

23 November 2020

WM Project Number: 19440
Our Ref: OWE_MOD6_19440_28102020
Email: stephanie.partridge@goodman.com

Stephanie Partridge
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SYDNEY NSW 2001

Dear Stephanie

Re: Oakdale West Estate (OWE) Modification 6 - Noise Assessment

Introduction

Wilkinson Murray Pty Limited (WM) was commissioned by Goodman to review the modifications of the Oakdale West Estate (OWE) Plans – SSD 7348 Modification 6 (MOD6). The OWE 'Concept Proposal' and 'Stage 1 Development' has been approved by the Department of Planning, Industry and Environment (DPIE), with Development Consent (SSD 7348) granted in September 2019.

The purpose of the review is to determine the noise impact from MOD 6 on surrounding receivers and provide any noise control recommendations, if required. The existing OWE noise model developed during MOD3 has been adapted to reflect the proposed changes, based on updated civil design, updated building layouts and updated vehicle movement data.

MOD6 involves minor changes to the Concept Plan Approval and Stage 1 Development Approval, principally relating to Precincts 2 and 3 as follows:

- Minor change to building layout at Precinct 3 (principally Warehouses 3A/3B);
- Civil design amended to accommodate changes to Precinct 3 (as above);
- Increase in building height to Building 2A (increase to 14.9m at ridge from 13.7m);
- Minor alterations to building form and layout of Buildings 1B, 1C, 2A & 2C-2E, resulting from detailed design development;
- No change to Estate GLA & GFA;
- No change to road layouts;
- No change to any other development controls;
- Construction of Estate Road 8 under the Stage 1 Development;
- Increasing the onsite speed limit to 50km/h for both light and heavy vehicles.

It should be noted, Goodman has executed noise agreements with the closest residential receivers to the south of the site (N3, N4 and N5) and as such, the only receivers considered to remain sensitive to noise effects from the site are N1 and N2 to the west.

Comparison of the OWE MOD 3 and OWE MOD 6 Concept Plans are presented in Figure 1 and Figure 2, respectively. The site maps also include the locations of nearby surrounding receivers.

Figure 1 Site Location Plan – MOD 3

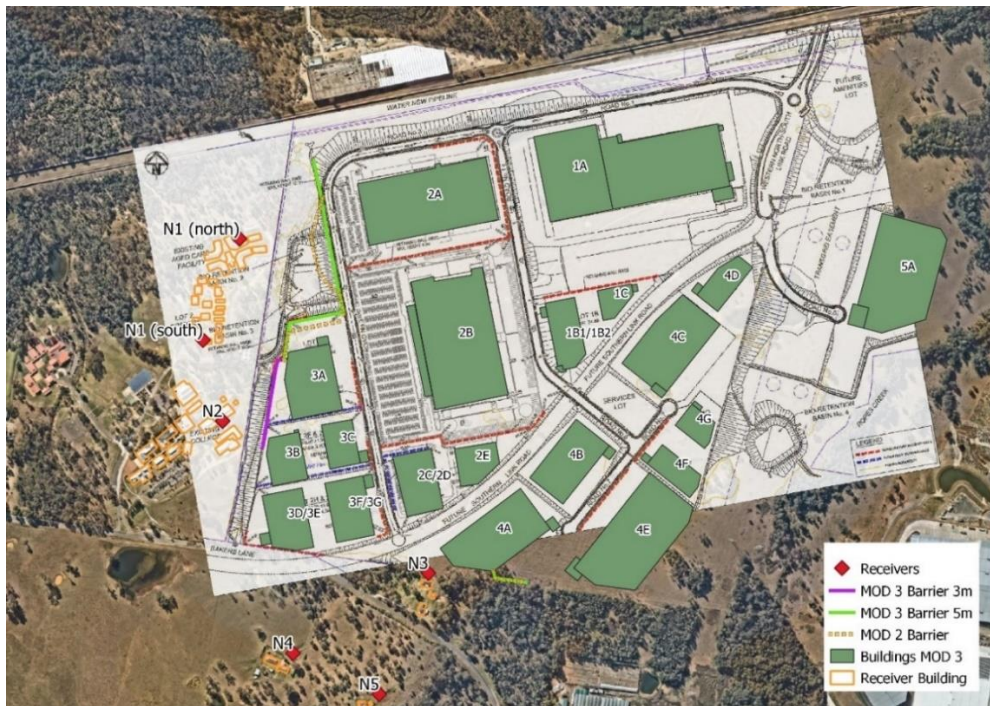


Figure 2 Site Location Plan – MOD 6



Noise Modelling

Operational noise emissions from the site have been predicted with a model prepared using the SoundPLAN V8.0 noise modelling software, implementing the CONCAWE prediction method. The model incorporates the OWE MOD 6 Masterplan design, including the updated civil design, buildings and sensitive receivers shown in Figure 2.

The revised traffic generation from Lots 2A, 2C, 2D, 2E, 3A, 3B and 3C for MOD 6 was provided by Ason Group. There are no changes in traffic volumes for Lots 1B and 1C due to minor changes in design for these lots. The revised traffic generation presented in Table 1 was incorporated in the noise prediction model.

Table 1 Revised OWE Trip Generation

OWE Trip Generation Comparison

Lot	MOD 3 Trip Generation				MOD 6 Trip Generation				Difference (MOD 6 to MOD 3) Trip Generation			
	GFA	AM	PM	Daily	GFA	AM	PM	Daily	GFA	AM	PM	Daily
Lot 2A	42,045	69	69	795	46,400	76	76	878	4,355	7	7	82
Lot 2C	5,338	9	9	101	5,130	8	8	97	-208	0	0	-4
Lot 2D	5,338	9	9	101	5,130	8	8	97	-208	0	0	-4
Lot 2E	6,500	11	11	123	5,300	9	9	100	-1,200	-2	-2	-23
Sub-total	59,220	97	97	1,120	61,960	101	101	1,172	2,740	4	4	52
Lot 3A	19,320	31	31	366	10,500	17	17	199	-8,820	-14	-14	-167
Lot 3B ¹	15,250	25	25	289	20,428	33	33	386	5,178	8	8	98
Lot 3C ²	23,250	38	38	440	26,250	43	43	497	3,000	5	5	57
Sub-total	57,820	94	94	1,094	57,178	93	93	1,082	-642	-1	-1	-12
Total	117,040	191	191	2,214	119,138	194	194	2,254	2,098	3	3	40

Note: 1. Include Lot 3B and Lot 3C in MOD 3
2. Include Lot 3D and Lot 3E in MOD 3

With exception to the revised OWE MOD6 plan layout and revised traffic generation, the site operations, noise control measures and meteorological condition from the previous noise model (report no. 19440 Version F) have been assumed.

Sound power levels of 91 dBA for light vehicles travelling at 50 km/hr and 106 dBA for heavy vehicles travelling at 50 km/hr have been applied per vehicle movement, for all modelling scenarios. It has been assumed that maximum peak vehicle movements in every precinct of the OWE would occur concurrently.

Noise Impact Results

Intrusive Noise Impact Results

The MOD3 assessment identified the potential for marginal noise exceedances at receivers N3, N4, N5 – these being closest residential receivers to the south, with full compliance predicted at all other receivers, including N1 (Emmaus Village Aged Care) and N2 (School) located to the west of the site. As noted earlier, Goodman now has executed noise agreements with N3, N4, N5 and as such, the only receivers considered to remain sensitive to noise effects from the site are N1 and N2.

Updated modelling taking account of the changes associated with MOD 6 indicates that noise levels would increase by less than 1dB at the receivers to the west – N1 and N2 (an unperceivable increase) and levels would remain in compliance with the sites approved noise levels at these receivers under all

operational and meteorological conditions.

The noise impact at Receiver N2 has been reduced due to the increase shielding from buildings in Lot 3. In addition to this, the traffic volume generation for Lot 3A, located near the school, has been reduced.

Table 2 presents the comparison in the MOD 3 and MOD 6 noise impact results.

Table 2 Predicted $L_{Aeq,15min}$ Operational Noise Levels – All Precincts

Receiver	Period (weather)	$L_{Aeq,15min}$ Noise Level (dBA)				
		Approved Noise Limits	Typical Season		PEAK Season	
			Mod 3	Mod 6	Mod 3	Mod 6
N1 – Emmaus Village Residential	Day	44	38	38	39	39
	Eve	43	37	37	38	38
	Night	41	35	35	36	36
	Night ^(Adverse)	41	38	39	39	39
N2 – Emmaus Catholic College (School)	Day	45	40	39	41	39
	Eve	n/a	40	39	40	39
	Night	n/a	37	33	38	34
	Night ^(Adverse)	n/a	40	37	42	37

Note 1: The approved noise limit for N2 is L_{Aeq} 35 dBA which applies internally and is only applicable when the school is in use. For the purpose of this assessment a conservative inside to outside correction of +10 dBA has been applied to the internal limit for N2 to allow for comparison with the external noise predictions. An inside to outside correction of +10 dBA is typical of a building with partially open windows.

Note 2: Consistent with the MOD2 assessment, noise-enhancing weather conditions during the daytime and evening periods have not been included in the assessment as these are not considered prevailing conditions for the site.

Note 3: This assessment has applied a revised sound power level of 91 dBA to represent a light vehicle movement. MOD2 applied a sound power level of 96 dBA, which is considered overly conservative.

Note 4: The predictions have assumed that the Lot 2B mechanical services plant can be attenuated by 10 dB by inclusion of silencers/attenuators and/or barrier solutions. This would need to be addressed with the mechanical services engineers during detailed design. Note this assessment has assumed that all mech services plant would operate concurrently, at all times - this assumption would also be reviewed at detailed design.

Note 5: The predictions assume the barrier to the west of the site is extended to the extent and heights shown in Figure 1-1.

Sleep Disturbance Assessment

Table 3 shows the $L_{A1,1min}$ maximum operational noise predictions for MOD3 and MOD 6 in comparison with the approved noise limits.

Table 3 Predicted Maximum Operational Noise Levels – Staged Development

Receiver	Period	$L_{A1,1min}$ Noise Level (dBA)		
		Adopted Criteria (Approved Limit)	MOD 3	MOD 6
N1 – Emmaus Village Residential	Night	52 (51)	43	44
	Night ^{Adverse}	52 (51)	49	50
N2 – Emmaus College (School)	Night	n/a	n/a	n/a
	Night ^{Adverse}	n/a	n/a	n/a

Updated modelling taking account of the changes associated with MOD6 (and Stage 3 DA & Council DA) indicates that noise levels would increase by less than 1dB at the receivers to the west (an unperceivable increase) and levels would remain in compliance with the sites approved noise levels at these receivers under all operational and meteorological conditions.

Amenity – Cumulative Noise

The cumulative effect of noise from all industrial sources has been considered in this review. Table 4 shows the $L_{Aeq,Period}$ operational noise predictions for MOD 3 and MOD 6 in comparison with the identified Project Amenity Noise Levels.

The updated noise model show noise level at N1 to be relatively the same and the noise level at N2 has slightly decreased.

As noted in the previous acoustic report (Report 19440 Version F) consideration is given to the screening effects of the OWE and the additional separation distance to the other industrial sites located further to the east (Oakdale Central, Oakdale South and Jacfin) from N1. It would be expected that the *NPFI* recommended ANLs (for cumulative industrial noise) would be generally achieved at N1.

Table 4 Predicted $L_{Aeq,Period}$ Operational Noise Levels – Staged Development

Receiver	Period (weather)	$L_{Aeq,Period}$ Noise Level (dBA)				
		<i>NPFI</i> Project Amenity Noise Levels (SSDA levels shown in brackets)	Typical Season		PEAK Season	
			Mod 3	Mod 6	Mod 3	Mod 6
N1 – Emmaus Village Residential	Day	45 (50)	38	38	39	39
	Eve	40 (44)	37	37	38	38
	Night	35 (36)	35	35	36	35
	Night ^(Adverse)	35 (36)	38	38	39	39
N2 – Emmaus Catholic College (School)	Day	45	40	39	41	39
	Eve	n/a	40	39	40	39
	Night	n/a	37	33	38	34
	Night ^(Adverse)	n/a	40	36	42	37

Note 1: The Project Amenity Noise Level for N2 is L_{Aeq} 35 dBA which applies internally and is only applicable when the school is in use. For the purpose of this assessment a conservative inside to outside correction of +10 dBA has been applied to the internal limit for N2 to allow for comparison with the external noise predictions. An inside to outside correction of +10 dBA is typical of a building with partially open windows.

Note 2: As per Condition C19 of the Development Consent SSD 7348, the predicted noise levels at N3 have not been compared against the approved noise limits, as a noise agreement is in place between the residential landowner and the applicant.

Note 3: Consistent with the MOD2 assessment, noise-enhancing weather conditions during the daytime and evening periods have not been included in the assessment as these are not considered prevailing conditions for the site.

Note 4: This assessment has applied a revised sound power level of 91 dBA to represent a light vehicle movement. MOD2 applied a sound power level of 96 dBA, which is considered overly conservative.

Note 5: The predictions assume the noise controls recommended by the MOD2 noise assessment. This includes the restriction of mechanical services use during the night-time period on Lots 3A, 3B, 3C, 3D, 3E, 2C, 2D, 2E, 4A, 4B, 4E; restriction of the use of forklifts during the night-time period on Lots 3B, 3C, 3D, 3E, 2B, 2C, 2D, 2E, 4A, 4E, 5A; and the installation of noise walls to the west and south of the site as described in the MOD2 assessment. However, due to the MOD3 change in the civil design of the Bio Retention Basin No 2 to the west of the site, the noise barrier has been relocated marginally to the east of the basin.

Note 6: The predictions have assumed that the Lot 2B mechanical services plant can be attenuated by 10 dB by inclusion of silencers/attenuators and/or barrier solutions. This would need to be confirmed with the mechanical services engineers during detailed design.

Note 7: The predictions assume the barrier to the west of the site is extended to the extent and heights shown in Figure 1-1. Note 8: The Project Amenity Noise Levels determined by the SSDA noise assessment are shown in brackets.

Construction Noise

An acoustic review of the construction of Road Estate 8 was undertaken. Noise from construction of Road Estate 8 will have minimal influence on the overall OWE construction noise at the surrounding receivers. This is because the road works are farther away than the main construction works of the OWE. In addition to this, the construction of Road Estate 8 is likely to occur when the exterior façade of building 2B is finished. Building 2B would provide shielding between works at Road Estate 8 and the surrounding receivers.

Construction works are to maintain the Noise Mitigation Plan outlined in Section 6.5 and 6.7 of the Wilkinson Murray Operational Noise Assessment report (reference number: 19440, Version F) and the indicative construction noise and vibration mitigation measures recommended in Section 5 of SLR report *610.15617-R2*.

Discussion

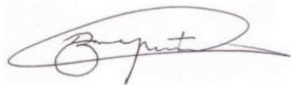
Noise impact assessment in relation to intrusive, sleep disturbance, cumulative and construction noise have been considered in this review. As indicated in the result sections, there is a marginal increase in noise level at N1, which is negligible. The noise impact at N1 is still deemed compliant with the relevant noise limits. A decrease in noise level at N2 was predicted. This decrease is due to the additional shielding from Lot 3 buildings and decrease in traffic generation for warehouse 3A.

Therefore, the proposed changes have been determined by noise modelling to be relatively minor from an acoustical perspective and no additional noise control is required.

I trust this information is sufficient. Please contact us if you have any further queries.

Yours faithfully

WILKINSON MURRAY



Brian Mendieta
Project Engineer

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