



Appendix F

UPDATED ENVIRONMENTAL NOISE IMPACT
ASSESSMENT





Lot 56 Adelaide Street

Environmental Noise Impact Assessment

Hesperia Property Pty Ltd

L3/338 Barker Road Subiaco WA 6904

Prepared by:

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Basis of Report

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with the Client. Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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1.0 Introduction

SLR Consulting Pty Ltd (SLR) was commissioned by HIF 189-190AS Pty Ltd ATF 189-190 Adelaide, through Hesperia Property Pty Ltd to undertake an Environmental Noise Impact Assessment of a proposed warehouse development. The proposed site development is intended to include warehouse buildings with attached office buildings.

A previous report (SLR May 2025) assessed partial development of the site for Warehouses 1A, 1B, 1C, 2C, 2A and 2B following developed tenancy fitout of 2A. This report is an update for the tenancy fitout of 1A and 1B, with revised mechanical services. Previous internal assessments have demonstrated that the fully developed site can achieve compliant noise emissions. This report assesses the full site development, subsequent to the remaining tenancies being developed.

The site is on Lot 56 Adelaide Street which was created from the amalgamation of former Lots 189 and 1190. The site is adjacent other industrial premises of a similar type, with an existing residential development to the south-east. The site is being developed in accordance with local planning policies / structure plan.

This report, prepared by SLR Consulting Australia Pty Limited (SLR), details an assessment of predicted noise emissions from the proposed development. The report details the predicted noise levels to the surrounding receptors, and an assessment of compliance against applicable noise limits from the Regulations.

2.0 Criteria

2.1 Noise regulations

The site noise emissions are required to achieve compliance with the Environmental Protection (Noise) Regulations 1997 (the "Regulations"). Under the Regulations, noise levels at nearby residential areas from development operations are not to exceed defined limits (Assigned levels). The 'assigned levels' vary with time of day and standard workdays versus holiday periods.

The most critical receptors to the southeast of the proposed development are termed 'noise sensitive premises'. These are residential receptors, for which the 'assigned levels' are determined from a 'base level' with an Influencing Factor (IF) based on proximity to industrial and commercial land uses, and roads with high traffic flows. The relevant parameter for assessment of operational noise is the LA10 statistical noise level, the noise level exceeded from greater than 10% of the representative time period. For these receptors, the 'assigned levels' are described in **Table A**.



Table A: EPNR Table 1 'Assigned Levels'

Type of premises receiving noise	Time of day	Assigned level (dB)		
		L _{A10}	L _{A1}	L _{Amax}
Noise sensitive premises: highly sensitive area	0700 to 1900 hours Monday to Saturday	45 + IF	55 + IF	65 + IF
	0900 to 1900 hours Sunday and public holidays	40 + IF	50 + IF	65 + IF
	1900 to 2200 hours all days	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays	35 + IF	45 + IF	55 + IF
Noise sensitive premises: any area other than highly sensitive area	All hours	60	75	80
Commercial premises	All hours	60	75	80
Industrial and utility premises other than those in the Kwinana Industrial Area	All hours	65	80	90

2.2 Adjustments for intrusive or dominant characteristics

Table B summarises applicable adjustments for intrusive or annoying characteristics.

Table B: Adjustment for Intrusive or Dominant Noise Characteristics

Adjustment where noise emission is not music			Adjustment where noise emission is music	
Where tonality is present	Where modulation is present	Where impulsiveness is present	Where impulsiveness is not present	Where impulsiveness is present
+5 dB	+5 dB	+10 dB	+10 dB	+15 dB

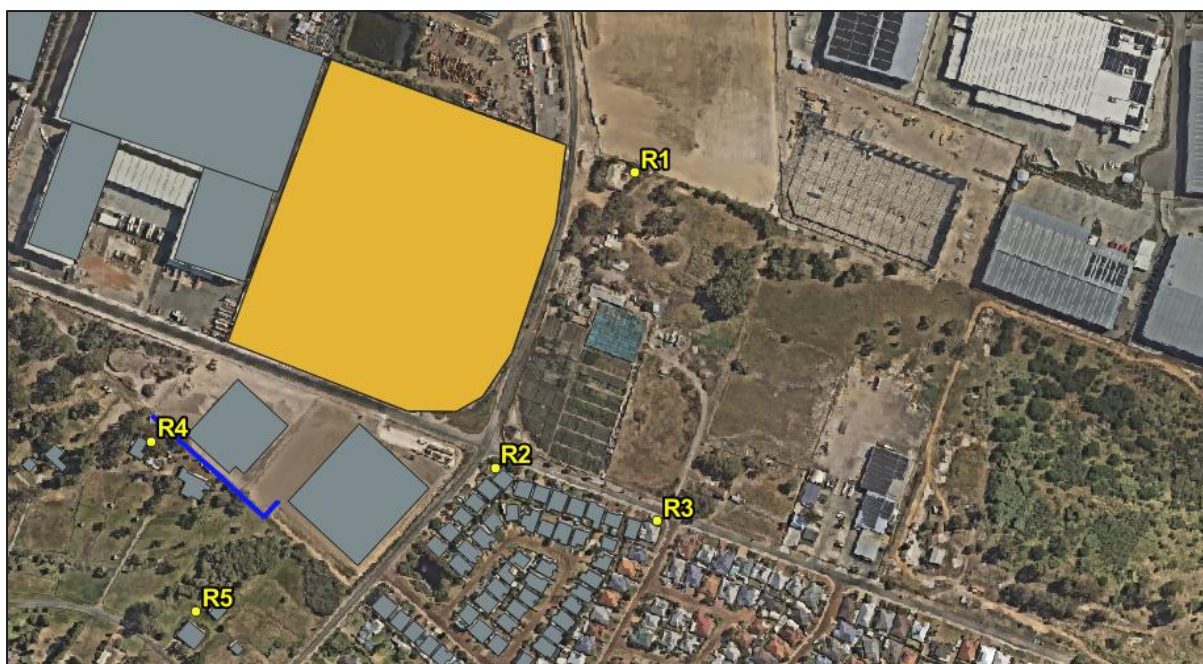
These adjustments are cumulative to a maximum of 15 dB.

2.3 Key receptors

Representative residential receptors have been determined for Lot 56 Adelaide Street, Hazelmere. These receptors are shown in **Figure A**.



Figure 1 Residential receptor locations



To simplify this assessment, the most significant receptors have been considered. The key noise sensitive residential receptors are described in **Table C**. Compliance at these identified receptors is predicted to result in compliance at all other receptors in the vicinity.

Table C: Key residential receptors

Sensitive receivers	Description
R1	Stirling Crescent
R2	Corner Stirling Crescent / Adelaide Street
R3	Adelaide Street
R4	Existing residence (Hatch Court)
R5	Existing residence (Hatch Court)

2.4 Receptor assigned levels

The assigned noise levels determined for sensitive receivers adjacent to the site are detailed in **Table D**. The assigned levels include the IF derived based on the proximity of the receivers to industrial and commercial zoned areas, and major and secondary roads. These areas have been identified from the City of Swan Local Planning Scheme 17 and the Hazelmere Enterprise Area Structure Plan.

Table D: Assigned levels – key receptors, dB

Sensitive receivers	Influencing Factor	Assigned Levels, L _{A10}		
		Day	Evening	Night
R1	13	58	53	48
R2	8	52	47	42
R3	2	47	42	37
R4	15	60	55	50



Sensitive receivers	Influencing Factor	Assigned Levels, L_{A10}		
		Day	Evening	Night
R5	15	60	55	50
All commercial	Not applicable	60	60	60

3.0 Methodology

Noise emissions from the operation of the proposed site were modelled using ISO 17534¹ compliant software (SoundPLAN v8.2).

3.1 Site specific noise model

A noise model was developed for the site as follows:

- Detailed 3-dimensional representation of the site terrain model and local environment inclusive of key receptor locations.
- Receiver buildings were digitised in the model and single point receivers were established at 1.5 m above the ground floor level at representative premises.
- Buildings identified from aerial imagery as non-sensitive, including site buildings such as warehouses, and property fences were retained in the noise model as they could provide screening on noise levels.
- The buildings and representative noise sources for the proposed development were incorporated into the noise model.
- A ground absorption coefficient of 0.6 was implemented which is considered reasonably representative of the proportion of soft and hard ground areas in each direction.

3.2 Calculation of noise levels

The model applied the 'CONCAWE' method for calculating outdoor noise propagation. CONCAWE started with a group of oil refining companies developing methods to assess environmental emissions in 1963, a concatenation of "**CON**servation of **C**lean **A**ir and **W**ater in **E**urope". The group developed an empirical method of modelling noise emissions from refineries to the far field, which has since evolved and continues to be used in 2023.

This method is accepted as being appropriate for modelling of projects of this type in Western Australia. The CONCAWE method permits calculation of noise levels with meteorological conditions favourable for downwind propagation of noise (wind speeds between approximately 1 m/s and 5 m/s) or under a moderate ground-based temperature inversion.

Both the SoundPLAN modelling software and the CONCAWE method are widely applied in Western Australia for the prediction of noise from industrial and commercial premises.

¹ ISO 17534-1:2015 Acoustics — Software for the calculation of sound outdoors — Part 1: Quality requirements and quality assurance



3.3 Assessment scenarios

Warehouse operations are expected to be intermittent: typically, a truck will arrive, shut down or idle while being loaded/unloaded using forklifts, then restart and move off site. Trucks potentially will operate 24 hours a day, although typically most warehouse operations are most active during the day period. The daytime scenario covers weekdays, but also Sundays and Public Holidays.

An extract of the proposed developed site layout is shown in **Figure 2**. Development approval has already been granted for partial development of the site, incorporating warehouses 1A, 1B, 1C and 2C. This report assesses cumulative noise emissions from the fully developed site.

Figure 2 Lot 56 site development plan



To assess potential noise emission levels from the site, representative activities have been modelled for both day and night conditions.

3.3.1 Generally

More than one forklift may operate at one time, however the combination of multiple forklifts and simultaneous truck movement is not expected to occur for more than 10% of the



representative period. Therefore, the combination of truck and forklift is considered representative of noise emissions occurring greater than 10% of the time.

For some freight associated businesses, it is common for trucking activity to occur prior to 7am, placing that activity within the nighttime period under the Regulations. Businesses commencing operations from 6am have been separately modelled (cumulatively) as there is expected to be a limited number of truck movements on site during this early morning period.

3.3.2 Night

The night period has been modelled based on two trucks and one forklift operating simultaneously. Mechanical services have been modelled at reduced duty, aligned with cooler temperatures.

An additional truck has been modelled for the early morning period prior to 7am.

It is noted that this acoustic assessment assumes that the forklifts that are to be used on site in the night period will have a broadband reversing alarm.

3.3.3 Day

The day period is assumed to be busier than the night period, with five trucks and two external forklifts modelled. Source noise emission levels

Table E presents the adopted noise emission levels for each source. The associated noise emission characteristics have been determined from measurement of noise levels for the relevant noise source (previously measured for other projects).

Table E: Noise Source Sound Power Levels, LA10 dB

Time period	Source	A-weighted Sound Power Level, dB
Night	Site: Trucks - Night 20 km/hr	94
	W2C Light trucks at frontage	87
	W1B - Forklift	96
	W1A Unit 1 Truck	94
	W2A - Plant Room Inlet Cowl	83
	W2A - Gas Cooler 1 CU	92
	W2A - Gas Cooler 2 CU	92
	W2A - Plant Room Exhaust Cowl	83
	W1C - PAC 1	87
	W1C - PAC 5	87
	W1C - PAC 2	87
	W1C - Coldroom CU 1	87
	W1C - Coldroom CU 2	87
	W1C - Coldroom CU 3	87
	W2A – The Maker pump	91
	W2A – The Maker dust system (two, each)	96
	W2A – The Maker air compressors	90
	WC1 - PAC 3	87



Time period	Source	A-weighted Sound Power Level, dB
	WC1 - PAC 4	87
	2C Semi truck – 20 km/hr	96
	W1A – Truck 20 km/hr	94
	W1A, W2A – 3 Evap coolers at 60% duty	88
Early Morning – Additional	WC1 - PAC 3	87
	WC1 - PAC 4	87
	2C Semi truck – 20 km/hr	96
Sunday/Public Holiday, Evenings - Additional	Total of six evap coolers at 60% duty	88
Day – Additional	W1A – Truck 20 km/hr	94
	W1A,2A – 24 Evaporative coolers (high)	90

Trucks are represented by a line source traversing the extent of the internal access road or passing through warehouse loading / unloading areas. Trucks are speed restricted on site.

It is noted that many unloading bays back up to the building, with forklifts operating within the warehouse and on the truck deck from the rear access doors.

As such, external noise from warehouse internal forklift operations are attenuated by the building and truck enclosure.

4.0 Impact assessment

4.1 Night operations

The predicted noise emissions at the key receptors are shown in **Table F**. It can be seen that the predicted noise levels comply with the regulation night-time L_{A10} 'assigned levels'. **Appendix A** includes predicted noise contours for the night-time operations.

Table F: Predicted noise emissions for night-time period, L_{A10} dB

Receptor	Night assigned noise level	Predicted noise emission	5 dB adjustment	Total predicted noise emission (Note 1)	Predicted Outcome
R1	48	43	5	48	Complies
R2	42	37	5	42	Complies
R3	37	34	-	34	Complies
R4	50	41	5	46	Complies
R5	50	37	-	37	Complies

Note 1 Results inclusive of 5 dB tonal adjustment.

An adjustment of + 5 dB has been applied to predicted noise emissions to receptors which are relatively close to the proposed development, represented by receptors R1, R2 and R4. The adjustment reflects a conservative view of the potential for 'tonal' noise characteristics



which may be measurable for forklifts and trucks if other background noise is at a lower level. In the case of high background noise, the noise characteristic will be masked and will not be assessed as having 'tonal' characteristic.

However, in some cases the additional noise could be from other premises, and a +5 dB adjustment would be re-applied if the noise is 'significantly contributing' to a cumulative noise emission exceeding the 'assigned level'.

No adjustment is applied to distant receptors such as R3, as 'tonality' from road trucks generally becomes less distinct at distance, noting that this site is exposed to general background noise from Roe Highway and road traffic within the Hazelmere industrial precinct.

The above results can be regarded as the 'worst case' scenario with continuous site activity throughout the day and night times. In reality, it is expected that the site will be less active during the night-time, with noise emissions less than that presented in **Table F**.

The predicted noise emissions comply with the night-time assigned levels.

4.2 Early morning operations

Some trucks may arrive prior to 7am, thereby falling into the night-time period of the regulations. The number of trucks is such that noise emissions will be less than 10% of the representative time period prior to 7am.

An assessment of truck noise for early morning truck arrivals is provided in **Table G**.

Table G: Predicted noise emissions for early morning night-time period, LA1 dB

Receptor	Night assigned noise level	Predicted noise emission	5 dB adjustment	Total predicted noise emission (Note 1)	Predicted Outcome
R1	59	47	5	52	Complies
R2	52	36	5	41	Complies
R3	47	34	-	34	Complies
R4	60	32	5	37	Complies
R5	60	34	-	34	Complies

Note 1 Results inclusive of 5 dB adjustment.

The above results can be regarded as the 'worst case' scenario for the early morning period prior to 7am, designated as night time period under the Regulations.

The predicted noise emissions comply with the night-time assigned levels.

4.3 Day operations – Weekdays

The predicted noise emissions at the key receptors are shown in **Table I**.

Table H: Predicted noise emissions for day-time period, LA10 dB

Receptor	Weekday assigned noise level	Predicted noise emission	5 dB adjustment	Total predicted noise emission (Note 1)	Predicted Outcome
R1	58	49	5	54	Complies
R2	52	45	5	50	Complies
R3	47	42	-	42	Complies



Receptor	Weekday assigned noise level	Predicted noise emission	5 dB adjustment	Total predicted noise emission (Note 1)	Predicted Outcome
R4	60	47	5	52	Complies
R5	60	45	5	50	Complies

Note 1 Results inclusive of 5 dB adjustment.

It can be seen that the predicted noise levels comply with weekday L_{A10} 'assigned levels'.

Appendix A includes predicted noise contours for the day-time operations.

4.4 Day operations – Sundays and Public Holidays

The modelled difference between the Weekday and Sunday/Public Holiday scenarios is reduced activity at the premises of 'The Maker', as generally this premises operates on weekdays. The scenario models six evaporative coolers on low speed on Sundays and Public Holidays, to cover the situation where 'The Maker' could operate to respond to a large client order if required. The predicted noise emissions at the key receptors are shown in **Table I**.

Table I: Predicted noise emissions for day-time period, L_{A10} dB

Receptor	Sunday/Public Holiday assigned noise level	Predicted noise emission	5 dB adjustment	Total predicted noise emission (Note 1)	Predicted Outcome
R1	53	47	5	52	Complies
R2	47	40	5	45	Complies
R3	42	37	-	37	Complies
R4	60	41	5	46	Complies
R5	60	41	5	46	Complies

Note 1 Results inclusive of 5 dB adjustment.

It can be seen that the predicted noise levels comply with day-time L_{A10} 'assigned levels'.

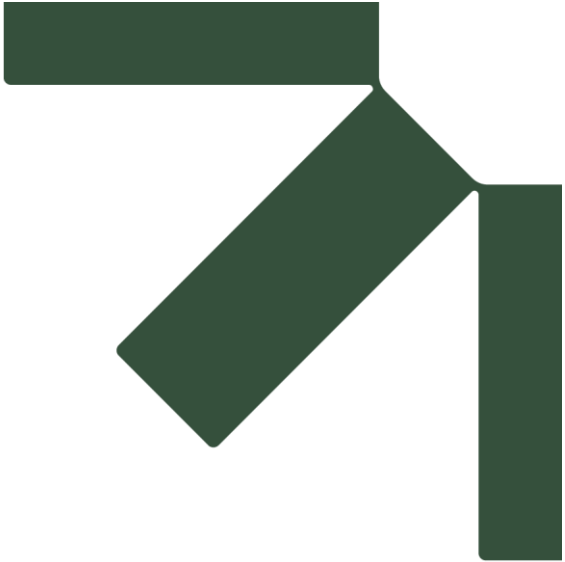
Appendix A includes predicted noise contours for the day-time operations.

The predicted noise emissions comply with the regulation assigned level for weekday and Sundays / public holiday time periods.

5.0 Conclusion

Predicted noise emissions from of operation of the development at Lot 56 are compliant at all nearby receptors.





Appendix A Noise contour plots

Lot 56 Adelaide Street

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Figure 3 Night-time operation noise contours, L_{Aeq} dB

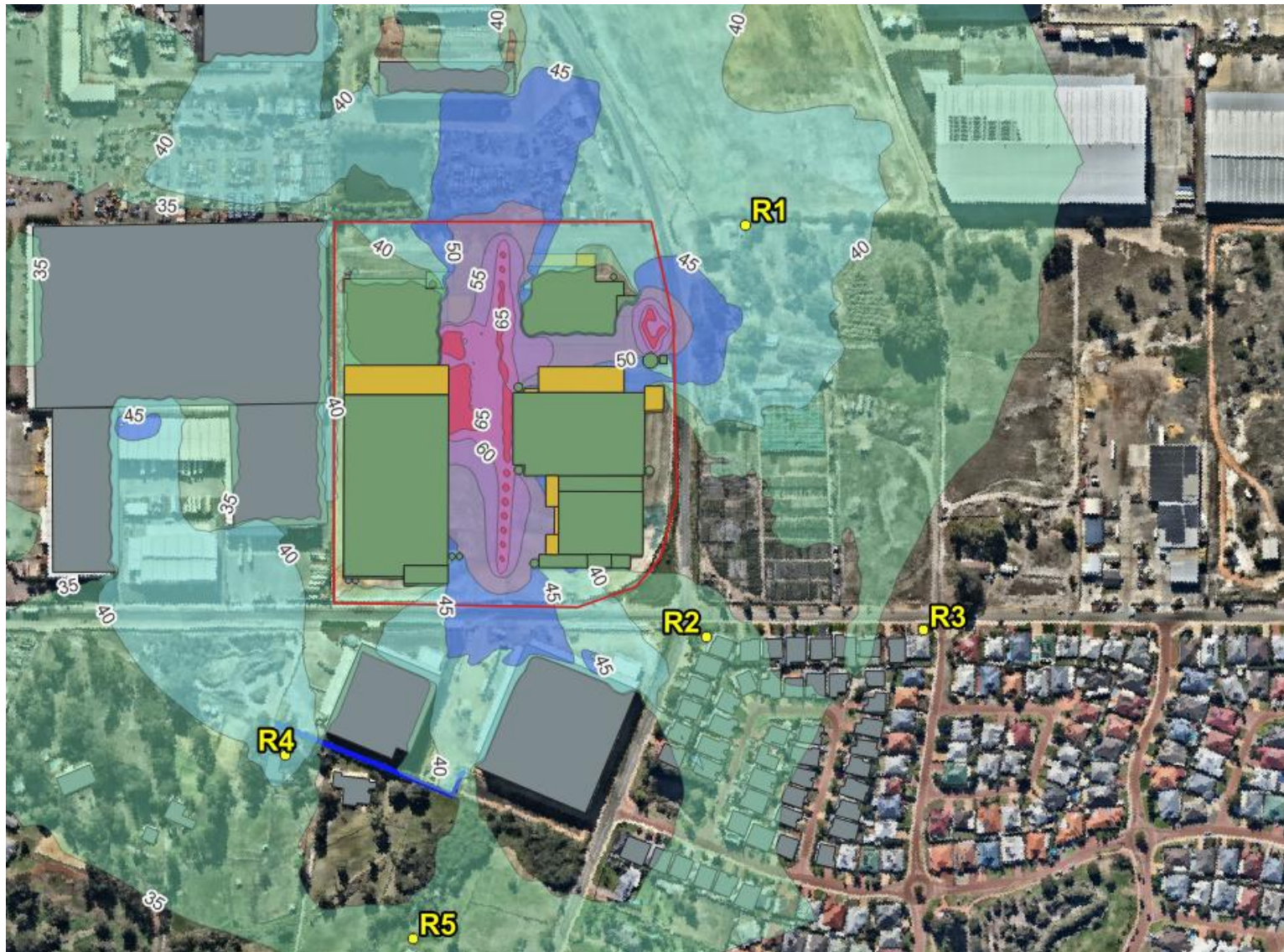


Figure 4 Early morning (night) noise contours, dB

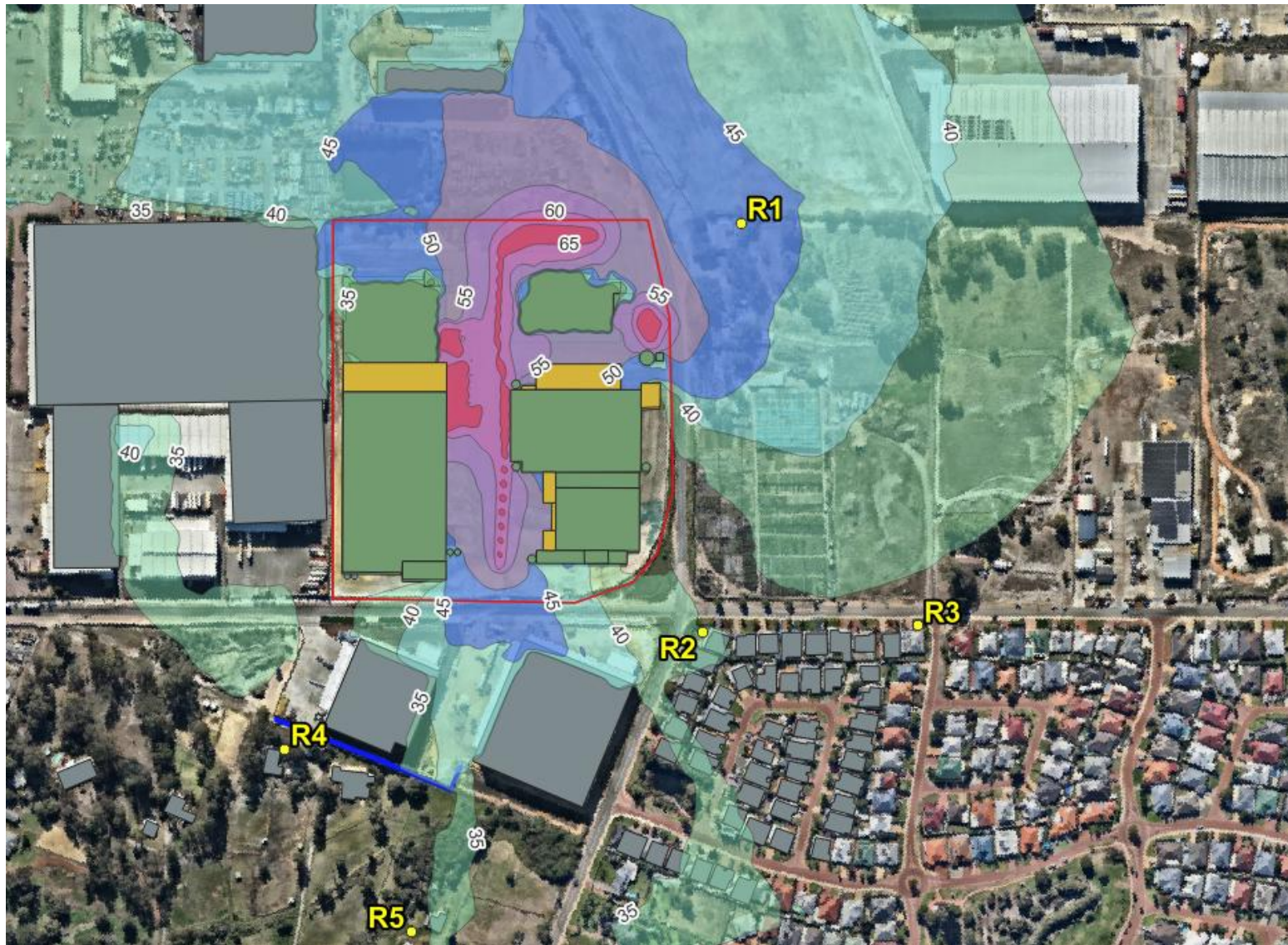


Figure 5 Weekday operations noise contours, L_{Aeq} dB

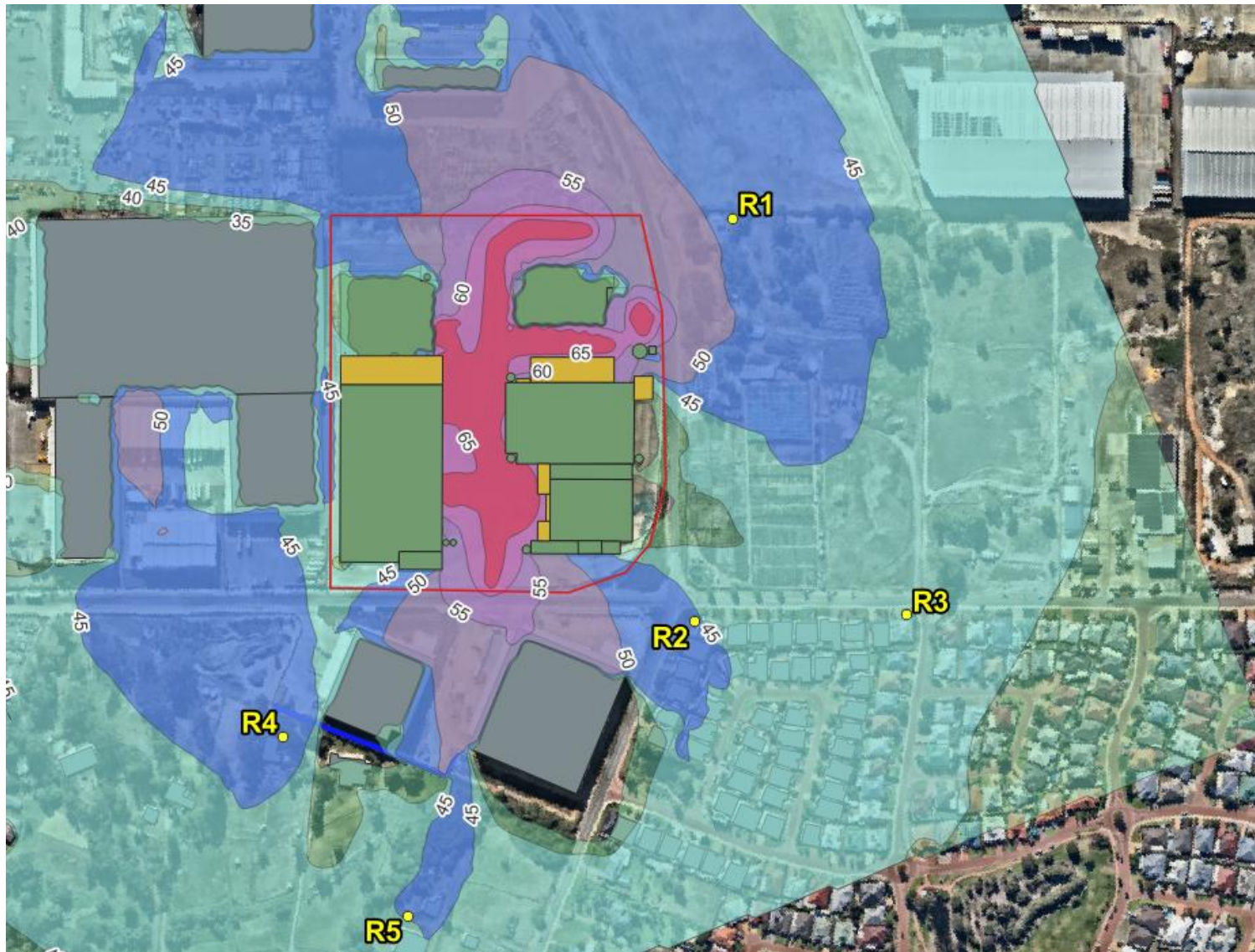
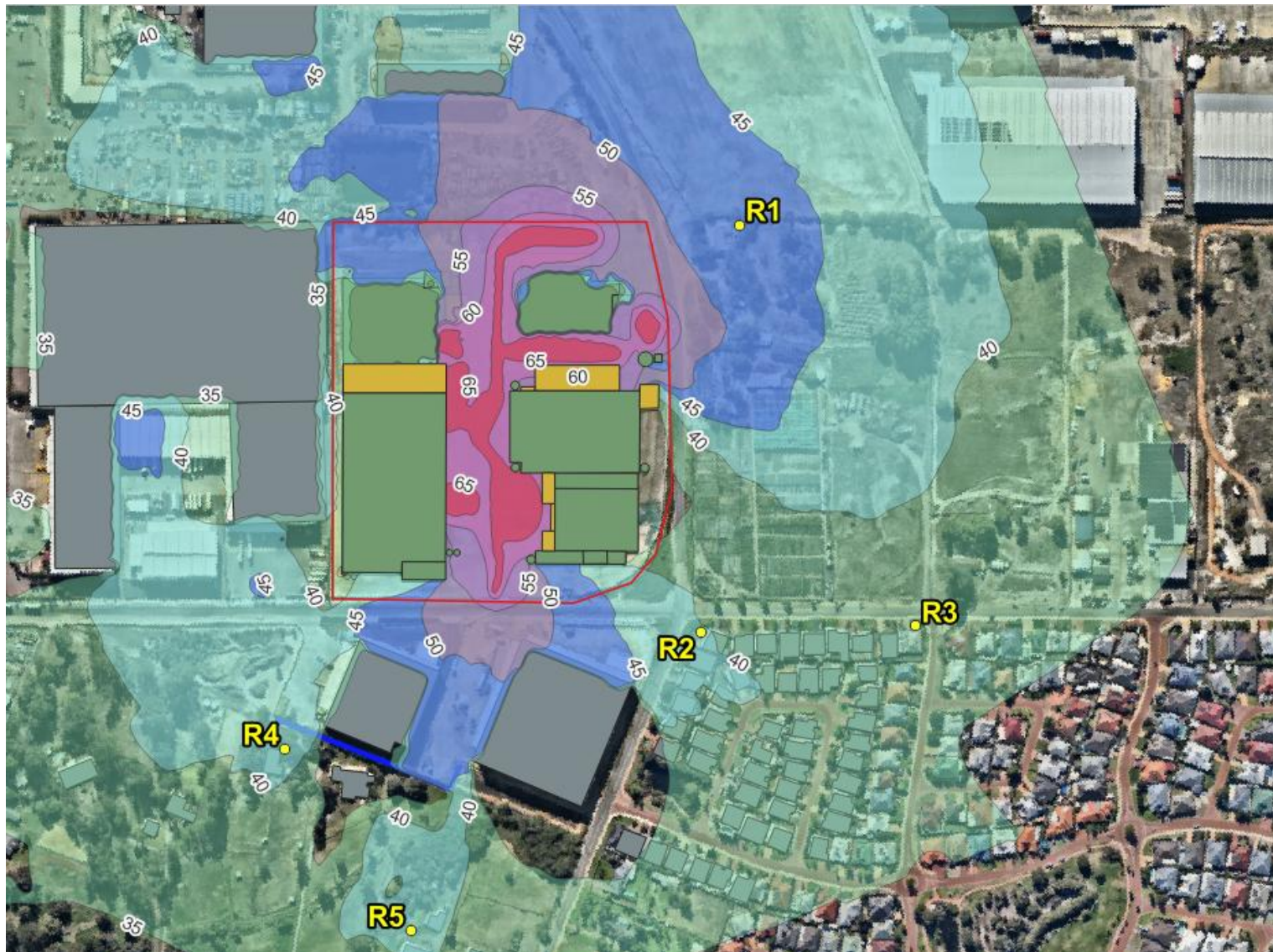
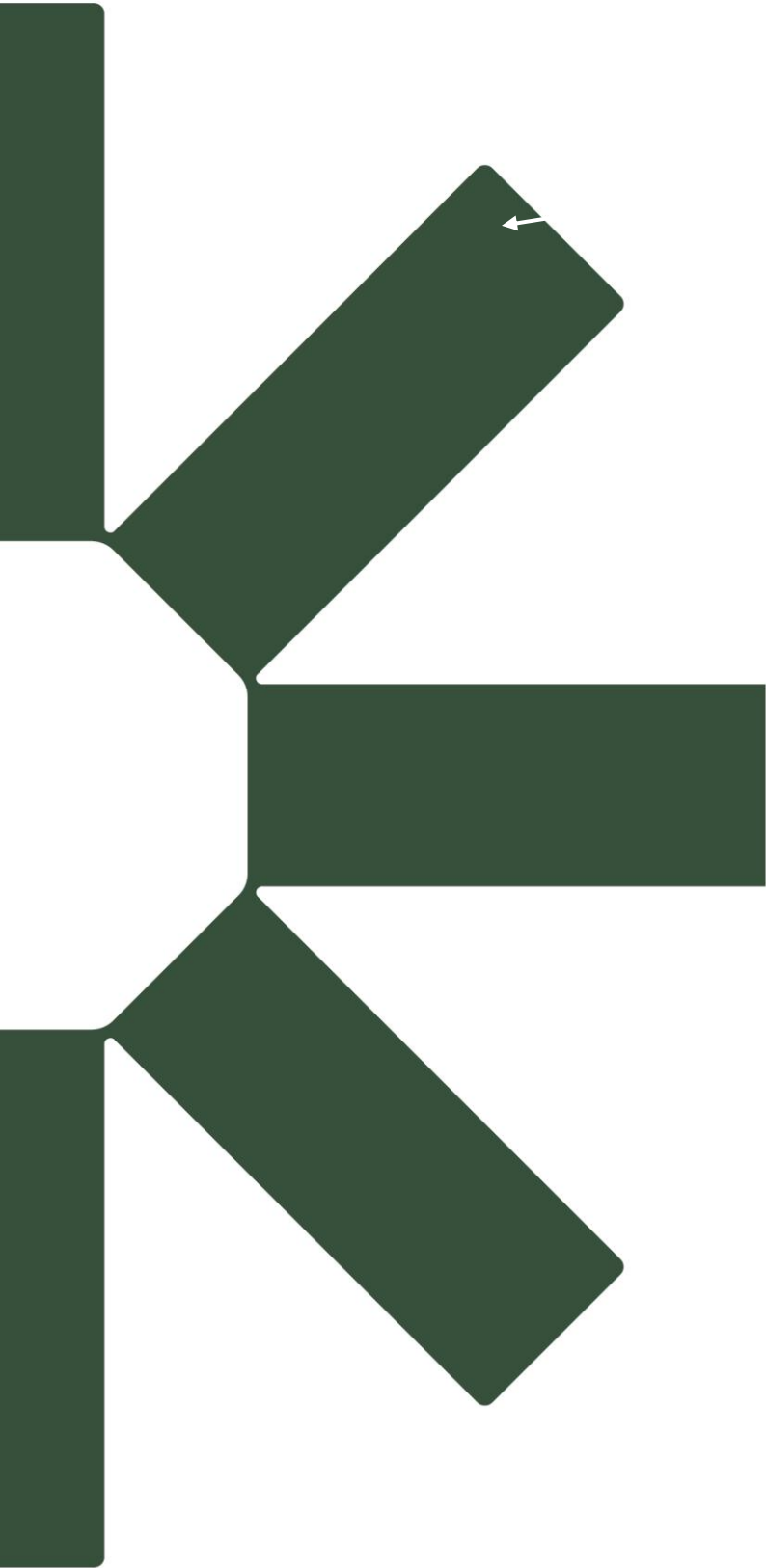


Figure 6 Sunday / Public Holiday operational noise contours, L_{Aeq} dB





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