Southwest Metro Corridor Construction Monitoring Report – March to August 2021

SMCSWSSJ-JHL-WEC-EM-REP-000020

Document and Revision History

Document Details	
Title	Construction Monitoring Report
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Revisions

Revision	Date	Description	Prepared by	Reviewed by
Rev A	30/09/2021	Initial Issue	CM	DK
Rev B	13/10/2021	Initial Issue	DK	TW

Management reviews

Review date	Details	Reviewed by

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Compliance Matrix

Condition	Requirement	Reference
C14	The results of the Construction Monitoring Programs must be submitted to the Planning Secretary, 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 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 Southwest Metro Corridor Works (SMC).

1.1 Submission Requirements

In accordance with condition C14, this will be submitted to the following agencies for information:

- City of Canterbury Bankstown
- Inner West Council
- DPIE

The Independent Environmental Representative will review the report prior to submission.

1.2 Surface Water

The project site is located within the rail corridor on the T3 Bankstown line between Sydenham and Bankstown, NSW.

The Project site forms part of the overall Cooks River, Coxs Creek and Salt Pan Creek catchment areas. The water from the area discharges into these water catchments via local stormwater drainage or overland flow. The surrounding catchment areas are urbanised with a mix of residential, commercial, and industrial properties.

Water quality is measured on an ongoing basis for the wider Cooks River catchment by the *Environment, Energy and Science - NSW DPIE* as part of the Beach watch programme. The monitoring pointis 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 discharge and sewagecontamination.

The EIS, referring to the Salt Pan Creek catchments, states “A number of beaches in the lower Georges River are monitored as part of DPIE-EES’s Beachwatch program. The most recent State of the Beaches annual report noted that these locations were graded as ‘good’, meaning that the quality of the water was appropriate for swimming most of the time”. It is noted however that the catchment is impact by development, including construction impacts and litter, as well as other influences such as wastewater overflows and a landfill operation.

Please refer to the Construction Soil and Water Management Plan for further information on surface

water within the project area.

Objectives for water quality management during construction are:

- Minimise pollution of surface water through appropriate erosion and sediment control
- Maintain existing water quality of surrounding surface watercourses

1.3 Noise and Vibration

The area surrounding the SMC project contains a variety of land-use types and receivers, including residential receivers, commercial, industrial, 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 surrounding stations, and primarily residential areas between stations. The area surrounding the project is affected by rail noise and vibration.

Majority of the works will occur within the rail corridor between stations, works will mainly occur adjacent to residential properties.

There are a number of sensitive non-residential receivers identified within the vicinity of the project works. The full list of receivers can be found within the CNVIS (SMCSWSSJ-JHL-WEC-EM-REP-000011-Construction Noise and Vibration Impact Statement-Rev00) A summary of the sensitive receivers are;

- 17 Childcare and Early Learning Centres
- 25 Primary and High Schools
- 24 Hospitals, Medical Centres, clinics and Aged Care Facilities
- 23 Places of Worship

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

Construction noise levels for some SMC 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 monitored accordingly.

2. Methodology

2.1 Surface Water

Surface water quality monitoring is undertaken in accordance with the Water Quality Monitoring Programme within the Construction Soil and Water Management Plan (refer to Section 7).

The water quality monitoring methodology as stated within the CSWMP is as follows;

"*Following rain events of greater than 20mm in a 24 hour period, JHLOR will undertake post rainfall inspections of works areas and outlets to determine if there is any change in water quality. Visual inspections will include the following monitoring parameters:*

- *Water clarity and colour*
- *Odour*
- *Description of flow and quantity*
- *Oil and Grease determination*
- *Details of any foreign objects within the water, and*
- *Visible runoff (into the water body)*

JHLOR will maintain a record of the inspections (including photographs) within the SMC Project drive.

Where water quality issues are visibly observed JHLOR will investigate further to determine if the source of the issue is related to JHLOR construction activities (where possible, noting safe access limitations). The JHLOR Environmental Manager or delegate will discuss changes in water quality associated with Construction with the JHLOR Construction Team to determine if further controls may be implemented, noting that any controls must be feasible and reasonable."

Water quality monitoring locations are included within Appendix F of the CSWMP. Canterbury Racecourse BOM weather observations were used to determine the amount of rainfall in a 24hr period, forming the basis of when monitoring occurred.

Pre-construction monitoring was undertaken prior to the start of Construction in late March 2021, noting that works did not commence across the entire project site in March. Monitoring was undertaken during both dry conditions (no rainfall within the last 24hrs) and wet conditions (>20mm rainfall within last 24 hours). Pre-construction monitoring was undertaken with the same visual and qualitative approach as described above. Pre-construction monitoring identified that waterways across the project were highly disturbed with a large degree of litter and other detritus. During the baseline wet weather monitoring turbid water was observed at a number of locations, including;

- Ewart St, Dulwich Hill,
- Close Street, Canterbury
- Cooks River, Canterbury
- Railway Parade, Lakemba
- Urunga Parade, Wiley Park
- South Terrace, Punchbowl

The results of the Construction Water Quality Monitoring Programme are included in Section 3.

There are currently no active sediment basins on the project, and none have been identified during the construction phase of the project to date.

2.2 Noise and Vibration monitoring

As part of the Noise and Vibration Assessment within the Sydney Metro Sydenham to Bankstown Upgrade Environmental Impact Statement, the area surrounding the entire Project site was divided into 13 Noise Catchment Areas (NCAs). SMC works occur across all 13 NCA's depending on where works will reside, there are some locations where works are more consistent than others. Noise monitoring was undertaken in 2016 to determine the Rating Background Level for the 13 noise catchments. The Rating Background Levels for all NCAs are shown in Table 1.

Table 1 - RBLs for SSJ Noise Catchment Areas

NCA	Daytime RBL (7am to 6pm)	Evening RBL (6pm to 10pm)	Night RBL (10pm to 7am)
1	38	38	33
2	38	38	33
3	38	38	34
4	40	40	35
5	36	36	32
6	45	42	35
7	41	41	35
8	47	47	41
9	44	44	36
10	47	47	41
11	47	47	39
12	54	51	42
13	42	42	39

Based on planned work in the construction phase, impacts were largely spread across the noise catchments.

Figure 1 shows the noise catchment boundaries across the project.

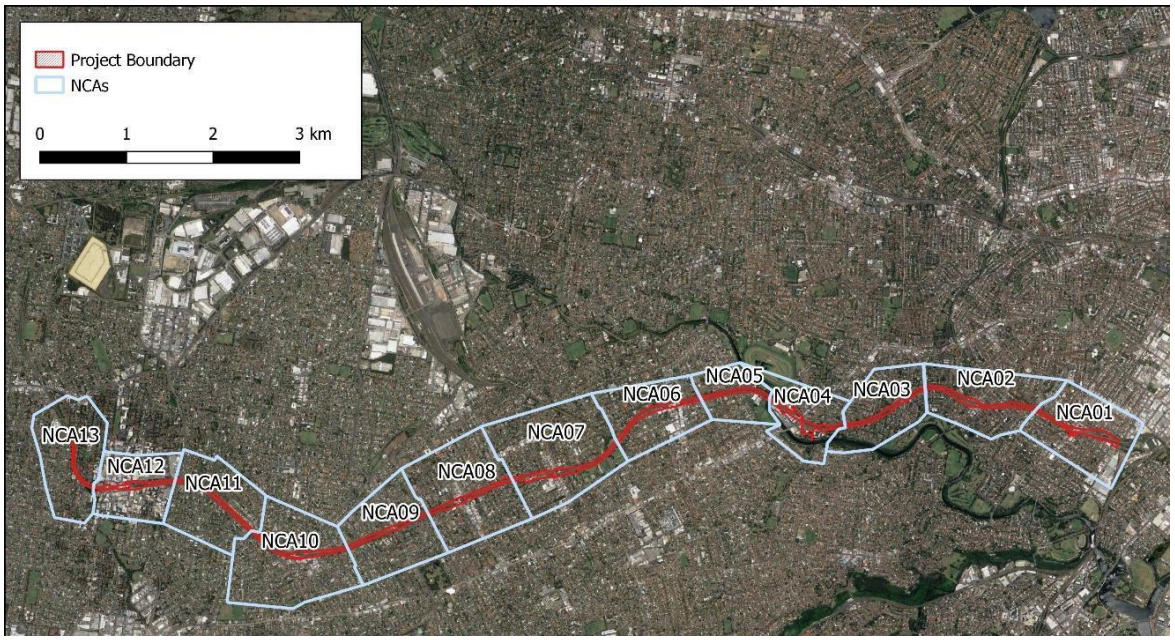

Figure 1 Sydenham to Bankstown Noise Catchment Areas

Monitoring is undertaken during construction activities (including out of hours works) where required in accordance with Section 8 of the CNVS and for validation purposes. Attended noise monitoring is undertaken in the event of a noise complaint. Where a complaint occurs, 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 that have the potential to impact on heritage items. Monitoring will be undertaken for vibration causing "activities" at a structure and applied as indicative across the project area in similar circumstances (e.g. the methods and plant used for the compaction of batters is consistent across the site, as such the monitoring at one structure is representative of the impacts at other structures). Representative monitoring should be undertaken at the most sensitive structure for which it is to be applied. In accordance with the requirements of the CNVS, the vibration limits have been set out in the British Standard BS 7385-2:1993.

3. Results

3.1 Surface Water

Water quality monitoring inspections were undertaken 6 times during the period, including 2 baseline inspections. Refer to Table 2 for a summary.

Full monitoring inspections, including commentary and photographs are maintained on the JHLOR Project Drive. These are available upon request. Where monitoring indicates adverse impacts associated with JHLOR works this Section of the CMR will explore the details and corrective actions in detail. However, there were no adverse impacts identified during the period.

Table 2 - Surface Water Monitoring Results for Pre-construction and Construction Phases for wet weather events (20mm rain)

Date	Total Rainfall (mm)	Rainfall Event (hours)	Adverse Impacts relating to JHLOR works recorded	Notable Observations	Observations relating to JHLOR impacts	Follow up actions with construction team
2/03/2021	0	0 (dry weather baseline)	No	Ewart St, Dulwich Hill: Turbid water entering from side tributary into D/S side of rail culvert – no JHLOR works in area. Unknown source General – low flows and litter	None	N/A
15/03/2021	65.8	72 (wet weather baseline)	No	Ewart St, Dulwich Hill: Turbid water entering from side tributary into D/S side of rail culvert – no JHLOR works in area. Unknown source Punchbowl – slight discolouration. No works in area. Unknown source	None	N/A
22/03/2021	318.2	144	No	Ewart St, Dulwich Hill – turbid water observed – no JHLOR works in vicinity Cooks River, Canterbury – turbid water and litter observed Belmore Triangle creek – some turbidity in water coming from upstream of corridor. No change observed in Belmore Triangle area Railway Pde, Lakemba – slightly turbid in culvert. Turbid water observed coming from city side of culvert. JHLOR RW21 investigation works occurring on country side Urunga Pde, Wiley Park – turbid water observed. No JHLOR works	None	N/A
05/05/2021	86.4	72	No	Ewart St, Dulwich Hill: Turbid water entering from side tributary into D/S side of rail culvert – no JHLOR works in area. Unknown source Close Street, Canterbury: turbid water observed coming from upstream. No inflow from compound area	None	N/A
11/07/2021	21.6	24	No	Ewart St, Dulwich Hill: Turbid water observed in main culvert from upstream and side tributary. No JHLOR works in area Hurlstone Ave, Hurlstone Park – turbid water observed. JHLOR undertaking works on overhead wire structure nearby – no impact from JHLOR works Cooks River, Canterbury – turbid water and litter observed Railway Pde, Lakemba: Turbid water entering culvert from city side. JHLOR works on Country side – no impact Close Street, Canterbury: turbid water observed coming from upstream. Clean inflow from compound area	None	N/A
24/08/2021	84.2	48	No	Ewart St, Dulwich Hill: Turbid water entering from side tributary into D/S side of rail culvert – no JHLOR works in area. Urunga Pde, Wiley Park: slightly turbid water entering from city side – no JHLOR works in area Close Street, Canterbury: turbid water observed coming from upstream. Clean inflow from compound area	None	N/A

3.2 Noise and Vibration Monitoring

Attended noise monitoring was undertaken as required for OOHW and possessions, where noise modelling predicted significant exceedance of Rating Background Levels or otherwise required validation using this method.

Attended noise monitoring has been conducted for activities with significant predicted exceedances of noise management levels, mostly occurring where works are conducted in the evening or night-time periods. SMC 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.

Results from attended noise monitoring are summarised in Table 3. Noise monitoring results from the reporting period indicated that works occurred at noise levels at or below predicted levels, with the exception of an exceedance related to service searching during the Week 42 Possession (19/04/2021-20/04/2021). JHLOR have undertaken an investigation into the exceedance in accordance with Section 8.4 of the CNVMP (& Condition R4.3 of the EPL) and a Noise Exceedance Report was submitted to the ER and NSW EPA (refer *SMCSWSSJ-JHL-WEC-EM-REP-000017 - Noise Exceedance Review- Week 42 Possession Works*). The investigation into the exceedance determined that a larger vacuum truck was used on site than had been included in the model. The model has since been updated to include the noise level associated with a large vacuum truck.

It is noted that wind speeds exceeded the recommended maximum level for noise monitoring as described within "*AS1055-2018 Description and measurement of environmentalnoise*" on a number of occasions, leading to exceedances. Monitoring was undertaken duringthese periods to provide indicative noise monitoring results only.

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:

- Noise from passing freight trains on the ARTC line
- Road traffic, particularly rail replacement buses during rail possessions

There were three complaints made within the period that were found to be relevant to JHLOR works.

1. 29/06/2021 Track work Campsie – June/July Shutdown
2. 2/07/2021 Delivery – June/July Shutdown
3. 7/07/2021 Music audible at residents – June/July shutdown

Noise monitoring and community consultation records were reviewed and it was found that compliance was achieved. Complaint 3 relates to unnecessary noise and worker behaviour, the issue was resolved at the time by turning the music down and briefing the worker responsible at the work-front.

Table 3 - Attended Noise Monitoring Results

NCA	Date	Time (hrs)	Duration (Mins)	Construction Activities	Audible noise from SSJ construction activities	Main source of noise	LA(eq)	LA_{Max}	Period	Predicted construction sound pressure level (LA(eq,15min))	Compliance	Comments
NCA4	20/03/2021	3:45	15	Cable pulling crew setting up operation in corridor	Construction activities barely audible	Lighting tower	47.6	65.9	Night	55	Y	Off loading plant and setting up in work area. Construction activities barely audible
NCA4	20/03/2021	5:35	15	Excavators working on ballast ramp. Idling sucker truck. Off loading equipment	Excavation works	Excavation works	66*	78.7	Night	61	Yes	*Monitoring in the rain for information purposes only. Work area shared with Station Contractors
NCA8	29/03/2021	23:00	15	Sucker truck - Sewer pipe cleaning in roadway at roundabout	Dominant noise from construction activities	construction	70.1	78.5	Night	74	Yes	
NCA8	30/03/2021	0:20	15	CCTV and cleaning of Sewer pipe in roadway at roundabout	Dominant noise from construction activities	construction	68.8	76.5	Night	74	Yes	
NCA5	19/04/2021	23:35	15	Sucker truck - NDD service searching alongside ballast batter	Dominant noise from construction activities	construction	74.4	83.9	Night	66	No	Due to nature of construction works noise exceedance (15m from residents). Mitigation addressed on site. Notification to ER and investigated reason for exceedance - larger sucker truck used due to length of pipe. Updated noise model with 'actual' data from this monitoring event and offered additional AA as required by update No complaints received.
NCA5	20/04/2021	0:01	15	Sucker truck - NDD service searching alongside ballast batter	Dominant noise from construction activities	construction	66.2	76.4	Night	61	No	Internal Purposes Only - for verification. Monitoring two houses further away from construction activities (30m). As above
NCA7	21/04/2021	23:43	15	Sucker truck - NDD service searching alongside ballast batter	Dominant noise from construction activities when there are no freight trains. Dominant noise is from 2# freight trains on ARTC track passing	Construction activities and 2# freight trains when passing	67.2	90.2	Night	68	Yes	Construction activities 35-40m from residents. Leq increased by the freight trains when passing.

NCA	Date	Time (hrs)	Duration (Mins)	ConstructionActivities	Audible noise from SSJ construction activities	Main sourceof noise	LA(eq)	LAMax	Period	Predicted construction soundpressure level (LA(eq,15min))	Compliance	Comments
NCA7	22/04/2021	0:32	11	Sucker truck - NDD service searching alongside ballast batter	Audible noise from construction activities	Construction activities and 2# freight trains when passing	59.3	71.1	Night	68	Yes	Construction activities +-40-50m. NOTE: 11" monitoring period due to approach of freight train on ARTC track to within 15m of monitoring location. This would have given a unrealistic reading for construction activities
NCA7	25/05/2021	1:30	15	Offloading oversize trucks. Rail track and sleepers for Xover	Payloaders x 2 Barely audible	Construction	60.8	76.8	Night	64	Yes	ARTC line - freight trains louder than construction activities
NCA8	29/05/2021	3:40	15	Setting up 100T crane and placing counterweights	Crane work - audible	Construction	53.9	76.2	Night	65	Yes	Quiet crane and setup activity.
NCA2	29/05/2021	5:20	15	2X excavators removing ballast from track for ULX 01	Audible	Construction	60.6	80.1	Night	80	Yes	Construction activities are being conducted in deep cutting.
NCA2	30/05/2021	0:20	15	Excavator with jackhammer attachment at ULX03. Dumper bringing sundry equipment along track removing ballast from track for ULX 01	Audible	Excavator and jackhammer attachment	63.9		Night	80	Yes	Construction activities are being conducted in deep cutting.
NCA8	28/06/2021	23:35	15	Setting up Giken silent piler. Crane moving equipment into position	Yes	Construction activities	55.7	66.7	NIght	65	Yes	ID: L510 Monitoring at 50m
NCA6	29/06/2021	1:15	15	Xover activities. Transfer (by dumpers)of ballast and capping from stockpiles to Xover	Yes	Construction activities	61.1	72.1	NIght	69	Yes	ID: L514 Monitoring at 40m
NCA6	29/06/2021	23:25	15	Xover activities. Transfer (by dumpers)of ballast and capping from stockpiles to Xover. Truck reversing into corridor. Drum roller tavelling into corridor	Yes	Construction activities	55.6	69.7	NIght	66	Yes	ID: L519 Monitoring at 40m

NCA	Date	Time (hrs)	Duration (Mins)	ConstructionActivities	Audible noise from SSJ construction activities	Main sourceof noise	LA(eq)	LAMax	Period	Predicted construction soundpressure level (LA(eq,15min))	Compliance	Comments
NCA7	29/06/2021	23:55	15	Xover activities. Transfer (by dumpers)of ballast and capping from stockpiles to Xover.	Yes	Construction activities	59.4	66.7	NIght	69	Yes	ID: L520 Monitoring at 40m
NCA10	1/07/2021	2:40	15	Setting up offices in compound. Trucks revesing and office sections being lifted into position with hiab crane	Yes	Construction activities	59	73.9	NIght	64	Yes	ID: L524 Monitoring at 40m
NCA8	1/07/2021	3:10	15	Giken Piling activities including use of coring attachment	Yes	Construction activities	63.4	75.6	Night	65	Yes	ID: L525 Monitoring at 70m
NCA7	1/07/2021	4:20	15	Xover activities. Penlems moving tracks into location (short duration then stop). Payloaders and excavtors moving equipment & materials around the track	Yes	Construction activities	53.1	73.4	Night	75	Yes	ID: 527 Monitoring at 40m
NCA10	1/07/2021	8:45	15	Hi rail movements, Excavator, Hydreema	Yes	Traffic, infrequent construction	55.8	73.1	Evening	64	Yes	ID: L528
NCA8	1/07/2021	10:10	15	Hydreema movements, excavator	Yes	Excavator faint	54.1	69.2	Night	65	Yes	ID: L529
NCA5	1/07/2021	11:00	15	Compaction, Excavator	Compactor audible infrequent	compactor, freight train	57.9	75.4	Night	66	Yes	ID: L530
NCA6	2/07/2021	4:35	15	Excavator	Excavator	Construction activities	59.2	81.3	Night	64	Yes	ID: L531
NCA1	3/07/2021	2:20	15	Lighting tower only (other contractor works)	Works by other contractors - JHLOR works inaudible	Vac Truck	71.9	77.7	Night	62	Yes	Works by other contractors - JHLOR works inaudible
NCA5	3/07/2021	2:53	15	EWP, Crane, non-powered tools	EWP and tools audible	EWP, intermittent tool use	56	77.2	Night	66	Yes	Lamax from freight train
NCA2	3/07/2021	4:21	15	Excavator	Excavator, Lighting tower	Buses, freight train	56.4	76.1	Night	64	Yes	Lamax from freight train

NCA	Date	Time (hrs)	Duration (Mins)	ConstructionActivities	Audible noise from SSJ construction activities	Main sourceof noise	LA(eq)	LAMax	Period	Predicted construction soundpressure level (LA(eq,15min))	Compliance	Comments
NCA8	4/07/2021	3:45	15	Giken Piling activities including use of coring attachment	Yes	Construction activities	60.6	78.6	NIght	65	Yes	ID: 548 Monitoring at 70m
NCA8	6/07/2021	20:10	15	Giken piling activities including crane use	Crane, multi-crane on-track, lighting tower	Traffic	64.9	80.8	evening	72	Yes	
NCA2	14/08/2021	14:40	15	Augering on track from DCM Antenna footing and HD bolts installation on Albermarle Bridge	Yes	Augering	65.8	79.0	Day	70	Yes	Monitoring ID #: L563 at 40m in deep cutting. Bridge works barely audible
NCA2	14/08/2021	18:50	15	Prep work for concrete with excavator movement along track. Concrete activities during last 2"	Yes (Barely audible)	Plant use and concrete activities	51.5	60.8	Evening	63	Yes	Monitoring ID #:564 at 40m in deep cutting. Construction noise barely audible
NCA2	15/08/2021	11:35	15	Drilling for Earthing & Bonding cable	Yes	Small drilling rig (into sandstone)	59.3	70.8	Day	65	Yes	Monitoring ID #: L567 at 60m in deep cutting
NCA2	15/08/2021	14:35	15	Drilling for Earthing & Bonding cable	Yes (Barely audible)	Small drilling rig (into fill)	54.3	70.2	Day	65	Yes	Monitoring ID #: L568 at 60m flat surface/corridor Construction noise barely audible

Note: Yellow highlighted boxes appear where an exceedance to the predicted noise levels have occurred due to extraneous sources but where compliance has still been achieved based on observations during attended monitoring.

3.3 Vibration

No vibration monitoring was required during the period. Vibratory rolling at the Canterbury site office has been captured within the SMEW Construction Monitoring Report 004 (*SMCSWSSJ-JHL-WEC-EM-REP-000019 - Construction Monitoring Report 004 February - July 2021*)

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 effective during the reporting period.

In response to the noise exceedance recorded on 19th-20th April 2021, JHLOR has updated the noise model to include a large vacuum truck.

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.

5. Conclusion

Pre-construction surface water monitoring began in March 2021, with results showing a number of instances of poor water quality due to detritus and turbidity. Monitoring during the period indicated no adverse impacts associated with JHLOR activities.

Erosion-sediment control plans are maintained and reviewed regularly, and JHLOR conducts weekly and post rain environmental inspections. The Environment Representative also conducts bi-weekly inspections, and any observations are closed out within agreed timeframes.

Monitoring records have validated modelled noise and are consistent with the predicted impact of construction activities on noise catchment areas, including sensitive receivers. One exceedance was reported during the period and three noise complaints. There were no exceedances or project-related complaints regarding vibration impacts.