

SSI 10051

6 Monthly Construction Monitoring Report 02

May 2023 – October 2023

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

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Distribution and Authorisation

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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	Second Draft - Updated formatting
C	Response to 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
CPBUJIV	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
OOHW	Out of Hours Works
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 (CPBUJ JV). 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.

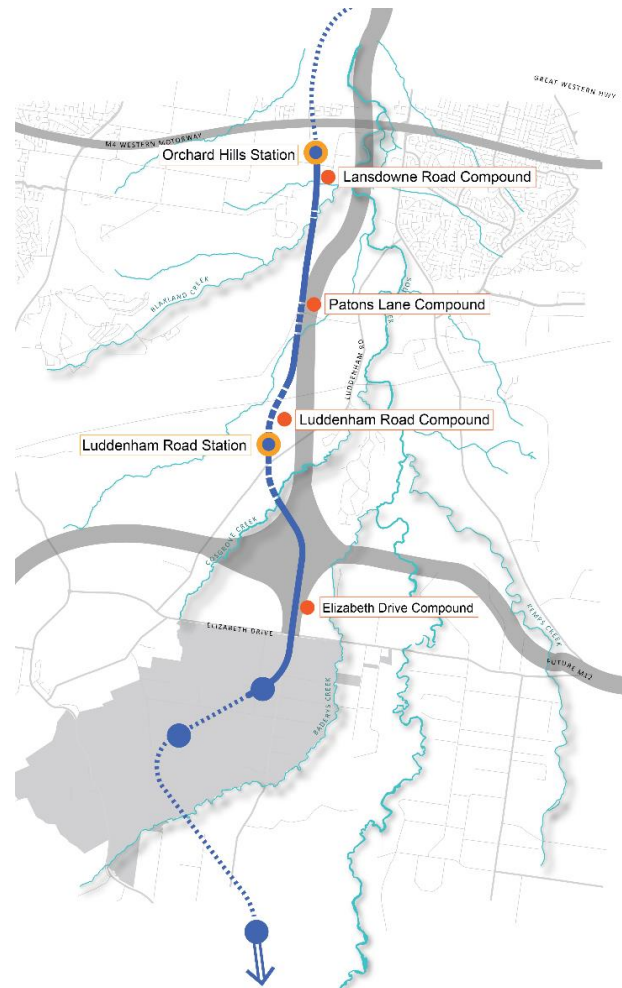


Figure 1 – Overview of the SCAW Project

1.3. Works Undertaken During Reporting Period

This monitoring report covers a reporting period of May 2023 to October 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
May 2023	<ul style="list-style-type: none"> • Ongoing earthworks/sandstone import at SMF • Commencement of substructure works at Luddenham Station • Ongoing piling works south of Luddenham Road • Erection of Super T girders at M12 Bridge • Establishment of creek crossing at Blaxland Creek • Commencement of clearing in Defence land • Ongoing earthworks between M12 and Cosgrove Creek
June 2023	<ul style="list-style-type: none"> • Finalisation of earthworks/sandstone import at SMF • Sandstone import and placement on alignment at Patons Lane to Blaxland Creek • Commencement of substructure works between Warragamba Pipeline and Luddenham Station • Ongoing substructure works at Luddenham Station • Completion of piling works south of Luddenham Road • M12 Bridge deck works • Commencement of clearing north of Blaxland Creek • Preparatory earthworks in Defence land • Ongoing earthworks between M12 and Cosgrove Creek
July 2023	<ul style="list-style-type: none"> • Substantial completion of SMF earthworks and ongoing maintenance • Commencement of piling works between Warragamba Pipeline and Luddenham Station • Commencement of viaduct segment placement at Luddenham Station • Ongoing substructure works south of Luddenham Road • M12 Bridge finishing works • Preparatory earthworks north of Blaxland Creek • Completion of clearing Blaxland Creek to Lansdowne Road • Ongoing earthworks Patons Lane to Blaxland Creek • Ongoing earthworks in Defence land • Ongoing earthworks between M12 and Cosgrove Creek
August 2023	<ul style="list-style-type: none"> • Ongoing maintenance of SMF Pad • Completion of piling works between Warragamba Pipeline and Luddenham Station • Ongoing viaduct segment placement at Luddenham Station • Ongoing substructure works south of Luddenham Road • Commencement and completion of piling works over Blaxland Creek • Commencement of piling works in Defence land

Month	Works Activities
	<ul style="list-style-type: none"> • Ongoing earthworks Patons Lane to Blaxland Creek • Ongoing earthworks Blaxland Creek to Lansdowne Road • Ongoing earthworks between M12 and Cosgrove Creek
September 2023	<ul style="list-style-type: none"> • Ongoing viaduct segment placement at Luddenham Station • Ongoing substructure works south of Luddenham Road • Ongoing substructure works over Blaxland Creek • Ongoing piling works and earthworks in Defence land including piling over Unnamed Creek • Ongoing substructure works at Blaxland Creek viaduct • Ongoing earthworks Patons Lane to Blaxland Creek • Ongoing earthworks Blaxland Creek to Lansdowne Road • Ongoing earthworks between M12 and Cosgrove Creek
October 2023	<ul style="list-style-type: none"> • Ongoing viaduct segment placement at Luddenham Station • Ongoing substructure works over Blaxland Creek • Completion of piling works and commencement of substructure works in Defence land • Ongoing earthworks in Defence land • Ongoing substructure works at Blaxland Creek viaduct • Ongoing earthworks Patons Lane to Blaxland Creek • Ongoing earthworks Blaxland Creek to Lansdowne Road • Box culvert works at the unnamed tributary stream south of Lansdowne Road • Ongoing earthworks between M12 and Cosgrove Creek • Commencement of establishing earthworks within Warragamba Pipeline

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 May 2023 to October 2023, including any monitoring data not included in the previous reporting period and has been compiled to address the SMWSA SCAW:

- 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 this 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 on 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 M12 Project Weather Station in Badgerys Creek, provided in Appendix 1. BOM website is also used for reference: 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 previous reporting period, with an additional three DDGs installed during this reporting period to monitor dust around SCAW. DDGs are 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 the Stabilising and Maintenance Facility (SMF) and nearby residents in Orchard Hills (130m to nearest resident).
- DS 02 – Located to the South of the SMF and nearby residents in Luddenham (520m to nearest resident). Due to handover of Portion 1A to the SSTOM contractor, this DDG was moved 330m south west to the western boundary of the SCAW Patons Lane compound in September 2023 (nearest receiver is BINGO waste facility 100m west). This DDG was again moved for October 2023 to assist with investigations of a number of exceedances from DS04.
- DS 03 – Located to the North-East of earthworks at the SCAW compound and nearby residents at Badgerys Ck (940m to nearest resident).
- DS 04 (installed April 2023) – Located east of the Lansdowne/Samuel Marsden Roads works area, along the fence line of the neighbouring property (25m to nearest receiver).
- DS 05 (installed April 2023) – Located north and east of the Luddenham Station Precinct (440m from nearest receiver).
- DS 06 (installed 2023) – Located south of Luddenham Road and Cosgrove Creek.

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 a summary of the air quality monitoring results for the reporting period. Figures 2 and 3 presents DDG results across the reporting period.

April 2023 results previously not reported have been included in this monitoring report.

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): - Annual (max total1): 4g/m2/month - Annual (max increase2): 2g/m2/month	AQMonP Table 5	There were three exceedances of the max total and four exceedances of the max increase trigger levels: - DS04 Max Total (August 2023) - DS04 Max Increase (August 2023) - DS04 Max Total (September 2023) - DS04 Max Increase (September 2023) - DS02 Max Increase (September 2023) - DS03 Max Total (October 2023) - DS01 Max Increase (October 2023)

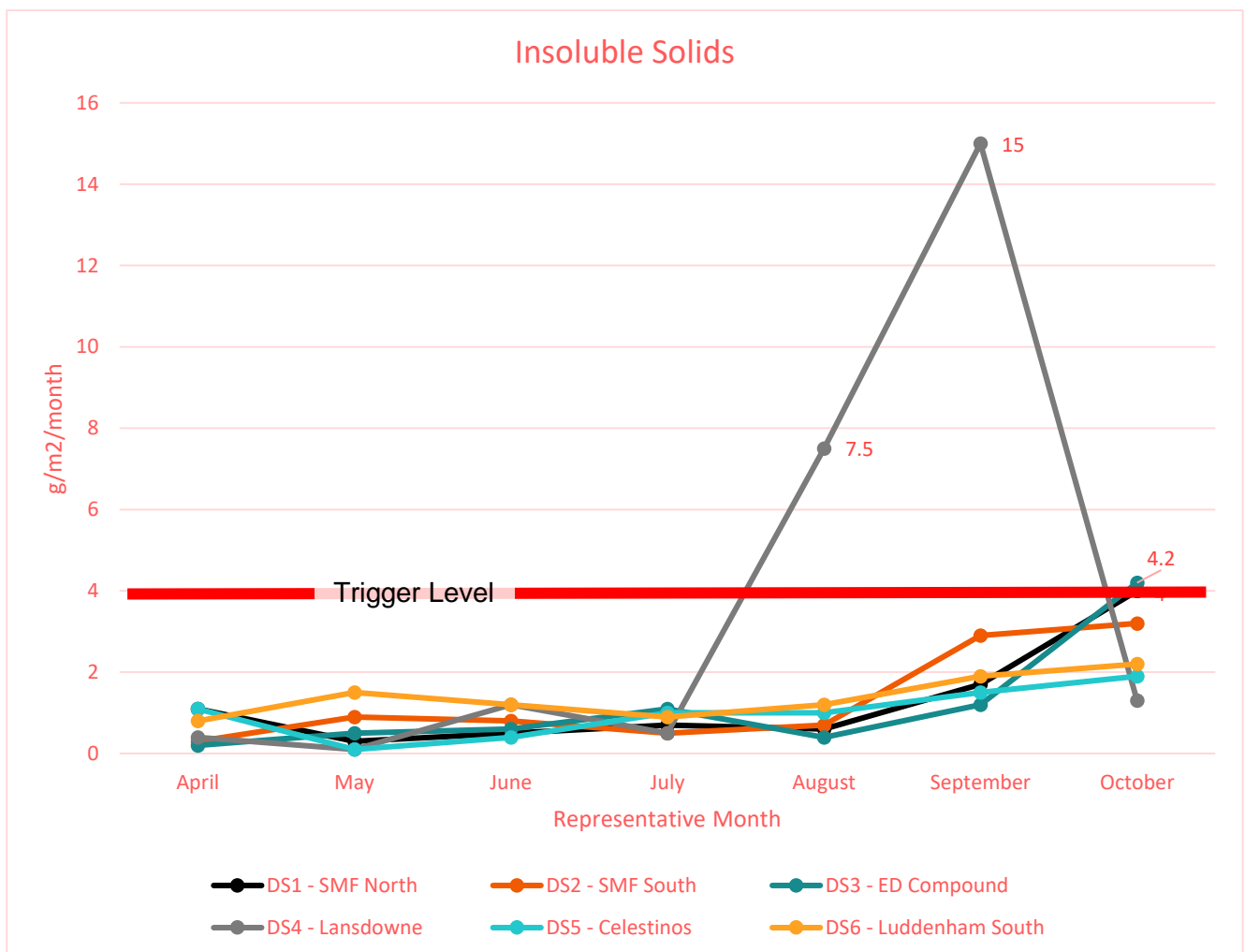


Figure 2: Insoluble solids at each DDG location (exceedances of the 4g/m²/month trigger level are noted in red)

4.1.4. Air Quality Monitoring Results Discussion

As detailed in Table 4-2, there were seven exceedances of nominated Air Quality Management Plan (AQMP) trigger levels for DDG monitoring across the reporting period. In accordance with the Air Quality Management Plan adaptive management procedure investigations into the exceedances were undertaken and outcomes detailed below.

Depositional Dust Exceedances at DS04:

Two significant exceedances of both the 4g/m²/month max total and 2g/m²/month max increase were recorded at DS04 in the August and September reporting periods. An investigation was undertaken to determine potential causes and it was determined that the intensity of works carried out adjacent to the gauge were lesser than other reporting periods when no other exceedances were recorded (since the project began construction in November 2022, no exceedances had been registered at any monitoring location). Further, the gauge is located over 100m from the closest active works area and the temporary stockpile located to the West of the dust gauge is stabilised by grass.

Ongoing visual surveillance of the area throughout the month had not indicated any significant dust issues and Penrith Weather Station (067113) reported most days during the reporting period had wind directions blowing away from the dust gauge.

Management Response following the recorded exceedance from August determined that the dust gauge would be left for another month to establish if the initial exceedance was an isolated event or ongoing issue and additional mitigation in the form of water carts and polymer were to be applied to the work area.

The following month, results received for the September period recorded a further exceedance of insoluble solids with an insoluble solid content result of 15 g/m²/month. Observations from the site team when samples were collected noted the appearance of dirt clumps/sods within the gauge which is not characteristic of deposited dust. This combined with the extraordinarily high results suggested that the gauge may not be reflective of the actual depositional dust contribution of the SCAW project.

Following gauge changeover, a control gauge was established at a nearby location in order to better assess depositional dust in the area. Receipt of October results indicated both DS4 and the control gauge returned results below trigger levels.

Depositional Dust Exceedance at DS02:

Depositional dust results at DS02 recorded an exceedance of the 2g/m²/month max increase trigger level in the month of September (Increased from 0.7g/m²/month in August to 2.9g/m²/month in September). The increase in deposited dust coincided with the relocation of the gauge from its original location to its new location following SCAW handover of the Patons Lane compound to the SSTOM contractor.

On investigation of the exceedance, it was determined that the suitability of the monitoring location was poor given its location directly adjacent to both a main haul road the neighbouring BINGO waste facility. It was considered this location was not reflective of depositional dust conditions in consideration of nearby sensitive receivers and therefore the gauge was relocated to an alternate location.

Depositional Dust Exceedance at DS03:

Depositional dust results at DS03 recorded an exceedance of both the 4g/m²/month max total and 2g/m²/month max increase trigger levels in the month of October with a result of 4.2g/m²/month (increased from 1.2g/m²/month in September). On investigation, it was determined that the October exceedance was unlikely to be directly attributable to SCAW construction work for the following reasons:

- A review of the construction program from early October to late October indicates little to no SCAW construction work occurring in the vicinity of the monitoring location.
- During the reporting period works for a non-SCAW related project commenced 50m to the South-West of the monitoring location.
- Another earthworks project was conducting construction activities approximately 130m to the South for the majority of the reporting period.
- A number of high wind events occurred during the reporting period which impact the airquality in the region as a result of multiple construction projects in close proximity.

DS03 is continually monitored to assess air quality conditions in the area and continued exceedances are identified, the location of DS03 will be reviewed to determine if a different location would provide a better reflection of SCAWs depositional dust contribution in the area.

Depositional Dust Exceedance at DS01:

Depositional dust results at DS01 (North west of the SMF, near Blaxland Creek) recorded an exceedance of the 2g/m²/month max increase trigger level in the month of October (Increased from 1.7g/m²/month in September to 4g/m²/month in October). A review of works activities during the reporting period identified that a substantial amount of topsoil work were undertaken directly adjacent to the monitoring location which likely triggered a spike in deposited dust. Within the month of October, a nearby topsoil stockpile was partially removed and the remainder of the stockpile was spread/ placed around the area adjacent to the monitoring location in preparation for landscaping/ stabilisation works.

Further, a swale drain along the rail alignment and next to DS01 was constructed and lined with topsoil. At the end of the reporting period, all newly placed topsoiled areas were treated with hydromulch/Spraygrass which includes a binder to increase stabilisation until grass seed strikes. Results are expected to return to within trigger levels for the November reporting period and dust gauge DS1 will continue to be monitored closely with the aim to keep dust generation in the area minimal.

As the area has been treated with landscaping/hydromulch, no further management response was considered necessary.

Daily Odour Monitoring

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	<p>A 15-minute sample is collected with time weighted average capturing at a minimum Leq, Lmax, L10 and L90.</p> <p>The testing method includes: Sound level meter configured for “Fast” time weighting and “A” frequency weighting.</p>	Fortnightly	Fortnightly attended noise monitoring to determine performance against the Project Noise Management Levels (NMLs) or Noise predictions identified in noise modelling.	<p>Summary of results in Table 4-6, Full tabulated results in Appendix 1.</p> <p>Note: a monitoring event in May was missed due to equipment calibration/servicing.</p>
		As required following complaint	Where a complaint is received and monitoring is considered an appropriate response to determine if noise levels exceed NMLs.	<p>N/A – No monitoring has been undertaken in response to a complaint.</p> <p>Complaints discussion included in Section 5.</p>
		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.	One property triggered monitoring as per DNVIS 005. Monitoring at this residence was deemed unnecessary due to sporadic occupation of the property during the reporting period.
			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> <p>One property triggered monitoring as per DNVIS 005. Monitoring at this residence was deemed unnecessary due to sporadic occupation of the property during the reporting period.</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>	All significant noise generating items of plant	To determine compliance with operating SWL’s for plant and equipment defined in the CNVS	<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. Fortnightly 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

Noise Monitoring was undertaken during Out of Hours Works (OOHW) on four nights during the reporting period to validate DNVIS predictions and assess potential impacts from SCAW OOHW. Attended noise monitoring during OOHW is undertaken with the same methodology to fortnightly attended monitoring, however monitoring locations are chosen based on DNVIS noise predictions and accessibility.

OOHW Noise monitoring was undertaken on the following dates during the reporting period and full details including date, time, monitoring location, construction activity and DNVIS predictions are included in Appendix 1.

- 10/08 - Luddenham roundabout works (line marking)
 - 3-evening locations
 - 3-night locations
- 16/10 – Luddenham South fill haulage and import
 - 3-evening locations
 - 2-night locations
- 23/10 – Luddenham roundabout establishment work (Luddenham South fill haulage and import was also occurring concurrently)
 - 3-evening locations
 - 3-night locations
- 24/10 – Luddenham roundabout earthworks (Luddenham South fill haulage and import was also occurring concurrently)
 - 3-evening locations
 - 2-night locations

Monitoring events on 23-24th October also assessed the potential for cumulative impacts from Luddenham haulage and Luddenham roundabout works occurring concurrently.

4.2.3. Vibration Monitoring Requirements

The NVMonP outlines types of vibration monitoring to be undertaken on 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	Attended and unattended vibration monitoring was undertaken at a residential property adjacent to compaction earthworks at 327-329 Luddenham Road, Orchard Hills. Summary of results is provided in Table 4-6.
		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.
		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)	Earthworks relating to an access road and piling pad were conducted in proximity to the Warragamba Pipeline during the reporting period. Attended and unattended monitoring was undertaken during works and is summarised in Table 4.6.
		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: <ul style="list-style-type: none"> McGarvie Smith Farm McMaster Farm 	Vibration monitoring was undertaken during earthworks near McMasters Farm. McGarvie farm has been demolished as part of SCAWs demolition scope.

4.2.4. Vibration Monitoring Locations

All vibration monitoring is undertaken in accordance with the methodology outlined in Table 7 of the NVMonP. Vibration monitoring locations are determined based on proximity of works to receivers and factor in any access constraints.

4.2.5. 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		
Fortnightly Attended Monitoring. NML, LAeq (15 min): <ul style="list-style-type: none"> - Noise affected Rating Background Level (RBL) + 10dB - Highly noise affected criteria: 75 dB(A) 	Noise and Vibration Management Sub-plan	NM16 – 11 exceedances of NML NM08 – 1 exceedance of NML NM09 – 11 exceedances of NML NM10 – 11 exceedances of NML Exceedances directly related to CPBUI construction activities: 0
Attended Monitoring during night works to demonstrate compliance with the project EPL and as required by the CNVS. <ul style="list-style-type: none"> - DNVIS Predicted noise levels dB(A) (varies for each location) 	Noise and Vibration Management Sub-plan	8 exceedances of DNVIS predicted noise levels. Exceedances directly related to construction activities: 0
Vibration Monitoring		
Attended Monitoring at McMasters Farm on 2/08/2023: Recommended vibration limits for cosmetic damage: <ul style="list-style-type: none"> - Sensitive Structures (such as heritage buildings): 2.5mm/s 	Noise and Vibration Management Sub-plan	Highest recordings: <ul style="list-style-type: none"> o 0.302mm/s o 0.252mm/s o 0.086mm/s o 0.139mm/s 0 exceedance of 2.5mm/s trigger limit for sensitive structures.
Attended and Unattended Monitoring at 327-329 Luddenham Road, Orchard Hills on 1/09/2023: Recommended vibration limits for cosmetic damage: <ul style="list-style-type: none"> - Dwellings and buildings of similar design and/or occupancy: 5mm/s 	Noise and Vibration Management Sub-plan	Attended Monitoring: Highest recordings: <ul style="list-style-type: none"> o 2.71mm/s o 2.26mm/s o 2.27mm/s o 1.89mm/s

Monitoring Type and Trigger Values	Source/ Methodology	Results												
		<ul style="list-style-type: none"> ○ 2.10mm/s ○ 1.95mm/s <p>0 exceedances of 5mm/s trigger limit for dwellings.</p> <p>Unattended Monitoring:</p> <ul style="list-style-type: none"> ○ 3.1mm/s ○ 4.3mm/s ○ 2.6mm/s ○ 2mm/s ○ 2.6mm/s ○ 3.1mm/s <p>0 exceedances of 5mm/s trigger limit for dwellings.</p>												
<p>Attended and Unattended Monitoring within the Warragamba Pipeline, Orchard Hills:</p> <p>Recommended vibration limits for cosmetic damage:</p> <table border="1" data-bbox="199 994 745 1218"> <thead> <tr> <th>Parameter</th> <th colspan="3">Limit</th> </tr> </thead> <tbody> <tr> <td>Frequency (Hz)</td> <td>1-10</td> <td>10-50</td> <td>50-100</td> </tr> <tr> <td>Peak Particle Velocity (PPV, mm/s)</td> <td>3</td> <td>3-8</td> <td>8-10</td> </tr> </tbody> </table>	Parameter	Limit			Frequency (Hz)	1-10	10-50	50-100	Peak Particle Velocity (PPV, mm/s)	3	3-8	8-10	<p>German Standard DIN 4150-3:2016</p> <p>Water NSW Guideline for Development within Warragamba Pipeline</p>	<p>2 Exceedances of trigger levels.</p> <p>Highest reading:</p> <ul style="list-style-type: none"> • 7.4mm/s <p>Exceedances related to SCAW works: 0</p>
Parameter	Limit													
Frequency (Hz)	1-10	10-50	50-100											
Peak Particle Velocity (PPV, mm/s)	3	3-8	8-10											

4.2.6. Noise and Vibration Monitoring Results Discussion

Noise – Standard Construction Hours

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 daytime construction in accordance with the NVMonP. Additional Noise monitoring was undertaken during OOHW on four occasions to verify the accuracy of project DNVIS.

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 or other construction projects (a number of dwellings are under construction adjacent to NM10), or
- Wildlife/birdlife (particularly cicadas during warmer nights).

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.

Noise – Out of Hours Works

Attended noise monitoring was undertaken during August and October to assess potential impacts from OOHW occurring in Luddenham. Of the 22 noise monitoring events undertaken during OOHW, there were 8 instances of DNVIS predicted noise levels being exceeded and no instances of SCAW works being the dominant noise source/direct cause of exceedance. Exceedances experienced at properties on Luddenham Road were determined to be caused from traffic along Luddenham Road.

Due to property access constraints noise monitoring for the activity was being undertaken on the receiver property boundary closest to the construction activity within the road corridor. As the landscape around Luddenham Road is predominately rural, most dwellings are 100-200m away from the road and therefore the application of the ICNG noise monitoring location criteria (i.e., “at the near point to that receiver within the site boundary”) is not entirely representative of the noise impacts at these properties. During attended noise monitoring for OOHW, most exceedances of DNVIS predicted noise levels were attributed to non-SCAW related factors such as:

- Road traffic (particularly on Luddenham Road).
- Air traffic (mostly light aircraft).
- Wildlife/birdlife (particularly frogs and cicadas).
- Other residential noise (dogs, people talking, music – particularly in the Twin Creeks subdivision).

As SCAW was undertaking multiple OOHW activities at the same time during October, attended monitoring at night also facilitated the assessment of any potential for cumulative impacts. On some occasions during monitoring events targeting one activity, noise from an alternate activity was noted as audible but not above DNVIS predictions or project NML’s. In response to this observation, when possible, SCAW substituted a quieter item of plant to further minimise the potential for disturbance.

Vibration

Attended Vibration monitoring was undertaken during earthworks activities within the vicinity of McMasters Farm Heritage Item on 2/08/2023. Whilst works were occurring outside the safe working distances nominated in Section 6.4.5 of the NVMP, monitoring was undertaken as a precautionary measure to assess potential impacts from earthworks activities on the closest McMasters Farm structure to SCAW (Figure 3)



Figure 3 Vibration Monitoring at McMasters Farm

A trigger value of 2.5mm/s was adopted due to the heritage status of the structure. No exceedances of the trigger value were recorded with the highest value being 0.302mm/s.

Attended and unattended vibration monitoring was undertaken at a residential property on the Eastern boundary of SCAW, between Patons Lane and the Warragamba Pipeline in Orchard Hills. Attended Monitoring occurred on 1/09/2023 with unattended monitoring occurring from 1/09/2023 to 7/09/2023. While works were expected to occur outside of nominated safe work distances, monitoring was undertaken to verify compliance with the trigger levels due to works occurring approximately 50m from the dwelling (Figure 4). Attended monitoring was undertaken during a 10-minute period with vibratory plant in operation. Unattended monitoring was undertaken over a 7-day period with various earthworks activities undertaken throughout.

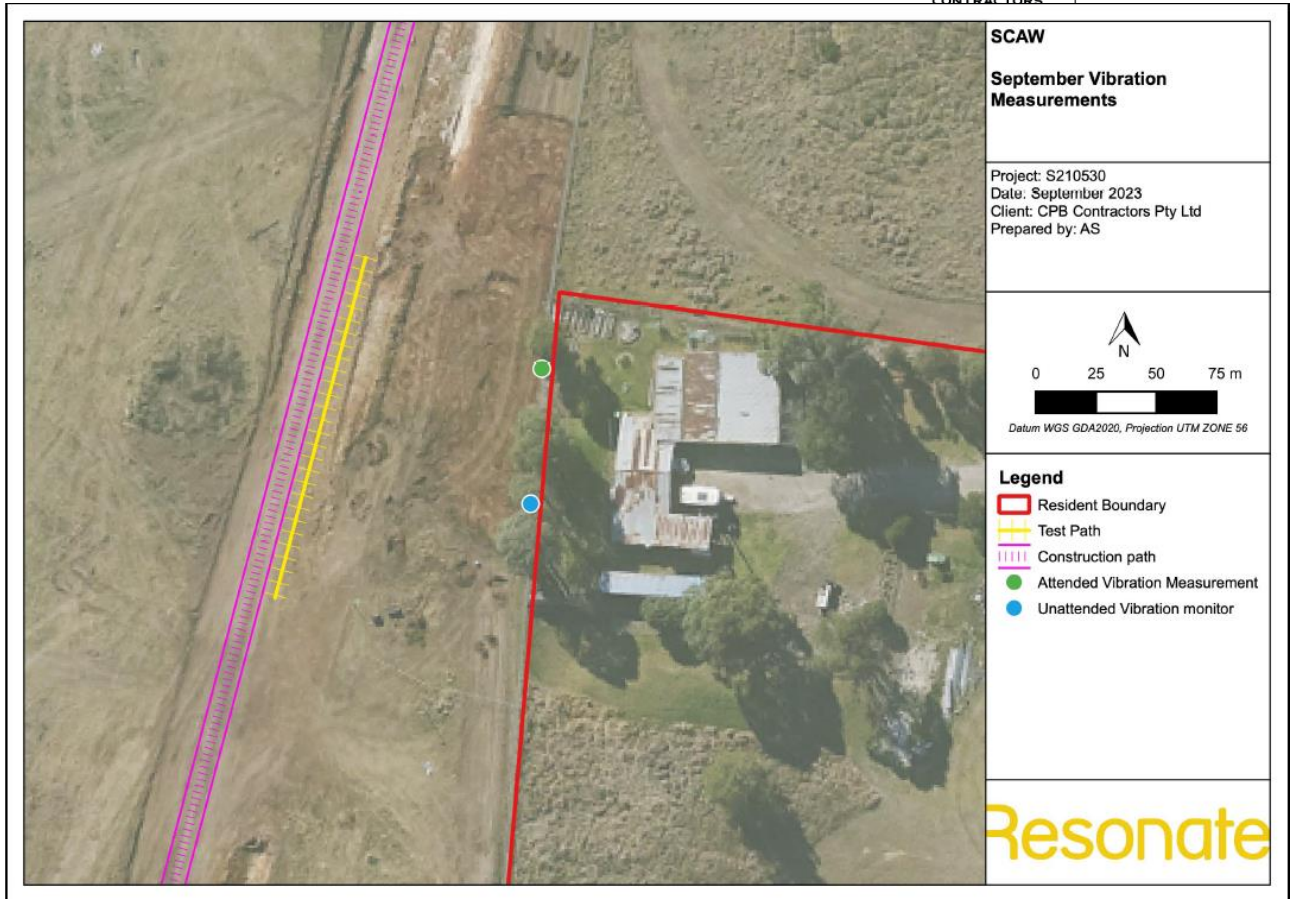


Figure 4 Vibration Monitoring at 327-329 Luddenham Road, Orchard Hills

A trigger value of 5mm/s was adopted due to the structure being residential. During attended monitoring, no exceedances were recorded, with the highest value being 2.71mm/s during a 20t roller operating at full vibration. During unattended monitoring, no exceedances were recorded, with the highest value being 4.3mm/s. Based on work activities occurring during unattended monitoring, the highest readings were most likely caused by placement and compaction of structural fill material (sandstone imported from tunnel projects).

Works within Warragamba Pipeline commenced within the reporting period which triggered the requirement for continuous vibration monitoring in accordance with REMM HR4, DNVIS 004 and the Guidelines for Development Adjacent to the Upper Canal and Warragamba Pipelines.

Monitors were not consistently attended, however they were configured to run from 6am to 6pm and a warning system was established so any exceedances of 2mm/s triggered an alarm to alert work crews and re-evaluate activities. Six monitors were installed along the Pipeline alignment to capture SCAW activities from access road widening and piling pad construction (Figures 6 and 7).

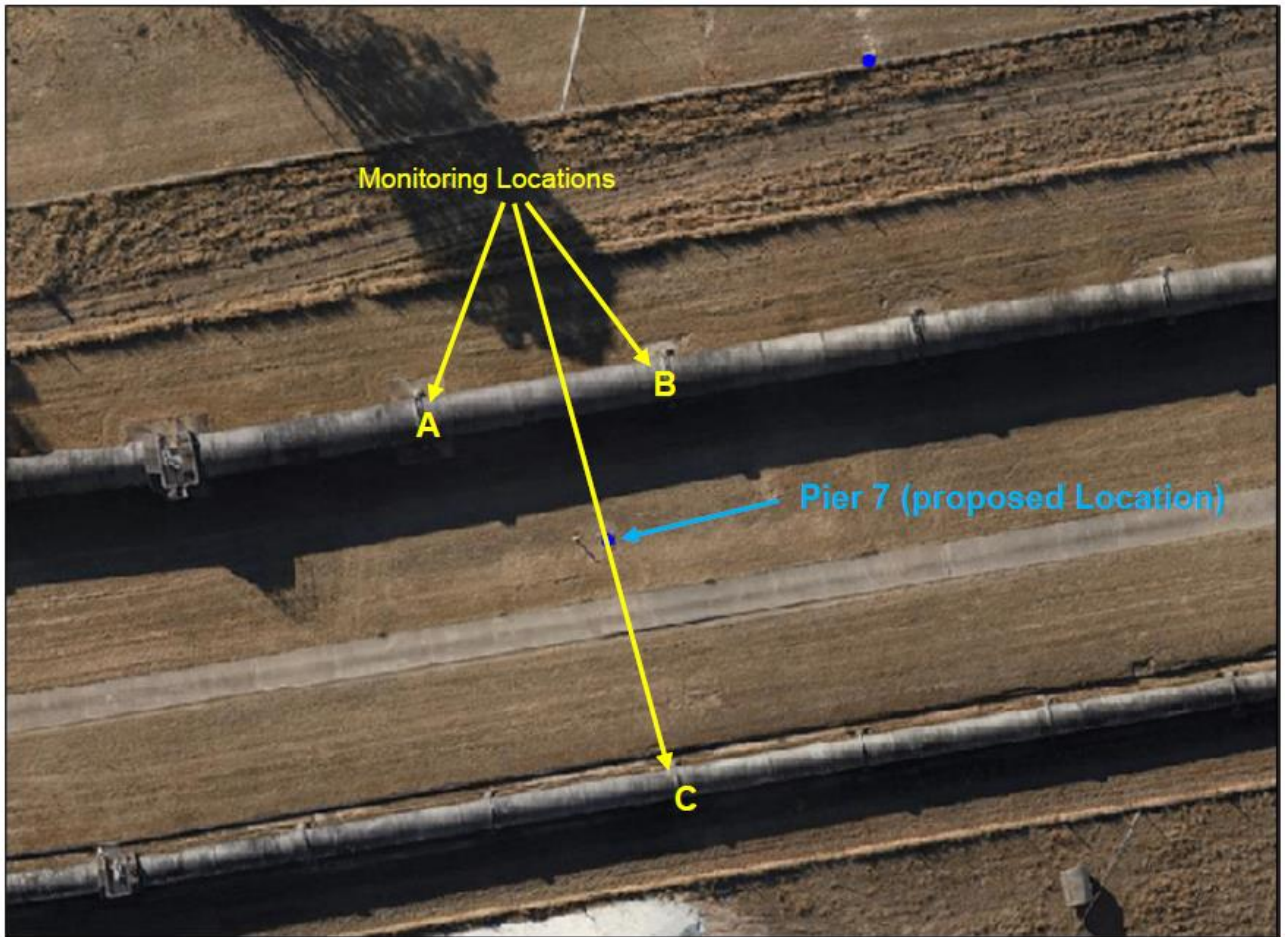


Figure 5 Vibration Monitoring Locations around Viaduct Pier 7

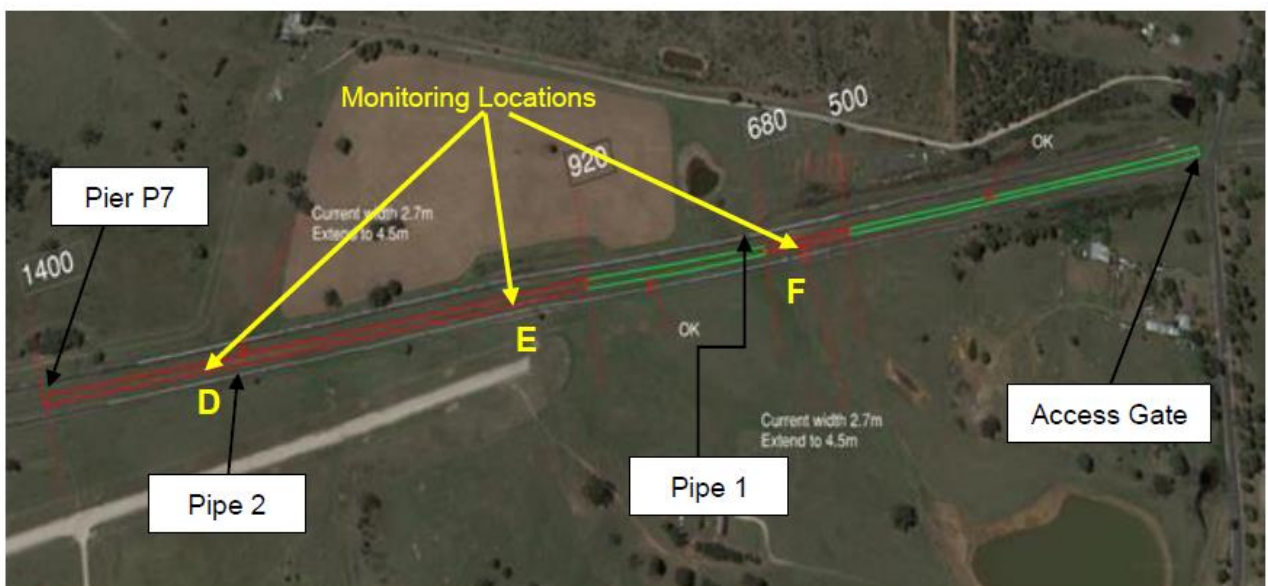


Figure 6 Vibration Monitoring Locations Along Warragamba Pipeline Access Road Widening Works (Red areas show road widening locations)

Continuous monitoring was undertaken from 3rd October to 31st October with 2 exceedances recorded on the 19th of October at monitoring location F. On investigation of the exceedances, it was found that no SCAW works were occurring at location F on that day and the exceedances were most likely caused by disturbance from other works occurring in the Pipeline corridor. Monitoring at Warragamba pipeline is ongoing until completion of piling works in late 2023.

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. The monitoring event for April was missed due to monitoring gear being serviced/repaired.

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. Post rainfall monitoring was undertaken on 31st August following a 25.8mm rain event on 30th August.

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 Creek Upstream	Y – Monitoring undertaken only when creek flowing in June and August
SCAW 2 DS	Unnamed Creek Downstream	Y – Monitoring undertaken only when creek flowing in June and August
SCAW 3 US	Cosgrove Creek Upstream	Y
SCAW 3 DS	Cosgrove Creek Downstream	Y
SCAW 4 US	Badgerys Creek Upstream,	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.

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 • Turbidity (NTU) • Visible oil and grease
	Laboratory testing	<ul style="list-style-type: none"> • Total suspended solids (TSS) (mg/L)
Metals	Laboratory testing	<p>All in mg/L:</p> <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	<p>All in mg/L:</p> <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 69 exceedances of ANZECC guideline trigger values recorded for the reporting period:</p> <ul style="list-style-type: none"> - Two exceedances of pH levels. - Six exceedances of conductivity levels. - 13 exceedances of NTU levels. - 28 exceedances of dissolved oxygen levels. - Six exceedances of TSS levels. - Two exceedances of aluminium levels. - Two exceedances of cobalt levels - Five exceedances in copper levels - Two exceedances of manganese levels - One exceedance of nickel levels - Two exceedances of zinc levels
<p>Post Rainfall Monitoring Trigger events (weather station):</p> <ul style="list-style-type: none"> - 25.8mm on 30/08/23 <p>Trigger levels formed from ANZECC Guidelines for slightly to moderately disturbed ecosystems (2000)</p>	<p>SWQMP</p>	<p>There were 37 exceedances of ANZECC guideline values recorded for the reporting period:</p> <ul style="list-style-type: none"> - Eight exceedances of NTU levels - Eight exceedances of dissolved oxygen levels - Five exceedance of TSS levels - Eight exceedances of aluminium levels - One exceedance of cobalt levels - Three exceedances of copper levels - One exceedance of lead levels - One exceedance of Vanadium levels - Two exceedances of zinc levels

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.

Monthly Surface Water Monitoring

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 and are consistent with historical/baseline monitoring results in the area.

Four downstream exceedances occurred in isolation from upstream results (or significantly higher than an upstream exceedance). All four exceedances were recorded on 16th June at Unnamed Creek. Field notes from the monitoring event identified that the creek was not flowing and samples were taken from stagnant, isolated puddles. The absence of flowing water was most likely to have resulted in an increase of dissolved metals from stagnant water in a disturbed creek bed.

Turbidity and Total Suspended Solids

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), where TSS is used as a more reliable indicator of potential sedimentation of waterways from construction works.

Of the six downstream NTU exceedances during the reporting period, only two were more than 20% higher than their corresponding upstream result (Blaxland Creek in May and Badgerys Creek in October). In these two instances, TSS was recorded within trigger levels suggesting other factors may have been impacting NTU readings such as discolouration of water from organic matter breakdown or algae growth.

Two downstream exceedances of TSS were recorded during the reporting period:

- 43mg/L, Badgerys Creek in May (upstream was 29mg/L)
- 27mg/L, Blaxland Creek in June (upstream was 40mg/L)

The exceedance at Badgerys Creek represented an exceedance greater than 20% of the upstream result. Upon investigation of this exceedance, it is not considered to be directly a result of SCAW activities due to the number of non SCAW related construction activities occurring between the upstream and downstream monitoring locations when compared to limited SCAW construction activities.

On investigation of the Blaxland Creek exceedance, the corresponding upstream result was recorded higher (40mg/L) than the downstream result, therefore no further management response was deemed necessary.

Dissolved Oxygen

A pattern of dissolved oxygen exceedances were identified in the previous reporting period and the management response from CPBUI was to service/repair the dissolved oxygen meter used during monitoring. However, instances of dissolved oxygen results outside trigger values continued in this reporting period. On further investigation of repeated exceedances, it was determined the exceedances were unlikely to be related to SCAW construction activities for reasons such as:

- dissolved oxygen is easily influenced by a number of external factors such as (but not limited to) temperature, atmospheric pressure, hydrostatic pressure, salinity, organic biomass, light intensity and flow speed.
- historical/background monitoring regularly identified dissolved oxygen outside ANZECC guideline values.
- due to access and safety constraints at monitoring points, the sampling methodology utilised by SCAW when monitoring may result in increases to dissolved oxygen due to increased aeration of water.

pH

During the reporting period, there was one instance of pH trigger level exceedance (6.5-8) at a downstream location where the upstream was within limits:

- Badgerys Creek, June (8.04).

The exceedances at Badgerys Creek are considered minor and represents a less than 20% increase from the upstream result. A review of the construction program identified limited works undertaken by SCAW within the Badgerys Creek catchment in the time period between the May and June monitoring events.

Conductivity

Three exceedances of conductivity were recorded at downstream locations during the reporting period:

- Blaxland Creek, June (2230 μ S/cm)
- Unnamed Creek, June (5710 μ S/cm)
- Badgerys Creek, September (2230 μ S/cm)

Blaxland Creek in June, the downstream exceedance represented an improvement from the upstream result (2840 μ S/cm). The downstream exceedance at Unnamed Creek in June also followed an upstream exceedance (2870 μ S/cm), however the downstream exceedance represents a 50% increase in conductivity. Field notes from monitoring at Unnamed Creek in June noted Unnamed Creek was not flowing and monitoring was conducted on stagnated puddles.

Further, Unnamed Creek is identified by NSW Government Mapping and the EIS as being an area of known salinity, therefore it is not unexpected that a stagnant puddle had elevated conductivity, likely due to saline conditions in the creek. 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 19 downstream exceedances recorded following the rain event in August, nine occurred in isolation from the corresponding upstream result or represented a more than 20% increase from upstream result and are discussed below.

Turbidity and Total Suspended Solids

NTU – four downstream exceedances, two of these were an increase of 20% from the upstream result:

- Blaxland Creek (upstream 183, downstream 264)
- Unnamed Creek (upstream 205, downstream 599)

Exceedance of NTU at Blaxland Creek returned a TSS result within trigger levels and lower than the corresponding upstream result. At Unnamed Creek, the TSS result exceeded trigger values but represented a less than 20% increase from the upstream result. As previously discussed, TSS is a precise measurement of sedimentation in the creeks and indicates the above NTU results may be attributable to other factors.

TSS – Three downstream exceedances, two were within 20% of the upstream result and one where the corresponding upstream was within limits and represented a increase of more than 20% from upstream:

- Cosgrove Creek (upstream 21mg/L, downstream 31mg/L)

The TSS exceedance recorded at Cosgrove Creek represented an approximately 30% increase from the nominated trigger value (25mg/L) and was consistent with previous TSS results recorded during historical / pre-construction monitoring in Cosgrove's creek (EIS Tech Paper 06 – Flooding, Hydrology and Water Quality). Results in the following monitoring period in September demonstrated a return to results within trigger values and no further management response is considered necessary.

Dissolved Oxygen

DO – Four downstream exceedances, three of these were an increase of 20% from the upstream result:

- Blaxland Creek (upstream 204%, downstream 418%)
- Unnamed Creek (upstream 43.57%, downstream 60.4%)
- Cosgrove Creek (upstream 218%, downstream 277%)

As previously mentioned in this report, dissolved oxygen can be impacted by a number of factors and the results recorded following rainfall in August appear consistent with the fluctuations recorded in previous monitoring events both during construction and pre construction background/historical monitoring.

Metals

Aluminium – Four downstream exceedances, one of these was an increase of 20% from the upstream result:

- Unnamed Creek (upstream 1.9mg/L, downstream 4.2mg.L)

Review of this exceedance determined that the result was unlikely to be as a result of SCAW works due to a number of reasons:

- No SCAW discharges had occurred in Unnamed Creek using aluminium based products
- Due to access constraints, downstream monitoring was undertaken downstream of other construction sites on Patons lane

- Elevated levels of aluminium can be caused by weathering of rocks/soil during rain events.

Following record of this exceedance, CPBUI determined an appropriate management response was to closely monitor aluminium results in Unnamed Creek. However due to lack of flow, Unnamed Creek is yet to receive a follow up monitoring event.

Cobalt – one downstream exceedance:

- Blaxland Creek (upstream not detected, downstream 0.002mg/L)

The cobalt exceedance at Blaxland Creek represented a 30% exceedance of the trigger value. It is difficult to determine sources of cobalt attributable to SCAW works, however cobalt has been historically used in rural areas as a fertilizer enrichment product.

Pre-construction ground and surface water survey(s) had indicated trace elements of cobalt within the proximity of Cosgroves creek. As results in the following monitoring period demonstrated a return to results within trigger values no further management response was considered necessary.

Vanadium – one downstream exceedance:

- Unnamed Creek (upstream not detected, downstream 0.01mg/L)

The Vanadium exceedance at Unnamed Creek represented a 40% exceedance of the trigger value. Vanadium in waterways is often attributable to the natural weathering of rock and soils and therefore not entirely unexpected during post rainfall surface water monitoring. Similar to Cobalt above, pre-construction ground and surface water survey(s) had indicated trace elements of Vanadium within the proximity of Cosgroves creek and as the results in the following monitoring period demonstrated a return to results within trigger values no further management response was considered necessary.

Missing Data Discussion

CPBUI notes that during the monitoring period Arsenic V was not analysed as committed in the SWQMP. CPBUI identified inconsistencies within the SWQMP where Arsenic V was included as parameters for testing in the Monitoring Program yet neither parameter was included in baseline monitoring tables. Further review determined this parameter was 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.

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)
15/05/2023 11:28am	Traffic	A business along Patons Lane, Orchard Hills experienced truck traffic on Patons Lane blocking access to their business (Bingo) at the end of Patons Lane.	CPBUI Informed the complainant that due to rainfall experienced onsite over the weekend, the site team had to undertake corrective earthworks to make the site safe for heavy vehicles which delayed the entry time of multiple vehicles and closures of other spoil receival sites (not SCAW related) resulted in additional trucks being diverted to the Stabling and Maintenance Facility by the haulage contractors. Project Manager explained that this should not be a recurring issue as the site access road will be completed this week allowing up to 1.5km of space within the project boundary for vehicles to queue and therefore remove traffic from Paton's Lane. The project has also established sufficient hardstand area for trucks to queue within the site after futhre rain events to prevent future congestion.	Closed.
6/07/2023 7:00pm	Air Quality	A nearby resident in Orchard Hills complained to the Sydney Metro complaints line to complain about mud tracking on Patons Lane and Luddenham Road, Orchard Hills.	In response, CPBUI notified the resident that fill importation in this area was nearing completion and truck volumes would begin to decline, however, CPBUI was not solely responsible for truck movements on Patons Lane. CPBUI offered to send a street sweeper to the area as a gesture of goodwill.	Closed.
12/07/2023 9:45pm	Noise	A nearby resident in Orchard Hills called the Transport for NSW community liaison phone line to complain about construction noise occurring out of hours at the SMF.	CPBUI contacted the resident to inform them of approved Out of Standard Construction Hours material delivery and stockpiling to the SMF since Feb 2023 in accordance with a negotiated agreement with impacted residents as detailed in the Community Consultation Report issued to EPA on 7th Feb 2023. These works are located approximately 1000m away from the complainant's property and shielded by the Bingo Waste Facility located West of the works area (see Appendix A). The complainant was not considered noise impacted during the DNVIS development and unattended noise monitoring throughout the night indicated works were consistent with the Noise Management Level (45dB) for the noise catchment area.	Closed.

Date/time	Complaint Type	Details	Action Taken	Complaint Status (Open / Closed)
			<p>CPBUI Actions in response to the complaint included:</p> <ul style="list-style-type: none"> Finished night works in this location by Monday 17th July 2023 – 3 more shifts CPBUI moved works as close as possible to Paton's lane to maximise distance to the receiver for the nightshift on 13th July 2023. Change out plant to use quieter equipment. 	
18/07/2023 8:13pm	Noise	A nearby resident in Badgerys Creek called the Transport for NSW community liaison phone line to complain about noise from out of hours construction works.	<p>CPBUI contacted the resident to confirm the OOHW were approved in accordance with the EPL. A member of CPBUI attended site between 11:45pm and 2:00am and noted the following:</p> <ul style="list-style-type: none"> Significant volumes of truck and dogs were utilising Elizabeth Drive outside of standard working hours for material haulage associated with the Western Sydney Airport. No truck and dog vehicles associated with SCAW activities were travelling past the residents property on Elizabeth Drive. Trucks associated SCAW works were following the approved haul routes and utilising the Northern Road. All truck and dog vehicles travelling past the residents property were not SCAW related. <p>All SMWSA SCAW sandstone deliveries are monitored for their travel route, driver behaviour and frequency.</p> <p>An offer for noise monitoring in response to the complaint was made to the resident but it was rejected.</p>	Closed.
21/09/2023 3:20pm	Air Quality	A nearby resident in Orchard Hills called the neighbouring Sydney Metro contractor to complain about dust from SCAW works.	CPBUI provided information for Sydney Metro to respond to the resident explaining context of works being undertaken in the area and that appropriate mitigation measures were in place at the time of complaint. Further, works were ceased at 3:45pm due to windy conditions.	Closed.
13/10/2023 1:30pm	Air Quality	Nearby residents in Orchard Hills called the Transport for NSW community liaison phone line to complain about dust from the SCAW works.	CPBUI contacted the resident via phone call to explain the context of works being undertaken in the area and that appropriate mitigation measures were in place at the time of complaint. Further, works had been scaled back from approximately 2pm due to windy conditions, with the highest risk activities being stopped.	Closed.

Date/time	Complaint Type	Details	Action Taken	Complaint Status (Open / Closed)
13/10/2023 1:35pm	Air Quality	Nearby residents in Orchard Hills called the Transport for NSW community liaison phone line to complain about dust from the SCAW works.	CPBUI provided information for Sydney Metro to respond to the resident explaining context of works being undertaken in the area and that appropriate mitigation measures were in place at the time of complaint. Further, works had been scaled back from approximately 2pm due to windy conditions, with the highest risk activities being stopped.	Closed.
31/10/2023 7:46am	Air Quality	A nearby resident in Orchard Hills called the Transport for NSW community liaison phone line to complain about dust from the SCAW works.	CPBUI provided information for Sydney Metro to respond to the resident explaining context of works being undertaken in the area and that appropriate mitigation measures were in place at the time of complaint. Further, a meeting was organised with the resident to discuss mitigation measures in place.	Closed
31/10/2023 8:55am	Air Quality	A nearby resident in Orchard Hills called the Transport for NSW community liaison phone line to complain about dust from the SCAW works.	CPBUI contacted the resident via phone to explain the context of works being undertaken in the area and that appropriate mitigation measures were in place at the time of complaint.	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

Data Collected from Weather Station

May

Date	1/05/2023	6/05/2023	7/05/2023	13/05/2023	14/05/2023	15/05/2023	16/05/2023	22/05/2023	24/05/2023	27/05/2023		Total May
Rain (mm)	0.2	0.6	3.8	13.8	2.2	0.2	0.2	0.2	0.2	0.2		21.6

June

Date	3/06/2023	4/06/2023	5/06/2023	8/06/2023	12/06/2023	13/06/2023	17/06/2023	22/06/2023	27/06/2023	28/06/2023		Total June
Rain (mm)	0.2	0.2	0.6	0.8	1	0.2	0.2	6.6	0.8	4.2		14.8

July

Date	3/07/2023	4/07/2023	11/07/2023	13/07/2023	16/07/2023	17/07/2023	24/07/2023					Total July
Rain (mm)	2	3.4	0.2	0.2	0.8	0.8	0.2					7.6

August

Date	5/08/2023	7/08/2023	13/08/2023	14/08/2023	15/08/2023	17/08/2023	22/08/2023	23/08/2023	24/08/2023	28/08/2023	30/08/2023	Total August
Rain (mm)	11.8	0.4	16.6	3.8	0.2	4.6	0.6	0.8	0.2	3.6	25.8	68.4

September

Date	7/09/2023	8/09/2023	21/09/2023	27/09/2023	28/09/2023							Total September
Rain (mm)	3	0.8	0.2	5.8	0.2							10

October

Date	4/10/2023	6/10/2023	7/10/2023	17/10/2023	18/10/2023	26/10/2023	27/10/2023					Total October
Rain (mm)	14	2.4	0.2	2	0.2	1.2	0.6					20.6

Days where no rainfall was recorded have not been included

Depositional Dust Monitoring Results

Date Started	Date Collected	Location	DS1 - SMF North	DS2 - SMF South	DS3 - ED Compound	DS4 - Lansdowne	DS5 - Celestinos	DS6 - Luddenham South
3/04/2023	1/05/2023	Combustible solids	1	0.2	0.1	0.3	1	0.7
		Soluble Solids	<0.1	<0.1	2.1	2.5	<0.1	2.2
		Total Solids	1.1	0.3	2.3	2.9	1.1	3
		Volume (total)	1500	1400	1300	1400	1300	1300
		Ash content	0.1	<0.1	<0.1	<0.1	0.1	<0.1
		Insoluble Solids	1.1	0.3	0.2	0.4	1.1	0.8
1/05/2023	6/06/2023	Combustible solids	<0.1	0.1	<0.1	<0.1	<0.1	0.2
		Soluble Solids	2.4	<0.1	<0.1	<0.1	1.8	1.3
		Total Solids	2.7	0.9	0.5	0.1	1.9	2.9
		Volume (total)	750	480	650	550	510	500
		Ash content	0.2	0.8	0.4	<0.1	<0.1	1.3
		Insoluble Solids	0.3	0.9	0.5	0.1	<0.1	1.5
6/06/2023	3/07/2023	Combustible solids	0.2	0.2	0.1	0.5	0.1	0.2
		Soluble Solids	1.6	1.5	1.7	1.9	3.6	3.7
		Total Solids	2.1	2.4	2.2	3	4	5
		Volume (total)	320	200	300	260	300	300
		Ash content	0.3	0.6	0.4	0.6	0.3	1
		Insoluble Solids	0.5	0.8	0.6	1.2	0.4	1.2
3/07/2023	9/08/2023	Combustible solids	0.2	0.2	0.2	0.1	0.2	0.3
		Soluble Solids	2.1	4.3	2.6	1.9	2.5	2.2
		Total Solids	2.7	4.8	3.7	2.4	3.5	3
		Volume (total)	300	200	300	300	300	250
		Ash content	0.4	0.3	0.9	0.4	0.8	0.6
		Insoluble Solids	0.7	0.5	1.1	0.5	1	0.9
9/08/2023	4/09/2023	Combustible solids	<0.1	<0.1	<0.1	0.6	<0.1	<0.1
		Soluble Solids	0.3	1.4	4.4	1.8	<0.1	5.5
		Total Solids	0.9	2.1	4.9	9.3	1	6.6
		Volume (total)	1100	1000	1000	950	2000	1600
		Ash content	0.5	0.6	0.4	6.9	0.9	1.1
		Insoluble Solids	0.6	0.7	0.4	7.5	1	1.2
4/09/2023	6/10/2023	Combustible solids	0.3	0.2	0.2	0.4	0.2	0.2
		Soluble Solids	2.9	0.2	1.1	0.5	1.6	2.3
		Total Solids	4.6	3.1	2.3	15	3.1	4.2
		Volume (total)	490	380	460	520	400	420
		Ash content	1.4	2.7	1	14	1.3	1.7
		Insoluble Solids	1.7	2.9	1.2	15	1.5	1.9
6/10/2023	3/11/2023	Combustible solids	3.5	2.7	3.3	0.9	1.5	1.7
		Soluble Solids	2.6	4.7	1.7	3.4	2.9	3.6
		Total Solids	6.6	7.9	6	4.7	4.8	5.8
		Volume (total)	200	250	500	200	200	200
		Ash content	0.5	0.4	1	0.4	0.5	0.5
		Insoluble Solids	4	3.2	4.2	1.3	1.9	2.2

Air quality criteria is assessed against insoluble solids with a max criteria of 4g/m2/month (exceedances highlighted in red) and a max increase of 2g/m2/month (exceedances highlighted in orange)

Attended Noise Monitoring - Fortnightly										
Date	Time	Location	NM #	Construction Activity/Location	NCA	NML	LAeq	L10	L90	Notes
30/05/2023	11:05	69 Solander Dr St Clair	NM16	SMF Earthworks	7	57	66.7	70.3	52	Site not audible
26/05/2023	10:55	8 Bordeaux Pl Orchard Hills	NM08	SMF Earthworks	8	54	49.9	52.5	45.4	Site not audible
30/05/2023	11:25	276 Luddenham Rd Orchard Hills	NM09	Celestinos/DEOH Earthworks	9	50	66.3	70.4	40.4	Site not audible
30/05/2023	11:58	28 Halmstad Blvd Luddenham	NM10	Luddenham South Earthworks	10	45	46.7	46.8	76.3	Site not audible
15/06/2023	14:09	68 Solander Dr St Clair	NM16	SMF Earthworks	7	57	70.4	72.7	64.3	Site not audible
15/06/2023	13:33	8 Bordeaux Pl Orchard Hills	NM08	SMF Earthworks	8	54	49.4	49.7	40.1	Site not audible, windy conditions
15/06/2023	14:33	246 Luddenham Rd Orchard Hills	NM09	Celestinos/DEOH Earthworks	9	50	69.2	72.4	50.7	Site not audible, heavy traffic
15/06/2023	14:58	28 Halmstad Blvd Luddenham	NM10	Luddenham South Earthworks	10	45	52.7	55	38.4	Dominant noise from plane and cars passing, plant equipment audible, believed to be M12,
30/06/2023	10:30	68 Solander Dr St Clair	NM16	SMF Earthworks	7	57	69.2	73.3	57.3	Site not audible, heavy traffic
30/06/2023	9:49	7 Bordeaux Pl Orchard Hills	NM08	SMF Earthworks	8	54	48	47.4	38.3	NOTE: Construction suspended at SMF.
30/06/2023	10:53	276 Luddenham Rd Orchard Hills	NM09	Celestinos/DEOH Earthworks	9	50	68.9	71.7	47.5	Site not audible, heavy traffic
30/06/2023	11:15	27 Halmstad Blvd Luddenham	NM10	Luddenham South Earthworks	10	45	50	46	35.8	Construction machinery audible but not dominant noise source. Unable to determine if SCAW works.
12/07/2023	10:14	68 Solander Dr St Clair	NM16	SMF Earthworks	7	57	68.9	72.5	57.1	Site not audible - constant road traffic noise
12/07/2023	9:45	8 Bordeaux Pl Orchard Hills	NM08	SMF Earthworks	8	54	47.9	51.8	43	Residential construction / Plane over head - NML compliant
12/07/2023	10:36	276 Luddenham Rd Orchard Hills	NM09	Celestinos/DEOH Earthworks	9	50	68	71.4	45.9	Site not audible - constant road traffic noise (heavy vehicles)
12/07/2023	11:00	27 Halmstad Blvd Luddenham	NM10	Luddenham South Earthworks	10	45	49	48.9	37.3	dominant noise source from aircrafts overhead - construction noise audible but unable to determine if M12 or SCAW
28/07/2023	10:23	68 Solander Dr St Clair	NM16	SMF Earthworks	7	57	69	73.1	55.3	Site not audible - constant road traffic noise
28/07/2023	9:50	7 Bordeaux Pl Orchard Hills	NM08	SMF Earthworks	8	54	48.8	49.4	44.7	Some site works audible, birds notably loud.
28/07/2023	10:50	250 Luddenham Rd Orchard Hills	NM09	Celestinos/DEOH Earthworks	9	50	67.9	71	46.9	Site not audible - constant road traffic noise (heavy vehicles)
28/07/2023	11:16	27 Halmstad Blvd Luddenham	NM10	Luddenham South Earthworks	10	45	48.7	46.9	37.3	SCAW works not audible. M12 and local construction
15/08/2023	16:28	68 Solander Dr St Clair	NM16	SMF Earthworks	7	57	69.6	72.5	63.2	Site not audible - Heavy constant traffic.
16/08/2023	9:17	8 Bordeaux Pl Orchard Hills	NM08	SMF Earthworks	8	54	50.2	54.1	38	Construction noise audible, piling, squawker - NOT dominant noise source - Frogs, birds, dog barking and light aircraft all dominant.
15/08/2023	15:27	276 Luddenham Rd Orchard Hills	NM09	Celestinos/DEOH Earthworks	9	50	67.9	72.5	49.5	Site not audible - Constant traffic, birds
16/08/2023	9:58	27 Halmstad Blvd Luddenham	NM10	Luddenham South Earthworks	10	45	52	52.6	34.4	Site not audible - Local construction, cars passing, light aircraft
29/08/2023	14:43	68 Solander Dr St Clair	NM16	Earthworks and Drainage, sub-structure works (Patons lane - blaxland Ck)	7	57	70.3	73.3	64.2	No SCAW works audible. Mamre Rd traffic dominant source of noise
29/08/2023	14:09	8 Bordeaux Pl Orchard Hills	NM08	Earthworks and Drainage, sub-structure works (blaxland Ck)	8	54	43.5	45.9	40.3	Some SCAW machinery audible (not distinguishable). Birds, plane and residential noise dominant.
29/08/2023	15:29	256 Luddenham Road	NM09	Earthworks and Piling within Defence Land	9	50	66.9	71.6	46.2	Road traffic and local Garde construction works dominant noise source - SCAW not audible.
29/08/2023	16:09	27 Halmstad Blvd Luddenham	NM10	Luddenham South Structures Works	10	45	60.7	53.1	30.7	Site not audible. Dominant noise sources include light aircraft, bird noises and local traffic.
15/09/2023	10:43	68 Solander Dr St Clair	NM16	SMF Earthworks	7	57	70.1	73.5	55.9	No SCAW works audible. Mamre Rd traffic dominant source of noise
15/09/2023	10:11	8 Bordeaux Pl Orchard Hills	NM08	Blaxland Creek structures/earthworks	8	54	45.9	49.5	43.2	Some SCAW machinery audible (not distinguishable). Birds, plane and residential noise dominant.
15/09/2023	11:11	256 Luddenham Road	NM09	DEOH. Luddenham Station earthworks/structures	9	50	67.4	70.2	43	Road traffic and local construction works dominant noise source - SCAW not audible.
15/09/2023	11:44	27 Halmstad Blvd Luddenham	NM10	Luddenham North/South earthworks/structures	10	45	56.9	52	34.8	Site not audible - Local construction, cars passing, light aircraft
29/09/2023	11:56	68 Solander Dr St Clair	NM16	SMF Earthworks/Structures	7	57	69.3	72.8	58.4	No SCAW works audible. Mamre Rd traffic dominant source of noise
29/09/2023	11:21	8 Bordeaux Pl Orchard Hills	NM08	SMF Earthworks/Structures	8	54	45.1	44.8	35.5	Some SCAW machinery audible (not distinguishable). Birds, plane and residential noise dominant.
29/09/2023	12:38	256 Luddenham Road	NM09	DEOH/Luddenham Station earthworks/structures	9	50	66.6	70.9	42.4	Road traffic and local construction works dominant noise source - SCAW not audible.
29/09/2023	13:01	27 Halmstad Blvd Luddenham	NM10	Luddenham Station/South earthworks/Structures	10	45	48.2	51.7	35.3	Site not audible - Local construction, cars passing, light aircraft
12/10/2023	9:26	68 Solander Dr St Clair	NM16	SMF Earthworks	7	57	70.7	74.6	59.6	No SCAW works audible. Mamre Rd traffic dominant source of noise
12/10/2023	8:50	8 Bordeaux Pl Orchard Hills	NM08	Blaxland Creek structures/earthworks	8	54	47.5	47.8	41.3	Some SCAW machinery audible (not distinguishable). Birds, plane and residential noise dominant.
13/10/2023	8:40	256 Luddenham Road	NM09	DEOH. Luddenham Station earthworks/structures	9	50	66.6	70.7	43.4	Road traffic and local construction works dominant noise source - SCAW not audible.
13/10/2023	9:05	27 Halmstad Blvd Luddenham	NM10	Luddenham North/South earthworks/structures	10	45	58.5	59.3	51.5	Site not audible - Local construction, cars passing, light aircraft
31/10/2023	15:30	68 Solander Dr St Clair	NM16	SMF Earthworks/Structures	7	57	68.5	71.7	61.5	Site not audible - Strong Winds
31/10/2023	14:55	8 Bordeaux Pl Orchard Hills	NM08	SMF Earthworks/Structures	8	54	55.9	58.9	46.2	Site not audible - Strong Winds
31/10/2023	15:55	256 Luddenham Road	NM09	DEOH/Luddenham Station earthworks/structures	9	50	67.8	71.6	48.6	Site not audible - Strong Winds
31/10/2023	16:18	27 Halmstad Blvd Luddenham	NM10	Luddenham Station/South earthworks/Structures	10	45	46.6	50	38.2	Site not audible - Strong Winds

Notes/Definitions:

All attended monitoring is undertaken as a 15 minute sample

NCA - Noise catchment area

NML - Noise management level

LAeq - Equivalent continuous sound pressure level (over 15min period)

L10 - The noise level exceeded for 10% of the measurement period

L90 - The noise level exceeded for 90% of the measurement period

Attended Noise Monitoring - Out of Hours Works											
Date	Time	Location	Period	Construction Activity/Location	NCA	DNVIS Activity	DNVIS Predicted	LAeq	L10	L90	Notes
10/08/2023	20:00	48-52 Portrush Cres Luddenham	Evening	Luddenham Roundabout Service Cutover	10	DNVIS 004 Activity 3	60	45.6	48.7	32.7	Site audible. Local traffic, aircraft and birds/insects noted.
10/08/2023	20:36	44 Portrush Cres Luddenham	Evening	Luddenham Roundabout Service Cutover	10	DNVIS 004 Activity 3	58	38.4	41.6	32.8	Site audible. Aircraft and residential noises noted.
10/08/2023	21:09	44 Twin Creeks Drive Luddenham	Evening	Luddenham Roundabout Service Cutover	10	DNVIS 004 Activity 3	46	53.2	46	36.3	Site audible. Local traffic, aircraft and birds dominant noise source.
10/08/2023	22:07	4 Ventana Court Luddenham	Night	Luddenham Roundabout Service Cutover	10	DNVIS 004 Activity 3	47	36.6	39.1	30.3	Site audible but feint. Local traffic, insects and barking dogs dominant noise source.
10/08/2023	22:34	44 Twin Creeks Drive Luddenham	Night	Luddenham Roundabout Service Cutover	10	DNVIS 004 Activity 3	46	49.7	40.6	35	Site audible but feint. Insects, local traffic and barking dogs dominant noise source.
10/08/2023	23:03	48-52 Portrush Cres Luddenham	Night	Luddenham Roundabout Service Cutover	10	DNVIS 004 Activity 3	60	40.4	43	36.9	Site audible. Birds, insects and light aircraft dominant noise source.
16/10/2023	19:57	16 Farmingdale Court Luddenham	Evening	Luddenham South Haulage and Import	10	DNVIS 005 Activity 2	49	48	49	35.9	Windy conditions. Site feintly audible. Dominant noise from residential sources (insects, aircraft, residents).
16/10/2023	20:35	644 Luddenham Road Luddenham	Evening	Luddenham South Haulage and Import	10	DNVIS 005 Activity 2	50	63.1	56.3	36.4	Windy conditions. Site not audible. Dominant noise from traffic on Luddenham Road.
16/10/2023	21:12	611A Luddenham Road Luddenham	Evening	Luddenham South Haulage and Import	10	DNVIS 005 Activity 2	46	66.9	61.4	37.7	Windy conditions. Occasional feint and distant site noise. Dominant noise from traffic on Luddenham Road.
16/10/2023	22:35	16 Farmingdale Court Luddenham	Night	Luddenham South Haulage and Import	10	DNVIS 005 Activity 2	49	38.8	42.3	31.2	Site audible and dominant noise source. Other residential noise from insects, aircraft and dogs barking.
16/10/2023	23:15	611A Luddenham Road Luddenham	Night	Luddenham South Haulage and Import	10	DNVIS 005 Activity 2	46	65.9	62.9	40.5	Distant site noise audible. Dominant noise from traffic on Luddenham Road.
23/10/2023	20:00	44 Portrush Cres Luddenham	Evening	Luddenham Roundabout Establishment Work	10	DNVIS 004 Activity 4	43	35.1	36.7	32.1	Site not audible. Dominant sources from residential noises (birds, insects, traffic, dogs).
23/10/2023	20:28	48-52 Portrush Cres Luddenham	Evening	Luddenham Roundabout Establishment Work	10	DNVIS 004 Activity 4	43	42.9	45.9	34.3	Site audible (dogman whistle, franna movement, truck movement). Other residential noises (traffic, aircraft, insects and birds).
23/10/2023	21:21	4 Ventana Court Luddenham	Evening	Luddenham Roundabout Establishment Work	10	DNVIS 004 Activity 4	35	37.6	40.2	33.4	Residential noise dominant noise source (insects, sprinklers, traffic, residents talking, aircraft, music). Site audible - not roundabout work (Luddenham South import activities audible).
23/10/2023	22:15	44 Portrush Cres Luddenham	Night	Luddenham Roundabout Establishment Work	10	DNVIS 004 Activity 4	43	34.8	37.5	31.3	Site audible (dogman whistle, franna movement, truck movement). Other residential noises (traffic, aircraft, insects and birds).
23/10/2023	22:42	48-52 Portrush Cres Luddenham	Night	Luddenham Roundabout Establishment Work	10	DNVIS 004 Activity 4	43	40.1	42.7	36.4	Site audible (dogman whistle, franna movement, truck movement). Other residential noises (traffic, aircraft, insects and birds).
23/10/2023	23:14	4 Ventana Court Luddenham	Night	Luddenham Roundabout Establishment Work	10	DNVIS 004 Activity 4	35	38.2	40.1	36	Residential noise dominant noise source (insects, sprinklers, traffic, dog barking/howling, aircraft, music). Site audible - not roundabout work (Luddenham South import activities audible).
24/10/2023	20:09	48-52 Portrush Cres Luddenham	Evening	Luddenham Roundabout Earthworks	10	DNVIS 004 Activity 5	54	42.5	45.3	38.7	Site audible (truck movement, excavator). Dominant noise from residential sources (traffic, dogs, aircraft, insects).
24/10/2023	21:08	6 Ventana Court Luddenham	Evening	Luddenham Roundabout Earthworks	10	DNVIS 004 Activity 5	44	44.9	45.5	36.4	Minor site noise audible. Domanant noise from residential sources (traffic, dogs, aircraft and insects).
24/10/2023	8:24	16 Farmingdale Court Luddenham	Evening	Luddenham South Haulage and Import	10	DNVIS 005 Activity 2	49	35.8	37.3	34	Site audible (Dozer from haulage). Roundabout work not audible. Residential noise dominant (dogs, insects).
24/10/2023	22:14	48.54 Portrush Cres	Night	Luddenham Roundabout Earthworks	10	DNVIS 004 Activity 5	54	39.2	41.7	35.3	Site audible but not dominant (excavator, truck movement). Residential noise domanant source (dogs, insects, traffic).
24/10/2023	22:55	6 Ventana Court Luddenham	Night	Luddenham Roundabout Earthworks	10	DNVIS 004 Activity 5	44	38.4	41.1	35.2	Site audible but not dominant (reverse alarm and truck movement). Residential noise domanant source (dogs, insects, traffic).

Notes/Definitions:

All attended monitoring is undertaken as a 15 minute sample

NCA - Noise catchment area

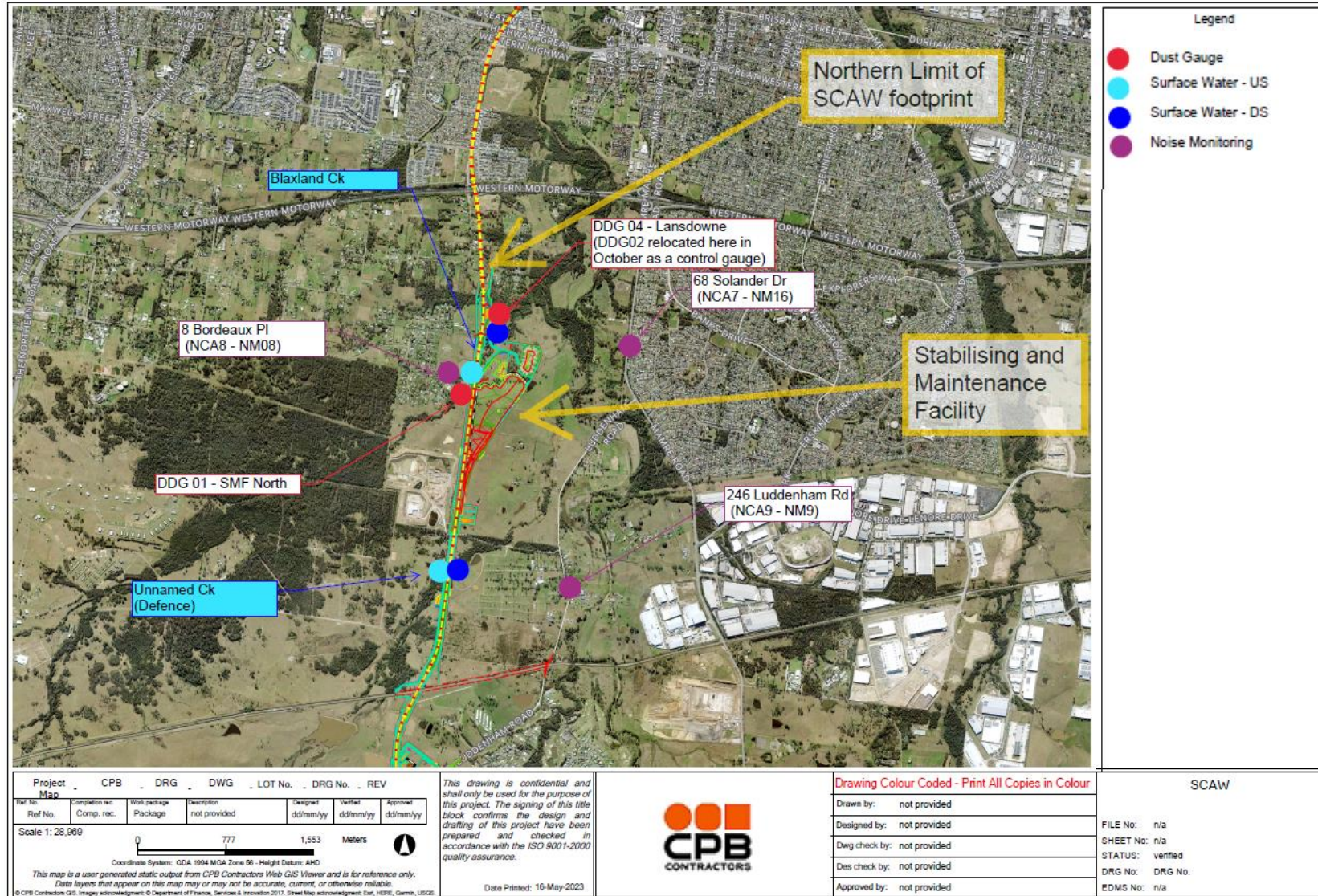
DNVIS Predicted - Noise level predicted by a Detailed Noise and Vibration Impact Statement

LAeq - Equivalent continuous sound pressure level (over 15min period)

L10 - The noise level exceeded for 10% of the measurement period

L90 - The noise level exceeded for 90% of the measurement

Appendix 2 – Monitoring Locations



Project				CPB	DRG	DWG	LOT No.	DRG No.	REV
Map									
Ref No.	Completion rec.	Work package	Description	Designed	Verified	Approved			
	Comp. rec.	Package	not provided	dd/mm/yy	dd/mm/yy	dd/mm/yy			
Scale 1: 28,909									
<small>Coordinate System: GDA 1994 MGA Zone 56 - Height Datum: AHD 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. © CPB Contractors GIS Imagery acknowledgment: © Department of Finance, Services & Innovation 2017. Street Map acknowledgment: Esri, HERE, Garmin, USGS.</small>									

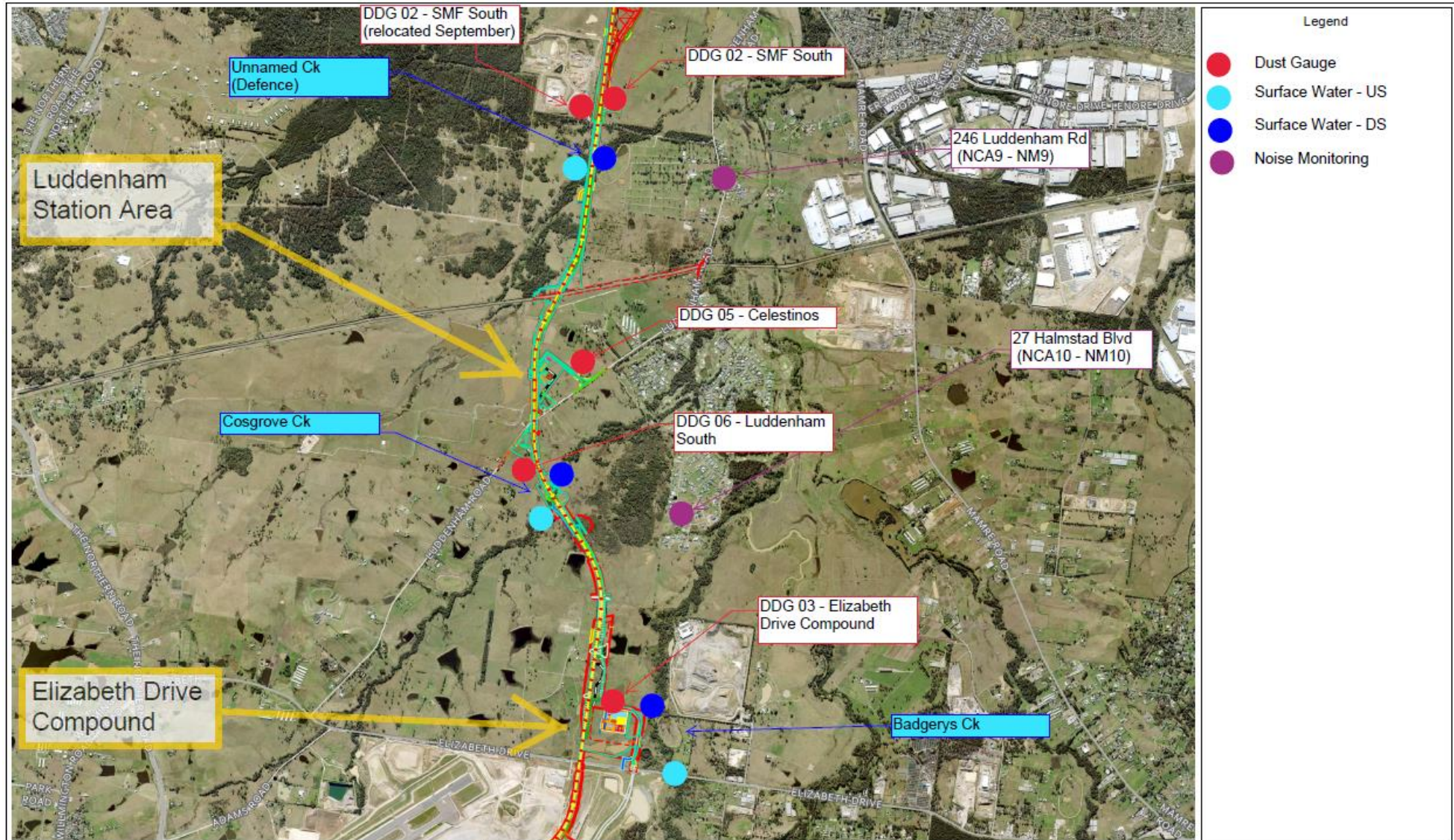
This drawing is confidential and shall only be used for the purpose of this project. The signing of this title block confirms the design and drafting of this project have been prepared and checked in accordance with the ISO 9001-2000 quality assurance.

Date Printed: 16-May-2023



Drawing Colour Coded - Pnnt 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.
EDMS No:	n/a



Legend

- Dust Gauge
- Surface Water - US
- Surface Water - DS
- Noise Monitoring

SCAW

0 777 1,553 Meters

Coordinate System: GDA 1994 MGA Zone 56 - Height Datum: AHD

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