Resonate

1 Glenburnie Terrace Apartments

SA 78B Assessment

A190308RP1 Revision 0

Tuesday, 30 April 2019

Resonate

Document Information

Project	Glenburnie Terrace Apartments
Client	SECON Consulting Engineers
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Revision Table

Report revision	Date	Description	Author	Reviewer
0	30 April 2019	First Issue	Nick Henrys	Carl Jungfer

Glossary

'A' Weighted	A spectrum adaption that is applied to measured noise levels to represent human hearing. A-weighted levels are used as human hearing does not respond equally at all frequencies.
Building envelope	means those parts of a building's fabric that separate an internal *habitable room* from the exterior of the building. Reference to *building envelope* includes parts of a *building envelope—From SA 78B.*
dB	Decibel—a unit of measurement used to express sound level. It is based on a logarithmic scale which means a sound that is 3 dB higher has twice as much energy. We typically perceived a 10 dB increase in sound as a doubling of that sound level.
dB(A)	'A' Weighted sound level in dB.
Designated sound source	means a sound source identified in a council Development Plan—*From SA 78B*.
Designated sound source level	means a prescribed sound level for a transport corridor to be used in proposing an *Alternative Solution—From SA 78B*.
Designated sound source spectral adjustment levels	means a prescribed sound level adjustment to be made to the *designated sound source level* for the purpose of calculating the *facade noise reduction* across the *building envelope—From SA 78B*.
External glass door	Means an external door with greater than 40% of the door area being glass—*From SA 78B*.
Facade sound reduction	means the reduction in external to internal sound level provided by the *building envelope—From SA 78B*.
Floor area	means, in relation to a room, the area of the room measured within the finished surfaces of the walls, and includes the area occupied by any cupboard or other built-in furniture, fixture or fitting—*From SA 78B*.
$L_{eq,1hr}$	Means the energy averaged equivalent sound level, averaged over a one hour time period—*From SA 78B*.
R_W	Weighted Sound Reduction Index—means a measure of the sound attenuation performance of a building element, measured in controlled conditions in a laboratory—*From SA 78B*.
R_W+C_{tr}	means a weighted sound reduction index with spectrum adaptation placing greater emphasis on low frequency performance—*From SA 78B*.
Separation distance	means the shortest distance (to the nearest metre), from an existing or future *designated sound source* to the nearest exposed point of the *building envelope* bounding a *habitable room—From SA 78B*.
Sound Exposure Category (SEC)	means the degree to which a *habitable room* within a building is likely to be affected by external sound received by the *building envelope—From SA 78B*.

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1 Introduction

This report outlines the external noise intrusion assessment for the proposed residential development at 1 Glenburnie Terrace, Plympton. It details the acoustic requirements and construction requirements for this proposed development.

The acoustic requirements are based on:

- West Torrens Council Development Plan (Consolidated 12 July 2018)
- Minister's Specification SA 78B *Construction Requirements for the Control of External Sound*

2 Proposed development

The proposed development is located at the corner of Glenburnie Terrace and Gray Street, Plympton. The proposed development is residential with car parking on the ground floor, and apartments on Levels 1 to 4.

Figure 1 Proposed site location with respect to existing buildings and roads

3 Development plan

The proposed development is located within the West Torrens Council Area and the development must have regard to the Council Development Plan.

3.1 Zoning

The proposed site is located in the Urban Corridor Zone (Boulevard Policy Area 34). The land uses promoted in this zone are mixed-use with medium to high density residential and commercial development primarily promoted. There are no relevant Objectives or Principles of Development Control (PDCs) in the Urban Corridor Zone relating to noise emissions.

3.2 Noise and air emissions overlay

The site is located within a 'Designated Area' and in the vicinity of a 'Designated Road: Type B Road' (Anzac Highway) in the Noise and Air Emissions overlay in the Development Plan. Relevant Objectives and Principles of Development Control for sites affected by the overlay are:

Objective 1: Protect community health and amenity from adverse impacts of noise and air emissions.

PDC 1 Noise and air quality sensitive development located adjacent to high noise and/or air pollution

sources should:

(a) shield sensitive uses and areas through one or more of the following measures:

(i) placing buildings containing less sensitive uses between the emission source and sensitive land uses and areas;

(ii) within individual buildings, place rooms more sensitive to air quality and noise impacts (e.g. bedrooms) further away from the emission source;

(iii) erecting noise attenuation barriers provided the requirements for safety, urban design and access can be met;

(b) use building design elements such as varying building heights, widths, articulation, setbacks and shapes to increase wind turbulence and the dispersion of air pollutants provided wind impacts on pedestrian amenity are acceptable;

(c) locate ground level private open space, communal open space and outdoor play areas within educational establishments (including childcare centres) away from the emission source.

Application of Minister's Specification SA 78B *Construction Requirements for the Control of External Sound* will demonstrate compliance with the PDCs relating to noise ingress.

4 Minister's Specification SA 78B

In accordance with the *Deemed to Satisfy* provisions of Minister's Specification SA 78B, the relevant Sound Exposure Category (SEC), which determines to acoustic rating of the façade is based on distance from the road.

The relevant SECs for the development are shown in Table 1. Please see Appendix A for treatment plan to the facades including glazing requirements.

Table 1 Relevant sound exposure categories based on separation distances for Type B Roads (50 - 60 km/hr)

Sound exposure category	Separation distance from road (m)(1)
1	35 – 60

(1) Distance from 3 m within the transport corridor boundary.

There is no part of the proposed development closer than 35m to Anzac Highway. For facade elements which are further than 60m from the road, clause C3.4 of SA 78B applies:

> All buildings in a *mixed land use area* must have a minimum *sound exposure category* of 1 at the building facade in the *building envelope*.

Based on the above, all facades of the proposed building are classified as SEC 1.

4.1 Sound insulation ratings

The appropriate sound insulation ratings for the different relevant SECs are outlined in Table 2. Under SEC 1, there are no acoustic requirements for the roof and ceiling, or external doors other than glass doors.

Table 2 Minimum acoustic requirements for habitable rooms

SEC	Building element	Location	Acoustic rating
1	External walls	All habitable rooms	$R_W + C_{tr} \geq 45$
	Windows & external glass doors	Refer to Table 3	

The sound insulation ratings for windows and external glass doors are outlined in Table 3 based on the area of the window/glass door divided by floor area of the room.

Table 3 Minimum acoustic requirements for windows and external glass doors($R_W + C_{tr}$)

Room	Area of window and external glass doors as a percentage of the floor area of the room	SEC 1
Bedroom and attached non-habitable rooms	Not more than 20%	25
	More than 20% but not more than 40%	28
	More than 40% but not more than 60%	31
	More than 60% but not more than 80%	34
	More than 80%	37
Habitable rooms (other than bedrooms and enclosed	Not more than 20%	22
	More than 20% but not more than 40%	25

Room	Area of window and external glass doors as a percentage of the floor area of the room	SEC 1
kitchens) and attached non-habitable rooms	More than 40% but not more than 60%	28
	More than 60% but not more than 80%	31
	More than 80%	34

4.2 Construction requirements

4.2.1 External walls

Based on the proposed external surface finishes, recommendations for façade wall construction can be seen in Table 4 that meet the requirements of the Minister's Specification SA 78B.

Table 4 Proposed external wall construction

Wall type	Proposed wall construction	SA 78B Criteria (SEC)	Compliance
3	• 80mm prefinished concrete panel • 10mm minimum cavity • 90mm steel framed wall • 14 kg/m^3 fibreglass insulation • 2 x 13mm plasterboard lining	$R_W + C_{tr} \geq 45$ (SEC 1)	Compliant
4	• Texture coated FRC facade system on furring channels (minimum 9mm FRC sheet) • 2 x 65m, steel framed walls • 20mm minimum cavity • 14 kg/m^3 fibreglass insulation • 2 x 13mm plasterboard lining	$R_W + C_{tr} \geq 45$ (SEC 1)	Compliant

4.2.2 External windows and doors

The acoustic criteria for each habitable room, based on the area of window and external glass doors as a percentage of the floor area of the room is presented in Appendix A. The recommended constructions for the external windows and doors are outlined in Table 5. Note that acoustically equivalent constructions can be adopted; however, any alternative constructions are to be acoustically reviewed.

Table 5 Example external window and door constructions

Example external windows and doors construction	Acoustic criteria
• 4mm / 12mm / 4mm double glazed fixed or awning windows • 6mm / 12mm / 6mm double glazed sliding door	$R_w + C_{tr} \geq 25$
• 6mm / 12mm / 6mm double glazed fixed or awning windows • 6mm / 12mm / 6.38mm laminate double glazed sliding door	$R_w + C_{tr} \geq 28$

All openable windows are to have the following or acoustically equivalent seals:

- sliding doors are to have:
  - Schlegel Q-Lon T-Slot seals on the lock and mullion
  - Schlegel Fin-Seal on the rails
- windows awning style with rubber compression seals around the perimeter such as Schlegel Q-Lon T-Slot seals, or sliding with seals as indicated for the sliding doors

4.2.3 Ventilation

Ventilation for rooms with SEC 1 Facade may be provided using openable windows.

5 Conclusion

An external noise intrusion assessment has been undertaken for the proposed development at 1 Glenburnie Terrace, Plympton. The assessment has taken into account the relevant noise requirements of the West Torrens Development Plan and Minister's Specification SA 78B.

Facade noise mitigation treatments detailed in this report are suitable to attenuate noise intrusion from traffic on Anzac Highway and mixed land uses into the residences in accordance with Minister's Specification SA 78B *Construction Requirements for the Control of External Sound*.

On this basis the proposed development will be able to operate within the noise requirements of the West Torrens Council Development Plan and Minister's Specification SA 78B.

Appendix A–External glazing mark-ups

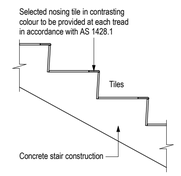
Podium - Level 1 Apartments
Scale 1:100

25 Minimum glazing acoustic rating, Rw + Ctr

DOOR & WINDOW SCHEDULE 480 GRI , 1 Glenburnie Tce, Plympton
Rev 1 23-04-19
SCFD = Self Closing Fire Door - must be fitted with Hot Smoke Seals
All fire doors to be proprietary systems and must comply with AS1905.1 This door / window schedule to be read in conjunction with Fire engineer resport
All residential Glazed doors (double glazed) to achieve an accoustic rating of RW29 unless otherwise stated
All residential Glazed windows (double glazed) to achieve an accoustic rating of RW29 unless otherwise stated
Sliding Doors - manual operation under a force of not more 110N
Obscure glazing to all wet area windows

TYPICAL APARTMENT	Item	Dimensions	Description	Finish	BCA Compliance Requirements
	D1	900w x 2400h	to suit 2340x820 Fire door	Steel frame, selected paint finish	SCFD. FRL -/60/30. Latch or keyless operation from inside. Level transition at threshold. Minimum sound transmission rating of no less than 30Rw
	D2	900w x 2400h	to suit 2340 x 820 single door	Steel frame, selected paint finish	
	D3	800w x 2400h	to suit 2340 x 720 single door	Steel frame, selected paint finish	
	D4	2000w x 2400h	to suit 2340 x 650 Panel sliding doors	By Cabinet maker	
	D5	1200w x 2400h	to suit 2340x1120 Aluminium glazed door	Powder coated aluminium frame, clear glazed	
	D6	3150w x 2400h	Aluminium, Centre Sliding door	Powder coated aluminium frame, clear glazed	
	D7	1800w x 2400h	Aluminium, Sliding door	Powder coated aluminium frame, clear glazed	
	W1	1000w x 1600h	Aluminium, Awning window	Powder coated aluminium frame	Maximum opening 120mm
	W2	900w x 1900h	Aluminium, Awning window	Powder coated aluminium frame	Maximum opening 120mm
	W3	900w x 900h	Aluminium, Awning window	Powder coated aluminium frame	1500 sill, Maximum opening 120mm
	W4	1600w x 1000h	Aluminium, Awning window	Powder coated aluminium frame	Maximum opening 120mm

Typical Apartment Door Window Shedule
For more detail refer to the full schedule in the specification



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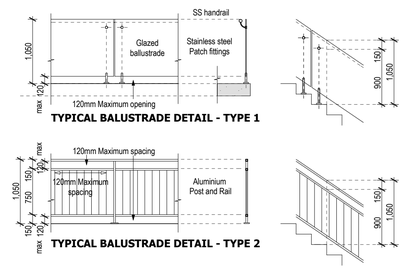
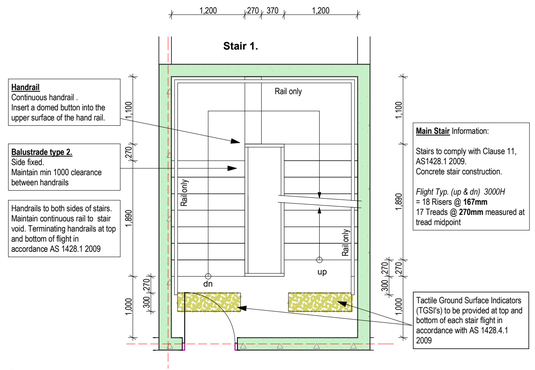


Typical Balustrades
Scale 1:50



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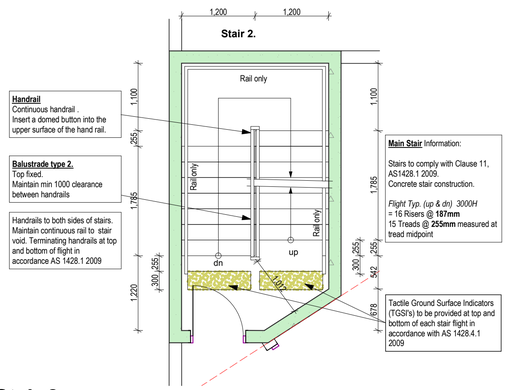
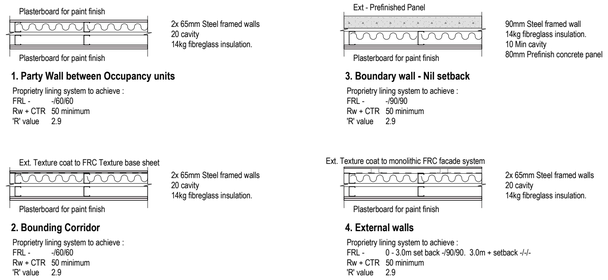
Scale 1:50

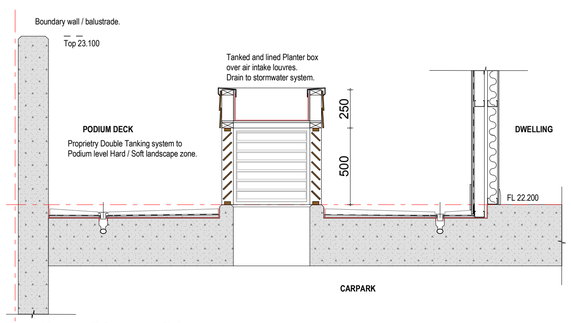


Stair 2.
Scale 1:50

LTCM Walling Systems
Non-load bearing - Discontinuous Construction



Wall Systems
Scale 1:20



Podium Planter/Vent
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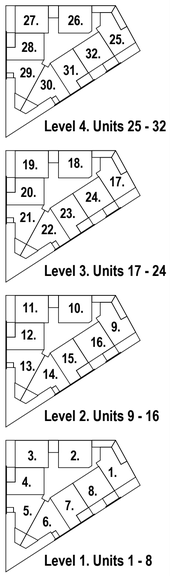

REV	DATE	DESCRIPTION
A	29.04.2019	ISSUED FOR BCA ASSESSMENT – BUILDING PERMIT
–	18.01.2019	ISSUED FOR CONSULTANT DESIGN INPUT

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The builder shall check and verify all dimensions refer any discrepancies to the Architect Do not scale the drawings. Drawings shall not be used for construction purposes until issued by the Architect for construction.

Client
DSF
Project Name
PROPOSED 32 APARTMENTS
1 Glenburnie Tce. Plympton
West Torrens

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Drawing Title:
Podium - Level 1 Plan

Scale: AS SHOWN	Date: 18-04-2019
Status: BCA	Job No.: 480- PLM
Revision: Rev-A	Drawing No.: BL-03
Plot Date: 29/04/2019	

Griffin

HALF SCALE at A3
FULL SCALE at A1

Podium - Level 1 Plan

For consultant design
Printed 29/04/2019

Levels 2 & 3 Apartments
Scale 1:100

25 Minimum glazing acoustic rating, Rw + Ctr

DOOR & WINDOW SCHEDULE 480 GRI , 1 Glenburnie Tce, Plympton
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Obscure glazing to all wet area windows

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	D2	900w x 2400h	to suit 2340 x 820 single door	Steel frame, selected paint finish	
	D3	800w x 2400h	to suit 2340 x 720 single door	Steel frame, selected paint finish	
	D4	2000w x 2400h	to suit 2340 x 650 Panel sliding doors	By Cabinet maker	
	D5	1200w x 2400h	to suit 2340x1120 Aluminium glazed door	Powder coated aluminium frame, clear glazed	
	D6	3150w x 2400h	Aluminium, Centre Sliding door	Powder coated aluminium frame, clear glazed	
	D7	1800w x 2400h	Aluminium, Sliding door	Powder coated aluminium frame, clear glazed	
	W1	1000w x 1600h	Aluminium, Awning window	Powder coated aluminium frame	Maximum opening 120mm
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	W3	900w x 900h	Aluminium, Awning window	Powder coated aluminium frame	1500 sill, Maximum opening 120mm
	W4	1600w x 1000h	Aluminium, Awning window	Powder coated aluminium frame	Maximum opening 120mm

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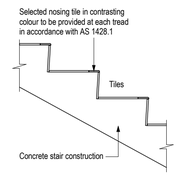

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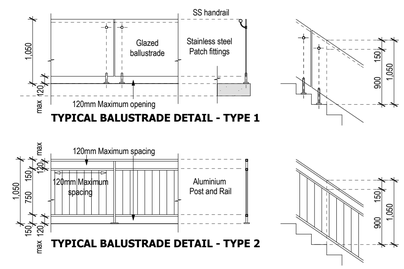
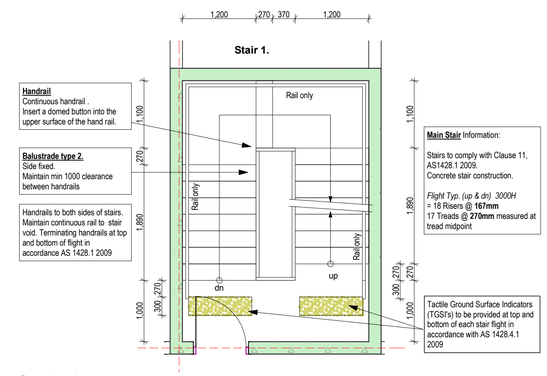


Typical Balustrades
Scale 1:50



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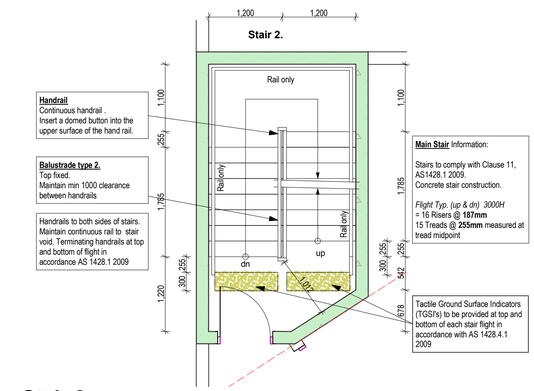


Stair 2.
Scale 1:50

LTCM Walling Systems
Non-load bearing - Discontinuous Construction

2x 65mm Steel framed walls
20 cavity
14kg fibreglass insulation.

1. Party Wall between Occupancy units
Proprietry lining system to achieve :
FRL - -/60/60
Rw + CTR 50 minimum
'R' value 2.9

90mm Steel framed wall
14kg fibreglass insulation.
10 Min cavity
80mm Prefinish concrete panel

3. Boundary wall - Nil setback
Proprietry lining system to achieve :
FRL - -/90/90
Rw + CTR 50 minimum
'R' value 2.9

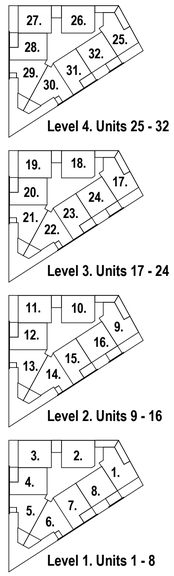
2x 65mm Steel framed walls
20 cavity
14kg fibreglass insulation.

2. Bounding Corridor
Proprietry lining system to achieve :
FRL - -/60/60
Rw + CTR 50 minimum
'R' value 2.9

2x 65mm Steel framed walls
20 cavity
14kg fibreglass insulation.

4. External walls
Proprietry lining system to achieve :
FRL - 0 - 3.0m set back -/90/90. 3.0m + setback -/-/-
Rw + CTR 50 minimum
'R' value 2.9

Wall Systems
Scale 1:20



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Drawing Title:
Levels 2 & 3 Apartments

Scale: AS SHOWN	Date: 18-04-2019
Status: BCA	Job No. : 480- PLM
Revision: Rev-A	Drawing No.: BL-04
Plot Date: 29/04/2019	

Griffin

HALF SCALE at A3
FULL SCALE at A1

Levels 2 & 3 Apartments

For consultant design
Printed 29/04/2019

Level 4 Apartments
Scale 1:100

25 Minimum glazing acoustic rating, Rw + Ctr

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Typical Apartment Door Window Shedule
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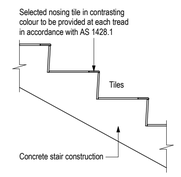

Stair Section
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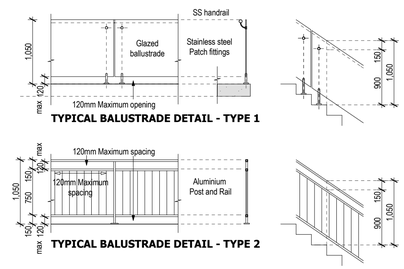
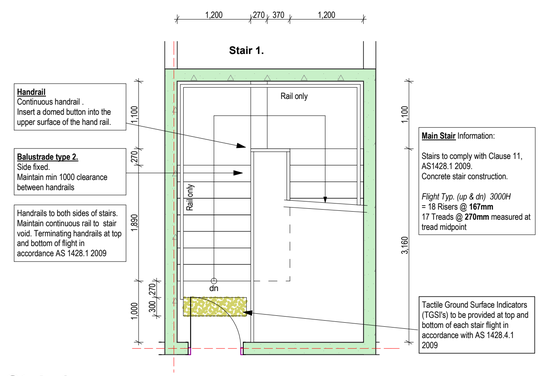
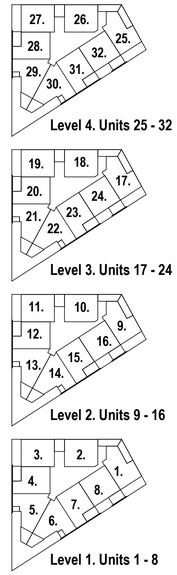
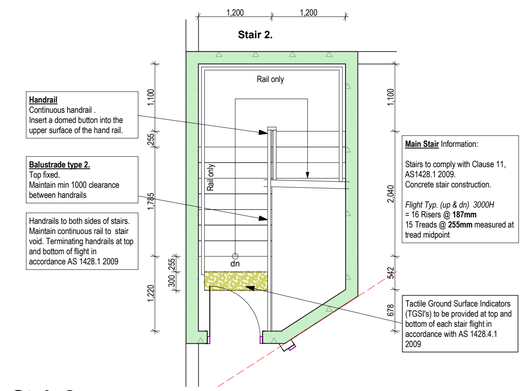


Typical Balustrades
Scale 1:50



Stair 1.
Scale 1:50





Stair 2.
Scale 1:50

LTCM Walling Systems
Non-load bearing - Discontinuous Construction

2x 65mm Steel framed walls
20 cavity
14kg fibreglass insulation.

1. Party Wall between Occupancy units
Proprietry lining system to achieve :
FRL - -/60/60
Rw + CTR 50 minimum
'R' value 2.9

2x 65mm Steel framed walls
20 cavity
14kg fibreglass insulation.

2. Bounding Corridor
Proprietry lining system to achieve :
FRL - -/60/60
Rw + CTR 50 minimum
'R' value 2.9

90mm Steel framed wall
14kg fibreglass insulation.
10 Min cavity
80mm Prefinish concrete panel

3. Boundary wall - Nil setback
Proprietry lining system to achieve :
FRL - -/90/90
Rw + CTR 50 minimum
'R' value 2.9

2x 65mm Steel framed walls
20 cavity
14kg fibreglass insulation.

4. External walls
Proprietry lining system to achieve :
FRL - 0 - 3.0m set back -/90/90. 3.0m + setback -/-/-
Rw + CTR 50 minimum
'R' value 2.9

Wall Systems
Scale 1:20

REV	DATE	DESCRIPTION
A	29.04.2019	ISSUED FOR BCA ASSESSMENT – BUILDING PERMIT
–	18.01.2019	ISSUED FOR CONSULTANT DESIGN INPUT

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The builder shall check and verify all dimensions refer any discrepancies to the Architect Do not scale the drawings. Drawings shall not be used for construction purposes until issued by the Architect for construction.

Client
DSF
Project Name
PROPOSED 32 APARTMENTS
1 Glenburnie Tce. Plympton
West Torrens

C:\SIMON STUFF\480-GRI-SA\BCA\TS\480-JQ.1401-planning\401-master file (11).pln

Drawing Title:
Level 4 Apartments

Scale: AS SHOWN	Date: 18-04-2019
Status: BCA	Job No.: 480- PLM
Revision: Rev-A	Drawing No.: BL-05
Plot Date:	29/04/2019

Griffin

HALF SCALE at A3
FULL SCALE at A1

Level 4 Apartments

For consultant design
Printed 29/04/2019