



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

**OPERATIONAL NOISE MANAGEMENT
REPORT**

Part 3:

**Additional Properties Eligible for
Architectural Treatment**

ZONE 0000

Lot No: Lot S2W-20-0000-EN052B

Doc No: S2W-REP-20-0000-EN052B-FD-12

Phase: Final Design

June 2013

Prepared for
Contractor:



Prepared by
Designer:



REVISION CONTROL

Edition / Revision/	Date	Details	Authorised
			Name/Position
01	Feb 2011	Detail Design	Edmond Lee Design Manager
02	Apr 2011	Substantial Design	Edmond Lee Design Manager
03	Aug 2011	Final Design	Edmond Lee Design Manager
04	Aug 2011	Final Design	Edmond Lee Design Manager
05	Nov 2011	Final Design	Edmond Lee Design Manager
06	Nov 2011	Final Design	Edmond Lee Design Manager
07	Dec 2011	Final Design (Published Issue)	Edmond Lee Design Manager
08	May 2012	Draft For Review	Greg Vercoe Design Manager
09	Aug 2012	Final Design	Greg Vercoe Design Manager
10	Nov 2012	Final Design	Greg Vercoe Design Manager
11	Apr 2013	Final Design	Greg Vercoe Design Manager
12	Jun 2013	Final Design	Greg Vercoe Design Manager

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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 3 of the Operational Noise Management Report (ONMR). This report provides noise results for the additional receivers eligible for at-house noise treatment not listed 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 additional 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.

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 Environmental Noise Management Manual, refer to Section 2 of Part 1 of the 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

Note:

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. RECEIVER ARCHITECTURAL TREATMENTS

This report details architectural treatments for the additional properties identified (in addition to those identified in the EA). Assessment of EA properties is considered in Part 2 of the ONMR.

Appendix A provides the full list of eligible properties not listed in the EA stage together with the level of architectural treatment proposed. Noise levels were calculated on every facade and every floor of all identified receivers.

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

TYPE 1

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

- 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. DISCUSSION OF RESULTS

The detailed listing of results is provided in Appendix A. In summary:

- 75 additional properties have been identified as being eligible for at-house noise treatments.
- Receiver 454b is included in the list of eligible properties. The building at the coordinates listed in the EA as Receiver 454a is a shed (i.e. ineligible use building) and not eligible for treatment. The building at 454b is residential and eligible.
- Properties that have Development Applications (DAs) approved prior to 13th January 2009 are included in the modelling. Whilst these properties are identified as requiring treatment, some of these properties are new and hence inspection of these properties may indicate that suitable treatments are already in place. It should be noted that the LFHJV does not have details of size or orientation of these properties and hence the extent of eligibility will need to be determined from a site inspection.

6. 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 mitigation, 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 ²	Acute ?	Treatment ³
8	18 THE MOUNTAIN WAY (ROW)~SAPPHIRE BEACH NSW 2450	2	60	61	1.9	55	6	-	Y	1
14	361-371 OLD COAST ROAD~KORORA NSW 2450	1	54	58	3.3	55	3	1.3	-	1
15	369 OLD COAST RD AND~19-21 HUNTER CLOSE~KORORA NSW 2450	1	54	57	2.2	55	2	0.2	-	1
17	17 HUNTER CLOSE~KORORA NSW 2450	2	55	58	2.9	55	3	0.9	-	1
18	13 HUNTER CLOSE~KORORA NSW 2450	2	51	56	5.3	55	1	3.3	-	1
19	11 HUNTER CLOSE~KORORA NSW 2450	2	55	61	5.7	55	6	3.7	Y	1
29	39 CAMPBELL CLOSE~KORORA NSW 2450	1	54	59	4.9	55	4	2.9	-	1
34	15-15A CAMPBELL CLOSE~KORORA NSW 2450	2	54	58	3.3	55	3	1.3	-	1
35	11 CAMPBELL CLOSE~KORORA NSW 2450	1	54	57	2.9	55	2	0.9	-	1
55	7 WAKELANDS ROAD~SAPPHIRE BEACH NSW 2450	1	65	60	-4.5	55	5	-	Y	1
56	1 WAKELANDS ROAD~SAPPHIRE BEACH NSW 2450	1	65	61	-4.7	55	6	-	Y	1
57	1A WAKELANDS ROAD~SAPPHIRE BEACH NSW 2450	1	66	61	-4.5	55	6	-	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 ²	Acute ?	Treatment ³
60	1059 PACIFIC HIGHWAY~SAPPHIRE BEACH NSW 2450	1	65	62	-2.5	55	7	-	Y	1
62	1049 PACIFIC HIGHWAY~SAPPHIRE BEACH NSW 2450	1	64	61	-2.8	55	6	-	Y	1
63	2 SUGARMILL ROAD~SAPPHIRE BEACH NSW 2450	1	65	63	-2.0	55	8	-	Y	1
64	2A SUGARMILL ROAD~SAPPHIRE BEACH NSW 2450	2	65	63	-2.0	55	8	-	Y	1
65	16 SUGARMILL ROAD~SAPPHIRE BEACH NSW 2450	2	63	60	-2.2	55	5	-	Y	1
73	1469 PACIFIC HIGHWAY~MOONEE BEACH NSW 2450	1	63	60	-2.4	55	5	-	Y	1
76	105 HOYS ROAD~MOONEE BEACH NSW 2450	1	61	60	-0.4	55	5	-	Y	1
122	1579 PACIFIC HIGHWAY~MOONEE BEACH NSW 2450	1	64	61	-2.6	55	6	-	Y	1
123	46 HERITAGE DRIVE~MOONEE BEACH NSW 2450	1	65	61	-3.7	55	6	-	Y	1
125	40 HERITAGE DRIVE~MOONEE BEACH NSW 2450	1	65	62	-3.8	55	7	-	Y	1
148	9 CASUARINA COURT~SANDY BEACH NSW 2456	1	63	61	-1.5	55	6	-	Y	1
156	1 EMERALD HEIGHTS DRIVE~EMERALD BEACH NSW 2456	2	62	61	-0.8	55	6	-	Y	1
159	9 EMERALD HEIGHTS DRIVE~EMERALD BEACH NSW 2456	2	64	61	-2.6	55	6	-	Y	1
168	17 EMERALD HEIGHTS DRIVE~EMERALD BEACH NSW 2456	2	63	60	-3.4	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 ²	Acute ?	Treatment ³
169	21 EMERALD HEIGHTS DRIVE~EMERALD BEACH NSW 2456	2	64	60	-3.7	55	5	-	Y	1
241	11 PINE CRESCENT~SANDY BEACH NSW 2456	1	69	60	-9.4	55	5	-	Y	1
260	1800 PACIFIC HIGHWAY~EMERALD BEACH NSW 2456	2	62	61	-0.9	55	6	-	Y	1
268	3 FIDDAMAN ROAD~EMERALD BEACH NSW 2456	1	64	63	-0.7	55	8	-	Y	1
269	5 FIDDAMAN ROAD~EMERALD BEACH NSW 2456	2	63	61	-1.5	55	6	-	Y	1
285	10 TIKI ROAD (ROW)~MOONEE BEACH NSW 2450	2	61	60	-1.7	55	5	-	Y	1
290	1206A PACIFIC HIGHWAY~MOONEE BEACH NSW 2450	1	62	61	-1.4	55	6	-	Y	1
291	1206B PACIFIC HIGHWAY~MOONEE BEACH NSW 2450	1	62	62	-0.4	55	7	-	Y	1
309	8 ALPINI PLACE~SAPPHIRE BEACH NSW 2450	2	60	61	1.0	55	6	-	Y	1
310	8 ALPINI PLACE~SAPPHIRE BEACH NSW 2450	2	66	61	-5.1	55	6	-	Y	1
322	1026G PACIFIC HIGHWAY~SAPPHIRE BEACH NSW 2450	1	64	60	-3.6	55	5	-	Y	1
366	27 WARRAWEE STREET~SAPPHIRE BEACH NSW 2450	2	55	58	2.4	55	3	0.4	-	1
370	42 WARRAWEE STREET~SAPPHIRE BEACH NSW 2450	2	59	60	1.1	55	5	-	Y	1
430	200 Woolgoolga Creek Road, Woolgoolga	1	NA	52	NA	50	2	-	-	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 ²	Acute ?	
431	14 SANCTUARY DRIVE~WOOLGOOLGA NSW 2456	2	NA	53	NA	50	3	-	-	1
432	6 FREEMANS ROAD~WOOLGOOLGA NSW 2456	1	NA	51	NA	50	1	-	-	1
439	25 PARK AVENUE~WOOLGOOLGA NSW 2456	2	NA	52	NA	50	2	-	-	1
440	17 PARK AVENUE~WOOLGOOLGA NSW 2456	1	NA	53	NA	50	3	-	-	1
443	18 SANCTUARY DRIVE~WOOLGOOLGA NSW 2456	1	NA	51	NA	50	1	-	-	1
454b	115 WEDDING BELLS WAY (ROW)~WOOLGOOLGA NSW 2456	1	NA	55	NA	50	5	-	-	1
455	85 WEDDING BELLS WAY (ROW)~WOOLGOOLGA NSW 2456	2	NA	54	NA	50	4	-	-	1
468	46 PALMER ROAD~WOOLGOOLGA NSW 2456	2	NA	51	NA	50	1	-	-	1
469	52 PALMER ROAD~WOOLGOOLGA NSW 2456	2	NA	52	NA	50	2	-	-	1
472	66 PALMER ROAD~WOOLGOOLGA NSW 2456	1	NA	52	NA	50	2	-	-	1
478	NEWMANS ROAD~WOOLGOOLGA NSW 2456	1	NA	51	NA	50	1	-	-	1
485	21 GRESHAM DRIVE~WOOLGOOLGA NSW 2456	2	NA	51	NA	50	1	-	-	1
491	26 GRESHAM DRIVE~WOOLGOOLGA NSW 2456	2	NA	51	NA	50	1	-	-	1
504	21 GREYS ROAD~WOOLGOOLGA NSW 2456	1	NA	52	NA	50	2	-	-	1
507	2377C PACIFIC HIGHWAY~WOOLGOOLGA NSW 2456	1	NA	52	NA	50	2	-	-	1
514	THE PINES LIVE SMART~8 HEARNES LAKE ROAD~WOOLGOOLGA NSW 2456	2	62	60	-1.6	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 ²	Acute ?	Treatment ³
547	2921 PACIFIC HIGHWAY~WOOLGOOLGA NSW 2456	1	NA	52	NA	50	2	-	-	1
619	3 COACHMANS CLOSE~SAPPHIRE BEACH NSW 2450	2	55	58	3.8	55	3	1.8	-	1
624	7/744 PACIFIC HIGHWAY~SAPPHIRE BEACH NSW 2450	3	63	60	-3.1	55	5	-	Y	1
634	SAPPHIRE PINES~29/784 PACIFIC HIGHWAY~SAPPHIRE BEACH NSW 2450	5	62	61	-0.8	55	6	-	Y	1
652	7 FIDDAMAN ROAD~EMERALD BEACH NSW 2456	2	62	60	-2.3	55	5	-	Y	1
703	4 OAK CLOSE~SANDY BEACH NSW 2456	1	63	61	-2.1	55	6	-	Y	1
716	124 WOOLGOOLGA CREEK ROAD~WOOLGOOLGA NSW 2456	1	NA	51	NA	50	1	-	-	1
1006	33 HUNTER CLOSE~KORORA NSW 2450	1	57	61	3.5	55	6	1.5	Y	1
1024	KUMBAINGERI CLOSE~MOONEE BEACH NSW 2450	1	63	60	-3.1	55	5	-	Y	1
1047	3 MAHOGANY AVENUE~SANDY BEACH NSW 2456	2	66	65	-1.6	55	10	-	Y	2
1048	50 DIAMOND HEAD DRIVE~SANDY BEACH NSW 2456	2	66	64	-1.2	55	9	-	Y	1
1050b	55 DIAMOND HEAD DRIVE~SANDY BEACH NSW 2456	1	60	61	1.0	55	6	-	Y	1
1060	34-40 UNWINS ROAD~WOOLGOOLGA NSW 2456	1	NA	53	NA	50	3	-	-	1
1067	201 NEWMANS ROAD~WOOLGOOLGA NSW 2456	1	NA	51	NA	50	1	-	-	1
1080	229 NEWMANS ROAD~WOOLGOOLGA NSW 2456	1	NA	53	NA	50	3	-	N	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 ²	Acute ?	Treatment ³
3024	48 KUMBAINGERI CLOSE~MOONEE BEACH NSW 2450	1	64	60	-3.3	55	5	-	Y	1
3093	42 KUMBAINGERI CLOSE~MOONEE BEACH NSW 2450	1	63	60	-2.8	55	5	-	Y	1

Notes

- The noise levels presented in Table A.1 are those calculated at the most affected façade level. Refer to digital façade model for detailed eligibility of each façade and floor.
- Increase Criteria = 2.0 dB(A).
- 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 materials).