Vipac Engineers & Scientists Ltd.
Level 2, 146 Leichhardt Street, Spring Hill, QLD 4000, Australia
PO Box 47, Spring Hill, Qld, 4000 Australia
t. +61 7 3377 0400 | **f.** +61 7 3377 0499 | **e.** brisbane@vipac.com.au
w. www.vipac.com.au | A.B.N. 33 005 453 627 | A.C.N. 005 453 627

Attention:	Prue Fitzgerald	Date:	26 Mar 2015
Company:	RPS Group	Pages:	Page 1 of 10
Email :	Prue.Fitzgerald@rpsgroup.com.au	Doc No.:	517955-0
From:	Daniel Cheetham	Ref No.:	70Q-13-0319-TRP-517955-0
Subject:	Yarrabilba Development, Precinct 2, Village 3B – Revised Traffic Noise Assessment		

Dear Prue,

This document presents a reassessment of the acoustic requirements for the Precinct 2 Village 3B area in the Yarrabilba development. The reassessment is necessary due to a change in the Lot layout in Village 3B.

A previous report has been issued by Vipac assessing traffic noise levels in all areas of Precinct 2 - Vipac report *70Q-13-0319-TRP-515727-3* "Yarrabilba Development, Precinct 2 - Traffic Noise Assessment", dated 16 Apr 2014.

The applicable noise limits (as obtained from the previous report) are summarised in Table 1.

Table 1: Applicable Noise Limits

Noise Criteria	Noise Limit	Period	Where
The Department of Transport and Main Roads' Road Traffic Noise Management: Code of Practice	60 dB(A) $L_{A10\ (18hr)}$, free field	6am to 12 pm	Future residences (external)
AS/NZS 2107:2000 Acoustics—Recommended design sound levels and reverberation times for building interiors (AS2107)	40 dB(A) $L_{Aeq,Night(1hr)}$, indoors	Night (10pm to 7am)	Sleeping areas in future residences, indoors
	45 dB(A) $L_{Aeq,Day(1hr)}$ indoors	Day (7am to 10pm)	Living areas in future residences, indoors

Revised noise calculations were performed for Village 3B using SoundPLAN noise modelling software, with the same parameters and assumptions used in the previous Vipac report, with the revised Lot layout received from RPS, "7952-BDY-Current-20150316.dwg", received 18/03/2015.

With the new Lot layout, predicted noise levels are up to 69 dB(A) $L_{A10(18hr)}$ at the ground floor and 70 dB(A) $L_{A10(18hr)}$ at the first floor. This exceeds the applicable 60 dB(A) noise limit by up to 9 dB(A) at the ground floor and 10 dB(A) at the first floor. 11 Lots exceed the noise limits at the ground floor and 13 Lots exceed the noise limits at the first floor as shown in Table 2 and Table 3.

Table 2: Lots Exceeding Applicable External Noise Limits at the Ground Floor Level and Predicted Noise Levels

Lot	$L_{A10(18hr)}$ (dB(A))	Lot	$L_{A10(18hr)}$ (dB(A))	Lot	$L_{A10(18hr)}$ (dB(A))
600	69	642	69	646	69
601	63	643	68	647	68
640	69	644	68	648	63
641	68	645	68		

Table 3: Lots Exceeding Applicable External Noise Limits at the First Floor Level and Predicted Noise Levels

Lot	$L_{A10(18hr)}$ (dB(A))	Lot	$L_{A10(18hr)}$ (dB(A))	Lot	$L_{A10(18hr)}$ (dB(A))
600	70	642	70	647	69
601	65	643	69	648	65
602	61	644	69	649	60
640	70	645	69		
641	69	646	70		

Noise contour maps are included in Appendix A. Predicted noise levels at all Lots affected by significant levels of traffic noise are presented in Appendix B.

Floors of future residences where the noise limits are exceeded will need to be designed and constructed to comply with the indoor noise limits in AS/NZS 2107:2000, "Acoustics—Recommended design sound levels and reverberation times for building interiors" (AS2107).

The recommended acoustic ratings for all walls, windows and roofing were calculated using the procedures in AS3671 *"Acoustics – Road Traffic Noise Intrusion Building Siting and Construction"* using worst case assumptions about room dimensions and building orientations.

The assumed construction specifications for future residences are given in Table 4. Brick external walls are assumed. If lightweight walls are proposed for future residences, building construction acoustic requirements must be calculated when final details of room dimensions and building component construction are available.

Table 4: The Assumed Construction Specifications for Future Residences

Item	Construction	Expected R_w
External Wall	Brick Veneer	52
	10mm plasterboard	
Ceiling and Roof	Sheet metal / Cement tiles	38
	10mm Plasterboard	
	R2.5 Batts Insulation	
Glazing and Frames	4mm Float	24

Glazing requirements are specified in Table 5. Where glazing acoustic requirements are not specified in Table 5, glazing ratings from Table 4 can be used.

Table 5: Required Glazing Construction for Residences on Lots exceeding External Noise Limits to Comply with Indoor Noise Limits

Floor	Room Type	Façade	Glazing Rating
Ground	Bedroom	N	33
		E	29
		S	25
		W	29
	Living Room	N	27
		E	26
		W	26
First	Bedroom	N	34
		E	31
		S	26
		W	31
	Living Room	N	28
		E	29
		W	29

Table 5 lists the required R_w ratings (Weighted Sound Reduction Index) for glazing and frames. If consistency of glazing systems is preferred for each room, the higher of the required R_W ratings must be used.

It is required that the R_w performance ratings of the glazing systems (windows and frames) be certified by the supplier prior to installation. Glazing certificates will be required for building certification.

For floors of Lots where the noise criteria is exceeded, acceptable indoor noise levels can be achieved with the glazing recommendations specified, however external doors and windows must remain closed. Under these conditions, alternative ventilation will be required. Alternative ventilation may include air-conditioning, borrowed ventilation, mechanically assisted ventilation or other suitable methods.

The recommended glazing requirements are conservative ratings based on preliminary data and assumptions about room sizes and component construction. It is recommended that building construction acoustic requirements be recalculated when final details of room dimensions and building component construction are available.

If you have any queries regarding this document, please do not hesitate to contact the undersigned on (07) 3377 0400.

Yours faithfully

VIPAC ENGINEERS & SCIENTISTS LTD

Daniel Cheetham

Consulting Engineer

REVIEWED BY:

Jackson Yu

Reviewing Engineer

APPENDIX A: NOISE CONTOUR MAPS

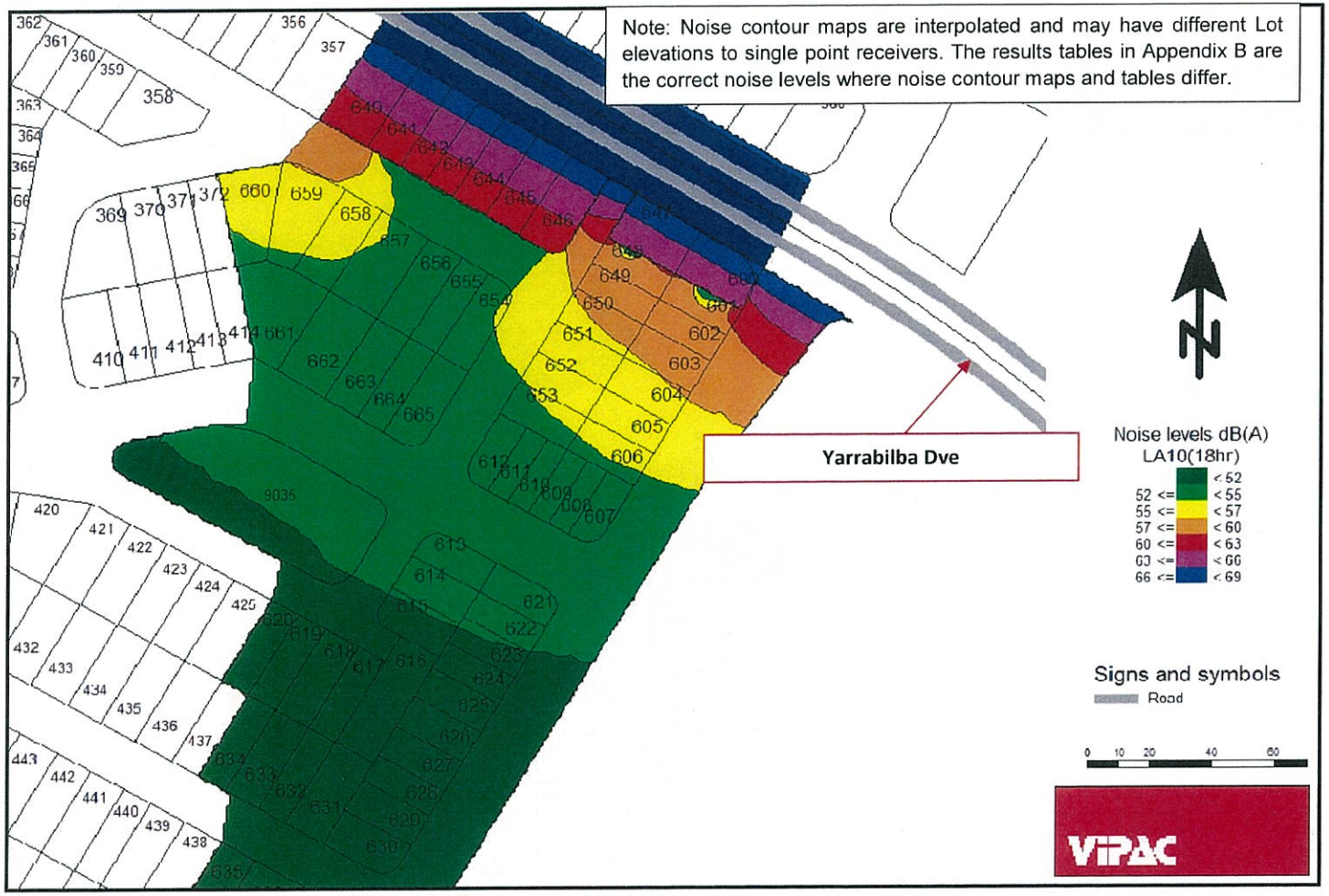

Figure A-1: Predicted Free Field $L_{A10\,(18hr)}$ Road Traffic Noise Levels at the Ground Floor

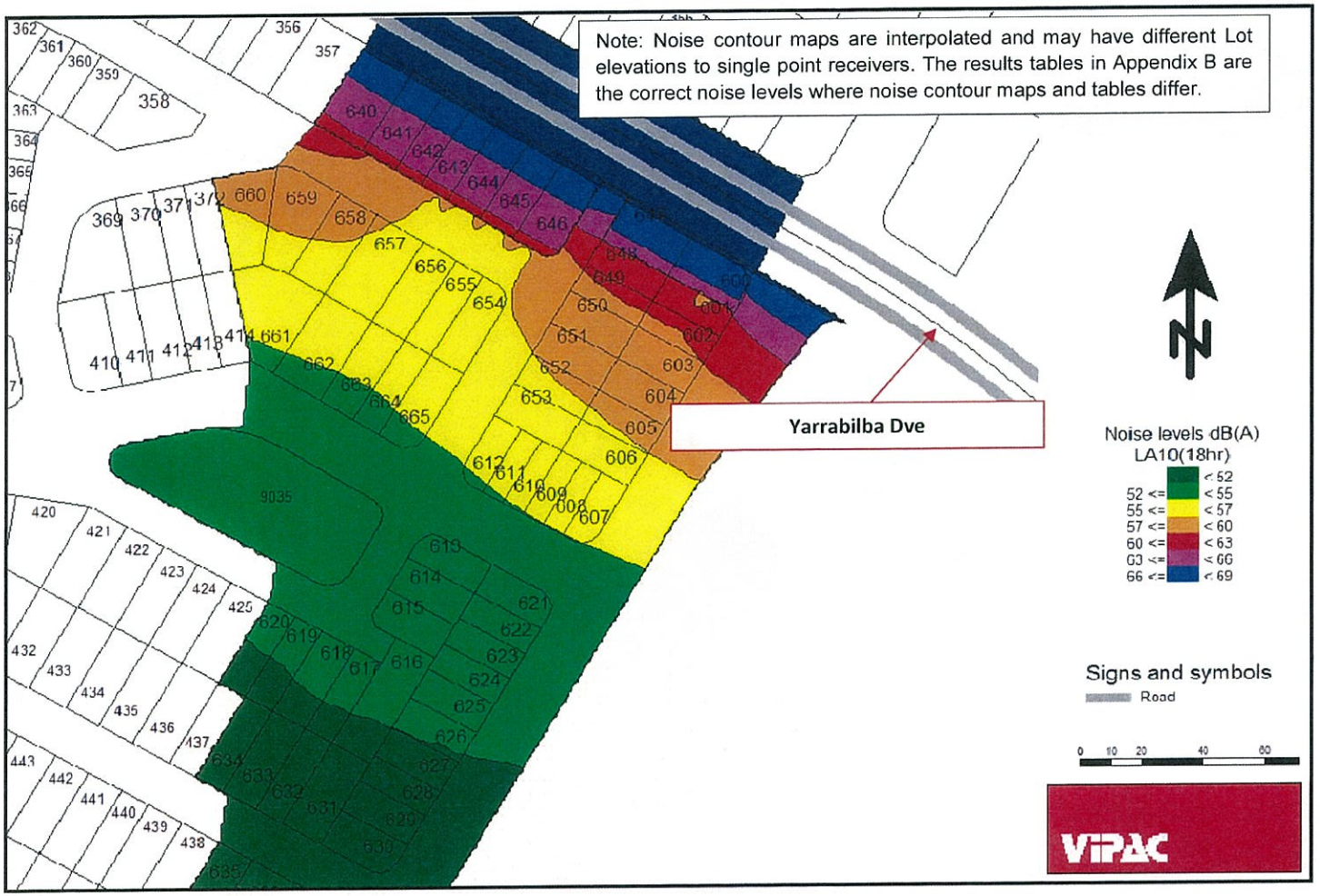

Figure A-2: Predicted Free Field $L_{A10\ (18hr)}$ Road Traffic Noise Levels at the First Floor

APPENDIX B: CALCULATION RESULTS AND ASSUMED PAD LEVELS

Table B-1: Noise Modelling Results and Assumed Pad Heights

Lot	Assumed Building Pad AHD	Floor	Predicted Free Field $L_{A10(18hr)}$ (dB(A))
600	35.30	Ground	69
		First	70
601	35.45	Ground	63
		First	65
602	35.62	Ground	59
		First	61
603	36.00	Ground	58
		First	60
604	36.21	Ground	57
		First	59
605	36.44	Ground	56
		First	58
606	36.74	Ground	55
		First	57
607	36.59	Ground	55
		First	56
608	37.01	Ground	55
		First	56
609	37.47	Ground	55
		First	56
610	56.20	Ground	55
		First	56
611	56.02	Ground	55
		First	56
612	55.80	Ground	54
		First	56
613	55.84	Ground	53
		First	54
614	55.61	Ground	52
		First	54
615	55.38	Ground	52
		First	53
616	55.04	Ground	52
		First	53
617	54.84	Ground	51
		First	53
618	54.54	Ground	51
		First	53
619	53.94	Ground	51
		First	53
620	53.56	Ground	51
		First	52
621	53.58	Ground	53
		First	54
622	53.35	Ground	52
		First	54
623	53.38	Ground	52
		First	53
624	53.30	Ground	52
		First	53
625	53.42	Ground	51
		First	53
626	53.39	Ground	51
		First	52
627	53.44	Ground	51
		First	52
628	53.76	Ground	50
		First	52

Lot	Assumed Building Pad AHD	Floor	Predicted Free Field $L_{A10(18hr)}$ (dB(A))
629	55.52	Ground	50
		First	51
630	55.27	Ground	50
		First	51
631	55.11	Ground	50
		First	52
632	54.88	Ground	50
		First	52
633	54.66	Ground	50
		First	52
634	54.34	Ground	50
		First	52
640	53.20	Ground	69
		First	70
641	53.06	Ground	68
		First	69
642	52.62	Ground	69
		First	70
643	53.68	Ground	68
		First	69
644	54.05	Ground	68
		First	69
645	54.44	Ground	68
		First	69
646	54.81	Ground	69
		First	70
647	55.14	Ground	68
		First	69
648	55.69	Ground	63
		First	65
649	36.56	Ground	59
		First	60
650	36.88	Ground	58
		First	59
651	37.16	Ground	57
		First	58
652	37.39	Ground	56
		First	57
653	37.80	Ground	55
		First	57
654	38.76	Ground	55
		First	57
655	39.29	Ground	54
		First	56
656	39.80	Ground	54
		First	56
657	40.47	Ground	55
		First	57
658	41.20	Ground	56
		First	58
659	42.05	Ground	57
		First	59
660	42.78	Ground	56
		First	58
661	42.36	Ground	55
		First	56
662	41.47	Ground	54
		First	56
663	40.73	Ground	54
		First	56

Lot	Assumed Building Pad AHD	Floor	Predicted Free Field $L_{A10(18hr)}$ (dB(A))
664	40.21	Ground	54
		First	56
665	39.71	Ground	54
		First	56