KEYLAN
consulting pty ltd

Suite 2, Level 1
1 Rialto Lane
Manly NSW 2095

13 September 2021

Mr Chris Ritchie
Director, Industry Assessments
NSW Department of Planning, Industry and Environment
GPO Box 39
Sydney, NSW

Dear Mr Ritchie,

Oakdale West Estate (SSD 7348) Modification 7 – Response to Request for further information

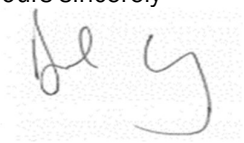
We write on behalf of *Goodman Property Services (Aust.) Pty Ltd* (the Applicant) in relation to the application to modify the Oakdale West Estate State Significant Development (SSD) application (SSD 7348 Mod 7).

We have reviewed the comments from the Department of Planning, Industry and Environment (DPIE), Penrith City Council and NSW Rural Fire Service and have provided a response to each (Attachment A).

We note that a response from Endeavour Energy stated it did not have any formal comments or make any objections to the development.

Please do not hesitate to contact Kane Winwood on 02 8459 7507 or kane@keylan.com.au if you wish to discuss any aspect of this correspondence.

Yours sincerely



Dan Keary BSc MURP MPIA
Director

Attachment A	Response to Agency Submissions
Attachment B	Letter to Council - Updated Noise and Vibration Impact Assessment – Building 3B
Attachment C	Updated Masterplan Layout
Attachment D	Updated Traffic Impact Assessment
Attachment E	Updated Noise and Vibration Impact Assessment – Mod 7
Attachment F	Bushfire Response Reference Figures

Attachment A

Response to Agency Submissions

Department of Planning, Industry and Environment

Issue	Comment/Response
EIS Description of modification – confirm the DA to Council for building 3B matches the updates to MOD 7 in terms of keeping the night-time restrictions on the use of mechanical plant and forklifts.	The DA for building 3B (DA21/0440) was lodged with Penrith City Council prior to the updated noise modelling for Modification 7, which no longer includes night time operation of mechanical plant and forklifts in Building 3B. Following the updated noise modelling for Mod 7, the noise assessment for Building 3B was also updated. A copy of the letter updating the noise assessment for DA21/0440 is attached for your information (Attachment B). This has been submitted to council for consideration, and we confirm that both applications are consistent.
Architectural plans – provide an estate masterplan that does not show building layouts for 3B and 3C. These should be blank.	An updated masterplan which does not indicate layouts of unapproved buildings in Precinct 3 is attached (Attachment C).
Transport Statement Refers to the modification including minor changes to the office design of Precinct 1. Clarify if the mod proposes any changes to offices in Precinct 1 (it's not in the EIS description)	Mod 7 does not propose the changes to Precinct 1 as indicated in the Transport Statement. The proposed changes to Precinct 1 are included in a separate modification application (SSD 7348 Mod 8). An updated Transport Statement which no longer refers to Precinct 1 changes is attached (Attachment D).
Noise Impact Assessment Please provide previously requested information and clarifications, which include: • revised source emission inventory • inconsistencies with data reference. • Provide further detail to verify how construction noise was excluded from the background monitoring dataset for N7 to N14 (South).	An updated NVIA is included at Attachment E which addresses the issues raised by DPIE.
The intermittency noise test put forward by RWDI cannot be accepted until EPA advice is provided in writing.	RWDI continues to believe that an intermittent modifying factor is not warranted by the proposal.

Issue	Comment/Response
	The amended NVIA at Attachment E notes that the EPA (Gordon Downey, Principal Technical Advisor – Noise) advised the intermittency modifying factor applies to step-change in continuous or quasi-continuous noise sources. The updated NVIA notes the noise sources at the development do not meet this classification. With consideration to the number of noise sources at OWE, total noise emissions will not suddenly change. Further detail is provided in the updated NVIA at Attachment E.

Table 1: Response to DPIE comments

Penrith City Council

Issue	Comment/Response
Planning and Design Considerations	
The appropriateness of the proposed increased finished ground levels with respect to adjacent properties. The SEE makes reference to a maximum of 700mm which is believed to be up to 800mm of additional fill. The resulting interface treatment at the boundaries of the estate should be carefully considered.	The interface treatment will be consistent with the approved estate. The proposed final floor level of Building 4A is increasing from the approved RL 83 m to RL 83.7 m and Building 4B is increasing from RL 79.8 m to RL 80.5 m. The revised levels are largely consistent with what has already been approved, falling mainly within the +/-1m tolerance approved under SSD 7348 Mod 6. The SEE notes (see Figure 7 in section 5.1 of the SEE) that the key viewshed for the southern receiver is towards the north and west. Building 4A is mostly obstructed from the view of the southern receiver due to existing vegetation and it does not interrupt views towards the Blue Mountains from this property. Therefore the 700 mm increase in final floor level would not impact the important views from the property adjoining the southern boundary of the site and would not be noticeable from receivers to the west of the site.

Issue	Comment/Response
The proposal indicates additional filling works within the transmission easement. Referral to and agreement from the relevant authority (assumed to be Transgrid) is considered necessary to ensure that the fill and amended finished ground levels will not impede access to and maintenance of the infrastructure.	The Applicant has consulted with TransGrid in relation to the encroachment of earthworks into its easement. TransGrid has advised (letter dated 13/7/2021 and previously provided to the Department) that it has no issues with the proposed changes.
Landscape Design Considerations • The final sheet (L.SK.200 – landscape sections) in the landscape set of drawings was not available and is requested to be provided to Council for consideration.	We note that the cover sheet refers to the previously approved landscape plan L.SK.200 dated 23/10/20, as part of SSD 7348 Mod 6.
• Additional infill planting between excessively spaced street tree groupings is required. • Shrubs and groundcovers are not acceptable in street verges as they compromise visibility and safety. • Street tree species are to be amended. Alternatively conditions of consent could be included requiring agreement from Council on the selection of street tree planting species to be utilized. • Street trees should be planted as individual trees in mulched areas and spaced apart so that mature canopies touch. As a result, there will be a continuous canopy in the street. Adjust spacings to suit overhead street lighting and driveways. • Organic mulches should be used on soils under planting. This could be addressed via conditions of consent. • Areas of cut and fill require a reconstruction of soil profiles • Unless required as a result of bushfire hazard assessment, groundcovers and shrubs should be planted on embankments for biodiversity and screening	We note that the only changes to the landscape plans are a reflection of the revised layout of the estate. The updated landscape plans submitted with Mod 7 incorporate landscaping elements that are consistent with the approved development.

Table 2: Response to Penrith City Council's comments

NSW Rural Fire Service

Issue	Comment/Response
The revised bush fire report dated 27 May 2021 used short fire run bush fire behaviour modelling to determine the construction requirements of Warehouses 3B and 3C. However, there appears to be a level of revegetation and retention on the adjoining land, northwest of Warehouse 3B and west of Warehouse 3C, exceeding the 40m short fire run as modelled. In this regard, further information is required concerning the management of the adjoining land, or the assessment can be revised to account for the vegetation retention on the neighbouring property.	The construction requirements in the report (for Building 3B) are based on site specific conditions and radiant heat modelling which utilises the Short Fire Run methodology. The nature of the bushfire hazard to the west of proposed building 3B is as follows: • The vegetation to the west of the site is an isolated (<2ha) and highly fragmented patch of woodland located between the Emmaus Catholic College and Emmaus Retirement Village (see attached 'OWE Veg & Slope' and Photo 4 in attached 'Photo Montage' in Attachment F); • Building 3B is adjoined by a 30 metre wide 'vegetated mound' that has been conservatively classified as 'Woodland' (see Photos 5 & 6 in 'Photo Montage' in Attachment F); • A sealed service road runs parallel to the western boundary and separates the 'vegetated mound' from the isolated woodland to the west (see Photos 1, 2 & 3 in attached 'Photo Montage' in Attachment F); • Based on the isolated, fragmented low-risk nature of the vegetation to the west of the site, the sealed service road is considered to provide adequate disconnection with the onsite 'vegetated mound'; and • The Short Fire Run approach is therefore considered appropriate and modelling has been based on the short run (30 metres) within the vegetated mound. This assessment is based on recognised approaches and the merits of the proposal. The APZ and building construction proposed are considered appropriate given the low-risk nature of the adjoining land and the broader landscape and satisfy the aim and objectives of PBP 2019.

Table 3: Response to NSW Rural Fire Service comments

Attachment B

Letter to Council – Updated Noise and Vibration Impact Assessment – Building 3B

KEYLAN
consulting pty ltd

Suite 2, Level 1
1 Rialto Lane
Manly NSW 2095

10 August 2021

Mr Warwick Winn
General Manager
Penrith City Council
PO Box 60
Penrith, NSW 2751

Attention: Lauren Van Etten

Dear Ms Van Etten,

DA21/0440 - Oakdale West Estate Building 3B – Noise and Vibration Assessment

We write on behalf of *Goodman Property Services (Aust.) Pty Ltd* (the Applicant) in relation to Development Application DA21/0440 for Building 3B within the Oakdale West Estate.

It has come to our attention that the Noise and Vibration Assessment (NVA) prepared by RWDI (Version A and dated 18/06/21) and submitted with DA21/0440 for Building 3B requires updating.

The update to the NVA is required due to the acoustic modelling in the NVA for Modification 7 to the Oakdale West Estate (OWE) Concept Approval (SSD 7348 MOD 7), prepared after DA21/0440 was lodged. The key change to the NVA is that the night time operation of forklifts and mechanical rooftop plant is **not** included at Building 3B. This is consistent with the current restrictions under Condition B9 of SSD 7348.

RWDI has updated the NVA for Building 3B which is provided at Appendix A. An assessment of the updated NVA is provided below.

Noise and Vibration Assessment

The updated NVA includes revised noise emission predictions based on the operations for Precinct 3 and 4 of the OWE, as proposed under SSD 7348 MOD 7. The changes within the revised NVA include, but are not limited to:

- Revised MOD 7 description to align with the modification application
- Updated operational noise level results tables to reflect the revised MOD 7 acoustic report
- Updated results tables to reflect proposed use of mechanical services and fixed plant
- Revised description of loading activities detailing that no forklift or mechanical rooftop plant will be operational at night hours for Building 3B.

A summary of the modelling results for operational noise generated by the modified OWE against the noise limits under condition B18 of SSD 7348, as per the updated NVA, is provided in Table 1.

Receiver	Period (weather)	Approved Noise Limits ($L_{Aeq,15min}$)	$L_{Aeq,15min}$ Noise Level (dBA)		Compliance
			Building 3B	All Precincts	
N1 – Emmaus Village (Residential)	Day	44	27	36	Yes
	Evening	43	<20	36	Yes
	Night	41	<20	37	Yes
	Night(Adverse)	41	<20	41	Yes
N2 – Emmaus College (School)	Day	45	37	43	Yes
	Evening	n/a	<20	32	Yes
	Night	n/a	<20	34	Yes
	Night(Adverse)	n/a	<20	38	Yes
N6 – Mamre Anglican College	Day	45	<20	28	Yes
	Evening	n/a	<20	27	Yes
	Night	n/a	<20	28	Yes
	Night(Adverse)	n/a	<20	34	Yes
N7 – 21-42 Bakers Ln, Kemps Creek	Day	47	<20	29	Yes
	Evening	42	<20	28	Yes
	Night	42	<20	31	Yes
	Night(Adverse)	42	<20	36	Yes
N8 – 706-752 Mamre Rd, Kemps Creek	Day	47	<20	28	Yes
	Evening	42	<20	27	Yes
	Night	42	<20	29	Yes
	Night(Adverse)	42	<20	34	Yes
N9 – 754-770 Mamre Rd, Kemps Creek	Day	47	<20	<20	Yes
	Evening	42	<20	<20	Yes
	Night	42	<20	<20	Yes
	Night(Adverse)	42	<20	22	Yes
N10 – 784-786 Mamre Rd, Kemps Creek	Day	47	<20	27	Yes
	Evening	42	<20	27	Yes
	Night	42	<20	28	Yes
	Night(Adverse)	42	<20	33	Yes

Receiver	Period (weather)	Approved Noise Limits ($L_{Aeq,15min}$)	$L_{Aeq,15min}$ Noise Level (dBA)		Compliance
			Building 3B	All Precincts	
N11 – 99-111 Aldington Rd, Kemps Creek	Day	47	<20	34	Yes
	Evening	42	<20	34	Yes
	Night	42	<20	33	Yes
	Night(Adverse)	42	<20	39	Yes
N12 – 53 Aldington Rd, Kemps Creek	Day	47	<20	33	Yes
	Evening	42	<20	33	Yes
	Night	42	<20	33	Yes
	Night(Adverse)	42	<20	39	Yes
N13 – 54-72 Aldington Rd, Kemps Creek	Day	47	<20	32	Yes
	Evening	42	<20	32	Yes
	Night	42	<20	33	Yes
	Night(Adverse)	42	<20	38	Yes
N14 – 74-88 Aldington Rd, Kemps Creek	Day	47	<20	35	Yes
	Evening	42	<20	35	Yes
	Night	42	<20	34	Yes
	Night(Adverse)	42	<20	39	Yes

Table 1: Summary of operational noise modelling results

The above analysis considers two separate operational noise scenarios: one scenario with Building 3B operating in isolation and the second scenario with the whole of the OWE Precinct in operation.

This analysis demonstrates a slight reduction in overall noise emissions in Precinct 3 compared with the NVA originally submitted with DA21/0440, due to the proposed operational amendments. In addition, all Precincts within the OWE will comply with the noise limits of SSD 7348.

The updated noise modelling within the NVA also predicts compliance with the sleep disturbance criteria to all receiver locations surrounding the OWE.

Given the above, the operational amendments proposed under MOD 7 will remain compliant with the applicable noise limits established for Building 3B and the wider OWE under SSD 7348.

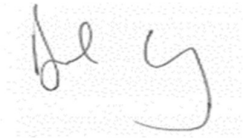
Conclusion

Based on the revised operations under MOD 7 and updated NVA for DA21/0440 as discussed above, the conclusions of the Statement of Environmental Effects prepared by Keylan Consulting (Revision 3,dated 18/06/21) remain valid.

These conclusions are that the proposal will provide substantial net public benefits to future occupants and the broader community and will not result in any significant environmental impacts, including noise. Accordingly, given the positive planning merits of the development, approval of DA21/0440 is recommended.

Please do not hesitate to contact Padraig Scollard on 02 8459 7508 or padraig@keylan.com.au if you wish to discuss any aspect of this correspondence.

Yours sincerely



Dan Keary BSc MURP MPIA
Director

Appendix A

Amended Noise and Vibration Assessment

Attachment C

Updated Masterplan Layout

REFER TO DRAWING OAK MP03 FOR CONTINUATION

Goodman

BRICKWORKS LIMITED

Legend

- Site Boundary
- Lot Boundary
- 3.75m Landscape Setback
- 7.50m Building Setback
- 7.15 m Landscape Setback along Main Roads
- 17.15m Lanscape Setback along Main Roads

Site Area Schedule

Total Site Area	**154.12 ha**
Less:	
Non Developable Land	21.08 ha
Easements	22.38 ha
Regional Roads	7.51 ha
Services Lot	1.23 ha
Estate Roads	7.0255 ha
Right of Way Roads	0.578 ha
E2 Zone non developable	1.43 ha
	61.23 ha
Development Areas	
Precinct 1	21.80 ha
Precinct 2	26.69 ha
Precinct 3	11.10 ha
Precinct 4	22.22 ha
Precinct 5	6.01 ha
Proposed Future Development	4.82 ha
Amenities Lot	0.25 ha
Total Developable	**92.89 ha**
Precinct 1 GLA	88,867 sqm
Precinct 2 GLA	263,090 sqm
Precinct 3 GLA	56,704 sqm
Precinct 4 GLA	112,178 sqm
Precinct 5 GLA	35,640 sqm
Amenities Lot GLA	345 sqm
Total GLA	**556,824 sqm**
Total Warehouse	529,772 sqm
Total Office	22,063 sqm
Others	4,989 sqm
Total GLA	**556,824 sqm**
Precinct 1 GFA	125,198 sqm
Precinct 2 GFA	269,390 sqm
Precinct 3 GFA	56,704 sqm
Precinct 4 GFA	112,178 sqm
Precinct 5 GFA	35,640 sqm
Amenities Lot GFA	345 sqm
Total GFA	**599,455 sqm**
Total Warehouse	529,772 sqm
Total Office	22,063 sqm
Others	4,989 sqm
Mezzanines (for Site 1A & 2B)	42,631 sqm
Total GFA	**599,455 sqm**

SBA ARCHITECTS

Oakdale West Estate - **MOD 7**

Kemps Creek, NSW

Estate Masterplan

0 60 300

1:3000 @ A1
1:6000 @ A3

10 August 2021

OAK MP 02 (E)

Job No 21116

Attachment D

Updated Traffic Impact Assessment

P1639r01v5

info@asongroup.com.au
+61 2 9083 6601
Suite 17.02, Level 17, 1 Castlereagh Street
Sydney, NSW 2000
www.asongroup.com.au

12 August 2021

Goodman Property Services (Aust) Pty Limited
The Hayesbery 1-11 Hayes Rd,
Rosebery, NSW 2018

Attn: Stephanie Partridge, Senior Development Manager

RE: Oakdale West Industrial Estate (SSD 7348) Modification 7 – Transport Statement

Dear Stephanie,

I refer to the proposed amendments made to the Concept Plan (SSD 7348, approved on 13 September 2019) of the Oakdale West Industrial Estate, Kemps Creek (the Site).

Modification 7 to the Oakdale West Estate Concept Approval (SSD 7348 MOD 7) seeks approval for a minor change to building layouts across Precinct 3 and 4, namely Building 3B, 3C, and 4E. The result of these changes sees minor amendments to the estate infrastructure including bulk earthworks in both precincts, the removal of an Estate Road in Precinct 4, and inclusion of additional retaining walls in Precinct 3 & 4.

There are no changes sought to development controls or the Gross Lettable Area of the Estate. Changes will be made to the Ultimate Lot Layout and Staging plan to accommodate the above.

The proposal also includes a modification to Stage 1 of SSD 7348 to construct a 2.4 m high boundary fence between Lot 1A and Lots 1B/1C in Precinct 1.

In this context, Ason Group has been tasked to review the following revision of the plans and to assess the potential transport impacts of the proposed modification:

- SBA Architects, *21116_MOD_7_OAK MP 02_(C)_Estate Masterplan*, dated 02 June 2021

A reduced copy of the Modification (the MOD 7) Site plan accompanying the submission is included in the **Attachment A**.

It has been considered that the abovementioned amendments do not involve any material changes relating to floor area of the warehouses and accompanying structures. Notwithstanding, the transport impact of the proposed modification has been assessed against the latest approved Transport Assessment supporting the Modification 6 (SSD 7348 MOD 6, approved on 10 March 2021), which includes the latest transport related modifications:

- Ason Group, *P1507r01v01 SSD 7348 MOD 6 Transport Statement_Oakdale West Estate*, dated 09 November 2020

The following table outlines a comparison between areas schedule between the proposed Concept Plan MOD 7 and the approved Concept Plan MOD 6.

Table 1: Area Comparison

Precinct No.	MOD 6 Approval (GFA, m^2)	MOD 7 Proposal (GFA, m^2)	Difference (GFA, m^2)
Precinct 1	125,198	125,198	-
Precinct 2	269,390	269,390	-
Precinct 3	56,759	56,704	(-) 55
Precinct 4	112,123	112,178	55
Precinct 5	35,640	35,640	-
Amenities Lot	345	345	-
Total	**599,455**	**599,455**	**0**

As indicated in the table above, the proposed MOD 7 does not seek changes to the total GFAs of the Oakdale West Estate. Therefore, it is expected that the resultant vehicular trip generation of MOD 7 will be generally consistent with the approved MOD 6 vehicular trip generation.

Notwithstanding, Ason Group has been advised of the exact traffic generation forecast of the Building 4E tenancy agreement (within Precinct 4 and subject to a separate SSD application), as summarised in below table.

Table 2: Forecast Traffic Generation of Building 4E[1]

Periods	AM Peak	PM Peak	Daily
Light Vehicle	9	9	252
Heavy Vehicle	9	28	276
Total	**18**	**37**	**528**

Note: 1) Operational details are included as part of the Transport Assessment supporting the separate Building 4E SSD Application.

Accordingly, traffic generation of the proposed MOD 7 has been assessed under “worst-case” scenario by adopting first-principles assessment - as discussed in the approved MOD 3 and subsequent MOD 6 TA reports - based on known operational requirements of specific tenants (Building 1A, Building 2B and Building 4E), including ‘seasonal peak factors’. For those buildings where a tenant is unknown, the generic ‘approved rates’ which reference standard RMS data for large format industrial warehouses are adopted.

Table 3: MOD 7 First-Principles Traffic Generation Assessment

Building	MOD 7 Forecast			
	GFA	Trip Generation		
		AM	PM	Daily
Building 1A[1&2]	107,212	79	54	2,222
Building 2B[1&3]	206,968	823	532	3,781
Building 4E	35,560	18	37	528
Other Buildings	249,370	406	406	4,718
Amenity Building	345	-	-	-
Total	**599,455**	**1,326**	**1,029**	**11,249**

Note: 1) Traffic generation during 'seasonal peak' as 'worst-case' scenario.
2) Ason Group, *P0950r01v12 SSD MOD 2 TIA_Oakdale* West, dated 21 November 2019
3) Ason Group, *P1086r01v7 SSD 7348 MOD 3 & Stage 2 DA TIA_Oakdale West Estate*, dated 15 January 2020

Traffic generation comparison between the approved MOD 6 and the proposed MOD 7 is provided in **Table 4**, including a detailed breakdown for each precinct.

Table 4: Vehicular Trip Generation Comparison[1]

Precinct	MOD 6 Approval				MOD 7 Estimated			
	GFA	Trip Generation			GFA	Trip Generation		
		AM	PM	Daily		AM	PM	Daily
1	125,198	108	83	2,562	125,198	108	83	2,562
2	269,390	925	634	4,962	269,390	925	634	4,962
3	**56,759**	**92**	**92**	**1,074**	**56,704**	**92**	**92**	**1,073**
4	**112,123**	**183**	**183**	**2,121**	**112,178**	**143**	**162**	**1,978**
5	35,640	58	58	674	35,640	58	58	674
Amenity Building	345	-	-	-	345	-	-	-
Total	**599,455**	**1,366**	**1,050**	**11,394**	**599,455**	**1,326**	**1,029**	**11,249**

Note: 1) Traffic generation during 'seasonal peak' as 'worst-case' scenario for Building 1A and Building 2B.

Table 4 indicates that the proposed MOD 7 is estimated to result in less vehicular trip generation comparing to the approved MOD 6 at both a daily and peak period level.

Having regard to the above, the traffic impact of proposed MOD 7 is expected to have no significant departure from the approved MODs 3 and 6, and do not warrant any further traffic modelling assessment.

We trust the above is of assistance and please contact either the undersigned or Ali Rasouli should you have any queries or require further information in relation to the above.

Yours sincerely,

Sara Hu
Traffic Engineer – Ason Group
Email: sara.hu@asongroup.com.au

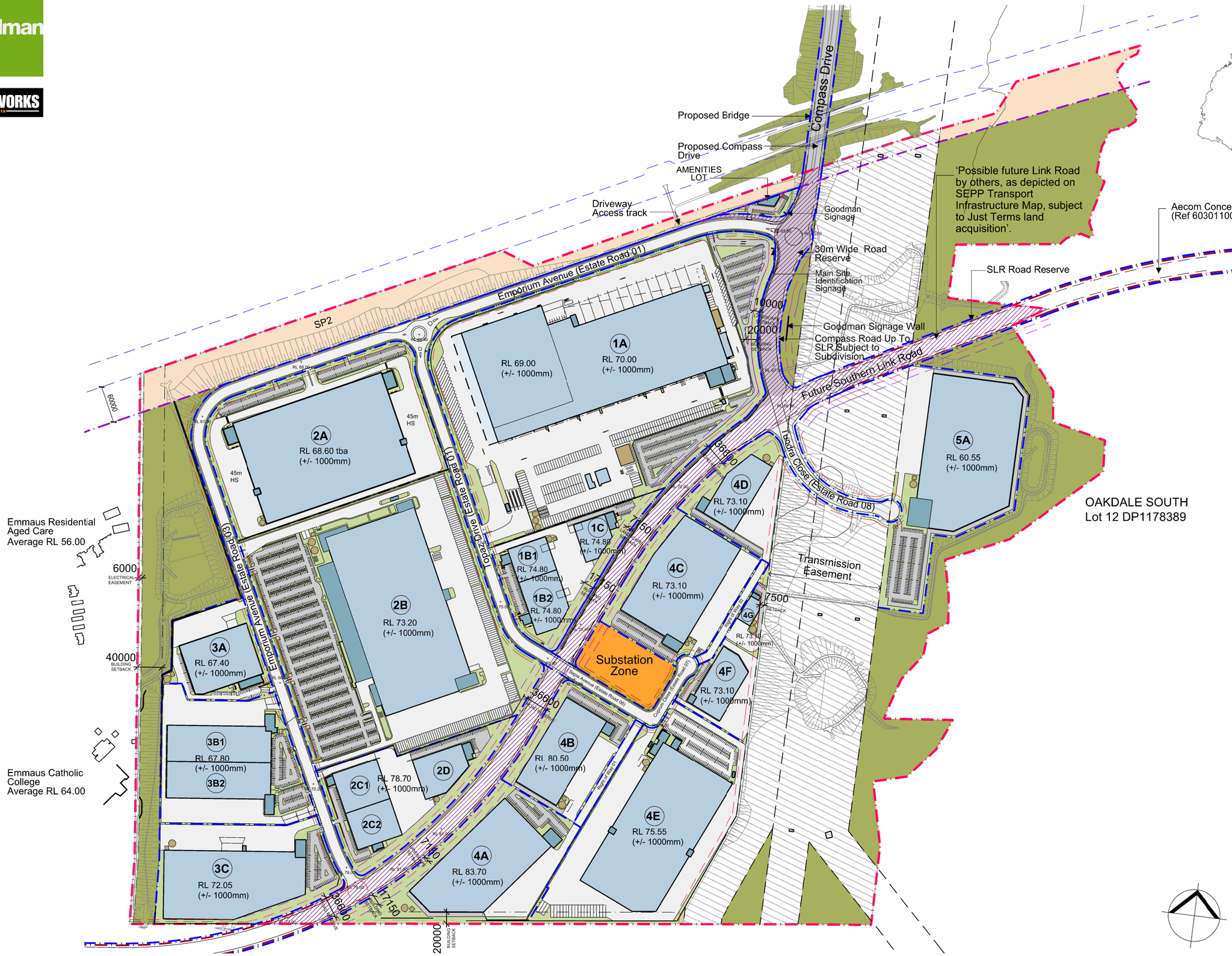
Attachment 1

MOD 7 Concept Plan

REFER TO DRAWING OAK MP03 FOR CONTINUATION

Goodman

BRICKWORKS LIMITED



Legend

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- Lot Boundary
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- 17.15m Lanscape Setback along Main Roads

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SBA ARCHITECTS

Oakdale West Estate - **MOD 7**

Kemps Creek, NSW

Estate Masterplan

0 60 300

1:3000 @ A1
1:6000 @ A3

02 June 2021

OAK MP 02 (C)

Job No 21116

Attachment E

Updated Noise and Vibration Impact Assessment – Mod 7

RWDI Australia Pty Ltd (RWDI)
Level 4, 272 Pacific Highway
Crows Nest, NSW, 2065, Australia

Tel: +61.2.9437.4611
E-mail: solutions@rwdi.com
ABN: 86 641 303 871

September 9, 2021

Stephanie Partridge
Goodman Property Services (Aust) Pty Limited
GPO Box 4703
Sydney NSW 2001
Stephanie.partridge@goodman.com

Re: Oakdale West Estate (OWE) Modification 7 – Noise Assessment
RWDI Ref. 2102730A

Dear Stephanie

Introduction

RWDI Australia Pty Ltd (RWDI) was commissioned by Goodman to review the Modifications of the Oakdale West Estate (OWE) Plans – SSD 7348 Modification 7 (MOD 7). The purpose of the review is to determine the noise impact from MOD 7 on surrounding receivers and provide any noise control recommendations, if required. The existing OWE noise model developed during MOD 6 has been adapted to reflect the proposed changes, based on updated civil design, operational changes and updated building layouts.

MOD 7 involves minor changes to the Concept Plan Approval and Stage 1 Development Approval, principally relating to Precincts 3 and 4 as follows:

- Building layouts across Precinct 3 and 4, namely Lot 3B, 3C, and 4E.
- Civil design amended to accommodate changes to Precinct 3 and Precinct 4.
- The removal of an Estate Road in Precinct 4.
- Inclusion of additional retaining walls in Precinct 3 & 4.
- The proposal also includes a modification to Stage 1 of SSD 7348 to construct a 2.4 m high boundary fence between Lot 1A and Lots 1B & 1C in Precinct 1.
- Operation of a forklift at Lot 4E during the night period (10.00pm to 7.00am).

Comparison of the OWE MOD 6 and OWE MOD 7 Concept Plans are presented in **Figure 1** and **Figure 2**, respectively. The site maps also include the locations of nearby surrounding receivers.

RWDI Australia Pty Ltd operates a Quality Management System which complies with the requirements of AS/NZS ISO 9001:2015 for the provision of consultancy services in acoustic engineering and air quality; and the sale, service, support and installation of acoustic monitoring and related systems and technologies.
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rwdi.com

Figure 1: Site Location Plan – MOD 6

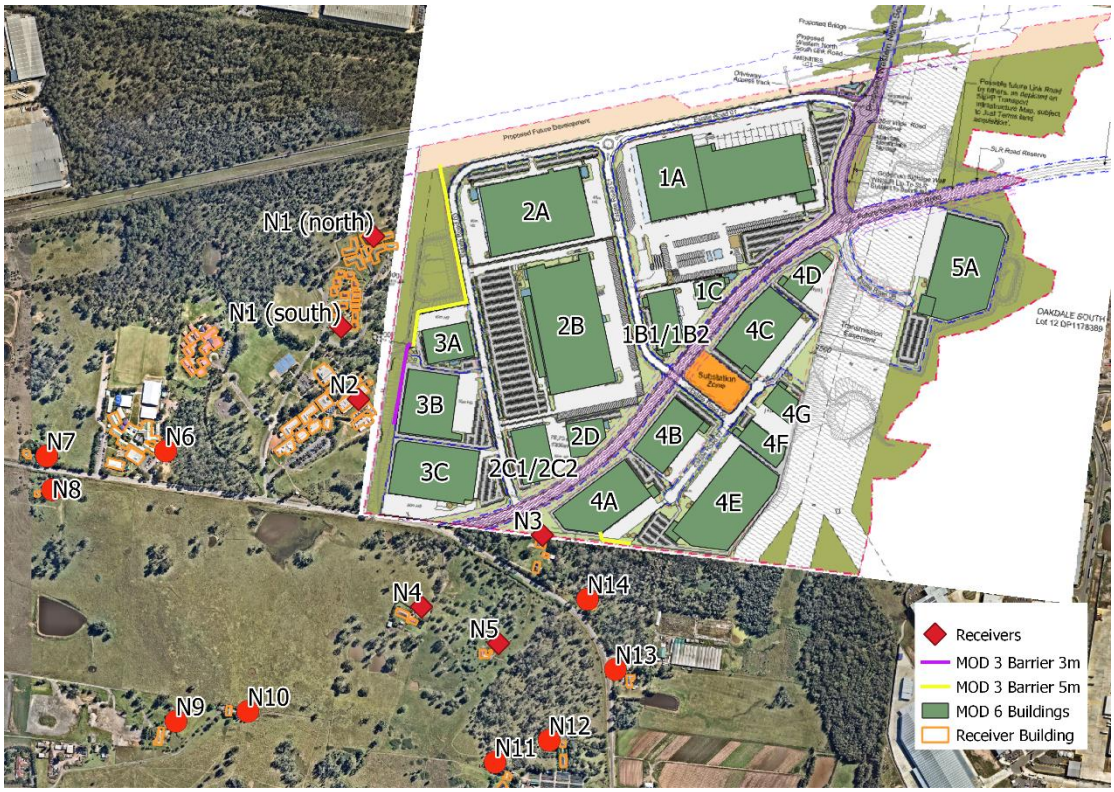
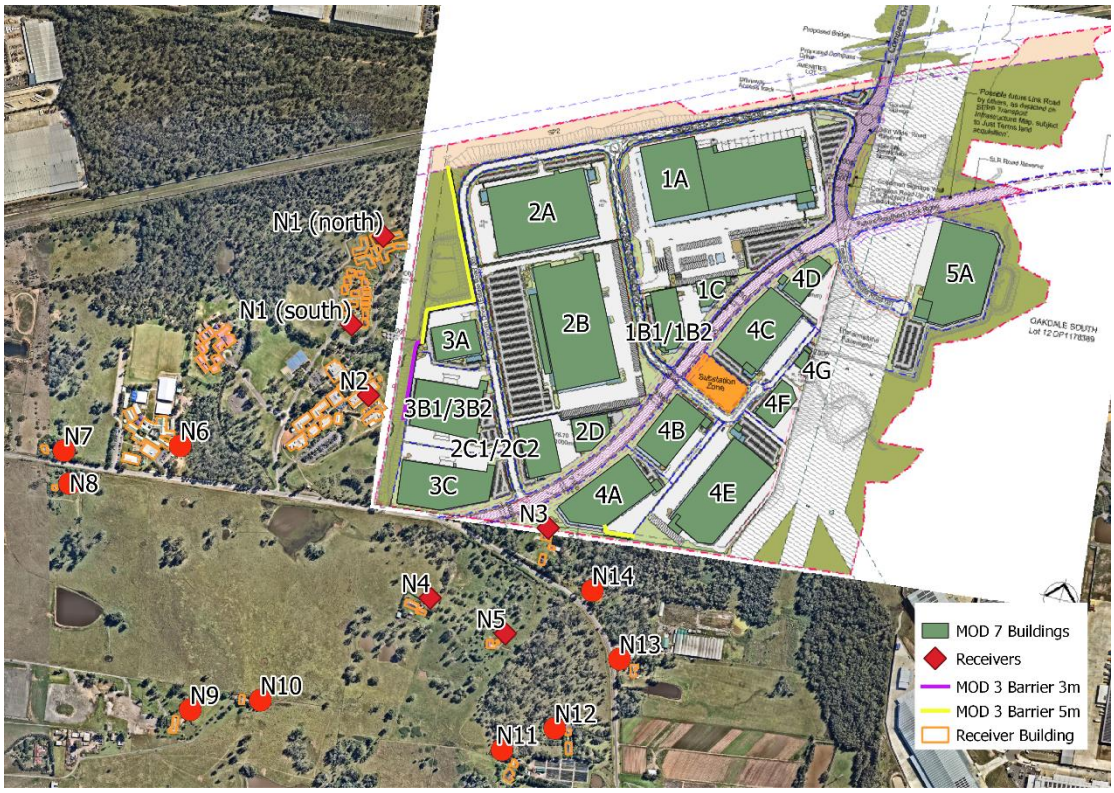


Figure 2: Site Location Plan – MOD 7



Approved Noise Limit

Conditions B18 and B19 of SSD 7348 include operational noise limits for the site as follows:

NOISE LIMITS

B18. The Applicant shall ensure the Development does not exceed the noise limits in **Table 3** at the receiver locations N1, N2, N3, N4 and N5 shown on the plan in **Appendix 5**.

Table 3: *Noise Limits dB(A)*

Location	Day	Evening	Night	
	L_{Aeq} (15 minute)	L_{Aeq} (15 minute)	L_{Aeq} (15 minute)	L_{AMax}
N1 Emmaus Village Residential	44	43	41	52
N3 Kemps Creek – nearest residential property	39	39	37	52
N4 & N5 Kemps Creek – other residences	39	39	37	52
All other non-associated residences	40[2]	35[2]	35[2]	52
N2 Emmaus Catholic College (school)	**When in use**: 45 $_{Leq\ (1h)}$			

Notes:

1. *Noise generated by the development is to be measured in accordance with the relevant procedures and modifications, including certain meteorological conditions, of the Noise Policy for Industry (EPA, 2017). Refer to the plan in Appendix 2 for the location of residential sensitive receivers.*
2. *or background + 5 dB, whichever is higher.*

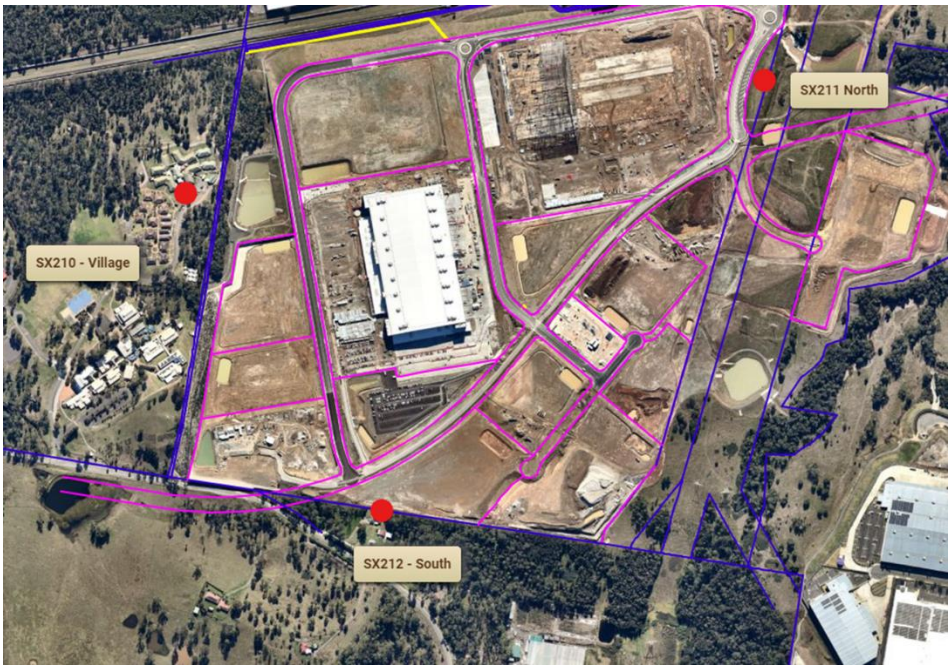
B19. The noise limits in **Table 3** do not apply to receiver N3, N4 and N5 if the Applicant has a Noise Agreement with the relevant landowner to exceed the noise limits, and the Applicant has provided written evidence to the Planning Secretary that an agreement is in place.

It is understood that a Noise Agreement between the applicant and receiver N3, N4 and N5 has been made. As such, the criteria in Condition B18 of the Development Consent SSD 7348 are not applicable at receivers N3, N4 and N5. Since the assessment of MOD 6, nine additional noise sensitive receivers have been taken into consideration to ensure noise compliance is achieved at all surrounding receiver locations.

Receiver N6 is Mamre Anglican College which will have the same noise criteria as N2 – Emmaus Catholic College (school).

To develop criteria for residential receivers N7 to N14, data was obtained from the unattended noise monitoring systems located on site. The location of these monitors is shown in Figure 3.

Figure 3: Noise Monitoring Locations



The 'South' location is representative of residential receivers N7 to N14. The 'Village' location is representative of residential location N1 (presented for information only).

We have re-analysed this data between 1 May 2021 and 29 June 2021 for these two locations to determine the Rating Background Levels (RBLs) in accordance with the NPfI (calculated ABLs are attached in Appendix A). This process avoids any potential influence from daytime construction noise on site. The resulting background levels are shown in **Table 1**. These are consistent with our expectations given the site conditions.

Table 1: Calculated RBLs

Location	RBL (dBA)		
	Day	Evening	Night
South	42	37	37
Village	39	38	37

As per Condition B18, all other 'non-associated residences' can be evaluated using background plus 5 criteria. The criteria determined in Table 2 have been adopted for receivers N7 to N14.

Table 2: Intrusiveness Criteria (Background plus 5)

Location	Criteria (dBA)		
	Day	Evening	Night
Receivers N7 to N14 (South)	47	42	42

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 7 Masterplan design, including the updated civil design and buildings shown in **Figure 2**.

There have been some changes to modelling assumptions to more accurately reflect this current operational plan. This includes traffic forecasts provided by tenants. These assumptions are presented in the following tables.

Note that traffic assumptions were previously conservative. Information provided for this assessment provides a more accurate assessment of traffic noise. Table 3 below presents the sound power level assumptions used for this assessment.

Table 3: Sound Power Reference Levels

Noise Source	Noise Characteristic	Sound Power Level SWL, dBA
Forklift operational on hardstand[3]	Quasi-steady	93 L_{Aeq}
Light Vehicles[6] on site, up to speed of 40km/h	Quasi-steady	90 L_{Aeq}
Heavy Vehicle[1] @25 km/h	Quasi-steady	106 L_{Aeq}
Heavy Vehicle[1], unloaded @ 10 km/h	Quasi-steady	106 L_{Aeq}
Heavy Vehicle[1], loaded @ 10 km/h	Quasi-steady	107 L_{Aeq}
Heavy Vehicle[1], reversing4 @ 5 km/h	Quasi-steady	111 L_{Aeq}
Truck Idling[5]	Quasi-steady	95 L_{Aeq}
Truck Engine Starting	Instantaneous	100 L_{Amax}
Truck Airbrake Release[2]	Instantaneous	115 L_{Amax}

Note 1: Heavy vehicle defined as any cargo vehicle with three or more axles with gross vehicle weight > 12,000 kg.

Note 2: Consistent with measurements taken at Woolworths Customer Fulfillment Centre Brookvale, 16 March 2021.

Note 3: Consistent with assessment of Woolworths Moorebank Distribution Centre, 16 October 2020.

Note 4: Assume that reversing operation will not take more than 30 seconds for each vehicle, includes reversing alarm and air brake release.

Note 5: Consistent with measurements taken at Woolworths Distribution Centre Minchinbury, 1 April 2021.

Note 6: Considered conservative when compared to previous assessment of Woolworths Moorebank Distribution Centre.

The noise levels presented above are consistent with US-FHWA-TNM 2.5 technical model and are considered to be a conservative for the purposes of this assessment. Note the increased level for a truck reversing is to account for audible reversing alarms and air brake releases.

A noise survey of a similar facility, Bevchain, located at 2 Tyrone Place, Erskine Park was conducted on Friday, 27 August, 2021. The purpose of this survey was to confirm the sound power levels presented in **Table 3** for heavy vehicle activities are appropriate. Sound power levels of the various heavy vehicle activities measured were found to be at or below the levels presented in this table.

Table 4: Peak Hourly Assumed Traffic Volumes

Precinct	Lot	Day (7am -6pm)		Evening (6pm-10pm)		Night (10pm -7am)	
		LV	HV	LV	HV	LV	HV
1	1A	377	54	377	54	216	54
	1B1	7	5	7	5	2	1
	1B2	7	5	7	5	2	1
	1C[1]	14	-	14	-	4	-
2	2A	65	21	65	21	19	6
	2B[3]	805	22	842	24	515	28
	2C-1[2]	17	-	5	-	5	-
	2C-2[2]	16	-	4	-	5	-
	2D	33	11	33	11	10	3
3	3A	13	3	-	-	-	-
	3B1	13	3	-	-	-	-
	3B2	13	3	-	-	-	-
	3C	13	3	-	-	-	-
4	4A	28	9	28	9	8	3
	4B	22	7	22	7	7	2
	4C	27	9	27	9	8	3
	4D	10	3	10	3	3	1
	4E[3]	84	28	33	6	117	34
	4F	6	2	6	2	2	1
	4G	6	2	6	2	2	1
5	5A	43	14	43	14	13	4

Note 1: 1C HV movements captured in 1B
Note 2: 2C HV movements captured in 2D
Note 3: Updated with hourly breakdown provided by tenant

Light vehicle and heavy vehicle traffic movements have been modelled as line sources with varying speed. Heavy vehicles are expected to enter the estate at 50km/h, reduce speed to 25km/h on estate roads, and reduce speed again to 10km/h when manoeuvring on site. For instances where heavy vehicles will be side loaded, these will park up within the bays allocated with engine off whilst loading/unloading. For rear loaded semi-trailers, these will reverse into the recessed docks where indicated. Sound power levels have been applied as per, accounting for reversing alarms.

Table 5: Mechanical Services / Fixed Plant Noise Sources throughout OWE

Precinct	Lot	Day (7am -6pm)	Evening (6pm-10pm)	Night (10pm -7am)
Precinct 1	1A	See Footnote	See Footnote	See Footnote
	1B1	No Operation	No Operation	No Operation
	1B2	No Operation	No Operation	No Operation
	1C	No Operation	No Operation	No Operation
Precinct 2	2A	SWL 90 dBA Cumulative	SWL 90 dBA Cumulative	SWL 85 dBA Cumulative
	2B	Refer Table 4-2 of Oakdale West Estate (OWE) Noise & Vibration Assessment Report (Report No.:19940 Version F)		
	2C-1	No Operation	No Operation	No Operation
	2C-2	No Operation	No Operation	No Operation
	2D	No Operation	No Operation	No Operation
Precinct 3	3A	No Operation	No Operation	No Operation
	3B	No Operation	No Operation	No Operation
	3C	No Operation	No Operation	No Operation
Precinct 4	4A	No Operation	No Operation	No Operation
	4B	No Operation	No Operation	No Operation
	4C	SWL 90 dBA Cumulative	SWL 90 dBA Cumulative	SWL 85 dBA Cumulative
	4D	SWL 90 dBA Cumulative	SWL 90 dBA Cumulative	SWL 85 dBA Cumulative
	4E	No Operation	No Operation	No Operation
	4F	SWL 90 dBA Cumulative	SWL 90 dBA Cumulative	SWL 85 dBA Cumulative
	4G	SWL 90 dBA Cumulative	SWL 90 dBA Cumulative	SWL 85 dBA Cumulative
Precinct 5	5A	SWL 90 dBA Cumulative	SWL 90 dBA Cumulative	SWL 85 dBA Cumulative

Note: Some of these assumptions have changed from previous assessments to be consistent with the current operational plan. Details of the Lot 1A mechanical services plant are set out in Table 4 of the MOD 2 noise assessment prepared by SLR (SLR Ref: 610.15617-L04-v1.5.doc). Assumptions for night-time plant operation has been based off estates in the surrounding area and current operational plan, as advised by Goodman.

Table 6: Number of Operational Forklifts Assumed for each Lot

Precinct	Lot	Day (7am -6pm)	Evening (6pm-10pm)	Night (10pm -7am)
Precinct 1	1A	4	4	4
	1B1	2	No Operation	No Operation
	1B2	1	No Operation	No Operation
	1C	1	No Operation	No Operation
Precinct 2	2A	2	No Operation	2
	2B	7	7	7
	2C-1	1	No Operation	No Operation
	2C-2	1	No Operation	No Operation
	2D	1	No Operation	No Operation
Precinct 3	3A	1	No Operation	No Operation
	3B	1	No Operation	No Operation
	3C	1	No Operation	No Operation
Precinct 4	4A	1	No Operation	No Operation
	4B	1	No Operation	No Operation
	4C	1	No Operation	1
	4D	1	No Operation	1
	4E	1	No Operation	1
	4F	1	No Operation	1
	4G	1	No Operation	1
Precinct 5	5A	1	No Operation	No Operation

Noise Impact Results

Intrusive Noise Impact Results

Updated modelling taking into account the changes associated with MOD 7 indicates that predicted noise levels would increase by 3dB at Emmaus Collect (N2) during the daytime period. This is due to the exposure of truck noise from Lot 3B2 and lot 3C. It should be noted, the predicted noise level at N2 would remain in compliance with the sites approved noise levels at under all operational conditions.

Predicted noise levels at N13 and N14 have increased by 1 to 7dB across all scenarios. This is due to the exposure of truck noise from Lot 4E. However, noise levels at both of these receivers remain compliant.

Table 7 presents the comparison in the MOD 6 and MOD 7 noise impact results.

Table 7: Predicted $L_{Aeq,15min}$ Operational Noise Levels – All Precincts, Peak Season

Receiver	Period (weather)	$L_{Aeq,15min}$ Approved Noise Limits	$L_{Aeq,15min}$ Noise Level (dBA)	
			Mod 6	Mod 7
N1 – Emmaus Village (Residential)	Day	44	39	36
	Eve	43	38	36
	Night	41	36	37
	Night(Adverse)	41	39	41
N2 – Emmaus College (School)	Day	45	39	43
	Eve	n/a	39	32
	Night	n/a	34	34
	Night(Adverse)	n/a	37	38
N6 – Mamre Anglican College	Day	45	32	28
	Eve	n/a	32	27
	Night	n/a	30	28
	Night(Adverse)	n/a	35	34
N7 – 21-42 Bakers Ln, Kemps Creek	Day	47	30	29
	Eve	42	30	28
	Night	42	28	31
	Night(Adverse)	42	34	36
N8 – 706-752 Mamre Rd, Kemps Creek	Day	47	31	28
	Eve	42	30	27
	Night	42	28	29
	Night(Adverse)	42	34	34
N9 – 754-770 Mamre Rd, Kemps Creek	Day	47	18	<20
	Eve	42	18	<20
	Night	42	16	<20
	Night(Adverse)	42	21	22
N10 – 784-786 Mamre Rd, Kemps Creek	Day	47	31	27
	Eve	42	30	27
	Night	42	28	28
	Night(Adverse)	42	33	33
	Day	47	35	34
	Eve	42	34	34

Receiver	Period (weather)	$L_{Aeq,15min}$ Approved Noise Limits	$L_{Aeq,15min}$ Noise Level (dBA)	
			Mod 6	Mod 7
N11 – 99-111 Aldington Rd, Kemps Creek	Night	42	32	33
	Night(Adverse)	42	37	39
N12 – 53 Aldington Rd, Kemps Creek	Day	47	34	33
	Eve	42	33	33
	Night	42	31	33
	Night(Adverse)	42	37	39
N13 – 54-72 Aldington Rd, Kemps Creek	Day	47	33	32
	Eve	42	33	32
	Night	42	31	33
	Night(Adverse)	42	36	38
N14 – 74-88 Aldington Rd, Kemps Creek	Day	47	32	35
	Eve	42	32	35
	Night	42	27	34
	Night(Adverse)	42	33	39

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 90 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.

We do not believe that a modifying factor correction is warranted at this stage. We would normally apply an intermittent modifying factor to $L_{Aeq,15min}$ noise levels where all noise being assessed suddenly increases or reduces where the difference between the total $L_{Aeq,15min}$ (including all other non-industrial sources) at the receiver with the source present and not present results in a difference in L_{Aeq} of 5dB or more during a 15 minute period. It should be noted that given the number of sources at OWE, total noise emissions will not suddenly change.

Further, we believe air brake releases and reversing beepers would be defined as 'Impulsive noise' under the following NPfI definition:

Noise with a high peak of short duration, or a sequence of such peaks

An impulsive correction was dropped from the NPfI in favour of the Maximum Noise Level Event Assessment (MNLEA), included below.

We have consulted with the Noise Policy Section of the EPA. Mr Gordon Downey (Principal Technical Advisor – Noise) has advised that the intermittency modifying factor applies to a step change in continuous or quasi-continuous noise (which these sources are not).

If a modifying factor for intermittency was applied to these results, we note the following points.

- This would result in negligible exceedances during the night time period at locations N13 (1dB exceedance) and N14 (2dB exceedance).
- This would result in a moderate exceedance during the night time period of 5dB at location N1.
- We have incorporated all reasonable and feasible noise mitigation measures (noise barriers, and orientation of noise sources).
- No night time operations are scheduled for precinct 3 near the western boundary hence changes here are not driving the potential exceedances.
- Noise emissions from Building 4E are not driving the exceedances at N1.
- If an intermittency correction was to be applied, this would be undoing or contradicting the basis for the assessments that DPIE have previously approved including SSD 10397 and the modifications to SSD 7348.
- The dominant source of the potential exceedance at receiver N1 is from Precinct 2 operations.

Sleep Disturbance Assessment

Table 8 shows the $L_{A1,1min}$ maximum operational noise predictions for MOD 6 and MOD 7 in comparison with the approved noise limits. Note that for the sources assessed, the difference between the $L_{A1,1min}$ and L_{AMax} descriptors is negligible.

Table 8: Predicted Maximum Operational Noise Levels – Staged Development

Receiver	Period	$L_{A1,1min}$ Noise Level (dBA)		
		(Approved Limit)	MOD 6	MOD 7
N1 – Emmaus Village Residential	Night	52	44	44
	Night^{Adverse}	52	50	50
N2 – Emmaus College (School)	Night	n/a	n/a	n/a
	Night^{Adverse}	n/a	n/a	n/a
N6 – Mamre Anglican College	Night	n/a	n/a	n/a
	Night^{Adverse}	n/a	n/a	n/a
N7 – 21-42 Bakers Ln, Kemps Creek	Night	52	37	37
	Night^{Adverse}	52	41	41

N8 – 706-752 Mamre Rd, Kemps Creek	Night	52	35	35
	Night^{Adverse}	52	42	42
N9 – 754-770 Mamre Rd, Kemps Creek	Night	52	20	20
	Night^{Adverse}	n/a	27	27
N10 – 784-786 Mamre Rd, Kemps Creek	Night	52	35	35
	Night^{Adverse}	52	41	41
N11 – 99-111 Aldington Rd, Kemps Creek	Night	n/a	n/a	n/a
	Night^{Adverse}	n/a	n/a	n/a
N12 – 53 Aldington Rd, Kemps Creek	Night	n/a	n/a	n/a
	Night^{Adverse}	n/a	n/a	n/a
N13 – 54-72 Aldington Rd, Kemps Creek	Night	n/a	n/a	n/a
	Night^{Adverse}	n/a	n/a	n/a
N14 – 74-88 Aldington Rd, Kemps Creek	Night	52	49	49
	Night^{Adverse}	52	51	52

Updated modelling taking account of the changes associated with MOD 7 (and Stage 3 DA & Council DA) indicates that noise levels would remain in compliance with the sites approved noise levels at these receivers under all operational and meteorological conditions.

Construction Noise

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 slight increase in noise level at N1 during the night time period. However, compliance is still achieved.

The predicted noise levels at receivers N2 and N14 have changed slightly due to the updates made. Notably, receivers immediately south of Building 4E have seen predicted noise levels increase during the evening and night time periods. The noise impact at all receivers are compliant with the relevant conditions of consent.

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 truly

Ben Lawrence
Technical Director
RWDI

APPENDIX A – NOISE LOGGING DATA

'South' Location

Descriptor	Date	Day	Evening	Night
ABL	01-May-21	38.0	38.4	36.1
ABL	02-May-21	34.7	38.1	34.3
ABL	03-May-21	46.4	40.3	33.9
ABL	04-May-21	37.4	35.8	35.4
ABL	05-May-21	38.5	37.8	35.0
ABL	06-May-21	38.3	39.2	35.2
ABL	07-May-21	36.5	40.1	39.1
ABL	08-May-21	35.4	38.6	32.1
ABL	09-May-21	33.3	39.1	37.0
ABL	10-May-21	45.8	39.7	37.1
ABL	11-May-21	42.1	35.7	33.4
ABL	12-May-21	47.5	37.4	34.4
ABL	13-May-21	54.6	38.0	38.0
ABL	14-May-21	49.7	37.2	37.3
ABL	15-May-21	39.6	34.2	31.1
ABL	16-May-21	32.0	33.2	34.0
ABL	17-May-21	46.0	32.8	35.9
ABL	18-May-21	49.5	42.3	38.7
ABL	19-May-21	41.4	41.0	38.3
ABL	20-May-21	40.8	37.0	35.0
ABL	21-May-21	37.8	35.4	34.3
ABL	22-May-21	34.9	35.2	34.0
ABL	23-May-21	31.8	33.3	34.3
ABL	24-May-21	42.1	39.9	40.1
ABL	25-May-21	44.8	44.0	43.1
ABL	26-May-21	43.2	36.3	32.7
ABL	27-May-21	42.5	35.8	33.7
ABL	28-May-21	40.8	34.8	33.8
ABL	29-May-21	37.0	34.4	32.6
ABL	30-May-21	33.3	32.4	33.6
ABL	31-May-21	43.4	40.6	40.5

Descriptor	Date	Day	Evening	Night
ABL	01-Jun-21	43.9	39.5	40.0
ABL	02-Jun-21	44.0	39.5	39.8
ABL	03-Jun-21	44.3	33.0	34.5
ABL	04-Jun-21	41.0	35.1	32.4
ABL	05-Jun-21	35.1	39.1	36.4
ABL	06-Jun-21	31.8	37.1	37.8
ABL	07-Jun-21	45.0	42.4	43.4
ABL	08-Jun-21	48.6	42.3	34.6
ABL	09-Jun-21	43.7	42.3	43.1
ABL	10-Jun-21	45.0	36.3	37.0
ABL	11-Jun-21	41.2	36.1	41.6
ABL	12-Jun-21	38.1	35.4	37.8
ABL	13-Jun-21	33.7	32.9	38.0
ABL	14-Jun-21	32.4	33.9	35.0
ABL	15-Jun-21	41.5	38.1	39.4
ABL	16-Jun-21	43.8	42.3	36.5
ABL	17-Jun-21	43.5	40.1	38.4
ABL	18-Jun-21	41.3	39.4	35.8
ABL	19-Jun-21	44.4	37.0	34.4
ABL	20-Jun-21	34.4	36.5	35.0
ABL	21-Jun-21	41.6	37.1	38.2
ABL	22-Jun-21	42.3	41.2	41.5
ABL	23-Jun-21	45.1	44.2	43.7
ABL	24-Jun-21	49.2	42.1	37.9
ABL	25-Jun-21	44.6	41.9	41.2
ABL	26-Jun-21	37.5	38.8	38.7
ABL	27-Jun-21	33.5	32.2	34.3
ABL	28-Jun-21	40.0	37.0	37.0
ABL	29-Jun-21	39.1	38.2	37.7
RBL	ALL	41.5	37.2	37.0

Note: Data shown as shaded has been excluded from the analysis due to non-compliant meteorological conditions.

‘Village’ Location

Descriptor	Date	Day	Evening	Night
ABL	01-May-21	36.5	37.2	31.1
ABL	02-May-21	33.4	37.5	34.4
ABL	03-May-21	40.3	39.4	35.5
ABL	04-May-21	37.6	35.2	34.0
ABL	05-May-21	39.6	38.5	35.5
ABL	06-May-21	40.4	40.2	36.6
ABL	07-May-21	39.9	38.9	37.4
ABL	08-May-21	35.8	37.9	36.1
ABL	09-May-21	33.5	37.0	36.0
ABL	10-May-21	38.7	40.1	37.0
ABL	11-May-21	39.2	35.3	34.4
ABL	12-May-21	40.8	36.3	35.4
ABL	13-May-21	39.8	37.1	37.1
ABL	14-May-21	42.8	39.0	40.7
ABL	15-May-21	38.7	34.4	32.2
ABL	16-May-21	32.0	34.1	33.9
ABL	17-May-21	39.5	34.8	37.8
ABL	18-May-21	39.2	42.7	38.3
ABL	19-May-21	38.2	40.2	39.0
ABL	20-May-21	39.1	37.1	35.4
ABL	21-May-21	38.9	36.8	35.7
ABL	22-May-21	34.0	36.6	34.3
ABL	23-May-21	31.3	35.2	34.6
ABL	24-May-21	37.7	36.4	35.3
ABL	25-May-21	40.0	43.3	41.7
ABL	26-May-21	40.0	35.6	34.3
ABL	27-May-21	43.3	36.3	34.6
ABL	28-May-21	42.4	38.1	34.5
ABL	29-May-21	38.4	35.3	33.1
ABL	30-May-21	34.8	33.9	35.0
ABL	31-May-21	38.2	41.1	40.0

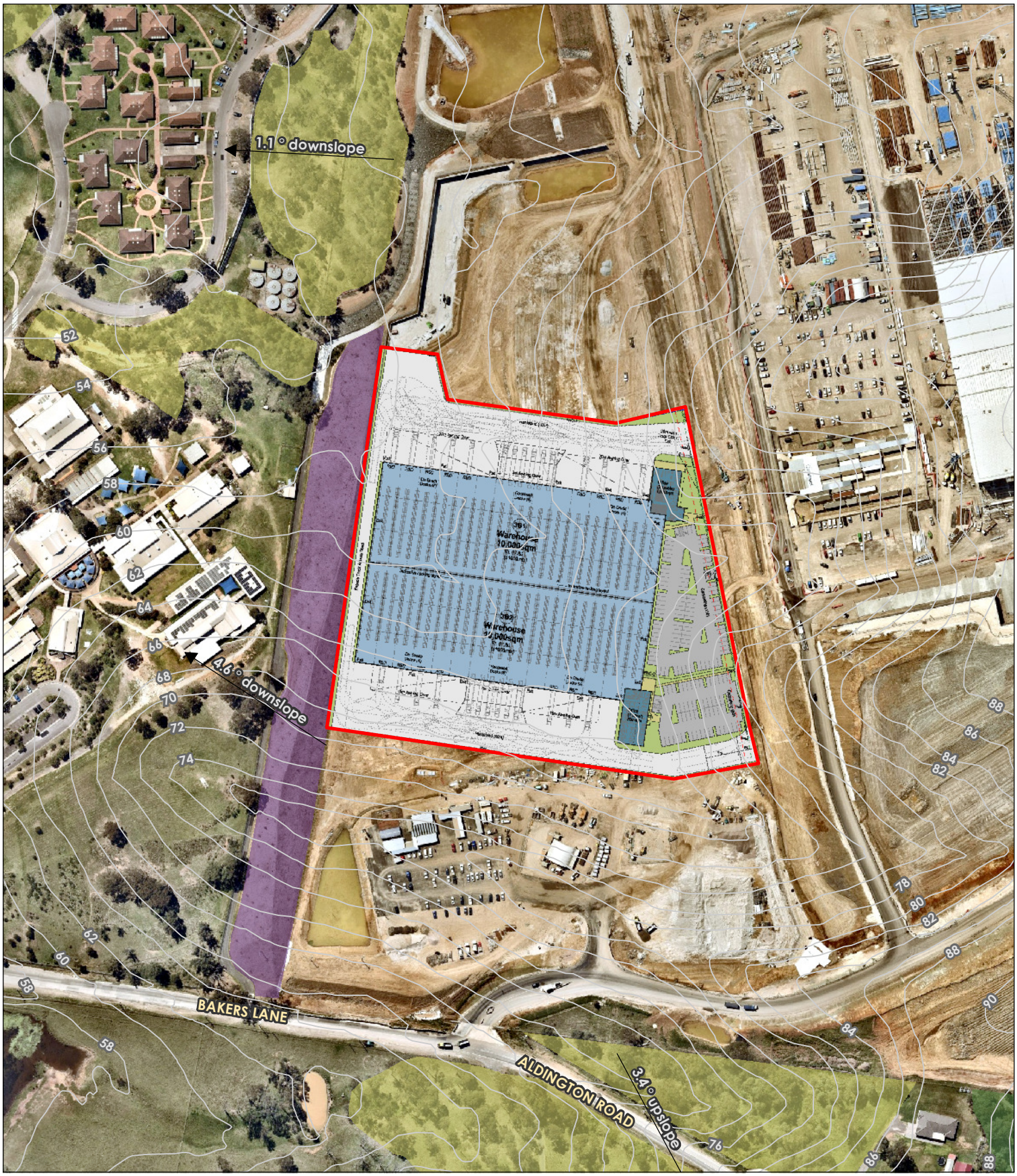
Descriptor	Date	Day	Evening	Night
ABL	01-Jun-21	38.6	39.3	38.6
ABL	02-Jun-21	38.2	40.3	38.7
ABL	03-Jun-21	42.2	32.3	34.1
ABL	04-Jun-21	41.3	36.3	35.3
ABL	05-Jun-21	34.2	39.3	41.6
ABL	06-Jun-21	30.5	38.2	41.3
ABL	07-Jun-21	39.9	42.3	44.3
ABL	08-Jun-21	44.2	39.6	37.1
ABL	09-Jun-21	42.1	42.6	43.2
ABL	10-Jun-21	44.8	37.5	42.4
ABL	11-Jun-21	40.1	38.2	43.8
ABL	12-Jun-21	36.8	35.8	42.5
ABL	13-Jun-21	33.3	35.3	38.1
ABL	14-Jun-21	32.4	34.2	34.2
ABL	15-Jun-21	35.0	37.9	40.7
ABL	16-Jun-21	39.0	41.2	41.2
ABL	17-Jun-21	41.8	40.7	40.8
ABL	18-Jun-21	40.3	41.3	38.3
ABL	19-Jun-21	43.6	37.0	36.1
ABL	20-Jun-21	35.1	37.0	36.2
ABL	21-Jun-21	39.7	38.1	38.7
ABL	22-Jun-21	39.5	41.7	40.5
ABL	23-Jun-21	41.3	42.8	43.0
ABL	24-Jun-21	44.7	41.5	38.2
ABL	25-Jun-21	42.4	41.0	41.3
ABL	26-Jun-21	38.7	38.5	41.4
ABL	27-Jun-21	33.5	33.5	36.3
ABL	28-Jun-21	39.2	38.8	39.7
ABL	29-Jun-21	38.5	37.1	36.4
RBL	ALL	39.1	37.5	37.1

Note: Data shown as shaded has been excluded from the analysis due to non-compliant meteorological conditions.

Attachment F

Bushfire Response Reference Figures

BLACKASH
BUSHFIRE CONSULTING



Legend

- Contour - 2m
- Subject Land
- Forest

Vegetation Formation

- Vegetated Mound
- Woodland

N

DKGIS

Date: 10/09/2021

0 25 50 100 150

Metres

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

Photo Montage – Oakdale West Estate (Building 3B)

Photo 1: Looking north along the western boundary. Photo shows the perimeter sealed maintenance track which separates the adjoining woodland from the vegetated mound.

Photo 2: Looking northeast towards the northwestern corner. Photo shows the retaining wall and sound barrier located to the west of the building.

Photo 3: Looking south along the perimeter service road to the west of the site. Shows adjoining vegetated mound (left) and isolated woodland (right).

Photo 4: Looking northwest from the perimeter service road showing the fragmented woodland to the west of the site.

Photo 5: Looking towards the western boundary. Shows vegetated mound (30m wide) which runs parallel to the boundary.

Photo 6: Looking north across the site. Shows the vegetated mound (30m wide) to the west.