

SSI 10051

6 Monthly Construction Monitoring Report 03

November 2023 – April 2024

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.

The controlled master version will be maintained on TeamBinder. All circulated hard copies are deemed to be uncontrolled.

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	Updated following internal review
C	Updated following internal review
D	Updated following internal review
1	For Issue
2	Updated following comment
3	Further updated following comment

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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
CPBUJ JV	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.

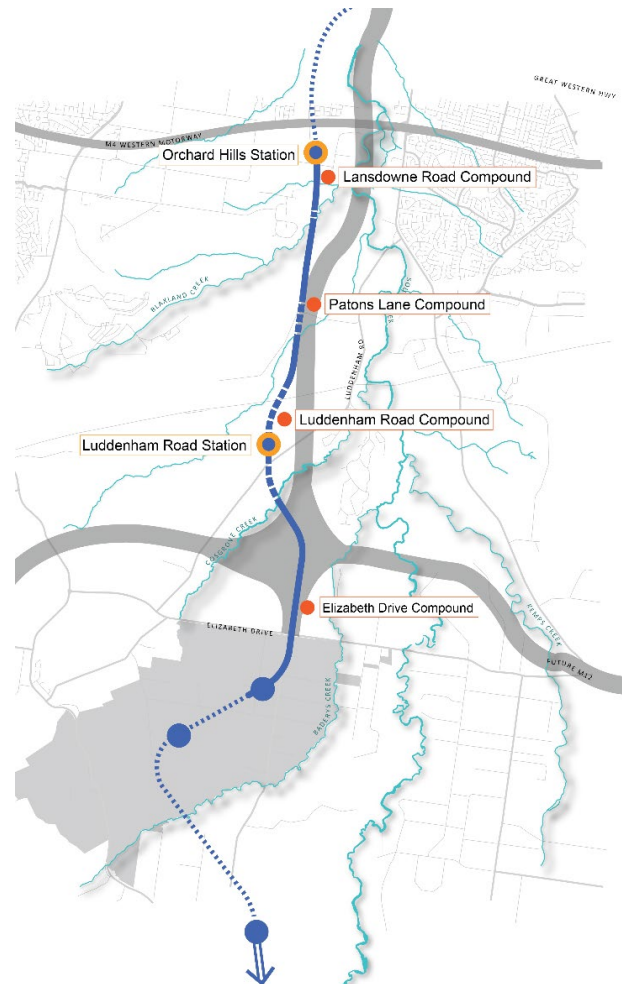


Figure 1 – Overview of the SCAW Project

1.3. Works Undertaken During Reporting Period

This monitoring report covers a reporting period of November 2023 to April 2024.

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
November 2023	<ul style="list-style-type: none"> • Drainage works, fauna crossing and sandstone placement ongoing at Patons Lane North • Substructure, drainage installation and fauna Culvert headwall works at Patons Lane south to Warragamba pipeline. • Piling works within Warragamba Pipeline. • Installation and commissioning of watermain at Celestino access road. • Viaduct segment placement between Cosgrove's Creek and Luddenham Road. • Luddenham Road roundabout works ongoing. • Sandstone placement and drainage at Cosgrove Creek to M12 Bridge Site. • Commencement of sandstone placement and drainage at M12 bridge to Elizabeth Drive.
December 2023	<ul style="list-style-type: none"> • PS105 works and sandstone import between Patons Lane and Lansdowne. • Fauna crossing works, prep for viaduct segment placement and backfilling around piers in Defence land. • Substructure pier works within Warragamba Pipeline. • Ongoing roundabout works at Luddenham. • Viaduct segment placement from Cosgroves Creek to the pipeline. • Between Elizabeth Drive and Cosgroves Creek final dam decommissioning and ongoing permanent basin works.
January 2024	<ul style="list-style-type: none"> • PS105 asbestos encapsulation and sandstone import over Northern tributary stream between Patons Lane and Lansdowne. • Completion of Fauna crossing works and backfilling works at defence area. • Substructure pier works within Warragamba Pipeline. • Drainage works south of Luddenham Road to Cosgrove's Creek • Basin and open drain works from Cosgrove's Creek to the M12 bridge site • Ongoing basin excavation, drainage works and earthworks between Elizabeth Drive and M12 bridge
February 2024	<ul style="list-style-type: none"> • PS105 asbestos encapsulation and earthworks between Patons Lane and Lansdowne. • Sandstone placement and Viaduct Temporary structure works at defence area. • Viaduct superstructure works at Luddenham Road to Cosgrove's Creek. • Open drain works and earthworks between Cosgrove's Creek and M12 bridge. • Drainage works and earthworks at Elizabeth Drive site, notably Basin excavation.
March 2024	<ul style="list-style-type: none"> • Sandstone placement and earthworks north of Patons lane along main alignment • Various earthworks in Defence area, including main alignment sandstone placement, haul road and crane pad works. • Viaduct finishing works and drainage works at Cosgrove's Creek to Luddenham Road, preparation for handover.

Month	Works Activities
	<ul style="list-style-type: none"> • Earthworks from Cosgroves Creek to M12 bridge site. • Earthworks from M12 bridge to Elizabeth drive, notably basin and drainage works.
April 2024	<ul style="list-style-type: none"> • Sandstone placement at Paton's Lane North completed. Finishing earthworks and spray grass is ongoing • Sandstone placement completed at Defence area. Ongoing Earthworks and preparation for viaduct segment placement. • Final handover works ongoing from Luddenham Road to Cosgrove's Creek. • Various earthworks from Cosgrove's Creek to M12 bridge site. • Earthworks progressing from M12 Bridge to Elizabeth drive, notably topsoiling and spray grass application.

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 November 2023 to April 2024, 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>	Part 4

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 SCAW weather station at Patons Lane, Orchard Hills 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. 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 next to a SCAW haul road adjacent to DS04 to assist with investigations of a number of exceedances from DS04. Following resolution of repeated exceedances at DS04, this DDG was relocated in February 2024 to the western works boundary (160m from the 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).
- DS 04 – Located east of the Lansdowne/Samuel Marsden Roads works area, along the fence line of the neighbouring property (25m to nearest receiver).
- DS 05 – Located north and east of the Luddenham Station Precinct (440m from nearest receiver).
- DS 06 – 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. 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): - Annual (max total): 4g/m2/month - Annual (max increase): 2g/m2/month	AQMonP Table 5	There was one exceedance where both the max total and max increase trigger levels were exceeded: - DS03 Max Total (November 2023) - DS03 Max Increase (November 2023)

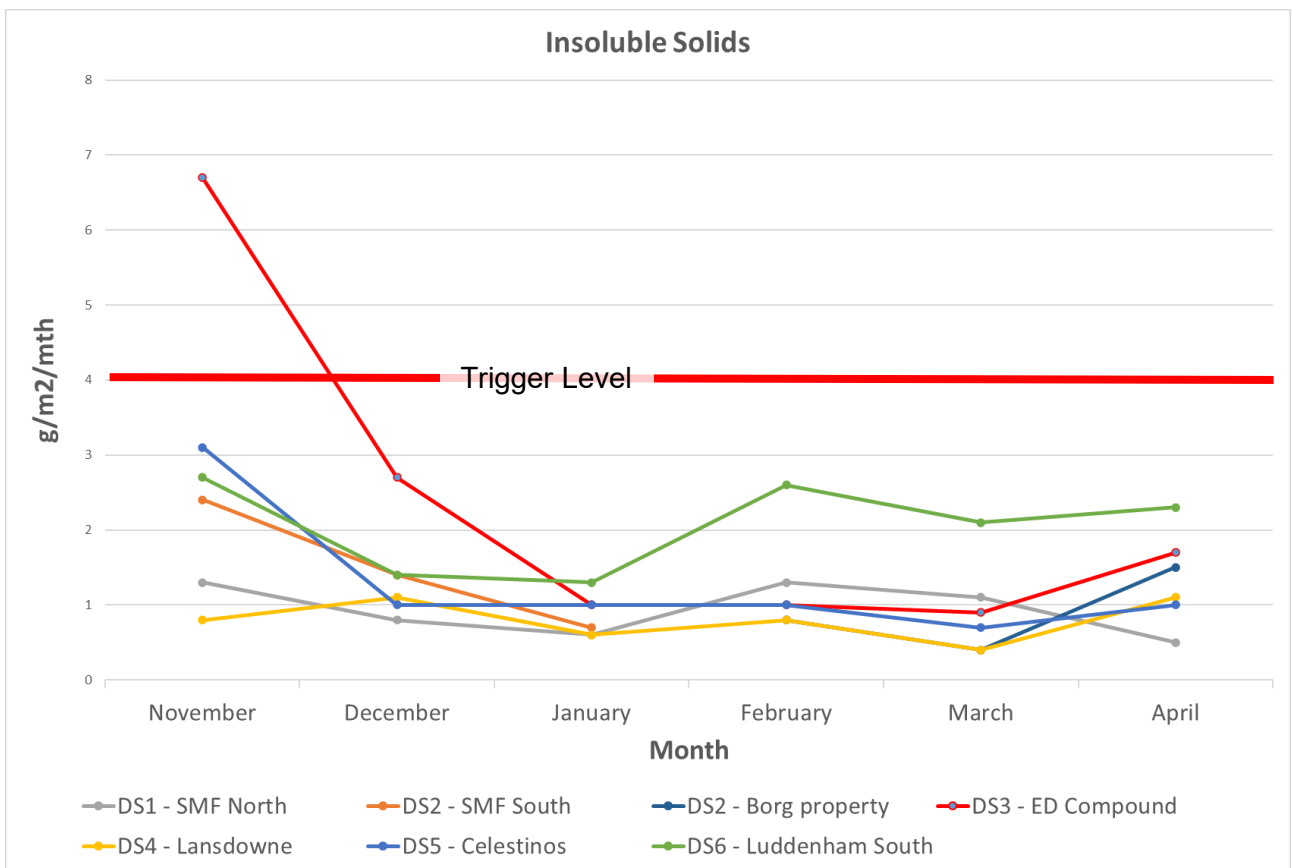


Figure 2: Insoluble solids at each DDG location (exceedances of the 4g/m2/month trigger level are noted in red). For comparisons between October 2023 and November 2023, refer to the 6 Monthly Construction Monitoring Report for the reporting period of May 2023 - October 2023 (figure 2 and Appendix 1). Note: DS2 was relocated following the January 2024 reporting period providing reasoning for the two DS2 labels.

4.1.4. Air Quality Monitoring Results Discussion

As detailed in Table 4-2, there were two 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 Exceedance at DS03:

An exceedance of both the 4g/m²/month max total and 2g/m²/month max increase were recorded at DS03 in the November 2023 reporting periods. The result returned an insoluble solid content of 6.7 g/m²/month with the trigger value in the AQMonP being 4 g/m²/month or an increase by 2 g/m²/month from the previous monthly result. The result recorded for the reporting period of November 2023 indicated an increase of 2.5 g/m²/month from the October 2023 reporting period as well as a 2.7 g/m²/month exceedance of the 4 g/m²/month trigger value.

Following an investigation, it was determined that the following factors were likely responsible, including:

- 1) SCAW Works: SCAW related works within close proximity to the gauge, most notably, topsoil material being delivered to areas within 80 – 100m of the dust gauge. The close proximity of these works likely caused a localised spike in dust from only a small number of days which is not considered an accurate representation of dust impacts relevant to the nearest receiver over the course of the month.
- 2) Other Works: the gauge is located close to other construction projects such as the M12 West and Sydney Water Upper South Creek works which are both approximately 100-150m to the south and the Western Sydney Airport, located to the south and southwest. It was observed over several days that these projects had dust generating activities in close proximity to DS3 that may have influenced the result.

Further, due to project constraints, DS3 is located much closer to active work areas (approx. 80m) when compared to the nearest sensitive receiver. It is noted that DS3 is located over 450m to the west of the nearest sensitive receiver and therefore actual depositional dust impacts experienced by the receiver are likely to be considerably lower. No complaints were received within the November 2023 reporting period relating to dust at the Elizabeth Drive – M12 portion of SCAW.

Standard dust mitigation measures such as, utilisation of water carts and sweeper carts, were in place during the November 2023 reporting period around DS3. As a result of the exceedance, additional adaptive management responses in the area adjacent to DS3 were implemented:

- Expediting permanent designed stabilisation works such as geofabric, scour rock, topsoil and jute mesh with Spray grass or soil binder.
- Excess fill stockpiles were consolidated or utilised elsewhere on the project and rehabilitation of stockpile footprint with Spray grass or soil binder.
- Increased focus on application of soil binder on any remaining exposed areas.
- Increased frequency of water carts and sweeper carts

The results at DS3 for the December 2023 reporting period highlighted an insoluble solid content of 2.7 g/m²/month which is below the AQMonP trigger value of 4g/m²/month. The work area around DS3 was continually monitored going forward and no further exceedances were experienced.

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.

For contextual comparisons between this reporting period and the previous reporting period, the NVMonP was updated to Revision 3 in December 2023.

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 <i>*Prior to January 24</i>	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.
		Within 1 week of the commencement of activities, or at the start of high noise and vibration activities, when required as per a DNVIS or within 150m of sensitive receivers.	Attended noise monitoring at sensitive receiver locations to determine relevant performance against the Project Noise Management Levels (NMLs) or Noise predictions identified in noise modelling.	One property triggered monitoring as per DNVIS 004. 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.	N/A – No monitoring has been undertaken in response to a complaint. Complaints discussion included in Section 5.
		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	Where a project Detailed Noise and Vibration Impact Assessment (DNVIS)	

Monitoring Type	Methodology	Frequency/Trigger	Purpose	How Reported
		with the Construction Noise and Vibration Standard (CNVS)	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.
		As required	For the purposes of refining construction methods or techniques to reduce noise levels.	
Plant Noise Auditing	Spot check monitoring according to AS 2012.1 Acoustics Measurement of airborne noise emitted by earth-moving machinery and agricultural tractors – Stationary test condition. The testing method includes: Sound level meter configured for “Fast” time weighting and “A” frequency weighting.	All significant noise generating items of plant	To determine compliance with operating SWL’s for plant and equipment defined in the CNVS	One Plant Noise audit was undertaken during the reporting period. No other Plant Noise Auditing was deemed necessary during the reporting period as: <ul style="list-style-type: none"> No other 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

*Change in monitoring requirements in NVMonP Rev 3.

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 provided in 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.

Following changes to the Noise and Vibration Monitoring Program, monitoring of the background noise locations ceased in December 2023.

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

Outside of Standard Construction Hours

Noise Monitoring was undertaken during Out of Hours Works (OOHW) on three 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.

- 6/11 – Viaduct Works - Luddenham Road crossing
 - 2-evening locations
 - 3-night locations
- 7/11 – Viaduct Works - Luddenham Road crossing
 - 3-evening locations
 - 3-night locations
- 30/04 –Asphalt Works - Luddenham Roundabout
 - 3-evening locations
 - 2-night locations

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	N/A - not triggered during 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.
		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)	Construction of Pier P7 for Warragamba Viaduct 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 	N/A - not triggered during reporting period. McGarvie farm has been demolished as part of SCAWs demolition scope.

4.2.4. Vibration Monitoring – Methodology and 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 to receivers in consideration of 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.

Table 4-6: Noise and Vibration Monitoring Results

Monitoring Type and Trigger Values	Source/ Methodology	Frequency and 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 – 3 exceedances of NML NM08 – 0 exceedance of NML NM09 – 2 exceedances of NML NM10 – 3 exceedances of NML Exceedances related to CPBUI construction activities: 0
Triggered noise monitoring as a result of activities, predicted in a DNVIS, being undertaken within 150 metres of a sensitive receiver.	Noise and Vibration Management Sub-plan	1 monitoring event at 327-329 Luddenham Road triggered by Activities 9 and 10 of DNVIS 04. DNVIS prediction not exceeded. Baseline monitoring also conducted for 16-20 Lansdowne Road.
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	9 exceedances of DNVIS predicted noise levels. Exceedances related to CPBUI construction activities: 0
Plant Noise audit	Noise and Vibration Management Sub-plan	1 plant noise audit of equipment associated with DNVIS 04 Activities 9 and 10. CNVS sound power level not exceeded.

Monitoring Type and Trigger Values		Source/ Methodology	Frequency and Results																
Vibration Monitoring																			
Attended and Unattended Monitoring within the Warragamba Pipeline, Orchard Hills - undertaken between November 2023 and January 2024 during viaduct substructure works: Recommended vibration limits for cosmetic damage:		German Standard DIN 4150-3:2016 Water NSW Guideline for Development within Warragamba Pipeline	Zero Exceedances of trigger levels.																
<table border="1"> <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> <tr> <td>-</td> <td></td> <td></td> <td></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	-					
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 initial 2 months of the reporting period as the primary method of determining the effectiveness of noise and vibration mitigation measures implemented during daytime construction in accordance with Revision 1 of the NVMonP.

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

- Road traffic noise
- Air traffic noise
- Local construction or other construction projects, or
- Local wildlife.

SCAW construction was audible on several 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.

Note: one monitoring event did not occur at 256 Luddenham Road on the 8/12/2023 as the monitoring location was inaccessible due to Penrith City Council roadworks occurring in same location.

Noise – DNVIS Monitoring

Attended noise monitoring was undertaken as a result of activities 9 and 10 predicted in DNVIS 04 being undertaken within 150 metres of a sensitive receiver at 327-329 Luddenham Road.

Monitoring indicated the works were occurring within DNVIS predicted levels (monitored LAeq:61.5dB, DNVIS Prediction: 72dB) and appropriate mitigation measures were in place in accordance with the CNVMP.

Background monitoring was also undertaken at 16-20 Lansdowne Road in anticipation of a future triggered monitoring event. No exceedances of the DNVIS prediction or NML was recorded.

Noise – Outside of Standard Construction Hours Works

Attended noise monitoring was undertaken during November 2023 and April 2024 to evaluate the predicted impacts from OOHW occurring in Luddenham.

Of the 16 noise monitoring events undertaken during OOHW, there were 9 instances of DNVIS predicted noise levels being exceeded but no instances of CPBUI construction activities being identified as the dominant noise source or cause of the exceedance.

Exceedances experienced at monitored properties were determined to be caused by non-SCAW related factors such as:

- Road and Air traffic.
- Local wildlife,
- Other residential noise, such as pets, music, etc.

Vibration Monitoring

Works within Warragamba Pipeline continued on from the previous monitoring in accordance with REMM HR4, DNVIS 04 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.

During the reporting period three monitors were installed as per Figure 3 below.

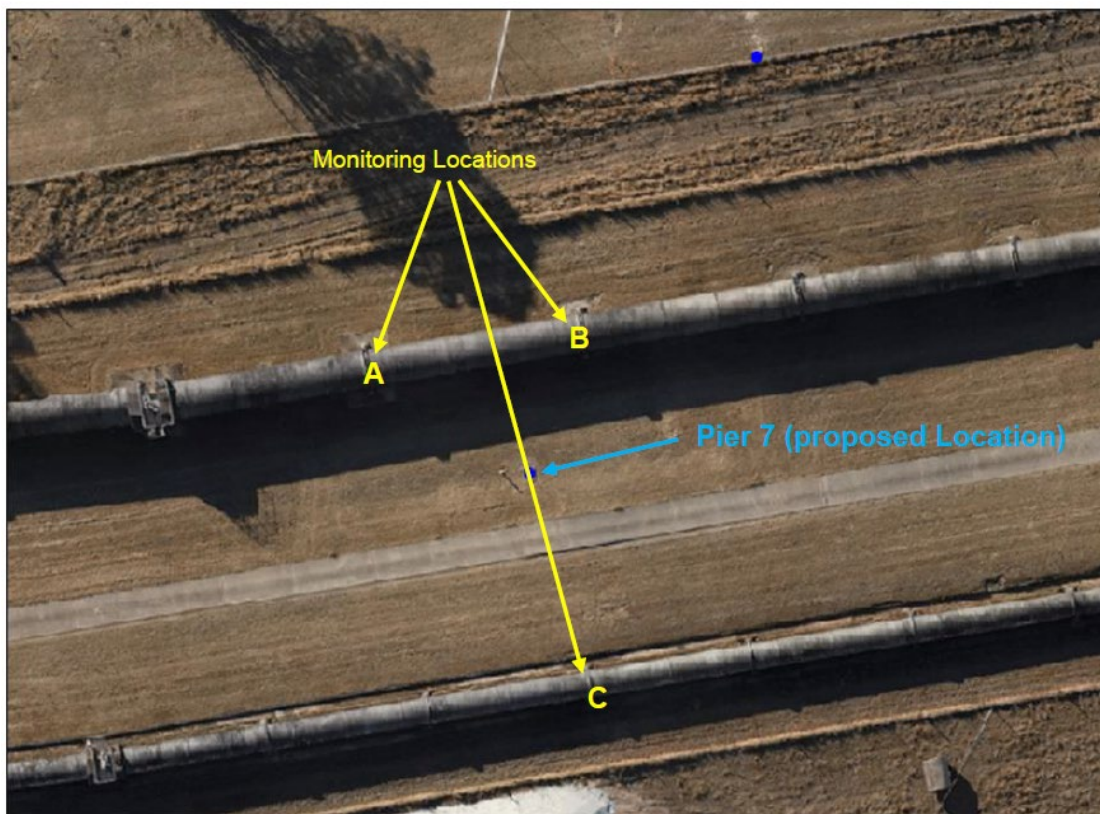


Figure 3 Vibration Monitoring Locations around Viaduct Pier 7

Continuous monitoring occurred from 01/11/2023 until 13/01/2024, excluding a break between 23/12/2023 and 07/01/2024 due to site shutdown over the holiday period. Over this monitoring period no exceedances occurred.

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.

During the reporting period post rainfall monitoring was undertaken on the:

- 7/11/2023 (33.6mm in previous five days),
- 10/01/2024 (>25mm during Christmas shutdown period),
- 19/01/2024 (46.4mm in previous five days),
- 7/02/2024 (35.6mm in previous five days),
- 23/02/2024 (56.4mm in previous five days) and
- 11/04/2024 (235mm in previous seven days).

Surface water quality monitoring was carried out at four 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 on 19/01/2024 and 11/04/2024
SCAW 2 DS	Unnamed Creek Downstream	Y – Monitoring undertaken only when Creek flowing on 19/01/2024 and 11/04/2024
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	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.

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>All monitoring events combined</p>	<p>SWQMP</p>	<p>In total there were 144 exceedances of the ANZECC guideline trigger values recorded for the reporting period, note reporting doubles for months of January and February due to rainfall:</p> <ul style="list-style-type: none"> - One exceedance of pH - Four exceedance of Conductivity - 24 exceedances of Turbidity - 26 exceedances of Dissolved Oxygen levels - 23 exceedances of TSS levels - Eight exceedances of Aluminium levels - One exceedance of cobalt - Three exceedances of Chromium (trivalent) levels - 30 exceedances of Copper levels - Two exceedances of Manganese levels - Two exceedances of Vanadium levels - 20 exceedances of Zinc levels.
<p>Monthly monitoring events (excluding post-rainfall)</p> <ul style="list-style-type: none"> o 19/12/2023 o 22/03/2024 	<p>SWQMP</p>	<p>There were 21 exceedances of ANZECC guideline values recorded for the reporting period:</p> <ul style="list-style-type: none"> - Three Exceedances of conductivity - Two exceedances of Turbidity - Seven exceedances of Dissolved Oxygen levels - Three exceedances of Copper levels - One exceedance of Manganese levels - Five exceedances of Zinc levels
<p>Post Rainfall Monitoring Trigger events (weather station):</p> <ul style="list-style-type: none"> o 7/11/2023 o 10/01/2024 o 19/01/2024 o 7/02/2024 o 23/02/2024 o 11/04/2024 	<p>SWQMP</p>	<p>There were 123 exceedances of ANZECC guideline values recorded for the reporting period:</p> <ul style="list-style-type: none"> - One exceedance of pH - One exceedance of conductivity - 22 exceedances of Turbidity - 19 exceedances of Dissolved Oxygen - 23 exceedances of TSS - Eight exceedances of Aluminium levels - One exceedance of Cobalt levels

Monitoring Type and Trigger Values	Source/ Methodology	Results
Trigger levels formed from ANZECC Guidelines for slightly to moderately disturbed ecosystems (2000)		<ul style="list-style-type: none"> - Three exceedances of Chromium (Trivalent) levels - 27 exceedances of Copper levels - One exceedance of Manganese levels - Two exceedances of Vanadium levels - 15 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

The majority of exceedances identified during the November 2023 to April 2024 reporting period are consistent with upstream results and reflect the general condition of the Creek(s). Due to the historical condition of the Creeks post rainfall and the timing of the monitoring event it was expected there would be several exceedances in nominated surface water quality parameters.

Of the exceedances recorded following the six Post Rainfall Monitoring events, 30 occurred in isolation from the corresponding upstream result or represented more than a 20% increase from the upstream result and are discussed below.

Sampling Event 7/11/2023 - Post Rainfall (33.6mm in past 5 days)

A total of 23 exceedances were recorded during this monitoring period. Of these 23 exceedances 11 occurred in isolation or were greater than 20% of the corresponding upstream result. Those exceedances were Conductivity, Turbidity, TSS, Aluminium, Chromium (Trivalent), Copper, Manganese and Vanadium.

The exceedances of Metals (Copper, Aluminium, Chromium (trivalent), Manganese & Vanadium) are consistent with historical post rainfall surface water monitoring events. Exceedances in metals are considered a consequence of a higher sediment load within the water body and not a consequence of CPBUI works.

NTU recorded at Cosgroves Creek downstream (59.3NTU) exceeded ANZECC trigger values (50NTU), however, the TSS result (22mg/L) was within the guideline value of 25mg/L, suggesting other factors may have been impacting the NTU result.

NTU and TSS recorded at Badgerys Creek downstream indicated an exceedance of approximately twice the magnitude of the upstream value. Site investigations identified a significant increase of non-SCAW contractor activities between the up and downstream monitoring locations potentially compromising the validity of the results as a reflection of SCAW works.

An exceedance of conductivity was observed at Cosgroves Creek downstream (5570 $\mu\text{S}/\text{cm}$) which is significantly above the trigger value of (2200 $\mu\text{S}/\text{cm}$). Fluctuations in connectivity are consistent with mapping in the EIS and are not considered to be an abnormal event following a high rainfall event.

Sampling Event 19/12/2023 – Monthly

A total of 10 exceedances were observed during this monitoring event. Of those 10 exceedances four exceedances occurred in isolation or were greater than 20% of the corresponding upstream result. Those exceedances were of Dissolved Oxygen at Blaxland Creek and Copper, Manganese and Zinc at Cosgroves Creek.

Dissolved oxygen readings have historically fluctuated and often outside the nominated trigger values identified. This monitoring event was found to be consistent with historical events and not deemed to be a result of CPBUI works.

Field notes from the monitoring event identified that Cosgroves Creek appeared stained due to biodegraded vegetation. Birdlife activity, noted within the creek at the time of monitoring, may have also impacted values through a range of mechanisms. Fluctuations in metal concentrations are consistent with background and EIS monitoring and can be impacted by external factors such as agriculture.

Sampling Event 10/01/2024 – Post Rainfall – (Significant rain leading into/over Christmas shutdown period >25mm)

A total of 10 exceedances were observed during this reporting period. Of those 10 exceedances two exceedances occurred in isolation or were greater than 20% of the corresponding upstream result. Those exceedances were in Dissolved Oxygen and Zinc at Cosgroves Creek.

Dissolved oxygen readings have historically fluctuated and are often outside the nominated trigger values identified. This monitoring event was found to be consistent with historical events and not deemed to be a result of CPBUI works.

The exceedance in Zinc was 0.035mg/L where the upstream result was 0.012mg/L and the trigger value was (0.008mg/L). Notably during this monitoring event the Blind sample was collected from this same location (Cosgroves downstream) and provided a zinc measurement of 0.015mg/L which is within 20% of the upstream result. Cosgroves Creek has previously fluctuated in zinc levels both upstream and downstream of SCAW and is often above the trigger value. Due to this, no exceedance is considered due to CPBUI works.

Sampling Event 19/01/2024 – Post Rainfall (46.4mm of rain in previous 5 days)

A total of 14 exceedances were recorded during this monitoring event with four downstream exceedances in isolation or were greater than 20% of the corresponding upstream result. These exceedances were in Turbidity, TSS and Copper.

An exceedance of the TSS trigger level (25mg/L) was recorded at Blaxland Creek downstream. However, the result (26mg/L) is considered minor as it is within 4% of the trigger level and not uncommon following a high rainfall event.

A minor exceedance in Copper was recorded at Blaxland Creek downstream. This exceedance is consistent with historical post rainfall surface water monitoring events.

Turbidity and TSS exceedances occurred at Badgerys Creek where turbidity was measured to be 286NTU and TSS 110mg/L. The corresponding upstream results were 185NTU and 70mg/L respectively, also both significantly higher than the trigger values (50NTU and 70mg/L).

Exceedances of NTU and TSS have been historically observed in Badgerys Creek. Further, multiple non-SCAW contactors were noted to be working between the upstream and downstream monitoring location. Therefore, neither exceedance is considered attributable to CPBUI works.

Sampling Event 07/02/2024 – Post Rainfall (35.6mm of rain in previous 5 days)

A total of 18 exceedances were recorded during this monitoring event with five downstream exceedances in isolation or were greater than 20% of the corresponding upstream result. These four exceedances were in pH, Turbidity and DO.

Exceedances of the Turbidity and TSS were recorded at Blaxland downstream. While increased sediment load in Creeks is common following rainfall, an investigation was undertaken to determine possible causes for the exceedances. It was determined the earthworks controls in and around Blaxland Creek required maintenance to improve their effectiveness prior to the next forecast rain event. Such maintenance requirements are attributable to a number of consecutive rainfall events each exceeding the designed rainfall event (31.5mm) which is considered normal following such events.

An exceedance of dissolved oxygen was recorded at Cosgrove Creek downstream and an exceedance of pH was recorded at Badgerys Creek downstream. Both exceedances are consistent with upstream results (within 20% deviation) and reflect the general condition of the Creeks. Dissolved oxygen readings have historically fluctuated and are often outside the nominated trigger values identified. An exceedance of Turbidity was also observed at Cosgroves Creek downstream (122NTU) compared to an upstream value of 86.2 NTU, the values are both in exceedance of the 50NTU trigger value. When considering the TSS result at this location, both the upstream and downstream results were within trigger levels, which is considered a more accurate reflection of sediment load in Creeks.

Sampling event 23/02/2024 – Post Rainfall (56.4mm of rain in previous 5 days)

A total of 23 exceedances were recorded during this monitoring event with five downstream exceedances in isolation or were greater than 20% of the corresponding upstream result. These five exceedances were in Turbidity, TSS, Copper and Zinc.

An exceedance of the turbidity trigger value (50 NTU) was recorded at Blaxland Creek downstream. However, the result (57.6 NTU) is not unexpected following a high rainfall event. An inverse relationship was demonstrated at this location in the Total Suspended Solids (TSS) result, where the upstream measurement (150mg/L) was recorded as being significantly higher than the downstream measurement (56mg/L).

A further exceedance of the turbidity trigger value was recorded at Cosgroves Creek downstream. The result (455 NTU) was significantly higher than the upstream result (333 NTU), both results demonstrate a deviation from the trigger value of greater than 500%. The corresponding TSS result (220mg/L) was also significantly greater than the corresponding upstream result (140mg/L). These exceedances all fall within what has been historically observed within Cosgroves Creek post rainfall.

A minor exceedance in copper and zinc was observed at Cosgroves Creek downstream but is consistent with baseline and historical post rainfall measurements and is therefore considered minor and not as a result of works being undertaken.

Sampling event 22/03/2024 – Monthly

A total of 11 exceedances were observed during this monitoring event. Of those exceedances two occurred in isolation or were greater than 20% of the corresponding upstream result. These two exceedances were in Turbidity and Zinc at Badgerys Creek.

Regarding the Turbidity exceedance, the upstream result was 87.2 NTU and the downstream result was 191 NTU. This is not considered to be a direct 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.

The Corresponding TSS measurements were 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.

The exceedance of Zinc (0.012mg/L) was not in isolation of the upstream result (0.009mg/L) as the trigger value is 0.008mg/L. However, it was slightly more than 20% of the upstream result. This exceedance is consistent with baseline values and is not considered abnormal in the area.

Sampling event 11/04/2024 – Post Rainfall (235mm of rain in previous 7 days)

A total of 36 exceedances were recorded during this monitoring event with one downstream exceedance in isolation of the corresponding upstream result and three downstream exceedances greater than 20% of the corresponding upstream result. These exceedances were in TSS, Aluminium, and Zinc.

A downstream exceedance of greater than 20% was observed in the DO and zinc levels of Cosgroves Creek (182% and 0.018mg/L) however, given the Creek flow and the significance of the rainfall event this is to be expected and is not uncommon in historical monitoring. Further minor exceedances in the aluminium and zinc levels (1.00mg/L and 0.021mg/L) of Badgerys Creek downstream were observed but no results are considered unexpected following such a rainfall event and are not significantly different from the corresponding upstream results (0.78mg/L and 0.017mg/L).

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)
6/11/2023 8:20am	Noise, Air Quality	Stakeholder neighbouring Luddenham South advised there are trucks carrying out u-turns at the front of their property causing an increase in noise and dirt.	<p><u>Investigated:</u></p> <ol style="list-style-type: none"> 1. Contacted the stakeholder by phone to obtain locations of dirt, truck movements and timings of their movements 2. Obtained a list of current activities taking place at the site to identify any heavy vehicles that could be carrying out unsafe practices. <p><u>Action:</u></p> <ol style="list-style-type: none"> 1. Area Manager cancelled truck bookings for the day (06/11/2023), organised for the entry and exit of the site compound to be cleaned and issued emails to suppliers accessing Luddenham South compound, outlining the importance of adhering to Left in and Out of the site. 2. Contacted the resident to inform them of the actions taken to reduce the impact of unwarranted noise and to limit dirt tracking from site. 	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.

The previous reports used the incorrect ANZECC trigger values for Aluminium (0.055mg/L not 0.55mg/L) and arsenic iii (0.013mg/L not 0.024mg/L)

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

Appendix 1 – Monitoring Program Results

Data Collected from Weather Station																		
November																		
Date	3/11/2023	4/11/2023	5/11/2023	9/11/2023	10/11/2023	16/11/2023	23/11/2023	24/11/2023	25/11/2023	26/11/2023	28/11/2023	29/11/2023						Total November
Rain (mm)	1.6	31.8	0.2	4.4	0.2	6.8	1.2	8.2	3	6.6	5.8	2.6						72.4
December																		
Date	3/12/2024	13/12/2023	19/12/2023	20/12/2023	23/12/2023	24/12/2023	25/12/2023	26/12/2023	27/12/2023	30/12/2023	31/12/2023							Total December
Rain (mm)	5.6	10.6	45	16.8	0.8	4.8	0.2	0.2	3.6	1.8	1							90.4
January																		
Date	3/01/2024	4/01/2024	7/01/2024	8/01/2024	9/01/2024	11/01/2024	12/01/2024	14/01/2024	15/01/2024	16/01/2024	17/01/2024	22/01/2024	23/01/2024	26/01/2024	29/01/2024	30/01/2024	31/01/2024	Total January
Rain (mm)	0.4	5.4	0.2	6.4	4.4	10	9.2	29.8	2.4	0.6	13.6	0.2	0.2	1	2.2	0.6	2.2	88.8
February																		
Date	5/02/2024	6/02/2024	14/02/2024	15/02/2024	18/02/2024	19/02/2024	20/02/2024	23/02/2024										Total February
Rain (mm)	32.2	3.4	4.4	0.6	0.4	42.4	9.8	4.2										97.4
March																		
Date	2/03/2024	14/03/2024	15/03/2024	16/03/2024	19/03/2024	23/03/2024												Total March
Rain (mm)	0.4	4.6	0.4	16	1	0.2												22.6
April																		
Date	4/04/2024	5/04/2024	9/04/2024	17/04/2024	29/04/2024													Total April
Rain (mm)	69.8	162.6	3.4	0.8	0.4													237

Note: data obtained from weather station located at Patons Lane.
Days where no rainfall was recorded have not been included.
Data missing for 19th of January due to weather station malfunction

Depositional Dust

Date Started	Date Collected	Location	DS1 - SMF North	DS2 - SMF South	DS2-BORG PROPERTY	DS3 - ED Compound	DS4 - Lansdowne	DS5 - Celestinos	DS6 - Luddenham South
3/11/2023	6/12/2023	Combustible solids	1.2	2.2		6.1	0.7	2.9	2.6
		Soluble Solids	6.3	6.6		5.3	3	3	3.3
		Total Solids	7.6	8.9		12	3.8	6.1	6.1
		Volume (total)	1300	1800		1400	1500	1500	1300
		Ash content	0.1	0.1		0.7	0.1	0.1	0.2
		Insoluble Solids	1.3	2.4		6.7	0.8	3.1	2.7
		Combustible solids	0.7	1.3		2.5	1	0.8	1.3
6/12/2023	8/01/2024	Soluble Solids	3	4.2		2.6	5.2	5	3.6
		Total Solids	3.8	5.6		5.3	6.3	6	5
		Volume (total)	1700	1700		1500	1900	1600	1200
		Ash content	LOR	0.1		0.2	0.1	0.1	0.1
		Insoluble Solids	0.8	1.4		2.7	1.1	1	1.4
		Combustible solids	0.5	0.6		0.9	0.5	0.9	1.2
		Soluble Solids	5.5	4.7		5	5.7	6.2	6.4
8/01/2024	5/02/2024	Total Solids	6.1	5.4		6	6.3	7.2	7.7
		Volume (total)	1700	1200		1300	1800	1500	1200
		Ash content	0.1	0.1		0.1	0.1	0.1	0.1
		Insoluble Solids	0.6	0.7		1	0.6	1	1.3
		Combustible solids	1.2		0.7	0.9	0.6	0.9	2.5
		Soluble Solids	7.6		3.8	5.4	6.5	5.9	5
		Total Solids	8.9		4.6	6.4	7.3	6.9	7.7
5/02/2024	4/03/2024	Volume (total)	1900		1700	1700	1900	2000	1500
		Ash content	0.1		LOR	0.1	0.1	LOR	0.2
		Insoluble Solids	1.3		0.8	1	0.8	1	2.6
		Combustible solids	0.8		0.3	0.7	0.2	0.5	1.9
		Soluble Solids	5.5		0.5	4.2	4.2	5.1	3.9
		Total Solids	6.6		0.9	5.1	4.5	5.8	6
		Volume (total)	500		300	500	500	600	550
4/03/2024	3/04/2024	Ash content	0.3		0.2	0.2	0.2	0.2	0.2
		Insoluble Solids	1.1		0.4	0.9	0.4	0.7	2.1
		Combustible solids	0.4		1.3	1.5	1	0.8	2.2
		Soluble Solids	5.3		5.8	6.5	7.8	6.6	6.3
		Total Solids	5.8		7.3	8.2	8.9	7.6	8.6
		Volume (total)	4300		4200	3700	4400	3700	3600
		Ash content	0.1		0.2	0.1	0.1	0.1	0.1
3/04/2024	3/05/2024	Insoluble Solids	0.5		1.5	1.7	1.1	1	2.3

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

Red text indicates an exceedance of both the 4g/m2/month and max increase of 2mg/m2/month criteria

Fortnightly Noise Monitoring

Date	Time	Location	Construction Activity/Location	NCA	NML	LAeq	L10	L90	Notes
24/11/2023	8:38	68 Solander Dr St Clair	SMF Earthworks	7	57	72.6	74.9	63.7	Site not audible
24/11/2023	16:00	8 Bordeaux Pl Orchard Hills	Blaxland Creek structures/earthworks	8	54	49.5	50.3	37.3	Site audible - distant squawkers - local construction/birds dominant noise source
24/11/2023	9:02	256 Luddenham Road	DEOH. Luddenham Station earthworks/structures	9	50	67	71.2	49.4	Site not audible
24/11/2023	9:26	27 Halmstad Blvd Luddenham	Luddenham North/South earthworks/structures	10	45	54.5	49.6	36.7	Site not audible
30/11/2023	15:05	68 Solander Dr St Clair	SMF Earthworks/Structures	7	57	71.7	74.7	65.8	Site not audible - Heavy constant traffic.
30/11/2023	14:30	8 Bordeaux Pl Orchard Hills	SMF Earthworks/Structures	8	54	51.2	54.1	41.7	Site not audible - Strong winds/local and residential construction
30/11/2023	15:30	256 Luddenham Road	DEOH/Luddenham Station earthworks/structures	9	50	68.6	72.7	55.3	Site not audible - Heavy constant traffic.
30/11/2023	15:57	27 Halmstad Blvd Luddenham	Luddenham Station/South earthworks/Structures	10	45	47	50.6	38.4	Site slightly audible - distant excavator tracking heard - resident gardening/cars passing dominant noise source
8/12/2023	10:49	68 Solander Dr St Clair	SMF Earthworks	7	57	69.6	73.5	57.1	Site not audible, heavy traffic Mamre road dominant
8/12/2023	10:16	8 Bordeaux Pl Orchard Hills	Blaxland Creek structures/earthworks	8	54	43.5	45.6	35.4	Site slightly audible - 1xSquawker, birds and light aircraft dominant
8/12/2023		256 Luddenham Road	DEOH. Luddenham Station earthworks/structures						Monitoring Location inaccessible due to Penrith City Council roadworks, works occurring in same location following week.
8/12/2023	11:24	27 Halmstad Blvd Luddenham	Luddenham North/South earthworks/structures	10	45	52.8	54.2	34.7	Site not audible, local construction dominant

Notes/Definitions:

Changes to the NVMP post december resulted in fortnightly noise monitoring no longer being necessary

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
6/11/2023	20:32	677-691 Luddenham Road	Evening	Viaduct Luddenham crossing	10		45	55.9	56.9	54.8	Insects/frogs dominant noise (feint mechanical noise whirring distantly and momentary excavator clunking). Distant traffic noise, occasional dog barks, aircrafts and truck departing.
6/11/2023	21:49	611-639 Luddenham road	Evening	Viaduct Luddenham crossing	10		52	41.1	42.8	39.2	bugs/frogs dominant noise and distant traffic noise. Banging/ clunking from works audible (machine operations/ hand tools)
6/11/2023	22:13	611A Luddenham Road	Night	Viaduct Luddenham crossing	10		49	49.8	43.8	39.2	insects/frogs dominant noise. Audible works (crane movement, workers talking, reversing, TC vehicle, excavator tracking)
6/11/2023	22:43	677-691 Luddenham Road	Night	Viaduct Luddenham crossing	10		45	43.5	45.3	41.7	Dominant noise insect/frogs, loudest: resident leaving/dog bark. Audible works (general worker chatter, crane noise, truck departing)
6/11/2023	23:34	48 Portrush twin creeks	Night	Viaduct Luddenham crossing	10		45	36.3	37.7	33.3	dominant noise insects/frogs & dogs barking. Works noise (distant humming of generator, some excavator movement) distant noise: construction noise to the north east (not SCAW) and traffic on luddenham road)
7/11/2023	20:15	611a luddenham road	evening	Viaduct Luddenham crossing	10		49	70.3	64.2	61.1	dominant noise insect/frogs, loudest: truc&dog and LV traffic. Feint works (reversing, chatter, hand tools/clunking, crane whirring)
7/11/2023	20:40	672-686 Luddenham Rd	evening	Viaduct Luddenham crossing	10		46	64.4	55.9	42.1	consistent noise from frogs/insects. Loudest - Regular truck & dogs (approx 6). Viaduct works not audible.
7/11/2023	21:44	48 Portrush	evening	Viaduct Luddenham crossing	10		45	50.3	53.3	48.4	Insects most dominant, construction noise to south (not SCAW) aircraft noise. Works not audible
7/11/2023	22:07	34 Portrush	night	Viaduct Luddenham crossing	10		42	58.6	46.3	34.1	Insects most dominant. Peaks at plane passing & motorbike. Distant traffic noise on Mamre & Luddenham roads. Site not audible.
7/11/2023	22:33	2 Ventana Ct	night	Viaduct Luddenham crossing	10		40	40	41.4	38.6	Insects dogs and birds dominant. Spike from cars, distant traffic noise. Feint construction noise to the North east (not SCAW). Potentially one SCAW related construction noise (Truck) otherwise un audible.
7/11/2023	22:58	3 Bird Port	Night	Viaduct Luddenham crossing	10		43	41.3	43.9	37.2	dominant noise: insects/frogs. Slight breeze S/W. Audible Mamre traffic. Dogs and Birds audible. Works not audible apart for 1 potential tailgate bang.
30/04/2024	20:31	34 Portrush	Evening	Luddenham Roundabout Wearing Course	10	DNVIS 4 Activity 7	45	42.7	41.2	34	Site audible and dominant noise source. Loudest noise from passing car at 66.2dB. Wind with small gusts SSW directing work noise directly over monitoring location.
30/04/2024	20:55	48 Portrush	Evening	Luddenham Roundabout Wearing Course	10	DNVIS 4 Activity 7	54	42.9	45.4	40	Location had line of site to works. Wind still with small gusts SSW towards monitoring location from works. Site audible and dominant noise. Some Cars passing on luddenham road and insects in grassed area.
30/04/2024	21:30	36 Twin Creeks Drive	Evening	Luddenham Roundabout Wearing Course	10	DNVIS 4 Activity 7	41	53.2	47.2	41	Site Audible, Winds SE directing site noise over receivers. 8+ cars passing at 66+dB dominating noise. Also due to golf course dam, frog and insect noise at 40-45dB dominating noise.
30/04/2024	22:00	4 Ventana Court Luddenham	Night	Luddenham Roundabout Wearing Course	10	DNVIS 4 Activity 7	46	48.7	45.6	37.4	Site noise audible around 45-46dB. Dominant noise/peaks occur due to aircraft (70db) x2, and cars x4-5 on Twin Creeks Drive. Wind gusts directing site noise over receivers.
30/04/2024	22:27	1 Portrush	Night	Luddenham Roundabout Wearing Course	10	DNVIS 4 Activity 7	46	36.7	38.4	34.6	Site dominant noise source but soft. Wind directing site noise over receivers. Cars on luddenham road and a proximity alarm was triggered multiple times. Some bird and insect noise.

Notes/Definitions:

Changes to the NVMP post december resulted in fortnightly noise monitoring no longer being necessary

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 period

NVMonP Triggered Monitoring												
Date	Time	Location	DNVIS #	DNVIS Activity #	Activities During Monitoring	NCA	NML	DNVIS Prediction	LAeq	L10	L90	Notes
12/03/2024	11:50	327-329 Luddenham Road	4	Activity 9 and 10	Roller and HV movements	9	50	72	61.5	66.3	52.6	Closest to Warragamba viaduct abutment in defence land
12/03/2024	12:38	16-20 Lansdowne Road	6	Activity 2	SSTOM Earthworks, SCAW truck maintenance, SCAW Dozer (distant)	8	54	N/A	51.1	54.1	47.6	Baseline monitoring prior to commencement of High Noise Activity #2 in DNVIS 6

Plant Noise Auditing Register					
Date	Plant type	Plant ID	Max SWL	Recorded SWL	Other Comment
13/03/2024	Vibratory Roller	RC120P-1	89	77.7	Monitoring for DNVIS 4 Activity 9 and 10

Notes/Definitions:

Changes to the NVMP post december resulted in fortnightly noise monitoring no longer being necessary

All attended monitoring is undertaken as a 15 minute sample

NCA - Noise catchment area

NML - Noise management level

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

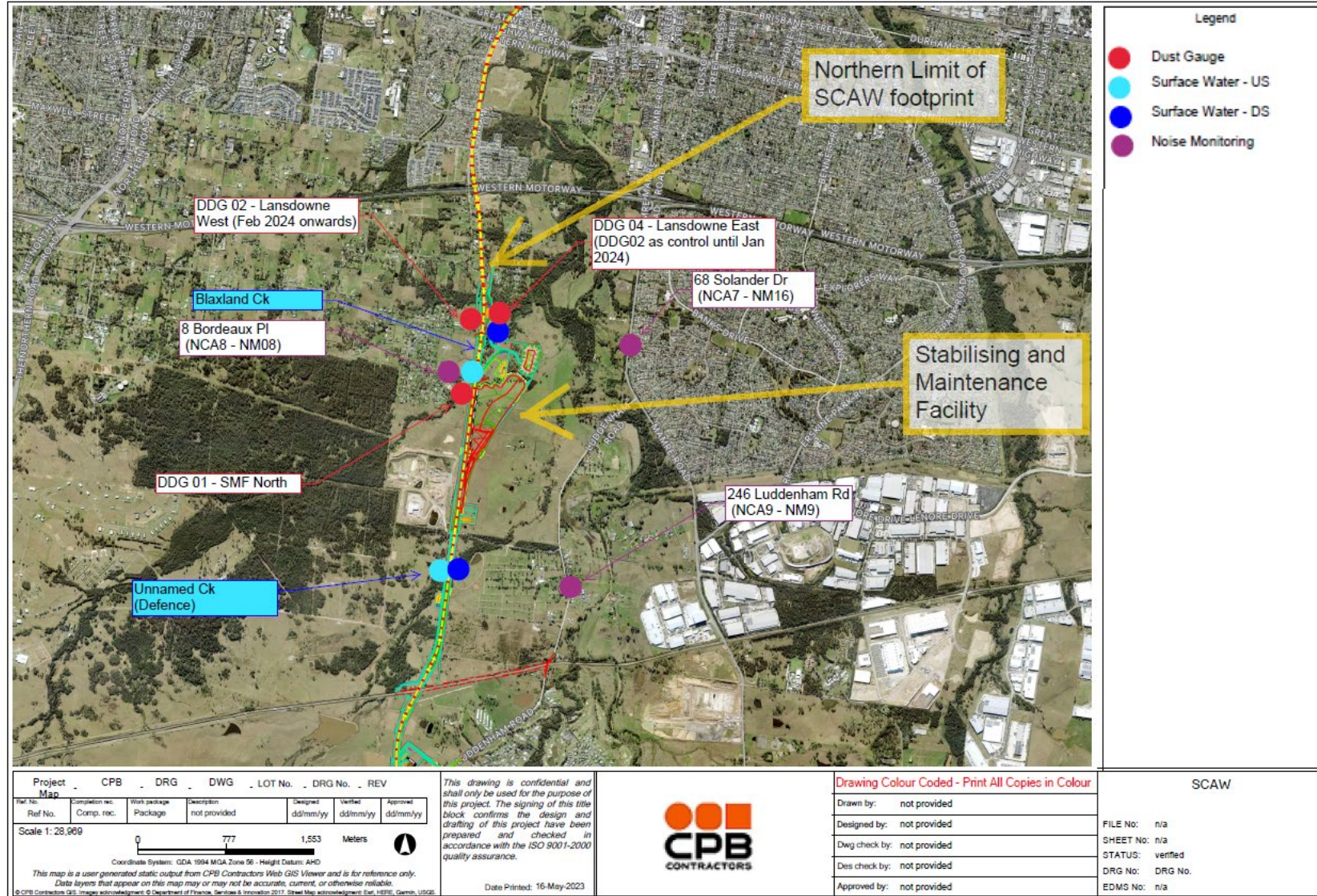
LAeq - Equivalent continuous sound pressure level (over 15min period)

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

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

SWL - Sound Power Level

Appendix 2 – Monitoring Locations



Project Map	CPB	DRG	DWG	LOT No.	DRG No.	REV
File 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						
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.						

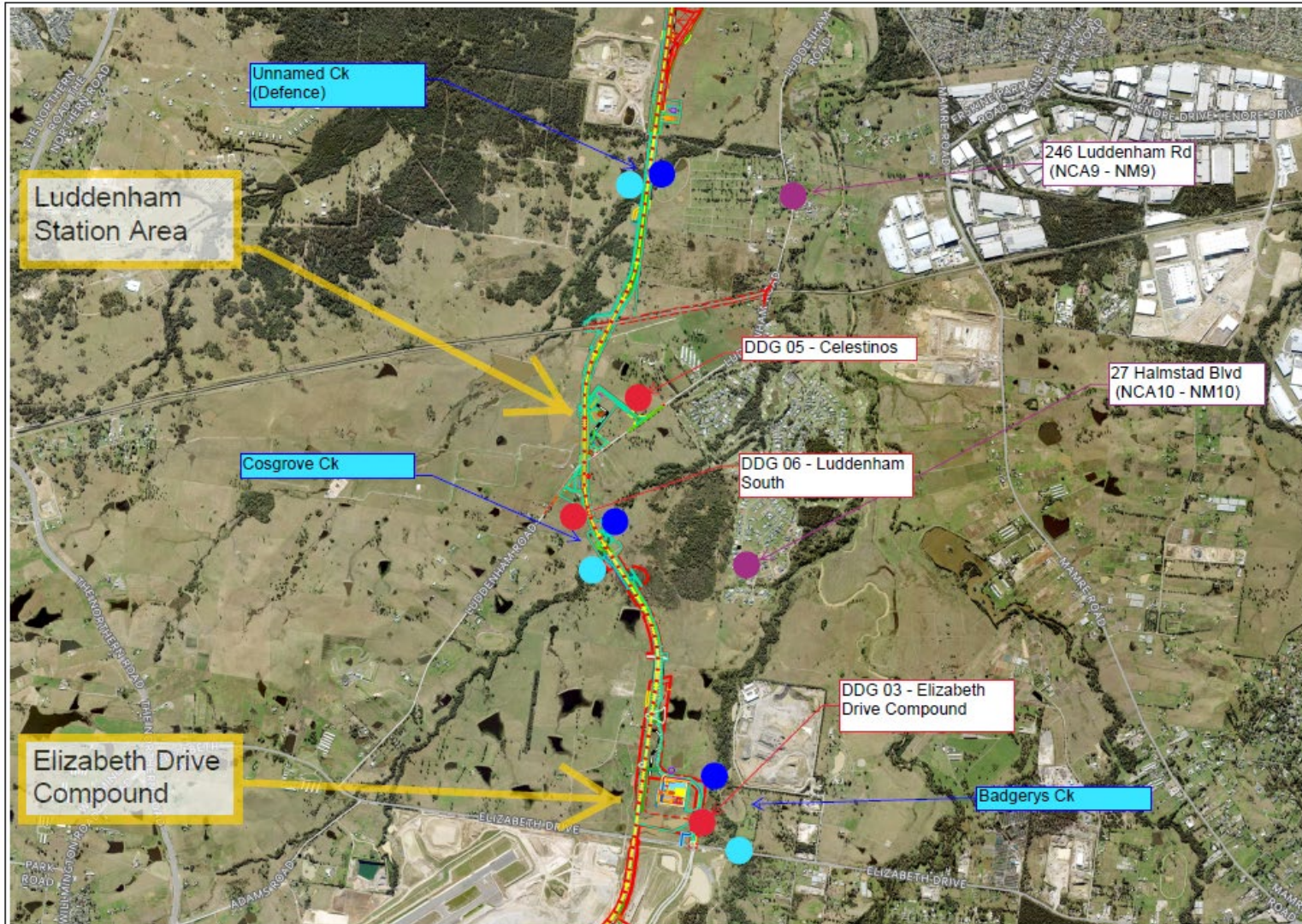
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Date Printed: 16-May-2023



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STATUS:	verified
DRG No:	DRG No.
EDMS No:	n/a



Legend

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

0 777 1,553 Meters

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

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