

B7 Reel Store Demolition verification noise report

Project B7 Reel Store Demolition
Client Opal ANZ Pty Ltd, Matraville

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16002-NV-TN-9-0

Executive summary

Opal ANZ recently demolished the B7 Reel Store. The reel store historically provided a noise barrier to screen nearby residences from the noise of paper mill operations. To ameliorate the impacts removing this noise barrier would generate, a new noise barrier was constructed on the site boundary.

This report describes a noise verification study completed to review ambient noise levels at the nearest residences to the old B7 Reel Store to establish the effectiveness of the new noise barrier.

Noise levels measured at the nearest affected receivers were compared to predicted levels from the *B7 Reel Store – demolition and noise mitigation report* (Hutchison Weller, April 2018). Measured noise levels were higher than the predicted noise from the site after the implementation of the noise wall. However, the measured noise level is not necessarily attributable to Opal operations.

Historically, ambient L_{Aeq} noise levels measured in the area around the Opal site have typically been higher than noise emissions from within the site due to the influence of other nearby industrial sources and major roads.

Noise monitoring data measured adjacent to the reel store from noise surveys between 2016 and 2020 has been included in this report to demonstrate compliance with MP 05_0120 Mod 5. This data demonstrates the operational noise of this site, which tends to remain constant over time, are consistent with and at the lower end of long term median noise level values for the nearest receiver locations.

Since the new boundary noise barrier is significantly higher than the demolished B7 Reel store building, noise emissions from the Opal site would be correspondingly lower. Long term analysis supports the conclusion that noise levels at the nearest affected receivers appear to be at least consistent with historical data, but in practice are likely to be much lower.

Introduction

Opal ANZ (formerly Orora Pty Ltd) demolished the B7 Reel store building, which was on the northeastern boundary of its Matraville site. The B7 building historically provided adjacent sensitive receivers with a level of noise attenuation for emissions from the paper mill operations. Removal of this building would lead to increase noise levels within the community unless adequately ameliorated.

Approval for demolition of the B7 reel store and construction of a new noise barrier on the north-eastern boundary was granted under Modification 8 to consent 05_0120, issued by Department of Planning and Environment in October 2018.

A noise impact assessment for completed by Hutchison Weller (April 2018), detailed predicted noise levels before and after demolition and construction of the new 12-metre noise barrier.

The noise compliance requirements for these works were outlined in the modification as follows:

Within 3 months of the installation of the Stage 2 Noise Barrier, the Applicant must submit a Noise Verification Study to the Secretary. This study must:

- a) be undertaken by a suitable qualified acoustical expert and in accordance with the NSW Industrial Noise Policy;*
- b) validate the predictions made in the EA and supporting documents for MP 05_0120 Mod 5;*
- c) demonstrate compliance with the noise limits in Table 1 of Conditions 10; and*
- d) describe the contingencies that would be implemented, and the timing for implementation, should non-compliances be detected.*

In line with the infrastructure modification, demolition of the B7 reel store and construction of the boundary barrier wall has been completed.

As part of the verification process, a noise survey was completed in May 2020 following completion of the demolition activities. A review of the local noise environment before and after the demolition of the reel store has also been used to provide context for the monitoring data.

This report presents a review of the noise monitoring impacts at the nearest affected receiver location and compares the noise data to the long-term quarterly noise monitoring at this location.

Noise monitoring

As part of Opal’s Environment Protection Licence (EPL) No. 1594 quarterly monitoring is undertaken at key locations surrounding the site. These locations are detailed in condition L4.1 of the EPL and Condition 10 of the MCoA. The monitoring locations are the subject of quarterly noise surveys, which provide an historical profile of noise levels surrounding the site.

The monitoring locations and references are presented in Table 1 and shown in Figure 1. Recent changes to access at R3 means that this location is no longer available as a monitoring site.

Table 1 Opal EPL noise monitoring locations

ID	Location
R1	Corner of McCauley Street and Australia Avenue
R2	Australia Avenue
R3	Murrabin Avenue
R4	Partanna Avenue
R5	Corner of Partanna Avenue and Moorina Avenue
R6	Moorina Avenue

Over several years of noise monitoring in the area, it is evident the noise environment is measurably higher than the EPL noise level criteria. This is due to the urban-industrial setting that the Opal site borders, with residential to the north and east of the site and industrial and commercial land uses to the south and west of the site.

Regular reporting of noise levels against the EPL criteria have used the L_{Aeq} and L_{A90} noise parameters to quantify the noise environment. These two noise parameters demonstrate changes to ambient noise levels in the area using the L_{Aeq} values and also the steady state noise emissions from the L_{A90} noise levels, which best represent the operations of the Opal site.

Since demolition commenced on the B7 paper mill in early 2017, and subsequent works on the reel store in 2019, changes to this noise environment close to the Opal site can be observed through the historical monitoring data from the L_{Aeq} and L_{A90} noise parameters.

In Partanna Avenue these changes are most apparent and noise data covering the following periods of operation have been reviewed in the context of changes to the local noise environment following the removal and addition of noise shielding from:

1. Demolition of the east end of the B7 Paper machine building
2. Installation of a 12 metre high noise wall covering the extent of the B7 building
3. Demolition of the B7 Reel Store
4. Installation of a 12 metre high noise wall covering the extent of the B7 reel store building

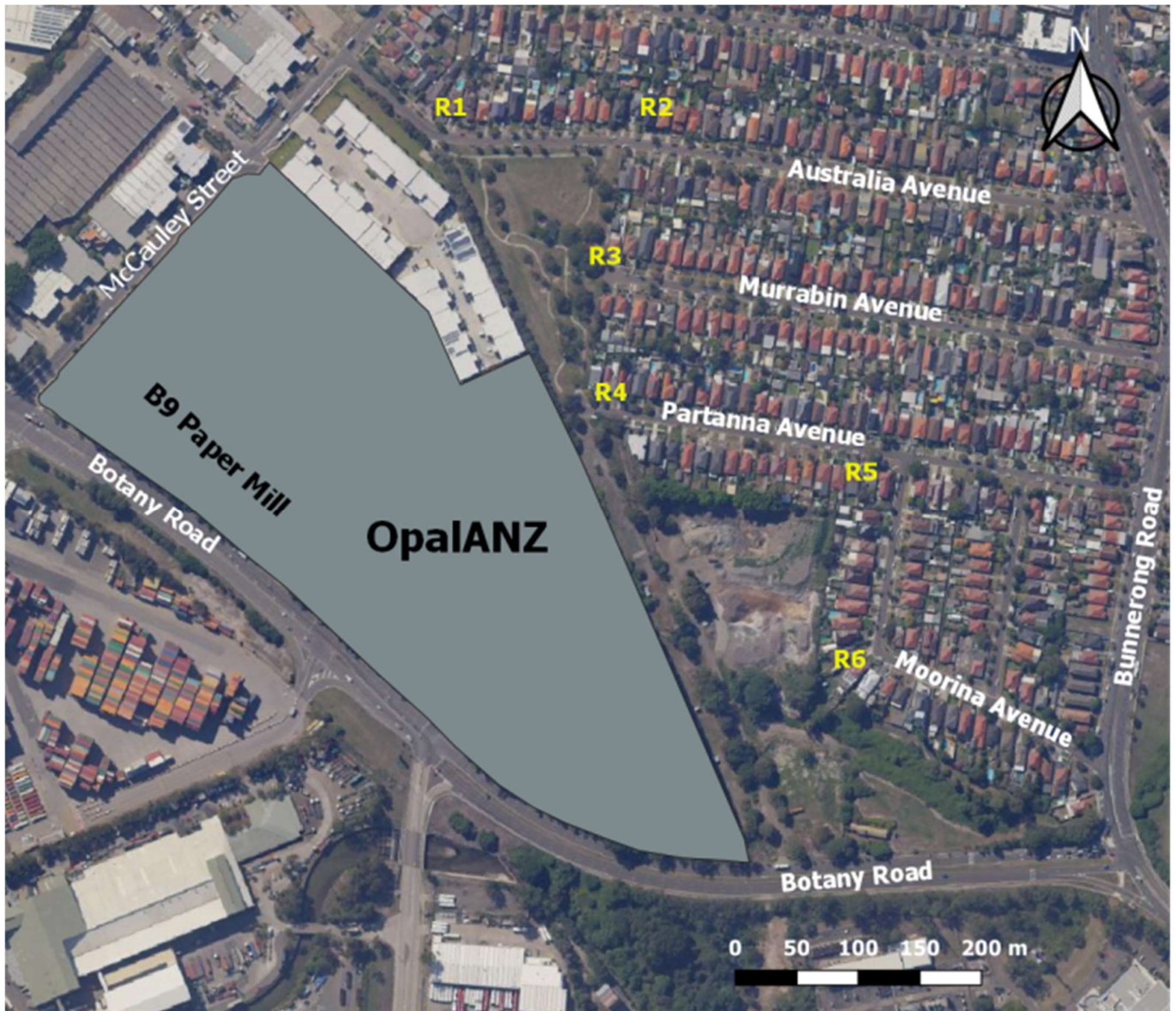


Figure 1 Site location and compliance monitoring locations

Changes to the configuration of the boundary noise walls at the B7 paper machine and reel store buildings after each round of demolition are presented in Figure 2 to Figure 4 showing the scale and extents of the shielding at Partanna Avenue.



Figure 2 Paper mill (southern section) container noise wall - March 2018



Figure 3 View of southern section of container noise wall following demolition of the B7 reel store - May 2020



Figure 4 View of northern section of container noise wall following demolition of the B7 reel store - May 2020

Predicted noise levels

Noise modelling using a SoundPLAN noise model was completed for the B7 reel store demolition and mitigation assessment completed in April 2018. The noise impact assessment was undertaken for four different scenarios which included the staged demolition of the reel store building and construction of the noise wall. The four stages of demolition and noise barrier installation covered in the report were:

5. Demolition of the east end of the Reel Store
6. Installation of extension 1 noise barrier to close the gap to the remaining part of the Reel Store
7. Demolition of the last portion (west end) of the Reel Store
8. Installation of extension 2 noise barrier to close the gap to the boundary fence

Once work had begun on the reel store, Opal determined the full length of noise wall could be installed prior to completion of demolition. This outcome provided nearby residents with a construction noise barrier during the works and effectively eliminated the interim demolition stages.

The noise assessment determined impacted residents would generally be limited to those at the end of Partanna Avenue and possibly receivers at the end of Murrabin Avenue.

Predicted noise levels for each stage of demolition and mitigation outlined in the demolition and noise mitigation report showing the staged impacts are presented in Table 2 for the most affected receivers in Partanna Avenue.

Table 2 Predicted noise levels and EPL noise limits for demolition works

Receiver location	Night criterion dB(A)	Predicted LAeq, 15 minute noise level			
		Demolition Stage 1	Noise barrier extension 1	Demolition Stage 2	Noise barrier extension 2
Partanna Avenue	41	50	41	44	41

The predicted noise level for the closest receivers at the end of Partanna Avenue is used as compliance guidance in accordance with the approval requirement for Modification 8 to consent 05_0120, Part b). From Table 2, the predicted noise level for verification testing is L_{Aeq} 41 dB(A), after demolition and noise wall construction have been completed.

Monitoring results

A verification noise monitoring survey was undertaken between 6 May and 12 May after the completion of the B7 reel store demolition. A Type 1 SVAN 958 SLM noise logger set to A-weighting, fast-response continuously recorded noise levels over consecutive 24-hour periods. This survey period coincided with quarterly noise monitoring reporting which included typical continuous operations of the paper mill.

A summary of noise monitoring results for the receiver at R4 was completed in May 2020 and is presented in Table 3 for the day, evening and night time assessment periods. Data from Table 3 have been graphed to show the range of noise level measurements and are presented in Appendix A.

Table 3 Summary of May 2020 monitoring data – Location R4

Time and date	Profile of Noise Environment - Monitoring location R4	
Daytime: 7:00:00 AM to 6:00:00 PM		
Date	L90 (10th Percentile) dB(A)	L_{Aeq} 15 minute dB(A)
Wednesday 6 May	41.9	53.4
Thursday 7 May	42.1	61.8
Friday 8 May	42.1	64.2
Saturday 9 May	41.8	53.7
Sunday 10 May	44.4	53.0
Monday 11 May	44.1	51.3
Tuesday 12 May	42.4	66.7
Median	42.4	60.5
Evening: 6:00:00 PM to 10:00:00 PM		
Date	L90 (10th Percentile) dB(A)	L_{Aeq} 15 minute dB(A)
Wednesday 6 May	40.3	48.4
Thursday 7 May	42.1	45.9
Friday 8 May	41.3	45.6
Saturday 9 May	41.7	51.7
Sunday 10 May	45.0	50.0

Time and date	Profile of Noise Environment - Monitoring location R4	
Monday 11 May	44.2	47.9
Tuesday 12 May	38.8	42.2
Median	41.9	46.9
Night 10:00:00 PM to 7:00:00 AM		
Date	L90 (10th Percentile) dB(A)	L _{Aeq} 15 minute dB(A)
Wednesday 6 May	42.7	46.9
Thursday 7 May	41.5	45.8
Friday 8 May	39.1	44.3
Saturday 9 May	43.9	49.3
Sunday 10 May	42.4	45.5
Monday 11 May	44.1	48.6
Tuesday 12 May	39.2	44.8
Median	42.5	46.3

The monitoring results from Table 3 present the median L_{Aeq} 15 minute measured noise levels for each of the assessment periods. These median noise levels exceed the final scenario predicted in Table 2 of 40.6 dB(A) however, this measured noise level is not solely a result of noise emissions from the Opal site; rather, it is the product of all noise sources in the vicinity of the paper mill.

To provide a more detailed picture of ambient noise levels adjacent to the mill, quarterly monitoring data from July 2016 to May 2020 has been summarised from the data available in the noise monitoring reports for the nearest receiver location at R4.

The monitoring data covers three periods with the B7 paper mill in place through to the demolition of the reel store, which can be summarised as follows:

1. B7 paper machine building *in situ* and no container noise barrier
2. B7 paper machine building demolition completed and 12 metre container noise barrier installed to cover the extents of the demolished building
3. B7 paper machine building and reel store demolition completed and 12 metre container noise barrier installed to cover the extents of both buildings

Measurements presented in Table 4 summarise the noise level ranges for the night-time results for each of the quarterly survey periods. The night-time periods have been selected to best represent the changes to long term background noise levels that are more accurately identified when extraneous noise influences are minimal.

The range of minimum and maximum noise levels for each of the noise parameters has been used to better describe the noise environment during each survey. The measurements include the L_{A90} and the L_{Aeq} noise levels, with the L_{A90} levels corresponding to the steady state noise influences from the Opal site.

Results indicating the status of the local B7 noise barrier for each of the monitoring periods gives context to the measured noise levels from 2016 to 2020. Table 4 presents the summarised monitoring data for monitoring location R4 adjacent to the B7 reel store.

Table 4 Summary of long term quarterly noise monitoring results – Location R4

Survey period		Container noise barrier status	Noise level Range LA90 dB(A)		Noise level Range LAeq dB(A)		Arithmetic average	
Year	Month		Min	Max	Min	Max	LA90	LAeq
Pre demolition noise levels								
2016	January	No container noise walls	36.3	47.9	45.5	52.9	41	48
2016	April		37.2	42.6	42.4	50.0	39	44
2016	July		44.6	48.4	47.3	52.2	46	50
2016	September		39.4	47.5	44.8	57.6	43	54
2017	February*		35.0	42.1	40.2	49.8	39	41
2017	August		45.3	48.7	47.5	51.3	48	50
Noise levels following B7 Paper mill demolition and noise wall installation								
2017	November	Paper mill wall installed	37.6	46.7	49.1	58.7	41	53
2018	February		39.6	46.8	43.3	52.3	43	48
2018	May		44.3	52.7	49.7	55.9	49	53
2018	August		40.1	45.9	47.2	51.1	43	49
2018	November		37.8	44.3	45.5	54.1	41	50
2019	February		37.0	46.4	45.5	55.6	42	51
2019	May		46.0	47.6	45.9	47.2	47	47
2019	August		39.8	43.8	44.9	50.8	42	48
2019	November*		40.4	44.7	44.9	50.6	43	48
2020	February		37.0	46.2	44.2	52.4	42	48
Noise levels following B7 Reel Store demolition and noise wall installation								
2020	May	Paper mill and Reel store wall installed	39.1	44.1	44.3	49.3	42	49
*Noise levels not recorded for this site, data taken from nearby R3								

The quarterly monitoring results for the years 2016 to 2020 demonstrate the variability in measured noise levels and highlights the dynamic noise environment in the area.

From the results in Table 4 it is apparent that noise levels, after successive rounds of demolition and installation of the container barrier, are generally similar and within a typical range of measured levels. Results from the May 2020 noise survey are notably at the lower end of the range of results for both the LAeq and the LA90 noise parameters.

Table 5 presents the median results for the three monitoring scenarios at this location. Evidence indicates demolition and construction of the noise barrier have not resulted in noise levels increasing at nearby receivers.

Table 5 Median values for quarterly monitoring – Location R4

Location	Container noise barrier status	Median Values					
		Noise level Range LA90 dB(A)		Noise level Range LAeq dB(A)		Arithmetic average	
		Min	Max	Min	Max	LA90	LAeq
R4	Paper mill wall not installed	39.4	47.9	45.5	52.2	43	50
	Paper mill wall installed	39.7	46.3	45.5	52.4	43	49
	Paper mill & Reel store wall installed	39.1	44.1	44.3	49.3	42	49

Conclusion and recommendations

Overall, the verification monitoring from the May 2020 survey shows good correlation with the other monitoring periods indicating that demolition of the B7 reel store and construction of the container noise wall have not resulted in an increase in noise at nearby receivers.

While the L_{Aeq} 15-minute noise contribution from the Opal site cannot be directly measured, using the long term historical monitoring data to compare changes in the noise environment at the most affected receivers indicates that there is no significant change to the measurable noise levels over time, at this location.

As a result of the scale and extents of the constructed container noise wall, it is possible that receivers close to the B7 paper machine building and reel store would experience an overall reduction in noise impacts due to greater shielding of extraneous noise sources from Botany Road and Port Botany container terminal.

Based on the measured noise levels, comparison of historical data and scale of the new container noise wall, there are no additional recommendations for noise mitigation following the successful completion of the demolition works.

Appendix A1 Receiver R4 results

