



**COFFS HARBOUR CITY COUNCIL
HW10 PACIFIC HIGHWAY
SAPPHIRE TO WOOLGOOLGA UPGRADE**

**OPERATIONAL NOISE MANAGEMENT
REPORT**

Part 2:

**Properties Eligible for Architectural
Treatment Identified in the Environmental
Assessment**

ZONE 0000

Lot No: Lot S2W-20-0000-EN052A

Doc No: S2W-REP-20-0000-EN052A-FD-12

Phase: Final Design

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Contractor:



Prepared by
Designer:



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Appendices

Appendix A – Architectural Treatments

1. INTRODUCTION

1.1. General

The Pacific Highway Upgrade from Sapphire to Woolgoolga includes the following:

- Duplication of the existing highway to a four lane dual carriageway between Sapphire and South Woolgoolga.
- Dual carriageway bypass of Woolgoolga deviating from the existing highway alignment north of Graham Drive North and rejoining the existing highway near Arrawarra Beach Road.
- Grade separated interchanges:
 - Sapphire Interchange at Split Solitary Road
 - Moonee Beach Interchange at Moonee Beach Road
 - Emerald Interchange South
 - Emerald Interchange North
 - South Woolgoolga Interchange at Graham Drive North
 - Arrawarra Interchange at Arrawarra Beach Road
- Approx 16 km of Access Roads and Local Roads
- Access road/local road highway crossings at Headland Road, Killara Avenue, Smiths Road, Diamond Head Drive, Greys Road, Woolgoolga Creek Road, Newmans Road and Bark Hut Road.
- Relocation of various public utilities and services including high and low voltage overhead and underground power lines, telecommunications, network water mains and sewer mains.

1.2. Description of Package

This report forms part of the Operational Noise Management Report (ONMR). The overall report structure is tabulated overleaf.

This report forms Part 2 of the ONMR. This report provides noise results for the 49 receivers listed as eligible for at-house noise treatment in the Environmental Assessment (EA) and reports the appropriate at-house treatment for each property, floor and façade. The structure of the ONMR is set out in Table 1.1. Modelling files and output files are provided digitally with this report.

Appendix A provides a list of the receivers and predicted noise levels for the EA identified properties.

Table 1.1 ONMR Report Structure

Lot Title	Lot Number
Operational Noise Management Report <i>Part 1: Noise Modelling and Calibration</i>	S2W-20-0000-EN052E
Operational Noise Management Report <i>Part 2: Properties Eligible for Architectural Treatment Identified in the Environmental Assessment</i>	S2W-20-0000-EN052A
Operational Noise Management Report <i>Part 3: Additional Properties Eligible for Architectural Treatment</i>	S2W-20-0000-EN052B
Operational Noise Management Report <i>Part 4: Property Treatment Plans</i>	S2W-20-0000-EN052G

Table 1.2 ONMR Digital Files

Model Description	File Reference
Façade model ¹	S2W-xrf-00-0000-facade.dwg

Note 1: The façade model provides the treatment eligibility at each floor and façade. This is recorded on different layers within the model. Interrogation of the façade model for a particular property is best achieved by turning all the layers off and turning them back on layer by layer.

1.3. Receivers Excluded from the Assessment

The EA listed 55 receivers in Working Paper 2. Of these, 49 receivers were highlighted for assessment for treatment as part of the works. The remaining 6 receivers were listed to receive noise monitoring assessment 12 months after opening to confirm any entitlement to noise treatments. These receivers are 551, 560, 561, 566, 757 and 758. These are all located on the existing Pacific Highway in the middle of Woolgoolga (just north of the roundabout on the east side of the road) well outside of the project area. They will be checked 12 months after opening but are unlikely to be eligible.

2. NOISE CRITERIA

The criteria for determining whether properties are eligible for noise treatment are set out in the Environment Protection Authority (EPA) document Environmental Criteria for Road Traffic Noise (ECRTN). For further information on the noise criteria including the SWTC requirements and the RMS's guidelines in the Environmental Noise Management Manual refer to Section 2 of Part 1 of ONMR.

For ease of reference the summary table of the noise criteria is reproduced below:

Table 2.1 New and Redeveloped Road Traffic Noise Criteria

Period	Parameter	Criterion dB(A)
New freeway or arterial road corridor¹		
Day (7.00 am – 10.00 pm)	$L_{Aeq(15hour)}$	55
Night (10.00 pm – 7.00 am)	$L_{Aeq(9hour)}$	50
Redevelopment of existing freeway/arterial road²		
Day (7.00 am – 10.00 pm)	$L_{Aeq(15hour)}$	60
Night (10.00 pm – 7.00 am)	$L_{Aeq(9hour)}$	55

Notes:

¹ In cases where noise from an existing road already exceeds the above criteria, the ECRTN recommends “the new road should be designed so as not to increase existing noise levels by more than 0.5 dB(A). Where reasonable and feasible noise levels from existing roads should be reduced to meet the noise criteria.”

² In cases where noise from an existing road already exceeds the above criteria, the ECRTN recommends “In all cases, the redevelopment should be designed so as not to increase existing noise levels by more than 2 dB(A). Where feasible and reasonable, noise levels from existing roads should be reduced to meet the noise criteria.”

3. STATUS OF ALIGNMENT DESIGN

Noise modelling was undertaken when the alignment design was sufficiently developed in all zones. The results of the modelling contained in Appendix A incorporate the following design models:

Table 3.1 Status of Alignment Design Incorporated in Noise Modelling

Zone	Alignment Design Status
2000	For Construction (FC)
3000	For Construction (FC)
4000	For Construction (FC)
5000	For Construction (FC)
6000	For Construction (FC)

4. EA RECEIVER ARCHITECTURAL TREATMENTS

A total of 49 receivers were identified at the Environmental Assessment stage as being eligible for architectural property treatments. In accordance with SWTC 4.6 h(i), these treatments are to be completed within 6 months of commencement of construction. An extension of time request has been submitted to the Department of Planning.

This report details the level of architectural treatment for the receivers identified at the EA stage only. Assessment of any additional properties will be covered in other parts of the ONMR – refer Section 1.2.

Appendix A provides the full list of properties identified at the EA stage together with the level of architectural treatment proposed. Noise levels were calculated for each floor for each facade of each sensitive receiver.

Architectural treatment of properties generally falls in two categories, exceedances up to and including 10 dB(A), and exceedances greater than 10 dB(A).

The available options for building treatments with exceedances up to and including 10 dB(A) are:

TYPE 1

- Air-conditioning (that complies with the fresh air requirements of the Building Code of Australia) and the sealing of wall vents,
- Upgraded window and door seals.

TYPE 2

For exceedances greater than 10 dB(A) the above apply in addition to:

- Upgraded windows, glazing and doors.

The Environmental Noise Management Manual (ENMM) also states that:

'Upgraded windows, glazing and doors may also be provided, in lieu of fresh air ventilation systems, where noise levels are predicted to be equal to or less than 10 dB(A) above the target noise levels and the building owner(s) prefer this option. However, the owner(s) should be informed in writing that this option will require the windows to be kept open when fresh air is required to maintain healthy living conditions, and that when the windows are open no noise reduction benefit will be achieved.'

External screen walls are also viable if the owner(s) prefers, however they must be proven to be cost-effective.

Whilst the above ENMM treatments will be offered to the landowner (as per eligibility), other treatments may be discussed and agreed with the landowner.

5. CHANGES TO THE EA IDENTIFIED RECEIVER LOCATIONS

Coordinates for two of the receivers listed in the EA appear to be incorrect as indicated in the following pages. Adjacent buildings have been assessed and are included in Part 3 of ONMR where they have been found to be eligible.



Figure 1

The residential property at 104 Hoys Road (shown in **Figure 1** above) is not eligible for architectural treatment as the noise level reduces at this property and the 2024 noise level is not acute.

The coordinates supplied for Receiver 121 (1579 Pacific Highway, Moonee Beach) identified in **Figure 2** below has been identified (via visual inspection) as an open pool gazebo, and not considered a habitable structure. The main building, located behind receiver 121 was assessed at the EA stage (Receiver 122) and found not to be eligible for consideration of further mitigation. On this basis Receiver 121 has been removed from this assessment. Receiver 122 is considered for additional mitigation measures in Part 3 of the ONMR.

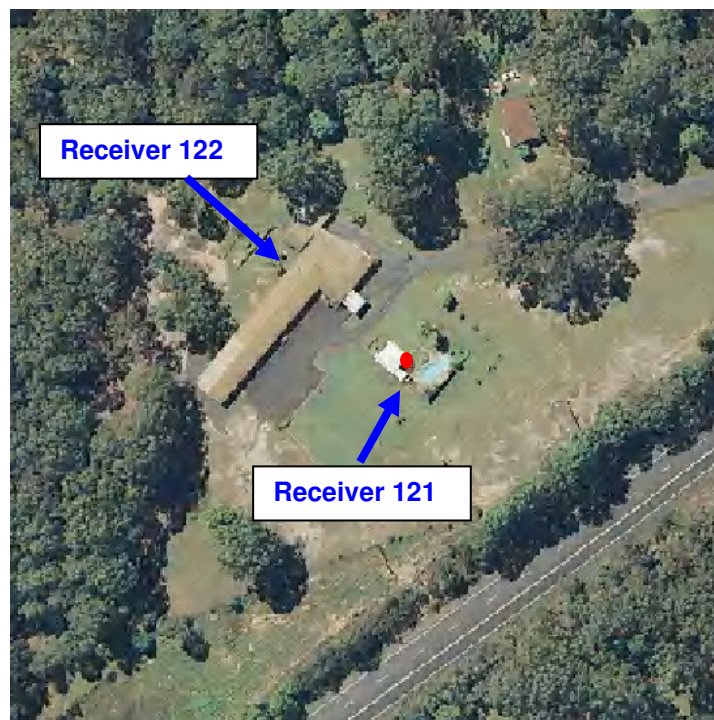


Figure 2

6. DISCUSSION OF RESULTS

6.1. General

Details of the EA listed properties and the required architectural treatment is provided in Appendix A. In summary, of the 49 receivers listed in the EA:

- 41 receivers are eligible for treatment, of which 5 receivers are eligible for Type 2 treatment on one or more façade
- 2 receivers have been pre-treated (Receivers 337 and 635)
- 2 receivers are being demolished (Receiver 442 and 267)
- 4 receivers have been identified as ineligible use buildings (Receivers 21, 85, 121 and 454a)

6.2. Non-eligible EA Properties

The results of the noise modelling indicates that a number of properties listed in the EA as eligible for additional noise mitigation are not eligible for treatment on any façade. These receivers are summarised below in Table 6.1.

Table 6.1 EA Listed Properties Found to be Ineligible for Architectural Property Treatment

Receiver	Address	Future Existing L _{Aeq,9hr} dB(A)	Design Year L _{Aeq,9hr} dB(A)	Increase	Acute?
178	61 EMERALD HEIGHTS DRIVE, EMERALD BEACH NSW 2456	63.2	55.0	-8.2	No
320	1026F PACIFIC HIGHWAY, SAPPHIRE BEACH NSW 2450	63.8	58.5	-5.3	No
324	1/1026B PACIFIC HIGHWAY, SAPPHIRE BEACH NSW 2450	63.4	59.3	-4.1	No
325	1026C PACIFIC HIGHWAY, SAPPHIRE BEACH NSW 2450	63.5	59.2	-4.3	No
326	1026D PACIFIC HIGHWAY, SAPPHIRE BEACH NSW 2450	63.8	59.4	-4.4	No

The noise modelling indicates that the predicted noise levels at the receivers listed above would reduce considerably due to the project, and the expected noise levels are not acute (acute criterion is 60 dB(A) for the design year).

6.3. EA Listed Non-eligible Use Receivers

The following four receivers have been identified as buildings with non-eligible use for noise insulation purposes:

- Receiver 21

- Receiver 454
- Receiver 85
- Receiver 121

Receiver 21 (817-817A Pacific Highway) is a non-residential building and hence no consideration of the potential noise impact is required.

Receiver 454 (115 Wedding Bells Way) has two separate buildings on the lot, both of which receive noise levels above the noise criteria levels. The buildings on this receiver site have been split into Receiver 454a, which is at the EA coordinates and hence included in this report, and Receiver 454b, which is an additional building and hence covered in Part 3 of ONMR. However recent inspection of Receiver 454a has concluded that this is not a residential property and hence it is not eligible for architectural treatment.

Receiver 85 (104 Hoys Road) also has two buildings on the lot. The building at the EA listed coordinates is a commercial use building and hence is not eligible for treatment. The adjacent building, which is used for residential purposes, has been assessed (Receiver 1019) and does not meet the noise criteria for noise treatment.

Receiver 121 (1579 Pacific Highway) is a non-residential building and hence no consideration of the potential noise impact is required. The main building on this lot is Receiver 122, which was not eligible for architectural treatment in the EA. Receiver 122 is eligible and is included in Part 3 of ONMR.

7. PROCESS FOR PROVISION OF ARCHITECTURAL TREATMENTS

The process for the provision of architectural treatments is outlined below:

- 1) A letter is sent to the resident notifying them that their property may be eligible for architectural property treatments, requesting them to contact the appointed person to arrange a site visit.
- 2) A site visit is undertaken to explain the process of assessment and criteria with the resident, inspect property detailing a floor plan, noting construction, façade details, ventilation, roof, floor types and insulation etc., including photographs.
- 3) Treatment is based on the required noise level reduction to achieve the criteria, for example providing air-conditioning, improved glazing, and insulation. Treatment will be dependent on existing construction of the property and how many applicable facades are exposed (e.g. living areas and bedrooms). Residents are consulted on treatment options.
- 4) Details of the agreed treatment are provided to the appointed building contractors.
- 5) Agreed treatment will be detailed in a Deed of Release that the resident is required to sign.
- 6) Agreed treatments will be installed. The architectural treatment will be installed as is feasibly possible, considering the constraints of the procedures required.
- 7) An Owner's Deed Poll to be signed when the works have been completed to the Owner's satisfaction.
- 8) Compliance noise monitoring will be undertaken upon completion of the project in accordance with the Minister's Conditions of Approval. Monitoring will be completed at a number of locations sufficient to provide a reliable assessment of the performance and effectiveness of applied noise mitigation measures.



APPENDIX A – ARCHITECTURAL TREATMENTS

Appendix A – Architectural Treatments

Note that the treatments shown in the table below are applicable to the most affected façade and floor only. Interrogation of the digital façade model is required to establish the appropriate treatment for each façade and floor.

Table A.1 Night-time Predicted Noise Levels and Property Treatments¹

Receiver	Address	# Floors	Future Existing dB(A)	Design Year dB(A)	Increase	Design Year Criteria	Design Year Criteria Exceedance	Increase Criteria Exceedance ³	Acute?	Treatment	
9	33 HUNTER CLOSE~KORORA NSW 2450	1	58	64	5.2	55	9	3.2	Y	1	
10	35 HUNTER CLOSE~KORORA NSW 2450	1	55	58	3.7	55	3	1.7	-	1	
21	817-817A PACIFIC HIGHWAY~KORORA NSW 2450	Ineligible									
24	815 PACIFIC HIGHWAY~KORORA NSW 2450	2	58	66	8.2	55	11	6.2	Y	2	
36	9-11 SEAVIEW CLOSE~KORORA NSW 2450	2	58	62	3.7	55	7	1.7	Y	1	
37	9-11 SEAVIEW CLOSE~KORORA NSW 2450	1	58	61	2.8	55	6	0.8	Y	1	
85	104 HOYS ROAD~MOONEE BEACH NSW 2450	Ineligible									
98	15E SMITHS ROAD~EMERALD BEACH NSW 2456	1	65	63	-2.9	55	8	-	Y	1	

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Receiver	Address	# Floors	Future Existing dB(A)	Design Year dB(A)	Increase	Design Year Criteria	Design Year Criteria Exceedance	Increase Criteria Exceedance ³	Acute?	Treatment	
110	1637 PACIFIC HIGHWAY~EMERALD BEACH NSW 2456	1	68	64	-4.2	55	9	-	Y	1	
121	1579 PACIFIC HIGHWAY~MOONEE BEACH NSW 2450	Ineligible									
178	61 EMERALD HEIGHTS DRIVE~EMERALD BEACH NSW 2456	2	63	55	-8.2	55	0	-	-	1	
180	69 EMERALD HEIGHTS DRIVE~EMERALD BEACH NSW 2456	1	65	60	-4.3	55	5	-	Y	1	
195	1789 PACIFIC HIGHWAY~EMERALD BEACH NSW 2456	1	66	63	-3.4	55	8	-	Y	1	
222	9 MAHOGANY AVENUE~SANDY BEACH NSW 2456	2	67	61	-6.5	55	6	-	Y	1	
223	7 MAHOGANY AVENUE~SANDY BEACH NSW 2456	2	68	65	-2.6	55	10	-	Y	1	
224	5 MAHOGANY AVENUE~SANDY BEACH NSW 2456	2	67	66	-1.7	55	11	-	Y	2	
225	52 DIAMOND HEAD DRIVE~SANDY BEACH NSW 2456	2	69	70	0.7	55	15	-	Y	2	
235	54 DIAMOND HEAD DRIVE~SANDY BEACH NSW 2456	1	72	67	-4.5	55	12	-	Y	2	
237	3 PINE CRESCENT~SANDY BEACH NSW 2456	1	65	60	-5.0	55	5	-	Y	1	

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Receiver	Address	# Floors	Future Existing dB(A)	Design Year dB(A)	Increase	Design Year Criteria	Design Year Criteria Exceedance	Increase Criteria Exceedance ³	Acute?	Treatment	
238	5 PINE CRESCENT~SANDY BEACH NSW 2456	1	68	64	-4.1	55	9	-	Y	1	
239	7 PINE CRESCENT~SANDY BEACH NSW 2456	1	68	62	-5.8	55	7	-	Y	1	
240	9 PINE CRESCENT~SANDY BEACH NSW 2456	2	71	66	-5.0	55	11	-	Y	2	
267	1 FIDDAMAN ROAD~EMERALD BEACH NSW 2456	Demolish									
283	2 TIKI ROAD (ROW)~MOONEE BEACH NSW 2450	1	63	64	0.2	55	9	-	Y	1	
292	1206C PACIFIC HIGHWAY~MOONEE BEACH NSW 2450	1	63	63	-0.2	55	8	-	Y	1	
320	1026F PACIFIC HIGHWAY~SAPPHIRE BEACH NSW 2450	1	64	59	-5.3	55	4	-	-	1	
324	1/1026B PACIFIC HIGHWAY~SAPPHIRE BEACH NSW 2450	1	63	59	-4.1	55	4	-	-	1	
325	1026C PACIFIC HIGHWAY~SAPPHIRE BEACH NSW 2450	1	64	59	-4.3	55	4	-	-	1	
326	1026D PACIFIC HIGHWAY~SAPPHIRE BEACH NSW 2450	1	64	59	-4.4	55	4	-	-	1	
332	1 COACHMANS CLOSE~SAPPHIRE BEACH NSW 2450	2	62	65	2.8	55	10	0.8	Y	1	

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Receiver	Address	# Floors	Future Existing dB(A)	Design Year dB(A)	Increase	Design Year Criteria	Design Year Criteria Exceedance	Increase Criteria Exceedance ³	Acute?	Treatment
336	786 PACIFIC HIGHWAY~SAPPHIRE BEACH NSW 2450	2	63	63	0.4	55	8	-	Y	1
337	8 SAPPHIRE PLACE~SAPPHIRE BEACH NSW 2450	Pre-treated								
425	227 NEWMANS ROAD~WOOLGOOLGA NSW 2456	2	NA	57	NA	50	7	-	-	1
441	15 PARK AVENUE~WOOLGOOLGA NSW 2456	1	NA	58	NA	50	8	-	-	1
442	42 GREYS ROAD~WOOLGOOLGA NSW 2456	Demolish								
444	244 BARK HUT ROAD~WOOLGOOLGA NSW 2456	3	NA	56	NA	50	6	-	-	1
445	235-235A BARK HUT ROAD~WOOLGOOLGA NSW 2456	1	NA	54	NA	50	4	-	-	1
446	234 BARK HUT ROAD~WOOLGOOLGA NSW 2456	1	NA	57	NA	50	7	-	-	1
447	226 BARK HUT ROAD~WOOLGOOLGA NSW 2456	1	NA	58	NA	50	8	-	-	1
454a	115 WEDDING BELLS WAY (ROW)~WOOLGOOLGA NSW 2456	Ineligible								
470	56 PALMER ROAD~WOOLGOOLGA NSW 2456	2	NA	55	NA	50	5	-	-	1

Receiver	Address	# Floors	Future Existing dB(A)	Design Year dB(A)	Increase	Design Year Criteria	Design Year Criteria Exceedance	Increase Criteria Exceedance ³	Acute?	Treatment
482	187 NEWMANS ROAD~WOOLGOOLGA NSW 2456	1	NA	55	NA	50	5	-	-	1
495	12-12A GREYS ROAD~WOOLGOOLGA NSW 2456	1	NA	55	NA	50	5	-	-	1
496	25 GREYS ROAD~WOOLGOOLGA NSW 2456	1	NA	57	NA	50	7	-	-	1
498	127 WOOLGOOLGA CREEK ROAD~WOOLGOOLGA NSW 2456	1	NA	55	NA	50	5	-	-	1
635	6 SAPPHIRE PLACE~SAPPHIRE BEACH NSW 2450	Pre-treated								
713	34-40 UNWINS ROAD~WOOLGOOLGA NSW 2456	1	NA	55	NA	50	5	-	-	1
714	2377B PACIFIC HIGHWAY~WOOLGOOLGA NSW 2456	1	NA	56	NA	50	6	-	-	1
715	2377A PACIFIC HIGHWAY~WOOLGOOLGA NSW 2456	1	NA	53	NA	50	3	-	-	1

Notes

1. The noise levels presented in Table A.1 are those calculated at the most affected façade. Refer digital façade model for detailed eligibility.
2. Increase Criteria = 2.0 dB(A)
3. Treatment Type 1: Air-conditioning and the sealing of wall vents and upgraded window and door seals.
Treatment Type 2: In addition to the above, upgraded windows, glazing and doors (for masonry structures and colorbond/timber structures where walls include insulation material).