Construction Monitoring Report 10 (March 2023 to February 2024)

SMCSWSSJ-JHL-WSS-EM-REP-000014

Document and Revision History

Document Details	
Title	Construction Monitoring Report 10
Client	Sydney Metro City & Southwest
Client reference no.	
JHLOR JV contract no.	K44

Revisions

Revision	Date	Description	Prepared by	Reviewed by
A	05/03/24	Rev A	TZ	CM
B	05/04/24	Rev B	TZ	LD

Management reviews

Review date	Details	Reviewed by

Controlled: NO Copy no.: Uncontrolled: YES

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Compliance Matrix

Condition	Requirement	Reference
C16	The results of the Construction Monitoring Programs must be submitted to the Secretary for information, and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program	Section 1.1

1. Introduction

The Construction Monitoring Program (CMP) is being implemented to monitor impacts on surrounding surface water quality resources and impacts from noise and vibration on the surrounding areas during the construction phase. The surface water monitoring program and noise and vibration monitoring program are also both designed to assess the effectiveness of the mitigation measures applied as part of the SMu Project. Note: no vibration monitoring was conducted throughout this duration as works were minor with low risk in scope and vibration monitoring was not required.

This report provides the results of the CMP for the period March 2023 to February 2024.

Submission Requirements

In accordance with condition C16, this will be submitted to the following agencies for information:

1.1

- NSW EPA
- Inner West Council
- DPE

The previous Construction Monitoring Report (CMR) was submitted on 17/04/2023 to stakeholders for information. No further request was received from any of the agencies following the submission of the previous monitoring report. This is the 10th construction monitoring report, the reporting periods for each document are as follows;

1. Construction monitoring report 001 for the period of September 2018 – February 2019
2. Construction monitoring report 002 for the period of March 2019 – August 2019
3. Construction monitoring report 003 for the period of September 2019 – February 2019
4. Construction monitoring report 004 for the period of March 2020 – August 2020
5. Construction monitoring report 005 for the period of September 2020 – February 2021
6. Construction monitoring report 006 for the period of March 2021 – August 2021
7. Construction monitoring report 007 for the period of September 2021 – February 2022
8. Construction monitoring report 008 for the period of March 2022 – August 2022
9. Construction monitoring report 009 for the period of September 2022 – February 2023
10. Construction monitoring report 010 for the period of March 2023 – February 2024

1.2 These reports are to be prepared on a 6-monthly basis and will continue until the completion of the project or when JHLORJV are no longer completing works in established monitoring areas. Note: Works are complete within the current reporting period (March 2023 to February 2024), only minor defect works remains to be completed, CMR 010 is the final report.

Surface Water

The project site is located within the rail corridor at Sydenham Station and several hundred metres to the north and south of the station, 11 Sydenham Road, Marrickville, NSW, the Sydenham Pit and Drainage Pump Station and future precinct areas on Railway Parade and Burrows Avenue, Sydenham, NSW.

The Project site forms part of the overall Cooks River catchment with water from the area discharging into the Cooks River via the Eastern Channel. The catchment area is highly urbanised with mixed residential, commercial and industrial properties. The closest watercourses to the project are man-made, the Eastern Channel and connecting culverts bordering the project. These collect urban stormwater from the surrounding area and typically exhibit low flow rates outside of rain events and the operation of Sydenham drainage pump.

Water quality is measured on an ongoing basis for the wider Cooks River catchment by the NSW Office of Environment and Heritage as part of the Beachwatch programme. The monitoring point is at Kyeemagh Baths at the mouth of the Cooks River in Port Botany. Water quality within the Cooks River catchment is influenced by stormwater, fertilisers, industrial discharges and sewage contamination.

The Project site also includes the Sydenham Pit. The Sydenham Pit is a large stormwater detention structure that captures stormwater from the Marrickville and Newtown area. The water is detained temporarily before being pumped out into the Eastern Channel. The Sydenham Pit is owned and operated by Sydney Water. The project has specific requirements when working within Sydenham Pit regarding water quality and management, which are contained in the project EPL (21147) and Construction Soil and Water Management Plan (CSWMP).

Objectives for water quality management during construction are:

- The prevention of pollution of surface water through appropriate erosion and sediment control
- Maintain existing water quality of surrounding surface watercourses
- Construct the Project in accordance with the NSW Water Quality Objectives

As of February 2022, the majority of construction has been completed and all areas have been stabilised to final ground cover, including asphalting, tiling and vegetation cover. As a result of reduce risk, surface water monitoring will no longer be conducted after Q1 of 2022. Note:
1.3 JHLORJV can conduct more monitoring if they deem necessary or as a good practice.

Noise and Vibration

The area surrounding the SMu project contains a variety of land-use types and receivers, including residential receivers, commercial, industrial, and sensitive non-residential receivers. These land-uses are mixed within the identified noise catchments, though in general there are clusters of industrial and commercial areas north of the rail corridor, and primarily residential areas to the south of the rail corridor. The area surrounding the project is affected by rail noise and vibration and is also underneath flight paths from Sydney Airport. There are therefore a number of residential properties under the Sydney Airport Noise Management Plan. Many, though not all, of these residential receivers have been fitted with double glazed windows, leading to lower internal noise levels originating from outdoor sources, when compared with standard windows.

There are three noise sensitive residential areas with a number of residential properties most regularly potentially affected by noise and/or vibration from the proposed construction:

- Edgeware Road / Lord Street – Located within NCA5. Many residences potentially affected by the construction works in this area have been fitted with heavy double glazing as part of the Sydney Airport Noise Management Plan, but some residences still retain standard single glazed windows.

- Burrows Avenue / Railway Road Area – Located within NCA3. All potentially affected residences in this area have been fitted with heavy double glazing as part of the Sydney Airport Noise Management Plan;
- Meeks Road Area – Located within NCA1. Many residences potentially affected by the construction works in this area have been fitted with heavy double glazing as part of the Sydney Airport Noise Management Plan, but some residences still retain standard single glazed windows.

In addition, two sensitive non-residential receivers have been identified as potentially being affected by noise during the project, Tempe High School and Tillman Park Early Learning Centre (both located within NCA2) – see **Figure 1**. To date, no construction activities have taken place which were identified as significantly affecting these sensitive receivers during their operating hours.

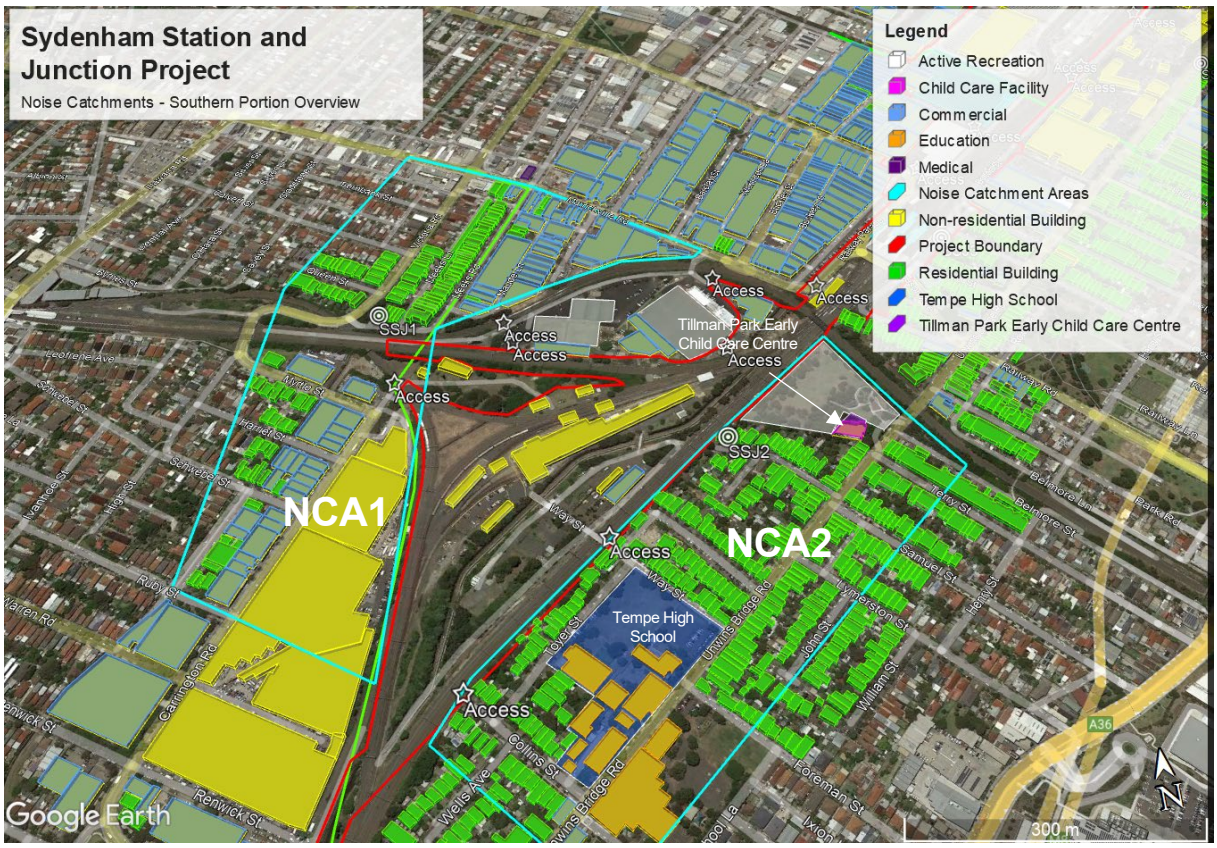

Figure 1 - Surrounding Land-use and Sensitive Non-Residential receivers

Objectives for noise and vibration management on the project are:

- Minimise unreasonable noise and vibration impacts on residents and businesses
- Avoid structural damage to buildings or heritages items as a result of construction vibration
- Maintain positive, co-operative relationships with schools, childcare centres, local residents and building owners and undertake active community consultation

At Meeks Road, Edgeware Road and at properties surrounding Sydenham station, construction noise levels may exceed the noise management levels at residences at times. However, given that most of the construction works are within industrial areas and the rail corridor, noise impact would be expected to be limited primarily to out-of-hours works. Construction noise levels for some SMu work activities are expected to exceed the external noise management level at times, particularly during works outside of standard hours, resulting in noise impacts to outdoor spaces. Internal and external noise levels will be assessed as part of the OOHW protocol and project EPL and monitored accordingly.

Most construction works in this area will not generate vibration which would be perceptible within the nearest residences, but some works, such as compaction by vibratory roller may generate vibration levels above the vibration criteria at the nearest residences in Railway Road.

No blasting will be undertaken, and ground-borne noise and vibration is also unlikely to occur on the SSJ project as it is typically generated by underground activities such as tunnelling. Now that the project is nearing the end of the construction phase, remaining construction is largely limited to defect work during standard construction hours and therefore further noise and vibration impacts are expected to be very limited.

As of February 2022, the majority of construction has been completed and only minor defect works has been carried out during normal construction hours. No further out of hours works proposed for SSJ project. As a result of reduce risk, noise and vibration monitoring will no longer be conducted after Q3 of 2022. Note: JHLORJV can conduct more monitoring if they deem necessary or as a good practice.

2. Methodology

Surface Water

Throughout the duration of the project, surface water monitoring was undertaken at two points, one upstream (EC1) and one downstream (EC2) of the construction footprints. Both are in the man-made Eastern Channel running alongside the rail corridor – See **Figure 2**.

2.1 As for this reporting period, EC1 no longer exists. The channel is covered for the majority of its length along the east side of the project following the completion of the aqueduct across Sydenham pit.

EC2 identified for surface water monitoring is the only location that offers safe access. There are several other drainage outlets along the length of the Eastern Channel that may convey water into the channel between the upstream and downstream monitoring locations, however gaining access to the channel at these points is not possible due to obstructions and safety reasons.

In the event of access issues, surface water monitoring will be taken from an accessible point nearby the culvert or Eastern Channel where feasible and noted in monitoring results. There were no occasions where an alternative monitoring point was required during this monitoring period.

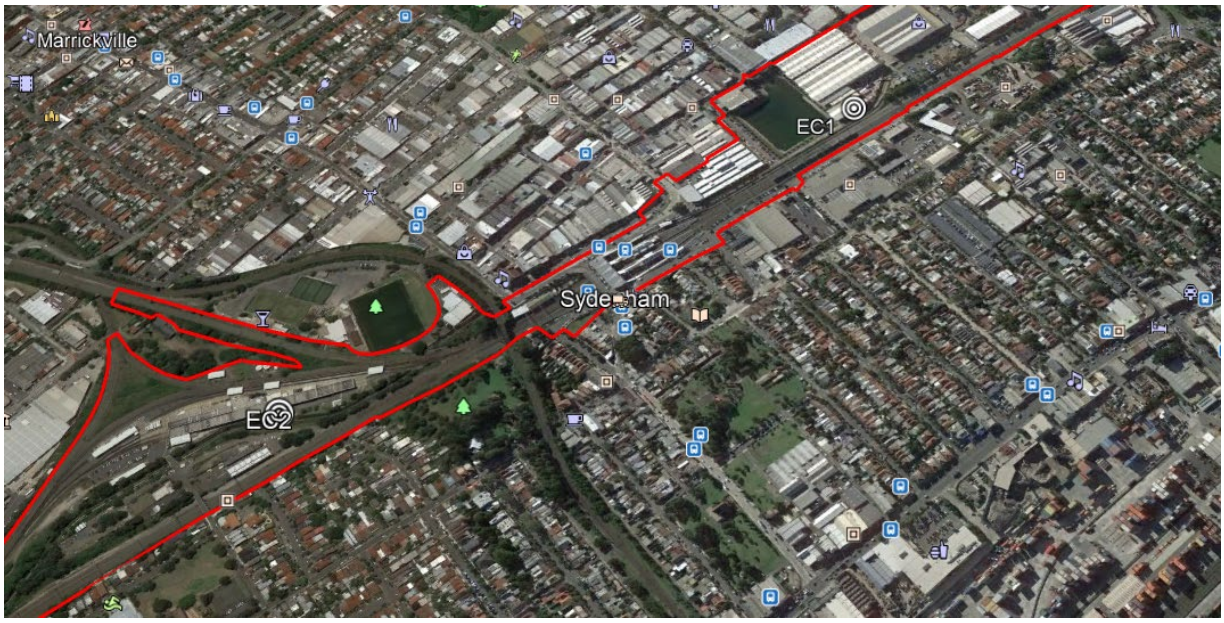

Figure 2 - Surface Water Monitoring Locations

Revision 16 of the CSWMP (June 2023) states the following: “As of March 2022, the majority of construction has been completed and nearly all areas have been stabilised to final ground cover, including asphalting, tiling and vegetation cover. As a result of reduce risk, surface water monitoring will no longer be conducted after Q1 of 2022.The water quality monitoring (WQM) will be undertaken within the Premises prior to discharge during construction as set out in section 6.2.” Given the current status, no water quality monitoring was conducted during the reporting period, and no further monitoring will be conducted by JHLOR except on an ad hoc basis based on necessity.

Surface water quality monitoring was undertaken as follows for the parameters in **Table 1**:

- Pre-construction – monthly following site control
- SSJ construction stage – every three months & up to 4 wet weather events per year
- Monitoring will cease to continue as JHLORJV works have been conducted in these monitoring locations.

However, it is noted that water monitoring was not conducted during this reporting period. As per the CSWMP, WQM is no longer required by the principal contractor as per the previous statement from the CSWMP.

Pre-construction monitoring was conducted at points EC1 and EC2 monthly once the project was given site control. Surface water quality monitoring of the receiving environment prior to construction is highly unlikely to define suitable standards or benchmarks for water quality discharges from the SSJ Works given that:

- Waterways along the site are mostly ephemeral
- Water quality from urban areas is highly variable and changes according to prevailing weather patterns and day-to-day during rainfall.

The Environment Protection Licence (#21147) provides the project with criteria to discharge off-site through approved discharge points. These criteria must be met prior to discharge. A record of monitoring for dewatering on the project is maintained and made available on the project website and EPA website. There are currently no active sediment basins on the project, and none have been identified during the construction phase of the project to date.

Sydney Airport Bureau of Meteorology (BOM) weather observations were used to report the amount of rainfall 24hrs prior to monitoring and to determine when a reportable rain event occurs.

SSJ also monitors water quality prior to any planned discharges to ensure water quality is within the parameters listed within the Environmental Protection Licence (No.21147), to minimise any potential impacts to surrounding waterways.

Table 1 - Water Monitoring Parameters

Parameter	Sampling Methods	Analytical Method	ANZECC Criteria* Freshwater	Proposed Trigger Values	Proposed Actions
Temperature (°C)	Probe	Field analysis	> 80%ile < 20%ile	Downstream results are > than upstream results in rainfall events up to and including the significant event threshold of >20mm in 24 hours.	Environment Manager (or delegate) to re-test to confirm results and undertake an inspection of the adjacent works and propose actions where required.
Dissolved Oxygen (DO)	Probe	Field analysis	Lower limit – 85 Upper limit – 110		
Turbidity (NTU)	Probe	Field analysis	6 – 50		
Oil and grease	Visual analysis, then grab sample if required	Visual assessment. Confirmed with lab analysis if required	-		
pH	Probe, grab sample if required	Field analysis, lab analysis if required	Lower limit – 6.5 Upper limit – 8.5		
Salinity (EC)	Probe	Field analysis	125 – 2200		
Total Suspended Solids (TSS)	Probe, grab sample if required	Field analysis, lab analysis if required	-		

Note: ANZECC guideline criteria are included for reference. It is noted that baseline testing will indicate whether water quality passing through the project site prior to construction meets ANZECC guidelines. JHLOR will comply with Section 120 of the *Protection of the Environment Operations Act 1997*.

Noise and Vibration Monitoring

2.2 As part of the Noise and Vibration Assessment within the Modification Report and Submissions Report, the area surrounding the Project site was divided into 3 Noise Catchment Areas (NCAs). Noise monitoring was undertaken in 2015 and 2016 to determine the Rating Background Level for these catchments. During the development of the Construction Noise and Vibration Impact Statement (CNVIS) further background noise monitoring was undertaken within the surrounding area between 18th & 27th June 2018. The additional monitoring has taken place at the following locations;

- NCA2 – 25 Bridge St, Tempe
- NCA3 – 4 Burrows Avenue, Sydenham
- NCA4 - 80 Unwins Bridge Road, St Peters

Following the development of the CNVIS and the additional monitoring, the area surrounding the project has been split into 6 Noise Catchment Areas. Rating Background Levels for all NCAs as per the CNVMP are shown in **Table 2**.

Table 2 - RBLs for SSJ Noise Catchment Areas

NCA	Daytime RBL (7am to 6pm)	Evening RBL (6pm to 10pm)	Night RBL (10pm to 7am)
1*	47	45	40
2	41	46	40
3	51	49	42
4	58	51	43
5**	58	52	38
6***	52	43	38

*Noise levels adopted from Sydenham to Bankstown EIS
**Noise levels adopted from Chatswood to Sydenham EIS
***Noise levels adopted from TSE Marrickville Dive Construction Site
Note: Reported RBLs are as per CNVIS findings, including in NCA2 where daytime is lower than evening.

Now that the project is nearing the end of the construction phase, remaining construction is largely limited to defect work during standard construction hours and therefore further noise impacts are expected to be very limited across all NCAs.

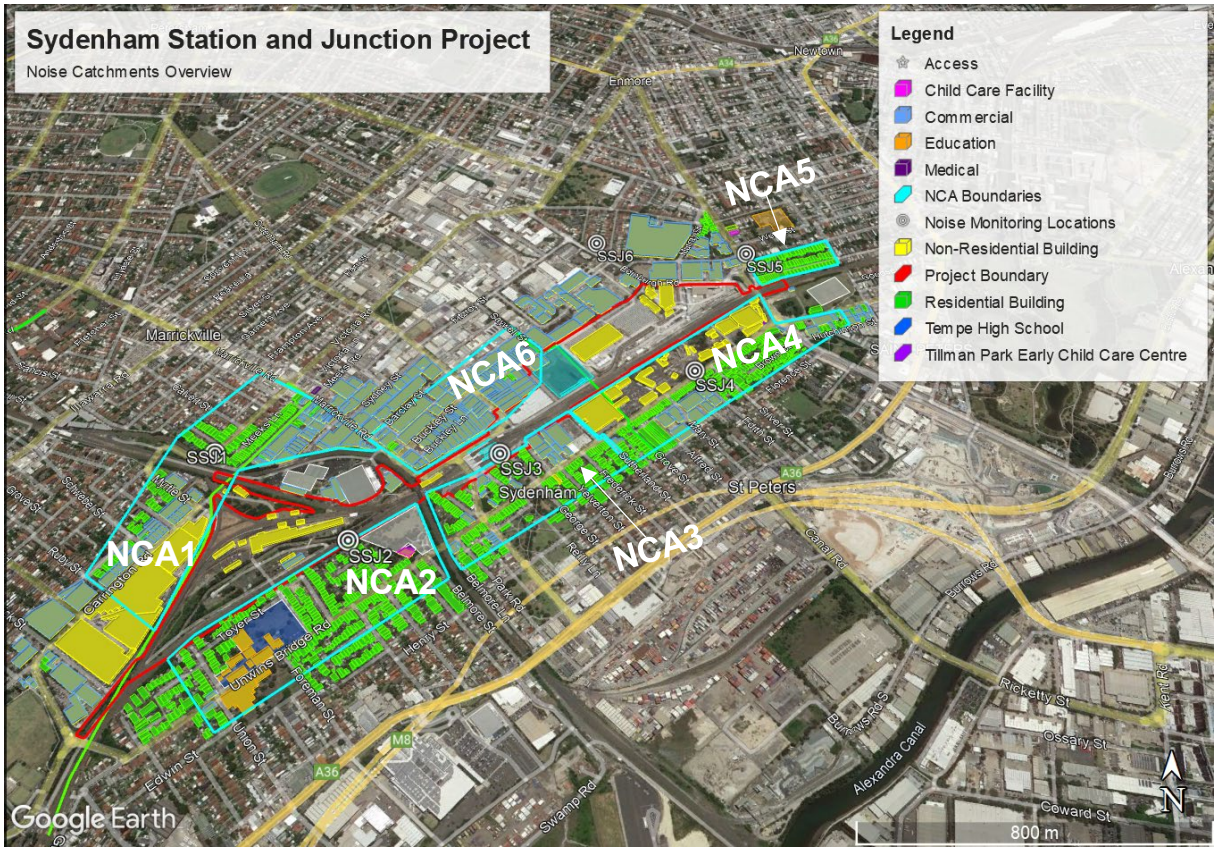

Figure 3 - NCAs and identified residential and non-residential receivers

Monitoring is required to be undertaken during construction activities (including out of hours works) where required in accordance with Section 8 of the CNVIS and for validation purposes. Attended noise monitoring is also undertaken in the event of a noise complaint. Monitoring will be undertaken at the complainant's property, nearest to any work.

Vibration monitoring will be undertaken before and during works where buildings or structures exist within the safe work distances of vibratory plant. Monitoring will also be undertaken where vibration generating actives have the potential to impact on heritage items. In accordance with CoA – E28 and the requirements of the CNVIS, the vibration limits have been set out in the British Standard BS 7385-2:1993.

The Modification Report states that "based on the typical nature of buildings around the proposed modification, the cosmetic damage screening criteria of 7.5mm/s for unreinforced or light framed structures has been uniformly applied. This same screening criteria is also relevant for heritage items". No heritage items in the footprint of the project have been screened as 'structurally unsound.'

During activities that are expected to generate maximum noise levels at impacted receivers, as identified in the CNVIS, continuous real-time noise and vibration monitoring will be undertaken. Continuous real-time noise and vibration monitoring will be undertaken on the project boundary adjacent to one of the closest residences in the Burrows Avenue / Railway Road Area, at one of the closest residences in the Meeks Road Area, and at one of the closest residences in Lord Street/Edgeware Road to determine the LAeq15min and LAMax levels during times of nearby work.

There will be periods of time where no works will be occurring, and it is not reasonable to have the real-time system in operation during these periods. There is a high likelihood that ambient noise and vibration levels from non-construction sources will need to be accounted for, particularly on the boundary of the rail corridor. Where the noise and vibration alert levels are exceeded as a result of project related works, the construction method and equipment will be reviewed/modified.

As per the Construction Noise and Vibration Impact Statement, real time vibration monitoring is conducted when the works are predicted to exceed the building damage vibration goals and/or human comfort vibration goals. No works throughout this reporting period indicated the need for vibration monitoring.

Details of noise monitoring equipment used during the reporting period are included in **Table 3**:

Table 3: Noise Monitoring Equipment

Model	Serial Number	Most Recent Calibration Date* *as of date report was written
Svantek SV971 Noise Monitor	61522	06/06/2023
Svantek SV44 Sound Calibrator	90201	06/06/2023

Note: Calibration certificate indicates that it was calibrated on 06/06/2023 which is attached as Appendix A. It is a common practice to assure the JHLORJV noise monitoring data received is correct thus as a quality control measure an extra check is conducted prior to noise monitoring. An example quality control check can be seen in Appendix B. The calibration device creates and isolates a noise of 114dB with a validity of ± 0.5dB. The reading should be within this range to assure validity of readings.

Due to the project is nearing the end of the construction phase, remaining construction is largely limited to defect work during standard construction hours with minimal vibrational plant and activities therefore further vibration impacts are expected to be very limited across all NCAs

3.1 3. Results

3.2 Surface Water

No monitoring during the reporting period.

3.3 Noise Monitoring

No monitoring during the reporting period.

Vibration Monitoring

No vibration monitoring was conducted throughout this period as no works triggered vibration levels exceeding noise and vibration monitoring trigger levels as defined in the CNVS.

To date, there have been no exceedances of vibration from construction activities, and recorded vibration (PPV in mm/s) has been below cosmetic vibration limits for affected structures. As above, previously attended noise and vibration monitoring has identified that external non-construction noise and vibration sources are frequent in the area, which is also expected to reflect in the results of any real-time continuous monitoring.

4. Mitigation Measures

4.1 Noise and Vibration

Standard mitigation measures were implemented as per Section 7 of the Construction Noise and Vibration Management Plan, and Sections 6.2 and 6.4 of the Construction Noise and Vibration Impact Statement. These were considered effective during the reporting period.

4.2 Water

Standard mitigation measures were implemented as per Section 6 of the Construction Soil and Water Management Plan. Controls were repaired as required and were effective during the reporting period. As per section 7.1 of the CSWMP, no WQM is required as of March 2022 due to the majority of construction being completed and all areas being stabilised with ground cover, including asphalting tiling and vegetation cover.

5. Conclusion

Pre-construction surface water monitoring began in June 2018, with results showing potentially high turbidity and fluctuations due to urban environment. Turbidity in monitoring results fluctuated slightly from upstream to downstream, suggesting no adverse impacts from the project. Surface water data does not provide a clear correlation between construction activities and water quality, due to channel access issues and the ephemeral nature of the channel.

Erosion-sediment control plans are maintained and reviewed regularly, and JHLOR conducts weekly, pre- and post-rainfall environmental inspections. Previously the Environment Representative (ER) would conduct bi-weekly inspections and any observations are closed out within agreed timeframes. This has now changed to ER inspections being conducted as required based on the risk of activities occurring.

As the scope of activities on site has been significantly reduced in comparison to previous CMRs thus the need for monitoring has been reduced. Potential noise and vibration impacts have been very limited on the project since the end of 2021. No noise and vibration monitoring has been conducted during this reporting period.

Appendix A – Calibration Certificate

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: SLM36378

EQUIPMENT TESTED: Sound Level Meter

Manufacturer:	Svantek		
Type No:	SVAN-971	**Serial No:**	61522
Mic. Type:	7052E	**Serial No:**	69741
Pre-Amp. Type:	SV18	**Serial No:**	64741

Owner: John Holland Laing O'Rourke JV
15 Close Street
Canterbury, NSW 2193

Tests Performed: IEC 61672-3:2013

Comments: All Tests passed for Class 1. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	1014	hPa ±1 hPa	**Date of Receipt :**	02/06/2023
Temperature	25	°C ±1° C	**Date of Calibration :**	06/06/2023
Relative Humidity	46	% ±5%	**Date of Issue :**	06/06/2023

Acu-Vib Test Procedure: AVP10 (SLM) based on IEC 61672-3.

CHECKED BY: ..... **AUTHORISED SIGNATURE:** .....

Bruce Meldrum

Accredited for compliance with ISO/IEC 17025 - Calibration
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

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Accredited Lab No. 9262
Acoustic and Vibration Measurements

Acu-Vib Electronics
CALIBRATIONS SALES RENTALS REPAIRS

Head Office & Calibration Laboratory
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
(02) 9680 8133
www.acu-vib.com.au

The performance characteristics listed below were tested. The tests are based on the relevant clauses of IEC 61672-3:2013

Tests Performed:	*Clause*	*Result*
Absolute Calibration	10	Pass
Acoustical Frequency Weighting	12	Pass
Self-Generated Noise	11.1	Observed
Electrical Noise	11.2	Observed
Long Term Stability	15	Pass
Electrical Frequency Weightings	13	Pass
Frequency and Time Weightings	14	Pass
Reference Level Linearity	16	Pass
Range Level Linearity	17	Pass
Toneburst	18	Pass
Peak C Sound Level	19	Pass
Overload Indicator	20	Pass
High Level Stability	21	Pass

Statement of Compliance: The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent organization responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC61672-1:2013.

A full technical report is available on request.

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C36377

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Svantek
Type No: SV33A **Serial No:** 90201
Owner: John Holland Laing O'Rourke JV
15 Close Street
Canterbury, NSW 2193
Tests Performed: Measured Output Pressure level, Frequency & Distortion
Comments: See Details overleaf. All Test Passed.

Parameter	Pre-Adj	Adj Y/N	Output: (dB re 20 µPa)	Frequency (Hz)	THD&N (%)
Level:	NA	N	113.96 dB	1000.00 Hz	1.12 %
Uncertainty			±0.11 dB	±0.05%	±0.20 %
Uncertainty (at 95% c.l.) k=2					

CONDITION OF TEST:

Ambient Pressure 1015 hPa ±1 hPa
Temperature 25 °C ±1° C
Relative Humidity 45 % ±5%

Date of Receipt : 02/06/2023
Date of Calibration : 06/06/2023
Date of Issue : 06/06/2023

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: .....

AUTHORISED SIGNATURE: .....

Bruce Meldrum

Accredited for compliance with ISO/IEC 17025 - Calibration
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The Calibrator described in this report has been tested to the requirements of the standard IEC 60942-[Ed 4]:2017-11.
The tests described in Annex B of the standard (Periodic tests) were carried out under the environmental conditions listed above to the following clauses:

Clause	**Test description**
B4.6	Sound Pressure Level (By comparison with a reference calibrator).
B4.7	Frequency (By measurement with a calibrated frequency meter).
B4.8	Total distortion and noise. (By measurement with a calibrated Noise and Distortion meter).

Notes:

1. The calibrator was calibrated with the main axis vertical and facing down.
2. No corrections have been made for atmospheric pressure, temperature, or humidity.

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

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Appendix B – Quality Control Test Prior to Monitoring example


20th Jan 2024, 23:01:01 PM
254 Livingstone Road
113.7