

**RAIL NOISE AND VIBRATION ASSESSMENT**

**35 RAYMOND TERRACE ROAD, EAST MAITLAND**

**Prepared for TJ and AJ Pty Ltd**

**Prepared by RCA Australia**

**RCA ref 16306-401/1**

**November 2022**



## RCA Australia

ABN 53 063 515 711

92 Hill Street, Carrington NSW 2294

Telephone: (02 4902 9200

Fax: (02) 4902 9299

Email: [administrator@rca.com.au](mailto:administrator@rca.com.au)

Internet: [www.rca.com.au](http://www.rca.com.au)

This document is and shall remain the property of RCA Australia. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission supplied at the time of proposal. Unauthorised use of this document in any form whatsoever is prohibited.

DOCUMENT STATUS						
Rev No	Comment	Author	Reviewer	Approved for Issue (Project Manager)		
				Name	Signature	Date
/0	Draft	Alex Rees	Rebekah Rees	Alex Rees		12.09.22
/1	Final	Alex Rees	Rebekah Rees	Alex Rees	<i>A. Rees</i>	25.11.22

DOCUMENT DISTRIBUTION				
Rev No	Copies	Format	Issued to	Date
/0	1	Electronic (email)	Tom Evans <a href="mailto:tom@alvpg.com.au">tom@alvpg.com.au</a>	12.09.22
/0	1	Electronic Report	RCA – job archive	12.09.22
/1	1	Electronic (email)	Tom Evans <a href="mailto:tom@alvpg.com.au">tom@alvpg.com.au</a>	25.11.22
/1	1	Electronic Report	RCA – job archive	25.11.22



# Contents

<b>1</b>	<b>INTRODUCTION .....</b>	<b>1</b>
	<b>1.1 PROPOSAL DESCRIPTION.....</b>	<b>1</b>
	<b>1.2 SITE DESCRIPTION .....</b>	<b>1</b>
<b>2</b>	<b>NOISE AND VIBRATION MONITORING .....</b>	<b>3</b>
<b>3</b>	<b>ASSESSMENT CRITERIA .....</b>	<b>4</b>
	<b>3.1 ROAD AND RAIL NOISE .....</b>	<b>4</b>
	<b>3.2 HUMAN COMFORT VIBRATION IMPACTS .....</b>	<b>4</b>
<b>4</b>	<b>METHODOLOGY &amp; RESULTS .....</b>	<b>5</b>
	<b>4.1 RAIL NOISE .....</b>	<b>5</b>
	<b>4.2 VIBRATION IMPACTS .....</b>	<b>9</b>
<b>5</b>	<b>CONCLUSION .....</b>	<b>9</b>

RCA ref 16306-401/1

25 November 2022

TJ and AJ Pty Ltd  
C/- Alva Property Group Pty Ltd  
Delivered by email: [tom@alvapg.com.au](mailto:tom@alvapg.com.au)

Attention: Mr Tom Evans

Geotechnical Engineering

Engineering Geology

Environmental Engineering

Hydrogeology

Construction Materials Testing

Environmental Monitoring

Sound & Vibration

Occupational Hygiene

---

## NOISE & VIBRATION ASSESSMENT

35 RAYMOND TERRACE ROAD, EAST MAITLAND NSW 2323

---

### 1 INTRODUCTION

RCA Acoustics (RCA) has been engaged to conduct a noise and vibration impact assessment at 35 Raymond Terrace Road, East Maitland, NSW. This property is within 20m of the Great Northern Railway. This report will provide acoustic design advice to account for rail noise and vibration and meet internal noise objectives set out in the Department of Planning document *Development Near Rail Corridors and Busy Roads – Interim Guideline* (2008), referred to hereafter as the “DoP guideline”.

#### 1.1 PROPOSAL DESCRIPTION



The proponent proposes to construct four single story unit houses, each with three bedrooms. Plans for the development are attached in **Appendix B**.

#### 1.2 SITE DESCRIPTION

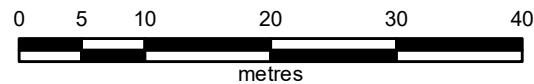
The site is located at 35 Raymond Terrace Road, East Maitland, and is impacted by rail noise from the Great Northern Railway. Noise and vibration monitoring were conducted on site to measure the noise and vibration contributions from rail. **Figure 1** shows the site and the noise and vibration monitoring location.



**LEGEND**

-  Approximate site boundary
-  Approximate noise and vibration monitoring location

Note: Aerial image taken from Nearmap, 14 June 2022 (used in accordance with commercial licence)



**SITE, NOISE AND VIBRATION MONITORING LOCATION PLAN  
35 RAYMOND TERRACE ROAD  
EAST MAITLAND**

CLIENT	TJ and AJ Pty Ltd	RCA Ref	16306-401/0	
DRAWN BY	AR	SCALE	1:600 (A3)	DRAWING No 1
APPROVED BY	AR	DATE	8/08/2022	REV 0
		OFFICE	NEWCASTLE	

## 2 NOISE AND VIBRATION MONITORING

Noise and vibration have been measured on site using a combination of attended and unattended monitoring. A noise logger was deployed between 29<sup>th</sup> July to the 1<sup>st</sup> of August 2022, and continuously recorded statistical noise data over 15-minute integration periods. This logger was placed so that it had good line of sight to the train line, at a height of approximately 1.2 m. A triaxial accelerometer was used to take attended vibration measurements at the time of deploying the noise logger

The calibration of the noise monitoring equipment was checked before and after the monitoring period and were found to be within 0.5 dB tolerance of 94 dB. Additional notes regarding the monitoring equipment are provided in **Table 1**.

**Table 1** *Equipment details*

Make/Model	Serial Number	Measured	Settings	Last Nata calibrated
SVAN / 971	55582	Noise	'A' weighted 'Fast' time response	June 2022
SVAN / 958	15440	Vibration	Triaxial VDV with filters x: wd y: wd x: wk	January 2022

Attended noise and vibration measurement results and observations are provided in **Table 2**.

**Table 2** *Attended noise and vibration measurements*

Time and date	Event	Observations and instantaneous sound pressure levels	Vibration, m/s <sup>1.75</sup> (VDV)		
			X	Y	Z
29.07.2022 10:00	-	Background noise levels noted to be 43 – 44 dBA	-	-	-
29.07.2022 10:08	Freight train east bound	Rolling noise ~70 dBA. LAmax ~79 dBA	0.002	0.002	0.005
29.07.2022 10:12	Coal train east bound	Rolling noise ~70 dBA. LAmax ~80 dBA	0.003	0.002	0.005
29.07.2022 10:17	Passenger train west bound	LAmax ~74 dBA	-	-	-

Time and date	Event	Observations and instantaneous sound pressure levels	Vibration, m/s <sup>1.75</sup> (VDV)		
			X	Y	Z
29.07.2022 10:19	Passenger train east bound	LAm <sub>ax</sub> 80 dBA	-	-	-
29.07.2022 10:20	Freight train east bound	Rolling noise ~70 - 74 dBA LAm <sub>ax</sub> 78 dBA	0.003	0.002	0.005
29.07.2022 10:22	Freight train west bound	Rolling noise ~69 dBA LAm <sub>ax</sub> 82 dBA	0.003	0.002	0.005
29.07.2022 10:46	Freight train east bound	Rolling noise ~69 dBA LAm <sub>ax</sub> 74 dBA	0.003	0.003	0.009
29.07.2022 10:49	Passenger train east bound	LAm <sub>ax</sub> 76 dBA	-	-	-

### 3 ASSESSMENT CRITERIA

#### 3.1 ROAD AND RAIL NOISE

The Infrastructure SEPP (2007) sets internal noise criteria for residential developments near public transport infrastructure. These criteria are also provided in the DoP guideline and are reproduced in **Table 3**.

**Table 3** Transport noise criteria for new residential developments

Residential Buildings		
Type of occupancy	Noise level	Applicable time period
Sleeping areas (bedrooms)	35	Night: 10 pm – 7 am
Other habitable rooms	40	At any time

Note: airborne noise is calculated as Leq (9hr) (night) and Leq (15hr) (day).

The DoP guideline also provides the following advice:

*“If internal noise levels with windows or doors open exceed the criteria by more than 10 dBA, the design of the ventilation for these rooms should be such that occupants can leave windows closed, if they so desire, and also to meet the ventilation requirements of the Building Code of Australia.”*

#### 3.2 HUMAN COMFORT VIBRATION IMPACTS

The EPA published a guideline titled “Assessing Vibration: A Technical Guideline (AVTG)” which sets out human comfort vibration criterion for different types of vibration sources. The AVTG provides rail passby events as an “intermittent” vibration source and sets out the following vibration dose value (VDV) criteria shown in **Table 4**.

**Table 4** *Vibration Criteria (VDV)*

Location	Daytime		Night-time	
	Preferred value	Maximum value	Preferred value	Maximum value
Residences	0.20	0.40	0.13	0.26

The VDV is a cumulative measure, and every train passby that occurs during the day or night will contribute to the period's VDV.

## 4 METHODOLOGY & RESULTS

### 4.1 RAIL NOISE

The measured day and night rail noise levels were used to calibrate a computer noise model using software CadnaA. This 3D computer noise model then allowed RCA to predict the noise levels at each façade of the proposed development. A representative train passby noise spectrum was captured during attended measurements at site. This spectrum has been used in the calculations discussed further below. The 15hr day and 9hr night noise levels measured between the 29<sup>th</sup> July and 1<sup>st</sup> August are shown in **Table 5**. The maximum day and night noise levels have been selected as the external design levels.

**Table 5** *Measured day and night overall rail noise levels*

Date	Measured LAeq,15 hr (Day) dBA	Measured LAeq,9hr (Night) dBA
29/7/22	incomplete data set	66
30/7/22	65	65
31/7/22	65	65
1/8/22	64	65

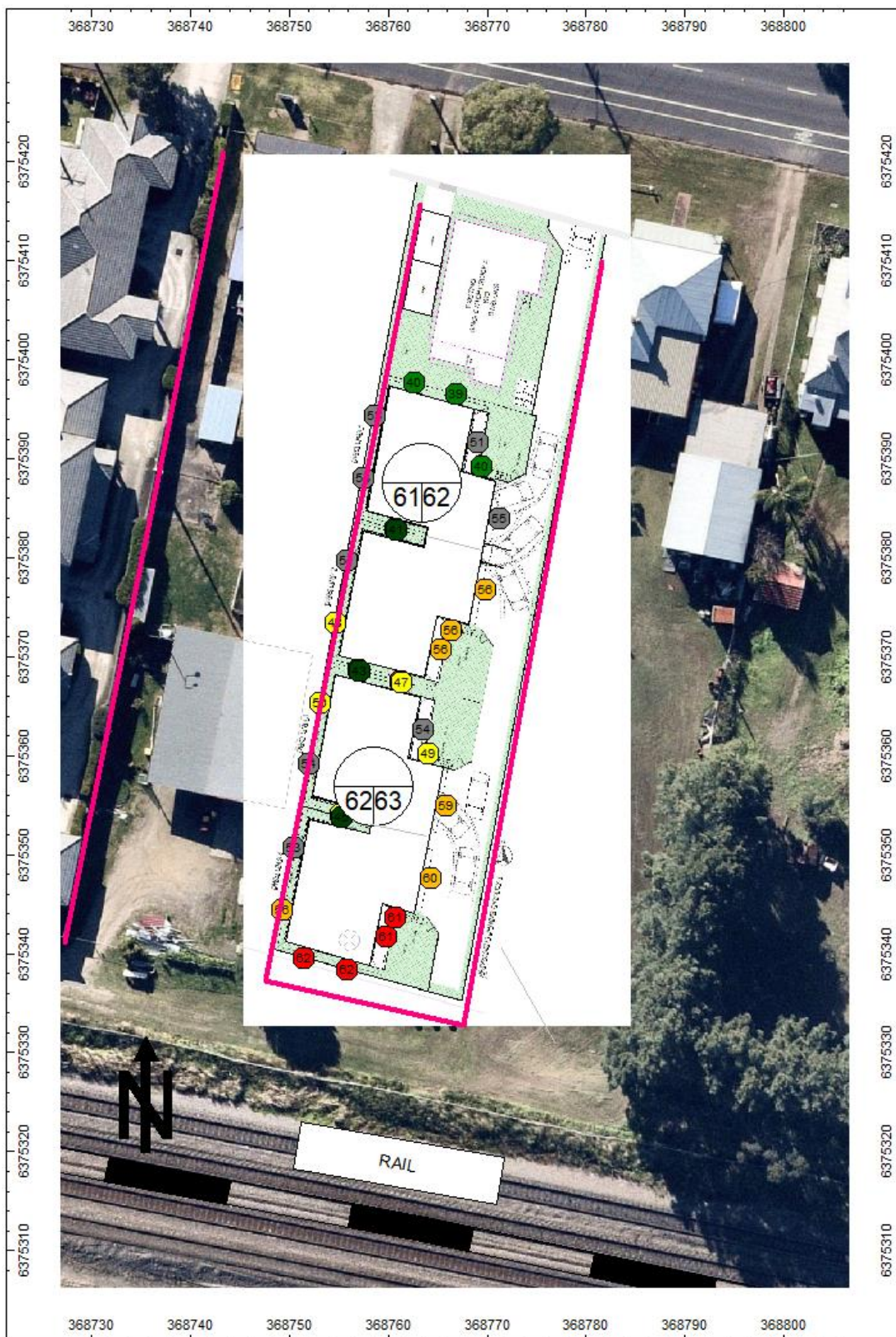
Adopted day and night noise levels to calibrate noise model are shaded green

Once a noise model was calibrated against measured levels, the noise levels at each façade could be predicted. External façade noise levels are presented for both Day (LAeq,15 hr) and Night (LAeq,9 hr) in **Figure 2** and **Figure 3** respectively. A 1.8 m boundary fence has been included in the noise model and is shown in pink.

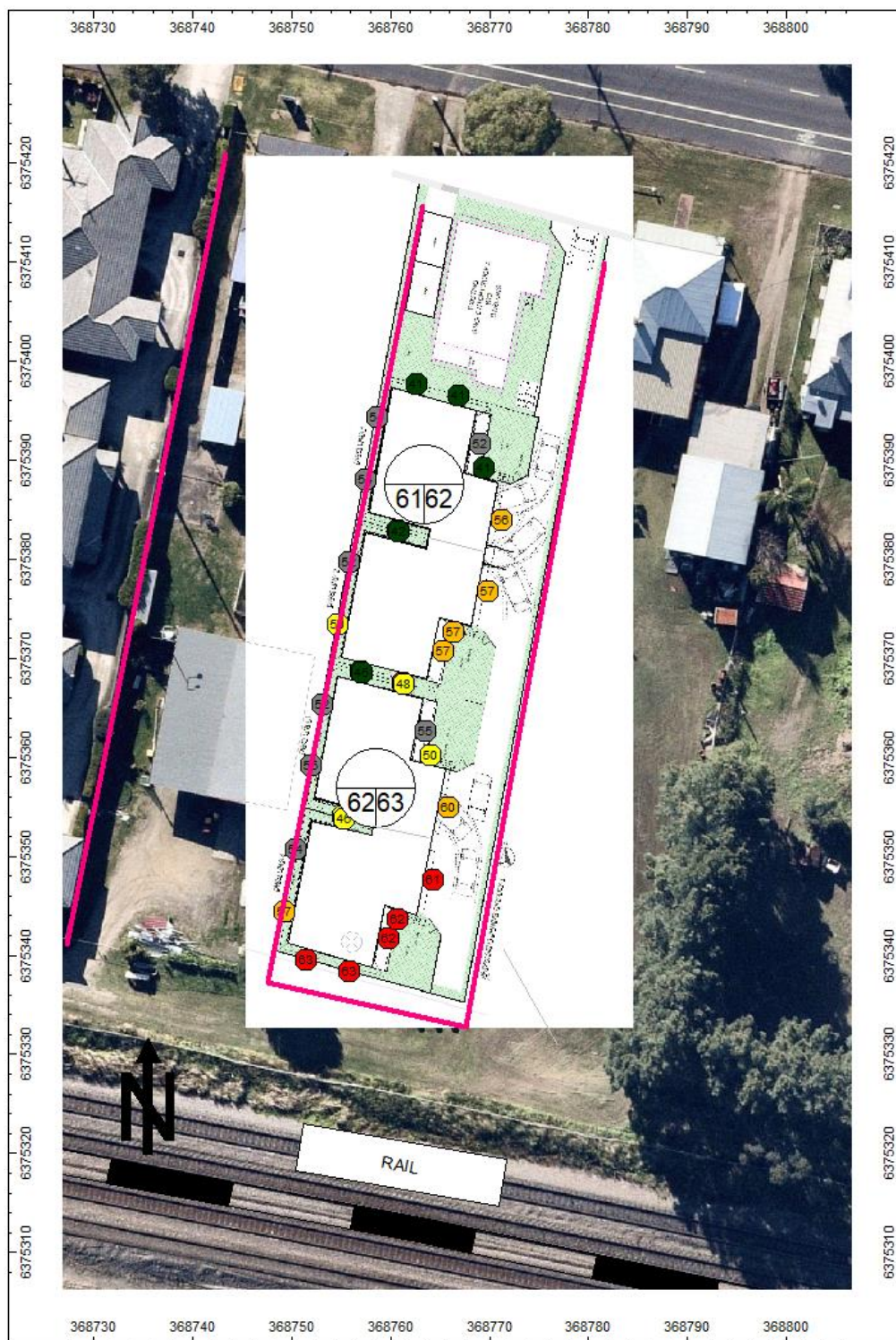
**Table 6** presents recommended minimum constructions for any façade elements that require a minimum acoustic rating to achieve the internal noise objectives.

Dwelling 4 has acoustic design constraints due to its proximity and line of sight to the rail. The other dwellings are further away from the rail and receive shielding from other structures. In general, Dwellings 1 – 3 don't have acoustic design constraints other than the recommendation to install full perimeter acoustic seals for bedroom glazing.





**Figure 2** Day external facade noise levels @ 1.5 m above ground



**Figure 3** Night external facade noise levels @ 1.5 m above ground

**Table 6** Minimum recommended construction

Dwelling	Façade / element	External level	Recommended minimum construction	Equivalent Rw value
Dwelling 4	All external brick facades	Southern façade: LAeq,15 hr (Day) 62 dBA LAeq, 9hr (Night) 63 dBA	70mm brick, 90mm timber stud or 92mm metal stud, minimum 50mm clearance between masonry and stud frame, Fibreglass wall batts (min 10 kg/m <sup>3</sup> ), 10mm standard plasterboard internally.	Rw55
Dwelling 4	Glazing on west façade (Master Bed)	Southern façade: LAeq,15 hr (Day) 56 dBA LAeq, 9hr (Night) 57 dBA	6 mm glazing, full perimeter acoustic seals	Rw31
Dwelling 4	Roof	LAeq,15 hr (Day) 65 dBA LAeq, 9hr (Night) 66 dBA	Pitched sheet metal with sarking, timber or metal frame, R2 insulation batts and 10 mm plasterboard ceiling	Rw44
Dwelling 4	Glazing on south and east facade	LAeq,15 hr (Day) 62 dBA	6 mm glazing, full perimeter acoustic seals	Rw31
Dwelling 4	Front door	LAeq,15 hr (Day) 61 dBA	35 mm solid core timber with perimeter acoustic seals	Rw28
Dwelling 4	Ensuite and Bathroom glazing	-	Standard glazing with full perimeter acoustic seals. Recommendation due to sliding cavity doors leading to Master and hall.	Rw29
All other dwellings	Bedroom Glazing	LAeq, 9hr 50 – 55 dBA	Standard glazing with full perimeter acoustic seals	Rw29
	External facades	-	Any standard construction	Minimum Rw38
	Roof	-	Any standard construction	Minimum Rw39

Dwelling	Façade / element	External level	Recommended minimum construction	Equivalent Rw value
	Front door	LAeq, 15 hr 50 - 56 dBA	35 mm solid core timber with perimeter acoustic seals	Rw28

The National Construction Code (NCC) requires that adequate fresh air ventilation be provided to rooms. RCA have assumed that bedroom doors may be closed at night and considered the external noise level at windows to determine if windows may be left open to provide fresh air ventilation. It is accepted that a window opened sufficiently to allow for fresh air ventilation will provide approximately 10 dB reduction from outside to inside. This means that if the external noise level is more than 20 dB greater than the internal noise objective, a person cannot rely on leaving a window open for ventilation and expect to meet internal noise criteria (see **Section 4**).

Where an open window cannot meet the internal noise objective, some means of mechanical fresh air ventilation will be required. Example solutions include ducted external fresh air and wall mounted mechanical fresh air ventilators, such as the Aeropac product. There may also be commercially available split air conditioner units that can provide fresh air. Note that split units and ducted air conditioning often do not offer “fresh air” by standard.

Dwelling 4 was found to require mechanical fresh air ventilation to the Living/Dining, Master Bed and Bed 2. Bed 3 can open the window on the north façade and still meet the internal noise objectives.

Dwellings 1 – 3 can meet internal noise objectives with windows open to allow for fresh air ventilation, and as such do not require mechanical ventilation to meet the BCA requirements.

## 4.2 VIBRATION IMPACTS

The attended vibration monitoring showed that the highest vibration event reported an individual VDV of 0.009. This is negligible. Even 1000 similar events would not exceed the vibration criteria. The site is therefore found to comply with the criteria for both day and night. No additional controls are necessary.

## 5 CONCLUSION

Provided construction materials are selected in accordance with this report, internal noise levels from the Great Northern Railway will not exceed the criteria set out in the DoP guideline. Vibration levels were measured to be below relevant criteria.

Yours faithfully

**RCA Acoustics**



Alex Rees  
Senior Acoustic Consultant

# Appendix A

---

## Terminology

dB(A) .....	Unit of sound pressure level, modified by the A-weighting network to represent the sensitivity of the human ear.
SPL.....	Sound Pressure Level (SPL), the incremental variation of sound pressure from the reference pressure level, 20 $\mu$ Pa, expressed in decibels.
$L_{eq}$ .....	Equivalent continuous noise level averaged over time on an equivalent energy basis.
Background Noise Level.....	Noise level determined for planning purposes as the one tenth percentile of the ambient $L_{A90}$ noise levels.
VDV .....	Vibration dose value, a cumulative vibration measure based on acceleration and weighted for human comfort.
eVDV .....	Estimated vibration dose value.

# Appendix B













---

## Plans for Proposed Development

**GENERAL NOTES**

- 1 ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF COUNCIL, THE BUILDING CODE OF AUSTRALIA AND CURRENT AUSTRALIAN STANDARDS.
- 2 ALL DIMENSIONS AND LEVELS TO BE CONFIRMED PRIOR TO CONSTRUCTION.
- 3 REPORT ANY DISCREPANCIES TO THE DESIGNER.
- 4 DO NOT SCALE OFF THESE DRAWINGS.
- 5 THESE PLANS ARE TO BE READ TOGETHER WITH THE ENGINEERS DRAWINGS AND SPECIFICATIONS.
- 6 SCALES APPLY TO SHEET SIZE SHOWN IN THE TITLE.
- 7 THE BUILDER IS TO CHECK ALL FLOOR, CEILING AND ROOF LEVELS TO ENSURE THAT THE FINISHED ROOF HEIGHT DOES NOT EXCEED THE DA APPROVED RL & HEIGHT LIMIT.
- 8 A REGISTERED SURVEYOR IS TO SET OUT THE BUILDINGS, & CONFIRM ALL LEVELS.

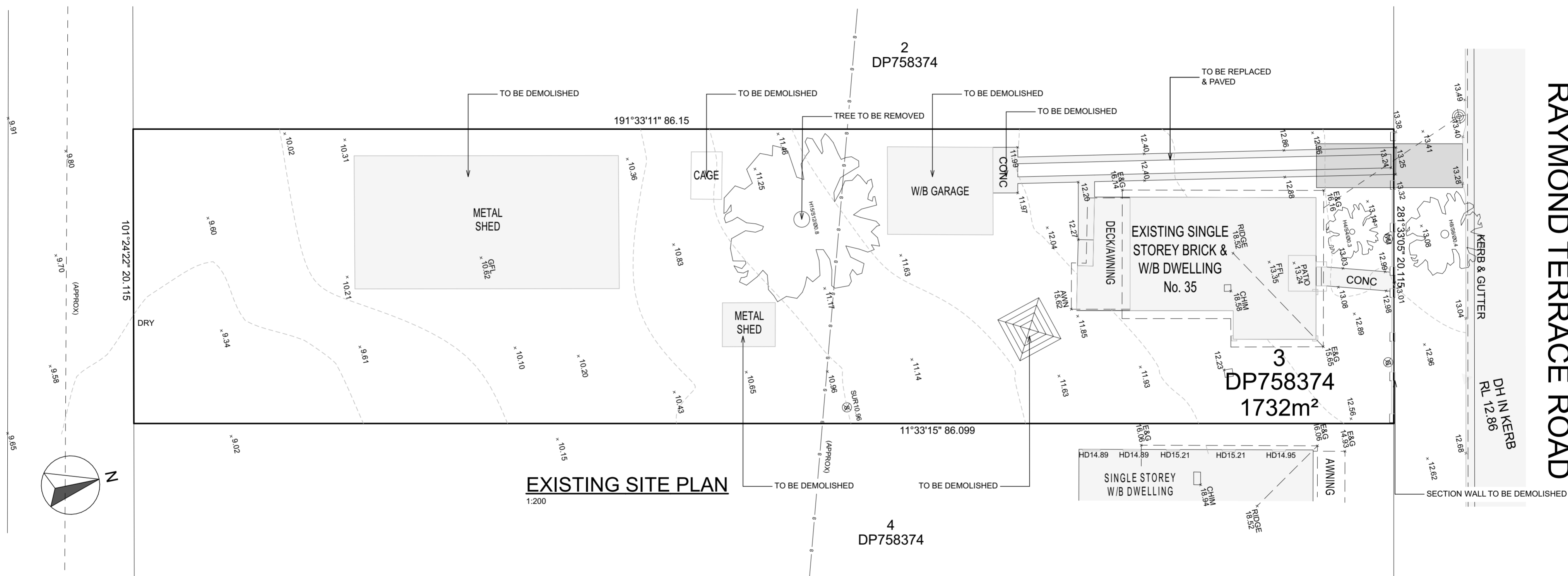
**LEGEND**

-  BOUNDARY LINE
-  FENCE LINE
-  OVERHEAD POWER LINE
-  POWER POLE
-  TELSTRA PIT
-  TELSTRA POST
-  TAP
-  HYDRANT
-  WATER METER
-  SEWER INSPECTION POINT
-  DENOTES SIGNAGE
-  DENOTES TREE

E - EAVE  
R - RIDGE  
G - GUTTER  
A - AWNING  
P - PARAPET

GREAT NORTHERN RAILWAY

RAYMOND TERRACE ROAD



**EXISTING SITE PLAN**  
1:200

**MEMBER OF BUILDING DESIGNERS AUSTRALIA NSW**

**WINNER 2011**  
HIA Hunter Residential Building Designer of the Year

**WINNER 2010**  
HIA Hunter Residential Building Designer of the Year

**HIA GreenSmart PROFESSIONAL**

**SORENSEN**  
DESIGN & PLANNING

**PORT STEPHENS OFFICE**  
Ph: (02) 4984 9955  
Suite 4/ 10 Yacaaba Street  
Nelson Bay NSW 2315

**NEWCASTLE OFFICE**  
Ph: (02) 4961 5544

**SINGLETON OFFICE**  
Ph: (02) 4961 5544

**CONTACT DETAILS**  
General Enquiries:  
reception@sorensendesign.com.au  
www.sorensendesign.com.au

PROJECT:	PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT:	ALVAPROPERTY GROUP
TITLE:	SITE PLAN
FILE:	2203273
DATE:	29/09/2022
SHEET:	1 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT	

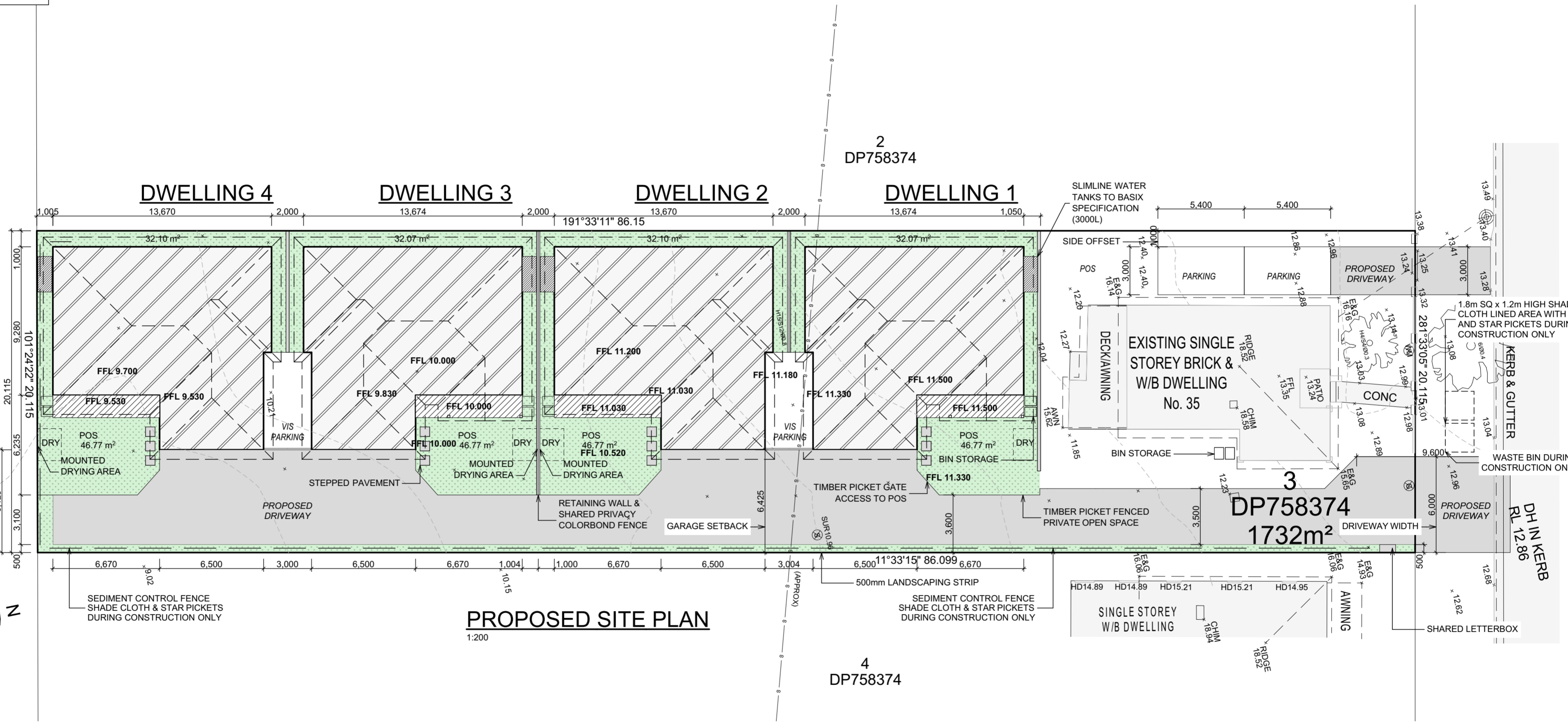
ISSUE	DETAILS
-------	---------

SITE ANALYSIS	
PROPOSED MULTI-UNIT DEVELOPMENT	
ZONING	R1
SITE AREA	1732.59m <sup>2</sup>
FLOOR AREA	
Existing dwelling	132.18m <sup>2</sup>
Proposed D01	147.71m <sup>2</sup>
Proposed D02	147.71m <sup>2</sup>
Proposed D03	147.71m <sup>2</sup>
Proposed D04	147.71m <sup>2</sup>
Floor to space ratio	0.34:1
Total building footprint	590.84m <sup>2</sup>
Site coverage	34%
Landscaping area	361.41m <sup>2</sup>
Landscaping coverage	21%

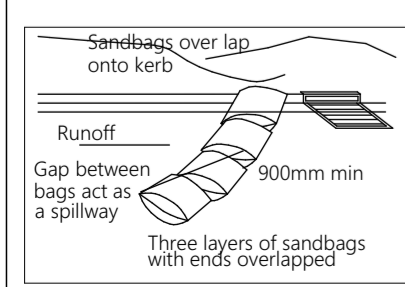
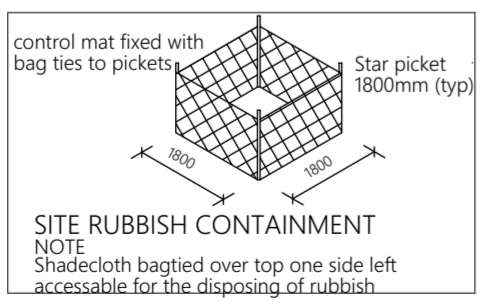
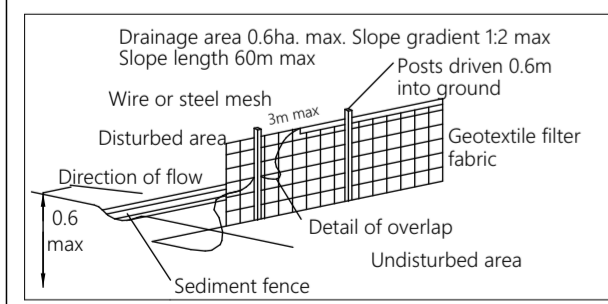
LEGEND	
	BOUNDARY LINE
	FENCE LINE
	OVERHEAD POWER LINE
	POWER POLE
	TELSTRA PIT
	TELSTRA POST
	TAP
	HYDRANT
	WATER METER
	SEWER INSPECTION POINT
	DENOTES SIGNAGE
	DENOTES TREE
E	- EAVE
R	- RIDGE
G	- GUTTER
A	- AWNING
P	- PARAPET

GREAT NORTHERN RAILWAY

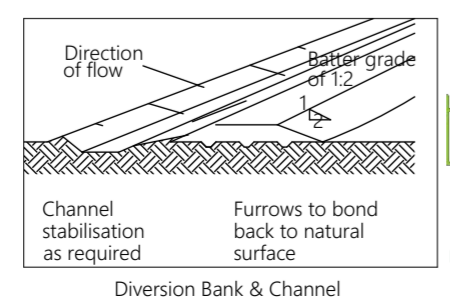
RAYMOND TERRACE ROAD



**PROPOSED SITE PLAN**  
1:200



- NOTE**
- 1 No vehicle crossing or stockpiling of material on vegetation buffer.
  - 2 All sedimentation control structures to be inspected & maintained by site manager daily.
  - 3 All sediment retaining structures to be cleaned on reaching 50% storage capacity.
  - 4 All existing vegetation will be retained outside the construction site.
  - 5 Clean sediments from footpaths, driveways & roads daily.
  - 6 Roof drainage via sealed pipeline to street gutter on roof completion.



**MEMBER OF BUILDING DESIGNERS AUSTRALIA NSW**

**WINNER 2011**  
HIA Hunter Residential Building Designer of the Year

**WINNER 2010**  
HIA Hunter Residential Building Designer of the Year

**HIA GreenSmart PROFESSIONAL**

**SORENSEN**  
DESIGN & PLANNING

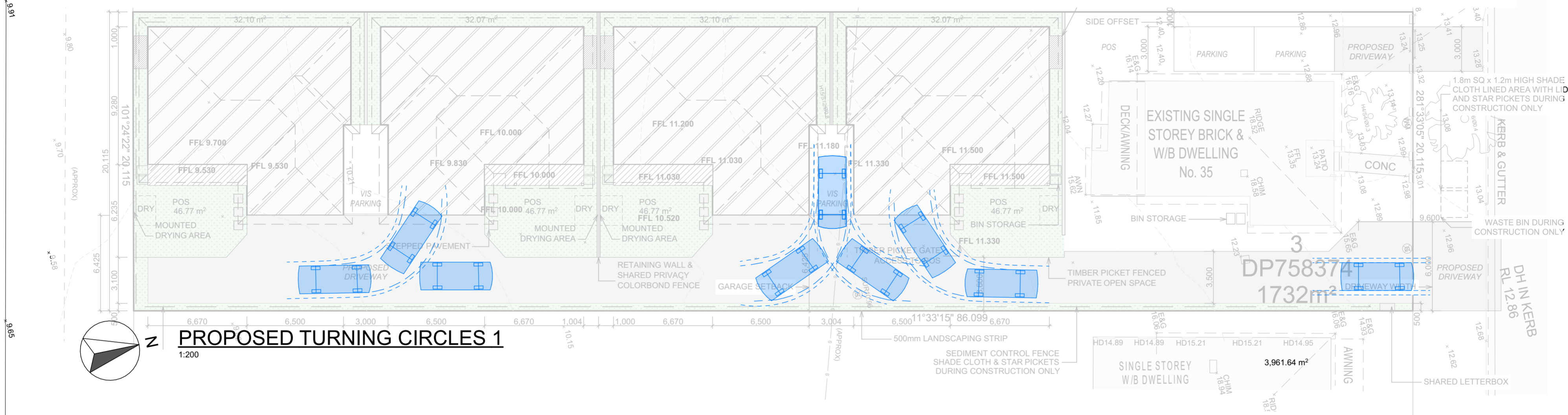
PORT STEPHENS OFFICE  
Ph: (02) 4984 9955  
Suite 4/ 10 Yacaaba Street  
Nelson Bay NSW 2315

NEWCASTLE OFFICE  
Ph: (02) 4961 5544  
SINGLETON OFFICE  
Ph: (02) 4961 5544

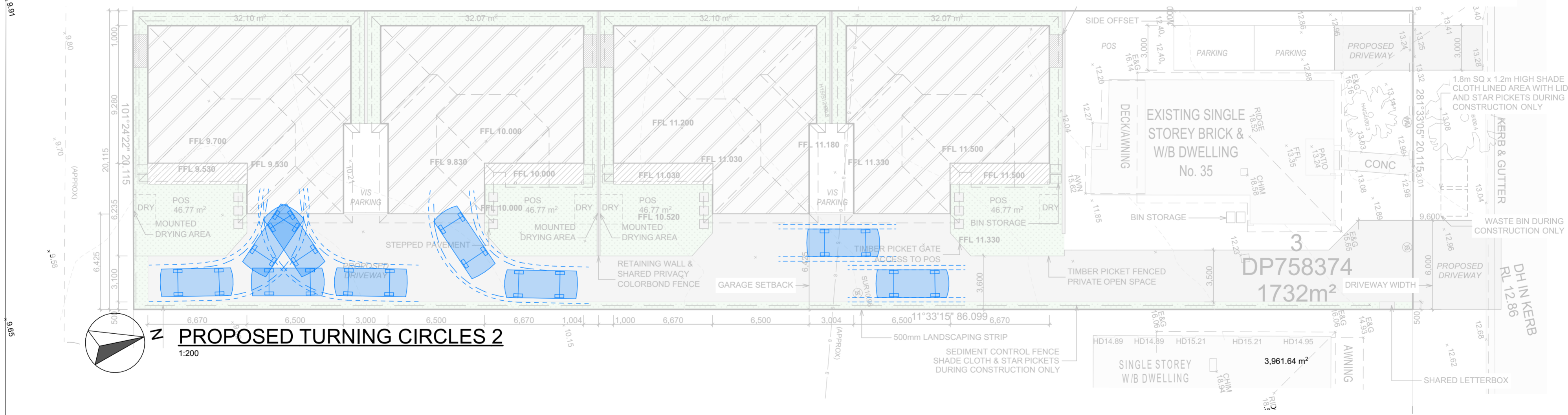
CONTACT DETAILS  
General Enquiries:  
reception@sorensendesign.com.au  
www.sorensendesign.com.au

PROJECT:	PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT:	ALVAPROPERTY GROUP
TITLE:	SITE PLAN PROPOSED
FILE:	2203273
DATE:	29/09/2022
SHEET:	2 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT	





**PROPOSED TURNING CIRCLES 1**  
1:200



**PROPOSED TURNING CIRCLES 2**  
1:200



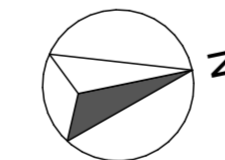
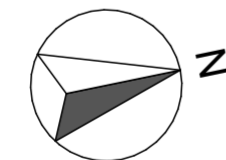
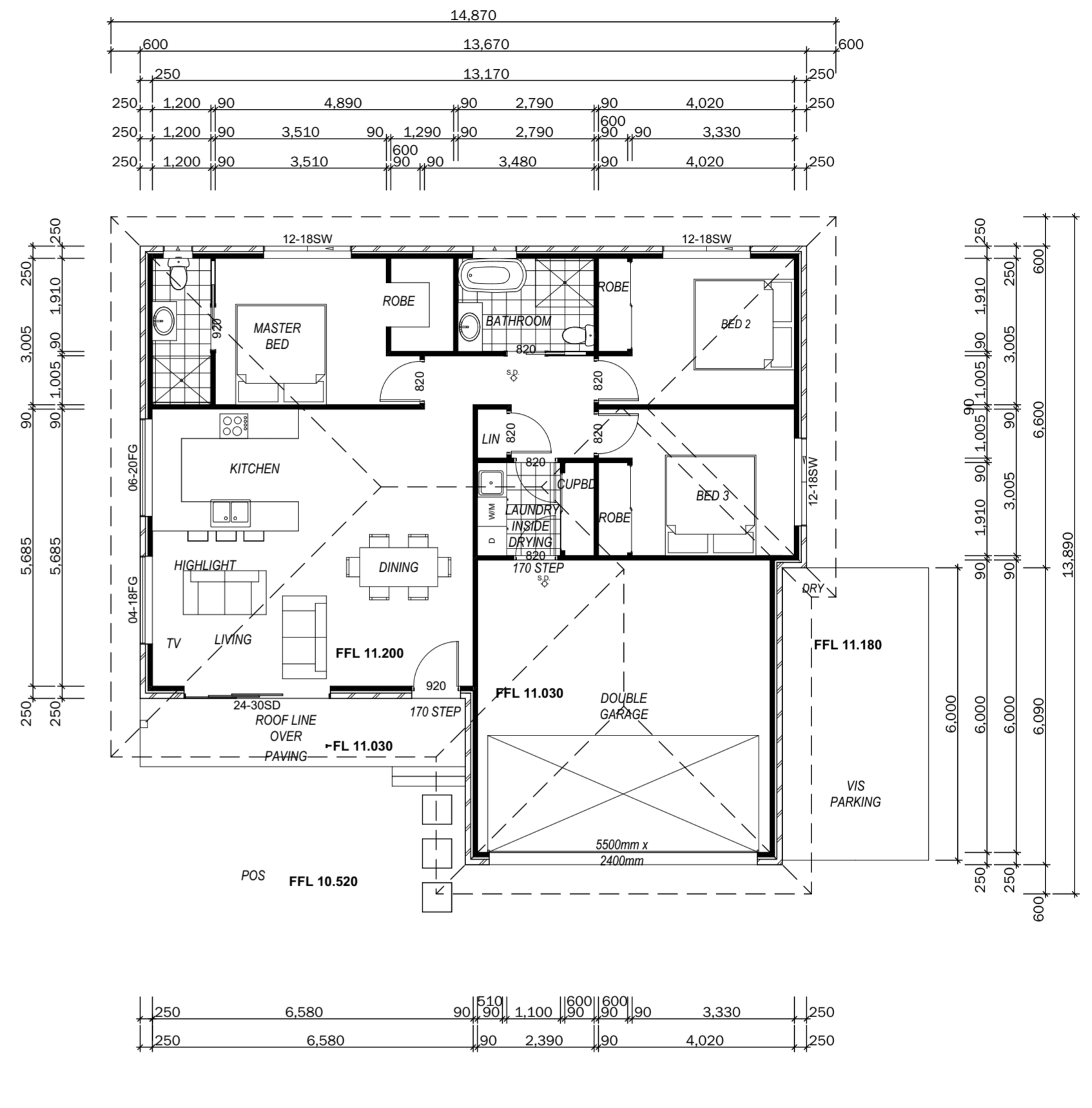
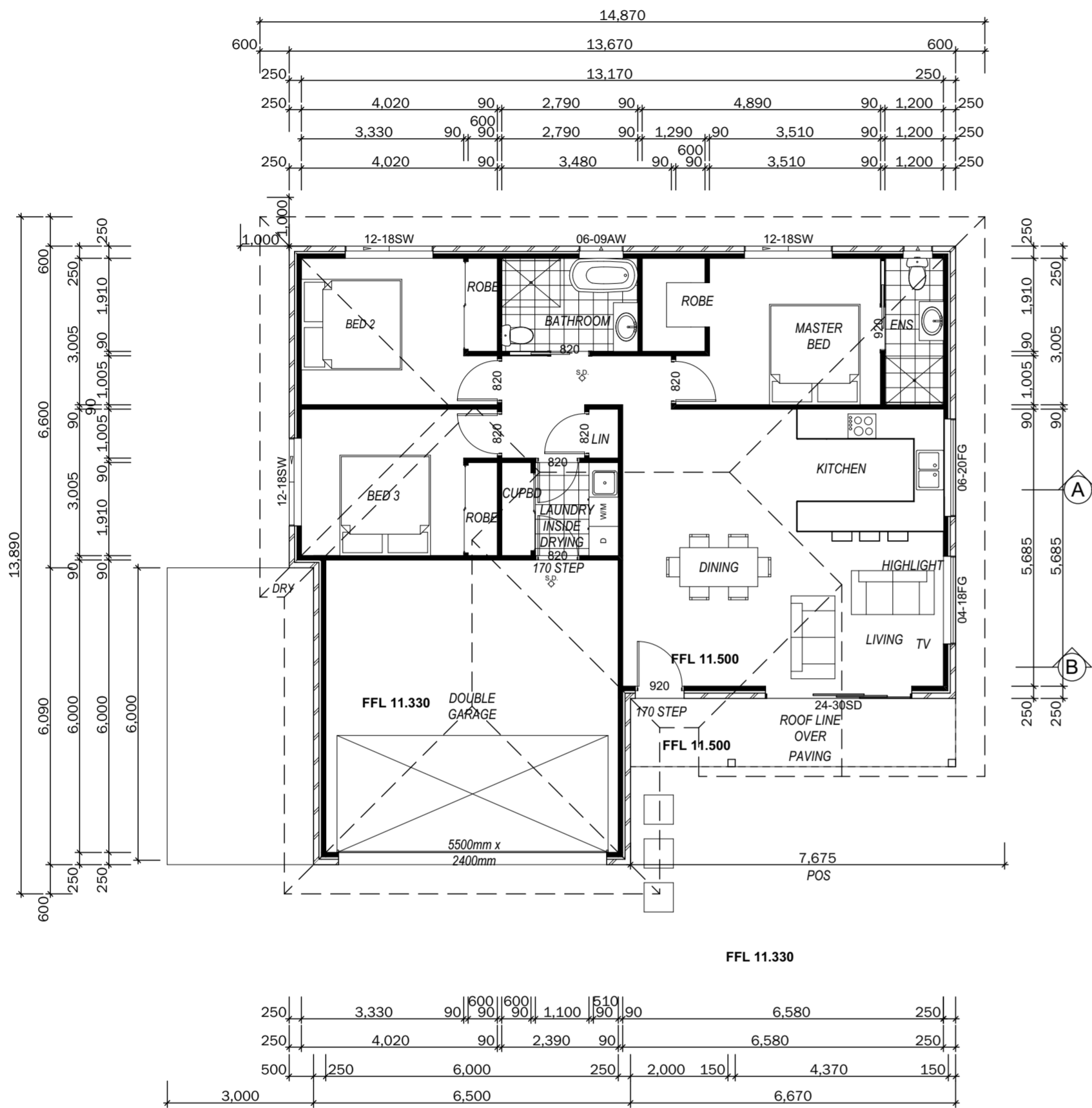
**S**  
 PORT STEPHENS OFFICE  
 Ph: (02) 4984 9955  
 Suite 4/ 10 Yacaaba Street  
 Nelson Bay NSW 2315  
 NEWCASTLE OFFICE  
 Ph: (02) 4961 5544  
 SINGLETON OFFICE  
 Ph: (02) 4961 5544  
 CONTACT DETAILS  
 General Enquiries:  
 reception@sorensendesign.com.au  
 www.sorensendesign.com.au

PROJECT:	PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT:	ALVAPROPERTY GROUP
TITLE:	TURNING CIRCLE PLAN
FILE:	2203273
DATE:	29/09/2022
SHEET:	3 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT	

ISSUE	DETAILS
-------	---------

**LEGEND**

- AW AWNING WINDOW
- BFD BI-FOLD DOOR
- DH DOUBLE-HUNG WINDOW
- DP DOWNPIPE
- CONC CONCRETE
- CPT CARPET
- CW CASEMENT WINDOW
- CSD CAVITY SLIDING DOOR
- FG FIXED GLASS
- f.w FLOOR WASTE
- GB GLASS BLOCKS
- HWS HOT WATER SYSTEM
- LV LOUVRE WINDOW
- PLD PANEL LIFT DOOR
- REF REFRIGERATOR
- RD ROLLER DOOR
- SH SHOWER
- SD SLIDING DOOR
- SW SLIDING WINDOW
- S.D. SMOKE DETECTOR
- VA VANITY BASIN
- WM WASHING MACHINE
- WC WATER CLOSET



**SORENSEN**  
DESIGN & PLANNING

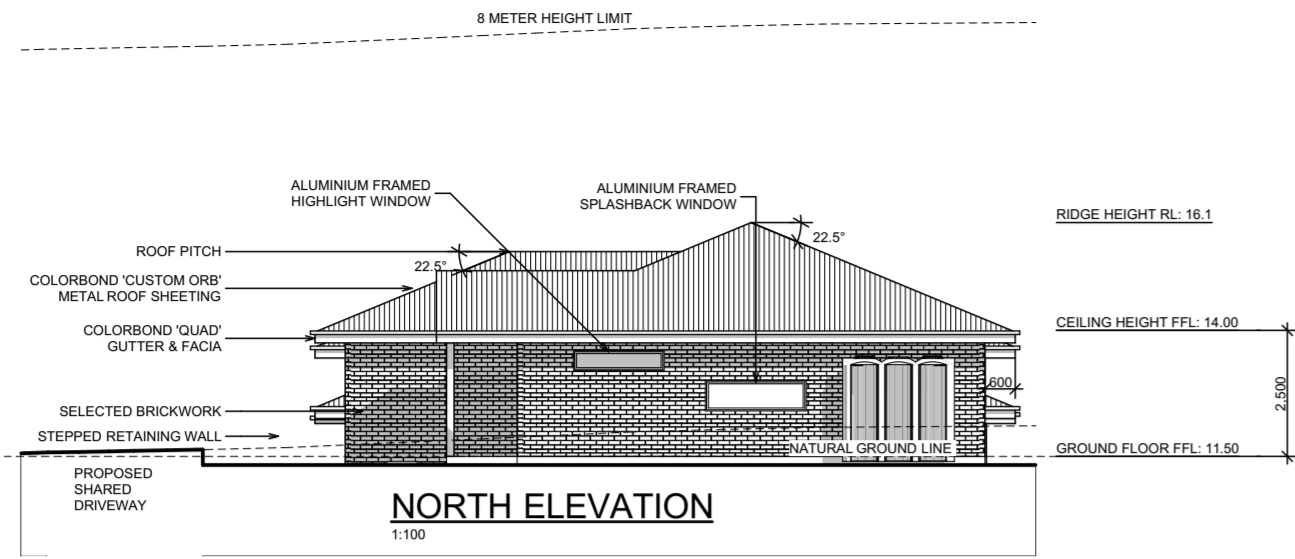
PORT STEPHENS OFFICE  
Ph: (02) 4984 9955  
Suite 4/ 10 Yacaaba Street  
Nelson Bay NSW 2315

NEWCASTLE OFFICE  
Ph: (02) 4961 5544  
SINGLETON OFFICE  
Ph: (02) 4961 5544

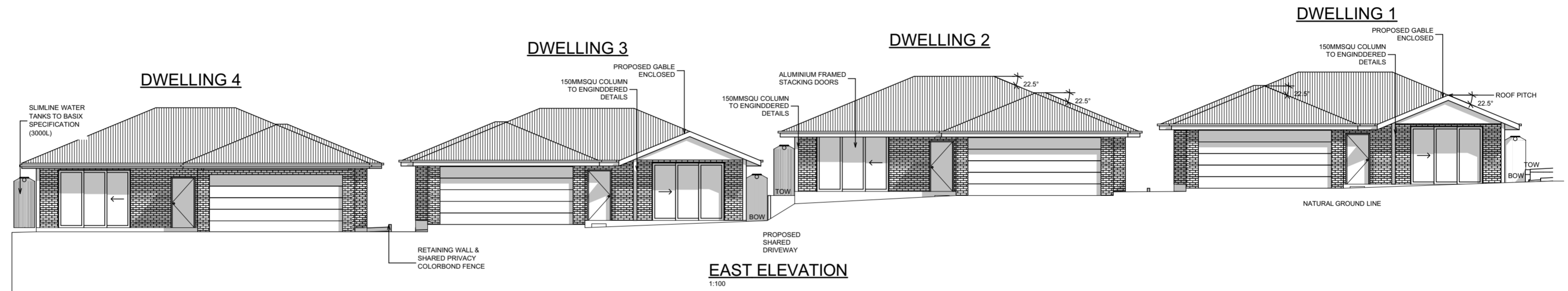
CONTACT DETAILS  
General Enquiries:  
reception@sorensendesign.com.au  
www.sorensendesign.com.au

PROJECT:	PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT:	ALVAPROPERTY GROUP
TITLE:	PROPOSED GROUND FLOOR
FILE:	2203273
DATE:	29/09/2022
SHEET:	4 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT	

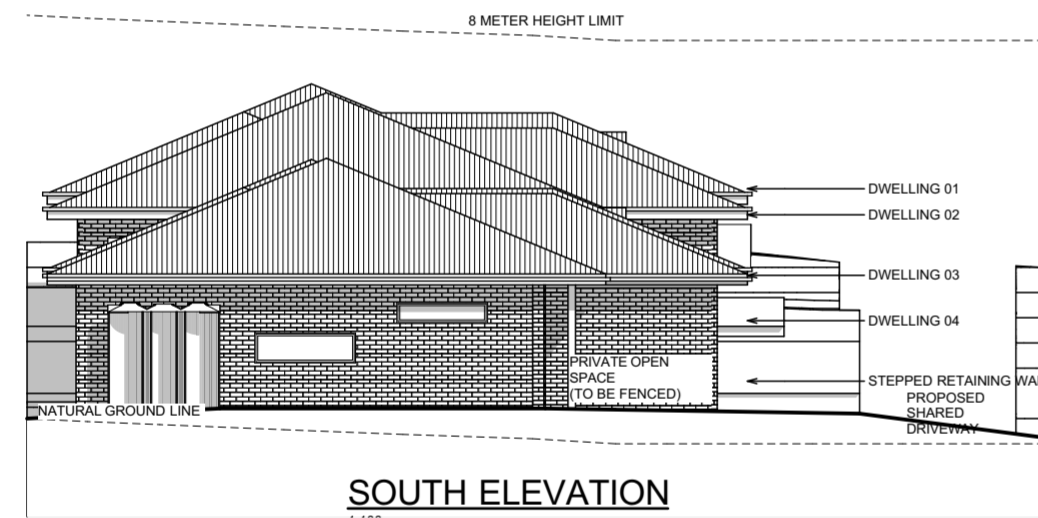
ISSUE DETAILS



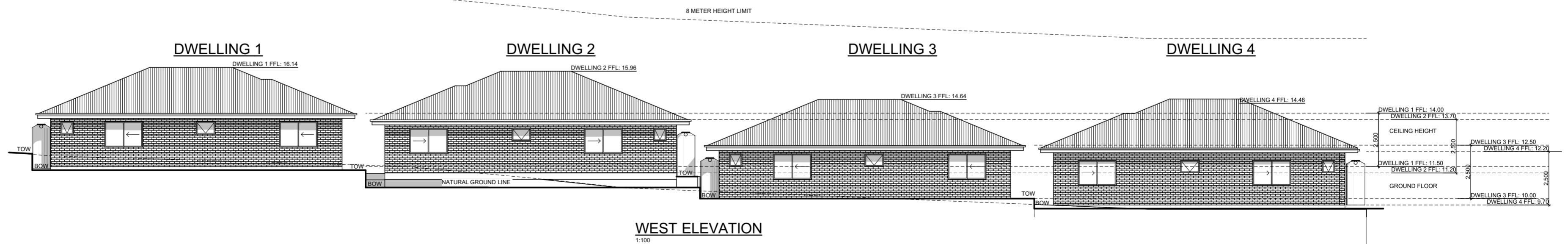
**NORTH ELEVATION**  
1:100



**EAST ELEVATION**  
1:100



**SOUTH ELEVATION**  
1:100



**WEST ELEVATION**  
1:100



**SORENSEN**  
DESIGN & PLANNING

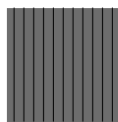
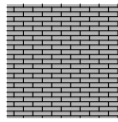


**S** PORT STEPHENS OFFICE Ph: (02) 4984 9955  
NEWCASTLE OFFICE Ph: (02) 4961 5544  
SINGELTON OFFICE Ph: (02) 4961 5544  
CONTACT DETAILS General Enquiries: reception@sorensendesign.com.au  
www.sorensendesign.com.au

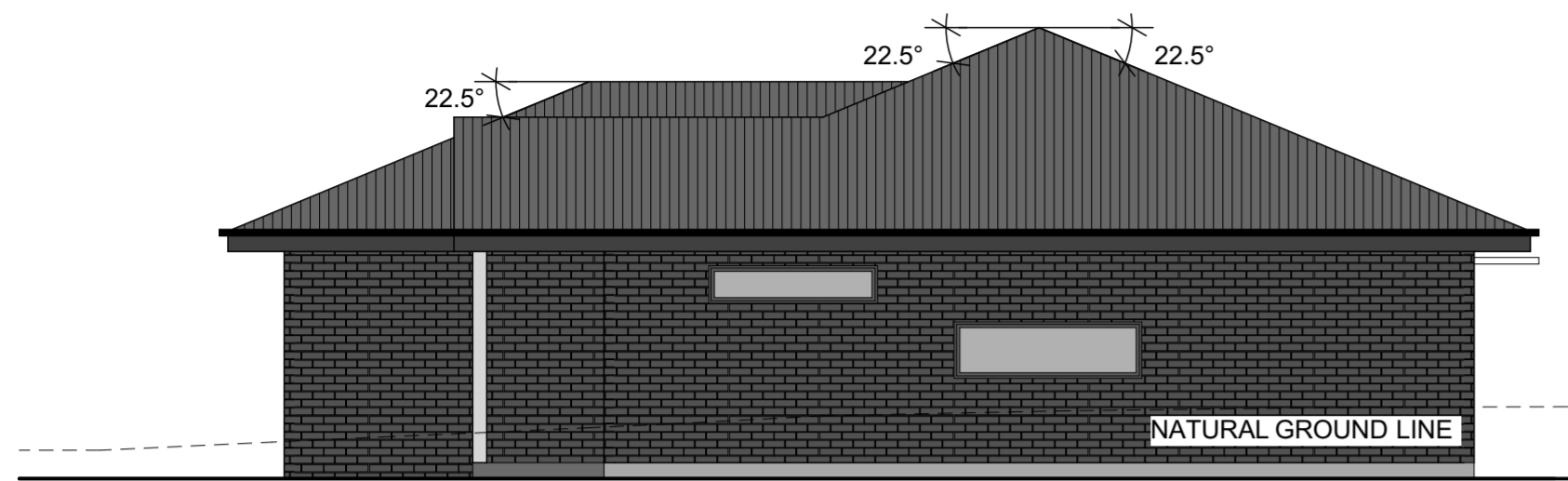
PROJECT: PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323  
CLIENT: ALVAPROPERTY GROUP  
TITLE: OVERALL NORTH, SOUTH, EAST, WEST ELEVATIONS  
FILE: 2203273 DATE: 29/09/2022 SHEET: 5 OF 23  
THESE PLANS ARE SUBJECT TO COPYRIGHT

ISSUE DETAILS

A2

**MATERIALS LEGEND**

-  COLORBOND 'CUSTOM ORB' METAL ROOF SHEETING
-  SELECTED FACE BRICK
-  SELECTED CLADDING
-  ALUMINIUM FRAMED GLASS



**NORTH ELEVATION D01**  
1:75

MAX RIDGE HEIGHT RL: 16.1  
RIDGE HEIGHT RL: 15.7

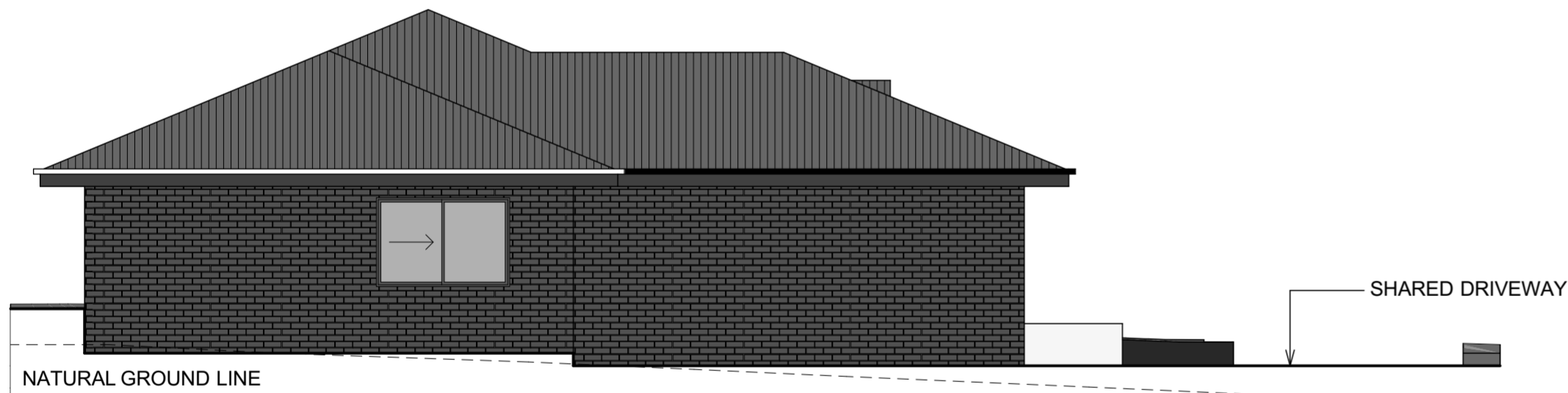
FIRST FLOOR FFL: 14.00

2.500

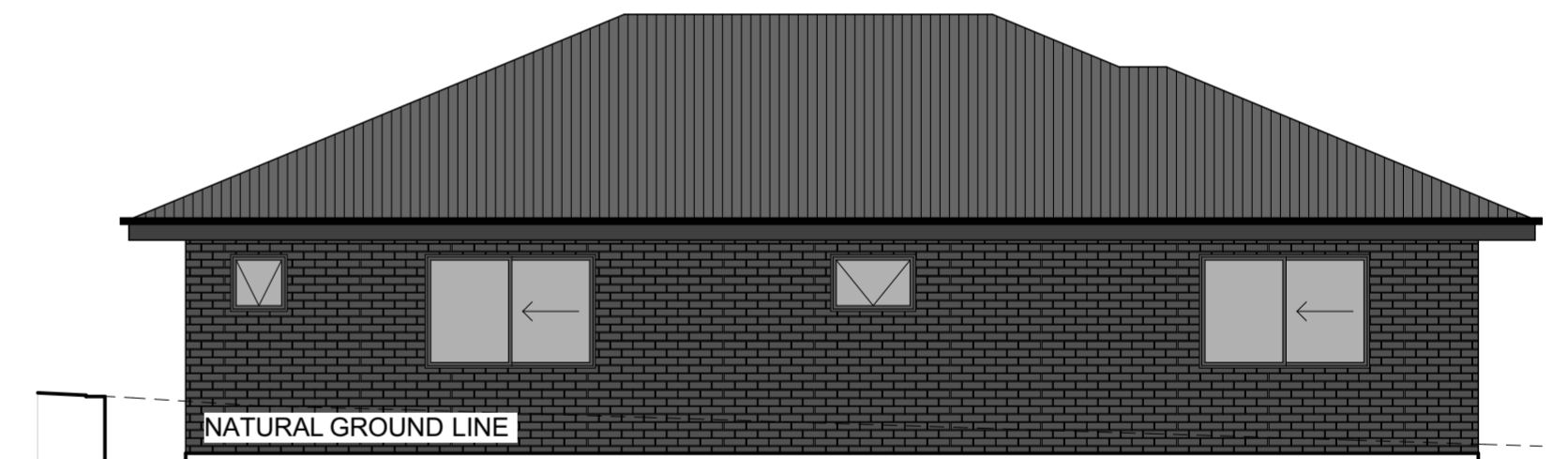
GROUND FLOOR FFL: 11.50



**EAST ELEVATION D01**  
1:75



**SOUTH ELEVATION D01**  
1:75



**WEST ELEVATION D01**  
1:75

MEMBER OF BUILDING DESIGNERS AUSTRALIA NSW

**bda**

WINNER 2011 HIA Hunter Residential Building Designer of the Year

WINNER 2010 HIA Hunter Residential Building Designer of the Year

HIA GreenSmart PROFESSIONAL

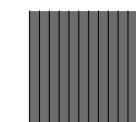
**SORENSEN**  
DESIGN & PLANNING

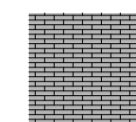
PORT STEPHENS OFFICE Ph: (02) 4984 9955  
NEWCASTLE OFFICE Ph: (02) 4961 5544  
SINGLETON OFFICE Ph: (02) 4961 5544  
CONTACT DETAILS General Enquiries: reception@sorensendesign.com.au  
www.sorensendesign.com.au


PROJECT:	PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT:	ALVAPROPERTY GROUP
TITLE:	DWELLING 1 ELEVATIONS
FILE:	2203273
DATE:	29/09/2022
SHEET:	6 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT	

ISSUE	DETAILS
-------	---------

**MATERIALS LEGEND**

 COLORBOND 'CUSTOM ORB' METAL ROOF SHEETING

 SELECTED FACE BRICK

 SELECTED CLADDING

 ALUMINIUM FRAMED GLASS

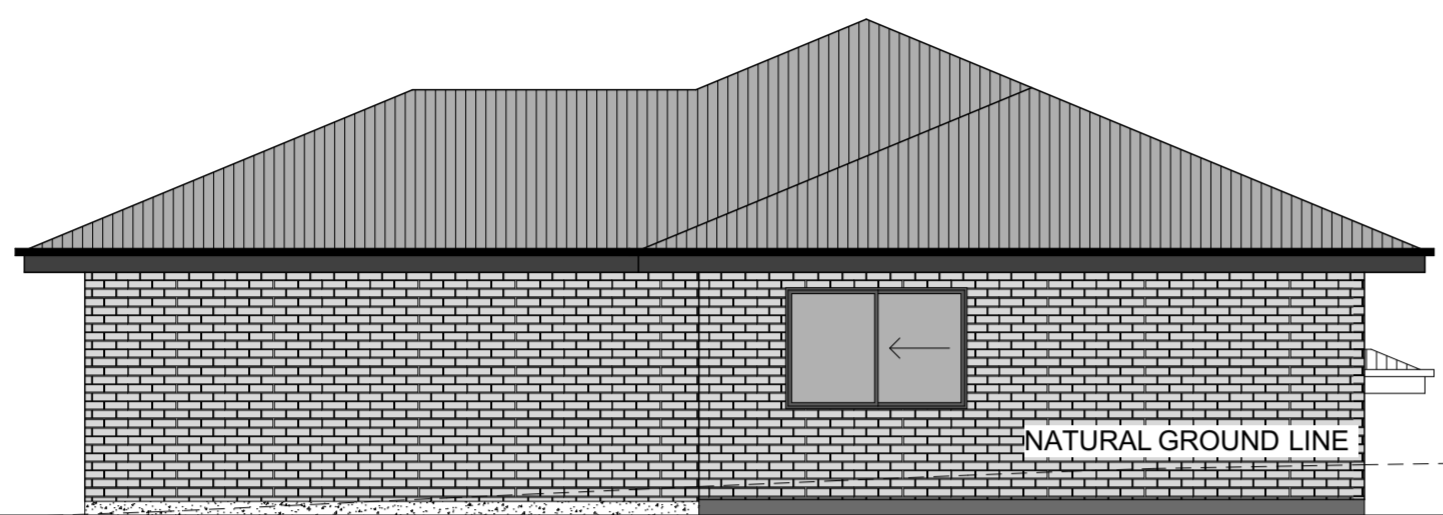
MAX ROOF HEIGHT RL: 16.0

MIN RIDGE HEIGHT RL: 15.3

FIRST FLOOR FFL: 13.68

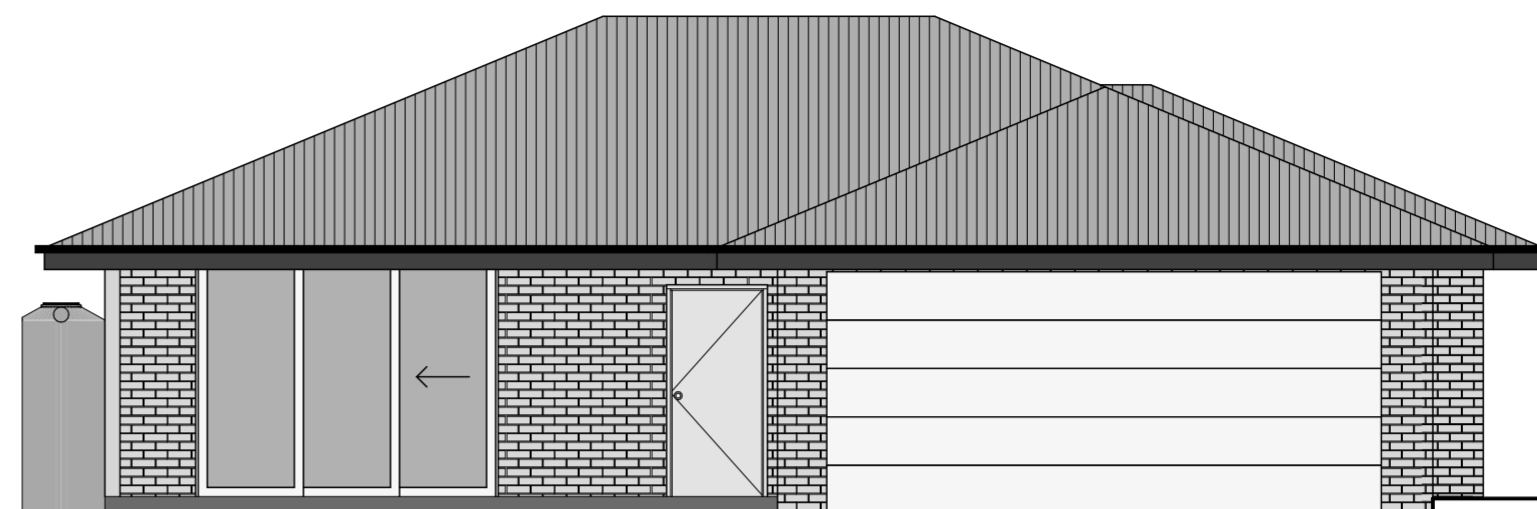
2.500

GROUND FLOOR FFL: 11.18



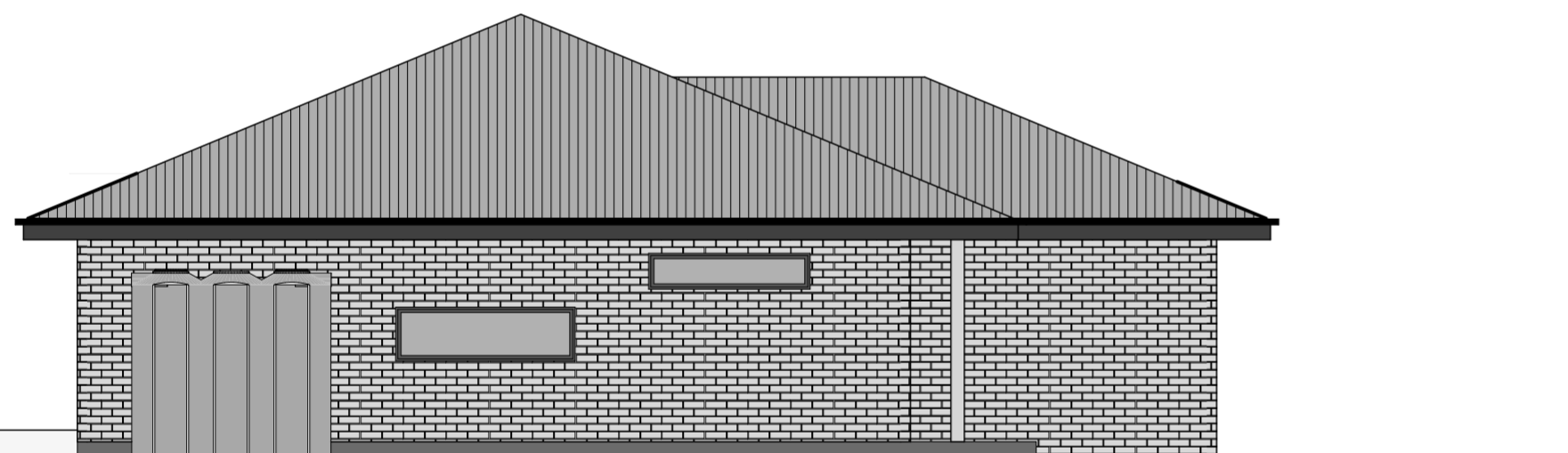
**NORTH ELEVATION D02**

1:75



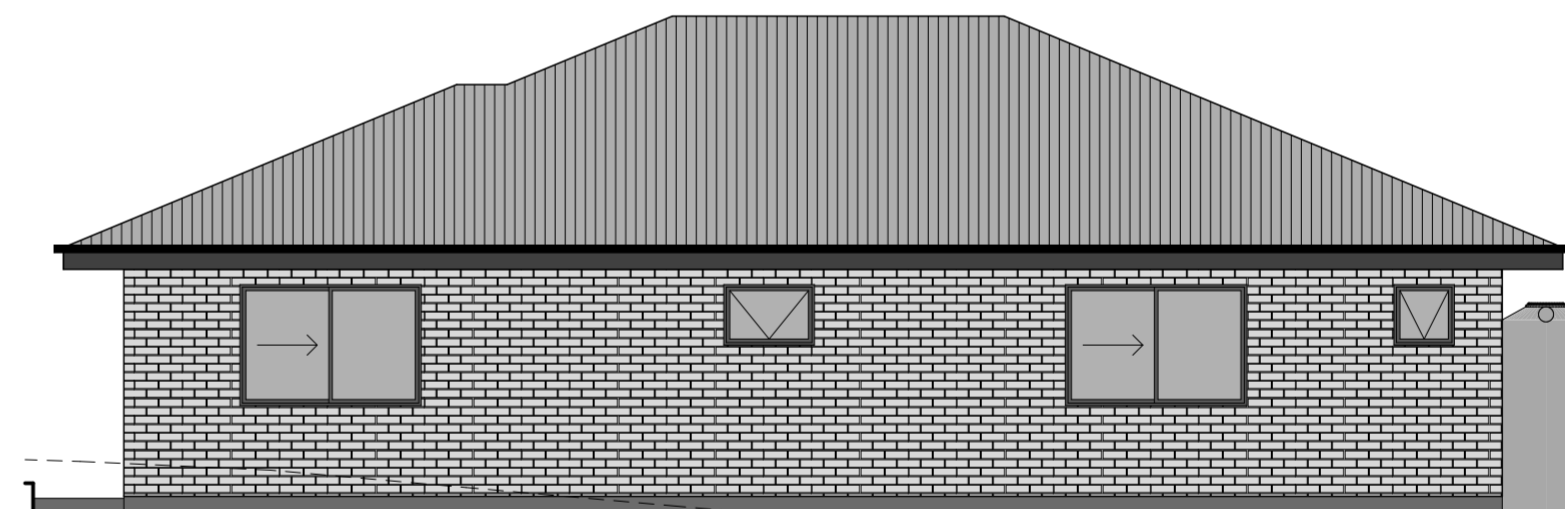
**EAST ELEVATION D02**

1:75



**SOUTH ELEVATION D02**

1:75



**WEST ELEVATION D02**

1:75



**SORENSEN**  
DESIGN & PLANNING

**S** PORT STEPHENS OFFICE Ph: (02) 4984 9955  
NEWCASTLE OFFICE Ph: (02) 4961 5544  
SINGLTON OFFICE Ph: (02) 4961 5544  
CONTACT DETAILS General Enquiries: reception@sorensendesign.com.au  
www.sorensendesign.com.au

PROJECT: PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323

CLIENT: ALVAPROPERTY GROUP

TITLE: DWELLING 2 ELEVATIONS

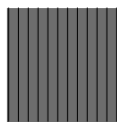
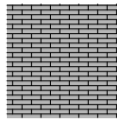


FILE: 2203273 DATE: 29/09/2022 SHEET: 7 OF 23

THESE PLANS ARE SUBJECT TO COPYRIGHT

ISSUE DETAILS

A2

**MATERIALS LEGEND**

-  COLORBOND 'CUSTOM ORB' METAL ROOF SHEETING
-  SELECTED FACE BRICK
-  SELECTED CLADDING
-  ALUMINIUM FRAMED GLASS

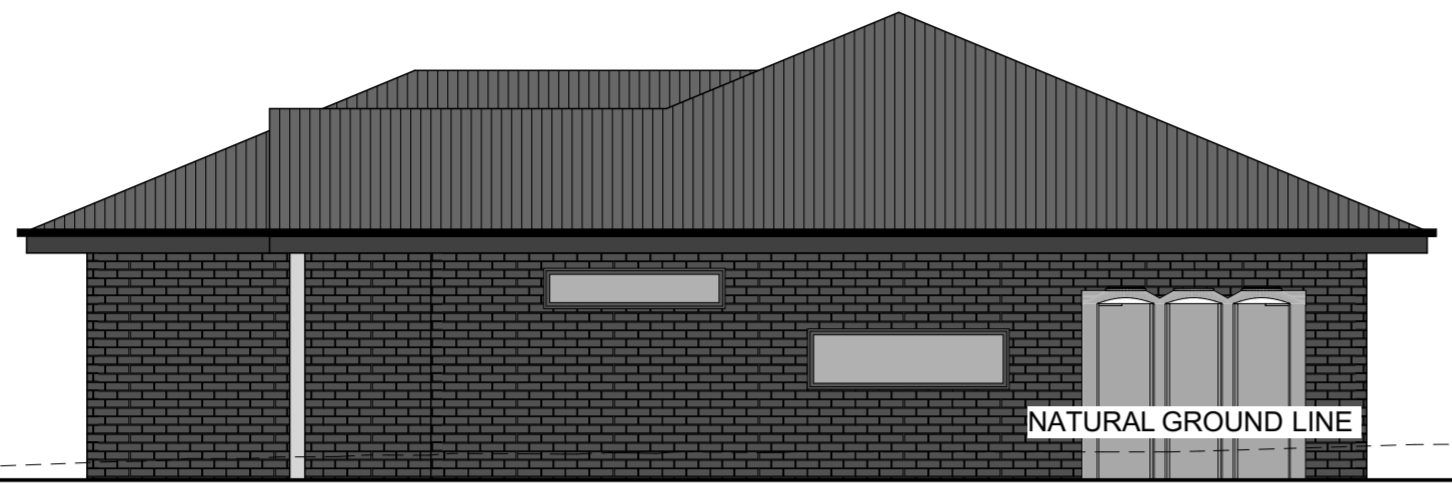
MAX ROOF HEIGHT RL: 14.8

MIN RIDGE HEIGHT RL: 14.1

FIRST FLOOR FFL: 12.50

2.500

GROUND FLOOR FFL: 10.00



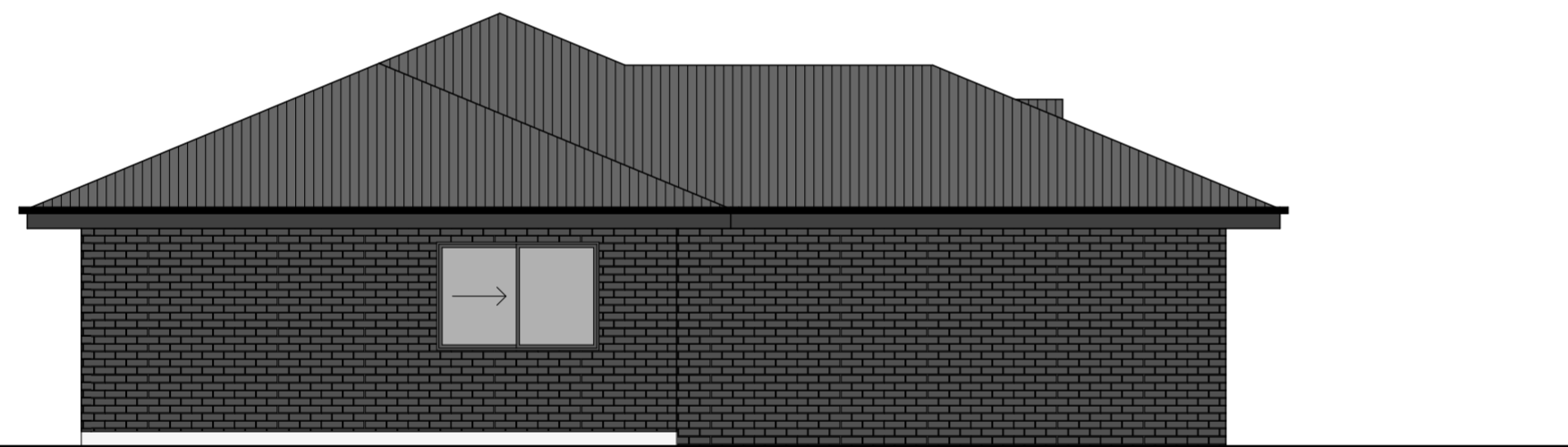
**NORTH ELEVATION D03**

1:75



NATURAL GROUND LINE **EAST ELEVATION D03**

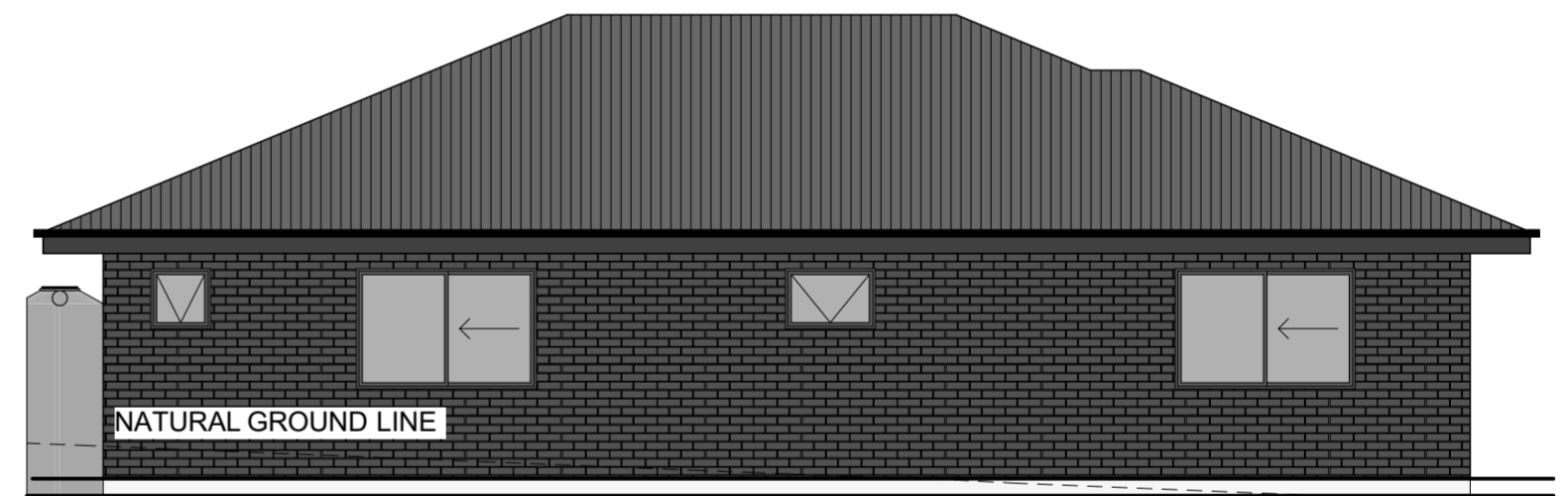
1:75



**SOUTH ELEVATION D03**

1:75

NATURAL GROUND LINE



**WEST ELEVATION D03**

1:75



**SORENSEN**  
DESIGN & PLANNING

**S** PORT STEPHENS OFFICE Ph: (02) 4984 9955  
Suite 4/ 10 Yacaaba Street Nelson Bay NSW 2315

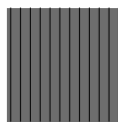
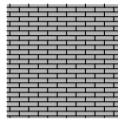


NEWCASTLE OFFICE Ph: (02) 4961 5544  
SINGLETON OFFICE Ph: (02) 4961 5544

CONTACT DETAILS  
General Enquiries: reception@sorensendesign.com.au  
www.sorensendesign.com.au

PROJECT:	PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT:	ALVAPROPERTY GROUP
TITLE:	DWELLING 3 ELEVATIONS
FILE:	2203273
DATE:	29/09/2022
SHEET:	8 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT	

ISSUE	DETAILS
-------	---------

**MATERIALS LEGEND**

-  COLORBOND 'CUSTOM ORB' METAL ROOF SHEETING
-  SELECTED FACE BRICK
-  SELECTED CLADDING
-  ALUMINIUM FRAMED GLASS

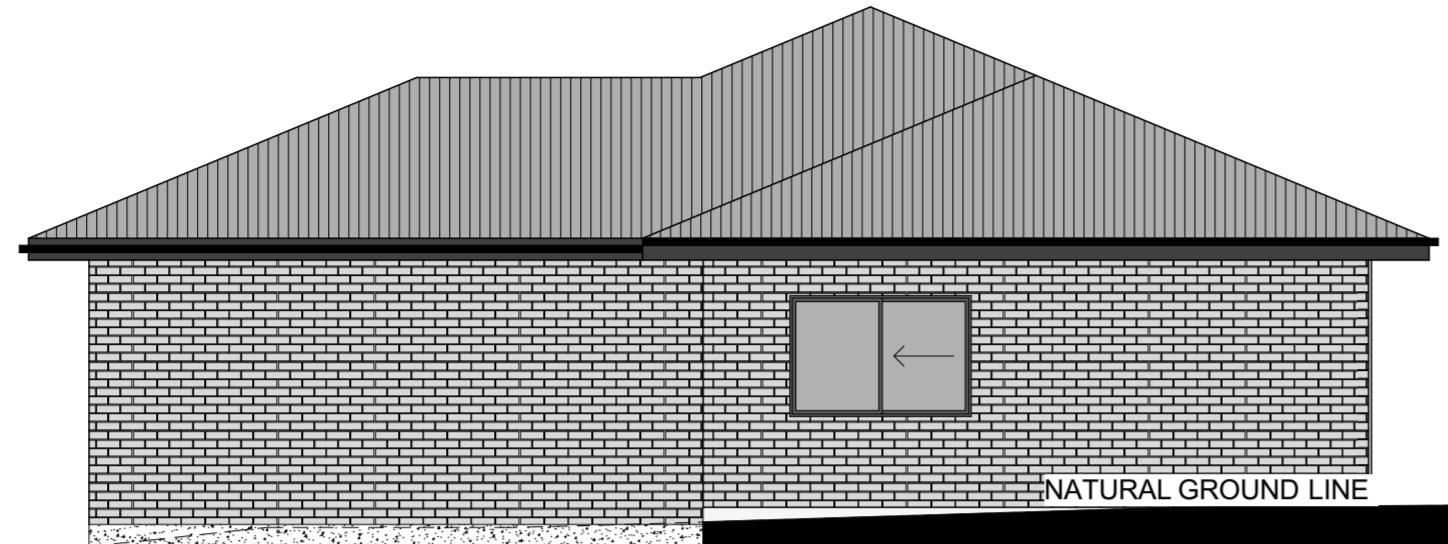
MAX ROOF HEIGHT RL: 14.3

MIN RIDGE HEIGHT RL: 13.6

FIRST FLOOR FFL: 12.03

2.500

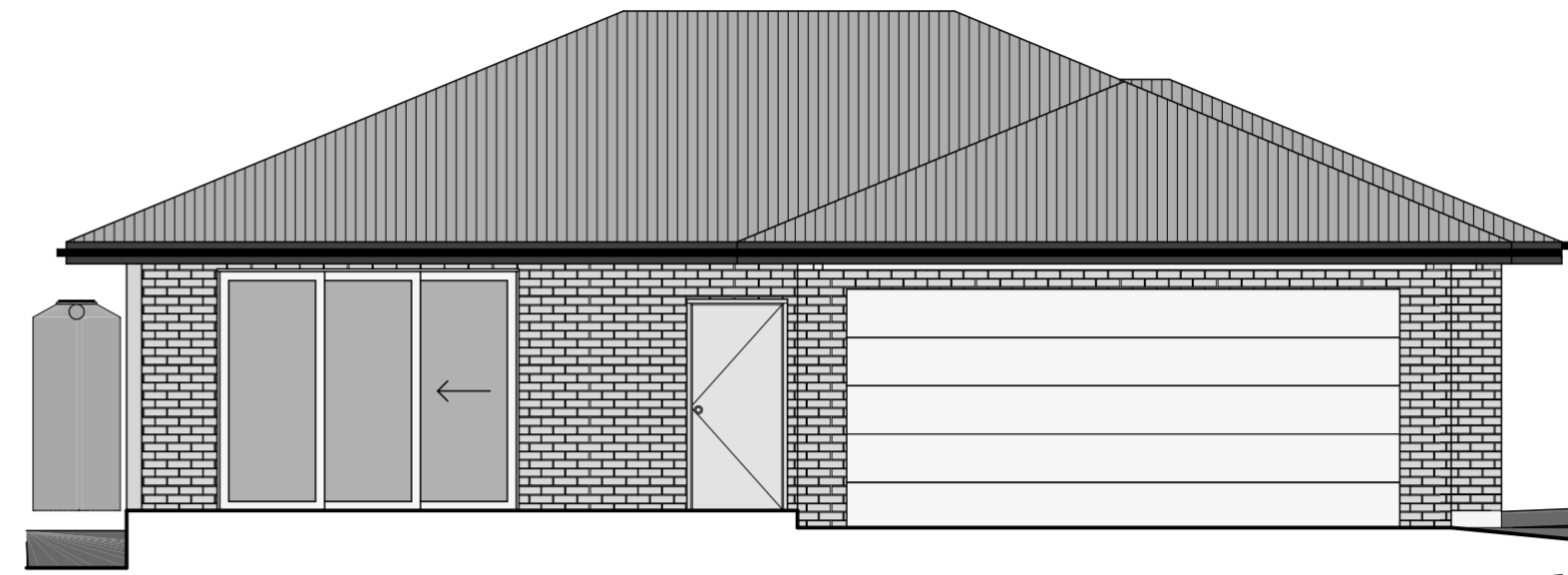
GARAGE FLOOR FFL: 9.53



**NORTH ELEVATION D04**

1:75

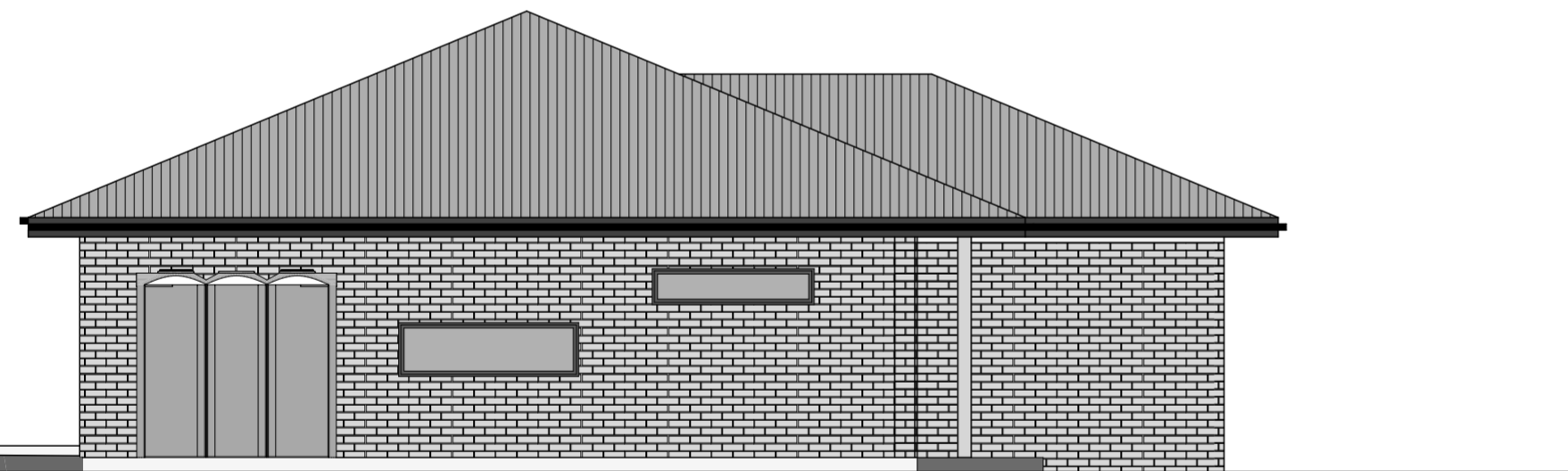
NATURAL GROUND LINE



**EAST ELEVATION D04**

1:75

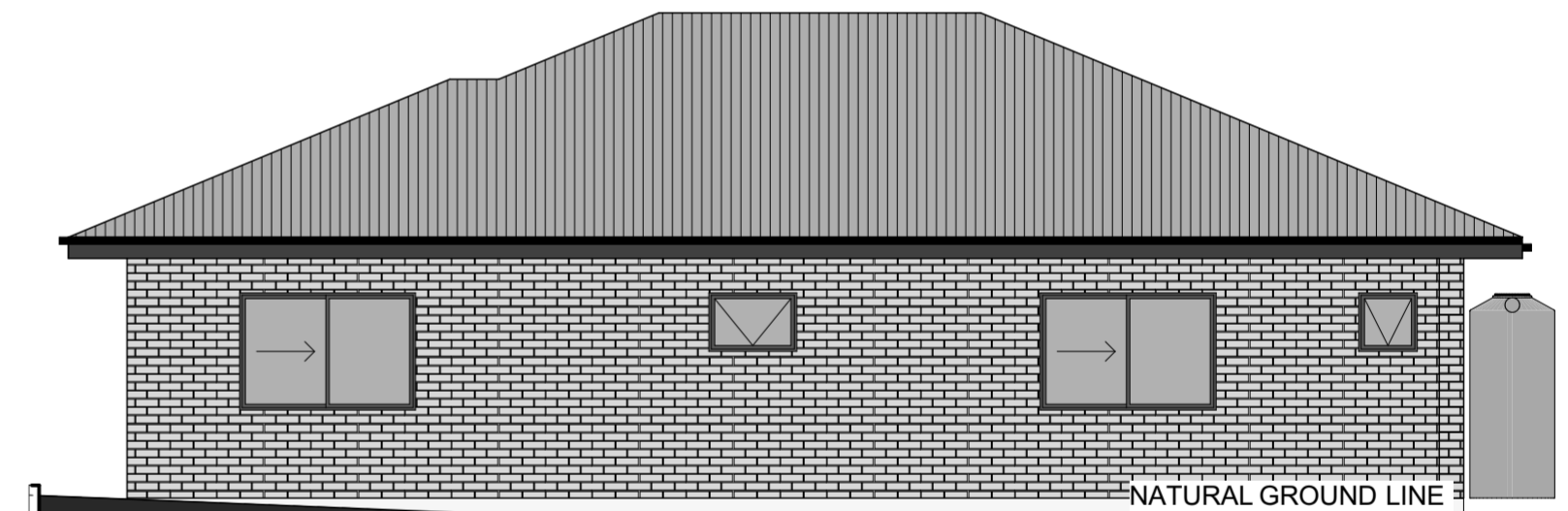
NATURAL GROUND LINE



**SOUTH ELEVATION D04**

1:75

NATURAL GROUND LINE



**WEST ELEVATION D04**

1:75

NATURAL GROUND LINE

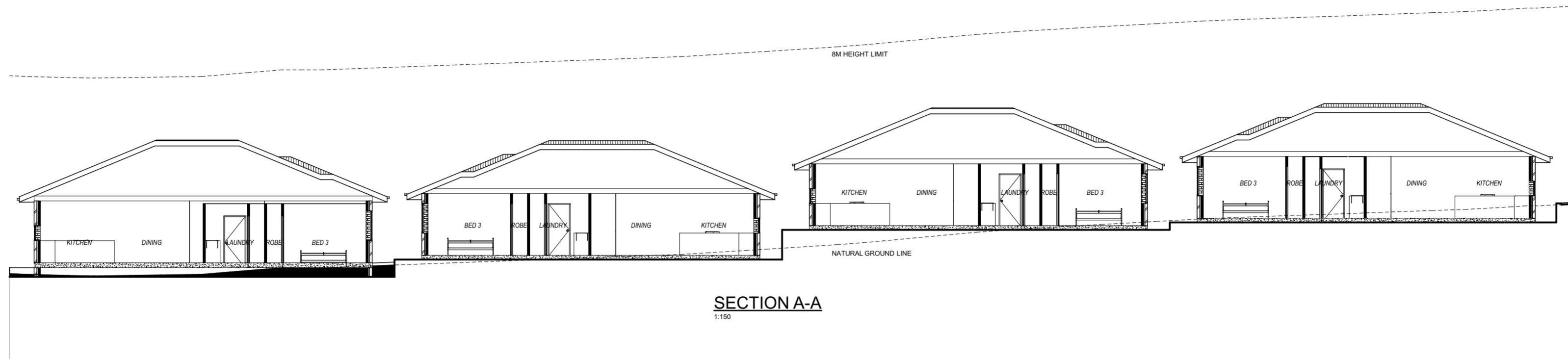


**SORENSEN**  
DESIGN & PLANNING

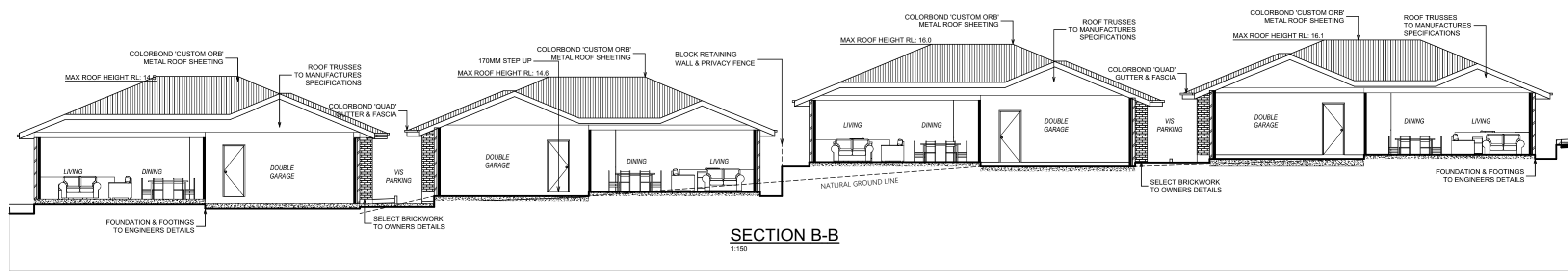
**S** PORT STEPHENS OFFICE Ph: (02) 4984 9955  
NEWCASTLE OFFICE Ph: (02) 4961 5544  
SINGLETON OFFICE Ph: (02) 4961 5544  
CONTACT DETAILS General Enquiries: reception@sorensendesign.com.au  
www.sorensendesign.com.au

PROJECT:	PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT:	ALVAPROPERTY GROUP
TITLE:	DWELLING 4 ELEVATIONS
FILE:	2203273
DATE:	29/09/2022
SHEET:	9 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT	

ISSUE	DETAILS
-------	---------



**SECTION A-A**  
1:150



**SECTION B-B**  
1:150



**SORENSEN**  
DESIGN & PLANNING

**S** PORT STEPHENS OFFICE  
Ph: (02) 4984 9955  
Suite 4/ 10 Yacaaba Street  
Nelson Bay NSW 2315

NEWCASTLE OFFICE  
Ph: (02) 4961 5544  
SINGLETON OFFICE  
Ph: (02) 4961 5544

CONTACT DETAILS  
General Enquiries:  
reception@sorensendesign.com.au  
www.sorensendesign.com.au

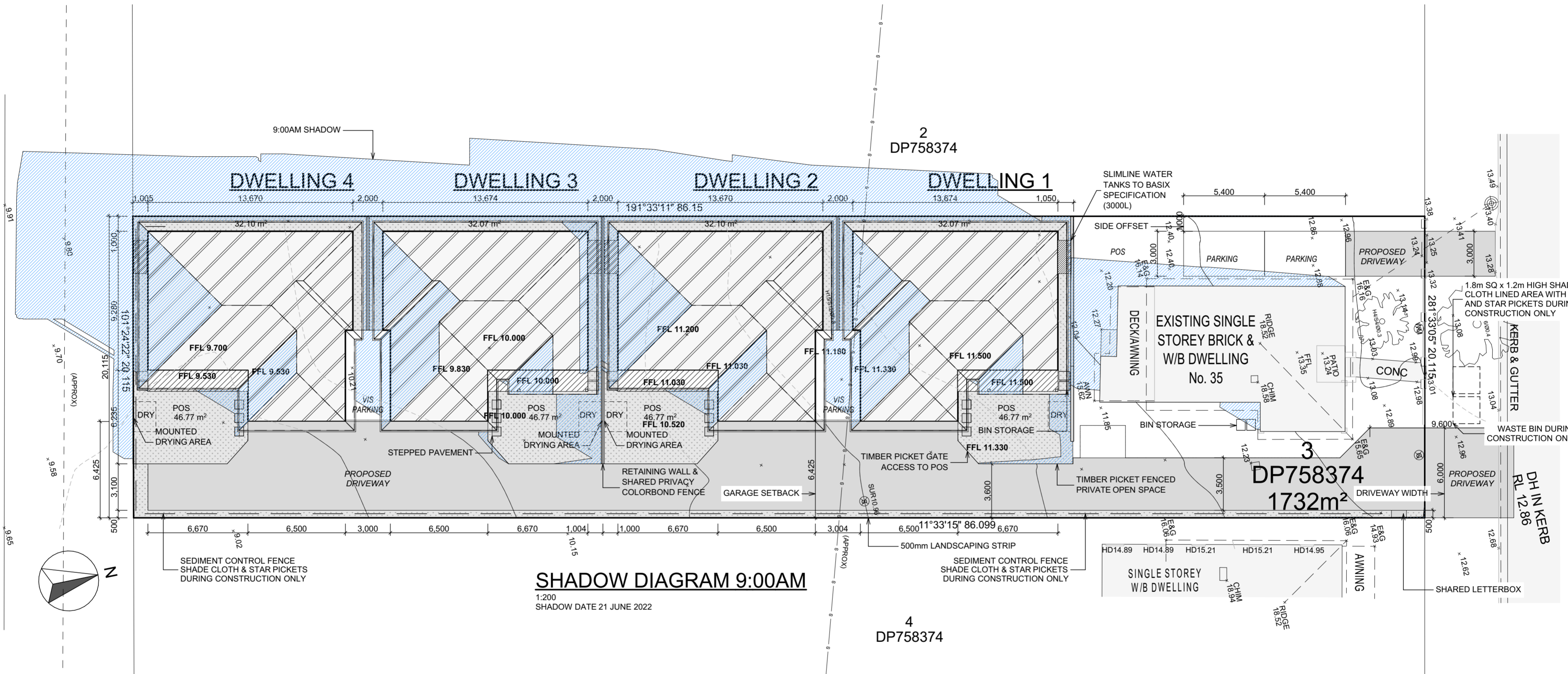
PROJECT:	PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT:	ALVAPROPERTY GROUP
TITLE:	SECTION A&B
FILE:	2203273
DATE:	29/09/2022
SHEET:	10 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT	

ISSUE	DETAILS
-------	---------



GREAT NORTHERN RAILWAY

RAYMOND TERRACE ROAD



**SHADOW DIAGRAM 9:00AM**  
1:200  
SHADOW DATE 21 JUNE 2022

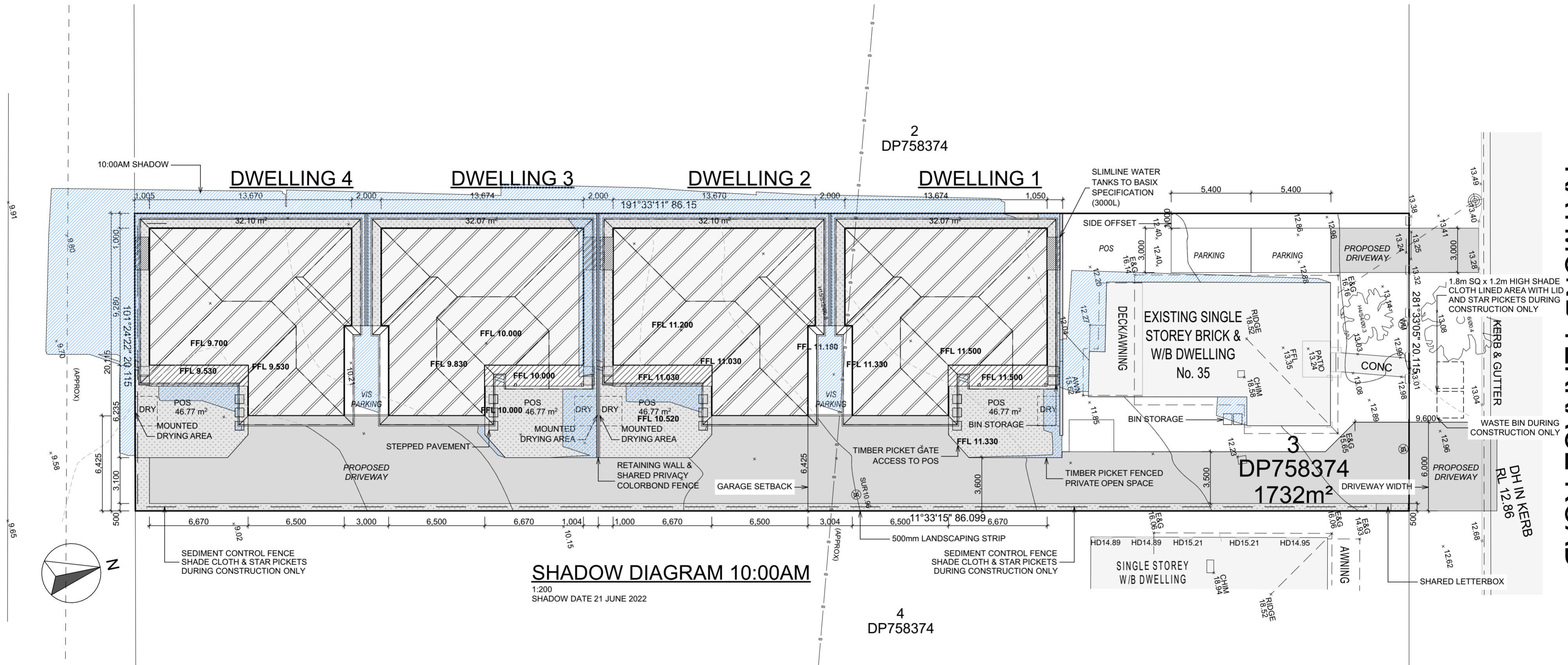


**SORENSEN**  
DESIGN & PLANNING

PORT STEPHENS OFFICE Ph: (02) 4984 9955  
 SUITE 4/ 10 YACAABA STREET NELSON BAY NSW 2315  
 NEWCASTLE OFFICE Ph: (02) 4961 5544  
 SINGLETON OFFICE Ph: (02) 4961 5544  
 CONTACT DETAILS General Enquiries: reception@sorensendesign.com.au www.sorensendesign.com.au

PROJECT:	PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT:	ALVAPROPERTY GROUP
TITLE:	SHADOW DIAGRAM 9:00AM
FILE:	2203273
DATE:	29/09/2022
SHEET:	11 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT	

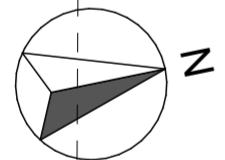
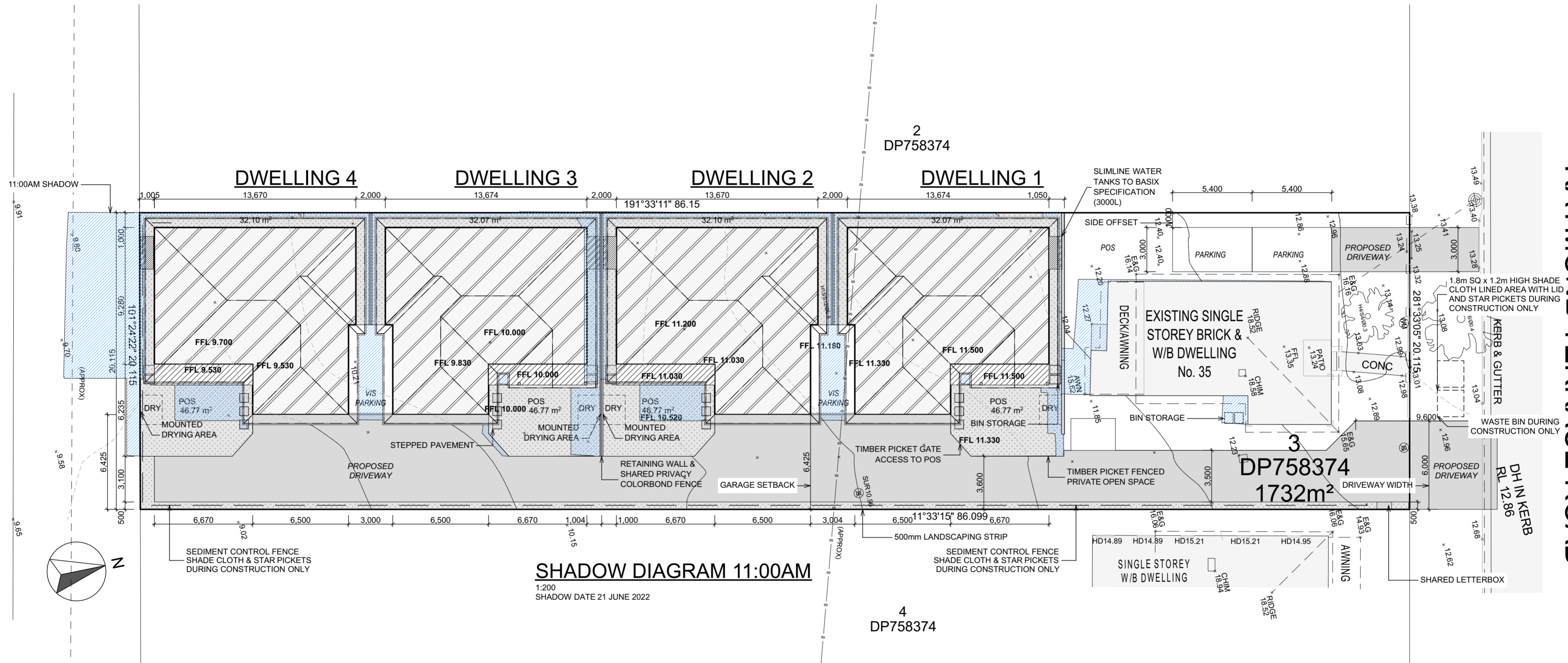
ISSUE	DETAILS
-------	---------



**S**  
 PORT STEPHENS OFFICE  
 Ph: (02) 4984 9955  
 Suite 4/ 10 Yacaaba Street  
 Nelson Bay NSW 2315  
 NEWCASTLE OFFICE  
 Ph: (02) 4961 5544  
 SINGLETON OFFICE  
 Ph: (02) 4961 5544  
 CONTACT DETAILS  
 General Enquiries:  
 reception@sorensendesign.com.au  
 www.sorensendesign.com.au

PROJECT:	PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT:	ALVAPROPERTY GROUP
TITLE:	SHADOW DIAGRAM 10:00AM
FILE:	2203273
DATE:	29/09/2022
SHEET:	12 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT	

ISSUE	DETAILS
-------	---------



PORT STEPHENS OFFICE  
 Ph: (02) 4984 9955  
 Suite 4/ 10 Yacaaba Street  
 Nelson Bay NSW 2315

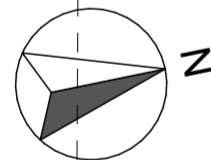
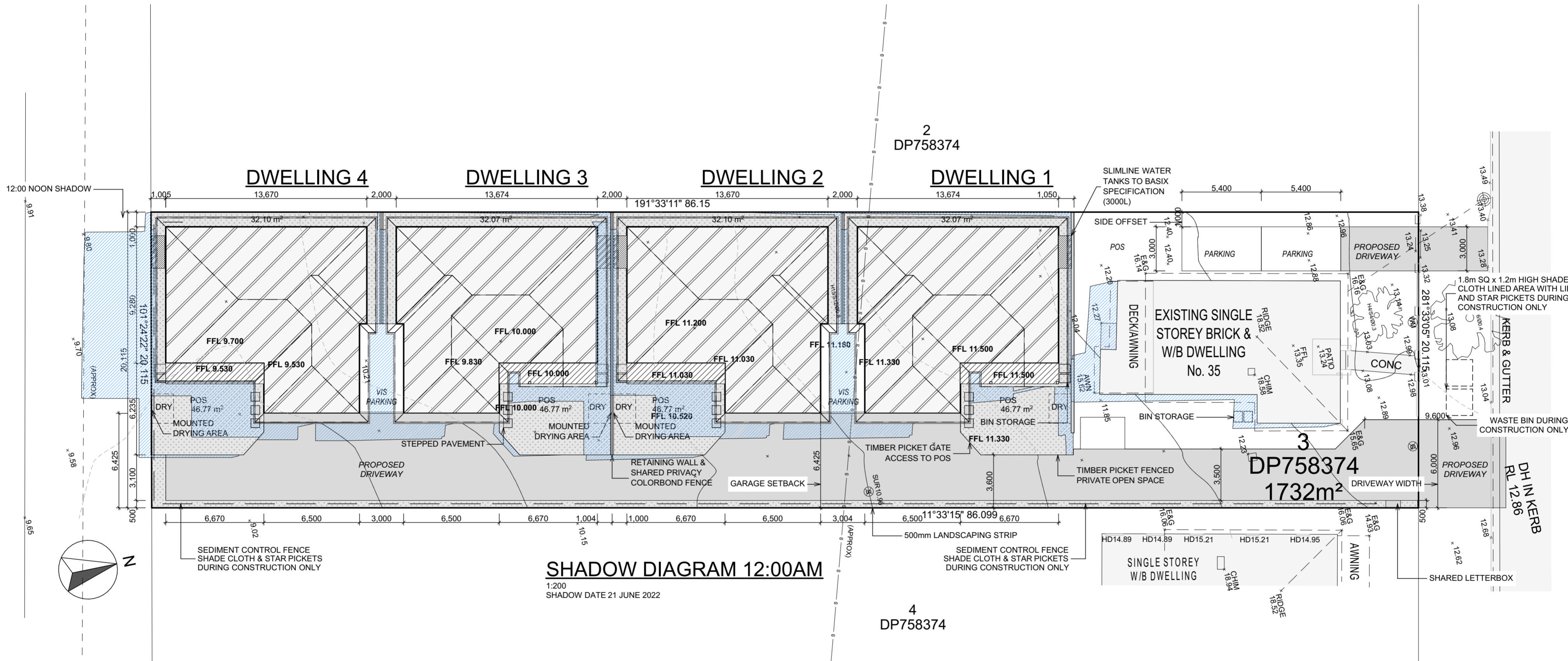
NEWCASTLE OFFICE  
 Ph: (02) 4961 5544

SINGLETON OFFICE  
 Ph: (02) 4961 5544

CONTACT DETAILS  
 General Enquiries:  
 reception@sorensendesign.com.au  
 www.sorensendesign.com.au

PROJECT:	PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT:	ALVAPROPERTY GROUP
TITLE:	SHADOW DIAGRAM 11:00AM
FILE:	2203273
DATE:	29/09/2022
SHEET:	13 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT	

ISSUE	DETAILS
-------	---------



PORT STEPHENS OFFICE  
 Ph: (02) 4984 9955  
 Suite 4/ 10 Yacaaba Street  
 Nelson Bay NSW 2315

NEWCASTLE OFFICE  
 Ph: (02) 4961 5544  
 SINGLETON OFFICE  
 Ph: (02) 4961 5544

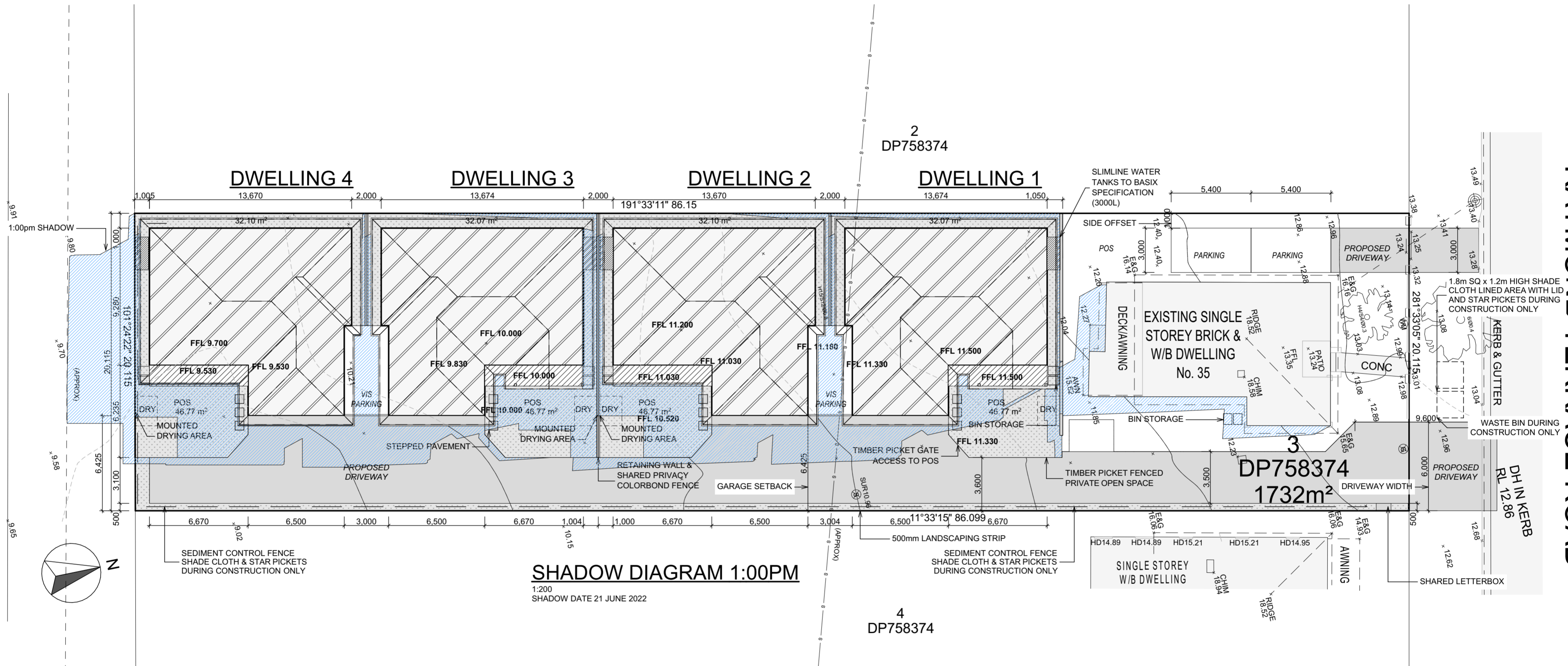
CONTACT DETAILS  
 General Enquiries:  
 reception@sorensendesign.com.au  
 www.sorensendesign.com.au

PROJECT:	PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT:	ALVAPROPERTY GROUP
TITLE:	SHADOW DIAGRAM 12:00 noon
FILE:	2203273
DATE:	29/09/2022
SHEET:	14 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT	

ISSUE	DETAILS
-------	---------

GREAT NORTHERN RAILWAY

RAYMOND TERRACE ROAD



**SORENSEN**  
DESIGN & PLANNING

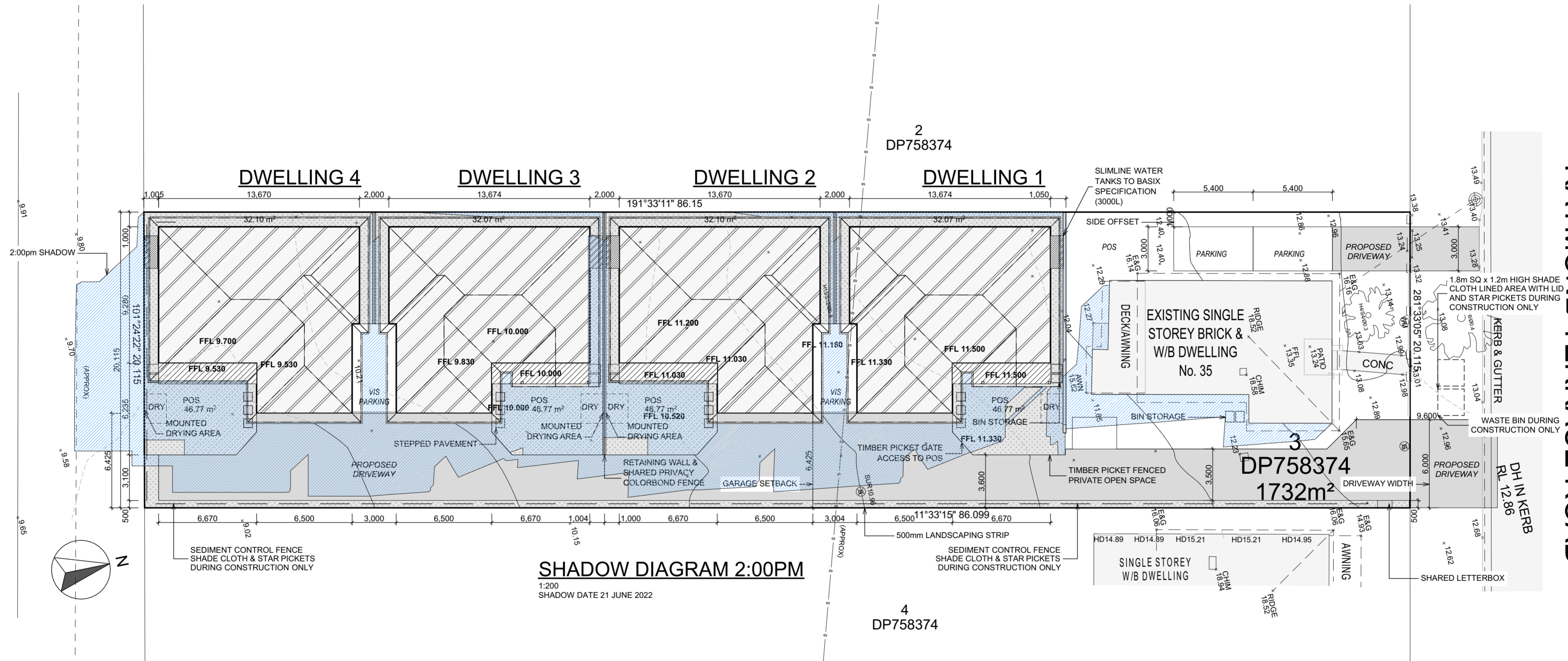
PORT STEPHENS OFFICE  
Ph: (02) 4984 9955  
Suite 4/ 10 Yacaaba Street  
Nelson Bay NSW 2315

NEWCASTLE OFFICE  
Ph: (02) 4961 5544  
SINGLETON OFFICE  
Ph: (02) 4961 5544

CONTACT DETAILS  
General Enquiries:  
reception@sorensendesign.com.au  
www.sorensendesign.com.au

PROJECT:	PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT:	ALVAPROPERTY GROUP
TITLE:	SHADOW DIAGRAM 1:00pm
FILE:	2203273
DATE:	29/09/2022
SHEET:	15 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT	

ISSUE	DETAILS
-------	---------



**S**  
 PORT STEPHENS OFFICE  
 Ph: (02) 4984 9955  
 Suite 4/ 10 Yacaaba Street  
 Nelson Bay NSW 2315

NEWCASTLE OFFICE  
 Ph: (02) 4961 5544

SINGLETON OFFICE  
 Ph: (02) 4961 5544

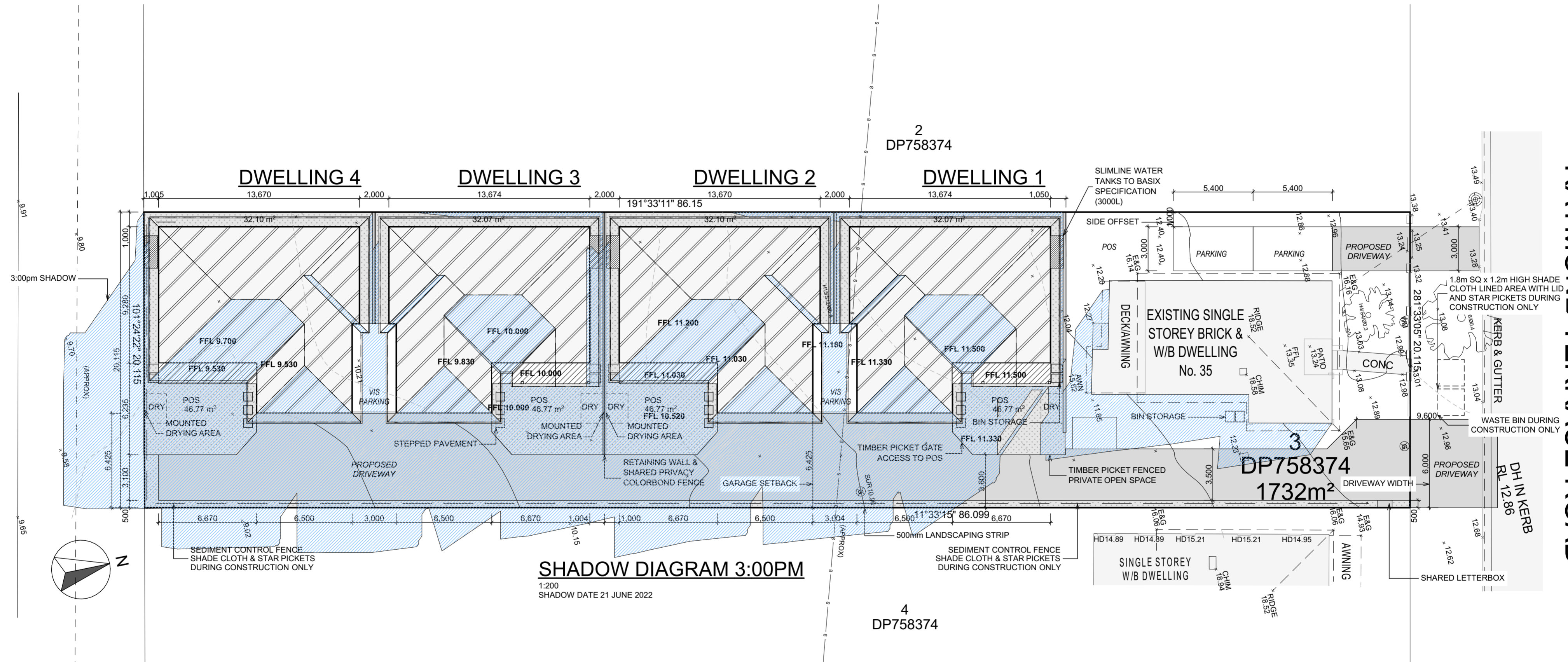
CONTACT DETAILS  
 General Enquiries:  
 reception@sorensendesign.com.au  
 www.sorensendesign.com.au

PROJECT:	PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT:	ALVAPROPERTY GROUP
TITLE:	SHADOW DIAGRAM 2:00pm
FILE:	2203273
DATE:	29/09/2022
SHEET:	16 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT	

ISSUE	DETAILS
-------	---------

GREAT NORTHERN RAILWAY

RAYMOND TERRACE ROAD



**SHADOW DIAGRAM 3:00PM**  
1:200  
SHADOW DATE 21 JUNE 2022



**SORENSEN**  
DESIGN & PLANNING

PORT STEPHENS OFFICE  
Ph: (02) 4984 9955  
Suite 4/ 10 Yacaaba Street  
Nelson Bay NSW 2315

NEWCASTLE OFFICE  
Ph: (02) 4961 5544  
SINGLETON OFFICE  
Ph: (02) 4961 5544

CONTACT DETAILS  
General Enquiries:  
reception@sorensendesign.com.au  
www.sorensendesign.com.au

PROJECT:	PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT:	ALVAPROPERTY GROUP
TITLE:	SHADOW DIAGRAM 3:00pm
FILE:	2203273
DATE:	29/09/2022
SHEET:	17 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT	

ISSUE	DETAILS
-------	---------



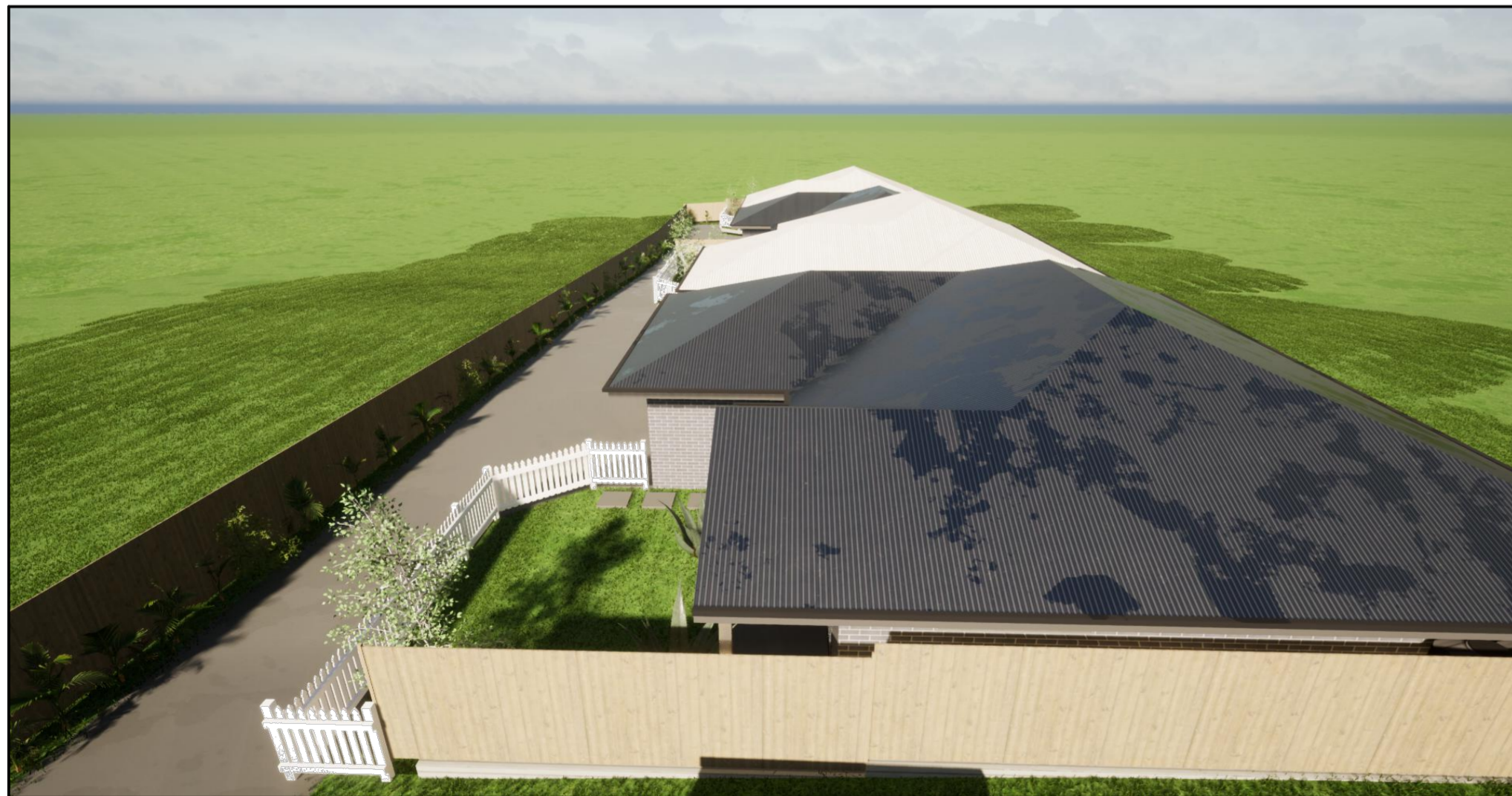
**SORENSEN**  
DESIGN & PLANNING

**S** PORT STEPHENS OFFICE Ph: (02) 4984 9955  
NEWCASTLE OFFICE Ph: (02) 4961 5544  
SINGLETON OFFICE Ph: (02) 4961 5544  
CONTACT DETAILS General Enquiries: reception@sorensendesign.com.au  
www.sorensendesign.com.au

PROJECT:	PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT:	ALVAPROPERTY GROUP
TITLE:	3D's
FILE:	2203273
DATE:	29/09/2022
SHEET:	18 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT	

ISSUE	DETAILS
-------	---------





**SORENSEN**  
DESIGN & PLANNING

**S** PORT STEPHENS OFFICE Ph: (02) 4984 9955  
NEWCASTLE OFFICE Ph: (02) 4961 5544  
SINGELTON OFFICE Ph: (02) 4961 5544  
CONTACT DETAILS General Enquiries: reception@sorensendesign.com.au  
www.sorensendesign.com.au

PROJECT:	PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT:	ALVAPROPERTY GROUP
TITLE:	3D's
FILE:	2203273
DATE:	29/09/2022
SHEET:	19 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT	

ISSUE	DETAILS
-------	---------

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled 'BASIX Definitions' dated 10/09/2020 published by the Department. This document is available at www.basix.nsw.gov.au

Secretary  
Date of issue: Thursday, 17 November 2022  
To be valid, this certificate must be lodged within 3 months of the date of issue.



Project summary		
Project name	2203273_ALVA property group D01	
Street address	35 Raymond terrace Road East Maitland 2323	
Local Government Area	Maitland City Council	
Plan type and plan number	deposited DP758374	
Lot no.	3	
Section no.	-	
Project type	separate dwelling house	
No. of bedrooms	3	
Project score		
Water	40	Target 40
Thermal Comfort	Pass	Target Pass
Energy	47	Target 45

Certificate Prepared by	
Name / Company Name:	Sorensen Design
ABN (if applicable):	75803073495

## Description of project

Project address		Assessor details and thermal loads	
Project name	2203273_ALVA property group D01	Assessor number	n/a
Street address	35 Raymond terrace Road East Maitland 2323	Certificate number	n/a
Local Government Area	Maitland City Council	Climate zone	n/a
Plan type and plan number	deposited DP758374	Area adjusted cooling load (MJ/m <sup>2</sup> /year)	n/a
Lot no.	3	Area adjusted heating load (MJ/m <sup>2</sup> /year)	n/a
Section no.	-	Ceiling fan in at least one bedroom	n/a
Project type	separate dwelling house	Ceiling fan in at least one living room or other conditioned area	n/a
Site details		Project score	
Project type	separate dwelling house	Water	40 Target 40
No. of bedrooms	3	Thermal Comfort	Pass Target Pass
Site area (m <sup>2</sup> )	1732	Energy	47 Target 45
Roof area (m <sup>2</sup> )	187		
Conditioned floor area (m <sup>2</sup> )	84.43		
Unconditioned floor area (m <sup>2</sup> )	9.89		
Total area of garden and lawn (m <sup>2</sup> )	40		

## Schedule of BASIX commitments

The commitments set out below regulate how the proposed development is to be carried out. It is a condition of any development consent granted, or complying development certificate issued, for the proposed development, that BASIX commitments be complied with.

Water Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check
<b>Fixtures</b>			
The applicant must install showerheads with a minimum rating of 4 star (> 6 but ≤ 7.5 L/min plus spray force and/or coverage tests) in all showers in the development.		✓	✓
The applicant must install a toilet flushing system with a minimum rating of 3 star in each toilet in the development.		✓	✓
The applicant must install taps with a minimum rating of 3 star in the kitchen in the development.		✓	✓
The applicant must install basin taps with a minimum rating of 3 star in each bathroom in the development.		✓	✓
<b>Alternative water</b>			
<b>Rainwater tank</b>			
The applicant must install a rainwater tank of at least 1000 litres on the site. This rainwater tank must meet, and be installed in accordance with, the requirements of all applicable regulatory authorities.	✓	✓	✓
The applicant must configure the rainwater tank to collect rain runoff from at least 186.62 square metres of the roof area of the development (excluding the area of the roof which drains to any stormwater tank or private dam).	✓	✓	✓
The applicant must configure the rainwater tank so that overflow is diverted to a stormwater tank.		✓	✓
The applicant must connect the rainwater tank to:			
• all toilets in the development		✓	✓
• at least one outdoor tap in the development (Note: NSW Health does not recommend that rainwater be used for human consumption in areas with potable water supply.)		✓	✓
<b>Stormwater tank</b>			
The applicant must install a stormwater tank with a capacity of at least 2500 litres on the site. This stormwater tank must meet, and be installed in accordance with, the requirements of all applicable regulatory authorities.	✓	✓	✓
The applicant must configure the stormwater tank to collect overflow from the rainwater tank.		✓	✓

Water Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check
The applicant must configure the stormwater tank to collect runoff from:			
• at least 186.62 square metres of roof area of the development (excluding the area of the roof which drains to any rainwater tank or private dam)		✓	✓
• at least 50 square metres of garden and lawn		✓	✓
The applicant must connect the stormwater tank to:			
• a sub-surface or non-aerated irrigation system, or if the stormwater has been appropriately treated in accordance with applicable regulatory requirements, to at least one outdoor tap in the development (Note: NSW Health does not recommend that stormwater be used to irrigate edible plants which are consumed raw.)		✓	✓

Thermal Comfort Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check
<b>General features</b>			
The dwelling must not have more than 2 storeys.	✓	✓	✓
The conditioned floor area of the dwelling must not exceed 300 square metres.	✓	✓	✓
The dwelling must not contain open mezzanine area exceeding 25 square metres.	✓	✓	✓
The dwelling must not contain third level habitable attic room.	✓	✓	✓
<b>Floor, walls and ceiling/roof</b>			
The applicant must construct the floor(s), walls, and ceiling/roof of the dwelling in accordance with the specifications listed in the table below.	✓	✓	✓
<b>Construction</b>			
Floor - concrete slab on ground		Additional insulation required (R-Value)	Other specifications
external wall - brick veneer		1.88 (or 2.40 including construction)	
internal wall shared with garage - plasterboard		nil	
ceiling and roof - flat ceiling / pitched roof		ceiling: 1.7 (up), roof: foil backed blanket (55 mm)	unventilated; light (solar absorbance < 0.475)
<b>Note</b>			
• Insulation specified in this Certificate must be installed in accordance with Part 3.12.1.1 of the Building Code of Australia.			
• In some climate zones, insulation should be installed with due consideration of condensation and associated interaction with adjoining building materials.			

Thermal Comfort Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check		
<b>Windows, glazed doors and skylights</b>					
The applicant must install the windows, glazed doors and shading devices described in the table below, in accordance with the specifications listed in the table. Relevant overshadowing specifications must be satisfied for each window and glazed door.	✓	✓	✓		
The dwelling may have 1 skylight (<0.7 square metres) which is not listed in the table.	✓	✓	✓		
The following requirements must also be satisfied in relation to each window and glazed door:					
• For the following glass and frame types, the certifier check can be performed by visual inspection.		✓	✓		
- Aluminium single clear		✓	✓		
- Aluminium double (air) clear		✓	✓		
- Timber/UPVC/Alu/Double glass single clear		✓	✓		
- Timber/UPVC/Alu/Double glass double (air) clear		✓	✓		
• Overshadowing building/vegetation must be of the height and distance from the centre and the base of the window and glazed door, as specified in the 'overshadowing' column.		✓	✓		
<b>Window/glazed door no.</b>	<b>Maximum height (mm)</b>	<b>Maximum width (mm)</b>	<b>Type</b>	<b>Shading Device (Dimension within 10%)</b>	<b>Overshadowing</b>
<b>North facing</b>					
W01	400	1800	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
W02	600	2000	aluminium, single, clear	eave 600 mm, 1000 mm above head of window or glazed door	1-2 m high, <1.5 m away
<b>East facing</b>					
W03	2400	3000	aluminium, single, clear	eave 1850 mm, 1000 mm above head of window or glazed door	not overshadowed
<b>South facing</b>					
W04	1200	1800	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
<b>West facing</b>					

Window/glazed door no.	Maximum height (mm)	Maximum width (mm)	Type	Shading Device (Dimension within 10%)	Overshadowing
W05	1200	1800	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
W06	600	900	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
W07	1200	1800	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
W08	600	600	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away

Energy Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check
<b>Hot water</b>			
The applicant must install the following hot water system in the development, or a system with a higher energy rating: gas instantaneous with a performance of 4 stars.	✓	✓	✓
<b>Cooling system</b>			
The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 living area: ceiling fans + 3-phase air conditioning. Energy rating: EER 3.5 - 4.0		✓	✓
The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 bedroom: ceiling fans + 3-phase air conditioning. Energy rating: EER 3.5 - 4.0		✓	✓
<b>Heating system</b>			
The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 living area: 3-phase air conditioning. Energy rating: EER 3.5 - 4.0		✓	✓
The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 bedroom: 3-phase air conditioning. Energy rating: EER 3.5 - 4.0		✓	✓
<b>Ventilation</b>			
The applicant must install the following exhaust systems in the development:			
At least 1 Bathroom: individual fan, ducted to façade or roof. Operation control: manual switch on/off		✓	✓
Kitchen: individual fan, ducted to façade or roof. Operation control: manual switch on/off		✓	✓
Laundry: individual fan, ducted to façade or roof. Operation control: manual switch on/off		✓	✓
<b>Artificial lighting</b>			
The applicant must ensure that the 'primary type of artificial lighting' is fluorescent or light emitting diode (LED) lighting in each of the following rooms, and where the word 'dedicated' appears, the fittings for those lights must only be capable of accepting fluorescent or light emitting diode (LED) lamps:			
• at least 3 of the bedrooms / study; dedicated		✓	✓
• at least 1 of the living / dining rooms; dedicated		✓	✓
• the kitchen; dedicated		✓	✓

Energy Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check
• all bathrooms/toilets; dedicated		✓	✓
• the laundry; dedicated		✓	✓
• all hallways; dedicated		✓	✓
<b>Natural lighting</b>			
The applicant must install a window and/or skylight in 2 bathroom(s)/toilet(s) in the development for natural lighting.	✓	✓	✓
<b>Other</b>			
The applicant must construct each refrigerator space in the development so that it is 'well ventilated', as defined in the BASIX definitions.		✓	✓
The applicant must install a fixed outdoor clothes drying line as part of the development.		✓	✓
The applicant must install a fixed indoor or sheltered clothes drying line as part of the development.		✓	✓

Legend
In these commitments, 'applicant' means the person carrying out the development.
Commitments identified with a ✓ in the 'Show on DA plans' column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).
Commitments identified with a ✓ in the 'Show on CC/CCDC plans & specs' column must be shown in the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.
Commitments identified with a ✓ in the 'Certifier check' column must be certified by a certifying authority as having been fulfilled, before a final occupation certificate (either interim or final) for the development may be issued.



ISSUE	DETAILS

<b>PORT STEPHENS OFFICE</b> Ph: (02) 4984 9955 Suite 4/ 10 Yacaaba Street Nelson Bay NSW 2315	<b>NEWCASTLE OFFICE</b> Ph: (02) 4961 5544 SINGLETON OFFICE Ph: (02) 4961 5544	<b>CONTACT DETAILS</b> General Enquiries: reception@sorensendesign.com.au www.sorensendesign.com.au
--	---	--

<b>PROJECT: PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323</b>
<b>CLIENT: ALVA PROPERTY GROUP</b>
<b>TITLE: BASIX D01</b>
<b>FILE: 2203273</b> <b>DATE: 21/11/2022</b> <b>SHEET: 20 OF 23</b>
<b>THESE PLANS ARE SUBJECT TO COPYRIGHT</b>

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled 'BASIX Definitions' dated 10/09/2020 published by the Department. This document is available at www.basix.nsw.gov.au

Secretary  
Date of issue: Thursday, 17 November 2022  
To be valid, this certificate must be lodged within 3 months of the date of issue.



Project summary		
Project name	2203273_ALVA property group D02	
Street address	35 Raymond terrace Road East Maitland 2323	
Local Government Area	Maitland City Council	
Plan type and plan number	deposited DP758374	
Lot no.	3	
Section no.	-	
Project type	separate dwelling house	
No. of bedrooms	3	
Project score		
Water	✓ 40	Target 40
Thermal Comfort	✓ Pass	Target Pass
Energy	✓ 47	Target 45

Certificate Prepared by	
Name / Company Name:	Sorensen Design
ABN (if applicable):	75803073495

### Description of project

Project address		Assessor details and thermal loads	
Project name	2203273_ALVA property group D02	Assessor number	n/a
Street address	35 Raymond terrace Road East Maitland 2323	Certificate number	n/a
Local Government Area	Maitland City Council	Climate zone	n/a
Plan type and plan number	deposited DP758374	Area adjusted cooling load (MJ/m <sup>2</sup> /year)	n/a
Lot no.	3	Area adjusted heating load (MJ/m <sup>2</sup> /year)	n/a
Section no.	-	Ceiling fan in at least one bedroom	n/a
Project type	separate dwelling house	Ceiling fan in at least one living room or other conditioned area	n/a
Project score		Project score	
Water	✓ 40	Target 40	
Thermal Comfort	✓ Pass	Target Pass	
Energy	✓ 47	Target 45	
Site details			
Site area (m <sup>2</sup> )	1732		
Roof area (m <sup>2</sup> )	187		
Conditioned floor area (m <sup>2</sup> )	84.43		
Unconditioned floor area (m <sup>2</sup> )	9.89		
Total area of garden and lawn (m <sup>2</sup> )	40		

### Schedule of BASIX commitments

The commitments set out below regulate how the proposed development is to be carried out. It is a condition of any development consent granted, or complying development certificate issued, for the proposed development, that BASIX commitments be complied with.

Water Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check
<b>Fixtures</b> The applicant must install showerheads with a minimum rating of 4 star (> 6 but ≤ 7.5 L/min plus spray force and/or coverage tests) in all showers in the development. The applicant must install a toilet flushing system with a minimum rating of 3 star in each toilet in the development. The applicant must install taps with a minimum rating of 3 star in the kitchen in the development. The applicant must install basin taps with a minimum rating of 3 star in each bathroom in the development.		✓	✓
<b>Alternative water</b> <b>Rainwater tank</b> The applicant must install a rainwater tank of at least 1000 litres on the site. This rainwater tank must meet, and be installed in accordance with, the requirements of all applicable regulatory authorities. The applicant must configure the rainwater tank to collect rain runoff from at least 186.62 square metres of the roof area of the development (excluding the area of the roof which drains to any stormwater tank or private dam). The applicant must configure the rainwater tank so that overflow is diverted to a stormwater tank. The applicant must connect the rainwater tank to: • all toilets in the development • at least one outdoor tap in the development (Note: NSW Health does not recommend that rainwater be used for human consumption in areas with potable water supply.)	✓	✓	✓
<b>Stormwater tank</b> The applicant must install a stormwater tank with a capacity of at least 2500 litres on the site. This stormwater tank must meet, and be installed in accordance with, the requirements of all applicable regulatory authorities. The applicant must configure the stormwater tank to collect overflow from the rainwater tank.	✓	✓	✓

Water Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check
The applicant must configure the stormwater tank to collect runoff from: • at least 186.62 square metres of roof area of the development (excluding the area of the roof which drains to any rainwater tank or private dam) • at least 50 square metres of garden and lawn		✓	✓
The applicant must connect the stormwater tank to: • a sub-surface or non-aerated irrigation system, or if the stormwater has been appropriately treated in accordance with applicable regulatory requirements, to at least one outdoor tap in the development (Note: NSW Health does not recommend that stormwater be used to irrigate edible plants which are consumed raw.)		✓	✓

Thermal Comfort Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check
<b>General features</b> The dwelling must not have more than 2 storeys. The conditioned floor area of the dwelling must not exceed 300 square metres. The dwelling must not contain open mezzanine area exceeding 25 square metres. The dwelling must not contain third level habitable attic room.	✓	✓	✓
<b>Floor, walls and ceiling/roof</b> The applicant must construct the floor(s), walls, and ceiling/roof of the dwelling in accordance with the specifications listed in the table below.	✓	✓	✓
<b>Construction</b>			
Floor - concrete slab on ground	nil		
external wall - brick veneer	1.88 (or 2.40 including construction)		
internal wall shared with garage - plasterboard	nil		
ceiling and roof - flat ceiling / pitched roof	ceiling: 1.7 (up), roof: foil backed blanket (55 mm)	unventilated, light (solar absorbance < 0.475)	
<b>Note</b>	• Insulation specified in this Certificate must be installed in accordance with Part 3.12.1.1 of the Building Code of Australia.		
<b>Note</b>	• In some climate zones, insulation should be installed with due consideration of condensation and associated interaction with adjoining building materials.		

Thermal Comfort Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check		
<b>Windows, glazed doors and skylights</b> The applicant must install the windows, glazed doors and shading devices described in the table below, in accordance with the specifications listed in the table. Relevant overshadowing specifications must be satisfied for each window and glazed door. The dwelling may have 1 skylight (<0.7 square metres) which is not listed in the table. The following requirements must also be satisfied in relation to each window and glazed door: • For the following glass and frame types, the certifier check can be performed by visual inspection: - Aluminium single clear - Aluminium double (air) clear - Timber/UPVC/Alu/Double glass double (air) clear • Overshadowing building/vegetation must be of the height and distance from the centre and the base of the window and glazed door, as specified in the 'overshadowing' column.	✓	✓	✓		
<b>Window/glazed door no.</b>	Maximum height (mm)	Maximum width (mm)	Type	Shading Device (Dimension within 10%)	Overshadowing
<b>North facing</b>					
W01	1200	1800	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
<b>East facing</b>					
W02	2400	3000	aluminium, single, clear	eave 1200 mm, 100 mm above head of window or glazed door	not overshadowed
<b>South facing</b>					
W03	400	1800	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	not overshadowed
W04	600	2000	aluminium, single, clear	eave 600 mm, 1000 mm above head of window or glazed door	not overshadowed
<b>West facing</b>					

Window/glazed door no.	Maximum height (mm)	Maximum width (mm)	Type	Shading Device (Dimension within 10%)	Overshadowing
W05	600	600	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
W06	1200	1800	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
W07	600	900	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
W08	1200	1800	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away

Energy Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check
<b>Hot water</b> The applicant must install the following hot water system in the development, or a system with a higher energy rating: gas instantaneous with a performance of 4 stars.	✓	✓	✓
<b>Cooling system</b> The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 living area: ceiling fans + 3-phase air conditioning. Energy rating: EER 3.5 - 4.0 The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 bedroom: ceiling fans + 3-phase air conditioning. Energy rating: EER 3.5 - 4.0		✓	✓
<b>Heating system</b> The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 living area: 3-phase air conditioning. Energy rating: EER 3.5 - 4.0 The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 bedroom: 3-phase air conditioning. Energy rating: EER 3.5 - 4.0		✓	✓
<b>Ventilation</b> The applicant must install the following exhaust systems in the development: At least 1 Bathroom: individual fan, ducted to façade or roof. Operation control: manual switch on/off Kitchen: individual fan, ducted to façade or roof. Operation control: manual switch on/off Laundry: individual fan, ducted to façade or roof. Operation control: manual switch on/off		✓	✓
<b>Artificial lighting</b> The applicant must ensure that the "primary type of artificial lighting" is fluorescent or light emitting diode (LED) lighting in each of the following rooms, and where the word "dedicated" appears, the fittings for those lights must only be capable of accepting fluorescent or light emitting diode (LED) lamps: • at least 3 of the bedrooms / study; dedicated • at least 1 of the living / dining rooms; dedicated • the kitchen; dedicated		✓	✓

Energy Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check
• all bathrooms/toilets; dedicated		✓	✓
• the laundry; dedicated		✓	✓
• all hallways; dedicated		✓	✓
<b>Natural lighting</b> The applicant must install a window and/or skylight in 2 bathroom(s)/toilet(s) in the development for natural lighting.	✓	✓	✓
<b>Other</b> The applicant must construct each refrigerator space in the development so that it is "well ventilated", as defined in the BASIX definitions. The applicant must install a fixed outdoor clothes drying line as part of the development. The applicant must install a fixed indoor or sheltered clothes drying line as part of the development.		✓	✓

Legend
In these commitments, "applicant" means the person carrying out the development.
Commitments identified with a ✓ in the "Show on DA plans" column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).
Commitments identified with a ✓ in the "Show on CC/CCDC plans & specs" column must be shown in the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.
Commitments identified with a ✓ in the "Certifier check" column must be certified by a certifying authority as having been fulfilled, before a final occupation certificate (either interim or final) for the development may be issued.

ISSUE	DETAILS



PORT STEPHENS OFFICE  
Ph: (02) 4984 9955  
Suite 4/ 10 Yacaaba Street  
Nelson Bay NSW 2315

NEWCASTLE OFFICE  
Ph: (02) 4961 5544

SINGLETON OFFICE  
Ph: (02) 4961 5544

CONTACT DETAILS  
General Enquiries:  
reception@sorensendesign.com.au  
www.sorensendesign.com.au

PROJECT: PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323
CLIENT: ALVA PROPERTY GROUP
TITLE: BASIX D02
FILE: 2203273 DATE: 21/11/2022 SHEET: 21 OF 23
THESE PLANS ARE SUBJECT TO COPYRIGHT



This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled 'BASIX Definitions' dated 10/09/2020 published by the Department. This document is available at www.basix.nsw.gov.au

Secretary  
Date of issue: Thursday, 17 November 2022  
To be valid, this certificate must be lodged within 3 months of the date of issue.



Project summary		
Project name	2203273_ALVA property group D03	
Street address	35 Raymond terrace Road East Maitland 2323	
Local Government Area	Maitland City Council	
Plan type and plan number	deposited DP758374	
Lot no.	3	
Section no.	-	
Project type	separate dwelling house	
No. of bedrooms	3	
Project score		
Water	40	Target 40
Thermal Comfort	Pass	Target Pass
Energy	47	Target 45

Certificate Prepared by	
Name / Company Name:	Sorensen Design
ABN (if applicable):	75803073495

### Description of project

Project address		Assessor details and thermal loads	
Project name	2203273_ALVA property group D03	Assessor number	n/a
Street address	35 Raymond terrace Road East Maitland 2323	Certificate number	n/a
Local Government Area	Maitland City Council	Climate zone	n/a
Plan type and plan number	deposited DP758374	Area adjusted cooling load (MJ/m <sup>2</sup> /year)	n/a
Lot no.	3	Area adjusted heating load (MJ/m <sup>2</sup> /year)	n/a
Section no.	-	Ceiling fan in at least one bedroom	n/a
Project type	separate dwelling house	Ceiling fan in at least one living room or other conditioned area	n/a
Site details		Project score	
Site area (m <sup>2</sup> )	1732	Water	40 Target 40
Roof area (m <sup>2</sup> )	187	Thermal Comfort	Pass Target Pass
Conditioned floor area (m <sup>2</sup> )	84.43	Energy	47 Target 45
Unconditioned floor area (m <sup>2</sup> )	9.89		
Total area of garden and lawn (m <sup>2</sup> )	40		

### Schedule of BASIX commitments

The commitments set out below regulate how the proposed development is to be carried out. It is a condition of any development consent granted, or complying development certificate issued, for the proposed development, that BASIX commitments be complied with.

Water Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check
<b>Fixtures</b> The applicant must install showerheads with a minimum rating of 4 star (> 6 but ≤ 7.5 L/min plus spray force and/or coverage tests) in all showers in the development.		✓	✓
The applicant must install a toilet flushing system with a minimum rating of 3 star in each toilet in the development.		✓	✓
The applicant must install taps with a minimum rating of 3 star in the kitchen in the development.		✓	✓
The applicant must install basin taps with a minimum rating of 3 star in each bathroom in the development.		✓	✓
<b>Alternative water</b> <b>Rainwater tank</b> The applicant must install a rainwater tank of at least 1000 litres on the site. This rainwater tank must meet, and be installed in accordance with, the requirements of all applicable regulatory authorities.	✓	✓	✓
The applicant must configure the rainwater tank to collect rain runoff from at least 186.62 square metres of the roof area of the development (excluding the area of the roof which drains to any stormwater tank or private dam).		✓	✓
The applicant must configure the rainwater tank so that overflow is diverted to a stormwater tank.		✓	✓
The applicant must connect the rainwater tank to: • all toilets in the development • at least one outdoor tap in the development (Note: NSW Health does not recommend that rainwater be used for human consumption in areas with potable water supply.)		✓	✓
<b>Stormwater tank</b> The applicant must install a stormwater tank with a capacity of at least 2500 litres on the site. This stormwater tank must meet, and be installed in accordance with, the requirements of all applicable regulatory authorities.	✓	✓	✓
The applicant must configure the stormwater tank to collect overflow from the rainwater tank.		✓	✓

Water Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check
The applicant must configure the stormwater tank to collect runoff from: • at least 186.62 square metres of roof area of the development (excluding the area of the roof which drains to any rainwater tank or private dam) • at least 50 square metres of garden and lawn		✓	✓
The applicant must connect the stormwater tank to: • a sub-surface or non-aerated irrigation system, or if the stormwater has been appropriately treated in accordance with applicable regulatory requirements, to at least one outdoor tap in the development (Note: NSW Health does not recommend that stormwater be used to irrigate edible plants which are consumed raw.)		✓	✓

Thermal Comfort Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check
<b>General features</b> The dwelling must not have more than 2 storeys.	✓	✓	✓
The conditioned floor area of the dwelling must not exceed 300 square metres.	✓	✓	✓
The dwelling must not contain open mezzanine area exceeding 25 square metres.	✓	✓	✓
The dwelling must not contain third level habitable attic room.	✓	✓	✓
<b>Floor, walls and ceiling/roof</b> The applicant must construct the floor(s), walls, and ceiling/roof of the dwelling in accordance with the specifications listed in the table below.	✓	✓	✓
<b>Construction</b>			
Floor - concrete slab on ground	nil		
external wall - brick veneer	1.88 (or 2.40 including construction)		
internal wall shared with garage - plasterboard	nil		
ceiling and roof - flat ceiling / pitched roof	ceiling: 1.7 (up), roof: foil backed blanket (55 mm)	unventilated, light (solar absorbance < 0.475)	
<b>Note</b>	• Insulation specified in this Certificate must be installed in accordance with Part 3.12.1.1 of the Building Code of Australia.		
<b>Note</b>	• In some climate zones, insulation should be installed with due consideration of condensation and associated interaction with adjoining building materials.		

Thermal Comfort Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check		
<b>Windows, glazed doors and skylights</b> The applicant must install the windows, glazed doors and shading devices described in the table below, in accordance with the specifications listed in the table. Relevant overshadowing specifications must be satisfied for each window and glazed door. The dwelling may have 1 skylight (<0.7 square metres) which is not listed in the table. The following requirements must also be satisfied in relation to each window and glazed door: • For the following glass and frame types, the certifier check can be performed by visual inspection. - Aluminium single clear - Aluminium double (air) clear - Timber/UPVC/Alu/Double glass double (air) clear • Overshadowing building/vegetation must be of the height and distance from the centre and the base of the window and glazed door, as specified in the 'overshadowing' column.	✓	✓	✓		
<b>Window/glazed door no.</b>	<b>Maximum height (mm)</b>	<b>Maximum width (mm)</b>	<b>Type</b>	<b>Shading Device (Dimension within 10%)</b>	<b>Overshadowing</b>
<b>North facing</b>					
W02	600	2000	aluminium, single, clear	eave 600 mm, 1000 mm above head of window or glazed door	1-2 m high, <1.5 m away
W01	400	1800	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
<b>East facing</b>					
W03	2400	3000	aluminium, single, clear	eave 1850 mm, 1000 mm above head of window or glazed door	not overshadowed
<b>South facing</b>					
W04	1200	1800	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
<b>West facing</b>					

Window/glazed door no.	Maximum height (mm)	Maximum width (mm)	Type	Shading Device (Dimension within 10%)	Overshadowing
W05	1200	1800	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
W06	600	900	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
W07	1200	1800	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
W08	600	600	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away

Energy Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check
<b>Hot water</b> The applicant must install the following hot water system in the development, or a system with a higher energy rating: gas instantaneous with a performance of 4 stars.	✓	✓	✓
<b>Cooling system</b> The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 living area: ceiling fans + 3-phase air conditioning. Energy rating: EER 3.5 - 4.0		✓	✓
The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 bedroom: ceiling fans + 3-phase air conditioning. Energy rating: EER 3.5 - 4.0		✓	✓
<b>Heating system</b> The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 living area: 3-phase air conditioning. Energy rating: EER 3.5 - 4.0		✓	✓
The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 bedroom: 3-phase air conditioning. Energy rating: EER 3.5 - 4.0		✓	✓
<b>Ventilation</b> The applicant must install the following exhaust systems in the development: At least 1 Bathroom: individual fan, ducted to façade or roof. Operation control: manual switch on/off Kitchen: individual fan, ducted to façade or roof. Operation control: manual switch on/off Laundry: individual fan, ducted to façade or roof. Operation control: manual switch on/off		✓	✓
<b>Artificial lighting</b> The applicant must ensure that the "primary type of artificial lighting" is fluorescent or light emitting diode (LED) lighting in each of the following rooms, and where the word "dedicated" appears, the fittings for those lights must only be capable of accepting fluorescent or light emitting diode (LED) lamps: • at least 3 of the bedrooms / study; dedicated • at least 1 of the living / dining rooms; dedicated • the kitchen; dedicated		✓	✓

Energy Commitments	Show on DA plans	Show on CC/CCDC plans & specs	Certifier check
• all bathrooms/toilets; dedicated		✓	✓
• the laundry; dedicated		✓	✓
• all hallways; dedicated		✓	✓
<b>Natural lighting</b> The applicant must install a window and/or skylight in 2 bathroom(s)/toilet(s) in the development for natural lighting.	✓	✓	✓
<b>Other</b> The applicant must construct each refrigerator space in the development so that it is "well ventilated", as defined in the BASIX definitions. The applicant must install a fixed outdoor clothes drying line as part of the development. The applicant must install a fixed indoor or sheltered clothes drying line as part of the development.		✓	✓

Legend
In these commitments, "applicant" means the person carrying out the development.
Commitments identified with a ✓ in the "Show on DA plans" column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).
Commitments identified with a ✓ in the "Show on CC/CCDC plans & specs" column must be shown in the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.
Commitments identified with a ✓ in the "Certifier check" column must be certified by a certifying authority as having been fulfilled, before a final occupation certificate (either interim or final) for the development may be issued.



**SORENSEN**  
DESIGN & PLANNING

<b>PORT STEPHENS OFFICE</b> Ph: (02) 4984 9955 Suite 4/ 10 Yacaaba Street Nelson Bay NSW 2315	<b>NEWCASTLE OFFICE</b> Ph: (02) 4961 5544  <b>SINGLETON OFFICE</b> Ph: (02) 4961 5544	<b>CONTACT DETAILS</b> General Enquiries: reception@sorensendesign.com.au www.sorensendesign.com.au
--	--	--

<b>PROJECT: PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323</b>
<b>CLIENT: ALVA PROPERTY GROUP</b>
<b>TITLE: BASIX D03</b>
<b>FILE: 2203273</b> <b>DATE: 21/11/2022</b> <b>SHEET: 22 OF 23</b>
<b>THESE PLANS ARE SUBJECT TO COPYRIGHT</b>

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled 'BASIX Definitions' dated 10/09/2020 published by the Department. This document is available at www.basix.nsw.gov.au

Secretary  
Date of issue: Thursday, 17 November 2022  
To be valid, this certificate must be lodged within 3 months of the date of issue.



Project summary		
Project name	2203273_ALVA property group D04	
Street address	35 Raymond terrace Road East Maitland 2323	
Local Government Area	Maitland City Council	
Plan type and plan number	deposited DP758374	
Lot no.	3	
Section no.	-	
Project type	separate dwelling house	
No. of bedrooms	3	
Project score		
Water	40	Target 40
Thermal Comfort	Pass	Target Pass
Energy	47	Target 45

Certificate Prepared by	
Name / Company Name:	Sorensen Design
ABN (if applicable):	75803073495

### Description of project

Project address		Assessor details and thermal loads	
Project name	2203273_ALVA property group D04	Assessor number	n/a
Street address	35 Raymond terrace Road East Maitland 2323	Certificate number	n/a
Local Government Area	Maitland City Council	Climate zone	n/a
Plan type and plan number	deposited DP758374	Area adjusted cooling load (MJ/m <sup>2</sup> /year)	n/a
Lot no.	3	Area adjusted heating load (MJ/m <sup>2</sup> /year)	n/a
Section no.	-	Ceiling fan in at least one bedroom	n/a
Project type	separate dwelling house	Ceiling fan in at least one living room or other conditioned area	n/a
Project score		Project score	
Water	40	Water	40
Thermal Comfort	Pass	Thermal Comfort	Pass
Energy	47	Energy	47

### Schedule of BASIX commitments

The commitments set out below regulate how the proposed development is to be carried out. It is a condition of any development consent granted, or complying development certificate issued, for the proposed development, that BASIX commitments be complied with.

Water Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
<b>Fixtures</b> The applicant must install showerheads with a minimum rating of 4 star (> 6 but ≤ 7.5 L/min plus spray force and/or coverage tests) in all showers in the development. The applicant must install a toilet flushing system with a minimum rating of 3 star in each toilet in the development. The applicant must install taps with a minimum rating of 3 star in the kitchen in the development. The applicant must install basin taps with a minimum rating of 3 star in each bathroom in the development.		✓	✓
<b>Alternative water</b> <b>Rainwater tank</b> The applicant must install a rainwater tank of at least 1000 litres on the site. This rainwater tank must meet, and be installed in accordance with, the requirements of all applicable regulatory authorities. The applicant must configure the rainwater tank to collect rain runoff from at least 186.62 square metres of the roof area of the development (excluding the area of the roof which drains to any stormwater tank or private dam). The applicant must configure the rainwater tank so that overflow is diverted to a stormwater tank. The applicant must connect the rainwater tank to: • all toilets in the development • at least one outdoor tap in the development (Note: NSW Health does not recommend that rainwater be used for human consumption in areas with potable water supply.)	✓	✓	✓
<b>Stormwater tank</b> The applicant must install a stormwater tank with a capacity of at least 2500 litres on the site. This stormwater tank must meet, and be installed in accordance with, the requirements of all applicable regulatory authorities. The applicant must configure the stormwater tank to collect overflow from the rainwater tank.	✓	✓	✓

Water Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
The applicant must configure the stormwater tank to collect runoff from: • at least 186.62 square metres of roof area of the development (excluding the area of the roof which drains to any rainwater tank or private dam) • at least 50 square metres of garden and lawn		✓	✓
The applicant must connect the stormwater tank to: • a sub-surface or non-aerated irrigation system, or if the stormwater has been appropriately treated in accordance with applicable regulatory requirements, to at least one outdoor tap in the development (Note: NSW Health does not recommend that stormwater be used to irrigate edible plants which are consumed raw.)		✓	✓

Thermal Comfort Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
<b>General features</b> The dwelling must not have more than 2 storeys. The conditioned floor area of the dwelling must not exceed 300 square metres. The dwelling must not contain open mezzanine area exceeding 25 square metres. The dwelling must not contain third level habitable attic room.	✓	✓	✓
<b>Floor, walls and ceiling/roof</b> The applicant must construct the floor(s), walls, and ceiling/roof of the dwelling in accordance with the specifications listed in the table below.	✓	✓	✓
<b>Construction</b>			
Floor - concrete slab on ground	nil		
external wall - brick veneer	1.88 (or 2.40 including construction)		
internal wall shared with garage - plasterboard	nil		
ceiling and roof - flat ceiling / pitched roof	ceiling: 1.7 (up), roof: foil backed blanket (55 mm)	unventilated, light (solar absorptance < 0.475)	
<b>Note</b>	• Insulation specified in this Certificate must be installed in accordance with Part 3.12.1.1 of the Building Code of Australia.		
<b>Note</b>	• In some climate zones, insulation should be installed with due consideration of condensation and associated interaction with adjoining building materials.		

Thermal Comfort Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check		
<b>Windows, glazed doors and skylights</b> The applicant must install the windows, glazed doors and shading devices described in the table below, in accordance with the specifications listed in the table. Relevant overshadowing specifications must be satisfied for each window and glazed door. The dwelling may have 1 skylight (<0.7 square metres) which is not listed in the table. The following requirements must also be satisfied in relation to each window and glazed door: • For the following glass and frame types, the certifier check can be performed by visual inspection: - Aluminium single clear - Aluminium double (air) clear - Timber/UPVC/tireglass single clear - Timber/UPVC/tireglass double (air) clear • Overshadowing building/vegetation must be of the height and distance from the centre and the base of the window and glazed door, as specified in the 'overshadowing' column.	✓	✓	✓		
<b>Window/glazed door no.</b>	<b>Maximum height (mm)</b>	<b>Maximum width (mm)</b>	<b>Type</b>	<b>Shading Device (Dimension within 10%)</b>	<b>Overshadowing</b>
<b>North facing</b>					
W01	1200	1800	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
<b>East facing</b>					
W02	2400	3000	aluminium, single, clear	eave 1200 mm, 100 mm above head of window or glazed door	not overshadowed
<b>South facing</b>					
W03	400	1800	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	not overshadowed
W04	600	2000	aluminium, single, clear	eave 600 mm, 1000 mm above head of window or glazed door	not overshadowed
<b>West facing</b>					

Window/glazed door no.	Maximum height (mm)	Maximum width (mm)	Type	Shading Device (Dimension within 10%)	Overshadowing
W05	600	600	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
W06	1200	1800	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
W07	600	900	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away
W08	1200	1800	aluminium, single, clear	eave 600 mm, 400 mm above head of window or glazed door	1-2 m high, <1.5 m away

Energy Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
<b>Hot water</b> The applicant must install the following hot water system in the development, or a system with a higher energy rating: gas instantaneous with a performance of 4 stars.	✓	✓	✓
<b>Cooling system</b> The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 living area: ceiling fans + 3-phase air conditioning. Energy rating: EER 3.5 - 4.0 The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 bedroom: ceiling fans + 3-phase air conditioning. Energy rating: EER 3.5 - 4.0	✓	✓	✓
<b>Heating system</b> The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 living area: 3-phase air conditioning. Energy rating: EER 3.5 - 4.0 The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 bedroom: 3-phase air conditioning. Energy rating: EER 3.5 - 4.0	✓	✓	✓
<b>Ventilation</b> The applicant must install the following exhaust systems in the development: At least 1 Bathroom: individual fan, ducted to façade or roof. Operation control: manual switch on/off Kitchen: individual fan, ducted to façade or roof. Operation control: manual switch on/off Laundry: individual fan, ducted to façade or roof. Operation control: manual switch on/off		✓	✓
<b>Artificial lighting</b> The applicant must ensure that the 'primary type of artificial lighting' is fluorescent or light emitting diode (LED) lighting in each of the following rooms, and where the word 'dedicated' appears, the fittings for those lights must only be capable of accepting fluorescent or light emitting diode (LED) lamps: • at least 3 of the bedrooms / study; dedicated • at least 1 of the living / dining rooms; dedicated • the kitchen; dedicated		✓	✓

Energy Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
• all bathrooms/toilets; dedicated		✓	✓
• the laundry; dedicated		✓	✓
• all hallways; dedicated		✓	✓
<b>Natural lighting</b> The applicant must install a window and/or skylight in 2 bathroom(s)/toilet(s) in the development for natural lighting.	✓	✓	✓
<b>Other</b> The applicant must construct each refrigerator space in the development so that it is 'well ventilated', as defined in the BASIX definitions. The applicant must install a fixed outdoor clothes drying line as part of the development. The applicant must install a fixed indoor or sheltered clothes drying line as part of the development.		✓	✓

Legend
In these commitments, 'applicant' means the person carrying out the development.
Commitments identified with a ✓ in the 'Show on DA plans' column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).
Commitments identified with a ✓ in the 'Show on CC/CDC plans and specs' column must be shown in the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.
Commitments identified with a ✓ in the 'Certifier check' column must be certified by a certifying authority as having been fulfilled, before a final occupation certificate (either interim or final) for the development may be issued.



ISSUE	DETAILS

<p><b>PORT STEPHENS OFFICE</b> Ph: (02) 4984 9955</p> <p>Suite 4/ 10 Yacaaba Street Nelson Bay NSW 2315</p>	<p><b>NEWCASTLE OFFICE</b> Ph: (02) 4961 5544</p> <p><b>SINGLETON OFFICE</b> Ph: (02) 4961 5544</p>	<p><b>CONTACT DETAILS</b> General Enquiries: reception@sorensendesign.com.au www.sorensendesign.com.au</p>
---	---	--

<b>PROJECT: PROPOSED MULTI-UNIT DEVELOPMENT AT 35 RAYMOND TERRACE ROAD, EAST MAITLAND 2323</b>
<b>CLIENT: ALVA PROPERTY GROUP</b>
<b>TITLE: BASIX D04</b>
<b>FILE: 2203273</b> <b>DATE: 21/11/2022</b> <b>SHEET: 23 OF 23</b>
<b>THESE PLANS ARE SUBJECT TO COPYRIGHT</b>