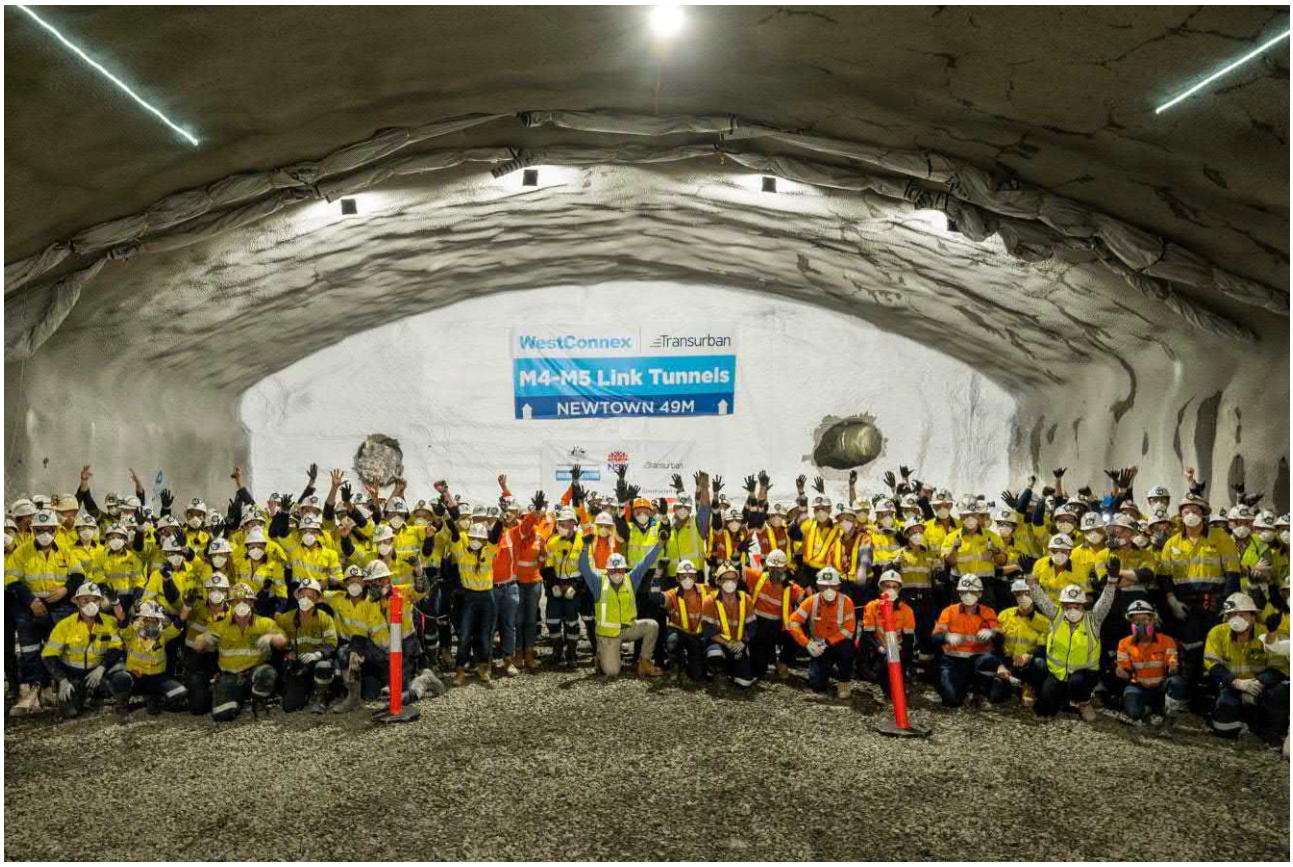
Construction Compliance Report:

28 November 2020 – 27 May 2021

M4-M5 Link Mainline Tunnels



WestConnex M4-M5 Link Tunnels

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Document Control

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Internal review

	Name	Position	Date	Signed/Authorised
Originator(s)	[redacted]	Environmental Coordinator	[redacted]	[redacted]
Review		Environment & Sustainability Manager		
Authorised		Project Director		

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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
DPIE	Department of Planning, Industry 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	*Environmental Planning and Assessment Act 1979* (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, Industry 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	Pyrmont Bridge Road civil and tunnel site
POEO Act	*Protection of the Environment Operations Act 1997* (NSW)
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 repose 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 by between 21 August 2019 to 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, Industry and Environment (DPIE) 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. A Response to Submissions Report was prepared to respond to submissions received during the public exhibition period. This report was lodged with DPIE in March 2020. 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 DPIE in June 2020. The Modification was determined by DPIE on 28 July 2020, along with modification to CoAs.

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

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 has 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 2020 to 27 May 2021.

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 4.5
	(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 0

CoA no.	Requirement	Reference
	(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 4.4
	(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, 4.3

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 have 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 open to traffic in 2023. At the completion of Stage 1, the mainline tunnels would operate generally with two traffic lanes in each direction. This would 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, tunnelling, civil, and mechanical and electrical (M&E) works were all well underway across the Project. Testing and commissioning (T&C) also commenced at Haberfield in early May 2021.

A summary of the key activities and major milestones at each of Project construction sites is provided below.

2.2.1 Tunnelling at Northcote St, Pyrmont Bridge Road (PBR) and Campbell Road Sites

At the end of the reporting period, over 20 kilometres of tunnel heading excavation across the Project had been completed, with only one and half kilometres remaining. Over 7.8 million tonnes of excavated tunnel spoil had been removed from the Project and beneficially reused on other infrastructure projects including the Western Sydney Airport.

A major Project milestone was reached in April 2021 with heading excavation between the PBR and Campbell Road sites completed with the tunnels breaking into each other (refer to CCR cover photo). The Campbell Road site also achieved breakthroughs into the exiting M8 Tunnel in January and March 2021.

In-tunnel civil works progressed behind tunnel excavation including trenching, drainage, waterproofing, services and paving. Around 50 percent of the tunnel has been paved with the final Continuously Reinforced Concrete Pavement (CRCP) layer.

Fit-out of internal structures was also underway including the fit-out of tunnel cross passages, substations (as shown in Figure 2-1) and tunnel low point sumps.

Following the completion of in-tunnel civil fit-out, sections of the tunnel were handed over for mechanical & electrical (M&E) works (as shown in Figure 2-2). Following the completion of M&E works, areas are progressively handed over to the testing and commissioning (T&C) team which involves energising and testing the M&E systems. The first Project T&C zone commenced at Haberfield at the end of the reporting period.

Figure 2-1 - Civil fit-out of tunnel substation 4 in February 2021

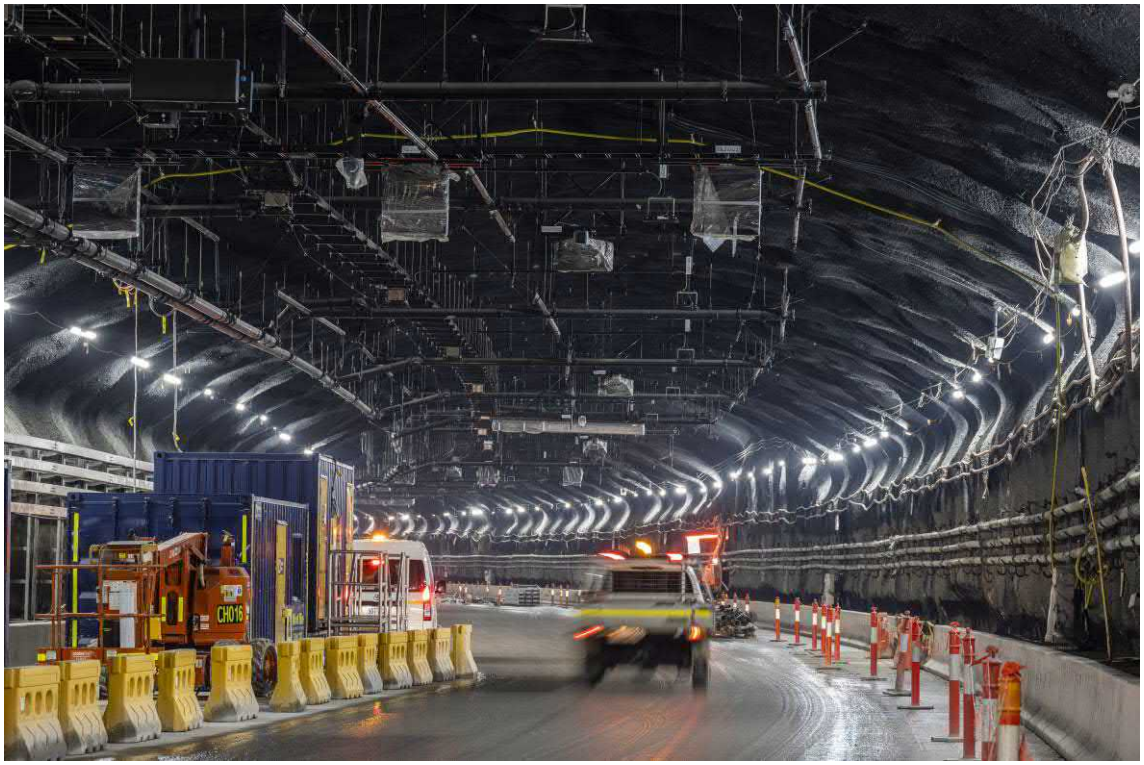

Figure 2-2 - Completed M&E works at Haberfield in April 2021

2.2.2 Controlled Blasting

As detailed in the previous CCR, the Project engaged an industry expect with over 35 years' experience to determine the feasibility and viability of controlled blasting as a method of tunnel excavation in areas of hard rock. Part of this investigation included carrying out a one-off trial blast in Annandale in July 2020.

Following this investigation, it was determined that the Project would not proceed with controlled blasting as an excavation methodology.

2.2.3 Wattle St Site Cut and Cover and Surface Works

Cut and Cover and surface works at the Wattle St site during the reporting period included:

- Commencement of benching works and rock breaking in the cut and cover
- Utility and Intelligent Transport Systems (ITS) works to facilitate permanent power and communications for the operation of the tunnel.

2.2.4 Campbell Road Site Surface Works

Surface works at Campbell Road during the reporting period included:

- Completion of Stage 1 permanent services and pavement
- Completion of the cut and cover above deck works which enabled construction of the ventilation building to commence (as shown in Figure 2-3)

- Installation of a new electric Tower Crane to facilitate lifting operations associated with the ventilation building and substation works
- Completion of supply shaft civil works, which was then handed over to the M&E Team.
- M&E works inside the supply shaft and substation

Figure 2-3 - Aerial view of the ventilation building at the Campbell Road site in March 2021

2.3 Timing

Construction on the Project began in late November 2018 and is proposed to continue until Q1 of 2023. Key aspects of the construction program include:

- 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 to open Q1 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.

2.5 Construction Environmental Management Plan Reviews/Amendments

Table 2-1 details the CEMP reviews and amendments during the reporting period.

Table 2-1 CEMP reviews and amendments

Relevant Plan	Review / Amendment	Revision No.	Approval Date
CEMP Main Body	Minor update submitted to the ER for approval to include a minor ancillary facility at Burrows Road. This minor ancillary facility supports M&E works and complies with the requirements for minor ancillary facilities detailed in Condition of Approval (CoA) C21A.	22	12 April 2021
	Minor update to the site layout at the Campbell Road Civil and Tunnel site to reflect construction progress and shift it from the tunnelling phase into M&E. Submitted to the ER for approval.	23	24 May 2021
Traffic, Transport & Access Management Sub-Plan (TTAMP)	Minor updates submitted to the ER for approval, including: • Update of Project Contractor name to Acciona Samsung Bouygues Joint Venture (ASBJV) • Access and egress arrangements for the Burrows Road and WestConnex Motorway Control Centre (WMCC) Building minor ancillary facilities • Removal of surface grouting area at Hawthorne Canal following the completion of works.	38	12 April 2021

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 are undertaken 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
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 (period of registration 06/03/2019 to 6/03/2022), which was adapted to address Project and joint venture requirements.

Following the transition from Lendlease Engineering to Acciona, an ISO 14001 audit on the implementation of the Project's EMS was undertaken in October 2020. Findings of this audit are detailed later in this report in Section 4.4.2.

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.

All incidents reported to the Secretary and EPA to date have been as a courtesy rather than a statutory trigger.

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 14 incidents were reported across the Project during the reporting period. The two most frequent incident issues were Spills (nine) and Traffic (four). Refer to Figure 4-1 for a breakdown of the incidents by issue.

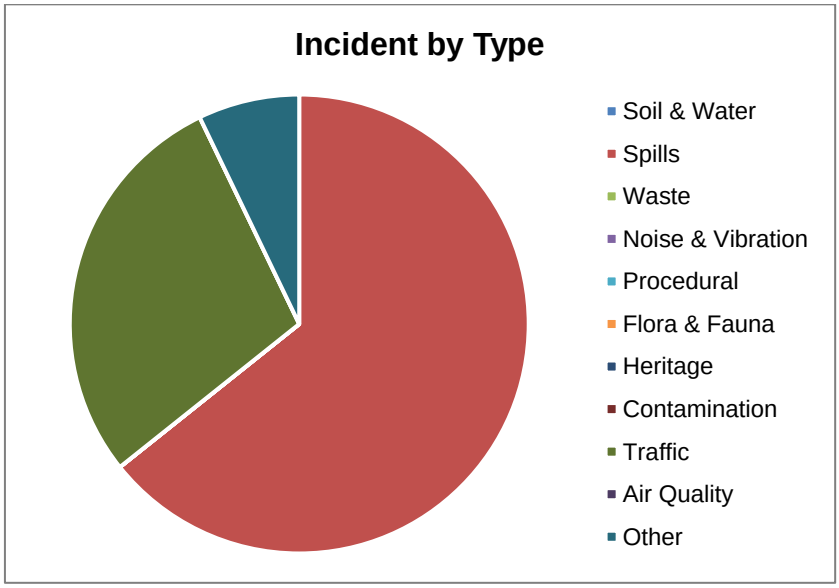

Figure 4-1 Environmental Incidents by Type

4.1.1 Spills

During the reporting period, spills comprised 64% of all incidents by type (refer to Figure 4-1) 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.

The number of spills occurring across the Project has remained generally consistent with the previous reporting period, despite an increase in the number of fuel and chemicals being used on site in line with peak construction activities. Routine toolboxes and training have been delivered

Project-wide on topics including appropriate material storage and bunding, spill prevention, spill response, management and reporting.

4.1.2 Traffic

Traffic and spoil haulage-related incidents comprised 29% of incidents (refer to Figure 4-1) with 3 of the 4 incidents involving spoil haulage vehicles using the 'Route A' loop outside of the approved hours to access the Northcote St site. The other incident involved a haulage truck using a non-approved local road and not adhering to the approved haulage route in the TTAMP. These incidents were reported to DPIE as breaches against CoA E49, E49B, and E52, and recorded as non-conformances against the TTAMP, which are discussed in Section 4.2.

The number of CoA E49B breaches have decreased since the previous reporting period, even with peak haulage operations continuing and approximately 500,000 tonnes of spoil transported every month. This suggests that the corrective and preventative actions taken by ASBJV in response to these incidents have been effective in minimising recurrent breaches and ensuring better vehicle route compliance.

4.1.3 Other incidents

One incident occurred at the Project's warehouse in Minto where pallets containing some items salvaged from the Former Bank of NSW could not be located. After being notified by the warehouse Superintendent, the ASBJV Environment Coordinator commenced an investigation into the incident. The investigation concluded that the items were gone and those responsible are not known. This incident was also reported to the Inner West Council.

Despite this incident, the remaining salvaged items were donated to Wilkins Public School in Marrickville to be beneficially reused throughout the playground (refer to Figure 4-2). The use of the heritage items by the school was determined in consultation with the Inner West Council in accordance with CoA E165.

Figure 4-2 Salvaged items at Wilkins Public School for beneficial reuse

4.2 Non-Conformances

Of the fourteen incidents detailed in Section 4.1, only four of these were non-conformances (NCRs). These NCRs were against the requirements of the TTAMP and are summarised in Table 4-2.

Table 4-2 Non-Conformances against the Project Documents

Project Document	No. of NCRs	Description	Corrective Action
TTAMP	3	Spoil haulage vehicles were recorded using Route A to access the Northcote St site outside of the approved hours of use. These occurred on the dates listed by three separate haulage subcontractors. 6:53AM on 28/11/2020 (Load and Go) 5:37AM on 3/02/2021 (Atcall) 4:58AM on 3/04/2021 (ResourceCo) This has been recorded as a non-compliance against CoA E49B in Appendix A.	In all instances, ASBJV contacted the driver and haulage subcontractor to notify them of the breach. Drivers were temporarily stood down and First and Final warnings were issued where required. Where considered appropriate, drivers were permanently removed from the Project following multiple offences. Some haulage subcontractors had their bookings suspended for multiple days as part of the compliance escalation process. Gate staff were also reminded to instruct drivers to use the “long loop” (i.e. G-Loop) prior to 7am and after 7pm. The Project’s GPS-tracking system Virtual Superintendent automatically alerts the Project Traffic Team when a spoil truck uses Route A outside of approved hours. This facilitates a prompt response from ASBJV. ASBJV also installed a sign at Wattle St in March 2021 to inform drivers not to take Ramsay St outside of approved hours.
	1	On 13 April 2021, a spoil truck leaving the Northcote site mistakenly turned onto Waratah St instead of Wattle St after leaving the G-Loop. In an attempt to return to the approved haulage route, the truck used a non-approved local road to turn around. This has been recorded as a non-compliance against CoA E49 and E52 in Appendix A.	The driver was temporarily stood down from the Project. The haulage company were also instructed by ASBJV to toolbox their drivers on strict adherence to approved Project routes.

4.3 Environmental Representative Inspections

The Project Environmental Representative (ER) conducted 11 environmental inspections and raised 14 issues and 25 positive findings during the reporting period. No issues were considered high-risk and were all subsequently closed out to the satisfaction of the ER. Figure 4-3 provides a breakdown of issue type raised during the fortnightly ER inspections.

ER inspections are assigned a Road and Maritime 'traffic light' status as an indicator of the overall environmental performance and effectiveness of site management measures. Table 4-3 provides definitions of the different TfNSW inspection statuses. During the reporting period, the Project received 100% 'Green' inspection results (refer to Table 4-4).

The Environment Protection Authority (EPA) also inspected the Project sites on three occasions during the reporting period. On each occasion, the EPA were satisfied with the controls being implemented on site to minimise and manage environmental risks, with only minor actions raised including the restocking of a spill kit.

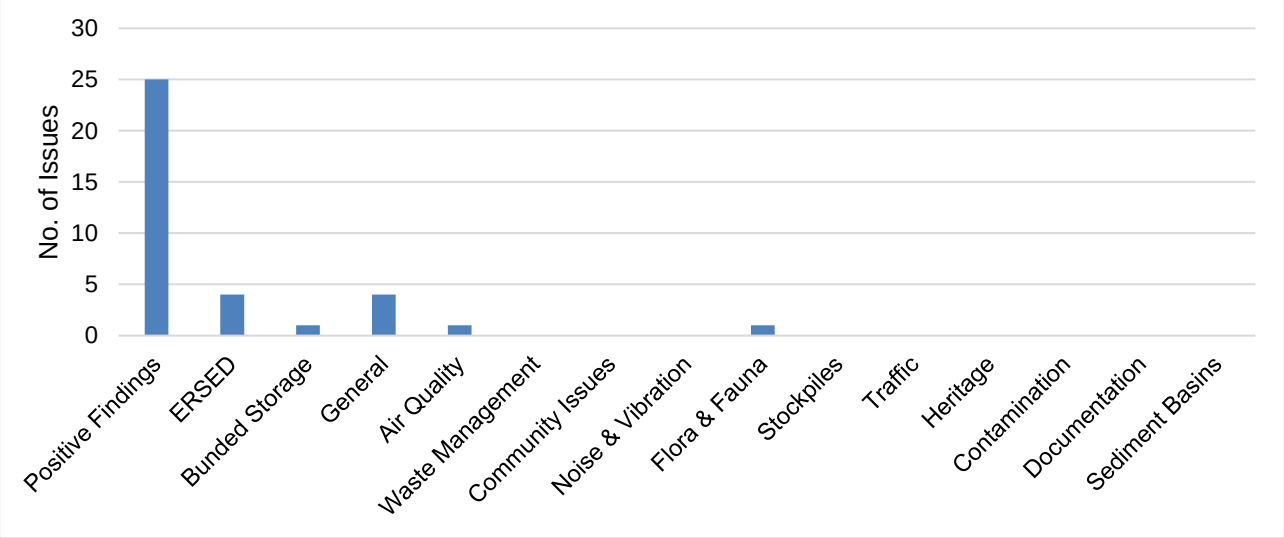

Figure 4-3 ER Inspection Issues by Type

Table 4-3 TfNSW Environment Inspection Status

Status	Definition
Red	• Actions required to address urgent risk issues. • Satisfactory actions not taken for high risk issues identified on the previous inspection. • A Category 1 incident has been identified during the inspection.
Amber	• Actions required to address high and/or medium risk issues. • Satisfactory actions not taken for previous medium or low risk issues on the previous inspection.

Status	Definition
Green	• Actions required to address low risk issues that will not directly cause environmental harm. • Site demonstrates good environmental management with no action required to avoid environmental harm.

Table 4-4 ER Inspection Status during the Reporting Period

ER Inspection Results											
Roads and Maritime Traffic Light Indicator	X	X	X	X	X	X	X	X	X	X	X
ER Inspection Date	10-Dec-20	7-Jan-21	21-Jan-21	4-Feb-21	18-Feb-21	4-Mar-21	18-Mar-21	1-Apr-21	15-Apr-21	13-May-21	27-May-27

4.4 Environmental Audits

4.4.1 Independent Environmental Audit

An independent environmental audit was undertaken on the Project on the 17 and 18 May 2021. The audit examined the Project's compliance against the CEMP and Noise and Vibration Management Sub-Plan (NVMP). A site inspection of the Haberfield Sites (including Northcote St and PREW), PBR site, Campbell Road site was also undertaken.

This audit resulted in two opportunities for improvement which are summarised in the Action Summary Table in Appendix B. Findings include any items raised during an audit that are categorised in accordance with the NSW Department of Planning Audit Guidelines. Refer to Table 4-5 for definitions of finding categories.

Table 4-5 Audit finding categories

Finding Category	Definition
Non-compliance	The intent or one or more specific requirements of the CoA or requirements have not been met. Non-compliances will require verification of adequate corrective action by the independent auditor within 6 weeks of the audit.
Observation / Non-conformance	Failure to implement and/or maintain conformance to the requirements of the Management Plans or other project management system documents relevant to the scope of the audit. Non-conformances will require verification of adequate corrective action by the independent auditor within 6 weeks of the audit.

Finding Category	Definition
Opportunity for Improvement	A suggestion or opportunity to implement a good or better practice identified during the audit that could assist in the improvement of environmental performance on the project.

4.4.2 ISO 14001:2015 EMS Audit

As detailed in the previous CCR, an audit on the implementation of the Project's EMS against the ISO14001 was undertaken on 26 October 2020.

No non-compliances were raised, and the Project was commended on the implementation of the EMS with records easily available during the audit. One Opportunity for Improvement (OFI) was identified regarding utilising the Project's training system Pegasus to capture ongoing environmental awareness training and toolboxes.

This OFI was closed out during the reporting period and has been included in the Action Summary Table in Appendix B.

4.5 Complaints

The Project received a total of 143 complaints during the reporting period. Of these, 5 were identified as not related to the Project but were still investigated and logged.

Refer to Figure 4-4 for a breakdown of the complaints by month and issue. The number of complaints received has decreased since the previous CCR reporting period.

Of the 138 Project-attributed complaints received, the three most frequent complaint issues were noise (78%), parking (7%), and operational aspects (5%). Noise has remained the most frequent complaint issue since the previous CCR, which is expected given tunnel excavation and other vibration-generating works are major activities at this stage of the Project. As the Project transitions from tunnel excavation to civil fit-out and M&E works, it is expected noise complaints will decrease.

Responses to these complaint issues are discussed in Section 4.5.1.

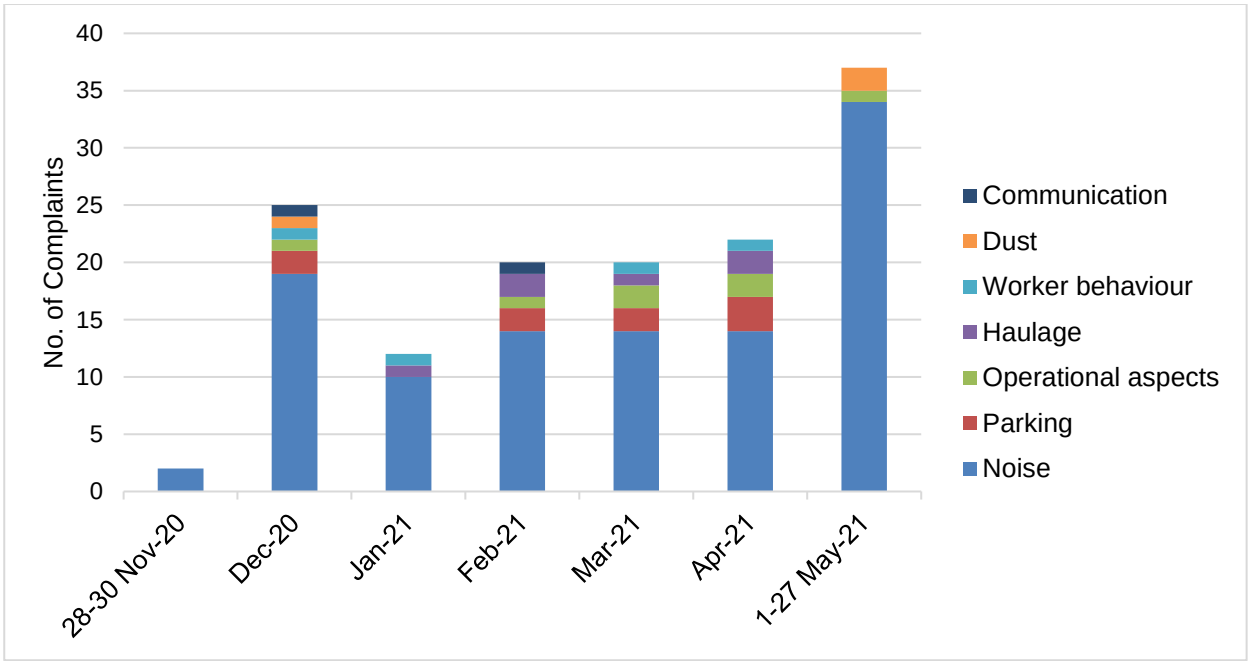

Figure 4-4 Project Attributed Complaints Received by Month and Issue

4.5.1 Complaint Management

4.5.1.1 Noise

Noise-related complaints were predominately received about ground borne noise impacts from tunnelling (102) at Leichhardt (44), Annandale (35), St Peters (9), Haberfield (7), Newtown (5) and Camperdown (2). Five airborne noise complaints were also received in response to civil works at Haberfield and noise from a street sweeper in Camperdown/Annandale.

Actions taken to address the issues raised included:

- Offering and carrying out noise monitoring to validate predicted and actual noise impacts. Monitoring results are issued to residents in a Monitoring Report
- Offering respite measures where applicable such as alternative accommodation, noise cancelling headphones and/or ear plugs.
- Offering compassionate respite measures such as alternative accommodation in special circumstances
- Implementing noise mitigation measures at the source for surface works including noise blankets and carrying out high impact work earlier in the shift
- Provide specific notification to impacted residents including details about duration and approval of work activities
- Providing additional regular weekly updates on work progress
- Toolboxing workers on noise mitigation measures and project expectations.

4.5.1.2 Parking

Nine parking-related complaints were received about the alleged use of a private carpark in Camperdown as well as alleged parking on local streets in Haberfield, Annandale, and St Peters.

Actions taken to address issued raised included:

- Investigating number plates of vehicle alleged to be doing the wrong thing
- Delivering toolbox talks to different sites and crews about parking requirements
- Reminding and reprimanding workers and contractors that do not comply with parking requirements
- Periodically and proactively inspecting locations of previous parking complaints

4.5.1.3 Operational Aspects

Seven complaints related to the operation of Project construction sites and activities were received on the following:

- Condition of Pyrmont Bridge Road at Annandale
- A gap on a pedestrian ridge ramp
- Rental income loss
- A site access door being left open on Mallett Street in Annandale
- Light vehicles driving through Alt St to access carpark
- ASBJV's property damage process

Actions taken to address issued raised included:

- Carrying out temporary repairs of the Pyrmont Bridge Road surface.
- Carrying out temporary adjustment work on a pedestrian bridge ramp to remove a hazard

- Providing information on how impacts associated with the Project are managed and mitigated in accordance with environmental requirements.
- Providing clarification that the Mallet St access was only intermittently used while emergency surface repair work was carried out on the Pyrmont Bridge Road exit gate
- Encouraged workforce to minimise use of Alt St in their private light vehicles and to be conscious of the local community while noting it cannot be legally enforced
- Provided information about the property damage claim process including reasoning for associated timing it takes to investigate/close out claims

4.5.1.4 Other Complaints

Actions taken to address other various complaints including haulage, worker behaviour, dust communications and unrelated complaints (refer to Figure 4-4) include:

- Using the project's GPS system to check if vehicles are complying with vehicle movement plans and haulage.
- Not all complaint investigations found drivers doing the wrong thing - in such cases, clarification was provided on which spoil haulage routes are approved or specific approved hours for specific routes.
- Carrying out audits of haulage routes by driving the routes as well as remotely via the GPS system.
- Providing regular updates of Vehicle Movement Plans to contractors to ensure they understand approved haulage and access routes.
- Reviewing spoil haulage logistics to reduce occurrence of trucks having to stop at Parramatta Road by staggering truck start times, increasing surveillance.
- Issuing warnings and taking disciplinary actions including suspending haulage operators or removal of drivers from the project that do not comply with requirements and rules.
- Tool boxing workers and contractors on acceptable behaviours when working close to properties and businesses as well as the need to comply with project requirements and overarching road rules.
- Implementing additional dust mitigation measures such as increased frequency of water cart use and asking operators to turn off vehicles/plant when not in use.
- Offering meetings and where accepted meeting with residents to further explain work activities, timelines, approvals, and mitigation measures.
- Advising nearby projects of complaints related to their work.

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)
- Controlled Blasting - CoA C9(d)
- 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.

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

Overall, downstream monitoring results recorded were compliant with the SSTV limits except on a few occasions. Improvement in water quality downstream of Project discharge outlets was also recorded.

At Dobroyd Canal (Northcote St), the pH criterion was exceeded on two occasions and the turbidity (NTU) SSTV once following a significant wet weather event in March 2021. On all occasions, the exceedance was greater at the upstream control site than impact site indicating improved water quality downstream. A review of site Water Treatment Plant (WTP) records for outgoing water quality confirmed outgoing water quality was compliant with EPL limits. Therefore, no evidence was found to attribute the changes in water quality to the Project.

At Johnstons Creek (PBR), one downstream pH exceedance was recorded. At the time of sampling, PBR was not actively discharging and WTP records confirmed outgoing water quality that day was within EPL limits. Two NTU exceedances were also recorded, however were attributed to non-Project sources such as wet weather following a review of the site WTP records which confirmed outgoing water quality was within EPL limits.

At Sheas Creek/Alexandra Canal (Campbell Road), the pH lower limit was exceeded once and NTU SSTV exceeded on two occasions. In all instances, reviews of WTP records confirmed outgoing water quality was compliant with EPL criteria and therefore not attributable to the Project.

5.2 Groundwater

In accordance with the Groundwater Monitoring Program (GWMP), continuous groundwater level and quality (conductivity) monitoring was undertaken on 27 bores. Loggers were downloaded and manual level measurements collected every two months.

It should also be noted access to LSB-MT-BH1003 became unavailable after the January 2021 monitoring round, due to asphalting works undertaken by the local council which covered the bore. ASBJV are currently investigating the feasibility of recovering this bore.

5.2.1 Groundwater Level

The predicted drawdown levels for each monitoring borehole are estimated based on EIS baseline monitoring results and pre-tunnelling water levels measured following the commencement of construction in late 2018. Predicted drawdown levels are also influenced by the monitoring bores proximity to the tunnel and depth of the tunnel invert.

At the end of CCR reporting period, groundwater levels in six monitoring bores were recorded below their predicted drawdown levels. Four of these bores are located close to the tunnel alignment and were therefore expected to drop to the tunnel invert. The levels in the other two bores are considered to be within the threshold of natural variance between the model predictions and actual groundwater levels.

One bore (LSB-MT-BH1016) went dry during the reporting period, whilst two dry bores previously reported remained dry.

Groundwater drawdown predictions are currently being reviewed as part of the 24-month groundwater model review required by CoA E194, which is expected to be finalised at the end of the year. Following the completion of this review, monitoring data will be evaluated against the revised predictions and a management response initiated where required.

5.2.2 Groundwater Quality

Potential changes in groundwater quality were assessed using electrical conductivity (EC) dataloggers, with a management response initiated if the following occurred:

- EC data continuously exceeds the SSTV over the period of three months and depicts a rising trend
- EC data exceeds the SSTV at any time by more than 100%.

During the reporting period, no management response was triggered for the six bores located in the Hawkesbury Sandstone (HSS) lithology. LSB-GW-HB-BH08d was observed in the previous reporting period to be just above the SSTV. The EC continued to rise until December 2020 and then has since gradually decreased. EC levels in this well will continue to be monitored to ensure identify any potential future upwards trends.

The EC within LSB-MT-BH1015 rose above the HSS SSTV during the reporting period after the mainline tunnel heading excavation passed the bore and peaked at the end of March 2021. LSB-GW-HB-BH12 also rose to equal or slightly above the SSTV for a short period of time. Since then the EC has not demonstrated any potential to increase. The EC in LSB-MT-BH1015 will continue to be closely monitored, with a management response triggered if the EC demonstrates a continued rising trend.

Between January and March 2021, EC levels in LSB-GW-HB-BH12 gradually rose, however experiences a sudden decrease mid-March. The decrease aligned with the deluge of rainfall received between the 11 March and 24 March, totalling 402mm.

As detailed in the previous CCR, the SSTV for the alluvial bore LSB-HV-PT-OW5a was initially developed using on baseline data from the EIS bore HB_BH08s. This SSTV was reviewed and updated with construction monitoring data recorded prior to tunnel excavation in this area (i.e. pre-impact) to ensure its appropriateness for assessing potential groundwater quality impacts associated with saline intrusion. At the end of the reporting period, EC levels in this bore were recorded above the revised SSTV. However, the gradual increase in EC that occurred from January to March 2021 was then followed by a decrease towards the SSTV. Therefore, no management response is triggered.

5.2.3 Water Treatment Plant (WTP) Discharges

During the reporting period, permanent construction-phase WTP were operational at the three Project tunnelling sites. The WTP are designed to treat a combination of surface water, groundwater and water from site operations to a suitable quality for discharge in accordance the Project's Environment Protection Licence (EPL) (Licence No. 21149). Monthly WTP samples are taken to confirm compliance against the EPL criteria.

A summary of the volumes discharged from each site and water quality results during the reporting period are summarised in Table 5-1

Table 5-1 Site WTP Discharges

Water Treatment Plant	EPL Discharge Point Ref.	Total Volume Discharged (m3)	No of Exceedances of EPL Criteria
Pyrmont Bridge Road site	3	21,837.765	0
Northcote Street site	5	101,937.74	0
Campbell Road site	4	24,445.49	0

5.2.4 Tunnel Inflows

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

Tunnel inflow = WTP Discharge – Project water inputs + Spoil Water Content

During the reporting period, tunnel inflows at the three Project sites were estimated every two months and are summarised in Table 5-2. Due to the difficulty of accurately quantifying groundwater inflows, uncertainty analysis has been undertaken and been accounted for in the inflow estimations.

Table 5-2 Total Tunnel Groundwater Inflow

Time Period	Campbell Road (L/s)	Pyrmont Bridge Road (L/s)	Haberfield (L/s)
December 2020	1.6110	2.1041	6.0840
February 2021	2.2382	1.8455	7.7006
March 2021	2.4587	1.6227	8.6674
May 2021	3.03	2.1554	9.0427

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
- Unattended ground-borne noise monitoring
- Real-time unattended noise and vibration monitoring
- Attended and unattended vibration monitoring

Table 5-3 provides a summary of the Project-wise noise and vibration monitoring results during the reporting period.

Table 5-3 Noise and Vibration Monitoring Events Summary

Monitoring Type	Prediction Exceedances	Comments
Airborne noise monitoring	0	Based on 14 monitoring events. All recorded exceedances were related to non-Project noise sources (i.e. road traffic and other construction works in the local vicinity) increasing the LAeq(15min) during the monitoring event.
Ground-borne noise monitoring	0	Based on 16 monitoring events. All ground-borne noise monitoring results where construction was the dominant noise source were compliant with the applicable criteria.
Vibration monitoring for potential cosmetic damage	0	Based on 6 monitoring events. All results were compliant with the relevant criteria for cosmetic damage
Vibration monitoring for human comfort	0	Based on 8 monitoring events. All results were compliant with the criteria for human comfort and no additional management measures were required to be implemented.

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.

This 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.

5.4 Controlled Blasting

No controlled blasting was undertaken during the reporting period.

As detailed in Section 2.2.2, the Project is no longer considering the use of controlled blasting as an excavation methodology.

5.5 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/m^2/month. During the reporting period, 17 monthly dust results greater than 4 g/m^2 were recorded across the Project as shown in Figure 5-1. As a result, the annual dust averages exceed the performance criteria at all sites except for PREW (refer to Table 5-4).

Monitoring results for Wattle St in February 2021 were not able to be obtained as the collection bottle had been broken.

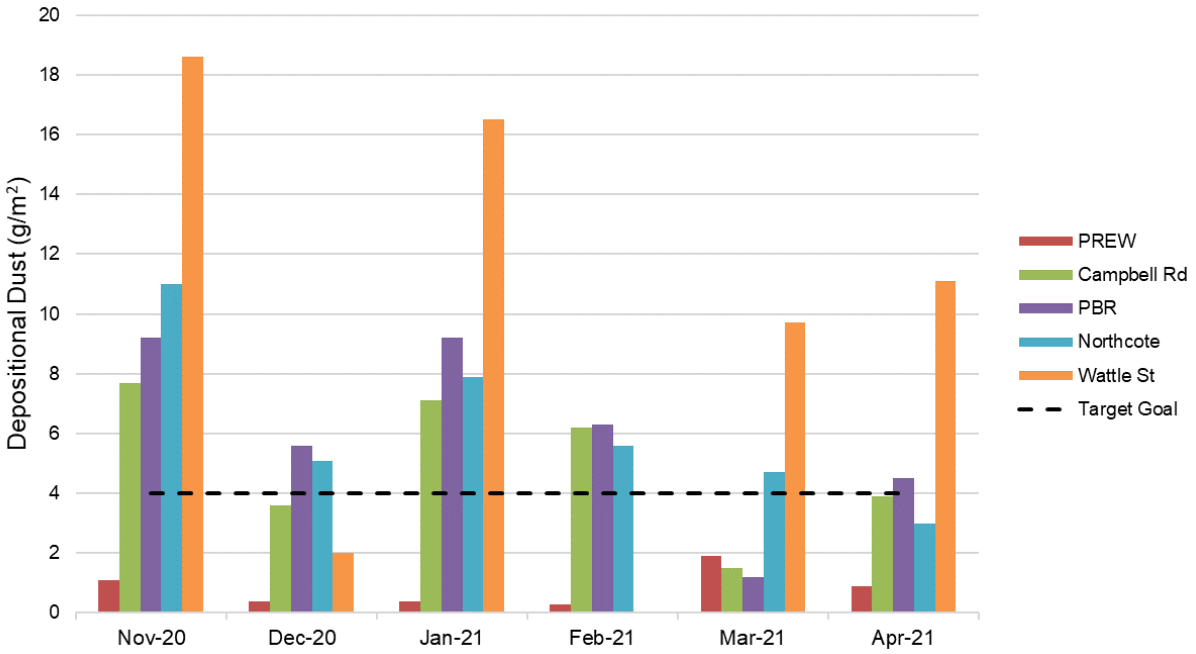

Figure 5-1 Monthly Depositional Dust Results by Site

Table 5-4 Annualised Average Dust Values (g/m2)

Construction Site	PREW	Campbell Road	PBR	Northcote	Wattle St
Annualised Avg	1.38	**6.11**	**4.79**	**5.06**	**10.38**

As reported in previous CCRs, dust monitoring results are highly correlated with air quality trends in the Greater Sydney Region and influenced by seasonal patterns, rainfall, and other factors such as hazard reduction burns. Monthly dust levels at each site increased and decreased together throughout the year, further demonstrating the strong influence of non-Project background sources on depositional dust monitoring results

At the end of the reporting period, dust levels at all sites are trending downwards towards the performance criteria, with the exception of the Wattle St site. On-site dust management is regularly monitored by ASBJV Environmental Coordinators, as well as the Project ER during fortnightly formal inspections. As detailed in Section 4.3, the Project received more positive ER findings than issues raised during the reporting period. These positive findings included effective dust management controls with no visible dust observed.

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

- Spoil handling predominantly within an acoustic shed
- Where 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

(Table redacted for online version)

Appendix B Action Status Table

Source	Finding Type	Finding Description	Relevant CoA	Action Proposed	Proposed Completion Date	Status	Action Completed
Acciona ISO 14007 EMS Aduit	**OFI**	The Project's training system Pegasus currently captures high-level training, however not routine environmental awareness training including toolboxes on Environmental Work Methods Statements (EWMS), permits, etc.	N/A	Consideration could be given to broaden the scope of Pegasus to capture all training delivered for the Project.	30/04/2021	Completed 22/04/2021	Use of the Pegasus system to capture environmental awareness training was configured by the ASBJV Training team. The ASBJV Environment team is now using Pegasus to capture specific and tailored training sessions as required.
Independent Audit 2021	**OFI**	Whilst non-tonal movement alarms were fitted to all vehicles and plant inspected during the audit, and there was a high level of awareness of this requirement, the Project Plant Inspection Report Form did not specifically identify non-tonal alarms as a requirement.	N/A	Consideration could be given to revise the wording in the Plant Inspection Form from "Reverse / travel alarm operational" to "Reverse / travel alarm non tonal and operational" or similar.	N/A	Open	ASBJV Environment and Plant teams are reviewing the key vehicle and plant supplier contracts to determine whether this update of the Plant Inspection Form is possible.
	OFI	Whilst the audit found no indication that the respite requirements were not being complied with, there was minimal documented evidence to demonstrate that respite periods for high noise impact surface works were being complied with.	E72	Consideration should be given to implement a process to record respite periods for high noise impact works on the surface.	N/A	Open	ASBJV Environment team are exploring options with site Supervisors to document respite periods in their site diaries.

Notes: Audit Finding Types: NCR = Non-Conformance, OBS = Observation, OFI = Opportunity for Improvement