




**SYDNEY METRO - WESTERN SYDNEY AIRPORT  
STATION BOXES AND TUNNELLING WORKS**

# Noise and Vibration Monitoring Report (May - October)

Sydney Metro Western Sydney Airport Station Boxes and Tunnelling Works

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## Document approval

Rev	Date	Prepared by	Reviewed by	Approved by
01	30/11/2023	Joshua Cosier	Jeremy Slattery	Jeremy Slattery
Signature:				

## Details of Revision Amendments

### Document Control

The Project Director is responsible for ensuring that this report is reviewed and approved. The Project Discipline Director is responsible for updating this plan to reflect changes to construction, legal and other requirements, as required.

### Amendments

Any revisions or amendments must be approved by the Project Director and/or client before being distributed/implemented.

### Revision Details

Revision	Details
00	Compliance report for issue to SM and stakeholders



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# 1. Introduction

## 1.1. Background

The Sydney Metro Western Sydney Airport will become the transport spine for Greater Western Sydney, connecting communities and travellers with the new Western Sydney International (Nancy-Bird Walton) Airport (referred to as Western Sydney International) and the growing region.

The Project forms part of the broader Sydney Metro network. It involves the construction and operation of a 23km new metro rail line that extends from the existing Sydney Trains suburban T1 Western Line (at St Marys) in the north and the Aerotropolis (at Bringelly) in the south. The alignment includes a combination of tunnels and civil structures, including viaduct, bridges, surface and open-cut troughs between the two tunnel sections.

The Sydney Metro Western Sydney Airport EIS was prepared in October 2020 to assess the impacts of construction and operation of the Project and was placed on public exhibition between 21 October 2020 and 2 December 2020. The Project was declared a Critical State Significant Infrastructure (CSSI) Project and is listed in Schedule 5 of *State Environmental Planning Policy (State and Regional Development)*.

The Sydney Metro Western Sydney Airport was approved by the Minister for Planning and Public Spaces on 23 July 2021 (SSI 10051) under section 5.19 of the *Environmental Planning and Assessment Act 1997* (EP&A Act).

The Project will be delivered through the following stages:

- **Advanced and Enabling Works (AEW)** – Site investigations, modification of the existing transport network, power and water supply for construction sites, utility and stormwater diversions and some demolition works.
- **Station Boxes and Tunnelling Works (SBT)** – delivered through the following sub-stages:
  - Preparatory Works (the subject of this Plan) – Including NSW (off-airport) demolition works, site levelling/grading, site access and parking, utility and temporary services works, erection of demountable buildings and noise barriers, tunnelling preparatory works and use of ancillary facilities including onsite parking.
  - Bulk Excavation and Tunnelling Works – Preparatory Works (works not completed prior to Final CEMP approval), bulk excavation, acoustic shed installation, tunnelling and cross passage installation.
- **Surface and Civil Alignment Works (SCAW)** – Construction of bridges and viaducts to cross floodplains, watercourses and existing and proposed permanent infrastructure.
- **Stations, Systems, Trains, Operations and Maintenance (SSTOM)** – Station design and fitout, testing and commissioning, and operation of the Western Sydney Airport metro service
- **Finalisation Auxiliary Works.**

Each package of work is to be delivered under separate contracts on behalf of the proponent Sydney Metro.





Figure 1: Overview of the Project



### 1.1.1. Station Boxes and Tunnelling Works

The CPB Ghella JV (CPBG) has been engaged to deliver the SBT Works. The SBT Works include the design and construction of:

- Two sections of twin tunnels with a total combined length of approximately 9.8km, including associated portal structures; Orchard Hills to St Marys and Western Sydney International (WSI) airport to the new Aerotropolis Station in NSW
- Excavations at either end to enable trains to turn back and stub tunnels to enable future extensions.
- Station box excavations with temporary ground support for four stations at St Marys, Orchard Hills, Airport Terminal and Aerotropolis
- Excavations for two intermediate service facilities, one in each of the tunnel sections at Claremont and Bringelly.

Completed sections of the SBT Works, including established construction worksites, will be progressively handed over to Sydney Metro to enable follow-on contractors to commence works. The exception is the on-airport Precast Segment Storage Facility which will be decommissioned and hydroseeded following the completion of segment manufacture.

### 1.1.2. Site List

CPBG has eight Project sites, five of which are in NSW under the CSSI 10051 and the other three are on Commonwealth land under the Airport Plan. The Airport Plan sites are greyed out in the below table. The CSSI sites are north and south of the Commonwealth airport site.

Table 1: SBT Worksite overview

Jurisdiction	Worksite	Abbreviation
NSW (north of Airport)	St Marys	STM
NSW (north of Airport)	Claremont Meadows	CMF
NSW (north of Airport)	Orchard Hills	OHE
On-Airport	Airport Portal Dive Structure	APB
On-Airport	Airport Terminal and TBM shaft	ATL
On-Airport	Primary Spoil Reveal	FS01
NSW (south of Airport)	Bringelly	BSF
NSW (south of Airport)	Aerotropolis	AEC



## 1.2. Purpose of this report

The purpose of this report is to present results of the Noise and Vibration Monitoring Program outlined in the SBT Construction Environmental Management Plan (CEMP) and Construction Noise and Vibration Management Sub-plan, including the results of the construction monitoring programs referred to in Condition C13 of the Infrastructure Approval.

The Noise and Vibration Monitoring Report has been prepared to address Minister’s Condition of Approval (CoA) C22 of the Infrastructure Approval (refer to Table 3). This report will be provided to the relevant regulatory authorities as detailed in the relevant Sub-plan (refer to Table 2).

Environmental monitoring is undertaken to:

- Validate the predicted impacts of the Infrastructure Works
- Measure the effectiveness of environmental controls in minimising and managing environmental impacts.
- Demonstrate compliance with relevant stakeholder conditions.

The monitoring requirements for nominated aspects are included in the relevant environmental management sub-plans and summarised in Table 2.

Table 2: Environmental Monitoring Reporting Requirements

CEMP or Sub-plan	Monitoring Program	Report	Distribution	Schedule (during construction)
Noise and Vibration Management Sub-Plan	Noise and Vibration Monitoring Program	Noise and Vibration Monitoring Report	EPA, DPE	Semi-annual

Table 3: Conditions of Approval (CoA)

CoA	Detail	Addressed
C15	The Noise and Vibration Construction Monitoring Program must include:	NVCMP
	(a) noise and vibration monitoring at representative residential and other locations (including at the worst- affected residences), subject to property owner approval, to confirm construction noise and vibration levels;	
	(b) monitoring undertaken during the day, evening and night-time periods throughout the construction period and cover the range of activities being undertaken;	NVCMP Section 2 : Monthly Noise data
	(c) method and frequency for reporting monitoring results; and	NVCMP Section 2: Monthly Noise data
	(d) a process to undertake real time noise and vibration monitoring.	NVCMP 1.6 Continuous Monitoring





CoA	Detail	Addressed
	The results of the monitoring must be readily available to the construction team, the Proponent and ER. The Planning Secretary and EPA must be provided with access to the results on request.	This Report
C22	The results of the Construction Monitoring Programs must be submitted to the Planning Secretary, ER and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program	This Report

### 1.3. On-site Activity

All station boxes and service facility sites have been established with all support services completed. St Marys, Orchard Hills, Airport Business Park and Aerotropolis station boxes have been completed. The Airport Terminal station box will be completed in the upcoming months. Claremont Meadows and Bringelly shafts have both been completed. All four TBMs have commenced tunnelling, with two in the north being launched from Orchard Hills and two in the south being launched from Airport Business Park.

The progress of construction at each site has followed the general process of site establishment and clearing, contamination management, ERSED installation and development, excavations, station box and service facility construction, TBM construction and support development and tunnelling. Water Treatment Plants have been constructed on all sites with commissioning taking place.

### 1.4. Monthly Construction Updates

#### 1.4.1. May

- Setup continues at ABP for tunnelling with the thrust frame installed this week.
- Ancillary services continued with the grout plant at ATL commissioned.
- Across the job piling is ending with 2 weeks remaining at STM and OHE.
- Box excavation has continued
- All sites are in full excavation, anchor support mode.
- FS01 is now taking material from ATL and ABP.

#### 1.4.2. June

- Across the project all capping beam is constructed and piling complete.
- The box, shaft and dive excavations are all proceeding with anchoring and shotcreting at each site proceeding well.
- Stub excavation is underway at AEC and at STM.



### 1.4.3. July

- This month has seen the launch of the first Northern TBM 1 (Catherine).
- The second TBM has been lowered into position in the dive and is being commissioned. The month of July has also seen the first TBM breakthrough with TBM#3 (Eileen) breaking through into Airport Terminal Station.
- Cross passages in the South have commenced with XPS2 and XPS3 currently in the excavation phase.
- In station boxes St Marys has completed heading excavation in the stub tunnels
- Aerotropolis has also completed stub tunnels headings and waterproofing of the short 10m stub is complete.
- In box excavation all anchor works are complete at AEC. Airport Terminal has reached invert level and poured 100m of TBM traverse slab.

### 1.4.4. August

- This month the focus is on portions completion with N7 complete and N5 works physical completion.
- The process to close out QA has improved with each portion and N5 progressing.
- Portion N1 and S3 are also approaching completion with a focus on ensuring all activities achieve the physical completion in line with the project programme.
- TBM#2 (Marlene) has been launched this month.
- A strong focus on getting TBM#2 (Marlene) launched and out of the zone of portion N5 to allow completion of this portion.
- TBM#1 (Catherine) has had the remaining gantries installed and blind rings removed. The final conveyor configuration is being installed.
- In the South the TBM#3 (Eileen) has broken through into Airport Terminal Station Box. Traverse through the station continues, delayed by completion of the station box excavation.
- TBM#4 (Peggy) has made good progress and will break through into Airport Terminal Station Box on the 30/8/2023.



### 1.4.5. September

- Substantial completion of the following portions:
  - N1a (St Mary Station Box and laydown),
  - N5a (Orchard Hills), N5b (Orchard Hills Station box) and
  - S6 (Aerotropolis).
- Portions N5b (Orchard Hills Station box) and S6 (Aerotropolis) are also approaching completion with a focus on ensuring all activities achieve physical completion in line with the project programme.
- TBM#1(Catherine) and TBM#2 (Marlene) are now in final configuration including the conveyor belt system.
- The TBMs will progress in open mode focusing on productivity.
- In the South the TBM#3 (Eileen) has broken through into Airport Terminal Temporary shaft.
- Traverse through the station has been completed for TBM#4 (Peggy).

### 1.4.6. October

- Substantial completion
  - N5b (Orchard Hills Station box) and
  - S6 (Aerotropolis).
- Physical works are complete in N1b (St Mary Stub tunnels).
- TBM#1(Catherine) and TBM#2 (Marlene) continue tunnelling in the North
- The first two cross passage ramps are poured in the North (XP21 and XP20).
- TBM#3 (Eileen) has relaunched from the Airport Terminal Temporary Shaft and
- TBM#4 (Peggy) will complete bullflex grouting and recommence production tunnelling.
- Cross passages in the south continue also with permanent concrete invert poured in cross passages.
- Bringelly and Claremont Meadows have both finished base slab construction.



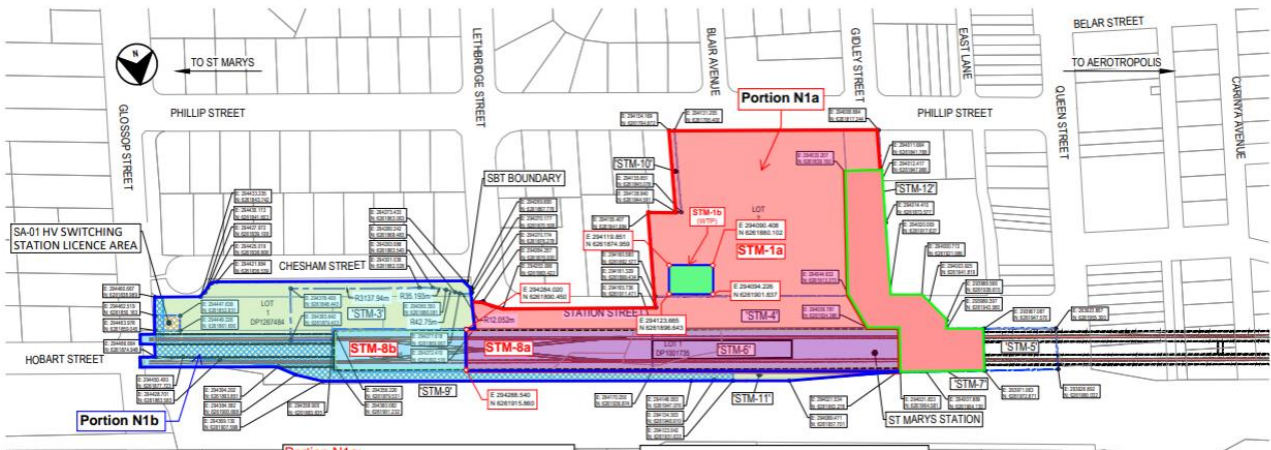


Figure 2: STM Portions Maps

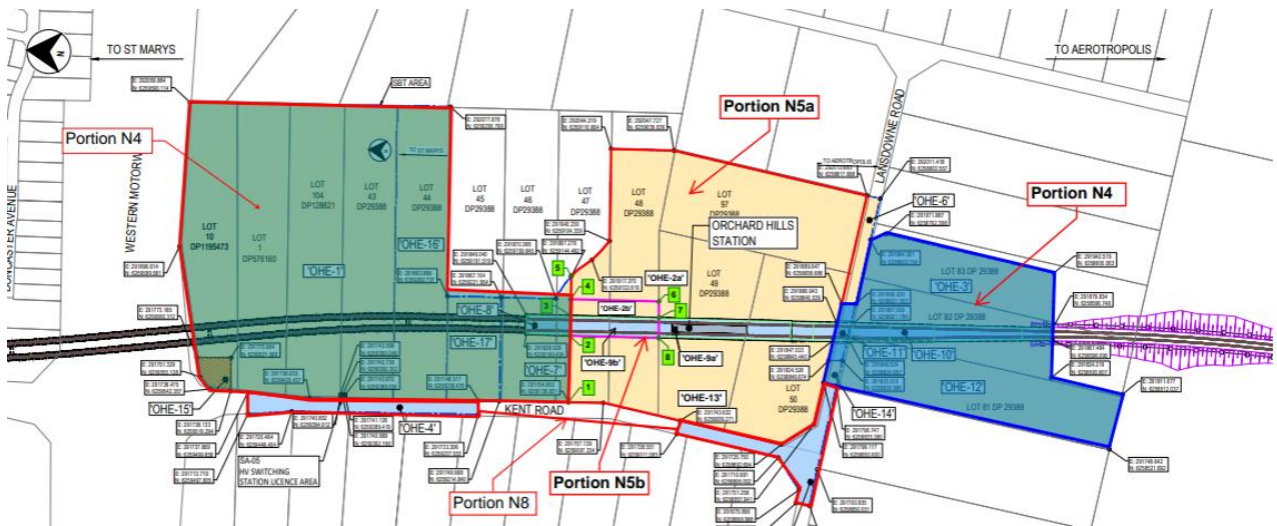


Figure 3: OHE Portions Map



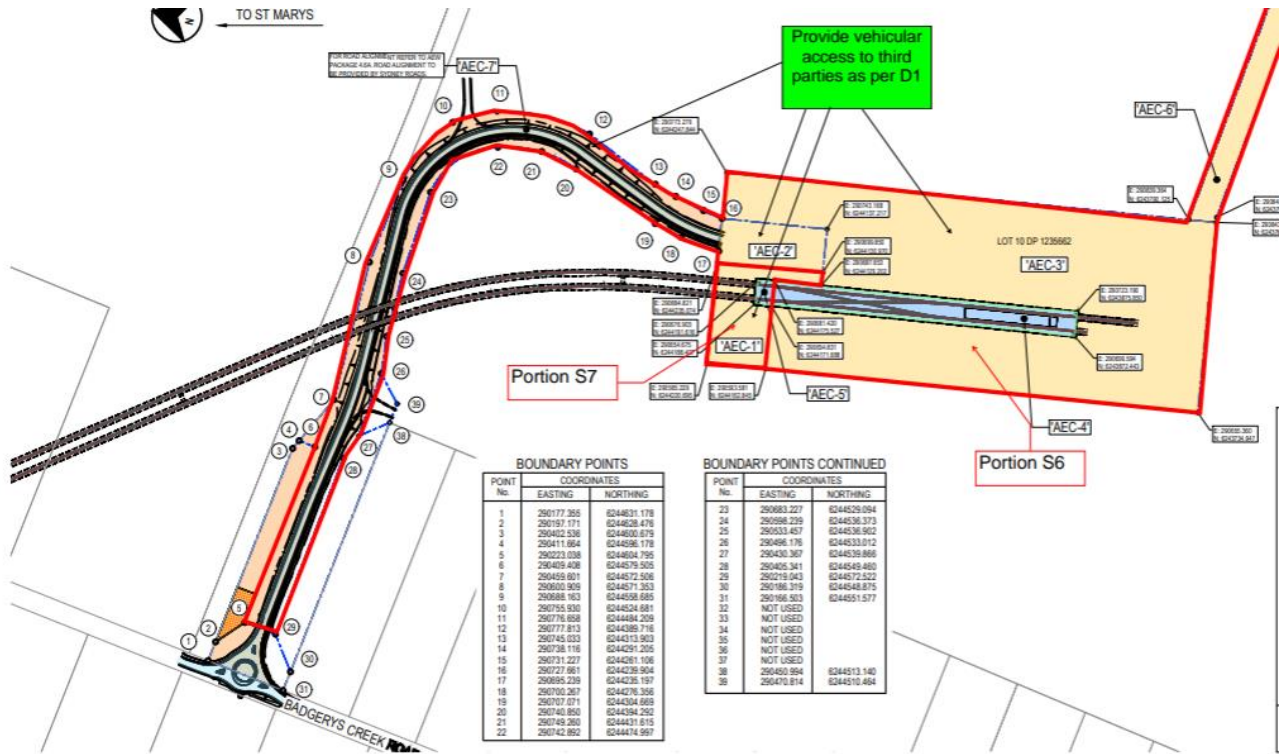


Figure 4: AEC Portions Map



## 1.5. Monitoring

Noise monitoring is a requirement of both the CSSI 10051 approval and EPL 21672. Monitoring is required:

- To validate the noise predictions for works undertaken outside of the standard construction hours as per the DNVIS.
- As a result of noise and vibration complaints; or
- As otherwise directed.

Results of monitoring will be used for:

- The evaluation of performance relative to legal, regulatory, contract, permit, licence and other commitments
- The prompt identification and correction of incidents or possible incidents
- Providing feedback on approval documents; and
- Providing the basis of internal and external reporting.

Between June 2023 and October 2023, the project has had eight community complaints relating to noise and one relating to vibration. A breakdown of complaints by month and site can be found in Table 4.

Table 4: Community Noise and Vibration Complaints

Month	Site	Complaint Type	Works undertaken at the time of complaint
June	Orchard Hills	Noise	OOHW Low Impact Work
			OOHW Low Impact Work
			OOHW Low Impact Work
July	Orchard Hills		OOHW Low Impact Work
	St Marys		OOHW Low Impact Work
August	St Marys		OOHW under community agreement
September	Orchard Hills		OOHW Tunnelling Work
October	St Marys		Vibration

After a complaint is made an internal investigation takes place, which may include on-site noise and vibration monitoring. All investigations concluded that SBT works were justified and not the probable cause of the noise and vibration.

The results of monitoring between May and October 2023 are presented below. Any anomalous readings or exceedances are identified within the Comments column of the tables.





## 1.6. Continuous Monitoring

Continuous noise monitoring was undertaken across each site undertaken by Sitehive units recording LAeq. The results from each sitehive unit are shown in Annexure A. Each monitoring has undertaken monitoring throughout the reporting period. The larger daily spike may be contributed to external noise impacts. Gaps within the sitehive data is due to technical issues or unit needed to be replaced.

## 1.7. Vibration monitoring

Throughout the reporting period, the Goods Shed adjacent to the St Marys Station Box site underwent continuous vibration monitoring. There was no significant exceedances recorded, except for a minor instance exceeding the amber limit by 0.25mm/s above the threshold of 1.05mm/s. This exceedance was investigated and revealed that no SBT works were taking place at the time, external factors were likely responsible for the incident.

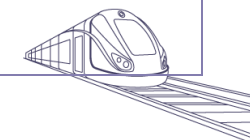
Ground borne noise monitoring was also undertaken between the 27<sup>th</sup> of October and the 3<sup>rd</sup> of November, in accordance with Sections 3 of the Noise and Vibration Monitoring Program. Monitoring was undertaken within 75A Blackwood Street Claremont Meadows. Results of monitoring will be presented within the next 6 monthly noise and vibration compliance report.



## 2. Monthly Noise data

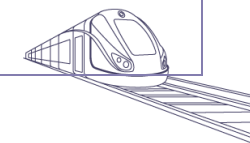
### 2.1. May 2023

Date	Time	Works Period	Construction Activity	Activity Location	Monitoring Location	NML (dBA)	Predicted (dBA)	Additional Mitigation Measures	Recorded L <sub>eq, 15min</sub> (dBA)	L <sub>Amax</sub>	L <sub>Amin</sub>	Exceedance of Predicted (dBA)	Exceedance of Predicted	Comments
6/5/2023	1:08pm	Day	Anchor Installaion	SBT Claremont Meadows	Inside of the site	47	N/A	-	51.4	63.9	47.6	-	Yes	On site Monitoring
6/5/2023	2:09pm	Day	Anchor Installation	SBT Claremont Meadows	1 Dolphin Cl, Claremont Meadows	47	N/A	-	45.4	60.7	38	-1.6	No	On site monitoring.
8/05/2023	7:42pm	Evening	Excavation	SBT St Marys	2 Station Street, St Marys	47	47	LB, M	44.5	54.5	40.7	-2.5	No	N/A
9/05/2023	8:40pm	Evening	Excavation	SBT St Marys	2 Station Street, St Marys	47	47	LB, M	44.3	53.2	40.3	-2.7	No	N/A
10/05/2023	7:51pm	Evening	Excavation	SBT St Marys	2 Station Street, St Marys	47	47	LB, M	48.6	57.8	44.9	1.6	Yes	Verification noise monitoring. Non-construction noise was the main source of noise during this monitoring event



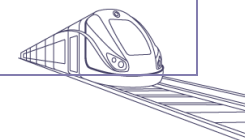


Date	Time	Works Period	Construction Activity	Activity Location	Monitoring Location	NML (dBA)	Predicted (dBA)	Additional Mitigation Measures	Recorded $L_{eq, 15min}$ (dBA)	$L_{Amax}$	$L_{Amin}$	Exceedance of Predicted (dBA)	Exceedance of Predicted	Comments
11/05/2023	7:55pm	Evening	Drilling & Coring	SBT St Marys	2 Station Street, St Marys	47	48	LB, M	49.7	61.5	45.3	1.7	Yes	Verification noise monitoring. Cannot use: Drill rig & 2 core drills reduced to 1 core rig and 2 core drills.
11/05/2023	8:23pm	Night	Drilling & Coring	SBT St Marys	5 Lethbridge Street, St Marys	41	48	LB, M	49.2	69.8	44.7	1.2	Yes	Verification noise monitoring. Non-construction noise was the main source of noise during this monitoring event
11/05/2023	12:41am	Night	Coring	SBT St Marys	5 Lethbridge Street, St Marys	41	39	LB, M	44.7	69.4	41.1	5.7	Yes	Verification noise monitoring. Non-construction noise was the main source of noise during this monitoring event
12/05/2023	2:30am	Evening	Steel Fixing	SBT St Marys	2 Station Street, St Marys	41	40	LB, M	59.6	44.4	47.6	19.6	Yes	Verification noise monitoring. Non-construction noise was the main source of noise during this monitoring event.

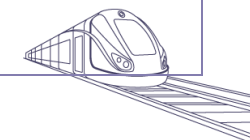


## 2.2. June 2023

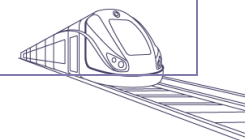
Date	Time	Works Period	Construction Activity	Activity Location	Monitoring Location	NML (dBA)	Predicted (dBA)	Additional Mitigation Measures	Recorded $L_{eq, 15min}$ (dBA)	$L_{Amax}$	$L_{Amin}$	Exceedance of Predicted (dBA)	Exceedance of Predicted	Comments
6/06/2023	11:25PM	Night	NA	SBT St Marys	2 Chesham Street, St Marys	41	NA	NA	43.1	61.7	38.4	NA	No	RBL monitoring, no construction
7/06/2023	7:10pm	Evening	NA	SBT St Marys	3 Chesham Street, St Marys	47	NA	NA	51.3	63.8	45.9	NA	No	RBL monitoring, no construction
7/06/2023	9:57pm	Night	Anchor Drilling and Excavation	SBT St Marys	3 Chesham Street, St Marys	41	42	LB, M	45.5	56.8	41.6	+3.5	Yes	Verification noise monitoring. Non-construction noise was the main source of noise during this monitoring event.
7/06/2023	11:05pm	Night	Anchor Drilling and Excavation	SBT St Marys	2 Chesham Street, St Marys	41	42	LB, M	44.6	57.9	41	+2.6	Yes	Verification noise monitoring. Non-construction noise was the main source of noise during this monitoring event.
8/06/2023	6:40pm	Evening	NA	SBT St Marys	3 Chesham Street, St Marys	47	NA	NA	54.1	65.4	50.6	NA	No	RBL monitoring, no construction
15/06/2023	8pm	Evening	Excavation (south end of box) TBM Assembly (in North of station box)	SBT Orchard Hills	95 Kent Road. Orchard Hills	49	49	LB, M	46.8	73	35	-2.2	No	



Date	Time	Works Period	Construction Activity	Activity Location	Monitoring Location	NML (dBA)	Predicted (dBA)	Additional Mitigation Measures	Recorded $L_{eq, 15min}$ (dBA)	$L_{Amax}$	$L_{Amin}$	Exceedance of Predicted (dBA)	Exceedance of Predicted	Comments
20/06/2023	9:30pm	Evening	Station box excavation	SBT Orchard Hills	60 Doncaster Avenue, Claremont Meadows	42	49	LB, M	54.9	74.2	49.2	-0.1	No	Verification noise monitoring. Non-construction noise was the main source of noise during this monitoring event.
20/06/2023	10:45pm	Night	Station box excavation	SBT Orchard Hills	107 Kent Road, Orchard Hills	46	49	LB, M	54.4	81.8	38.6	-0.6	No	Verification noise monitoring. Non-construction noise was the main source of noise during this monitoring event.
20/06/2023	7:56 pm	Evening	Station box mesh installation	SBT Aerotropolis	SBT Aerotropolis Site	40	40	LB, M	47.5	62.5	41.3	+7.5	Yes	Verification noise monitoring. Exceedance as a result of construction methodology. Exceedance reported works stopped.
21/06/2023	6:56pm	Evening	Station box mesh installation	SBT Aerotropolis	SBT Aerotropolis Site	40	40	LB, M	34.5	39.4	19.8	-0.5	No	
21/06/2023	7:27pm	Evening	Station box mesh installation	SBT Aerotropolis	25 The Retreat, Bringelly	40	35	LB, M	40.1	56.3	56.3	+5.1	Yes	Verification noise monitoring - extraneous noise was the dominant noise source
27/06/2023	7:42pm	Evening	Mined Tunnel Excavation	SBT Aerotropolis	SBT Aerotropolis Site	40	47	LB, M	43.3	56.3	37.3	-9.7	No	Construction noise and local traffic were the dominant noise source



Date	Time	Works Period	Construction Activity	Activity Location	Monitoring Location	NML (dBA)	Predicted (dBA)	Additional Mitigation Measures	Recorded $L_{eq, 15min}$ (dBA)	$L_{Amax}$	$L_{Amin}$	Exceedance of Predicted (dBA)	Exceedance of Predicted	Comments
27/06/2023	8:25pm	Evening	Mined Tunnel Excavation	SBT Aerotropolis	25 The Retreat, Bringelly	40	42	LB, M	42.1	64.1	32.2	-9.8	No	Verification noise monitoring - extraneous noise was the dominant noise source - construction was inaudible
27/06/2023	8:57Pm	Evening	Mined Tunnel Excavation	SBT Aerotropolis	22 Kelvin Park Drive Bringelly	40	42	LB, M	41.9	63.3	33.1	-8.9	No	Verification noise monitoring - extraneous noise was dominant noise source - construction was inaudible
27/06/2023	10:23pm	Night	Mined Tunnel Excavation	SBT Aerotropolis	SBT Aerotropolis Site	39	46	LB, M	41.1	54.3	36	-10	No	Construction noise and local traffic were the dominant noise source

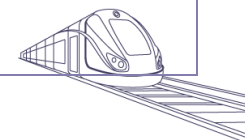


### 2.3. July 2023

Date	Time	Works Period	Construction Activity	Activity Location	Monitoring Location	NML (dBA)	Predicted (dBA)	Additional Mitigation Measures	Recorded $L_{eq, 15min}$ (dBA)	L <sub>Amax</sub>	Exceedance of Predicted (dBA)	Exceedance of Predicted	Comments
18/07/2023	7:39pm	Evening	Mined Tunnel Excavation	SBT Aerotropolis	24 Kelvin Park Drive Bringelly	40	46	LB, M	44.2	66.1	-1.8	No	No
18/07/2023	8:19pm	Evening	Mined Tunnel Excavation	SBT Aerotropolis	22 Kelvin Park Drive Bringelly	40	46	LB, M	44.8	64.2	-1.2	No	No

### 2.4. August 2023

Date	Time	Works Period	Construction Activity	Activity Location	Monitoring Location	NML (dBA)	Predicted (dBA)	Additional Mitigation Measures	Recorded $L_{eq, 15min}$ (dBA)	L <sub>Amax</sub>	Exceedance of Predicted (dBA)	Exceedance of Predicted	Comments
19/08/2023	4:17am	Night	Spoil Handling	SBT St Marys	2 Station St St Marys	41	42	LB, M	44	64.7	3	Yes	Verification noise monitoring - extraneous noise was the dominant noise source - construction was inaudible

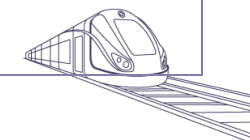


## 2.5. September 2023

No Monitoring was undertaken during the month of September.

## 2.6. October 2023

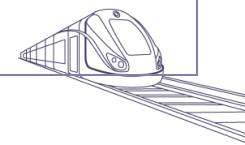
Date	Time	Works Period	Construction Activity	Activity Location	Monitoring Location	NML (dBA)	Predicted (dBA)	Additional Mitigation Measures	Recorded L <sub>eq, 15min</sub> (dBA)	L <sub>Amax</sub>	L <sub>Amin</sub>	Exceedance of Predicted (dBA)	Exceedance of Predicted	Comments
23/10/2023	6pm	Evening	Spoil Shed	SBT Orchard Hills	77 Kent Road	49	44	LB, M	53.7	33.2	83.1	9.7	Yes	Verification noise monitoring - extraneous noise was the dominant noise source - construction was inaudible
30/10/2023	6:45	Evening	Hoarding artwork Installation	St Marys	96 Glossip Steet	42	61	LB, M	69.7	84.3	50.9	8.7	Yes	Verification noise monitoring - extraneous noise was the dominant noise source - construction was inaudible



### 3.Plant Sound Power Level

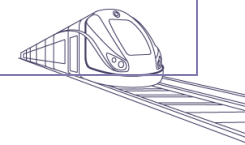
On-site plant sound power level checks were conducted to validate the accuracy of the noise modelling estimations. The monitoring data presented in Table 5 confirmed that all the plant equipment met the maximum allowed LAeq, demonstrating compliance.

Site	Equipment	Max LAeq allowed at 7m	On-Site LAeq at 7m
STM	40T excavator	90	74.7
STM	Franna	78	75.7
STM	Dozer (D9)	95	79.35
STM	Moxy	109 (DNVIS - not at 7m)	77.13
STM	Truck and Dog	83	74
STM	Piling rig - Bored	91	89
STM	Truck - Dump 15t	85	83.5
STM	Crane franner - 20t	78	76
CMF	Crane - Fixed	88	68.73
CMF	Truck and Dog	83	81
CMF	Light vehicle	78	74
CMF	30T excavator	85	84
CMF	EWP	73	64
OHE	Crane franner - 20t	78	71
OHE	Loader front end - 23tn	87	67
OHE	Water cart	107	66
OHE	Light vehicle	78	64
OHE	Truck and Dog	83	74.8
OHE	Concrete Truck	84	73.5
OHE	Roller Smooth Drum	82	78
OHE	Concrete Truck	84	78.3
BSF	Crane - Fixed	88	71.3
BSF	Water cart	107	69.3



Site	Equipment	Max LAeq allowed at 7m	On-Site LAeq at 7m
BSF	Franna	78	71.8
BSF	30T excavator	85	82.8
BSF	Concrete Truck	84	81.3
BSF	Crane - Mobile	113	59
AEC	Grader 35t	88	84
AEC	Water cart	82	71
AEC	40T excavator	90	87.6
AEC	EWP	73	64
AEC	Dozer (D9)	93	92
AEC	Dozer (D10)	95	87.4
AEC	Truck and Dog	83	81.2

Table 5: Plant Sound Power Levels





## 4. Additional Mitigation Measures

Section 5 of the CNVS directs that in instances where, after the application of all reasonable and feasible mitigation and management measures, the LAeq(15minute) ground-borne construction noise levels are still predicted to exceed the NMLs, additional ground-borne noise management measures can be applied to further limit the risk of annoyance from construction noise. The CNVS suggests the Project should consider implementing additional mitigation measures such as:

### **Additional Mitigation Measures**

LB = Letter box drops

M = Monitoring

SN = Specific Notification

RO = Project Specific Respite Offer

IB = Individual Briefing

PC = Phone Calls and Emails

AA = Alternate Accommodation

**OOHW1** is defined as:

- a. 8:00am to 6:00pm Sunday and public holidays (days).

**OOHW2** 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.



## 5. Discussion

During this reporting period, noise monitoring was conducted to ensure the range of activities being undertaken at the site are measured. This monitoring would target the first opportunity within the first month of starting new tunnelling works as well as during the day, evening and night-time periods throughout construction.

During noise monitoring one exceedance was noted with works stopped and a change to methodology on site implemented. As per the requirements of the DNVIS, when a change in methodology is anticipated to result in a significant change in construction noise, further monitoring was undertaken to confirm. All new activities met the noise requirements.

Throughout the reporting period eight noise complaints and one vibration complaint was received from the community, all of which were investigated and closed out. Monitoring was undertaken when required.



## Annexure A Sitehive Data

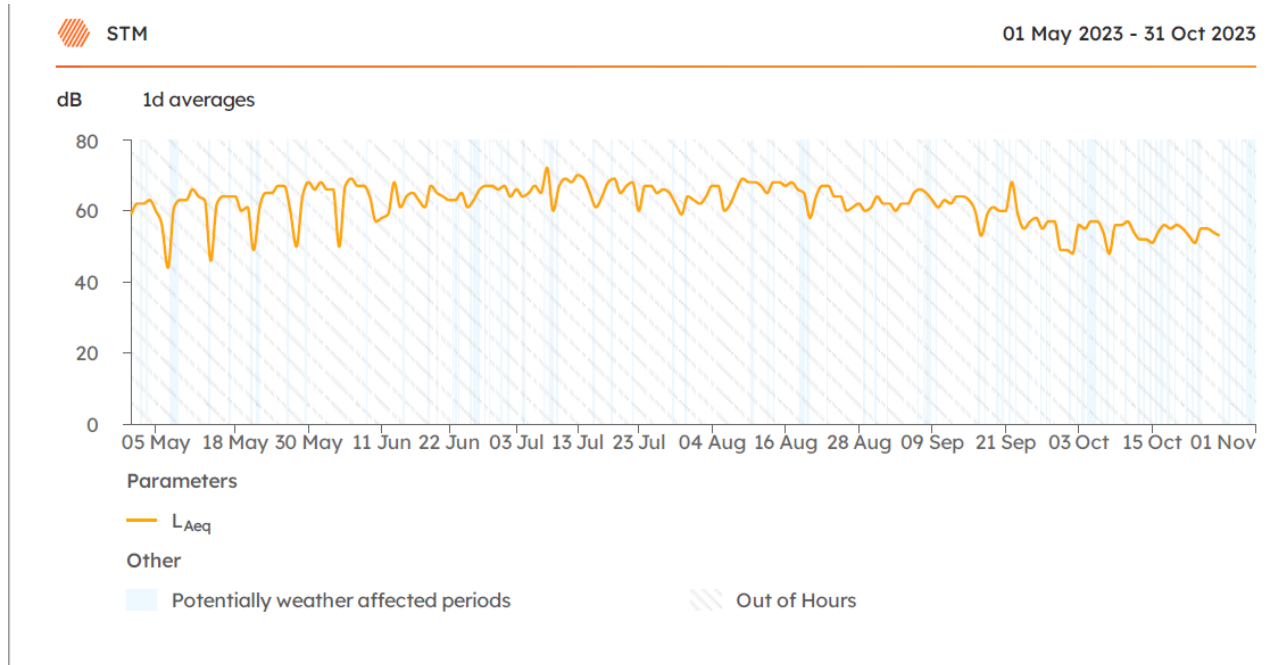


Figure 5: St Marys Sitehive LAqe

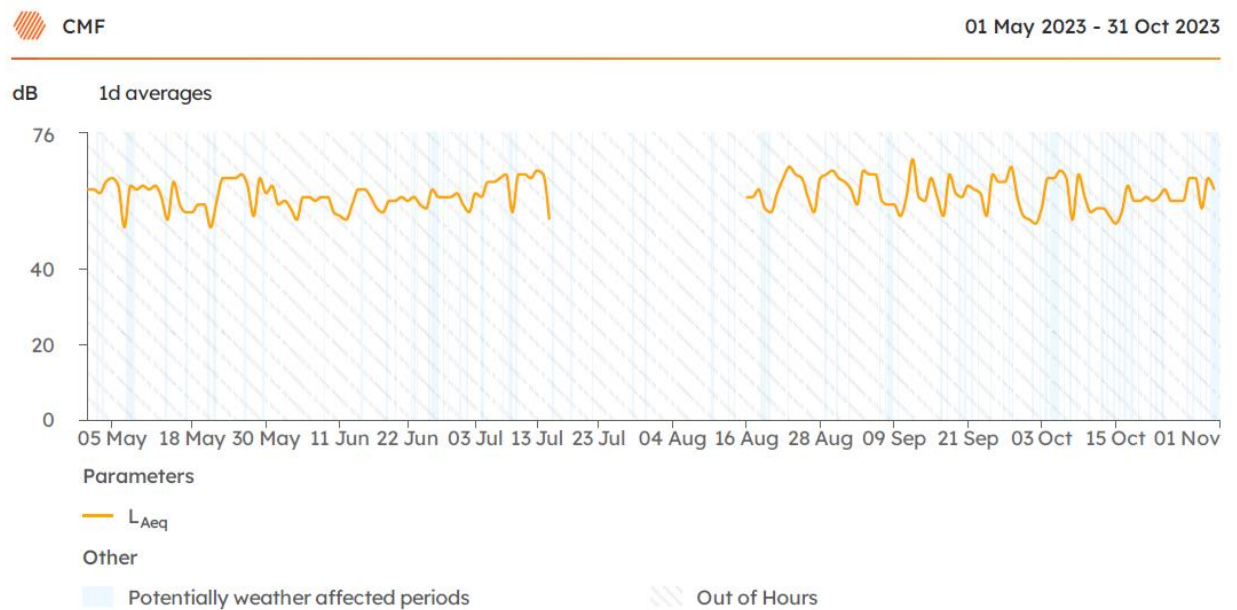


Figure 6: Claremont Sitehive LAqe



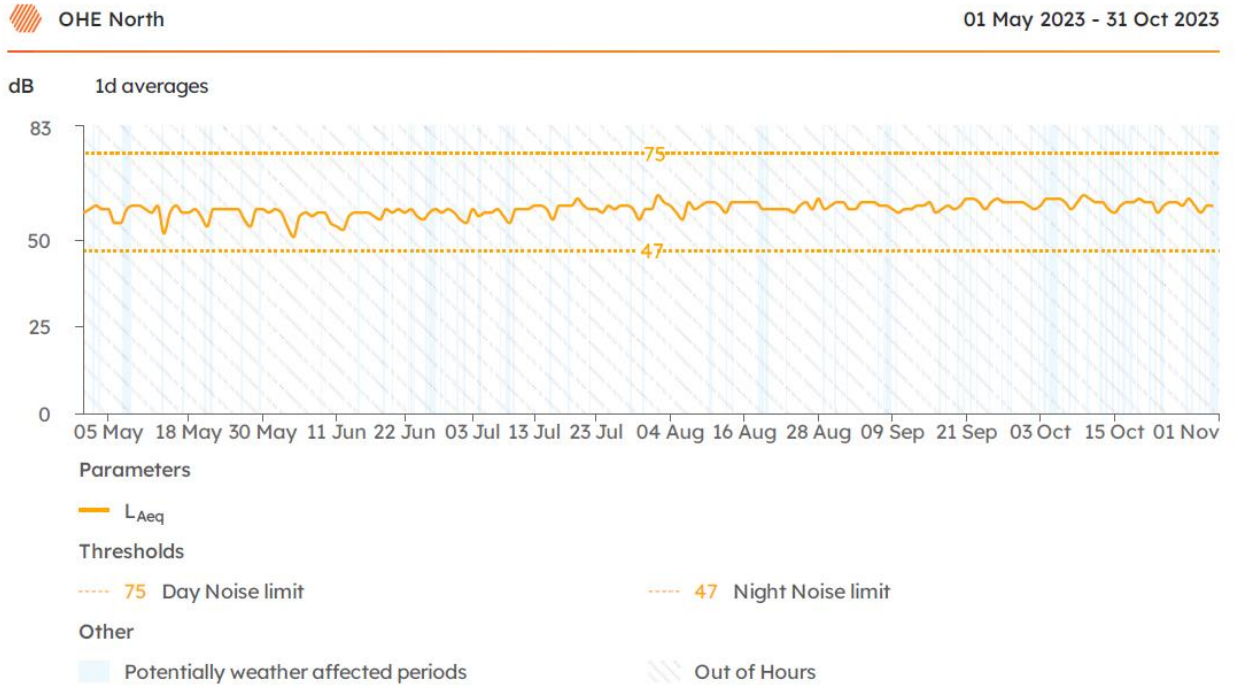


Figure 7: Orchard Hills North Sitehive LAqe

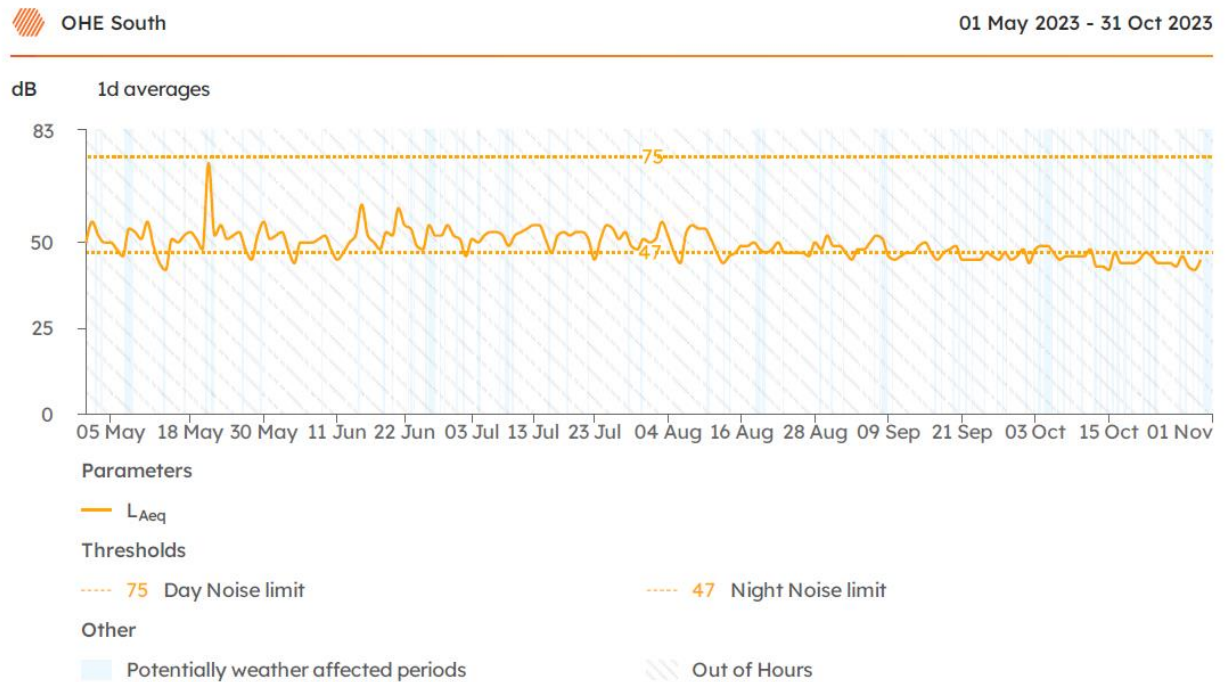


Figure 8: Orchard Hills South Sitehive LAqe



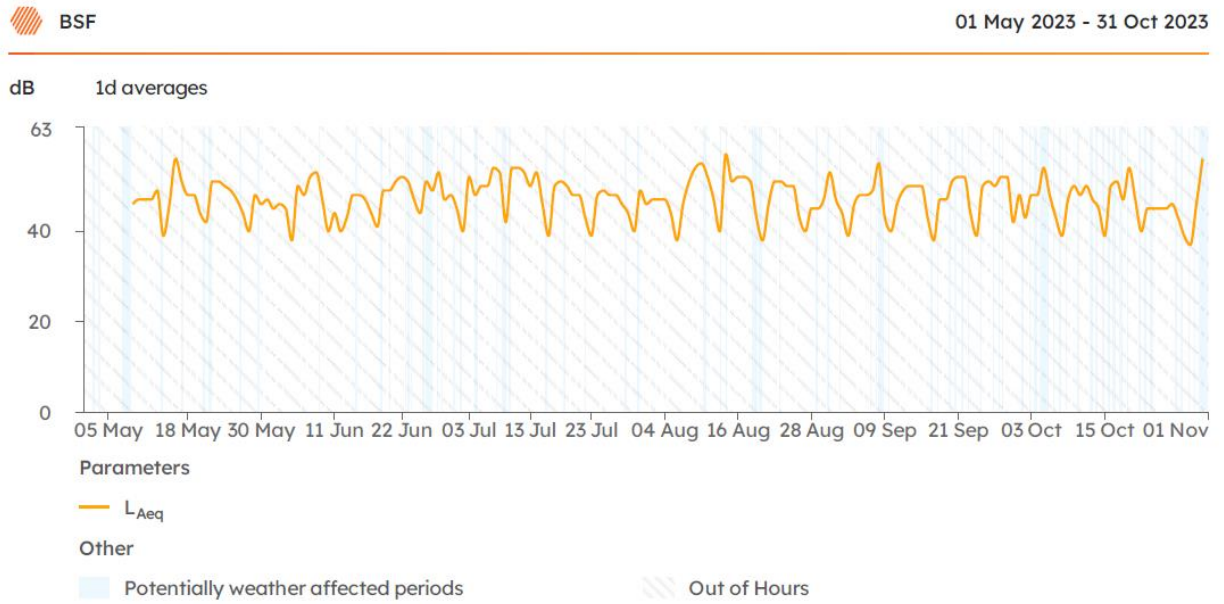


Figure 9: Bringelly Sitehive LAeq

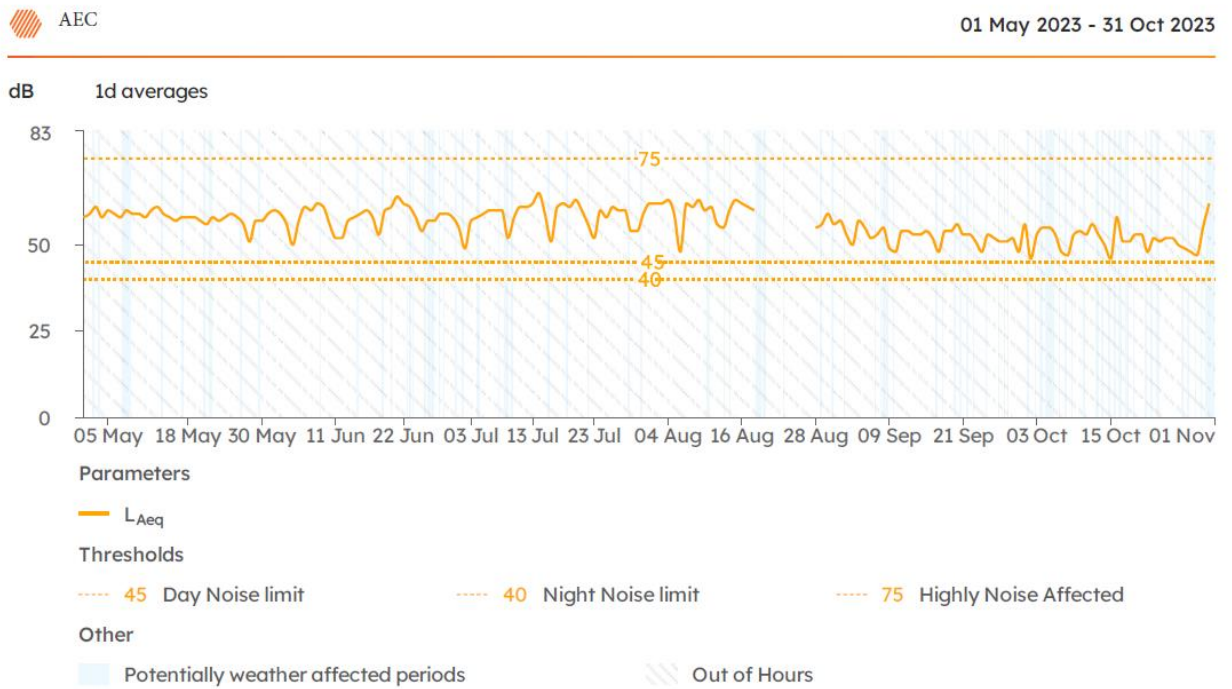


Figure 10: Aerotropolis Sitehive LAeq

