

SSI 10051

6 Monthly Construction Monitoring Reporting

October 2022 – April 2023

Western Sydney Airport – Surface and
Civil Alignment Works (SCAW)

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Distribution and Authorisation

Document Control

The CPBUI JV Environment Manager is responsible for ensuring this report is reviewed and approved. The Environment and/or Community Engagement Manager is responsible for updating this report, as required.

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Amendments

The implementation of this report is under the authority of the CPBUI Delegated Authority Matrix. All Contract personnel will perform their duties in accordance with this Plan, supporting plans, and related procedures.

Revision Details

Rev.	Details
A	First Draft
B	Response to Sydney Metro and ER comments
C	Response to further Sydney Metro and ER comments

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Acronym/Term	Meaning
ANZECC	Australia and New Zealand Environment Conservation Council
AQMP	Air Quality Management Plan
AQMonP	Air Quality Monitoring Program
BOM	Bureau of Methodology
CEMP	Construction Environmental Management Plan
CNVS	Sydney Metro Construction Noise and Vibration Statement 2020
CPBUIJV	CPB Contractors and United Infrastructure Joint Venture
dB(A)	A-weighted Decibels
DEOH	Defence Establishment Orchard Hills
DDG	Dust Deposition Gauge
DNVIS	Detailed Noise and Vibration Impact Statement
EIS	Environmental Impact Statement
EPL	Environmental Protection Licence
ER	Environmental Representative
LAeq	Equivalent Continuous Sound Pressure Level – generally measured over a 15 minute period and presented in decibels
LOR	Limit of Reporting
M12	M12 Motorway under construction between the M7 Motorway and The Northern Road
NCA	Noise Catchment Area
NML	Noise Management Level
NTU	Nephelometric Turbidity Unit
NVMP	Noise and Vibration Management Plan
NVMonP	Noise and Vibration Monitoring Program
RBL	Rating Background Level
SCAW	Sydney Metro Western Sydney Airport – Surface Civil Alignment Works Package
SMF	Stabilising and Maintenance Facility
SWMP	Soil and Water Management Plan
SWQMP	Surface Water Quality Monitoring Program
TSS	Total Suspended Solids
WSIA	Western Sydney International (Nancy-Bird Walton) Airport

Part 1 Overview

1. Introduction

1.1. Project Background

The Sydney Metro Western Sydney Airport Project (referred to as the Project) is being undertaken on Darug Country and will form part of the future Western Parkland City. The Project involves the construction and operation of a new 23km metro rail line that extends from the existing Sydney Trains suburban T1 western line (at St Marys) in the north to the Aerotropolis (at Bringelly) in the south. The Project alignment includes a combination of tunnels and civil structures, including viaducts, bridges, and surface and open-cut troughs between the two tunnel sections. The Project also includes six new metro stations, and a stabling and maintenance facility and operational control centre at Orchard Hills (Figure 1).

The Surface Civil Alignment Works package (SCAW) is the second major contract package to be procured for the Project and was awarded to the CPB Contractors and United Infrastructure Joint Venture (CPBUIJV). The successful and timely completion of the SCAW package is critical to the subsequent construction activities and ultimate completion of the entire Project.

The Sydney Metro Western Sydney Airport will become the transport spine for Greater Western Sydney, connecting communities and travellers with the new Western Sydney International (Nancy-Bird Walton) Airport (referred to as Western Sydney International) and the growing region.

1.2. SCAW scope of works

The scope for SCAW includes approximately 10.6km of alignment up to the underside of track formation from Orchard Hills to the Western Sydney International Airport (WSIA). This includes approximately:

- 3.6 kilometre of viaduct
 - 400 metres of viaduct over Blaxland Creek
 - 660 metres of viaduct over the Patons Lane area and un-named creek
 - 2.5km of viaduct in the Luddenham Road area including across the Warragamba pipeline, at Luddenham Station, across Luddenham Road and across Cosgrove Creek
- 205 metres of bridges
 - An over rail bridge, approximately 180m long, over the proposed M12 Motorway
 - An over rail bridge, approximately 25m long, over the drainage swale on the WSA site
- 6.9km of at-grade alignment
 - 600m at Orchard Hills, south of Lansdowne Road
 - 1.6km alongside the stabling maintenance facility in Orchard Hills
 - 900m to the north of the Warragamba pipelines
 - 1.1km north of the proposed M12 motorway
 - 1.4km south of the proposed M12 Motorway on Elizabeth Drive
 - 1.3km within the Airport site from the northern boundary to the Airport Business Park Station
- Temporary and permanent access roads.

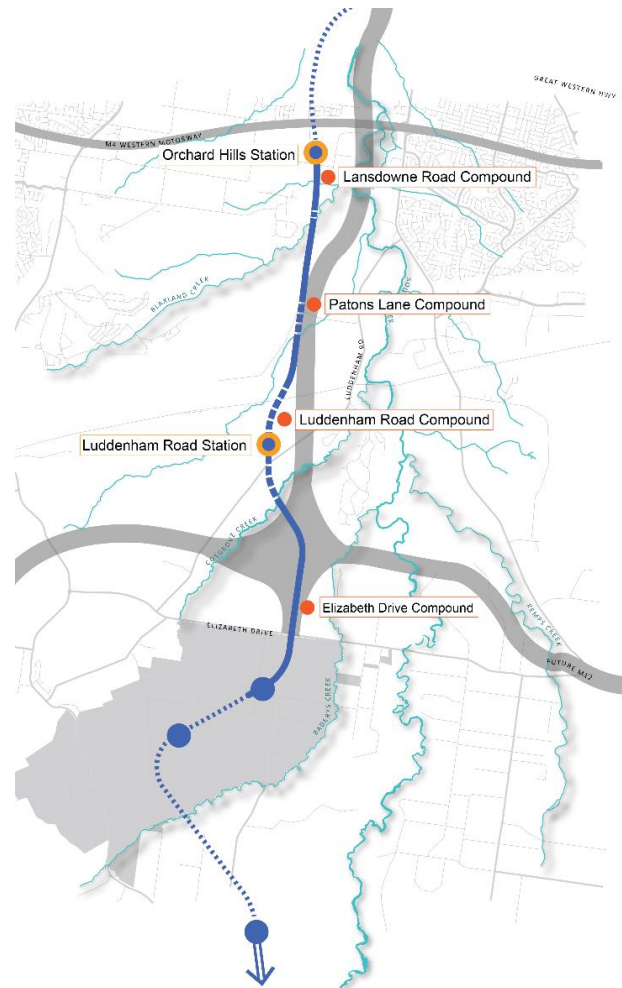


Figure 1 – Overview of the SCAW Project

1.3. Works Undertaken During Reporting Period

This monitoring report covers a reporting period of October 2022 to April 2023. Preliminary works commenced in October 2022, with full commencement of construction occurring in November 2022 following approval of the project Construction Environment Management Plan (CEMP). Work activities undertaken during the reporting period are summarised below in Table 1-1.

Table 1-1 Summary of work activities during reporting period

Month	Works Activities
October 2022	<ul style="list-style-type: none"> • Geotech investigations across SCAW • Commencement of sandstone import at the Stabilising and Maintenance Facility (SMF) • Site preparation for Elizabeth Drive compound
November 2022	<ul style="list-style-type: none"> • Site establishment works for SMF compound • Ongoing earthworks/sandstone import at SMF • Commencement of bulk earthworks at Elizabeth Drive compound • Ongoing Geotech investigations across SCAW
December 2022	<ul style="list-style-type: none"> • Ongoing earthworks/sandstone import at SMF • Completion of earthworks at Elizabeth Drive compound and establishment of compound structures • Construction of haul road between Elizabeth Drive and M12 • Establishment of environmental controls for end of year shutdown
January 2023	<ul style="list-style-type: none"> • Ongoing earthworks/sandstone import at SMF • Geotech investigations within Defence Establishment Orchard Hills (DEOH) • Establishment of piling pad at M12 bridge • Installation of drainage crossings along Elizabeth Drive to M12 haul road • Shed installation at Elizabeth Drive compound
February 2023	<ul style="list-style-type: none"> • Ongoing earthworks/sandstone import at SMF • Completion of piling works at M12 bridge • Site establishment and preparation for piling works at Luddenham Station • Ongoing Elizabeth Drive compound establishment including DGB placement and spray seal • Topsoil placement along Elizabeth Drive to M12 Haul road
March 2023	<ul style="list-style-type: none"> • Ongoing earthworks/sandstone import at SMF • Ongoing piling works at Luddenham Station including south of Luddenham road • Substructure works at M12 bridge including abutment concrete pours • Clearing in preparation for creek crossing at Blaxland Creek • Preparatory earthworks between M12 and Cosgrove Creek
April 2023	<ul style="list-style-type: none"> • Ongoing Earthworks/sandstone import at SMF • Substructure works at Luddenham Station in preparation for viaduct segment placement • Commencement of earthworks within WSIA

Part 2 – Scope of this report

This Construction Monitoring Report provides the results of all environmental monitoring required to be undertaken by CPBUI JV in accordance with the project Construction Environmental Management Plan (CEMP) and Construction monitoring programs approved in accordance with Condition of Approval C13 of Infrastructure Approval SSI-10051.

This report covers a reporting period of October 2022 to April 2023 and has been compiled to address:

- Surface Water Quality Monitoring Program:
 - Water Monitoring Reports (every 6 months)
 - Construction Compliance Reports (every 6 months)
- Air Quality Monitoring Program
 - Air Quality Monitoring Report (every 6 months)
 - Construction Monitoring Report (every 6 months)
- Noise and Vibration Monitoring Program
 - Construction Monitoring Report (every 6 months)
 - Construction Noise and Vibration Monitoring Report (every 6 months)

The Planning approval requirement for monitoring report is discussed in Section 3.

Part 3 – Reporting Requirements

The SSI 10051 Infrastructure Approval Condition of Approval C22 states that accrued results of the Construction Monitoring Programs outlined within the project Construction Environment Management Plan (CEMP), and relevant sub-plans, are submitted to the Planning Secretary, ER, and relevant regulatory agencies. Results are required to be submitted in the form of a six-monthly Construction Monitoring Report as per Table 18 in Section 7.13.2 (Reporting) of the project CEMP.

Table 3-1 SSI 10051 Condition C22 Construction Compliance Report

SSI 10051 Condition	Requirement	Report Reference
C22	<p>The results of the Construction Monitoring Programs must be submitted to the Planning Secretary, ER and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program.</p> <p>Note: Where a relevant CEMP Sub-plan exists, the relevant Construction Monitoring Program may be incorporated into that CEMP Sub-plan.</p>	Section 7.13.2

Part 4 – Monitoring

Construction monitoring programs developed in accordance with C13 include:

- Construction Air Quality Construction Monitoring Program (AQMonP),
- Construction Noise and Vibration Monitoring Program (NVMonP), and
- Construction Surface Water Quality Monitoring Program (SWQMP).

The Monitoring Programs have been developed as the key measurement tools to compare actual impacts of SCAW works against the predicted impacts in the EIS. The Monitoring Programs outline scope, methodology, location and exceedance criteria for all environmental monitoring on SCAW and should be read in conjunction with this Monitoring Report.

This Section presents summaries of the results for all monitoring undertaken in accordance with the programs outlined above with full tabulated results provided in Appendix 1.

4.1 Air Quality

4.1.1. Air Quality Monitoring Requirements

The AQMonP outlines types of air quality monitoring to be undertaken by SCAW which are summarised in Table 4-1 below.

Table 4-1 Air Quality Monitoring Identified in the AQMonP

Monitoring Type	Frequency	Methodology (AQMonP)	How Reported
Wind and weather forecast	Daily	Weather conditions and forecast data will be obtained from the Bureau of Meteorology (BOM) website.	Available on BOM website: http://www.bom.gov.au/climate/averages/tables/cw_067108.shtml
Climate	Hourly	Daily rainfall monitoring from weather station. Temperature and humidity data will be obtained from automatic weather station and/or BOM website.	Collected from Project Weather Station provided in Appendix 1 and the BOM website: http://www.bom.gov.au/climate/averages/tables/cw_067108.shtml
Suspended Particles (PM2.5/PM10 concentrations)	Real Time	Real time monitoring will be undertaken to support deposited dust data in response to a complaint and/or investigation.	As discussed in the AQMonP Section 5.4 Real time monitoring is not an approved method for assessing against the compliance criteria according to Schedule 3 of the National Environment Protection (Ambient Air Quality) Measure and the Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales. Therefore, data captured through real time monitoring is indicative and utilised as a management tool only. For this reason, results are not included in monitoring reports.
Deposited Dust	Monthly	Deposited dust data to be collected from SCAW dust deposition gauges.	Summary of results in Table 4-2, full tabulated results in Appendix 1
Odour	Daily	No detectable odour to extend beyond SCAW boundary.	Monitored during environmental inspections and by site supervisors. No odours have been detected during inspections in the reporting period. Results and investigations of odour will be reported if detected during SCAW construction.

4.1.2. Depositional Dust Monitoring - Methodology and Locations

Dust deposition gauges (DDGs) were used to record airborne dust on SCAW during the reporting period. The monitoring criteria (identified in Table 4-2) relates to total cumulative concentration of dust in the air, not just contributions from SCAW specific sources and provide a useful measure of changing local air quality.

Depositional dust monitoring is undertaken in accordance with the methodology outlined in Section 5.3 of the AQMonP. Three DDGs were used during the reporting period to monitor dust around SCAW and were located adjacent to active construction work areas in representative locations to measure air quality impacts to surrounding properties:

- DS 01 – located to the North of earthworks at the Stabilising and Maintenance Facility (SMF) and nearby residents in Orchard Hills (130m to nearest resident).
- DS 02 – Located to the South of earthworks at the SMF and nearby residents in Luddenham (520m to nearest resident).
- DS 03 – Located to the North-East of earthworks at the SCAW compound and nearby residents at Badgerys Ck (940m to nearest resident).

The specific locations were selected in accordance with AS/NZS 3580.1.1 2016, *Methods for Sampling and analysis of ambient air – Guide to siting air monitoring equipment* (Standards Australia, 2016). A map of locations is provided in Appendix 2.

4.1.3. Depositional Dust - Monitoring Results Summary

Table 4-2 provides the air quality monitoring results for the reporting period. Figure 2 presents DDG results across the reporting period.

Full tabulated results are provided in Appendix 1.

Table 4-2: Air Quality Results – Depositional Dust

Monitoring Type and Trigger Values	Source/ Methodology	Results
Depositional Dust long-term impact assessment trigger values (insoluble solids): <ul style="list-style-type: none"> - Annual (max total¹): 4g/m²/month - Annual (max increase²): 2g/m²/month 	AQMonP Table 5	6-month average of deposited dust were recorded below the 4g/m ² /month total and 2g/m ² /month max increase.

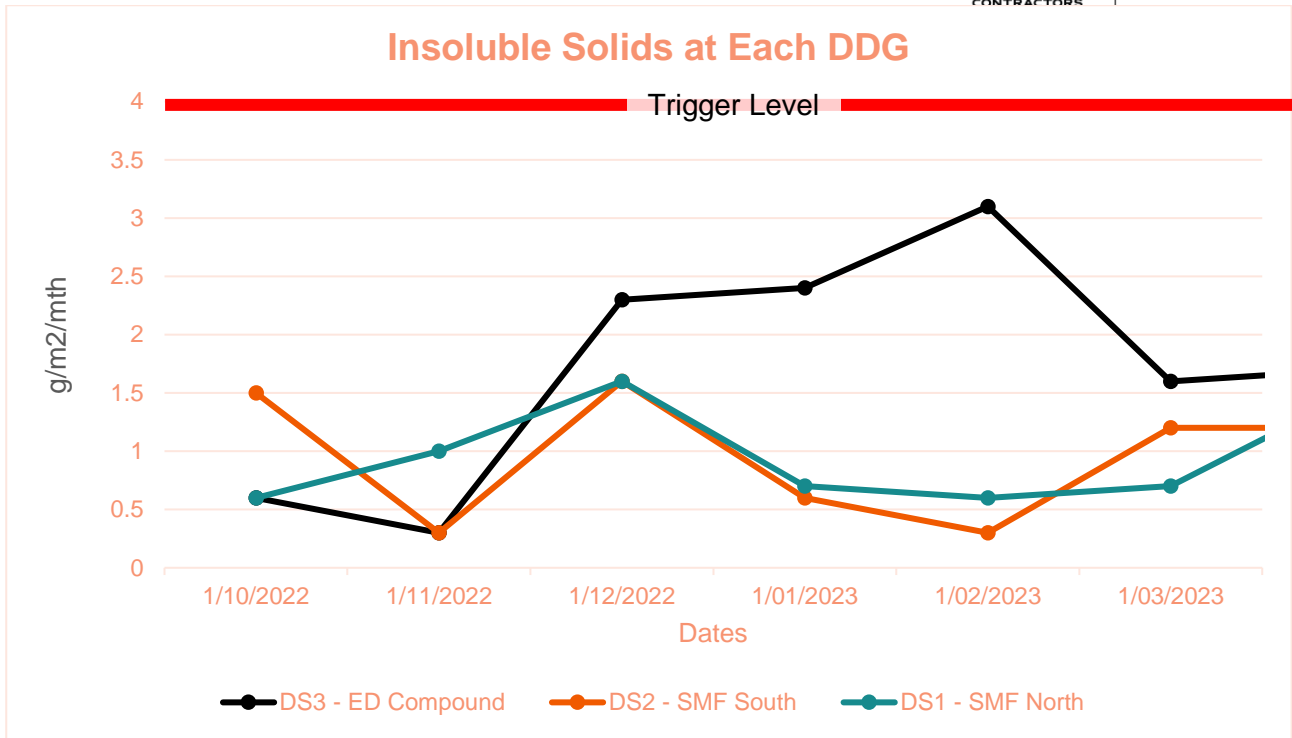


Figure 2: Insoluble solids at each DDG location

4.1.4. Air Quality Monitoring Results Discussion

As detailed in Table 4-2, there were no exceedances of nominated Air Quality Management Plan (AQMP) trigger levels for DDG monitoring across the reporting period. Results indicate dust conditions were highest at the SCAW compound DDG and dust conditions at the SMF DDGs were similar at both locations. This is likely caused by December to February being a key works period in establishing the SCAW compound, comprising of earthworks, sandstone import and topsoil placement in close proximity to the DDG.

Notably, the exceedance criteria relating to an increase of no more than 2g/m2/month was not exceeded during the reporting period, however from November to December the dust gauge at the SCAW compound experienced an increase of exactly 2g/m2/month. While this is not considered an exceedance it has triggered the management response of moving the dust gauge to a more suitable location that better represents conditions at nearby sensitive receivers. The new location is 370m closer to the nearest residential receiver in this area and will take effect in the next reporting period.

Following completion of the reporting period, all DDGs will be reviewed to determine suitability of monitoring location and to determine if additional DDGs are required.

Site inspections conducted by the SCAW environment team and Site Supervisors did not detect any odours as a result of SCAW construction activities and therefore no further monitoring or investigation was undertaken.

4.2 Noise and Vibration

4.2.1. Noise Monitoring Requirements

The NVMonP outlines types of noise monitoring to be undertaken by SCAW which are summarised in Table 4-3 below.

Table 4-3 Noise Monitoring Requirements identified in the NVMonP

Monitoring Type	Methodology	Frequency/Trigger	Purpose	How Reported
Site Inspections	Weekly Environmental Site Inspection	Weekly	Inspection of works to ensure that noise and vibration mitigation measures are being implemented on site.	Records of SCAW Environmental site inspections are captured on the CPBUI Internal Environmental Management System.
Attended Noise Monitoring	A 15-minute sample is collected with time weighted average capturing at a minimum Leq, Lmax, L10 and L90. The testing method includes: Sound level meter configured for “Fast” time weighting and “A” frequency weighting.	Fortnightly	Fortnightly attended noise monitoring to determine performance against the Project Noise Management Levels (NMLs) or Noise predictions identified in noise modelling.	Summary of results in Table 4-6, Full tabulated results in Appendix 1.
		As required following complaint	Where a complaint is received and monitoring is considered an appropriate response to determine if noise levels exceed NMLs.	Summary of results in Table 4-6. Complaints discussion included in Section 5. Full tabulated results in Appendix 1.
		As required by an Environmental Protection Licence or If requested by EPA	To assess or demonstrate compliance with the Project Environmental Protection Licence (EPL).	Night works monitoring undertaken during reporting period - summary of results in Table 4-6. Full tabulated results in Appendix 1.
		Where verification is required in accordance with the Construction Noise and Vibration Standard (CNVS)	Where a project Detailed Noise and Vibration Impact Assessment (DNVIS) identifies the need for monitoring in accordance with mitigation measures outlined in the CNVS.	
		As required where a change of construction methods or techniques is anticipated to result in increased noise.	N/A – works during the reporting period were consistent with the modelled activities in the project EIS.	

Monitoring Type	Methodology	Frequency/Trigger	Purpose	How Reported
Spot Check Attended Noise Monitoring	<p>Spot check monitoring according to AS 2012.1 Acoustics Measurement of airborne noise emitted by earth-moving machinery and agricultural tractors – Stationary test condition.</p> <p>The testing method includes: Sound level meter configured for “Fast” time weighting and “A” frequency weighting.</p>	<p>Monthly for construction activities with Perceived Noise Level >60 dB LAeq(15min) or when new predicted high noise impact activities commence.</p> <p>As required</p>	<p>Spot checks of noise intensive plant where it is required to check noise emission against manufacturer’s specifications or to confirm the operating sound power level.</p> <p>For the purposes of refining construction methods or techniques to reduce noise levels.</p>	<p>Spot check attended noise monitoring was not undertaken during the reporting period as no SCAW construction activities as listed in Table 1-1 were identified as high noise impact in the EIS or perceived as greater than 60dB at the nearest receiver during site inspections or fortnightly attended monitoring.</p>
Plant Noise Auditing	<p>Spot check monitoring according to AS 2012.1 Acoustics Measurement of airborne noise emitted by earth-moving machinery and agricultural tractors – Stationary test condition.</p> <p>The testing method includes: Sound level meter configured for “Fast” time weighting and “A” frequency weighting.</p>	<p>All significant noise generating items of plant</p>	<p>To determine compliance with operating SWL’s for plant and equipment defined in the CNVS</p>	<p>Plant Noise Auditing was not undertaken during the reporting period as:</p> <ul style="list-style-type: none"> • No plant/machinery has been considered significantly noise generating in the context of proximity to residential receivers. • All plant/machinery is assessed during the onboarding process to confirm mechanical performance quality • Fortnightly attended monitoring and weekly site inspections have not identified significantly noise generating plant/machinery

4.2.2. Noise monitoring - Methodology and Locations

All Noise monitoring is undertaken in accordance with the methodology outlined in Table 7 of the NVMonP. Attended monitoring locations are nominated in Section 5.1.3 of the NVMonP and provided Table 4-4, with a map of locations in Appendix 2 below.

The noise monitoring locations are selected to represent the Noise Catchment Areas (NCA) identified as applicable to the SCAW Project. These locations have been selected to coincide with the approximate locations where baseline monitoring occurred during the EIS.

Table 4-4: Noise monitoring locations (fortnightly attended monitoring)

Noise monitoring location (EIS)	NCA	NML – dB(A)			Address
		Day	Evening	Night	
NM16	NCA07	57	47	35	68 Solander Drive, St Clair
NM08	NCA08	54	49	45	7 Bordeaux Place, Orchard Hills
NM09	NCA09	50	44	39	246 Luddenham Road, Orchard Hills
NM10	NCA10	45	35	35	27 Halmstad Boulevard, Luddenham

4.2.3. Vibration Monitoring Requirements

The NVMonP outlines types of vibration monitoring to be undertaken by SCAW which are summarised in Table 4-5 below.

Table 4-5: Vibration Monitoring Requirements Identified in the NVMonP

Monitoring Type	Methodology	Frequency/Trigger	How Reported
Attended or unattended monitoring to assess peak vibration level against cosmetic and structural damage criteria (buildings) or human comfort criteria derived from the Standard DIN-4150	Peak Particle Velocity (PPV) measured in mm/s recorded using a calibrated accelerometer.	At start of vibratory compaction work or rock breaking within 50m of residential buildings	N/A – No works were undertaken within 50m of residential buildings during the reporting period.
		Where verification is required in accordance with CNVS.	N/A - not triggered during reporting period.
		Where a complaint is received and monitoring is considered an appropriate response.	N/A - No vibration related complaints received during the reporting period.
		If requested by the EPA.	N/A - No requests from EPA received during the reporting period.
		Where an activity may occur within safe working distances for cosmetic damage for no more than one day continuously.	N/A - No works were undertaken within the nominated safe working distances for cosmetic damage in the CNVMP during the reporting period.
		During construction to confirm minimum safe working distances in Section 6.4.5 of the Noise and Vibration Management Sub-plan and refine construction methods if vibration levels exceed guideline values.	N/A - No works were undertaken within the nominated safe working distances for cosmetic damage in the CNVMP during the reporting period.

Monitoring Type	Methodology	Frequency/Trigger	How Reported
		<p>Prior to and during construction for high risk construction activities that has the potential to impact on the Warragamba to Prospect Water Supply Pipeline (in accordance with a DNVIS)</p>	<p>No high-risk construction activities were undertaken during the reporting period that had the potential to impact the Warragamba to Prospect Water Supply Pipeline</p> <p>One monitoring event was undertaken during geotechnical survey works for due diligence purposes and is provided below in Table 4-6 and Appendix 1.</p>
		<p>At the commencement of works to confirm vibration limits to prevent cosmetic damage and during vibration generating activities that has the potential to impact the following heritage items:</p> <ul style="list-style-type: none"> • McGarvie Smith Farm • McMaster Farm 	<p>N/A - No vibration intensive activities were undertaken within the nominated safe working distances in the CNVMP.</p>

4.2.4. Noise and Vibration Monitoring Results Summary

Table 4-6 details noise and vibration monitoring results for the reporting period. Full tabulated results are provided in Appendix 1, with exceedances highlighted.

Table 4-6: Noise and Vibration Monitoring Results

Monitoring Type and Trigger Values	Source/ Methodology	Results
Noise Monitoring		
<p>Fortnightly Attended Monitoring.</p> <p>NML, LAeq (15 min):</p> <ul style="list-style-type: none"> - Noise affected Rating Background Level (RBL) + 10dB - Highly noise affected criteria: 75 dB(A) 	<p>Noise and Vibration Management Sub-plan</p>	<p>NM16 – 8 exceedances of NML</p> <p>NM08 – 3 exceedances of NML</p> <p>NM09 – 8 exceedances of NML</p> <p>NM10 – 7 exceedances of NML</p> <p>Exceedances related to CPBUI construction activities: 0</p>
<p>Additional Attended Monitoring (in response to complaint at Bordeaux PI, Orchard Hills)</p> <p>16/02/2023</p> <ul style="list-style-type: none"> - NML:54 dB(A) - Highly noise affected Criteria: 75dB(A) 	<p>Noise and Vibration Management Sub-plan</p>	<p>15 min LAeq: 57.1</p> <p>Result exceeded NML by 3.1 dB</p> <p>SCAW construction was noted to be audible and mitigation measures reviewed.</p>

Monitoring Type and Trigger Values	Source/ Methodology	Results
Attended Monitoring during night works to demonstrate compliance with the project EPL and as required by the CNVS. <ul style="list-style-type: none"> - NMLs: Noise affected RBL + 5 DB 	Noise and Vibration Management Sub-plan	No exceedances of NMLs were recorded.
Vibration Monitoring		
Recommended vibration limits for cosmetic damage: <ul style="list-style-type: none"> - Buildings used for commercial purposes, industrial buildings and buildings of similar design: 10mm/s - Dwellings and buildings of similar design and/or occupancy: 5mm/s - Sensitive Structures (such as heritage buildings): 2.5mm/s 	Noise and Vibration Management Sub-plan	Highest recording: 0.58mm/s 99.16% of recordings were below 0.4mm/s

4.2.5. Noise and Vibration Monitoring Results Discussion

Noise

Fortnightly attended noise monitoring was undertaken during the reporting period as the primary method of determining the effectiveness of noise and vibration mitigation measures implemented during construction in accordance with the NVMonP. Additional Noise monitoring was undertaken following a community complaint and during night works to verify the accuracy of any noise assessments.

During fortnightly attended noise monitoring, no exceedances of daytime NML's were identified as a result of CPBUI JV Construction activities during the reporting period. All recorded exceedances included in Appendix 1 were attributed to external factors such as:

- Road traffic noise (particularly at NM16 and NM09).
- Air traffic noise (airspace around SCAW is commonly used by light aircraft).
- Local construction (a number of dwellings are under construction adjacent to NM10), or
- Wildlife/birdlife (particularly cicadas during summer).

SCAW construction was audible on a number of occasions at NM08, however construction noise was noted to either be below the applicable NML or not the dominant noise source during monitoring. SCAW construction was not audible during monitoring events at all other locations.

Additional attended noise monitoring was undertaken at Bordeaux PI during February following a community complaint (approx. 200m from NM08). At the time of attended monitoring, SCAW construction was noted as audible and monitoring recorded a 15 minute LAeq 3.1dB higher than the applicable NML. This NML exceedance is recognised as occurring during approved daytime construction hours.

In response to this exceedance, CPBUI reviewed work activities and implemented mitigation measures such as:

- Relocation of earthworks haul road to Eastern side of the SMF;

- Respite periods; and
- Establishment of topsoil stockpile on Western project boundary to act as line of site barrier.

Fortnightly monitoring in March and April at NM8 indicated noise levels in this area had returned to below NML. Noting there were a further 6 complaints relating to noise at the SMF during the reporting period (see section 5 below), no further additional monitoring was undertaken following these complaints as:

- All complainants were offered noise monitoring however some refused,
- All complaints were located within close proximity to NM08 and fortnightly monitoring had either just occurred or was able to be utilised, and
- Some complaints were able to be responded to using monitoring data previously recorded, such as fortnightly monitoring or the above-mentioned complaint triggered monitoring at Bordeaux PI.

Further additional attended noise monitoring was undertaken during March to assess potential impacts from night works occurring at the SMF. All monitoring results indicated noise levels near affected receivers were below applicable NMLs.

Vibration

While not considered high risk vibratory work, one monitoring event was undertaken at the heritage listed Warragamba Pipeline during geotechnical testing works as summarised in Table 4-6.

This was undertaken during the reporting period as a precautionary measure to ensure early investigation works did not pose a risk of vibration impacts to the Pipeline and the results recorded vibration measurements significantly below the recommended vibration limits for cosmetic damage defined in the Construction Noise and Vibration Management Plan (CNVMP).

4.3 Surface Water Quality

4.3.1. Surface Water Monitoring Requirements

In accordance with the SWQMP, monthly surface water monitoring was undertaken during the reporting period as a tool to measure effectiveness of soil and water management measures implemented during construction.

4.3.2. Surface Water Monitoring - Methodology and Locations

All surface water quality monitoring is undertaken in accordance with the methodology outlined in Section 4 of the SWQMP. Monitoring is undertaken monthly during construction and post rainfall monitoring is undertaken following a rainfall event exceeding 25mm in a 24 hour period, provided safe access to waterways. In some instances, the post rainfall monitoring may occur days after a rain event to ensure safe access can be achieved.

Surface water quality monitoring was carried out at three sites during the reporting period as detailed below in Table 4-7 with a map of locations provided in Appendix 2. The surface water quality monitoring locations were also monitored during the baseline monitoring period that informed the EIS.

Table 4-7: Water Quality Monitoring Locations

Sample ID	Sample location	Monitored during reporting period (Y/N)
SCAW 1 US	Blaxland Creek Upstream	Y
SCAW 1 DS	Blaxland Creek Downstream	Y
SCAW 2 US	Unnamed Tributary of South Creek upstream	N – Access unavailable – Creek located within Defence Establishment Orchard Hills
SCAW 2 DS	Unnamed Tributary of South Creek downstream	N – as above
SCAW 3 US	Cosgrove Creek upstream	Y
SCAW 3 DS	Cosgrove Creek downstream	Y
SCAW 4 US	Badgerys Creek upstream, Badgerys Creek Road crossing, Bringelly	Y
SCAW 4 DS	Badgerys Creek downstream	Y

Surface water quality results are compared against the Australia and New Zealand Environment Conservation Council (ANZECC) water quality guidelines for slightly to moderately disturbed ecosystems, however historical monitoring data identified in the EIS may also be used to establish the local water quality context. For this reporting period Surface Water Quality Results were analysed for the parameters identified in Table 4-8 below.

In accordance with Section 3.2.6 of the SWQMP, water quality results are under review to develop site specific trigger values in future monitoring reports. A combination of ANZECC guidelines, historical data and SCAW monitoring results will be used.

Table 4-8 Surface Water Quality Monitoring Parameters

Category	Measured	Parameters
Physio-chemical parameters	In-field using a calibrated multi parameter probe	<ul style="list-style-type: none"> • Temperature (°C) • Dissolved Oxygen (% saturation) • Electrical Conductivity (µS/cm) • Reduction-Oxidation Potential (Redox)(mV) • pH • Total suspended solids (TSS) • Turbidity (NTU) • Visible oil and grease
Metals	Laboratory testing	All in mg/L: <ul style="list-style-type: none"> • Aluminium • Arsenic (III and V) • Cadmium • Cobalt • Chromium (III and VI) • Copper • Lead • Manganese • Mercury • Nickel • Vanadium • Zinc
Organochlorine Pesticides	Laboratory testing	All in mg/L: <ul style="list-style-type: none"> • Endosulphan • Methoxychlor

4.3.3. Surface Water Monitoring Results Summary

Table 4-9 below details the surface water monitoring results for the reporting period. Full tabulated results are provided in Appendix 1, with exceedances highlighted.

Table 4-9: Water Quality Monitoring Results

Monitoring Type and Trigger Values	Source/ Methodology	Results
<p>Trigger levels formed from ANZECC Guidelines for slightly to moderately disturbed ecosystems (2000)</p>	<p>SWQMP</p>	<p>There were 71 exceedances of ANZECC guideline trigger values recorded for the reporting period:</p> <ul style="list-style-type: none"> - One exceedance of zinc levels. - Three exceedances of total suspended solids - Four exceedances of Cobalt levels. - Five exceedances of conductivity levels. - Six exceedances of copper levels. - Two exceedances of manganese levels. - five exceedances of NTU levels - Nine exceedances in pH levels - 23 exceedances of dissolved oxygen
<p>Post Rainfall Monitoring Trigger events (weather station):</p> <ul style="list-style-type: none"> - 33mm on 13/11/23 - 48mm on 29/04/23 <p>Trigger levels formed from ANZECC Guidelines for slightly to moderately disturbed ecosystems (2000)</p>	<p>SWQMP</p>	<p>There were 12 exceedances of ANZECC guideline values recorded for the reporting period:</p> <ul style="list-style-type: none"> - Three exceedances of NTU levels - Five exceedances of dissolved oxygen - One exceedance of total suspended solids - Two exceedances of copper levels - One exceedance of lead levels <p>Post rainfall monitoring for the 29/04/23 was not conducted within the reporting period.</p> <p>Results will be discussed in the next reporting period.</p>

4.3.4. Surface Water Quality Results Discussion

The SWQMP outlines a data analysis and management response requirement for surface water monitoring results identifying an exceedance of the established trigger values (currently ANZECC guidelines). Full monitoring results are provided in Appendix 1 below, with exceedances highlighted in red, and management responses to exceedances outlined below.

Metals

As identified in Table 4-9 surface water quality monitoring has identified various minor exceedances of metals during the reporting period (see Appendix 1, highlighted in red) however these results appear consistent with baseline and historical monitoring. In addition, the majority of exceedances are not considered to be attributable to SCAW as a number of the exceedances have:

- Only occurred upstream of SCAW.
- Are consistent with upstream results, or
- Only represent a minor increase from upstream results.

The most notable downstream exceedance of metals occurred in February downstream monitoring at Badgerys Creek. A minor exceedance (0.008mg/L) of the Copper trigger level (0.0014 mg/L) was recorded while Copper was undetected upstream. On investigation, CPBUI noted that Copper has previously been detected in Badgerys creek upstream and downstream multiple times during the reporting period. By the next monitoring event in March, Copper had returned to below guideline values. CPBUI considers these variations in metal levels to be reasonable and a reflection of the natural chemical fluctuations within moderately disturbed water ways.

Turbidity

The South Creek catchment outlined in the EIS is one of the most degraded catchments in the wider Hawkesbury-Nepean system largely associated with increased urbanisation resulting in the alteration of hydrological and sediment regimes. Exceedances of turbidity are measured using both Nephelometric Turbidity Units (NTU) and total suspended solids (TSS) and during the reporting period there were two instances of an NTU exceedance at downstream locations where upstream was within limits (Badgerys Creek in December and February). In both instances, TSS results were recorded within limits, suggesting other factors may have been impacting NTU readings such as discolouration of water from organic matter breakdown or algae growth.

Dissolved Oxygen

Exceedances of dissolved oxygen were noted across all locations throughout the reporting period. On further investigation it was determined that the dissolved oxygen meter in use by CPBUI was faulty and was sent for repair in April.

pH

During the reporting period, four instances of pH trigger level exceedance (6.5-8.5) occurred at downstream locations where upstream was within limits:

- Badgerys Creek, December (5.8)
- Blaxland Creek, February (8.94)
- Cosgrove Creek, February (11.74)
- Cosgrove Creek, March (8.56).

Exceedances at Badgerys and Blaxland Creeks are considered minor and subsequent monthly monitoring returned results within limits. The exceedances at Cosgrove Creek were further investigated by CPBUI due to the significance of the February result and repeat occurrence of exceedance from February to March. A review of work activities occurring in the area during February identified that very limited works had occurred on both sides of Cosgrove Creek prior to the monitoring event. Further, CPBUI had noted that a large number of livestock were identified in and around Cosgrove creek as project fencing works were yet to commence. Elevated levels of pH may have been caused by increased nutrient levels in the creek due to a large number of livestock

accessing the creek as a water source. Project fencing installed North of Cosgrove Creek by March significantly reduced livestock accessibility to the SCAW section of Cosgrove Creek and the March monitoring event represented a downward trend in pH. Levels of pH will continue to be closely monitored in the next reporting period.

Conductivity

Two minor exceedances of conductivity were recorded at downstream locations at Blaxland Creek in January and March. Minor fluctuations are common during periods of warmer weather and the Blaxland Creek corridor is a listed area of high salinity potential (high conductivity can be an indicator of salinity). Further, during both January and March monitoring events, Blaxland Creek was noted to not be flowing and/or consist of areas with stagnant pools and riffles. Stagnant water can also result in increased conductivity as dissolved substances are generally higher, resulting in an increase of ions.

Pesticides

Monitoring for Endosulfan and Methoxychlor during the reporting period was unable to detect either parameter above the minimum limit of reporting (LOR) during lab analysis. These parameters will continue to be monitored going forward as a precautionary measure.

Post Rainfall Results

Of the 12 exceedances recorded following the rain event in November, three occurred in isolation from the corresponding upstream result:

- Badgerys Creek (Dissolved Oxygen – 279%)
- Blaxland Creek (Copper – 0.002mg/L)
- Badgerys Creek (Copper – 0.002mg/L)

Noting dissolved oxygen at Badgerys Creek downstream was more than double that of its upstream results it is likely attributable to a fault in the monitoring equipment meter as previously discussed.

Exceedances of copper in November are considered minor and are consistent with the previous months results.

Missing Data Discussion

CPBUI notes that during the monitoring period Arsenic V and Aluminium were not analysed as committed in the SWQMP. CPBUI identified inconsistencies within the SWQMP where Arsenic V and Aluminium were included as parameters for testing in the Monitoring Program yet neither parameter were included in baseline monitoring tables and in the case of Aluminium, was not included in the Site-Specific Trigger Values (SSTV) table (Table 10 of the SWQMP). Further review determined these parameters were not assessed during the EIS and CPBUI is undertaking an update of the SWQMP to better align the Monitoring Program with the of baseline monitoring.

CPBUI has taken steps to include aluminium in monitoring going forward as a precautionary measure.

Other minor gaps in surface water quality monitoring are explained in Appendix 1.

Part 5 – Community Complaints

Table 5-1 provides a summary of community complaints received relating to environmental aspects on SCAW and the actions taken during the reporting period. Complaints and enquiries are managed in accordance with the SCAW Community Communication Strategy (Section 4.4 Enquiries and complaints management) and Project Environmental Protection Licence 21695.

Table 5-1 Summary of Complaints Within Reporting Period

Date/time	Complaint Type	Details	Action Taken	Complaint Status (Open / Closed)
6/12/22 10:00am	Noise, Air Quality and Housekeeping	A nearby resident in Orchard Hills raised concerns about vegetation within the SCAW boundary posing a fire risk and noise/dust from earthworks at the SMF.	CPBUI contacted the resident to provide context of works being undertaken in the SMF. SCAW undertook grass slashing in the areas adjacent to the residents property boundary. CPBUI noted that works were being conducted within standard construction hours however, an offer of attended or unattended noise monitoring was made to the resident to confirm noise levels at the property. An investigation conducted by the environment team concluded that adequate dust mitigation measures were in place during earthworks activities.	Closed.
17/12/22 11:00am	Air Quality	A nearby resident in Orchard Hills complained to the NSW EPA complaints line about dust from SCAW earthworks activities at the SMF.	In response, CPBUI shutdown earthworks activities in this portion of the SMF for the rest of the workday, with the exception of a watercart.	Closed.
14/02/23 1:00pm	Noise, Air Quality	A nearby resident in Orchard Hills called the Transport for NSW community liaison phone line to complain about noise and dust from the SMF earthworks.	CPBUI contacted the resident to provide context of works being undertaken at the SMF and SCAW noise/air quality monitoring results to date. CPBUI attended the residents property to undertake attended monitoring (see Table 4.6 above). CPBUI also committed to provide noise cancelling headphones and externally clean the residents property at conclusion of earthworks at the SMF as a measure of good will.	Closed.
16/02/2023 3:30pm	Noise, Air Quality	A nearby resident in Orchard Hills called the Transport for NSW community liaison phone line to complain about noise	CPBUI met with the resident to provide context of works being undertaken in the SMF. CPBUI also committed to externally clean the residents property at the conclusion of	Closed.

Date/time	Complaint Type	Details	Action Taken	Complaint Status (Open / Closed)
		and dust from the SMF earthworks.	earthworks at the SMF as a measure of good will.	
4/03/2023 8:30am	Noise, Air Quality	A nearby resident in Orchard Hills emailed the Sydney Metro inbox to complain about noise from SCAW SMF works and dust from a different Sydney Metro works package.	CPBUI provided information for Sydney Metro to respond to the resident explaining context of works being undertaken at SMF and that noise monitoring on the date of complaint indicated that SCAW was compliant with required noise levels.	Closed.
6/03/2023 4:00pm	Noise, Air Quality	A nearby resident in Orchard Hills called the Transport for NSW community liaison phone line to complain about noise and dust from the SMF earthworks.	CPBUI contacted the resident to provide context of works being undertaken at the SMF and SCAW noise/air quality monitoring results to date. CPBUI also committed to providing a pool cover to the resident and to externally clean their property at the conclusion of earthworks at the SMF as a measure of good will.	Closed.
17/03/2023 7:30am	Noise	A nearby resident in Orchard Hills emailed the CPBUI Community inbox complaining about noise from the SMF earthworks.	CPBUI contacted the resident to address the raised issue. Details regarding noise management measures (such as driver behaviour, methodology change to reduce sharp noises generated from fill import activities and respite periods), project requirements and results of noise monitoring were also provided. Investigations of SCAW realtime noise monitors did not detect any instances of construction related noise exceedances.	Closed.
21/04/2023 8:00am	Noise, Housekeeping	A nearby resident in Orchard Hills called the Transport for NSW community liaison phone line to complain about noise from SMF earthworks and weed/vegetation management on Sydney Metro land adjacent to their property.	CPBUI contacted the resident and discussed recent noise monitoring results which had not identified exceedances of nominated noise management levels. CPBUI also provided a commitment to providing a 2 month noise monitoring summary and commitment to slash grass in works areas adjacent to the resident.	Closed.

Part 6 - Correction Log

It's possible from time to time that incorrect data may get published in good faith.

As soon as practicable after CPBUI becomes aware that the published monitoring data is incorrect or misleading, they will then publish a correction log to correct this data that is incorrect or misleading.

There are no matters included in the correction log for this reporting period.

Appendix 1 – Monitoring Program Results

Air Quality Monitoring

Date Started	Date Collected	Parameter	DS1 - SMF North	DS2 - SMF South	DS3 - ED Compound
1/09/2022	4/10/2022	Combustible solids (g/m2/mth)	0.46	1.3	0.48
		Soluble Solids (g/m2/mth)	50	50	50
		Total Solids (g/m2/mth)	0.59	1.5	0.58
		Volume (total mL)	1600	1100	1700
		Ash content (g/m2/mth)	0.13	0.19	0.1
		Insoluble Solids (g/m2/mth)	0.6	1.5	0.6
4/10/2022	1/11/2022	Combustible solids (g/m2/mth)	0.84	0.24	0.2
		Soluble Solids (g/m2/mth)	50	50	70
		Total Solids (g/m2/mth)	44	40	70
		Volume (total mL)	2800	2600	3500
		Ash content (g/m2/mth)	0.11	0.07	0.07
		Insoluble Solids (g/m2/mth)	1	0.3	0.3
1/11/2022	5/12/2022	Combustible solids (g/m2/mth)	1.3	1.4	2.1
		Soluble Solids (g/m2/mth)	50	50	50
		Total Solids (g/m2/mth)	29	35	2.3
		Volume (total mL)	950	900	950
		Ash content (g/m2/mth)	0.33	0.2	0.19
		Insoluble Solids (g/m2/mth)	1.6	1.6	2.3
5/12/2022	9/01/2023	Combustible solids (g/m2/mth)	0.6	0.5	2.2
		Soluble Solids (g/m2/mth)	2.3	3.7	2.8
		Total Solids (g/m2/mth)	2.9	4.2	5.2
		Volume (total mL)	1200	730	760
		Ash content (g/m2/mth)	0.1	0.1	0.2
		Insoluble Solids (g/m2/mth)	0.7	0.6	2.4
9/01/2023	6/02/2023	Combustible solids (g/m2/mth)	0.5	0.2	3
		Soluble Solids (g/m2/mth)	2.8	2.3	3.5
		Total Solids (g/m2/mth)	3.3	2.6	6.7
		Volume (total mL)	1600	1100	1600
		Ash content (g/m2/mth)	< 0.1	< 0.1	0.1
		Insoluble Solids (g/m2/mth)	0.6	0.3	3.1
6/02/2023	8/03/2023	Combustible solids (g/m2/mth)	0.5	1	1.4
		Soluble Solids (g/m2/mth)	5.6	5.5	5.8
		Total Solids (g/m2/mth)	6.3	6.7	7.4
		Volume (total mL)	730	460	600
		Ash content (g/m2/mth)	0.1	0.2	0.2
		Insoluble Solids (g/m2/mth)	0.7	1.2	1.6
8/03/2023	3/04/2023	Combustible solids (g/m2/mth)	1.3	1.1	1.5
		Soluble Solids (g/m2/mth)	3.3	2.1	2.6
		Total Solids (g/m2/mth)	4.8	3.3	4.2
		Volume (total mL)	1100	800	1100
		Ash content (g/m2/mth)	0.2	<0.1	0.1
		Insoluble Solids (g/m2/mth)	1.5	1.2	1.7

Air quality criteria is assessed against insoluble solids with a max criteria of 4g/m2/mth and a max increase of 2g/m2/mth

Data Collected from Weather Station

November															
Date	9/11/2022	11/11/2022	12/11/2022	13/11/2022	19/11/2022	27/11/2022									Total Nov
Rain (mm)	0.6	0.8	0.4	33.8	1.6	12.2									49.4
December															
Date	5/12/2022	12/12/2022	15/12/2022	22/12/2022	23/12/2022	29/12/2022	31/12/2022								Total Dec
Rain (mm)	5.6	3.2	1.2	1.4	0.2	2.6	1.6								15.8
January															
Date	3/01/2023	4/01/2023	5/01/2023	6/01/2023	15/01/2023	18/01/2023	19/01/2023	20/01/2023	21/01/2023	22/01/2023	24/01/2023	26/01/2023	29/01/2023	30/01/2023	Total Jan
Rain (mm)	0.6	16	1	3.2	1.8	24.4	1.6	0.8	2.2	13.6	21.2	4.2	1.2	20.4	112.2
February															
Date	8/02/2023	13/02/2023	14/02/2023	18/02/2023	21/02/2023	23/02/2023	27/02/2023								Total Feb
Rain (mm)	1.6	0.2	7.4	9.8	13.4	0.4	0.2								33
March															
Date	3/03/2023	12/03/2023	13/03/2023	14/03/2023	20/03/2023	22/03/2023	23/03/2023	24/03/2023	25/03/2023	26/03/2023	27/03/2023	28/03/2023	29/03/2023		Total March
Rain (mm)	2	4.4	8.4	10.6	1.4	0.2	6.6	0.2	2.4	10	1.2	8.8	1		57.2
April															
Date	1/04/2023	2/04/2023	3/04/2023	6/04/2023	7/04/2023	13/04/2023	14/04/2023	19/04/2023	20/04/2023	23/04/2023	24/04/2023	28/04/2023	29/04/2023		Total April
Rain (mm)	1.2	7.6	0.4	0.6	6.8	5.6	2.6	2.2	0.2	7.4	0.4	2	48.6		85.6

Days where no rainfall was recorded have not been included

Noise Monitoring Results

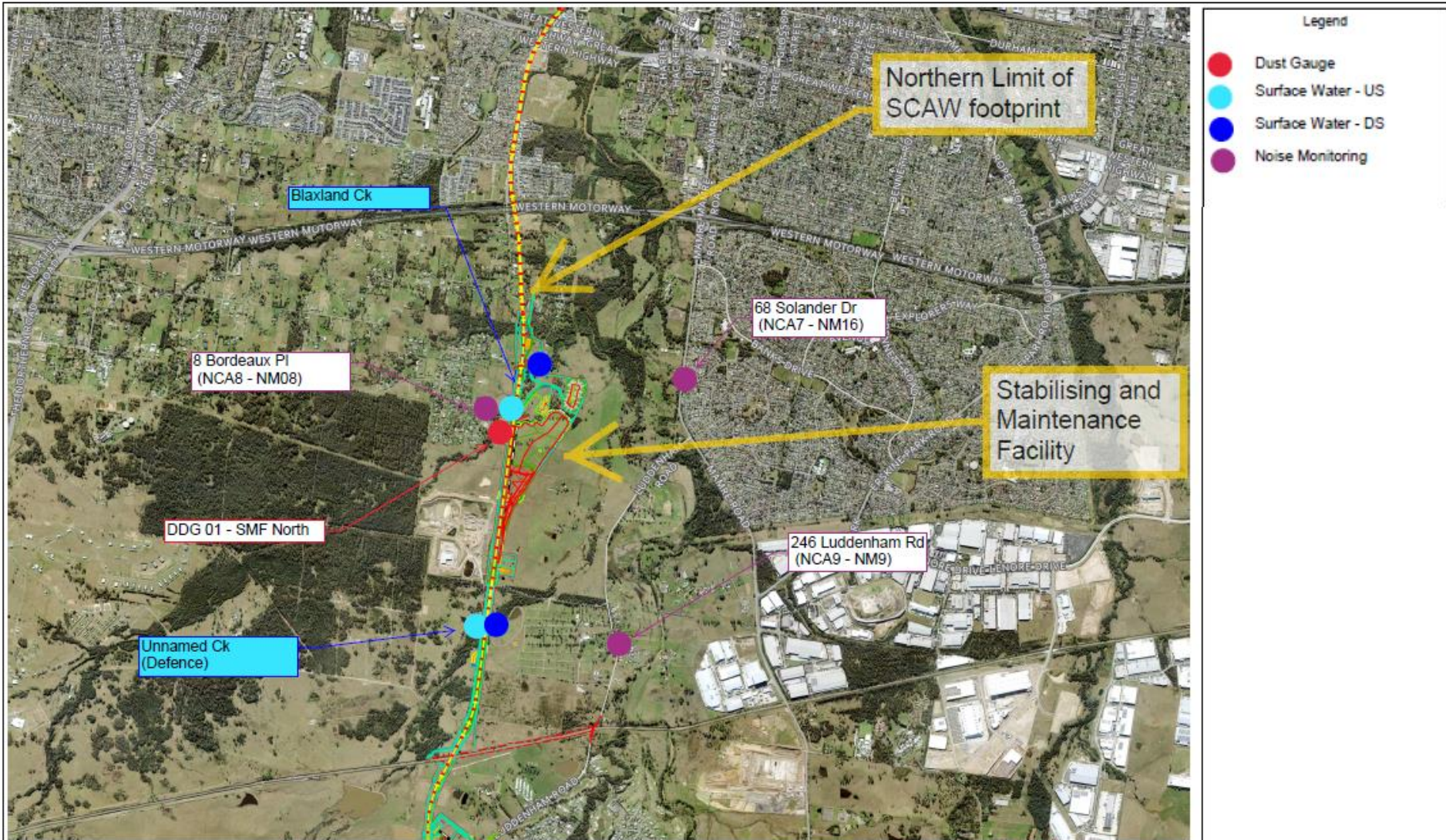
Date	Time	Location	Construction Activity/ Monitoring Type	NCA	NML	LAeq	L10	L90	Notes
17/11/2022	10:16	68 Solander Dr St Clair	SMF set up works	7	57	69.7	73	52.9	Site not audible
17/11/2022	16:14	8 Bordeaux Pl Orchard Hills	SMF set up works, dozer stripping topsoil	8	54	52.5	52.1	42.3	Some site works audible (dozer)
17/11/2022	15:07	246 Luddenham Rd Orchard Hills	SMF set up works	9	50	66.7	71.3	52	Site not audible
17/11/2022	15:29	27 Halmstad Blvd Luddenham	Elizabeth Drive Compound set up works. No works at Cosgroves Creek	10	45	51.6	48.9	38.8	Site not audible
8/12/2022	12:27	68 Solander Dr St Clair	SMF Earthworks	7	57	68.1	72.3	54.2	Site not audible
8/12/2022	11:51	8 Bordeaux Pl Orchard Hills	SMF Earthworks	8	54	43.9	43.4	35.4	Site not audible
12/12/2022	11:26	246 Luddenham Rd Orchard Hills	SMF Earthworks	9	50	67.5	70.3	46.6	Site not audible
12/12/2022	12:47	27 Halmstad Blvd Luddenham	Elizabeth Drive Compound set up works. No works at Cosgroves Creek	10	45	47.8	46.2	37.2	Site not audible
20/12/2022	13:47	68 Solander Dr St Clair	SMF Earthworks	7	57	69.2	72.3	56.3	Site not audible
20/12/2022	12:36	8 Bordeaux Pl Orchard Hills	SMF Earthworks	8	54	47.9	49	77.5	Some site works audible (earthworks plant)
20/12/2022	14:11	246 Luddenham Rd Orchard Hills	SMF Earthworks	9	50	65.7	70.7	44.4	Site not audible
20/12/2022	11:12	27 Halmstad Blvd Luddenham	Elizabeth Drive Compound set up works. No works at Cosgroves Creek	10	45	61.8	51	38.7	Site not audible
17/01/2023	15:01	68 Solander Dr St Clair	SMF Earthworks	7	57	70.5	73.4	59.9	Site not audible
17/01/2023	11:03	8 Bordeaux Pl Orchard Hills	SMF Earthworks	8	54	57.8	59.7	39.8	Site not audible
17/01/2023	11:54	246 Luddenham Rd Orchard Hills	SMF Earthworks	9	50	61.9	66.7	42.7	Site not audible
16/01/2023	10:16	27 Halmstad Blvd Luddenham	Elizabeth Drive Compound set up works. No works at Cosgroves Creek	10	45	53	44.2	34	Site not audible
6/02/2023	12:14	68 Solander Dr St Clair	SMF Earthworks	7	57	68.8	72.8	57.6	Site not audible
6/02/2023	11:40	8 Bordeaux Pl Orchard Hills	SMF Earthworks	8	54	64.8	67.8	58.5	Some site works audible (earthworks plant)
6/02/2023	14:24	246 Luddenham Rd Orchard Hills	SMF Earthworks	9	50	67.3	70.7	48.6	Site not audible
6/02/2023	14:50	27 Halmstad Blvd Luddenham	Establishing works M12 - Cosgrove creek	10	45	46.8	42.8	33	Site not audible
16/02/2023	15:30	8 Bordeaux Pl Orchard Hills	SMF Earthworks	8	54	57.1	60.3	51.9	monitoring in response to complaint Site works audible (Scrapers and moys)
21/02/2023	14:00	68 Solander Dr St Clair	SMF Earthworks	7	57	68.4	71.6	62.5	Site not audible
21/02/2023	8:46	10 Bordeaux Pl Orchard Hills	SMF Earthworks	8	54	54.6	59.3	43.2	Some site works audible (earthworks plant)
24/02/2023	10:47	246 Luddenham Rd Orchard Hills	SMF Earthworks/Celestinos set up works	9	50	65.6	56.7	47.5	Site not audible
21/02/2023	12:04	27 Halmstad Blvd Luddenham	Background noise/Celestinos set up works	10	45	39	41.6	35.7	Site not audible
6/03/2023	19:55	SMF approx 700m from stockpile	DOHW - Material delivery and stockpiling Patons Ln	9	44	34.5	35.1	28.5	Night Works - site not audible
6/03/2023	20:15	SMF 1100m from noise source	DOHW - Material delivery and stockpiling Patons Ln	9	44	41.4	42.8	39.8	Night Works - site not audible
6/03/2023	20:35	SMF Southern side of PSIOS stockpile	DOHW - Material delivery and stockpiling Patons Ln	9	44	39.2	41.5	36.6	Night Works - site not audible
6/03/2023	22:20	SMF 700m from material delivery and stockpile	DOHW - Material delivery and stockpiling Patons Ln	9	39	38.9	40.3	34.9	Night Works - site not audible
9/03/2023	8:55	68 Solander Dr St Clair	SMF Earthworks	7	57	69	72.2	61	Site not audible
9/03/2023	9:40	7 Bordeaux Pl Orchard Hills	SMF Earthworks	8	54	49.8	51.6	44.9	Some site works audible (earthworks plant)
9/03/2023	13:38	246 Luddenham Rd Orchard Hills	Celestinos/DEOH Earthworks	9	50	66.5	69.9	45.4	Site not audible
8/03/2023	11:14	27 Halmstad Blvd Luddenham	Luddenham South Earthworks	10	45	51.2	52	38.9	Site not audible
24/03/2023	11:22	68 Solander Dr St Clair	SMF Earthworks	7	57	71.3	72.6	53.6	Site not audible
23/03/2023	9:00	8 Bordeaux Pl Orchard Hills	SMF Earthworks	8	54	54.6	54.4	40.2	Some site works audible (earthworks plant)
24/03/2023	11:47	246 Luddenham Rd Orchard Hills	Celestinos/DEOH Earthworks	9	50	62	65.5	43.4	Site not audible
24/03/2023	12:14	27 Halmstad Blvd Luddenham	Luddenham South Earthworks	10	45	50.3	47.6	35.9	Site not audible
4/04/2023	14:58	68 Solander Dr St Clair	SMF Earthworks	7	57	69.6	72.5	62	Site not audible
5/04/2023	9:55	7 Bordeaux Pl Orchard Hills	SMF Earthworks	8	54	48.2	50.4	39.5	Some site works audible (earthworks plant)
5/04/2023	11:16	236 Luddenham Rd Orchard Hills	Celestinos/DEOH Earthworks	9	50	65.3	69.2	42.6	Site not audible
5/04/2023	9:16	27 Halmstad Blvd Luddenham	Luddenham South Earthworks	10	45	45.1	46.5	38.5	Plant audible - Not frequent and source of plant noise undetermined (multiple projects operating nearby (M12, Cleanaway Kemps Creek))

Notes/definitions:

All attended monitoring is done as a 15 minute sample
 All Measurements in dB
 Noise catchment area
 Noise management level
 Equivalent continuous sound pressure level (over 15min period)
 The noise level exceeded for 10% of the measurement period
 The noise level exceeded for 90% of the monitoring period

NCA
 NML
 LAeq
 L10
 L90

Appendix 2 – Monitoring Locations



Project Map						
Ref. No.	Completion rec.	Work package	Description	Designed	Verified	Approved
Ref. No.	Comp. rec.	Package	not provided	dd/mm/yy	dd/mm/yy	dd/mm/yy
Scale 1:28,969	0 777 1,553 Meters		<p>Coordinate System: GDA 1994 MGA Zone 56 - Height Datum: AHD</p> <p>This map is a user generated static output from CPB Contractors Web GIS Viewer and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.</p> <p>© CPB Contractors GIS, Imagery acknowledgment © Department of Finance, Services & Innovation 2017, Street Map acknowledgment: Esri, HERE, Garmin, USGS.</p>			

This drawing is confidential and shall only be used for the purpose of this project. The signing of this title block confirms the design and drafting of this project have been prepared and checked in accordance with the ISO 9001-2000 quality assurance.

Date Printed: 16-May-2023



Drawing Colour Coded - Print All Copies in Colour

Drawn by:	not provided
Designed by:	not provided
Dwg check by:	not provided
Des check by:	not provided
Approved by:	not provided

SCAW	
FILE No:	n/a
SHEET No:	n/a
STATUS:	verified
DRG No:	DRG No.
EDMG No:	n/a

