EGLINTON TOWN CENTRE

ACOUSTIC ASSESSMENT

SEPTEMBER 2026

OUR REFERENCE: 24118-4-18172

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FOR

WOODSOME MANAGEMENT PTY LTD

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1. INTRODUCTION

Herring Storer Acoustics was commissioned by Urbis on behalf of Eglinton Estates to undertake a noise assessment for the activity centre associated with proposed development of the Eglinton Town Centre. The acoustic review has been undertaken with respect to State Planning Policy 5.4 *"Road and Rail Transport Noise and Freight Considerations in Land Use Planning"* (SPP5.4).

For this activity centre, the assessment was undertaken with respect to road traffic noise associated with vehicles travelling along Marmion Avenue and Eglinton Drive; and the proposed future extensions of the Perth passenger rail system.

As part of this this assessment, the following was carried out:

- Determine by modelling, the noise that would be received at residences within the residential development from vehicles travelling along Marmion Avenue and Eglinton Drive.
- Determine by modelling, the noise that would be received at residences within the residential development from passing passenger trains.
- Assess the predicted noise levels for compliance with the appropriate criteria.
- If exceedances are predicted, comment on possible noise amelioration options for compliance with the appropriate criteria.

For reference, the concept plan is attached in Appendix A.

2. SUMMARY

Under the Western Australian Planning Commission (WAPC) Planning Policy 5.4 *"Road and Rail Transport Noise and Freight Considerations in Land Use Planning"* the following external criteria are listed:

"Noise Target"	**"Noise Limits"**
$L_{Aeq(Day)}$ of 55 dB(A);	$L_{Aeq(Day)}$ of 60 dB(A).
$L_{Aeq(Night)}$ of 55 dB(A);	$L_{Aeq(Night)}$ of 55 dB(A).

As external noise levels exceed the "Noise Target" noise levels, then the residential premises should be designed to comply with the following internal noise levels:

INTERNAL

$L_{Aeq(Day)}$ of 40 dB(A) in living and work areas; and
$L_{Aeq(Night)}$ of 35 dB(A) in bedrooms.

We also note that under the SPP5.4, noise mitigation measures should be implemented with a view to achieve, in at least one outdoor area, the "Noise Target".

The results of the acoustic assessment indicate that noise received at the ground floor level of residences located adjacent to Marmion Avenue would exceed the "Noise Limit". Thus, for these residences, noise received at residences would exceed the "Noise Limits" criteria and notifications on Titles and a "Quiet House" design would be required for at least the first row of residences.

For residences located adjacent to Marmion Avenue, we do not believe that for the entire length of the development it would be practicable or desirable to construct noise barriers at the edge of the Marmion Avenue road reserve. Therefore, the following is recommended:

1. Where lots back on to Marmion Avenue, the construction of a 2.0 or 2.2 metre barrier wall is recommended. Locations are shown on Figure D1 attached in Appendix D.

2. Where possible, minor access streets be located between Marmion Avenue and residential premises. This then allows the front of the residences to face the major roads and ensures that the residences themselves provide a barrier to an outdoor living area located at the rear of the residence. Noise received at the outdoor living areas would then comply with the "Noise Target" as required under SPP5.4.

With the construction of an 2.0 or 2.2 metre high barrier, noise received at the ground floor would be reduced and the "Quiet House" design packages required would be as shown on Figure D1 in Appendix D.

Additional, to the above, depending on the final sub-divisional plan, some additional residence may require "Quiet House" design. All residences receiving noise levels of an $L_{Aeq(Day)}$ of 55 dB(A) or above, require Notifications on Titles.

With regards to noise received at the noise received from the extension of the northern suburbs passenger rail, it is noted that under the current proposed structure plan there would be no noise sensitive within the $L_{Aeq(Day)}$ 55 dB(A) noise contour. Therefore, in relation to the railway, nothing is required.

Areas requiring "Quiet House" design and Notifications on Titles are shown in Figure D1 in Appendix D.

Information regarding "Quiet House" design Package as outlined in the Implementation Guidelines, is contained in Appendix E.

Notes:

1 To refine the "Quiet House" design requirements and the residences requiring Notifications, it is recommended that additional noise modelling be undertaken at subdivision stage when lots and the internal road network have been finalised.

2 It is noted that Quiet House Design Packages attached are "Deemed to Satisfy" constructions and alternative constructions would be acceptable, provided they are supported by an acoustic report prepared by a suitably qualified acoustic consultant. Additionally, for multiple storey residences, it is recommended that specialist acoustic advice be sort.

3 The buildings associated with an educational facility are under State Planning Policy 5.4 considered as a Noise Sensitive Premises. Thus, depending on the location of the building, "Quiet House" design may be required. Under State Planning Policy 5.4, the internal noise levels within an education facility need to comply with the noise levels as listed in Table 1 of AS 2107 : 2016 - "Acoustics – Recommended design sound levels and reverberation times for building interiors".

3. CRITERIA

3.1 STATE PLANNING POLICY 5.4

The Western Australian Planning Commission (WAPC) released on 22 September 2009 State Planning Policy 5.4 "Road and Rail Transport Noise and Freight Considerations In Land Use Planning" (SPP 5.4). Section 5.3 – Noise Criteria, outlines the acoustic criteria and states:

"5.3 - NOISE CRITERIA

Table 1 sets out the outdoor noise criteria that apply to proposals for new noise-sensitive development or new major roads and railways assessed under this policy.

These criteria do not apply to—

- *Proposals for redevelopment of existing major roads or railways, which are dealt with by a separate approach as described in section 5.4.1; and*
- *Proposals for new freight handling facilities, for which a separate approach is described in section 5.4.2.*
- *The outdoor noise criteria set out in Table 1 apply to the emission of road and rail transport noise as received at a noise-sensitive land use. These noise levels apply at the following locations—*
- *For new road or rail infrastructure proposals, at 1m from the most exposed, habitable façade of the building receiving the noise, at ground floor level only; and*
- *For new noise-sensitive development proposals, at 1m from the most exposed, habitable façade of the proposed building, at each floor level, and within at least one outdoor living area on each residential lot.*

Further information is provided in the guidelines.

TABLE 1: OUTDOOR NOISE CRITERIA

Time of day	*Noise Target*	*Noise Limit*
Day (6 am–10 pm)	$L_{Aeq(Day)}$ *= 55 dB(A)*	$L_{Aeq(Day)}$ *= 60 dB(A)*
Night (10 pm–6 am)	$L_{Aeq(Night)}$ *= 50 dB(A)*	$L_{Aeq(Night)}$ *= 55 dB(A)*

The 5 dB difference between the outdoor noise target and the outdoor noise limit, as prescribed in Table 1, represents an acceptable margin for compliance. In most situations in which either the noise-sensitive land use or the major road or railway already exists, it should be practicable to achieve outdoor noise levels within this acceptable margin. In relation to greenfield sites, however, there is an expectation that the design of the proposal will be consistent with the target ultimately being achieved. Because the range of noise amelioration measures available for implementation is dependent upon the type of proposal being considered, the application of the noise criteria will vary slightly for each different type. Policy interpretation of the criteria for each type of proposal is outlined in sections 5.3.1 and 5.3.2.

The noise criteria were developed after consideration of road and rail transport noise criteria in Australia and overseas, and after a series of case studies to assess whether the levels were practicable. The noise criteria take into account the considerable body of research into the effects of noise on humans, particularly community annoyance, sleep disturbance, long-term effects on cardiovascular health, effects on children's learning performance, and impacts on vulnerable groups such as children and the elderly. Reference is made to the World Health Organization (WHO) recommendations for noise policies in their publications on community noise and the Night Noise Guidelines for Europe. See the policy guidelines for suggested further reading.

5.3.1 Interpretation and application for noise-sensitive development proposals

In the application of these outdoor noise criteria to new noise-sensitive developments, the objective of this policy is to achieve –

- *acceptable indoor noise levels in noise-sensitive areas (for example, bedrooms and living rooms of houses, and school classrooms); and*
- *a reasonable degree of acoustic amenity in at least one outdoor living area on each residential lot[1].*

If a noise-sensitive development takes place in an area where outdoor noise levels will meet the noise target, no further measures are required under this policy.

In areas where the noise target is likely to be exceeded, but noise levels are likely to be within the 5dB margin, mitigation measures should be implemented by the developer with a view to achieving the target levels in a least one outdoor living area on each residential lot[1]. Where indoor spaces are planned to be facing any outdoor area in the margin, noise mitigation measures should be implemented to achieve acceptable indoor noise levels in those spaces. In this case, compliance with this policy can be achieved for residential buildings through implementation of the deemed-to-comply measures detailed in the guidelines.

In areas where the outdoor noise limit is likely to be exceeded (i.e. above $L_{Aeq(Day)}$ of 60 dB(A) or $L_{Aeq(Night)}$ of 55 dB(A)), a detailed noise assessment in accordance with the guidelines should be undertaken by the developer. Customised noise mitigation measures should be implemented with a view to achieving the noise target in at least one outdoor living or recreation area on each noise-sensitive lot or, if this is not practicable, within the margin. Where indoor spaces will face outdoor areas that are above the noise limit, mitigation measures should be implemented to achieve acceptable indoor noise levels in those spaces, as specified in the following paragraphs.

For residential buildings, acceptable indoor noise levels are $L_{Aeq(Day)}$ of 40 dB(A) in living and work areas and $L_{Aeq(Night)}$ of 35 dB(A) in bedrooms[2]. For all other noise-sensitive buildings, acceptable indoor noise levels under this policy comprise noise levels that meet the recommended design sound levels in Table 1 of Australian Standard AS 2107:2000 Acoustics—Recommended design sound levels and reverberation times for building interiors.

1 For non residential noise-sensitive developments, (e.g. schools and child care centres) consideration should be given to providing a suitable outdoor area that achieves the noise target, where this is appropriate to the type of use.
2 For residential buildings, indoor noise levels are not set for utility spaces such as bathrooms. This policy encourages effective "quiet house" design, which positions these non-sensitive spaces to shield the more sensitive spaces from transport noise (see guidelines for further information).

These requirements also apply in the case of new noise-sensitive developments in the vicinity of a major transport corridor where there is no existing railway or major road (bearing in mind the policy's 15-20 year planning horizon). In these instances, the developer should engage in dialogue with the relevant infrastructure provider to develop a noise management plan to ascertain individual responsibilities, cost sharing arrangements and construction time frame.

If the policy objectives for noise-sensitive developments are not achievable, best practicable measures should be implemented, having regard to section 5.8 and the guidelines."

4. MODELLING

To determine the noise received within the area of the activity centre from vehicles travelling along Marmion Avenue, noise modelling was carried out using SoundPlan, in accordance with the "Implementation Guidelines" for the State Planning Policy 5.4.

The ground contours used in the modelling were the current design contours for the project.

Noise modelling was undertaken based on the Structure Plan attached in Appendix A.

The traffic volume for Marmion Avenue, was as used for previous assessment, with the traffic volume for Eglinton Drive being extrapolated to 2036 from 2031 data contained within the Traffic report. The data is used in the model was as listed in Table 5.1

TABLE 5.1 - NOISE MODELLING INPUT DATA FOR ROAD TRAFFIC

Parameter	Value	
	Marmion Avenue	Eglinton Drive
Traffic Flow (vpd)	42000	37500
Speed (km/hr)	80	70
Future Heavy Vehicles (%)	6	4
Road Surface	Dense Graded Asphalt	Dense Graded Asphalt

In this situation where the road will undergo a major upgrade, noise modelling should be based on the DEFRA requirements. Using the DEFRA publication, the difference between the $L_{Aeq,16hr}$ (i.e day period) and the $L_{Aeq,8hr}$ (i.e night period) would be greater the 5 dB(A).

With regards to train movements, from previous projects in this area, the number of train movements are as listed in Table 5.2.

TABLE 5.2 – TRAIN MOVEMENTS

DAY	NIGHT
75 north bound 75 South bound	22 North bound 22 South bound

Note: All trains are 6 car sets.

Based on the number of train movements, the difference between the $L_{Aeq,16hr}$ and the $L_{Aeq,8hr}$ would be greater than 5 dB(A). Hence, again the day period would be the critical period for compliance.

Notes :

1 As outlined in the Implementation Guidelines, when using DEFRA for the basis of the noise modelling, the standard correction of -1.7 dB has been applied to the noise model. However, based on our experience, we believe that noise modelling undertaken using this correction, would still be conservative.

For this development within the activity centre plan, it is anticipated that the majority of residences would be single storey. Thus, the following modelling was undertaken to the ground floors:

Road Traffic Noise

Figure B1 - Base calculation (No noise mitigation) to Ground floor.
Figure B2 - With 2.2 metre high fence to lots backing on to Marmion Avenue.

Rail Noise

Figure C1 - No Mitigation.

5. DISCUSSION / RECOMMENDATIONS

This development fronts both Marmion Avenue and Eglinton Drive; and an extension to the northern suburbs passenger railway. Thus, under State Planning Policy 5.4, acoustic assessments for both these transport corridors are required.

For both Marmion Avenue and Eglinton Drive, the variation between the current road usage and design compared to that of the future, as per the Implementation Guidelines for State Planning Policy 5.4, noise modelling was undertaken using the DEFRA and standard parameters. Using this parameter, the day period is the critical period for compliance. For the passenger trains, with the variation in train movements between the day and night periods, the day period is also the critical period for compliance. Thus, noise modelling and the assessment were based on the day period ($L_{Aeq,16hr}$).

Under the Western Australian Planning Commission (WAPC) Planning Policy 5.4 *"Road and Rail Transport Noise and Freight Considerations in Land Use Planning"* the following external criteria are listed:

"Noise Target"	**"Noise Limits"**
$L_{Aeq(Day)}$ of 55 dB(A);	$L_{Aeq(Day)}$ of 60 dB(A).
$L_{Aeq(Night)}$ of 55 dB(A);	$L_{Aeq(Night)}$ of 55 dB(A).

As external noise levels exceed the "Noise Target" noise levels, then the residential premises should be designed to comply with the following internal noise levels:

INTERNAL

$L_{Aeq(Day)}$ of 40 dB(A) in living and work areas; and
$L_{Aeq(Night)}$ of 35 dB(A) in bedrooms.

We also note that under the SPP5.4, noise mitigation measures should be implemented with a view to achieve, in at least one outdoor area, the L_{Aeq} of 50 dB(A) noise level for the night period.

Within this Structure plan area, it is anticipated that the majority of residences would be single storey. Therefore, the assessments have been undertaken for ground floors. The results of the noise modelling for traffic noise associated with Marmion Avenue and Eglinton Drive are shown in Appendix B, with the passenger rail noise attached in Appendix C.

Note : For multiple storey residences, it is recommended that specialist acoustic advice be sought.

For residences located adjacent to Marmion Avenue, we do not believe that for the entire length of the development it would be practicable or desirable to construct noise barriers at the edge of the Marmion Avenue road reserve. Therefore, the following is recommended:

1. Where lots back on to Marmion Avenue, the construction of a 2.0 or 2.2 metre barrier wall is recommended. Locations are shown on Figure D1 attached in Appendix D.

2. Where possible, minor access streets be located between Marmion Avenue and residential premises. This then allows the front of the residence to face the major roads and ensuring that the residences themselves provide a barrier to an outdoor living area located at the rear of the residence. Noise received at the outdoor living areas would then comply with the "Noise Target" as required under SPP5.4.

With the construction of an 2.0 or 2.2 metre high barrier, noise received at the ground floor would be reduced and the "Quiet House" design packages required would be as shown on Figure D1 in Appendix D.

Additional, to the above, depending on the final subdivision plan, some additional residences may require "Quiet House" design. All residences receiving noise levels of an $L_{Aeq(Day)}$ of 55 dB(A) or above, require Notifications on Titles.

With regards to noise received from the northern suburbs passenger rail, it is noted that under the current proposed activity centre plan there would, with a road running along the eastern side of the railway reserve, be no noise sensitive premise within the $L_{Aeq(Day)}$ 55 dB(A) noise contour and in relation to the railway, nothing is required.

Finally, it is noted that buildings associated with an educational facility are under State Planning Policy 5.4 considered as a Noise Sensitive Premises. Thus, depending on the location of the building, "Quiet House" design may be required. Under State Planning Policy 5.4, the internal noise levels within an education facility need to comply with the noise levels as listed in Table 1 of AS 2107 : 2016 - "Acoustics – Recommended design sound levels and reverberation times for building interiors".

The lot requirements with regards to “Quiet House” design Package and Notifications on Titles, as outlined in the Implementation Guidelines, are shown in Figure D1 in Appendix D.

Information regarding “Quiet House” design Package, as outlined in the Implementation Guidelines, is contained in Appendix E.

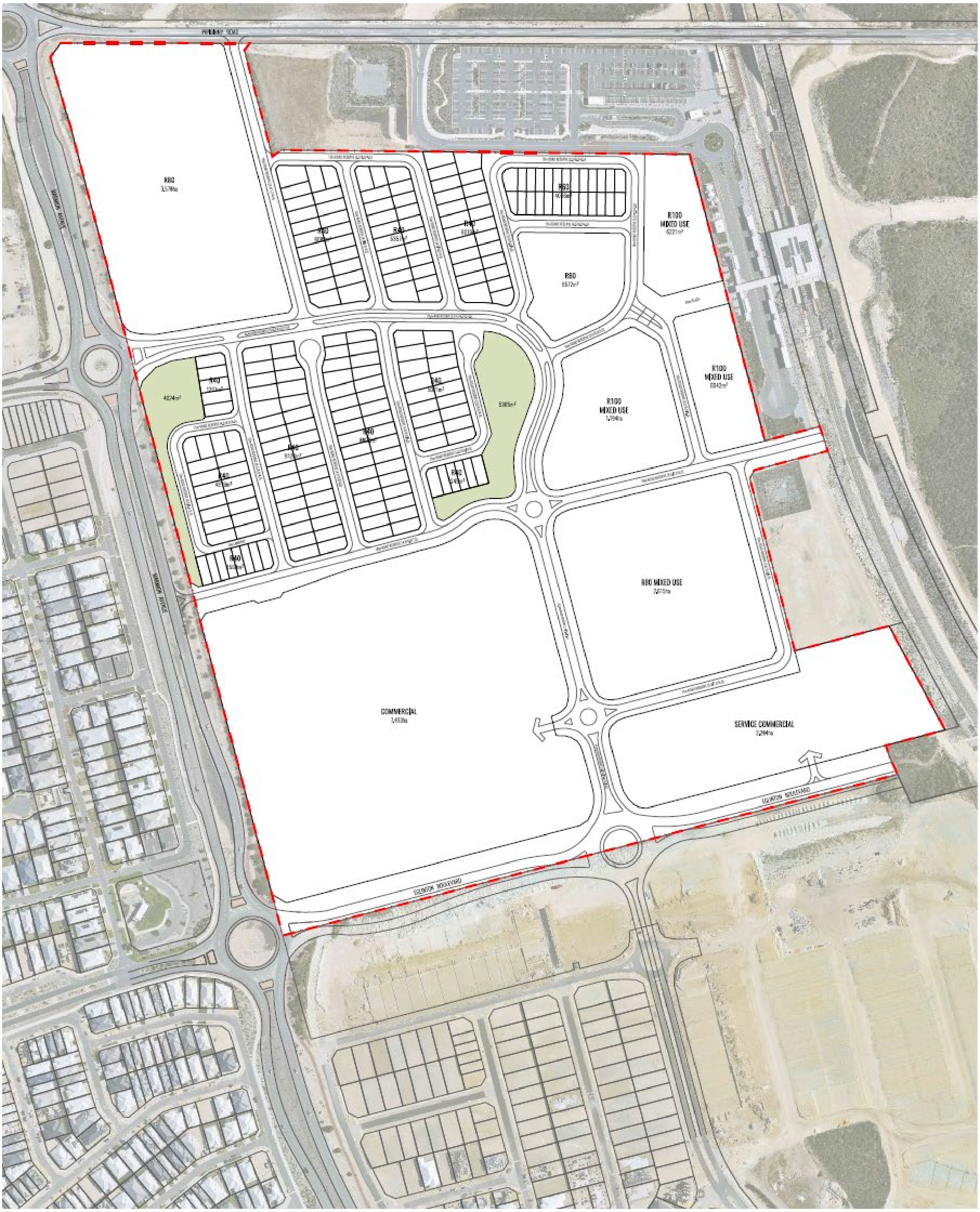
Notes:

1 To refine the “Quiet House” design requirements and the residence requiring Notifications, it is recommended that additional noise modelling be undertaken at Sub-divisional stage when lots ground levels and the internal road network have been finalised.

2 It is noted that Quiet House Design Packages attached are “Deemed to Satisfy” constructions and alternative constructions would be acceptable, provided they are supported by an acoustic report prepared by a suitably qualified acoustic consultant. Additionally, for multiple storey residences, it is recommended that specialist acoustic advice be sort.

APPENDIX A

STRUCTURE PLAN



LOT 9101 CENTRAL PRECINCT

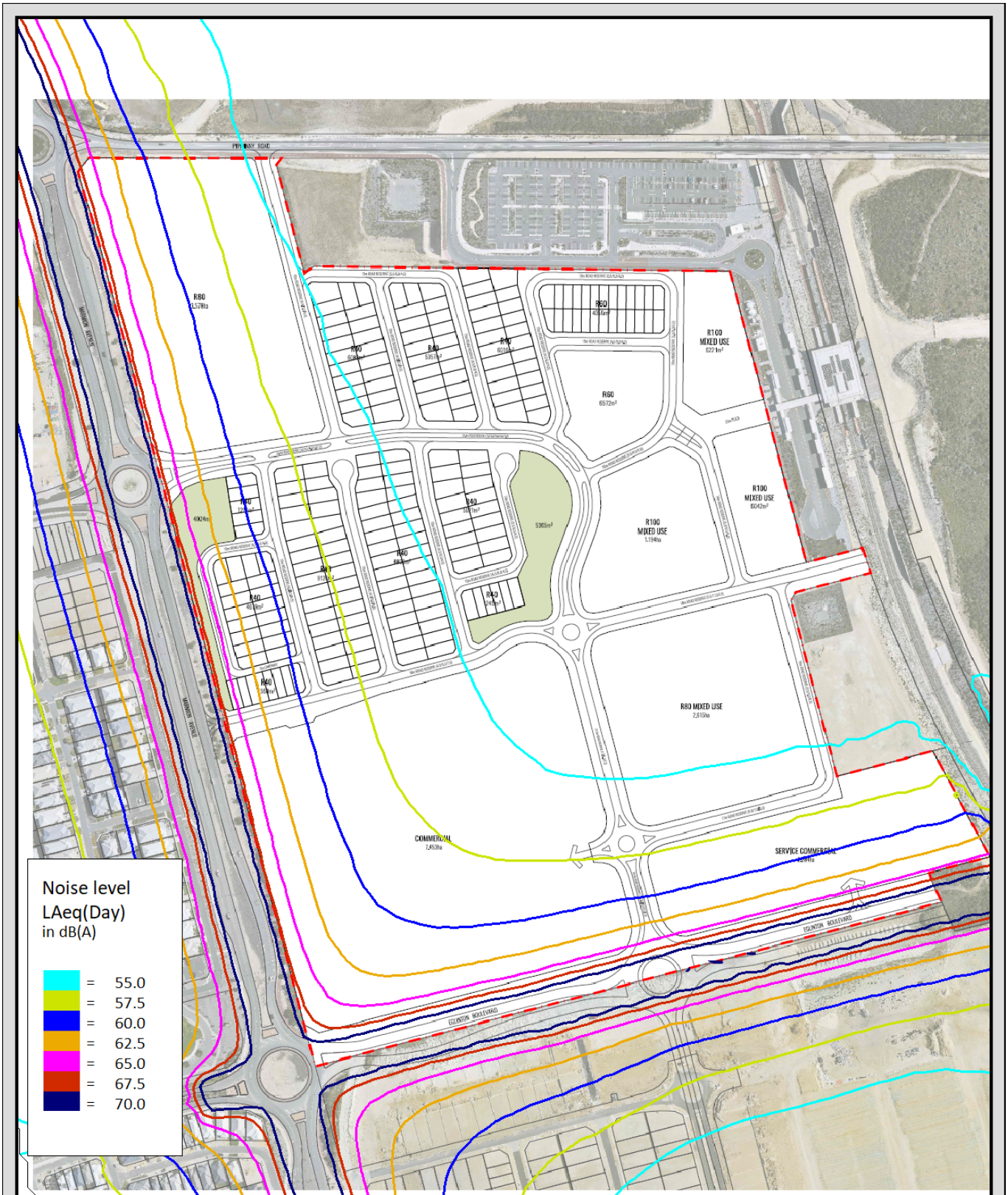
EGLINTON - OVERALL CONCEPT PLAN

Date: 13/08/2026 Plan: CFM-1-013B Scale 1:3000@A3

studio CFM TOWN PLANNING URBAN DESIGN

APPENDIX B

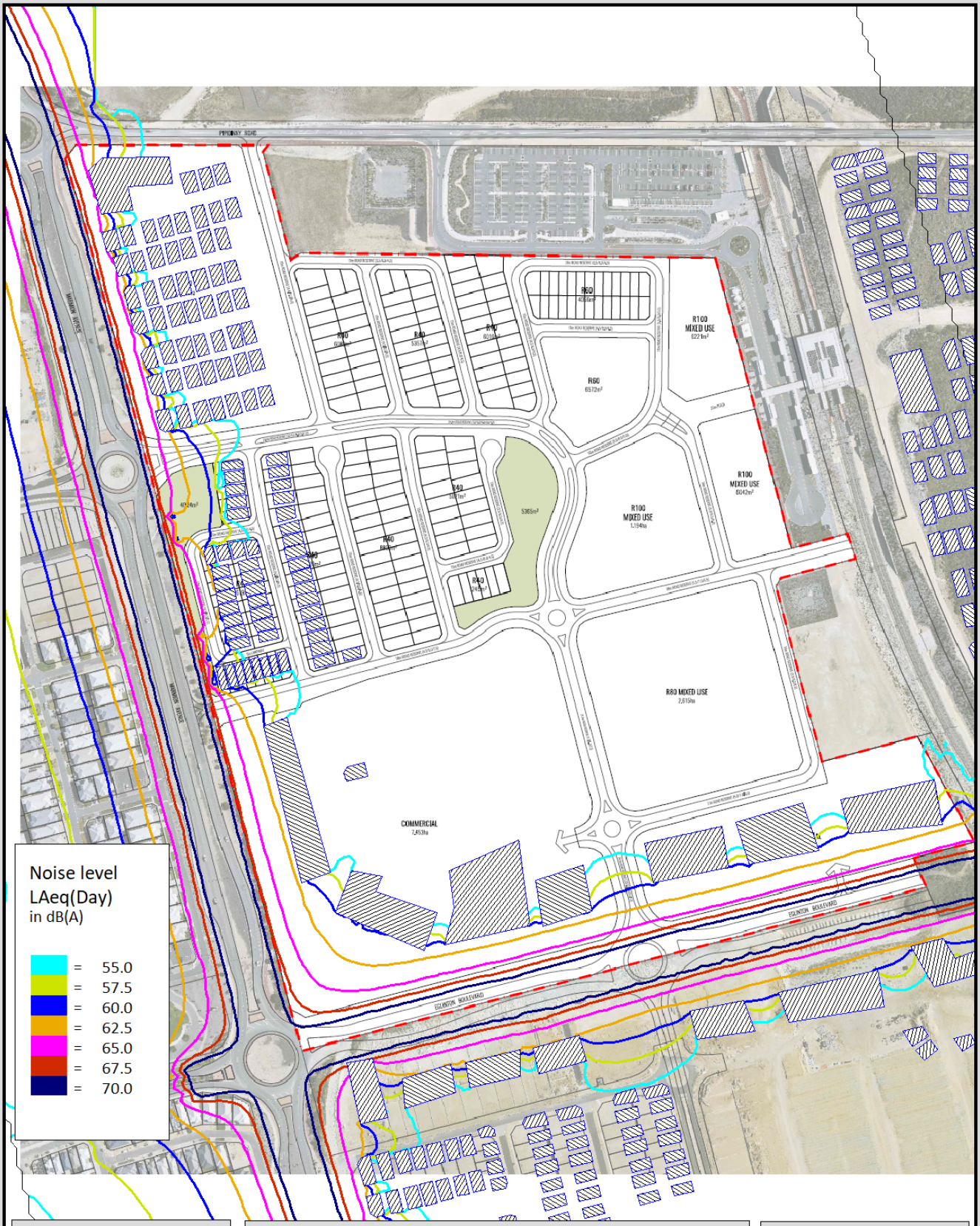
ROAD TRAFFIC NOISE
$L_{Aeq(16hr)}$ DAY PERIOD NOISE CONTOURS



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Date : 03 September 2026
File : 0827

EGLINTON TOWN CENTRE
LAeq(Day) NOISE CONTOURS
WITH 2.2m HIGH WALL TO R60 LOT AND RESIDENCES

Figure B1
Appendix B



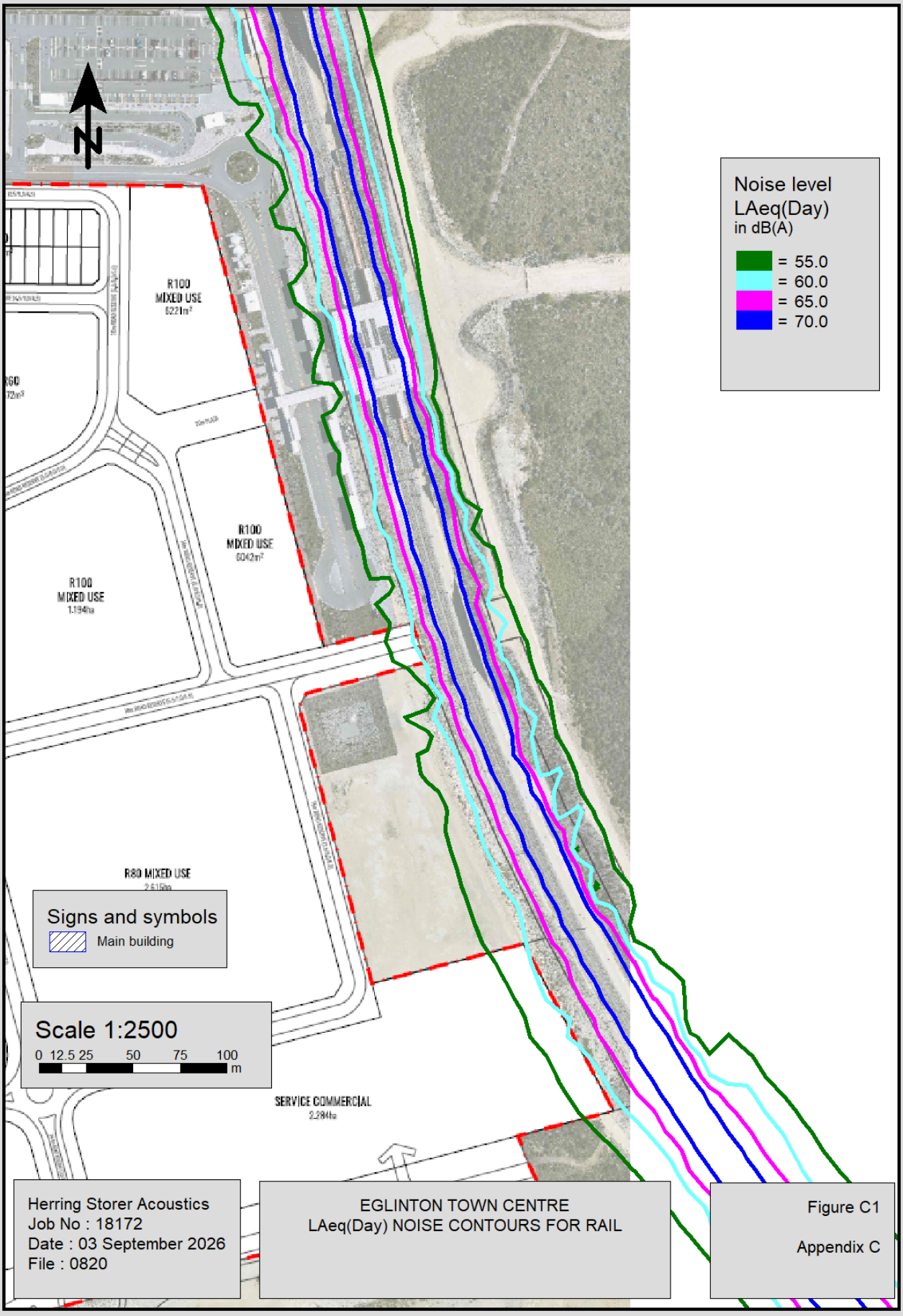
Herring Storer Acoustics
Job No : 18172
Date : 03 September 2026
File : 0831

EGLINTON TOWN CENTRE
LAeq(Day) NOISE CONTOURS
WITH 2.2m HIGH WALL TO R60 - 80 LOT AND RESIDENCES

Figure B2
Appendix B

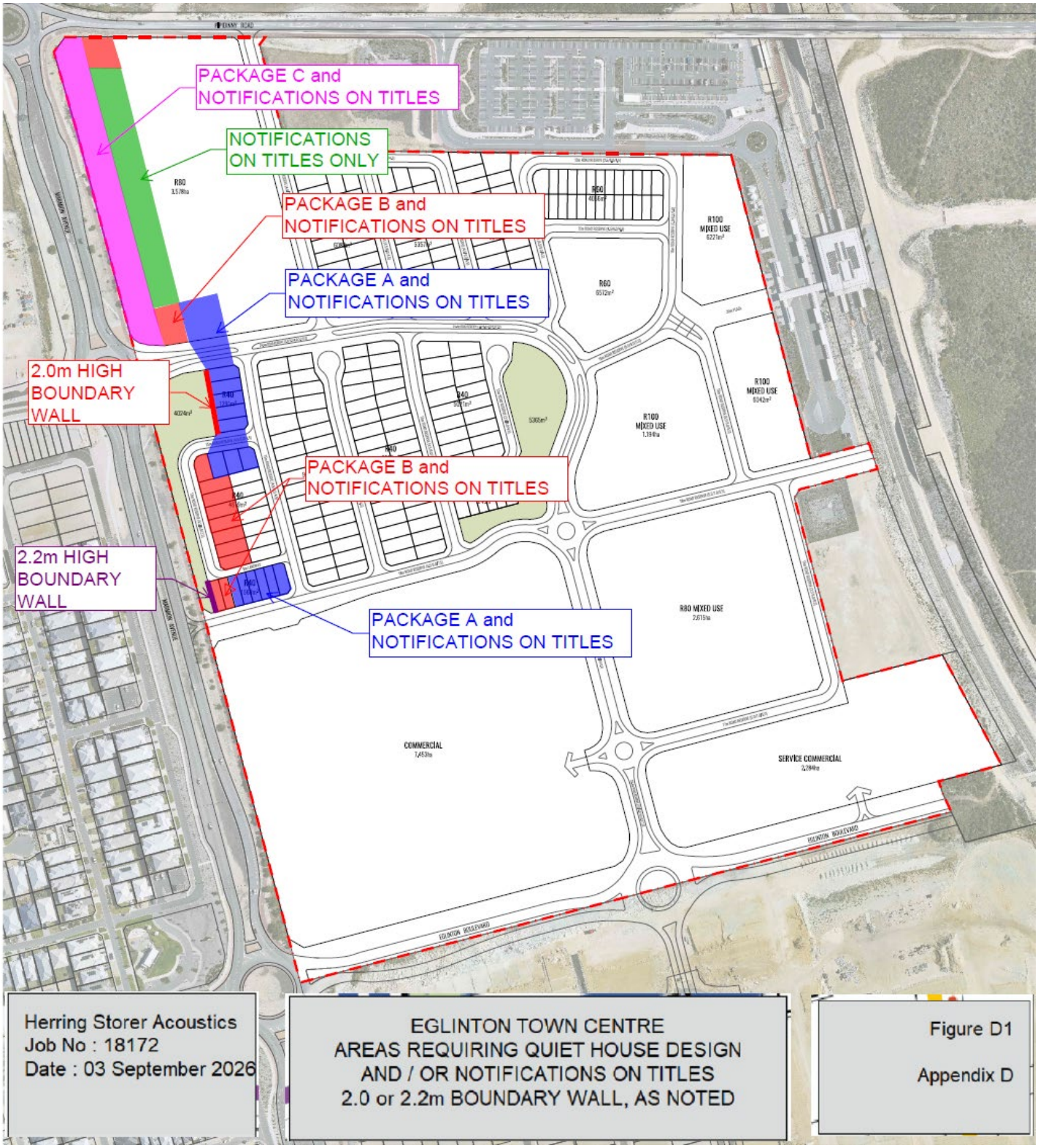
APPENDIX C

RAIL NOISE
$L_{Aeq(16hr)}$ DAY PERIOD NOISE CONTOURS


N
Noise level
LAeq(Day)
in dB(A)
= 55.0
= 60.0
= 65.0
= 70.0
R100
MIXED USE
R100
MIXED USE
R100
MIXED USE
1.194ha
R80 MIXED USE
Signs and symbols
Main building
Scale 1:2500
0 12.5 25 50 75 100
m
SERVICE COMMERCIAL
2.284ha
Herring Storer Acoustics
Job No : 18172
Date : 03 September 2026
File : 0820
EGLINTON TOWN CENTRE
LAeq(Day) NOISE CONTOURS FOR RAIL
Figure C1
Appendix C

APPENDIX D

LOTS REQUIRING QUIET HOUSE DESIGN
NOTIFICATION ON TITLES



Herring Storer Acoustics
Job No : 18172
Date : 03 September 2026

EGLINTON TOWN CENTRE
AREAS REQUIRING QUIET HOUSE DESIGN
AND / OR NOTIFICATIONS ON TITLES
2.0 or 2.2m BOUNDARY WALL, AS NOTED

Figure D1

Appendix D

APPENDIX E

QUIET HOUSE DESIGN PACKAGES

Road Traffic and Passenger Rail
Quiet House Requirements
(*Based on Table 3 of State Planning Policy 5.4 2019*)

Exposure Category	Orientation to corridor	Acoustic rating and example constructions					Mechanical ventilation/air conditioning considerations
		Walls	**External doors**	**Windows**	**Roofs and ceilings of highest floors**	**Outdoor Living areas**	
A **Quiet House A**	**Facing**	**Bedroom and Indoor Living and work areas to Rw + Ctr 45dB** **Stud Frame Walls** ➢ One row of 92mm studs at 60mm centres with: ➢ Resilient steel channels fixed to the outside of the studs; and ➢ 9.5mm hardboard or 9mm fibre cement weatherboards or one layer of 19mm board cladding fixed to the outside of the channels; and ➢ 75mm glass wool (11kg/m3) or 75mm polyester (14kg/m3) insulation, positioned between the studs; and ➢ -Two layers of 16mm fire-protective grade plasterboard fixed to the inside face of the studs. **Brick Walls** ➢ Single leaf of 150mm brick masonry with 13mm cement render on each face: **OR** ➢ Double brick: two leaves of 90 mm clay brick masonry with a 20mm cavity between leaves.	**Bedrooms**: ➢ Fully glazed hinged door with certified **R_w+C_{tr} 28dB** rated door and frame including seals and 6mm glass **Indoor Living and work areas:** ➢ 35mm solid core timber hinged door and frame system certified to **Rw 28dB** including seals**: OR** ➢ Glazed sliding door with 10 mm glass and weather seals	**Bedrooms**: ➢ Total external door and window system area up to 40% of room floor area: Sliding or double hung with minimum 10 mm single or 6mm-12mm-10mm double insulted glazing (**R_w+C_{tr} 28 dB**). Sealed awning or casement windows may use 6 mm glazing instead**: OR** ➢ Up to 60% floor area: as per above but must be sealed awning or casement type windows (**R_w+C_{tr} 31dB**). **Indoor Living and work areas** ➢ Up to 40% floor area: Sliding, awning, casement or double hung with minimum 6mm single pane or 6mm-12mm-6mm double insulted glazing (**R_w+C_{tr} 25dB): OR** ➢ Up to 60% floor area: As per Bedrooms at up to 40% area (**Rw+Ctr28 dB : OR** ➢ Up to 80% floor area: As per Bedrooms at up to 60% area (**R_w+C_{tr} 31 dB**).	**To R_w+C_{tr} 35dB** ➢ Concrete or terracotta tile or metal sheet roof with sarking and at least 10mm plasterboard ceiling	➢ At least one outdoor living area located on the opposite side of the building from the transport corridor and/or at least one ground level outdoor living area screened using a solid continuous fence or other structure of minimum **2 metres** height above ground level	➢ Acoustically rated openings and ductwork to provide a minimum sound reduction performance of **Rw 40dB** into sensitive spaces ➢ Evaporative systems require attenuated ceiling air vents to allow closed windows ➢ Refrigerant-based systems need to be designed to achieve National Construction Code fresh air ventilation requirements ➢ Openings such as eaves, vents and air inlets must be acoustically treated, closed or relocated to building sides facing away from the corridor where practicable
	Side On		As per "Facing" above, except R_w+C_{tr} values may be 3dB less, e.g. glazed sliding door with 10 mm glass and weather seals for bedrooms	As above, except R_w+C_{tr} values may be 3dB less, or max % area increased by 20%			
	Opposite		No specific requirements	No specific requirements			

Road Traffic and Passenger Rail
Quiet House Requirements
(*Based on Table 3 of State Planning Policy 5.4 2019*)

Exposure Category	Orientation to corridor	Acoustic rating and example constructions					Mechanical ventilation/air conditioning considerations
		Walls	**External doors**	**Windows**	**Roofs and ceilings of highest floors**	**Outdoor Living areas**	
B **Quiet House B**	**Facing**	**Bedroom and indoor living and work areas to R_w+C_{tr} 50dB** **Single leaf of 90 mm clay brick masonry with:** ➢ A row of 70 mm x 35 mm timber studs or 64 mm steel studs at 600 mm centres; ➢ A cavity of 25 mm between leaves; ➢ 50 mm glass wool or polyester cavity insulation (R2.0+) insulation between studs; and ➢ One layer of 10mm plasterboard fixed to the inside face ➢ Single leaf of 220mm brick masonry with 13mm cement render on each face ➢ 150mm thick unlined concrete panel or 200mm thick concrete panel with one layer of 13mm plasterboard or 13mm cement render on each face **Double brick: two leaves of 90mm clay brick masonry with:** ➢ A 50mm cavity between leaves ➢ 50mm glass wool or polyester cavity insulation (R2.0+) ➢ Resilient ties where required to connect leaves **Double brick: two leaves of 110mm clay brick masonry with** ➢ 50mm cavity between leaves and R2.0+ cavity insulation	**Bedrooms** ➢ Fully glazed hinged door with certified **R_w+C_{tr} 31dB** rated door and frame including seals and 10mm glass **Indoor Living and work areas** ➢ 35mm solid core timber hinged door and frame system certified to **Rw 28dB** including seals**: OR** ➢ Glazed sliding door with 10 mm glass and weather seals	**Bedrooms**: ➢ Total external door and window system area up to 40% of room floor areas: Fixed sash, awning or casement with minimum 6mm single or 6mm-12mm-6mm double insulted glazing (**Rw+Ctr 31dB**). ➢ Up to 60% floor area: as per above but must be minimum10mm single or 6mm-12mm-10mm double insulated glazing (**Rw+Ctr 34dB**) **Indoor Living and work areas** ➢ Up to 40% floor area; Sliding or double hung with minimum 6mm single pane or 6mm-12mm-6mm double insulted glazing (R_w+C_{tr} 28dB). Sealed awning or casement windows may use 6mm glazing instead. **: OR** ➢ Up to 60% floor area: As per Bedrooms at up to 40% area (**R_w+C_{tr} 31dB**). **: OR** ➢ Up to 80% floor area: As per Bedrooms at up to 60% area (**R_w+C_{tr} 34dB).**	**To R_w+C_{tr} 35dB** ➢ Concrete or terracotta tile sarking and at least 10mm plasterboard ceiling, R3.0+ insulation **OR** ➢ Metal sheet roof, sarking and at least 10mm plasterboard ceiling, R3.0+ insulation	➢ At least one outdoor living area located on the opposite side of the building from the corridor and/or at least one ground level outdoor living area screened using a solid continuous fence or other structure of minimum **2.4 metres** height above ground level	➢ Acoustically rated openings and ductwork to provide a minimum sound reduction performance of **Rw 40dB** into sensitive spaces ➢ Evaporative systems require attenuated ceiling air vents to allow closed windows ➢ Refrigerant-based systems need to be designed to achieve National Construction Code fresh air ventilation requirements ➢ Openings such as eaves, vents and air inlets must be acoustically treated, closed or relocated to building sides facing away from the corridor where practicable
	Side-On		**Bedrooms**: ➢ Fully glazed hinged door with certified **R_w+C_{tr} 28dB** rated door and frame including seals and 6mm glass **Indoor Living and work areas:** ➢ 35mm solid core timber hinged door and frame system certified to **Rw 28dB** including seals**: OR** ➢ Glazed sliding door with 10 mm glass and weather seals	**Bedrooms**: ➢ Total external door and window system area up to 40% of room floor area: Sliding or double hung with minimum 10 mm single or 6mm-12mm-10mm double insulted glazing (**R_w+C_{tr} 28 dB**). Sealed awning or casement windows may use 6 mm glazing instead. **: OR** ➢ Up to 60% floor area: as per above but must be sealed awning or casement type windows (**R_w+C_{tr} 31dB**). **Indoor Living and work areas** ➢ Up to 40% floor area: Sliding, awning, casement or double hung with minimum 6mm single pane or 6mm-12mm-6mm double insulted glazing (**R_w+C_{tr} 25dB**). **: OR** ➢ Up to 60% floor area: As per Bedrooms at up to 40% area (**Rw+Ctr28 dB**) **: OR** ➢ Up to 80% floor area: As per Bedrooms at up to 60% area (**R_w+C_{tr} 31 dB**).			
	Opposite		As above, except R_w+C_{tr} values may be 3dB less, or max % area increased by 20%	As above, except R_w+C_{tr} values may be 3dB less, or max % area increased by 20%			

Road Traffic and Passenger Rail
Quiet House Requirements
(*Based on Table 3 of State Planning Policy 5.4 2019*)

Exposure Category	Orientation to corridor	Acoustic rating and example constructions					
		Walls	**External doors**	**Windows**	**Roofs and ceilings of highest floors**	**Outdoor Living areas**	**Mechanical ventilation/air conditioning considerations**
C **Quiet House C**	**Facing**	**Bedroom and indoor living and work areas to R_w+C_{tr} 50dB** **Single leaf of 90 mm clay brick masonry with:** ➢ A row of 70 mm x 35 mm timber studs or 64 mm steel studs at 600 mm centres; ➢ A cavity of 25 mm between leaves; ➢ 50 mm glass wool or polyester cavity insulation (R2.0+) insulation between studs; and ➢ One layer of 10mm plasterboard fixed to the inside face **Double brick: two leaves of 90mm clay brick masonry with:** ➢ A 50mm cavity between leaves ➢ 50mm glass wool or polyester cavity insulation (R2.0+) ➢ Resilient ties where required to connect leaves	**Bedrooms** ➢ External doors to bedrooms facing the corridor are not recommended. **Indoor Living and work areas** ➢ Fully glazed hinged door with certified **Rw+Ctr 31dB** rated door and frame including seals and 10mm glass**: OR** 40mm solid core timber frame and door (without glass or with glass inserts not less than 6mm), side hinged with certified **Rw 32dB** acoustically rated door and frame system including seals	**Bedrooms**: ➢ Total external door and window system area up to 20% of room floor area: Fixed sash, awning or casement with minimum 6mm single or 6mm-12mm-6mm double insulted glazing (**R_w+C_{tr} 31dB): OR** ➢ Up to 40% floor area; as per above but must be minimum 10mm single or 6mm-12mm-10mm double insulted glazing (**R_w+C_{tr} 34dB**). **Indoor Living and work areas** ➢ Up to 40% floor area: Sliding or double hung with minimum 6mm single pane or 6mm-12mm-6mm double insulated glazing (**R_w+C_{tr} 31dB**). Sealed awning or casement windows may use 6mm glazing instead**: OR** ➢ Up to 60% floor area: As per Bedrooms at up to 40% area (**Rw+Ctr 34dB)**	**To R_w+C_{tr} 40dB** ➢ To al bedrooms, 2 layers of 10mm plasterboard, or one layer 13mm high density sealed plasterboard (minimum surface density of 12.5 kg/m2), affixed using steel furring channels beneath ceiling rafters/supports**: and** ➢ R3.0+ insulation batts laid in cavity **: and** ➢ Concrete or terracotta tile roof with sarking, or metal sheet roof with foil backed R2.0+ fibre insulation between steel sheeting and roof battens	➢ At least one outdoor living area located on the opposite side of the building from the corridor and/or at least one ground level outdoor living area screened using a solid continuous fence or other structure of minimum **2.4 metres** height above ground level	➢ Acoustically rated openings and ductwork to provide a minimum sound reduction performance of Rw 40dB into sensitive spaces. ➢ Evaporative systems require attenuated ceiling air cents to allow closed windows. ➢ Refrigerant-based systems need to be designed to achieve National Construction Code fresh air ventilation requirements ➢ Openings such as eaves, vents and air inlets must be acoustically treated, close or relocated to building sides facing away from the corridor where practicable.
	Side-on	**Single leaf of 90 mm clay brick masonry with:** ➢ A row of 70 mm x 35 mm timber studs or 64 mm steel studs at 600 mm centres; ➢ A cavity of 25 mm between leaves; ➢ 50 mm glass wool or polyester cavity insulation (R2.0+) insulation between studs; and ➢ One layer of 10mm plasterboard fixed to the inside face ➢ Single leaf of 220mm brick masonry with 13mm cement render on each face ➢ 150mm thick unlined concrete panel or 200mm thick concrete panel with one layer of 13mm plasterboard or 13mm cement render on each face **Double brick: two leaves of 90mm clay brick masonry with:** ➢ A 50mm cavity between leaves ➢ 50mm glass wool or polyester cavity insulation (R2.0+) ➢ Resilient ties where required to connect leaves	**Bedrooms** ➢ Fully glazed hinged door with certified **R_w+C_{tr} 31dB** rated door and frame including seals and 10mm glass **Indoor Living and work areas** ➢ 35mm solid core timber hinged door and frame system certified to **Rw 28dB** including seals**: OR** ➢ Glazed sliding door with 10 mm glass and weather seals				
	Opposite	**Double brick: two leaves of 110mm clay brick masonry with** ➢ 50mm cavity between leaves and R2.0+ cavity insulation	**Bedrooms**: ➢ Fully glazed hinged door with certified **R_w+C_{tr} 28dB** rated door and frame including seals and 6mm glass **Indoor Living and work areas:** ➢ 35mm solid core timber hinged door and frame system certified to **Rw 28dB** including seals**: OR** ➢ Glazed sliding door with 10 mm glass and weather seals	**Bedrooms**: ➢ Total external door and window system area up to 40% of room floor area: Sliding or double hung with minimum 10 mm single or 6mm-12mm-10mm double insulted glazing (**R_w+C_{tr} 28 dB**). Sealed awning or casement windows may use 6 mm glazing instead**: OR** ➢ Up to 60% floor area: as per above but must be sealed awning or casement type windows (**R_w+C_{tr} 31dB**). **Indoor Living and work areas** ➢ Up to 40% floor area: Sliding, awning, casement or double hung with minimum 6mm single pane or 6mm-12mm-6mm double insulted glazing (**R_w+C_{tr} 25dB): OR** ➢ Up to 60% floor area: As per Bedrooms at up to 40% area (**Rw+Ctr28 dB : OR** ➢ Up to 80% floor area: As per Bedrooms at up to 60% area (**R_w+C_{tr} 31 dB**).			

Note: The above treatments are a deemed to satisfy construction. Alternative designs are acceptable, provided they are certified by a suitable qualified acoustic consultant.