



Construction Monitoring Report 09 (September 2022 to February 2022)

SMCSWSSJ-JHL-WSS-EM-REP-000013

Document and Revision History

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Management reviews

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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 2022 to August 2022.

1.1 Submission Requirements

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

- NSW EPA
- Inner West Council
- DPE

The previous Construction Monitoring Report (CMR) was submitted on 23/03/2022 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 8th 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 2020
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

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 (September 2022 – February 2023), only minor defect works remains to be completed, CMR 009 will be the final report.

1.2 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 2023, the majority of construction has been completed and all areas have been stabilised to final ground cover, including asphaltting, tiling and vegetation cover. As a result of reduce risk, surface water monitoring will no longer be conducted after Q1 of 2022. Note: JHLORJV can conduct more monitoring if they deem necessary or as a good practice.

1.3 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:

- Edgware 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.

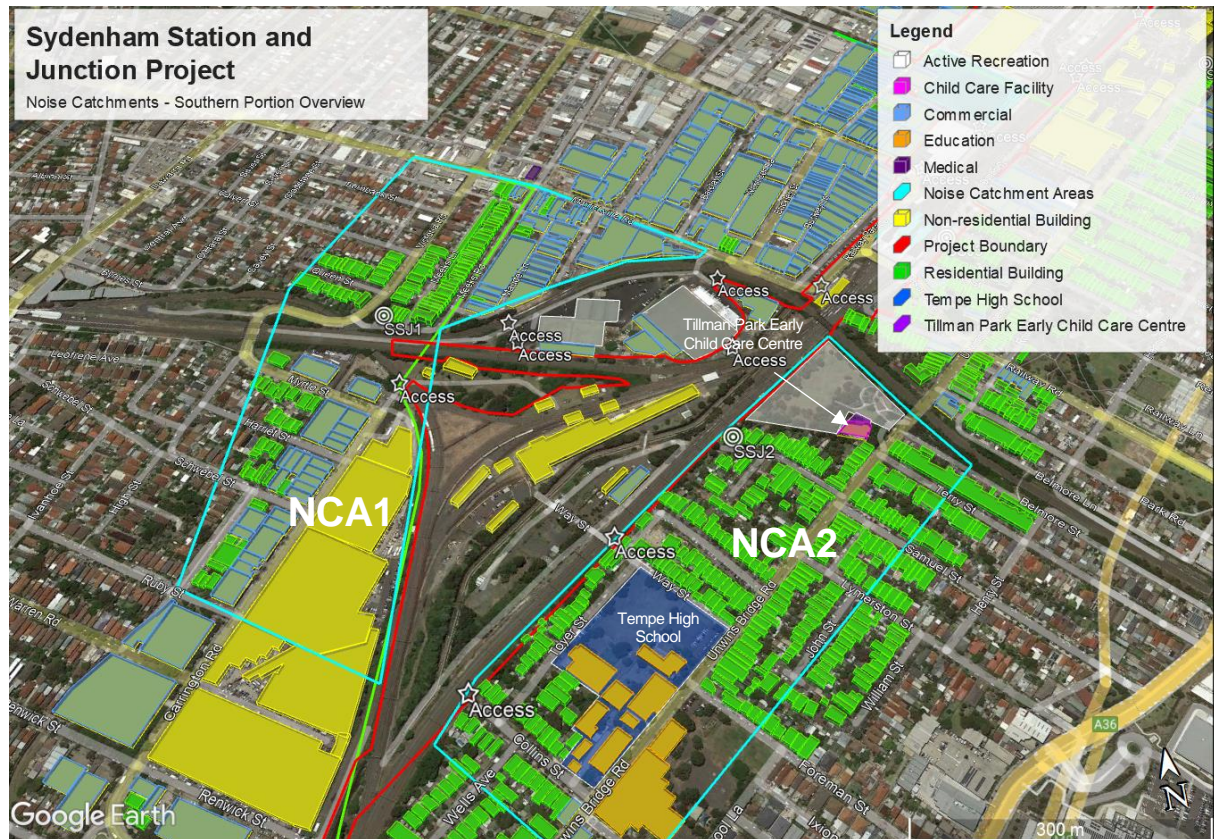


Figure 1 - Surrounding Land-use and Sensitive Non-Residential receivers

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 2023, the majority of construction has been completed and only minor defect works has been carried out during normal construction hours. 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

2.1 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 footprint. Both are located in the man-made Eastern Channel running alongside the rail corridor – See **Figure 2**.

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.

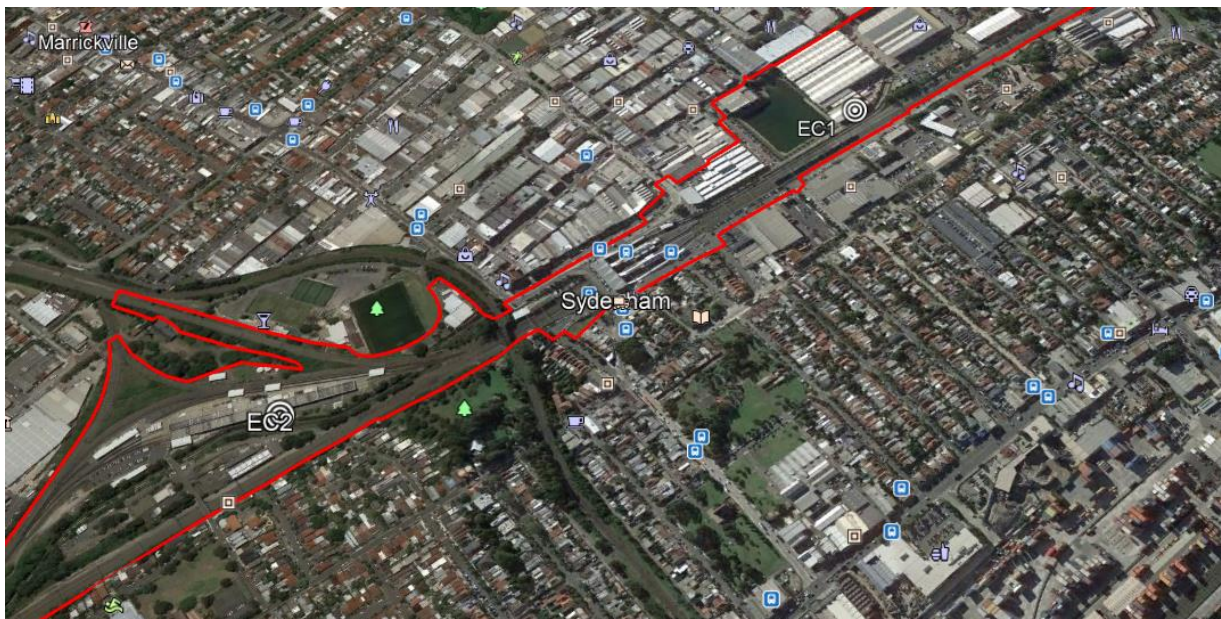


Figure 2 - Surface Water Monitoring Locations

Although water quality monitoring was not conducted during this reporting period, as per the CSWMP Rev14 “As of March 2022, the majority of construction has been completed and nearly all areas have been stabilised to final ground cover, including asphaltting, 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” (of the CSWMP). Moving onto the following reports, WQM will no longer need to be conducted, JHLORJV may decide to partake in WQM as a good practice if need be.

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*.

2.2 Noise and Vibration Monitoring

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.

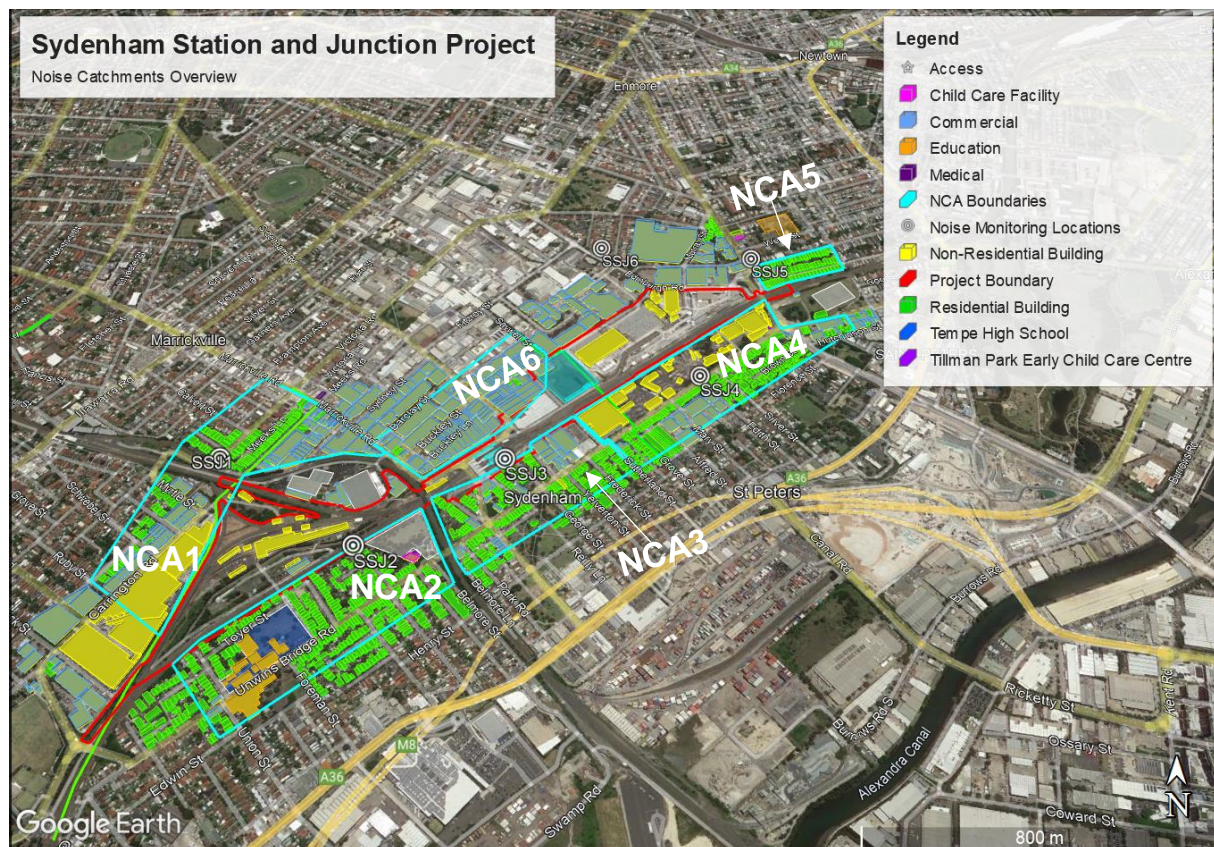


Figure 3 - NCAs and identified residential and non-residential receivers

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 activities 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 $LA_{eq15min}$ and LA_{Max} 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* <small>*as of date report was written</small>
Svantek SV971 Noise Monitor	61522	31/05/2022
Svantek SV44 Sound Calibrator	90201	31/05/2022

Note: Calibration certificate indicates that it was calibrated on 31/05/2022 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 ± 0.5 dB. The reading should be within this range to assure validity of readings.

3. Results

3.1 Surface Water

Pre-construction monitoring took place over 3 months from June-August 2018, with 4 samples collected from two identified points. As noted in section 1.2 and surface water background results, the culvert has several inflows from the surrounding urban environment, including between the two monitoring points due to access limitations. As recorded in baseline monitoring, this has been noted as accounting for the high base Total Suspended Solids (TSS) recorded and turbidity noted in subsequent surface water monitoring, particularly when taken after a rain event. Turbid inflows of water from urban stormwater into the culvert have been visually confirmed in post-rainfall inspections.

No monitoring during the reporting period.

3.2 Noise Monitoring

Attended noise monitoring was undertaken as required for a single instance of OOHV during the past 6 months, where noise modelling predicted a 5 dB Rating Background Level exceedance. This was conducted to validate the predicted results. During the attended monitoring, JHLORJV construction works was in-audible and the noise was attributed to continuous ongoing traffic from the road, rail and planes. The low instance of noise impacts is due to the stage of construction on the project, as most rail and road construction had been completed prior to this period.

Historically, as part of attended noise monitoring, significant extraneous noise has been recorded as impacting receivers and monitoring results, including throughout the night-time period, well above the given RBLs. Monitoring locations and timing has been adjusted where necessary to try to isolate construction impact, however this is often not feasible. Common extraneous noise sources include:

- Loud noise from air traffic, as area is part of Sydney Airport Noise Management Plan and heavily affected by flight-path
- Road traffic, particularly near Gleeson Ave, as nearby industrial, commercial and other nearby construction projects use cause frequent heavy trucks trafficking the area
- Rail replacement buses during rail possessions
- Noise from trains passing and train signalling horns

SSJ have committed to review impacts and mitigation of construction activity and document outcomes where an exceedance is recorded or a complaint is made related to project construction activities. To date there have been no exceedances of predicted construction related noise levels assessed as relating to ongoing construction activities on the project.

No monitoring during the reporting period.

3.3 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 nearly all areas being stabilised with ground cover, including asphalt tiling and vegetation cover. WQM was conducted by JHLORJV regardless as good practice. JHLORJV can continue completing as

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. The noise monitoring result has validated that the modelling is consistent with the predicted impact of construction activities on noise catchment areas, including sensitive receivers. There have not been any recorded exceedances regarding noise and vibration impacts attributed to construction activities. Potential noise and vibration impacts have been very limited on the project since the end of 2021. No vibration monitoring has been conducted during this reporting period.

Appendix A – Calibration Certificate

1/2

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: **SLM32735**

EQUIPMENT TESTED: **Sound Level Meter** (Hand held)

Manufacturer: Svanetek
Type No: Svan-971
Mic. Type: 7052E
Pre-Amp. Type: SV18

Serial No: 61522
Serial No: 69741
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	975 hPa ± 1 hPa	Date of Receipt :	30/05/2022
Temperature	23 $^{\circ}\text{C} \pm 1^{\circ}\text{C}$	Date of Calibration :	31/05/2022
Relative Humidity	45 % $\pm 5\%$	Date of Issue :	31/05/2022

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


CHECKED BY: **AUTHORISED SIGNATURE:**
Hein Sae

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

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

2/2

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: **C32734**

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:	114.4	Y	113.99 dB	999.99 Hz	0.16 %
Uncertainty			±0.11 dB	±0.05%	±0.20 %

Uncertainty (at 95% c.l.) k=2

CONDITION OF TEST:


Ambient Pressure	976 hPa ±1 hPa	Date of Receipt :	30/05/2022
Temperature	23 °C ±1° C	Date of Calibration :	30/05/2022
Relative Humidity	44 % ±5%	Date of Issue :	31/05/2022

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


CHECKED BY:  **AUTHORISED SIGNATURE:** 

Accredited for compliance with ISO/IEC 17025 - Calibration
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Appendix B – Quality Control Test Prior to Monitoring example

