



ENVIRONMENTAL MONITORING REPORT, OCTOBER 2020

PARRAMATTA LIGHT RAIL INFRASTRUCTURE WORKS

25 October 2020

Parramatta
Connect

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1. Introduction

1.1. Background

Parramatta Light Rail Stage 1 ('Stage 1') will connect Westmead to Carlingford via Parramatta Central Business District (CBD) and Camellia. Stage 1 is expected to be operational in 2023.

Stage 1 will create new communities, connect great places and help both local residents and visitors move around and explore what the region has to offer. The route will link Parramatta's CBD and train station to a number of key locations, including the Westmead Precinct, the Parramatta North Growth Centre, the new Western Sydney Stadium, the Camellia Town Centre, the new Powerhouse Museum and Riverside Theatre arts and cultural precinct, the private and social housing redevelopment at Telopea, the Rosehill Gardens Racecourse and the three Western Sydney University campuses.

Key features of Stage 1 include:

- A new dual track light rail network of approximately twelve (12) kilometres in length, including approximately seven (7) kilometres within the existing road corridor and approximately five (5) kilometres within the existing Carlingford Line and Sandown Line, replacing current heavy rail services
- Sixteen (16) stops that are fully accessible and integrated into the urban environment including a terminus stop at each end of Westmead and Carlingford
- High frequency 'turn-up-and-go' services operating seven days a week from 5am to 1am. Weekday services will operate approximately every 7.5 minutes in the peak period between 7am and 7pm
- Modern and comfortable air-conditioned light rail vehicles, nominally 45 metres long and driver-operated, each carrying up to 300 passengers.
- Intermodal interchanges with existing public transport services at Westmead terminus, Parramatta CBD and the Carlingford terminus
- Creation of two light rail and pedestrian zones (no general vehicle access) within the Parramatta CBD along Church Street (generally between Market Street and Macquarie Street) and along Macquarie Street (generally between Horwood Place and Smith Street)
- A Stabling and Maintenance (SaM) Facility located in Camellia for light rail vehicles to be stabled, cleaned and maintained
- New bridge structures along the alignment including over James Ruse Drive and Clay Cliff Creek, Parramatta River (near the Cumberland Hospital), Kissing Point Road and Vineyard Creek, Rydalmere
- Alterations to the existing road network including line marking, additional traffic lanes and turning lanes, new traffic signals, and changes to traffic flows
- Relocation and protection of existing utilities
- Public domain and urban design works along the corridor and at Stop precincts
- Closure of the heavy rail line between Carlingford and Clyde
- Active transport corridors and additional urban design features along sections of the alignment and within Stop precincts
- Integration with the Opal Electronic Ticketing System (ETS)
- Real time information in light rail vehicles and at Stops via visual displays and audio.



1.1.1. Statutory Context

The Parramatta Light Rail is classified as Critical State Significant Infrastructure (CSSI) and was subject to environmental impact assessment under the *Environmental Planning and Assessment Act 1979* (EP&A Act). The EIS assessed impacts for Parramatta Light Rail Stage 1 (Westmead to Carlingford) including the light rail and associated road enabling works.

Stage 1 received Infrastructure Approval from the Minister for Planning under Section 5.19 of the EP&A Act on 29 May 2018 (Critical State Significant Infrastructure Application SSI-8285), subject to the conditions provided in the Instrument of Approval, specifically Schedule B – Ministerial Conditions of Approval.

The Infrastructure Approval was subsequently modified under Section 5.25 of the EP&A Act on 21 December 2018 and 25 January 2019.

The planning approval, modifications and related environmental assessment documents are located at: http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8285.

A Construction Environmental Management Plan (CEMP) has been prepared for the Parramatta Light Rail Package 4 – Infrastructure Works (Infrastructure Works). The purpose of the CEMP and associated Sub-plans is to address the requirements of the:

- Minister’s Conditions of Approval (CoA) SSI-8285
- Revised Environmental Mitigation and Management Measures (REMMMs)
- Environmental Performance Outcomes (EPOs)
- Applicable legislation and contractual requirements, including the PLR Stage 1 Infrastructure Contract Project Deed (ISD-17-6721).

The REMMMs and EPOs are listed in Parramatta Light Rail Stage 1 Westmead to Carlingford via Parramatta CBD and Camellia Environmental Impact Statement (the EIS), as amended by the Parramatta Light Rail (Stage 1) Westmead to Carlingford via Parramatta CBD and Camellia Submissions Report (incorporating Preferred Infrastructure Report) (March 2018) (the SPIR). The CEMP and associated Sub-plans were approved the Secretary on the 21 November 2019.

1.2. Scope

The scope of this report is to present monthly results of the inspection and monitoring programs outlined in the Infrastructure Works CEMP and associated Sub-plans, including the results of the construction monitoring programs referred to in Condition C9 of the Planning Infrastructure Approval.

Environmental inspections and monitoring are undertaken to:

- Validate the predicted impacts of the Infrastructure Works
- Measure the effectiveness of environmental controls
- Track progress against targets and objectives of the CEMP.

The monitoring requirements for nominated aspects are included in the relevant Sub-plans and summarised in **Table 1-1**.

Where relevant, data will be presented on a progressive basis (i.e. monthly summary) to identify trends.

The data of the monitoring programs will also be reviewed annually in the Annual Environment Reports.



Table 1-1 Monthly Environmental Monitoring Reporting Requirements

CEMP or Sub-plan	Monitoring program	Distribution
Noise and Vibration Management Sub-plan	<ul style="list-style-type: none"> - Locations and descriptions of monitoring undertaken - Noise monitoring results - Summary of any exceedance of the nominated criteria - Corrective actions 	<ul style="list-style-type: none"> - City of Paramatta Council - Cumberland Council - EPA - NSW Health - TfNSW - IC - ER - AA - Made publicly available
Soil and Water Management Sub-plan	<ul style="list-style-type: none"> - Weather forecasts and observations - Water Quality (Turbidity) monitoring - Discharge and dewatering monitoring 	<ul style="list-style-type: none"> - City of Paramatta Council - Cumberland Council - EPA - DOI Water - TfNSW - IC - Made publicly available
Air Quality and Dust Management Sub-plan	<ul style="list-style-type: none"> - Weather observations - Dust deposition monitoring - Real time aerosol dust monitors - Asbestos fibre air monitoring 	<ul style="list-style-type: none"> - EPA - TfNSW - IC - Made publicly available
Grey-headed Flying-fox (GHFF) Construction Monitoring Program	<ul style="list-style-type: none"> - Weekly visual checks of GHFF camp during high risk periods (1 September to 31 January) 	<ul style="list-style-type: none"> - TfNSW



2. Site Activities

Table 2-1 provides a summary of the site activities for October 2020.

Table 2-1 Site Activities During Reporting Period

Precinct	Site Activities
Westmead and North Parramatta	Westmead
	<ul style="list-style-type: none">– Utility installations and property adjustments along Hawkesbury Road and Hainsworth Street– Commencement of drainage and CSR works
	Cumberland
	<ul style="list-style-type: none">– Tree removal– Ongoing utility installations
Parramatta CBD	North Parramatta
	<ul style="list-style-type: none">– Utility installations and property adjustments along Factory Street and Church Street– Tree removal– Commencement of drainage and CSR works
	Area 2 West (CBD)
	<ul style="list-style-type: none">– Utility installations on Church Street, George Street, Smith Street and Macquarie Street– Installation of electrical and lighting– Installation of Multifunction Poles– Minor Civil Works (tree pits, CSR etc) along Church Street– Drainage works along Church Street and Macquarie Street
Camellia and Carlingford line	Area 2 East (Smith Street to Arthur Street)
	<ul style="list-style-type: none">– Utility installations on Harris Street, Macquarie Street, George Street, Purchase Street, Arthur Street and Charles Street– Sewer relocation on Barrack Lane / Arthur Phillip High School– Installation of Multifunction Poles– Heritage investigations on George Street and Robin Thomas Reserve (Sonic drilling)– Drainage works on Tramway Avenue– Tree removal on Tramway Avenue and George Street
	Camellia
	<ul style="list-style-type: none">– Concrete pour works for James Ruse Drive Bridge– Stormwater drainage works at Grand Avenue North– Ongoing utility, stormwater drainage, track and CSR work at Grand Avenue– Clearing and stormwater drainage works
	Carlingford Line
	<ul style="list-style-type: none">– Kissing Point Road girder landing– Vineyard Creek Bridge form retain pour works– CSR work



Precinct	Site Activities
	<ul style="list-style-type: none">- Retaining wall and stormwater drainage works from Rydalmere to Carlingford- Ongoing utility works at Rydalmere and Leamington Road, Dundas- Ongoing utility works for Sydney Water Sewer in Carlingford





3. Monitoring Results

Section 3 presents a summary of the environmental inspection and monitoring programs completed during the reporting period (26 September 2020 to 25 October 2020). Detailed monitoring results for each program are presented in the appendices to this report.

3.1. Inspections

A total of four ER inspections and two AA inspections were completed during the reporting period in addition to 29 internal inspections. **Table 3-1** provides a summary of the number of actions raised and closed within the agreed timeframe.

Table 3-1 Inspections for October 2020

Date	Number of Inspections	Type	Actions	Closed in Time
29/09/2020	8	Internal Inspection	3	Yes
29/09/2020	1	ER Inspection	3	Yes
31/09/2020	1	AA Inspection	0	N/A
02/10/2020	2	Internal Inspection	2	Yes
07/10/2020	7	Internal Inspection	2	Yes
07/10/2020	1	AA Inspection	0	N/A
08/10/2020	1	ER Inspection	7	Yes
08/10/2020	1	Internal Inspection	1	Yes
09/10/2020	2	Internal Inspection	2	Yes
12/10/2020	7	Internal Inspection	9	Yes
13/10/2020	1	ER Inspection	4	Yes
16/10/2020	1	Internal Inspection	2	Yes
20/10/2020	1	ER Inspection	5	Yes
20/10/2020	1	Internal Inspection	3	Yes
Total	35		43	

3.2. Weather

The total rainfall during the reporting period was 35mm with four days with over 1mm of rain. No rain events exceeded the 80th percentile (25.8mm) or the 85th percentile (33.1mm).

During the reporting period, there were 26 days where the maximum wind gust recorded was greater than 25km/hr and two days where the maximum wind gust recorded was greater than 50km/hr. There was a total



of 21 days where wind speeds greater than 25km/hr were forecast and on each of those days, notifications were issued to the construction team to alert them of the strong winds forecast.

A summary of the weather observations and weather events during the reporting period of relevance to the Soil and Water Management Sub-plan and Air Quality Management Sub-Plan Trigger Action Response Plans (TARPs) are summarised in **Table 7-2**. A comparison between long term monthly means and recorded values can be found in **Figure 3-2**.

Detailed weather observation records for October 2020 are presented in **Appendix A-1**.

Table 3-2 Weather Summary and Trigger Weather Events for October¹ 2020

Weather Event	Forecast	Observation
Minimum temperature	7°C	7°C
Maximum temperature	32°C	33.3°C
Total rainfall	61.2mm	35mm
Number of days with rain (>1mm)	10 days	4 days
>80 th percentile (25.8mm) rain events	No events	No events
Flood warning / events	No events	No events
>25km/hr wind ²	21 days	26 days
>50km/hr wind	No days	2 day

¹Weather summary based on data from the 26 September to 25 October (30 days).

²Wind data from Sydney Olympic Park AWS (Archery Centre) {station 066212}. Weather data from Parramatta North (Masons Drive) {station 066124}.

Note: Red text indicates observation greater than forecast.

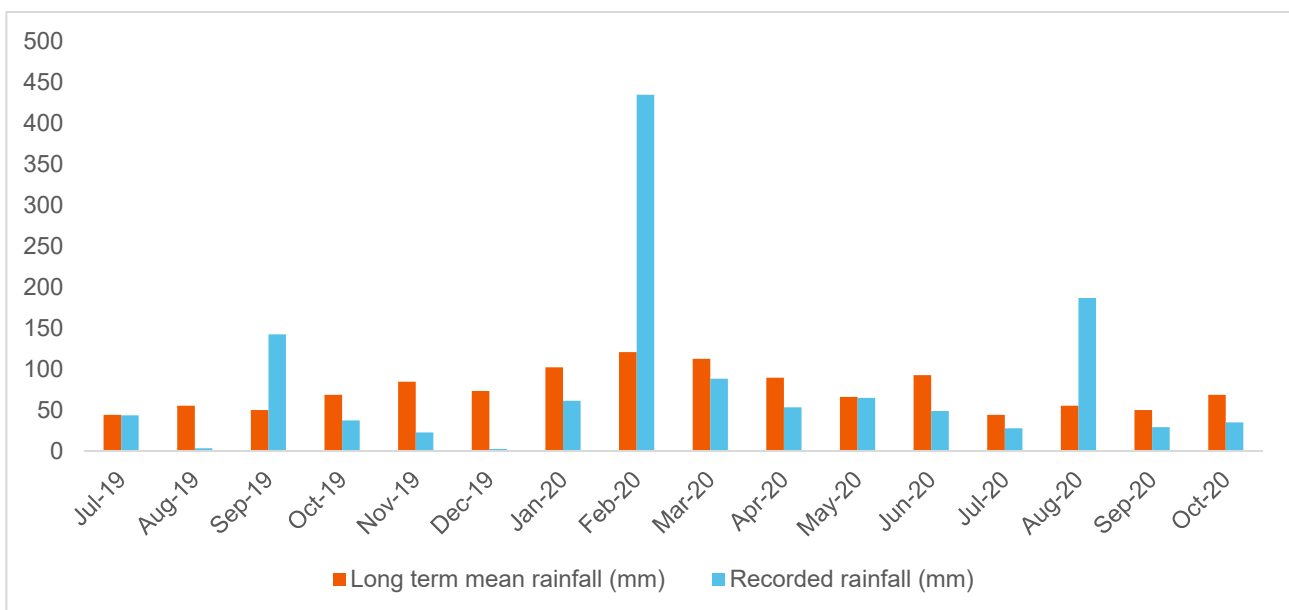


Figure 3-1 Monthly rainfall comparison

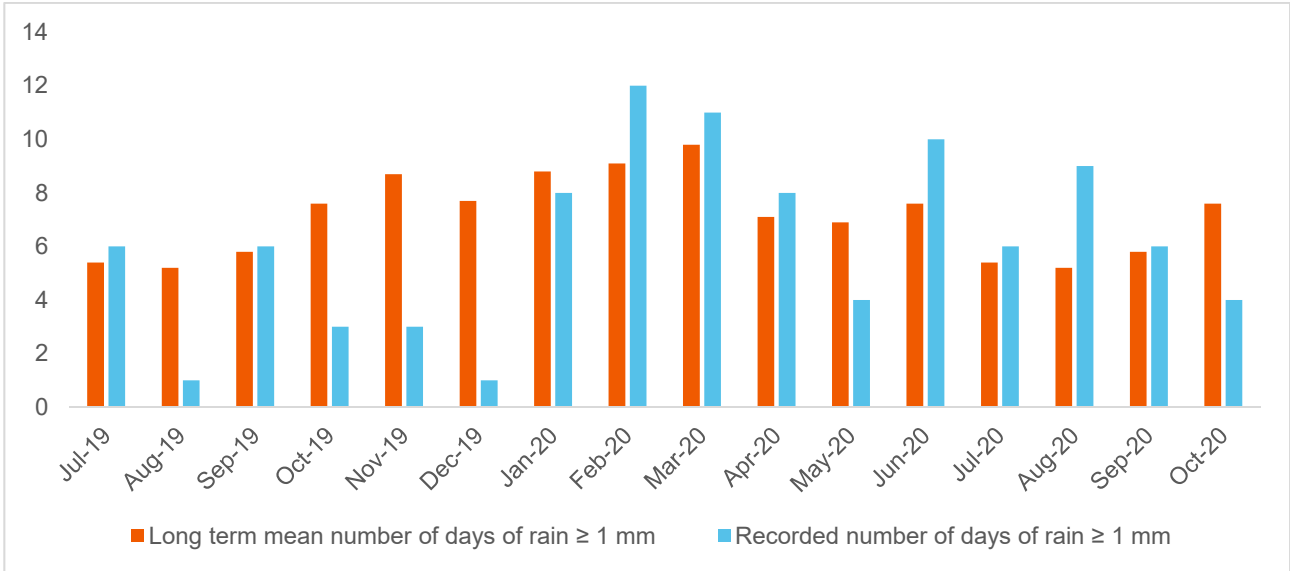


Figure 3-2 Monthly rain days comparison

3.3. Noise and Vibration

Table 3-3 provides a summary of noise monitoring events conducted during the reporting period. Detailed noise monitoring results and comments are presented in **Appendix A-2**. All recorded noise levels ($L_{Aeq15min}$) during the reporting period were below the predicted noise levels.

Additional information on the hours of works, respite requirements and alternative accommodation is provided in the Noise and Vibration Management Sub-plan (Section 11.3).

Vibration monitoring events completed during the reporting period are summarised in **Table 3-4** and detailed results and comments are presented in **Appendix A-2**. All monitoring events were compliant with vibration targets.

All noise and vibration monitors used during the reporting period, together with current NATA calibration data, is provided in **Table 3-5**.

Continuous noise and vibration monitoring was undertaken during the reporting period at medical facilities in Westmead that have been identified as sensitive receivers. In consultation with the Health Administration Corporation, monitoring will be ongoing for 12 months. Locations of the noise and vibration monitors are provided in **Table 3-6**.

Table 3-3 Summary of Noise Monitoring October 2020

Date	Monitoring Location	Attended/Continuous	Description
8/10/2020	Orthodox Church	Attended	Construction noise is clearly audible
8/10/2020	Orthodox Church	Attended	Construction noise is clearly audible
9/10/2020	89 Marshall Rd	Attended	Construction noise is audible most times



Date	Monitoring Location	Attended/Continuous	Description
9/10/2020	Carlingford Station	Attended	Construction noise is audible most times
9/10/2020	22 Adderton Road	Attended	Construction noise sometimes audible
9/10/2020	14 Dudley St	Attended	Construction noise sometimes audible
9/10/2020	Dundas Station	Attended	Construction noise sometimes audible
9/10/2020	Teloepa Station	Attended	Construction noise sometimes audible
16/10/2020	58 Rippon Ave	Attended	Construction noise is audible most times
20/08/2020	Westmead Institute for Medical Research (Sleep Lab)	Continuous	General construction
20/08/2020	Westmead Institute for Medical Research (Brain Dynamics Centre)	Continuous	General construction
26/06/2020	Children's Medical Research Institute (Microscopy Labs)	Continuous	General construction
26/06/2020	Cumberland Hospital (Clinical psychology rooms)	Continuous	General construction

Table 3-4 Summary of Vibration Monitoring October¹ 2020

Date	Monitoring Location	Attended/Continuous	Description
16/10/2020	58 Rippon Ave, Dundas	Attended	No comment
21/10/2020	Leamington Rd	Attended	No comment
6/10/2020	Camellia	Attended	No comment
9/10/2020	Rydalmere	Attended	No comment
16/06/2020	Hawkesbury Road Westmead Institute for Medical Research (HAL incubators)	Continuous	General construction
16/06/2020	Hawkesbury Road Westmead Institute for Medical Research (Microscopy Labs)	Continuous	General construction



Date	Monitoring Location	Attended/Continuous	Description
16/06/2020	Hawkesbury Road Children's Medical Research Institute (Microscopy Labs)	Continuous	General construction

Table 3-5 Noise and Vibration Monitors and NATA Calibration

Equipment ¹	Serial Number	Calibration Date
Noise Level Meter	00973277	4/12/2020
Noise Level Meter	00661732	19/05/2021
Vibration Monitor	BE14639	5/12/2020
Vibration Monitor	BE17441	16/07/2021

¹Continuous monitoring equipment installed at the Westmead Institute for Medical Research and the Children's Medical Research Institute is owned and operated by Renzo Tonin.

Table 3-6 HAC Noise and Vibration Monitor Locations

Organisation	Monitor Type	Location
Westmead Institute for Medical Reach	Vibration Monitor	HAL incubators
		Microscopy Labs
	Noise Monitor	Sleep Lab
		Brain Dynamics Centre
Children's Medical Research Institute	Vibration Monitor	Microscopy Labs
	Noise Monitor	Labs (Level 1)
Cumberland Hospital	Noise Monitor	Clinical psychology rooms

Note: The calibration of the monitoring equipment is checked in the field before and after the noise measurement period per Standards Australia AS/IEC 60942:2004/IEC 60942:2003–Electroacoustic – Sound Calibrators.

3.4. Soil and Water

3.4.1. Water quality in receiving waters

A pre-construction investigation to establish water quality objectives for the project is included within the EIS Technical Paper 6 – Water Quality Assessment.

In accordance with the Soil and Water Management Sub-plan, there was no water monitoring required to be undertaken during the reporting period.



Table 3-7 Water Monitor Calibration

Equipment ¹	Serial Number	Calibration Date
Water Quality Monitor	DV7F6E7J	21/08/2021

¹All equipment is calibrated by NATA standards.

3.4.2. Discharge and dewatering

There were four discharge events during the reporting period as presented in **Table A-3-2**.

3.5. Air Quality

3.5.1. Dust Deposition Monitoring

A dust deposition gauge was installed at 13A Grand Avenue in Camellia in December 2019 in advance of works which commenced at the beginning of February 2020. Baseline data indicated that the value of Total Insoluble Matter (TIM) was 3.9 g/m² before the commencement of construction activities at 13A Grand Avenue.

Additional dust gauges were installed as per the Air Quality Management Plan in July 2020 at Rydalmere Station and Dundas Station, in August 2020 at Carlingford and September in Telopea as large-scale earthworks are ongoing.

The dust monitoring results are presented one month in arrears.

Dust deposition results are summarised in **Table A-4-1** in **Appendix A-4**. All results from last month were within Total Insoluble Matter limits.

3.6. Flora and Fauna

3.6.1. Grey-Headed Flying Fox Monitoring

Under Condition of Approval C9, a Grey-Headed Flying Fox (GHFF) Construction Monitoring Program has been developed by TfNSW. The requirements of this Program have been reflected in the Flora and Fauna Management Plan.

The Grey-Headed Flying Fox camp is in Parramatta Park which lies approximately 150m from the project boundary at the nearest point.

Visual observation inspections must be carried out during the ‘high risk’ months of September to January, inclusive. In the event that distress is observed within the camp, immediate notification must be provided to TfNSW. During the reporting period, no indicators of stress or abnormal behaviour were observed during weekly inspections.

Table 3-8 Observations from Visual Monitoring

Date	Time	Temperature	Works	Notification Triggers ¹	Comments
07/10/2020	14:17	22°C	Utility installation, vac truck, excavations,	No	No indicators of stress or abnormal behaviour were observed during the inspection.



Date	Time	Temperature	Works	Notification Triggers ¹	Comments
			jackhammer operating		No construction works can be heard.
14/10/2020	10:49	21°C	Utility installation	No	No indicators of stress or abnormal behaviour were observed during the inspection. No construction works can be heard.
22/10/2020		25.8°C	No project works, only Park Trust undertaking lawn mowing	No	GHFF observed to be distressed during lawn mowing (non-PCPLR works). No construction works can be heard.

¹Notification triggers include: >50% of the roost takes flight for over 20 minutes, GHFF leaving the roost in daylight hours, unusual vocalisations, located on or 2m from the ground, panting, saliva spreading, adults moving away from young, GHFF injured or killed on site (including aborted fetuses).



Appendices

A-1 Weather Observations

Table A-1-1 Weather Observations: Parramatta North (Masons Drive) {station 066124}.

Date	Temperatures		Rain mm	Temp °C	RH %	9:00 AM		
	Min	Max				Cld 8th	Dir	Spd km/h
	°C	°C						
26/09/2020	7.8	17.6	0.4	13	35	2	SW	41
27/09/2020	7	18.5	0	14.6	48	0	SW	9
28/09/2020	7.5	20.5	0	15	79	0	NW	4
29/09/2020	8	19.6	0	16.5	58	6	ENE	4
30/09/2020	8	21.2	0	16.6	62	8	WNW	4
1/10/2020	13.5	25.7	1	20.8	53	3	SW	6
2/10/2020	8.2	28.7	0	18	62	0	WSW	4
3/10/2020	9.3	30	0	22.6	53	0	ENE	2
4/10/2020	12.6	32.2	0	19	79	3	NNE	2
5/10/2020	13	33.3	0	25.5	38	0	NNE	15
6/10/2020	16.3	20.3	0	17	80	8	SW	6
7/10/2020	15.3	21.5	0	18.7	83	8	SE	4
8/10/2020	14.3	29.4	0.6	19.2	92	7	WSW	2
9/10/2020	10.8	23	0	18.2	52	5	WSW	6
10/10/2020	9.7	26.8	0	16.3	52	0	W	11
11/10/2020	9.5	28	0	19.5	47	2	NW	4
12/10/2020	15.8	25.7	0	18.8	78	7	SW	2
13/10/2020	12	29.8	0	19.3	72	0	W	6
14/10/2020	15.3	22.8	0	18.8	73	6	S	7
15/10/2020	12.6	30.3	0	20.6	69	3	W	4
16/10/2020	16.7	20.2	0	18.3	80	8	SSE	6
17/10/2020	14.5	30	0	19.4	82	8	NE	9
18/10/2020	16.3	25.3	2.4	20.8	70	8	NE	2
19/10/2020	14.5	21.5	4	16.5	79	8	SSW	9
20/10/2020	15.2	22.2	0	17	82	8	ENE	2
21/10/2020	10.8	25	0	19.6	69	2	NNE	7
22/10/2020	12.8	25.8	0	17.5	87	8	NNW	2
23/10/2020	13.8	29.4	0	20.2	82	4	NW	2
24/10/2020	17	24.6	6.6	22.3	82	8	NNW	4
25/10/2020	12.5	*	20	13.8	84	8	SSE	19



Table A-1-2 Wind Observations: Sydney Olympic Park AWS (Archery Centre) {station 066212}.

Date	Maximum Wind Gusts			9:00 AM		3:00 PM	
	Direction	Speed	Time	Direction	Speed	Direction	Speed
		km/h	local		km/h		km/h
26/09/2020	NW	50	8:58	WNW	28	W	20
27/09/2020	ESE	39	14:32	W	17	SE	19
28/09/2020	E	24	15:48	W	6	E	11
29/09/2020	ESE	28	13:45	S	4	E	13
30/09/2020	N	30	13:07	NNW	6	NNW	13
1/10/2020	WNW	35	5:46	WNW	15	WSW	13
2/10/2020	WNW	24	10:31	WNW	7	NW	6
3/10/2020	NE	33	16:56	*	Calm	NE	13
4/10/2020	ESE	28	14:50	*	Calm	E	17
5/10/2020	SSE	39	22:36	N	11	NNW	15
6/10/2020	SSE	43	23:33	SSW	9	SE	13
7/10/2020	SE	19	15:46	S	6	E	2
8/10/2020	NW	43	13:31	N	7	W	17
9/10/2020	NW	46	14:17	WNW	9	WNW	22
10/10/2020	W	30	13:50	WSW	11	WSW	11
11/10/2020	SSE	35	14:31	*	Calm	S	6
12/10/2020	ESE	30	14:10	SW	6	E	20
13/10/2020	SSE	41	18:47	WNW	7	ESE	7
14/10/2020	ESE	28	13:53	S	7	SE	19
15/10/2020	N	28	10:05	N	13	E	17
16/10/2020	S	37	6:56	S	15	SE	17
17/10/2020	NE	28	9:05	N	9	E	11
18/10/2020	SE	35	16:06	*	Calm	E	17
19/10/2020	ESE	30	14:22	S	11	ESE	17
20/10/2020	ESE	30	14:53	ENE	4	E	17
21/10/2020	E	28	15:02	NNE	9	NE	11
22/10/2020	E	31	16:32	WNW	2	E	15
23/10/2020	ENE	35	16:15	WSW	7	ENE	15
24/10/2020	S	50	22:36	N	9	*	Calm
25/10/2020	*	*	*	S	17	S	11

Notes:

Blue text indicates a rain event greater than 1mm of rain.

The orange text indicates a rain event greater than the 80th percentile of 25.8mm, and a wind speed of greater than 25km/hr

Red text indicates a rain event greater than the 85th percentile of 33.1mm, and a wind speed greater than 50km/hr.

* Data was unavailable.



A-2 Noise and Vibration Monitoring Results

Table A-2-1 Noise Monitoring Results

Date	Time	Works Period	Construction Activity	Activity Location	Monitoring Location	NML (dBA)	Predicted (dBA)	Additional Mitigation Measures	L _{Amax}	Recorded L _{eq, 15min} (dBA)	Exceedance of Predicted (dBA)	Exceedance of Predicted	Comments
8/10/2020	16:25	Standard Hours	Sewer by bypass	Orthodox Church	Orthodox Church	53	75	PN, V	67.8	62.6	-12.4	No	Construction noise is clearly audible
8/10/2020	16:02	Standard Hours	Sewer by bypass	Orthodox Church	Orthodox Church	53	75	PN, V	67.2	56.1	-18.9	No	Construction noise is clearly audible
9/10/2020	13:36	Standard Hours	Lime machine	89 Marshall Rd	89 Marshall Rd	55	-	PN, V, SN	64.1	50.3	-	N/A	Construction noise audible most times
9/10/2020	13:11	Standard Hours	Utilities	Carlingford Station	Carlingford Station	56	-	PN, V, RP	68.4	59.2	-	N/A	Construction noise audible most times
9/10/2020	14:20	Standard Hours	Haulage	22 Adderton Road	22 Adderton Road	61	-	PN, V, RP	82.5	66.7	-	N/A	Construction noise sometimes audible
9/10/2020	15:08	Standard Hours	Retaining wall Form Retain Pour	14 Dudley St	14 Dudley St	53	-	PN, V, RP	83.1	64.3	-	N/A	Construction noise sometimes audible
9/10/2020	14:23	Standard Hours	Form Retain Pour	Dundas Station	Dundas Station	61	-	PN, V, RP	69.4	56.5	-	N/A	Construction noise sometimes audible
9/10/2020	13:59	Standard Hours	Haulage	Telopea Station	Telopea Station	55	-	PN, V, RP	79	61.1	-	N/A	Construction noise sometimes audible
16/10/2020	9:47	Standard Hours	Piling	58 Rippon Ave	58 Rippon Ave	55	80	PN, V, RP	99.7	78.5	-2.5	No	Construction noise audible most times
26/06/2020	Continuous monitoring		Construction works	Hawkesbury Road works	Westmead Institute for Medical Research (Sleep Lab)	40	*	*	*	*	*	No	Activities are reviewed in response to exceedance alerts. Where the exceedance is attributed to construction, a review is undertaken of works and plant/equipment or methodology is modified where necessary.
26/06/2020	Continuous monitoring		Construction works	Hawkesbury Road works	Westmead Institute for Medical Research (Brain Dynamics Centre)	60	*	*	*	*	*	No	
26/06/2020	Continuous monitoring		Construction works	Hawkesbury Road works	Children's Medical Research Institute (Microscopy Labs)	60	*	*	*	*	*	No	
26/06/2020	Continuous monitoring		Construction works	Cumberland Hospital	Cumberland Hospital (Clinical psychology rooms)	60	*	*	*	*	*	No	

Notes:

Standard hours:

- a) All areas excluding Eat Street and Camellia – Monday to Friday 7:00 am to 7:00 pm. Saturday 8:00 am to 6:00 pm
- b) Eat Street (Church Street between Palmer Street and George Street) – Monday to Friday 7:00 am to 6:00 pm. Saturday 8:00 am to 12:00 pm)
- c) Camellia, Rosehill and Rydalmere (east of James Ruse Drive to Victoria Road) – 24 hours a day and seven days a week provided that sensitive receivers are not affected by noise levels of greater than 5 dBA above the rating background level at any residence

OOHW Period 1 is defined as:

- a) 6:00pm to 10:00pm (evenings) Monday to Saturday
- b) 7:00am to 8:00am and 1:00pm to 10:00pm (day & evening) Saturday and
- c) 8:00am to 6:00pm Sunday and public holidays (days).

OOHW Period 2 is defined as:

- a) 10:00pm to 7:00am (nights) Monday to Saturday and
- b) 6:00pm to 8:00am (nights) Sundays and public holidays.

Additional Mitigation Measures

- PN = Project Notification
- V = Verification Monitoring
- RP = Respite Period
- AA = Alternate Accommodation
- SN = Specific Notification / individual briefing or phone call
- DR = Duration Reduction
- RO = Project Specific Respite Offer



Table A-2-2 Vibration Monitoring Results

Date	Time	Works Period	Construction Activity	Activity Location	Monitoring Location	Trigger Value (mm/s)	Recorded PVS (mm/s)	Exceedance of Target	Construction Vibration Exceedance	Comments
16/10/2020	09:45-10:02	Standard work hours	Piling	58 Rippon Ave, Dundas	58 Rippon Ave, Dundas	25	1.171	No	No	No comment
21/10/2020	08:00-08:23	Standard work hours	Rock hammering	Leamington Rd	Leamington Rd	25	2.423	No	No	No comment
6/10/2020	09:55-17:00	Standard work hours	Rolling	Camellia	Camellia - Caltex line	25	4.286	No	No	No comment
9/10/2020	15:42-16:07	Standard work hours	Rolling/compacting	Rydalmere	Rydalmere	25	19.15	No	No	No comment
26/06/2020		Continuous monitoring	Hawkesbury Road works	Hawkesbury Road	Westmead Institute for Medical Research (HAL incubators)	0.1 mm/s	*	No	No	Activities are reviewed in response to exceedance alerts. Where the exceedance is attributed to construction, a review is undertaken of works and plant/equipment or methodology is modified where necessary.
26/06/2020		Continuous monitoring	Hawkesbury Road works	Hawkesbury Road	Westmead Institute for Medical Research (Microscopy Labs)	0.1 mm/s	*	No	No	
26/06/2020		Continuous monitoring	Hawkesbury Road works	Hawkesbury Road	Children's Medical Research Institute (Microscopy Labs)	0.1 mm/s	*	No	No	

A-3 Water Sampling and Discharge Results

Table A-3-1 Discharge Water Quality

Discharge monitoring Point ID	Type of Monitoring Point	Type of Discharge Point	Date	Discharge Permit #	Oil and Grease (Not visible)	pH (6.5 - 8.5)	Turbidity (NTU)	Comments
A2.39	Basins and settling containers	Stormwater inlet	9/10/2020	DW-A2_033	Not visible	7.76	15.96	Discharge from Sydney Water main
A2.39	Basins and settling containers	Stormwater inlet	9/10/2020	DW-A2_034	Not visible	7.86	19.59	Discharge from Sydney Water main
A2.36	Basins and settling containers	Stormwater inlet	9/10/2020	DW-A2_035	Not visible	8.38	1.1	Discharge from Sydney Water main
A2.36	Basins and settling containers	Stormwater inlet	9/10/2020	DW-A2_036	Not visible	8.42	1.7	Discharge from Sydney Water main



A-4 Dust Deposition Results

Table A-4-1 Summary of Dust Deposition Data

Date	Monitoring Location	Total Insoluble Matter g/m ² /month
January	13a Grand Avenue	3.9
March	13a Grand Avenue	4
April	13a Grand Avenue	4.1
May	13a Grand Avenue	4.9
June	13a Grand Avenue	3.5
July	13a Grand Avenue	12
July	Rydalmere Station	21.7
July	Dundas Station	0.7
August	13a Grand Avenue	2.8
August	Rydalmere Station	2.6
August	Dundas Station	0.5
August	Carlingford	0.9
September	13a Grand Avenue	1.2
September	Rydalmere Station	2.3
September	Dundas Station	1.3
September	Telopea	2.9
September	Carlingford	2.5
October	13a Grand Avenue	-
October	Rydalmere Station	-
October	Dundas Station	-
October	Telopea	-
October	Carlingford	-