ATTACHMENT I – SONUS NOISE INVESTIGATIONS

Kidman Park (Metcash)

Code Amendment

Environmental Noise Assessment

S7088C3

November 2021

sonus.

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Document Title	:	Kidman Park Code Amendment Environmental Noise Assessment
Document Reference	:	S7088C3
Date	:	November 2021
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INTRODUCTION

An environmental noise assessment has been made of the proposed Planning and Design Code Amendment (**Code Amendment**) at Kidman Park on the former Metcash site.

The Affected Area is proposed to be rezoned for a combination of residential and commercial development, as shown on the concept plan in Appendix A. In addition, the existing Wormald and Fugro LADS Corporation (**Fugro**) facilities are proposed to be included in an Urban Renewal Neighbourhood Zone, within the Mixed Use Transitional Subzone.

There are existing noise sources in the vicinity of the proposal with the potential to impact on the amenity of any future residences, should the Code Amendment proceed. These include traffic on Findon Road, and the existing Wormald and Fugro facilities. In addition, there is potential noise from the proposed commercial area located on the north-east corner of the Affected Area.

The environmental noise assessment considers the existing provisions of the South Australian Planning and Design Code (**the Code**) and demonstrates that reasonable levels of amenity can be achieved through implementing the existing provisions and assessment pathways.

Road traffic is assessed against the provisions within the Code and referenced standard. Examples of the likely acoustic treatments to achieve the Code provisions have been provided to demonstrate that through practical building techniques and material selections, adequate levels of residential amenity can be achieved within the Affected Area.

Noise measurements have been made at the Affected Area for activity adjacent to the existing Wormald and Fugro LADS Corporation facilities. The measurements are used as the basis for determining the need for any construction upgrades to ensure that encroaching residences do not impact on the existing lawful land uses.

Consideration has also been given to the potential activity at future commercial premises and the adequacy of the provisions of the Code has been considered.

The assessment ensures that each of the noise sources is adequately accounted for within the Code Amendment and that adequate levels of residential amenity can be achieved.

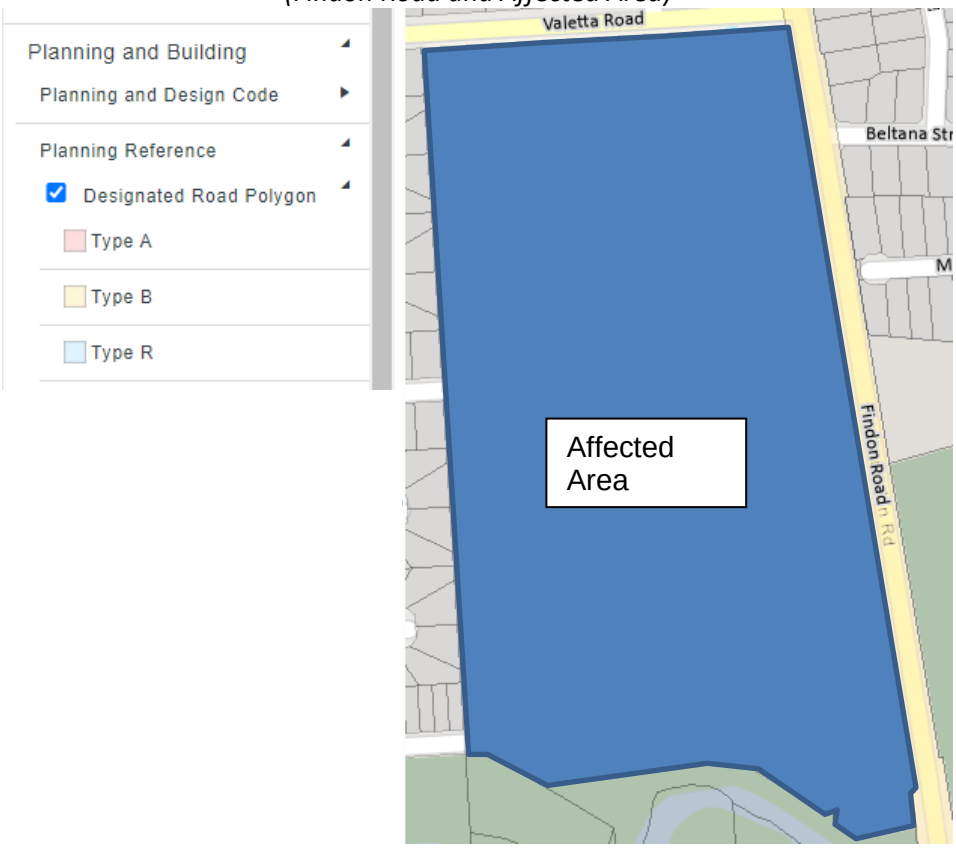
ROAD TRAFFIC

The Ministerial Building Standard MBS 010 *Construction requirements for the control of external sound* (**MBS 010**) "contains provisions for reducing the intrusion of unacceptable levels of sound into habitable rooms of residential buildings".

It is predominantly applied to residential development adjacent to transport corridors, such as major roads, however can also apply to residential development in a mixed use environment where there is the potential for other activity to impact on amenity. The Noise and Air Emissions Overlay (**the Overlay**) within the Planning and Design Code mandates MBS 010 as part of Building Rules Consent, where the subject land is designated.

MBS 010 requires treatment of residential building facades which are exposed to traffic noise from designated roads in the Code. Findon Road is a Type B designated road in the Code, as shown in the Figure below.

Figure: *Designated Roads*
(Findon Road and Affected Area)



Recommendations

To adequately address the noise from road traffic (on Findon Road) it is recommended that as part of the Code Amendment, the portion of the subject land closest to Findon Road be designated under the Overlay. In accordance with MBS 010, the land within 60m (measured from 3m inside the road reserve) of Findon Road should be included.

Being within a designated area will require building facades to be designed to reduce traffic noise in accordance with MBS 010. One assessment method under MBS 010 specifies acoustic treatment to dwellings based on the "Sound Exposure Category" (SEC) of specific facades. The SECs range from 1 to 5, with SEC 1 requiring a base level of acoustic treatment and SEC 5 requiring specific extensive treatment. The treatments are based on achieving a level of no more than 35 dB(A) inside a bedroom at night and therefore the SEC's account for varying levels of noise outside.

The SEC will vary according to the distance from the corridor, shielding from the corridor, the speed limit and the Type B designation of the road. It is noted that for any site designated within the Overlay, a minimum of SEC1 acoustic treatment applies. The following table provides the SEC's which would apply for various setback distances and the corresponding outdoor design sound level.

Distance within site boundary	Applicable Sound Exposure Category	Outside Noise Level
0-10m	4	71-75dB(A)
10-20m	3	67-71dB(A)
20-35m	2	63-67dB(A)
35-60m	1	59-63 dB(A)

Once assigned an SEC, the extent of treatment for each building element varies according to design factors such as the size of glazing relative to the floor area of the room. For example, for a given SEC, the larger the glazing system into a room, the thicker the glazing must be. That is, for a future development application, the actual acoustic treatments will depend on the final design, adjusted according to the methodology provided by MBS 010.

The following mark-up shows the area of the site which would require treatments if the Code Amendment progresses.

Appendix B of this report provides indicative treatments for each of the SEC's. The treatments demonstrate that the provisions of MSB 010 can be achieved with practical building upgrades. The final extent of treatment will be determined at the Building Rules Consent stage for the residences.

INTERFACE WITH WORMALD AND FUGRO LADS CORPORATION

An assessment has been made of the noise from the facilities on the northern boundary of the subject site. The assessment is designed to ensure:

- a suitable level of amenity for future residents; and
- that the ongoing lawful operation of the facilities are not constrained.

The *Environment Protection (Noise) Policy 2007* (the **Policy**) under the *Environment Protection Act 1993* provides an objective tool to achieve both outcomes. The Policy is based on the *World Health Organisation Guidelines* (the WHO Guidelines) to prevent annoyance, sleep disturbance and unreasonable interference on the amenity of an area and is therefore suitable for assessing the level of amenity for future residents. Further, achievement of the goal noise levels of the Policy protects the existing land uses from future action under the *Environment Protection Act 1993*.

The Policy allows for the goal noise levels to be achieved outside of the residence or, where acoustic treatment is incorporated into the construction, the assessment location becomes inside (with an internal goal noise level).

The Policy goal noise levels are based on the principally promoted land uses within the proposed zone of the noise source (industries) and the noise receiver (future residences).

Given that the proposed Code Amendment is to promote “mixed use” in the Mixed Use Transitional Subzone and “residential” land use in the vicinity of these facilities, the goal noise levels under the Policy will be as follows:

- Daytime (7am to 10pm) noise levels directly outside residences of no greater than 55 dB(A), or 35 dB(A) within habitable rooms of the residences; and,
- Night-time (10pm to 7am) noise levels directly outside residences of no greater than 48 dB(A), or 30 dB(A) within habitable rooms of the residences.

Under the Policy, noise levels are effectively “adjusted” for each characteristic of tone, impulse, low frequency and modulation that the noise source exhibits. The application of penalties is discussed further in the following sections.

Noise Monitoring

Visits to the site indicated that noise from these facilities was sporadic and mostly associated with deliveries into and out of the warehouses of Wormald and Fugro. Measurements of the noise from activity within the Affected Area was conducted by placing a noise logger in the vicinity of the roller doors of each facility between 24 September and 30 September, 2021. The noise loggers included digital audio recording to enable the noise from sources such as distant traffic, birds and wind in trees to be excluded.

The highest noise levels measured were adjacent to the Wormald roller door. The highest noise levels recorded (after the obvious noise from birds etc were excluded) were 52 dB(A) at night and 57 dB(A) during the day. It is noted that these noise levels are likely to still include a significant contribution from other sources and therefore represent an upper limit to the noise from the facilities. The noise from loading of trucks at a warehouse has the potential for an annoying noise characteristic. With an adjustment made for the noise character penalty (+5 dB(A)), the highest noise levels were 57 dB(A) at night and 62 dB(A) during the day.

The noise would therefore exceed the goal noise levels of 48 dB(A) at night and 55 dB(A) during the day, which would apply outside a new residence on the subject site.

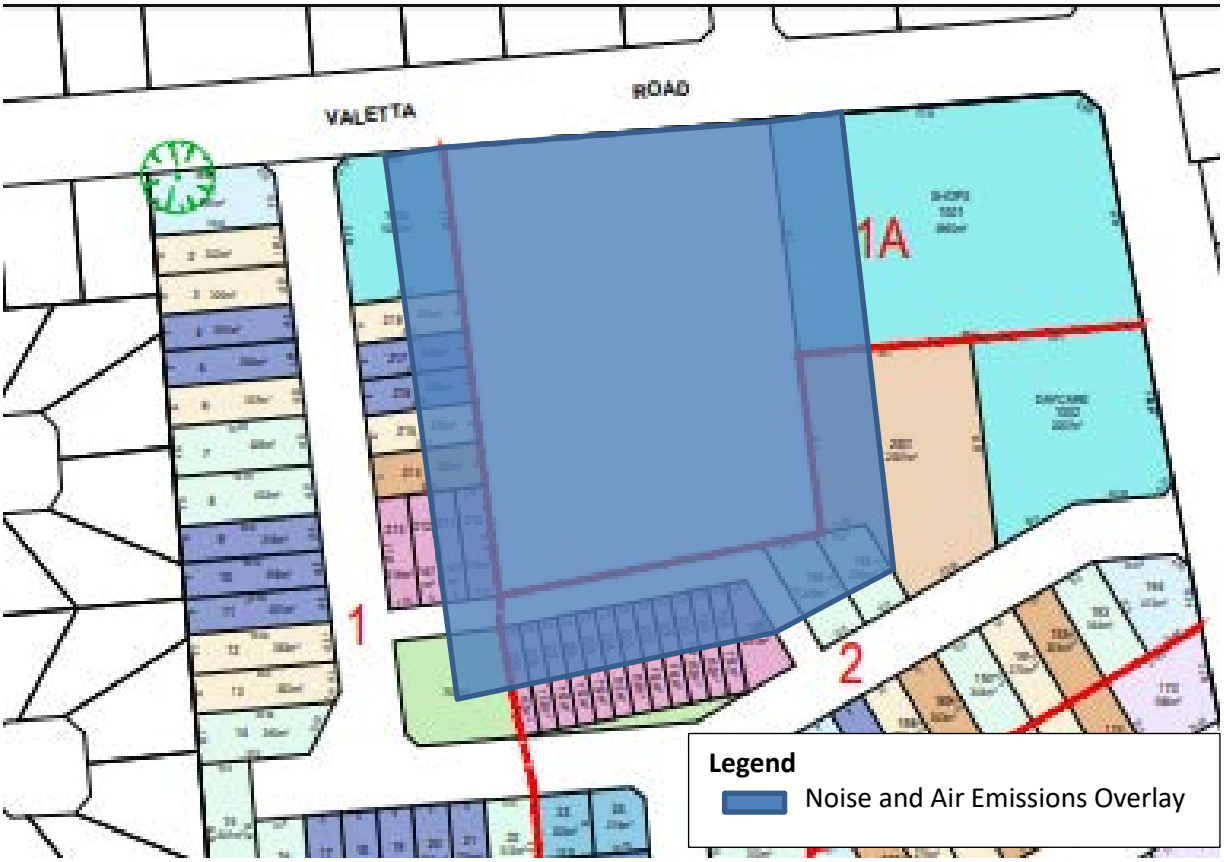
Recommendation

Although the goal noise level is not predicted to be achieved outside, a minimum noise reduction of 27 dB(A) across the facade of a residence would result in the internal goal noise level being achieved.

It is therefore recommended that the portion of the site adjacent to the Mixed Use Transitional Subzone (containing these facilities) be included in the Noise and Air Emissions Overlay. As noted in previous sections, being within the Overlay will result in the need to incorporate a minimum of SEC 1 treatments under MBS 010, which is designed to achieve a noise reduction of 28 dB(A). Based on the above, where SEC 1 treatments are incorporated, a noise level of no greater than 29 dB(A) at night and 34 dB(A) during the day would be achieved inside residences, satisfying the Policy goal levels of 30 dB(A) and 35 dB(A) respectively.

The area which should be included in the Overlay as a “designated area” is shown below.

It is noted that the overlay covers allotments of the existing industries as well as allotments proposed for commercial development. If applications for commercial development are made, then the Overlay has no effect but if residences are proposed at some future time (for example on upper levels), the Code will include provisions to protect the amenity of the future residents and to protect the ongoing lawful operation of existing industries at 5 & 7 Valetta Road.



PROPOSED COMMERCIAL USES

The concept plan proposes retail and a child care centre as part of a commercial area in the north east corner. The location is shown in the figure below.

The Code provides a shared responsibility for noise at the interface of commercial and residential land uses in a mixed use area.

It is therefore recommended that the land in the vicinity of the commercial land uses be designated within the Overlay. As a result of being within the Overlay, the closest dwellings are subject to the requirements of MBS 010. That is, all dwellings within the Overlay will need to be designed to achieve Sound Exposure Category 1. These requirements are mandated at the building rules consent stage, once the final designs are known but are likely to include moderate upgrades to glazing and facades (as described in Appendix B). The recommended overlay location is shown in the figure below:

Legend
Noise and Air Emissions Overlay

It is noted that the overlay covers allotments proposed for commercial development. If applications for commercial development are made, then the Overlay has no effect but if residences are proposed at some future time on these allotments (for example above the retail), the Code will include provisions to protect the amenity of the future residents and to protect the commercial land uses.

In addition, the Development Application for each of the commercial land uses is required to consider the potential impact on existing and future residential land uses. At the time of the Development Application, measures to reduce the noise from the commercial land uses will be considered. The measures are likely to include:

- Placement of noise sources away from dwelling locations;
- Barriers between noise sources and dwellings;
- Selection of low noise plant and equipment; and
- Restriction of high noise activity, if sufficient attenuation measures cannot be incorporated.

The shared responsibility in the design of commercial land uses and dwellings, which is already contemplated by the Code, will result in an appropriate level of acoustic amenity at future dwellings in the vicinity of commercial land uses.

SUMMARY

An environmental noise assessment has been made of the proposed Planning and Design Code Amendment land at Kidman Park on the former Metcash land.

There are a number of noise sources in the vicinity of the proposed land, with the potential to impact on any future residences, as follows:

- traffic on Findon Road;
- Wormald and Fugro LADS Corporation; and,
- future commercial land uses.

Based on the assessment, it is recommended that the Code Amendment include designating specific areas of the subject land within the Noise and Air Emissions Overlay. The figure on the following page shows the extent of the site to be designated.

Designating these areas of the site in a Noise and Air Emissions Overlay will result in mandating the inclusion of acoustic treatment into the facade of the residential buildings to address:

- the influence of traffic noise into those residences;
- the interface with the continuing industry (including Wormald and Fugro); and
- the interface with future commercial land uses.

These measures will ensure that reasonable levels of residential amenity are achieved at future residences and that existing lawful activities are protected from future action.

The assessment has been based on the existing assessment pathways of the Planning and Design Code and demonstrates that by implementing the Noise and Air Emissions Overlay, the Code Amendment will achieve the other provisions of the Code.


VALETTA
ROAD
1A
1
2
3
4
5
6
7
AVENUE
ROAD
KOORALIA
GROVE
Legend
Noise and Air Emissions Overlay

APPENDIX A Subject Site & Nearby Noise Sources

APPENDIX B: Example MSB 010 Treatments based on Sound Exposure Category

Sound Exposure Category 4

An example of Sound Exposure Category 4 treatments are detailed below.

Table 4: Sound Exposure Category 4

BUILDING ENVELOPE ELEMENT	ACOUSTIC REQUIREMENTS OF SA78B		
	Room	***Area of Glazing***	***Requirement***
Windows and glazed doors	*Bedrooms (including attached non-habitable rooms)*	Restrict total glazing area to no more than 20% of the floor area	Ensure the following glass is incorporated into systems that can be sealed airtight when closed: • minimum 12.5mm thick laminated glass in sliding doors; • minimum 10mm thick glass as fixed panes, awning, casement, or side hung doors.
	Habitable rooms other than bedrooms (including attached non-habitable rooms)	Restrict total glazing area to no more than 40% of the floor area	Ensure the following glass is incorporated into systems that can be sealed airtight when closed: • minimum 12.5mm thick laminated glass in sliding doors; • minimum 10mm thick glass as fixed panes, awning, casement, or side hung doors.
External walls	*All habitable rooms*	Ensure external walls are the acoustic equivalent of a brick veneer construction incorporating: • single leaf of minimum 90mm thick brick; • a row of minimum 64mm thick studwork with minimum 25mm cavity to the brick; • 75mm thick insulation with a minimum density of 11kg/m^3 between studwork, and; • one layer of 10mm thick plasterboard fixed to the inside face.	
Roof and ceiling systems	*Bedrooms*	Ensure the roof is sheet metal or tile, and ceilings are constructed from 2 layers of 13mm thick fire rated plasterboard fixed to furring channels under the truss and with 165mm thick insulation (with a minimum density of 7kg/m^3) laid over the ceiling.	
	All habitable rooms other than Bedrooms	Ensure the roof is sheet metal or tile, and ceilings are constructed from 1 layer of 16mm thick fire rated plasterboard with 165mm thick insulation (with a minimum density of 7kg/m^3) laid over the ceiling.	
Ventilation	*All*	No outside air ventilation (other than openable windows) should be provided across these facades, with the exception of outside air into a ducted system via a minimum 3m length of acoustically insulated ductwork.	
External Doors (other than external glazed doors)	*All habitable rooms*	Ensure external doors are a minimum 35mm thick solid core, fully fitted with Raven “RP8” and “RP10” (or equivalent) acoustic doors seals. These seals should be fitted and adjusted to ensure that the doors are sealed as close as practicable to airtight when closed. If a glass infill is proposed a minimum of 6.38mm thick laminated glass should be incorporated and sealed airtight into the door.	
Ground Floor	*All habitable rooms*	Ensure the dwelling is constructed on a concrete slab.	

Sound Exposure Category 3

An example of Sound Exposure Category 3 treatments are detailed below.

Table 4: Sound Exposure Category 3

BUILDING ENVELOPE ELEMENT	ACOUSTIC REQUIREMENTS OF SA78B		
	Room	***Area of Glazing***	***Requirement***
Windows and glazed doors	*Bedrooms (including attached non-habitable rooms)*	Restrict total glazing area to no more than 20% of the floor area	Ensure the following glass is incorporated into systems that can be sealed airtight when closed: • minimum 10mm thick glass in sliding doors; • minimum 6.38mm thick laminated glass as fixed panes, awning, casement, or side hung doors.
	Habitable rooms other than bedrooms (including attached non-habitable rooms)	Restrict total glazing area to no more than 40% of the floor area	Ensure the following glass is incorporated into systems that can be sealed airtight when closed: • minimum 10mm thick glass in sliding doors; • minimum 6.38mm thick laminated glass as fixed panes, awning, casement, or side hung doors.
External walls	*All habitable rooms*	Ensure external walls are the acoustic equivalent of a brick veneer construction incorporating: • single leaf of minimum 90mm thick brick; • a row of minimum 64mm thick studwork with minimum 25mm cavity to the brick; • 75mm thick insulation with a minimum density of 11kg/m^3 between studwork, and; • one layer of 10mm thick plasterboard fixed to the inside face.	
Roof and ceiling systems	*Bedrooms*	Ensure the roof is sheet metal or tile, and ceilings are constructed from 1 layer of 16mm thick fire rated plasterboard with 165mm thick insulation (with a minimum density of 7kg/m^3) laid over the ceiling.	
	All habitable rooms other than Bedrooms	Ensure the roof is sheet metal or tile, and ceilings are constructed from 1 layer of 10mm thick plasterboard with 165mm thick insulation (with a minimum density of 7kg/m^3) laid over the ceiling.	
Ventilation	*All*	No outside air ventilation (other than openable windows) should be provided across these facades, with the exception of outside air into a ducted system via a minimum 3m length of acoustically insulated ductwork.	
External Doors (other than external glazed doors)	*All habitable rooms*	Ensure external doors are a minimum 35mm thick solid core, fully fitted with Raven “RP8” and “RP10” (or equivalent) acoustic doors seals. These seals should be fitted and adjusted to ensure that the doors are sealed as close as practicable to airtight when closed. If a glass infill is proposed a minimum of 6.38mm thick laminated glass should be incorporated and sealed airtight into the door.	
Ground Floor	*All habitable rooms*	Ensure the dwelling is constructed on a concrete slab.	

Sound Exposure Category 2

An example of Sound Exposure Category 2 treatments are detailed below.

Table 5: Sound Exposure Category 2

BUILDING ENVELOPE ELEMENT	ACOUSTIC REQUIREMENTS OF SA78B		
	Room	***Area of Glazing***	***Requirement***
Windows and glazed doors	*Bedrooms (including attached non-habitable rooms)*	Restrict total glazing area to no more than 40% of the floor area	Ensure the following glass is incorporated into systems that can be sealed airtight when closed: • minimum 10mm thick glass in sliding doors; • minimum 6.38mm thick laminated glass as fixed panes, awning, casement, or side hung doors.
	Habitable rooms other than bedrooms (including attached non-habitable rooms)	Restrict total glazing area to no more than 60% of the floor area	Ensure the following glass is incorporated into systems that can be sealed airtight when closed: • minimum 10mm thick glass in sliding doors; • minimum 6.38mm thick laminated glass as fixed panes, awning, casement, or side hung doors.
External walls	*All habitable rooms*	Ensure external walls are the acoustic equivalent of: • brick veneer construction incorporating: ○ single leaf of minimum 90mm thick brick; ○ a row of minimum 64mm thick studwork with minimum 25mm cavity to the brick; ○ 75mm thick insulation with a minimum density of 11kg/m^3 between studwork, and; ○ one layer of 10mm thick plasterboard fixed to the inside face. OR; • Hebel construction incorporating: ○ a row of minimum 90mm thick timber studwork; ○ 75mm thick Hebel Powerpanel fixed to the studwork with minimum 22mm thick battens ○ 90mm thick insulation with a density of 10.5kg/m^3 between the studwork, and; • one layer of 10mm plasterboard fixed to the inside face.	
Roof and ceiling systems	*Bedrooms*	Ensure the roof is sheet metal or tile, and ceilings are constructed from 1 layer of 10mm thick plasterboard with 165mm thick insulation (with a minimum density of 7kg/m^3) laid over the ceiling.	
Ventilation	*All*	No outside air ventilation (other than openable windows) should be provided across these facades, with the exception of outside air into a ducted system via a minimum 3m length of acoustically insulated ductwork.	
External Doors (other than external glazed doors)	*All habitable rooms*	Ensure external doors are a minimum 35mm thick solid core, fully fitted with Raven “RP8” and “RP10” (or equivalent) acoustic doors seals. These seals should be fitted and adjusted to ensure that the doors are sealed as close as practicable to airtight when closed. If a glass infill is proposed a minimum of 6.38mm thick laminated glass should be incorporated and sealed airtight into the door.	
Ground Floor	*All habitable rooms*	Ensure the dwelling is constructed on a concrete slab.	

Sound Exposure Category 1

An example of Sound Exposure Category 1 treatments are detailed below.

Table 6: Sound Exposure Category 1

BUILDING ENVELOPE ELEMENT	ACOUSTIC REQUIREMENTS OF SA78B		
	Room	***Area of Glazing***	***Requirement***
Windows and glazed doors	*Bedrooms (including attached non-habitable rooms)*	Restrict total glazing area to no more than 40% of the floor area	Ensure a minimum 6.38mm thick laminated glass is incorporated into systems that can be sealed airtight when closed.
	Habitable rooms other than bedrooms (including attached non-habitable rooms)	Restrict total glazing area to no more than 60% of the floor area	Ensure a minimum 6.38mm thick laminated glass is incorporated into systems that can be sealed airtight when closed.
External walls	*All habitable rooms*	Ensure external walls are the acoustic equivalent of: • brick veneer construction incorporating: ○ single leaf of minimum 90mm thick brick; ○ a row of minimum 64mm thick studwork with minimum 25mm cavity to the brick; ○ 75mm thick insulation with a minimum density of 11kg/m^3 between studwork, and; ○ one layer of 10mm thick plasterboard fixed to the inside face. OR; • Hebel construction incorporating: ○ a row of minimum 90mm thick timber studwork; ○ 75mm thick Hebel Powerpanel fixed to the studwork with minimum 22mm thick battens ○ 90mm thick insulation with a density of 10.5kg/m^3 between the studwork, and; ○ one layer of 10mm plasterboard fixed to the inside face.	
Ventilation	*All*	No outside air ventilation (other than openable windows) should be provided across these facades, with the exception of outside air into a ducted system via a minimum 3m length of acoustically insulated ductwork.	