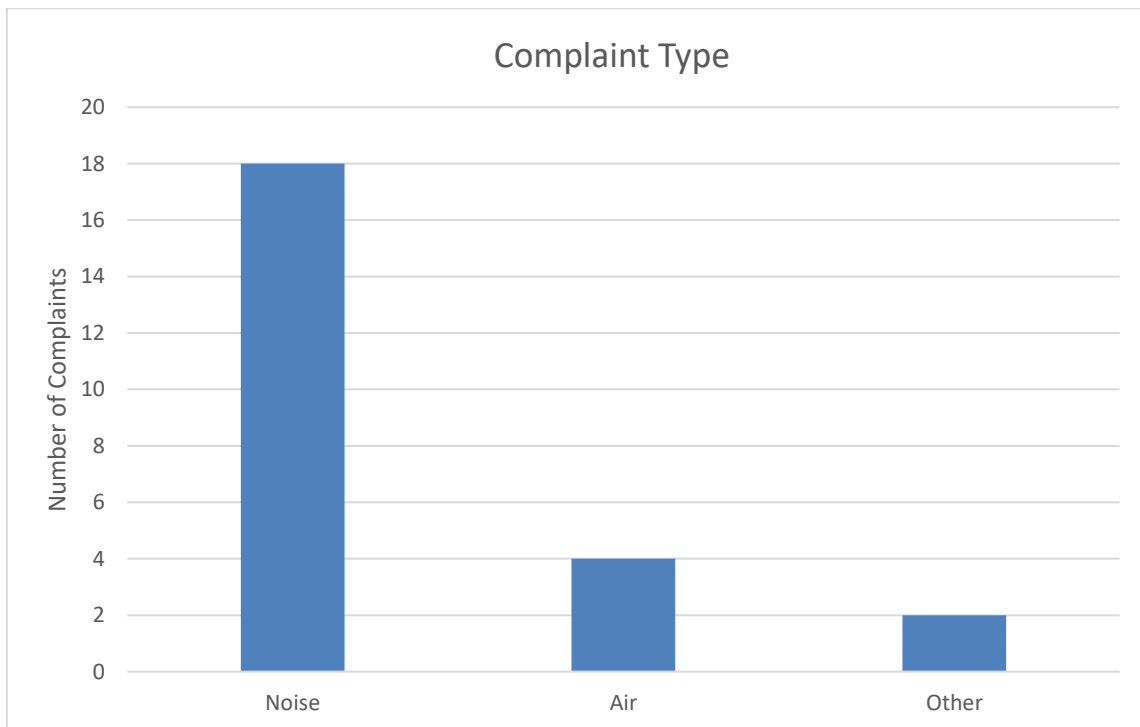


Figure 4-2 Project Complaints Received

5 Environmental Monitoring

In accordance with CoA C9, environmental construction monitoring programs have been prepared and implemented on the Project to monitor the following impacts:

- Surface water quality – CoA C9(a)
- Groundwater – CoA C9(b)
- Noise and Vibration – CoA C9(c)
- Dust Deposition – CoA C9(e)

5.1 Surface Water Quality

In accordance with the Surface Water Quality Monitoring Program (SWQMP), surface water monitoring was undertaken monthly and quarterly following a wet weather event during the reporting period. Monitoring was undertaken at six locations during the period.

Potential changes in water quality were assessed and a management response initiated following any exceedance of a site-specific trigger values (SSTV).

Downstream monitoring results were generally compliant with SSTVs. Where exceedances were noted at the downstream/impact sites, poorer water quality was generally also evident at the control sites, suggesting these exceedances were unlikely to be related to the Project.

It should be noted that two exceedances at the downstream/impact sites required further investigation. Turbidity exceedances were noted at Dobroyd Canal/Iron Cove Creek on 7 December 2022 and at Johnstons Creek on 10 January 2023.

On both instances, a review of site activities leading up to the monitoring event and dry weather suggested that lateral inflows from non-project areas were contributing to poor downstream water quality, specifically high turbidity.

5.2 Groundwater

Groundwater monitoring transitioned from the Construction Groundwater Management Plan and Monitoring Program to the Operational Groundwater Management Plan and Monitoring Program at commencement of tunnel operation on 20 January 2023. As such, the last construction groundwater monitoring event was completed in November 2022, during the previous reporting period.

5.2.1 Water Treatment Plant (WTP) Discharges

During the reporting period, the Operational WTP (EPL 21616) was the only plant treating mainline tunnel water. Prior to transfer of the Operational WTP from ASBJV to the Tunnel Operator, two monthly compliance samples were collected within the reporting period; 14 December 2022 and 10 January 2023 – both of which returned compliant results.

Table 5-1 Site WTP Discharges

Water Treatment Plant	EPL Discharge Point Ref.	Total Volume Discharged (m3)	No of Exceedances of EPL Criteria
Campbell Road-Operational	1	53,888	0

5.2.2 Tunnel Inflows

Tunnel inflows are estimated by the ASBJV Geotechnical Team using the following water balance equation:

$$\text{Tunnel inflow} = \text{WTP Discharge} - \text{Project water inputs} + \text{Spoil Water Content}$$

During the reporting period, monitoring and quantifying of the tunnel groundwater inflow was undertaken at the Campbell Road WTP. Due to the difficulty of accurately quantifying groundwater inflows during the construction phase of the project, an uncertainty analysis has been undertaken on each component of the tunnel inflow equation. This uncertainty has been accounted for in the inflow estimations. The estimated total groundwater inflow rate during the reporting period was 10.82 L/s. In addition to this, targeted in-pit inflow validation monitoring was completed in December 2022 which confirmed that, with exception of a ~1km area where all practicable measures were taken to limit groundwater inflows, the groundwater inflows across any kilometre of tunnel did not exceed 1 L/km/s.

5.3 Noise and Vibration

In accordance with the Construction Noise and Vibration Monitoring Program (CNVMP), the following noise and vibration monitoring were undertaken during the reporting period:

- Attended airborne noise monitoring
- Real-time unattended noise and vibration monitoring
- Attended vibration monitoring

Table 5-2 provides a summary of the Project-wide noise and vibration monitoring results during the reporting period.

Table 5-2 Noise and Vibration Monitoring Events Summary

Monitoring Type	Prediction Exceedances	Comments
Airborne noise monitoring	0	Based on 14 monitoring events. All airborne noise monitoring results were compliant with the applicable criteria and no additional mitigation measures were required to be implemented
Vibration monitoring to verify safe working distance	0	Based on 2 monitoring events. All results were compliant with the relevant criteria for cosmetic damage

Real-time unattended airborne noise and vibration monitoring was undertaken at each of the three tunnelling sites (Campbell Road, PBR and Northcote Street). The locations of the monitors were determined in consultation with the Project’s Acoustic Advisor (AA) and access to the monitoring results are available to ER and AA. The real- unattended data has provided little value to the community or Project team and has not been needed to respond to complaints or in relation to compliance investigations since Project commencement.

On 3 April 2023 following approval of the Project Acoustic Advisor, the real-time noise and vibration monitoring ceased.

5.4 Dust Deposition

In accordance with the Dust Deposition Monitoring Program (DDMP), depositional dust monitoring was undertaken monthly at the following ancillary facilities:

- Northcote Street civil and tunnel site
- Parramatta Road East and West civil sites (PREW)
- Wattle Street civil and tunnel site
- Pyrmont Bridge Road tunnel site (PBR)
- Campbell Road civil and tunnel site

Depositional dust exceedances are assessed against the annual maximum level of 4 g/m²/month. During the reporting period, 6 monthly dust results greater than 4 g/m² were recorded across the Project as shown in Figure 5-1.

During the reporting period, no exceedances were recorded against the target criteria. Refer Table 5-3.

Following receipt of the April – May '23 monthly motoring results and in alignment with cessation of the ER Inspection, monthly depositional dust monitoring was also ceased.

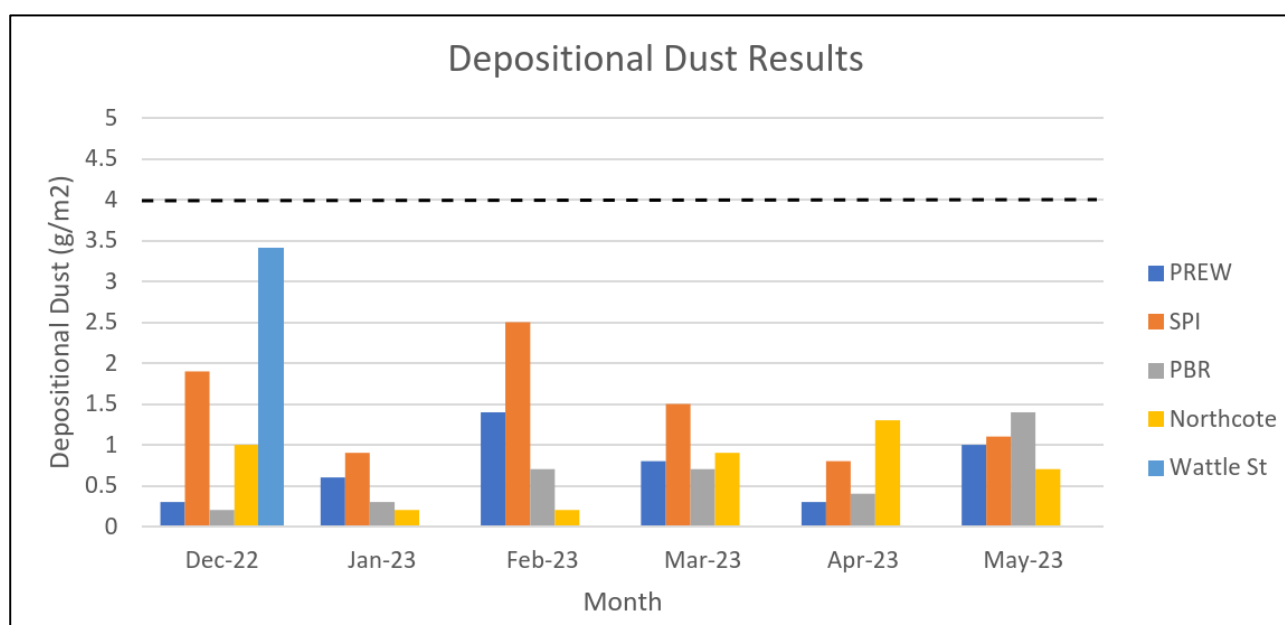


Figure 5-1 Monthly Depositional Dust Results by Site

Construction Site	PREW	Campbell Rd	PBR	Northcote	Wattle St
Six Months Average	0.73	1.45	0.62	0.72	3.4*
Annualised Average	0.64	1.69	0.58	1.96	5.77

*Due to tunnel operations commencing in January 2023, the Wattle St tunnel ramp was no longer classified as a construction site and access was no longer available.

Table 5-3 Six Months and Annualised Average Dust Values (g/m²)

On-site dust management is regularly monitored by ASBJV Environmental Coordinators, as well as the Project ER during fortnightly formal inspections.

Dust management measures implemented on site during the reporting period included:

- Spoil is handled outside an acoustic shed, for example at the Campbell Road site, additional controls were investigated and implemented including the use of water misters and increasing the frequency of water carts in that area
- Covered loads for all vehicles transporting spoil and other materials
- On-site dust suppression including water carts, hoses, drizzle bars and street sweepers
- Maintenance of hardstand areas to prevent material building up and potentially becoming airborne
- Dust minimisation toolbox talks delivered to site personnel
- Use of wheel washes, wheel baths, drizzle bars and street sweepers to minimise sediment tracking and build up on public roads

Appendix A Conditions of Approval - Compliance Table

Available upon request.

