Part 2.6 - Energy Efficiency

National Construction Code Series
Building Code of Australia 2016, Volume 2

Reference: SH81561
Date: 11 May, 2017

BCA compliance assessment of:
Lot 67 (BCA Class 1a)
Lot 41-69 Bucananan Drive, WOODFORDE SA 5072
BCA Climate Zone 6

Client Reference: Woodforde Development Stage 1 Terraces

Report commissioned by:
Xtraordinary Constructions
PO Box 822, Two Wells SA 5501

On behalf of:
Starfish Developments

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Member of BDAV, AIBA, HIA and MBA

Competency in ABCB accredited software:
EnergyPlus, Accurate, FirstRate5, BERSPro.

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1. Action Summary

Actions required to comply with Part 2.6

P2.6.1 - Building

Comply with additional requirements

These are additional requirements that need to be complied with because insufficient information was provided to verify them.

1.	*3.12.1.1*	Building fabric thermal insulation must be installed in compliance with this section.
2.	*3.12.3.5*	Building sealing for the construction of roofs, walls, and floors must comply with this section.
3.	*3.12.3.6*	Building sealing for the evaporative coolers must comply with this section.

P2.6.2 - Services

Comply with additional requirements

These are additional requirements that need to be complied with because insufficient information was provided to verify them.

4.	*3.12.5.0*	Heated water supplies must comply with NCC 2016 Volume 3 SA B2.2.
5.	*3.12.5.1*	Thermal insulation for central heating water piping and heating and cooling ductwork must comply with this section.
6.	*3.12.5.2*	The level of insulation for the central heating water piping must meet the requirements of this section.
7.	*3.12.5.3*	The installation of heating and cooling ductwork and duct insulation must comply with this section.
8.	*3.12.5.4*	Electrical resistance space heaters must comply with this section.
9.	*3.12.5.5(a)-(c)*	Artificial lighting lamp power density or illumination power density must comply with this section.
10.	*3.12.5.5(d)*	Halogen lamps must be separately switched from fluorescent lamps.
11.	*3.12.5.5(e)*	Artificial lighting must be either controlled by daylight sensors or have an average light source efficacy of at least 40 Lumens/W.
12.	*3.12.5.6*	Heated water supplies must comply with NCC 2016 Volume 3 SA B2.4.

2. Compliance Report

Introduction

Sustainability House was engaged by Xtraordinary Constructions to assess the proposed residential dwelling for compliance with Part 2.6 Energy Efficiency of the National Construction Code Series (NCC), Building Code of Australia (BCA) 2016, Volume 2.

The building is located in WOODFORDE, SA (BCA Climate Zone 6) and is classified as a BCA Class 1a.

Compliance Summary

To comply with Part 2.6 Energy Efficiency a building must meet the Performance Requirements P2.6.1 Building and P2.6.2 Services.

P2.6.1 Building

This Performance Requirement requires a building to have a level of thermal performance that allows for efficient use of energy for artificial heating and cooling appropriate to the function, use, and physical arrangement of the site location.

The assessment was conducted in accordance with BCA 2016, Volume 2, Part 2.6 using energy modelling under *Alternative Solution V2.6.2.2 – verification using a reference building*. Unlike the pre-determined performance level of a NatHERS star rating, this method uses Part 3.12 Deemed-to-Satisfy (DTS) provisions to create a 'reference building' and set a target for annual thermal comfort load consumption that is specific to a given building design. As this building is located in BCA Climate Zone 6 the requirement relates to both the cooling and heating load. The target maximum thermal loads for this building have been calculated as 91.5 MJ/m².annum for cooling and 37.5 MJ/m².annum for heating.

The proposed building envelope must achieve at least the same level of energy efficiency as the reference building. In this case, the proposed building specification was assessed to achieve annual thermal loads of 91.3 MJ/m2.annum for cooling (0% more efficient than the reference building) and 37.5 MJ/m2.annum for heating (0% more efficient than the reference building). The only action required is to comply with the following items that could not be included in the simulation under V2.6.2.2. Full details can be found in *Action Summary*.

P2.6.2 Services

This Performance Requirement requires the domestic services to have features that allow for the efficient use of energy appropriate to the type of service and to obtain energy from a source with a low greenhouse gas intensity.

Supplied information relating to building services has been assessed for compliance with P2.6.2. Where compliance could not be verified the relevant 'Deemed-to-Satisfy' requirements under Part 3.12.5 of BCA 2016, Volume 2 have been stated in full in Appendix B.

Please note: An abbreviated description of all actions required to comply with Performance Requirements P2.6.1 and P2.6.2 is given in the Action Summary on page 3 of this report.

3. Final Building Specification

Building Fabric

		Insulation R-Value	System R-Value
Roofs	**Actium Homes Typical Roof Construction - Pitched metal roof, flat ceiling roof** Non-ventilated, pitched roof with horizontal ceiling (5 degree pitch). Solar absorptance of 0.3. Loss of ceiling insulation: 0.0% to less than 0.5%. Containing 100% of added insulation laid on ceiling. - *Ground floor*	4.00	**4.36 (up)**
	Actium Homes Typical Roof Construction - Pitched metal roof, flat ceiling roof Non-ventilated, pitched roof with horizontal ceiling (5 degree pitch). Solar absorptance of 0.3. Loss of ceiling insulation: 0.0% to less than 0.5%. Containing 100% of added insulation laid on ceiling. - *First floor*	4.00	**4.36 (up)**
Walls	**Autoclaved aerated concrete masonry wall** - *Ground floor*	2.00	**3.15**
	Autoclaved aerated concrete masonry wall - *First floor*	2.00	**3.15**
	Steel Sheet wall cladding on frame with plasterboard internal lining wall - *First floor*	2.00	**2.22**
Suspended Floors	**Suspended timber floor**	0.00	**0.52 (down)**
Internal Wall Construction	Internal Plasterboard Stud Wall	0.00	
Internal Floor Construction	Timber floor with Enclosed Disconnected subfloor	0.00	
Internal Window Covering	Holland blind		
Floor Type	CSOG: Slab on Ground with Enclosed subfloor	0.00	
Internal Floor Coverings	floattimber to Dining , Passage and Cook/Fam Tiles to Ldry, WC, ENS and Bath Carpet to Stairs, Stair/Study/Passage, Bed3, Bed2 and Bed1		

Glazing

Type	U-Value	SHGC
Trend: Aluminium Awning Window - Single Glazed : TND-002-01 - 3mm Clear (3Clr)	6.6	0.66
Trend: Aluminium Sliding Window - Single Glazed : TND-001-01 - 3mm Clear (3Clr)	6.5	0.73
Trend: Aluminium Sliding Door - Single Glazed : TND-017-01 - 4mm Clear (4Clr)	6.5	0.73

Window Schedule

		Dimensions	U	SHGC	Shading
Dining					
Dining AW	TND-002-01	2400 x 1510	6.6	0.66	400 mm projection
Entry FW	TND-001-01	2700 x 700	6.5	0.73	1280 mm projection
Cook/Fam					
Family SD	TND-017-01	2400 x 4800	6.5	0.73	0 mm projection
ENS					
ENS AW	TND-002-01	2400 x 900	6.6	0.66	0 mm projection
Stair/Study/Passage					
Study FW	TND-001-01	1200 x 600	6.5	0.73	0 mm projection
Bed3					
Bed3 AW	TND-002-01	2400 x 1500	6.6	0.66	0 mm projection
Bed2					
Bed2 AW	TND-002-01	2400 x 800	6.6	0.66	0 mm projection
Bed1					
Bed1 AW	TND-002-01	2400 x 2400	6.6	0.66	0 mm projection

Services

Class 1 regions

Given that the total area of the internal rooms is 138.50 m², a maximum total of 693 watts for all lighting is permitted.

Verandah, balcony or the like regions

Given that the total area of the verandah, balcony or the like is 32.90 m², a maximum total of 132 watts for all lighting is permitted.

4. Assessment Calculations

Software Results

Simulation Verification

	Reference	Proposed
Heating (MJ/m²)	37.50	37.50
Cooling (MJ/m²)	91.50	91.30

Appendix A - P2.6.1 Building

Section 3.12.1 - Building Fabric

Section 3.12.1.1 - Building fabric thermal insulation

Building fabric thermal insulation must be installed in compliance with BCA 2016, Volume 2, Section 3.12.1.1, as follows:

(a) Where required, insulation must comply with AS/NZS 4859.1 and be installed so that it—
  (i) abuts or overlaps adjoining insulation other than at supporting members such as columns, studs, noggings, joists, furring channels and the like where the insulation must butt against the member; and
  (ii) forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier; and
  (iii) does not affect the safe or effective operation of a domestic service or fitting.

(b) Where required, reflective insulation must be installed with—
  (i) the necessary airspace, to achieve the required R-Value between a reflective side of the reflective insulation and a building lining or cladding; and
  (ii) the reflective insulation closely fitted against any penetration, door or window opening; and
  (iii) the reflective insulation adequately supported by framing members; and
  (iv) each adjoining sheet of roll membrane being—
    (A) overlapped not less than 150 mm; or
    (B) taped together.

(c) Where required, bulk insulation must be installed so that—
  (i) it maintains its position and thickness, other than where it crosses roof battens, water pipes, electrical cabling or the like; and
  (ii) in a ceiling, where there is no bulk insulation or reflective insulation in the external wall beneath, it overlaps the external wall by not less than 50 mm.

Section 3.12.3 - Building Sealing

Section 3.12.3.5 - Construction of roofs, walls and floors

(a) Roofs, external walls, external floors and any opening such as a window frame, door frame, roof light frame or the like must be constructed to minimise air leakage in accordance with (b) when forming part of the external fabric of—
  (i) a conditioned space; or
  (ii) a habitable room in climate zones 4, 5, 6, 7 and 8.

(b) Construction required by (a) must be—
  (i) enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or
  (ii) sealed by caulking, skirting, architraves, cornices or the like.

A permanent building ventilation opening that is necessary for the safe operation of a gas appliance is excluded from this requirement.

Section 3.12.3.6 - Evaporative coolers

An evaporative cooler must be fitted with a self-closing damper or the like when serving—

(a) a heated space; or
(b) a habitable room in climate zones 4, 5, 6, 7 or 8.

A permanent building ventilation opening that is necessary for the safe operation of a gas appliance is excluded from this requirement.

Appendix B - P2.6.2 Services

Section 3.12.5 - Services

Section 3.12.5.0

Plumbing Code of Australia (PCA) Part SA B2.2 - General requirements

(a) The design, construction, installation, replacement, repair, alteration and maintenance of a heated water service must be in accordance with the following:

(i) AS/NZS 3500.4 with the following variations:

(A) After clause 1.9.2(b) insert (c), (d), (e) and (f) as follows:

(c) Heated water services in buildings constructed after 19 October 1995 shall have temperature control in accordance with items (a) and (b).

(d) All new solar water installations (including solar heater replacements) shall be in accordance with items (a) and (b).

(e) Where an existing building is altered or extended in such a way that sanitary fixtures used primarily for personal hygiene purposes are installed in a location where, before the alteration or extension, no such fixture existed, the delivery temperature at the fixture shall be in accordance with items (a) and (b).

(d) Where a water heater is replaced, a temperature control device is required where such a device was in place prior to the installation of the replaced water heater. The device must meet the requirements of items (a) and (b).

(B) Substitute clause 5.8(c) as follows:

5.8(c) All new or replacement unvented storage water heaters shall be fitted with new temperature/pressure relief and expansion control valves as shown in Figure 5.7.

(C) Substitute clause 5.11.2.1 as follows:

5.11.2.1 The drain lines from the outlet of the temperature/pressure-relief valve and the expansion control valve on an individual water heater shall not be interconnected; and

(D) Substitute clause 5.11.3(e) as follows:

5.11.3(e) All drain lines shall discharge separately over a gully, tundish or other visible approved outlet.

(ii) Section 3 of AS/NZS 3500.5 with the following variations:

(A) After clause 3.2.2 insert 3.2.2.1 as follows:

3.2.2.1 The requirements of Clause 3.2.2 apply to the following:

(a) Heated water services in buildings constructed after 19 October 1995.

(b) All new solar water heater installations (including solar water replacements).

(c) Where an existing building is altered or extended in such a way that sanitary fixtures used primarily for personal hygiene purposes are installed in a location where, before the alteration or extension, no such fixture existed.

(d) Where a water heater is replaced, a temperature control device is required where such a device was in place prior to the installation of the replaced water heater.

(B) Substitute clause 3.19(c)(i) as follows:

(c)(i) All new or replacement unvented storage water heaters shall be fitted with new temperature/pressure relief and expansion control valves as shown in Figure 5.7.

(C) Substitute clause 3.21.2(a) and (b) as follows:

(a) The drain lines from the outlet of the temperature/pressure-relief valve and the expansion control valve on an individual water heater shall not be interconnected; and

(b) All drain lines shall discharge separately over a gully, tundish or other visible approved outlet.

(iii) The requirements of this Part.

(b) * * * * *

(c) A solar heated water supply system for food preparation and sanitary purposes, where installed in a new building in climate zones 1, 2 or 3, is not required to comply with—

(i) Section 8 of AS/NZS 3500.4; or

(ii) for new Class 1a and Class 10 buildings, Section 3.33 of AS/NZS 3500.5.

Section 3.12.5.1

Thermal insulation for central heating water piping and heating and cooling ductwork must—

(a) be protected against the effects of weather and sunlight; and

(b) be able to withstand the temperatures within the piping or ductwork; and

(c) use thermal insulation material in accordance with AS/NZS 4859.1.

Section 3.12.5.2

Central heating water piping that is not within a conditioned space must be thermally insulated to achieve the minimum material R-Value as follows:

1. All internal flow and return internal piping that is-

(i) within an unventilated wall space; or

(ii) within an internal floor between storeys; or

(iii) between ceiling insulation and a ceiling,

in addition to any hot water piping encased within a concrete floor slab (except that which is part of a floor heating system) must have an R-Value greater than 0.4.

2. All piping located within a ventilated wall space, an enclosed building sub-floor or a roof space that is:

(a) flow and return *piping*; or

(b) cold water supply *piping*—within 500 mm of the connection to the central water heating system; or

(c) relief valve piping *piping*—within 500 mm of the connection to the central water heating system,

must be greater than 0.9, as required for climate zone 6.

3. All piping outside the building or in an unenclosed building sub-floor or roof space that is:

(a) flow and return *piping*; or

(b) cold water supply *piping*—within 500 mm of the connection to the central water heating system; or

(c) relief valve piping *piping*—within 500 mm of the connection to the central water heating system,

must be greater than 1.3, as required for climate zone 6.

Section 3.12.5.3

(a) Heating and cooling ductwork and fittings must—

(i) achieve a minimum material R-Value of 0.4 for fittings, and 1 for heating-only system or cooling-only system including an evaporative cooling system, and 1.5 for combined heating and refrigerated cooling system, as required for climate zone 6 as per table 3.12.5.2.

(ii) be sealed against air loss—

(A) by closing all openings in the surface, joints and seams of ductwork with adhesives, mastics, sealants or gaskets in accordance with AS 4254 for a Class C seal; or

(B) for flexible ductwork, with a draw band in conjunction with a sealant or adhesive tape.

(b) Duct insulation must—

(i) abut adjoining duct insulation to form a continuous barrier; and

(ii) be installed so that it maintains its position and thickness, other than at flanges and supports; and

(iii) where located outside the building, under a suspended floor, in an attached Class 10a building or in a roof space—

(A) be protected by an outer sleeve of protective sheeting to prevent the insulation becoming damp; and

(B) have the outer protective sleeve sealed with adhesive tape not less than 48 mm wide creating an airtight and waterproof seal.

(c) The requirements of (a) do not apply to heating and cooling ductwork and fittings located within the insulated building envelope including a service riser within the conditioned space, internal floors between storeys and the like.

Note: The minimum material R-Value required for ductwork specified in (a)(i) may be reduced by 0.5 for combined heating and refrigerated cooling systems in climate zones 1, 3, 4, 6, and 7 if the ducts are—

(a) under a suspended floor with an enclosed perimeter; or

(b) in a roof space that has insulation of not less than R0.5 directly beneath the roofing.

Section 3.12.5.4

An electric resistance space heating system that serves more than one room must have—

(a) separate isolating switches for each room; and

(b) a separate temperature controller and time switch for each group of rooms with common heating needs; and

(c) power loads of not more than 110 W/m² for living areas, and 150 W/m² for bathrooms.

Section 3.12.5.5

(a) The lamp power density or illumination power density of artificial lighting, excluding heaters that emit light, must not exceed—

(i) 5 W/m² in a Class 1 building; and

(ii) 4 W/m² on a verandah, balcony or the like attached to a Class 1 building; and

(ii) 3 W/m² in a Class 10a building associated with a Class 1 building.

(b) The illumination power density allowance in (a) may be increased by dividing it by the illumination power density adjustment factor for a control device in BCA 2016, Table 3.12.5.3 as applicable.

(c) When designing the lamp power density or illumination power density, the power of the proposed installation must be used rather than nominal allowances for exposed batten holders or luminaires.

(d) Halogen lamps must be separately switched from fluorescent lamps.

(e) Artificial lighting around the perimeter of a building must —

(i) be controlled by a daylight sensor; or

(ii) have an average light source efficacy of not less than 40 Lumens/W.

Section 3.12.5.6

Plumbing Code of Australia (PCA) Part SA B2.4 - Water heater in a heated water supply system

(a) A water heater in a hot water supply system must be—

(i) a solar heater complying with **(b)**; or

(ii) a heat pump water heater complying with **(b)**; or

(iii) a gas water heater complying with **(c)**; or

(iv) an electric resistance heater only in the circumstances described in **(d)**; or

(v) a wood combustion water heater with a tank volume not more than 700 litres and no additional heating mechanisms.

(b) A solar heater and a heat pump heater must have the following performance:

(i) An electric boosted solar heated water service or heat pump heated water service (air source or solar boosted) with a single tank and a volume of 400 litres or more and not more than 700 litres—

(A) at least 38 *Renewable Energy Certificates* in zone 3; and/or

(B) at least 36 *Renewable Energy Certificates* in zone 4.

(ii) An electric boosted solar heated water service or heat pump heated water service (air source or solar boosted) with a single tank and a volume of more than 220 litres and less than 400 litres—

(A) at least 27 *Renewable Energy Certificates* in zone 3; and/or

(B) at least 26 *Renewable Energy Certificates* in zone 4.

(iii) An electric boosted solar heated water service or heat pump heated water service (air source or solar boosted) with a single tank and a volume of not more than 220 litres—

(A) at least 17 *Renewable Energy Certificates* in zone 3; and/or

(B) at least 16 *Renewable Energy Certificates* in zone 4.

(iv) A natural gas or LPG boosted solar heated water service with a total tank volume of not more than 700 litres and at least 1 or more Renewable Energy Certificates in any zone.

(v) A wood combustion boosted solar water heater, with no additional heating mechanism and a total tank volume not more than 700 litres.

(c) A gas heater must be rated at not less than 5 stars in accordance with AS 4552.

(d) An electric resistance water heater may be installed when—

(i) the building has—

(A) a water heater that complies with **(b)** or **(c)**; and

(B) not more than 1 electric resistance water heater installed; and

(ii) the electric resistance water heater—

(A) has no storage capacity or a *rated hot water delivery* of not more than 50 litres; and

(B) it does not supply *heated water* to more than 1 room; and

(C) it does not supply *heated water* to a bath or a shower.

Section 3.12.5.7

It has been specified that no swimming pools are to be installed.

Section 3.12.5.8

It has been specified that no spa pools are to be installed.

Appendix C - V2.6.2.2 Methodology

From BCA 2016, Volume 2:

V2.6.2.2 Verification using a reference building

(a) Compliance with P2.6.1 is verified when a proposed building, compared with a reference building, has—
  (i) in climate zones 1 and 2, a cooling load equal to or less than that of the reference building; or
  (ii) in climate zones 7 and 8, a heating load equal to or less than that of the reference building; or
  (iii) in climate zones 3, 4, 5 and 6, a heating load and a cooling load equal to or less than that of the reference building.

(b) The heating load and cooling load for the proposed building and the reference building must be determined using the same—
  (i) calculation method; and
  (ii) location specific data, including that of climate and topography appropriate to the location where the proposed building is to be constructed if the data is available, or the nearest location with similar climatic conditions in the same climate zone for which the data is available; and
  (iii) impact of adjoining structures and features; and
  (iv) soil conditions; and
  (v) orientation; and
  (vi) floor plan, including the location of glazing; and
  (vii) ceiling height and number of storeys; and
  (viii) solar absorptance of external surfaces; and
  (ix) roof pitch, roof cladding and roof lights; and
  (x) separating walls; and
  (xi) external non-glazed doors; and
  (xii) intermediate floors; and
  (xiii) floor and floor coverings; and
  (xiv) internal zones; and
  (xv) internal heat gains including people and appliances.

(c) The calculation method used must be capable of assessing the heating load and cooling load by modelling—
  (i) the building fabric; and
  (ii) glazing and shading; and
  (iii) air infiltration and ventilation; and
  (iv) the function and use of the building including zoning, hours of occupation, hours of heating and cooling availability and internal heat gains; and
  (v) space temperature settings in the range 20°C to 21°C for heating and 25°C to 28°C for cooling; and
  (vi) relevant built-environment and topographical features; and
  (vii) the sensible heat component of the cooling load and heating load.

(d) Climatic data employed in the calculation method must be based on hourly recorded values and be representative of a typical year for the proposed location.

(e) The reference building must be modelled using the Deemed-to-Satisfy Provisions of Part 3.12 in accordance with 3.12.0(a)(ii).

Appendix D - Reference Specification

Specification

Building Fabric

		Insulation R-Value	System R-Value
Roofs	**Actium Homes Typical Roof Construction - Pitched metal roof, flat ceiling roof** Non-ventilated, pitched roof with horizontal ceiling (5 degree pitch). Solar absorptance of 0.3. Loss of ceiling insulation: 0.0% to less than 0.5%. Containing 100% of added insulation laid on ceiling. - *Ground floor*	3.76	**4.61 (up)**
	Actium Homes Typical Roof Construction - Pitched metal roof, flat ceiling roof Non-ventilated, pitched roof with horizontal ceiling (5 degree pitch). Solar absorptance of 0.3. Loss of ceiling insulation: 0.0% to less than 0.5%. Containing 100% of added insulation laid on ceiling. - *First floor*	3.76	**4.61 (up)**
Walls	**Autoclaved aerated concrete masonry wall** - *Ground floor*	0.71	**2.81**
	Autoclaved aerated concrete masonry wall - *First floor*	0.71	**2.81**
	Steel Sheet wall cladding on frame with plasterboard internal lining wall - *First floor*	1.47	**2.81**
Suspended Floors	**Suspended timber floor**	0.46	**2.26 (down)**
Internal Wall Construction	Internal Plasterboard Stud Wall	0.00	
Internal Floor Construction	Timber floor with Enclosed Disconnected subfloor	0.00	
Internal Window Covering	Holland blind		
Floor Type	CSOG: Slab on Ground with Enclosed subfloor	0.00	
Internal Floor Coverings	floattimber to Dining , Passage and Cook/Fam Tiles to Ldry, WC, ENS and Bath Carpet to Stairs, Stair/Study/Passage, Bed3, Bed2 and Bed1		

Glazing

Type	U-Value	SHGC
Timber Double Glazed Argon Fill Clear-Clear	2.6	0.53
Aluminium Double Glazed Air Fill Clear-Clear	4.8	0.59

Appendix E - Reference Calculations

Building Fabric

Roof and ceiling construction

Actium Homes Typical Roof Construction - Pitched metal roof, flat ceiling - *Ground floor* - Non-Ventilated

Layer	Specification		R-Value [Upwards] (m².K/W)
- Air Film	Wind speed: not more than 3 m/s		0.04
- Roof Cladding - Steel sheeting	Conductivity: 47.50 W/m.K, Thickness: 0.4 mm		0.00
- Bulk Insulation	*Specified R-Value of 1.88 K.m²/W*		1.88
- Air Space	0.9 outer / 0.05 inner		0.64
- Bulk Insulation	*Specified R-Value of 1.88 K.m²/W*		1.88
- Wall Cladding - Gypsum plasterboard	Conductivity: 0.17 W/m.K, Thickness: 10 mm		0.06
- Air Film	Wind speed: *none*		0.11
		Achieved:	**4.61**
		Required:	**4.60**

Actium Homes Typical Roof Construction - Pitched metal roof, flat ceiling - *First floor* - Non-Ventilated

Layer	Specification		R-Value [Upwards] (m².K/W)
- Air Film	Wind speed: not more than 3 m/s		0.04
- Roof Cladding - Steel sheeting	Conductivity: 47.50 W/m.K, Thickness: 0.4 mm		0.00
- Bulk Insulation	*Specified R-Value of 1.88 K.m²/W*		1.88
- Air Space	0.9 outer / 0.05 inner		0.64
- Bulk Insulation	*Specified R-Value of 1.88 K.m²/W*		1.88
- Wall Cladding - Gypsum plasterboard	Conductivity: 0.17 W/m.K, Thickness: 10 mm		0.06
- Air Film	Wind speed: *none*		0.11
		Achieved:	**4.61**
		Required:	**4.60**

Walls

Autoclaved aerated concrete masonry wall - *Ground floor*

Layer	Specification	R-Value
- Air Film	Wind speed: not more than 3 m/s	0.04
- Wall Cladding - Cement render (1 cement : 4 sand)	Conductivity: 0.53 W/m.K, Thickness: 5 mm	0.01
- Wall Cladding - Autoclaved aerated concrete(1)	Conductivity: 0.10 W/m.K, Thickness: 75 mm	0.75
- Air Space	70 mm Airspace, 0.05/0.20 emitt.	1.12
- Bulk Insulation	*Specified R-Value of 0.71 K.m²/W*	0.71
- Wall Cladding - Gypsum plasterboard	Conductivity: 0.17 W/m.K, Thickness: 10 mm	0.06
- Air Film	Wind speed: *none*	0.12

	Achieved	**2.81**
	Required	**2.80**
	Surface Density	**42.9**

Autoclaved aerated concrete masonry wall - *First floor*

Layer	Specification	R-Value
- Air Film	Wind speed: not more than 3 m/s	0.04
- Wall Cladding - Cement render (1 cement : 4 sand)	Conductivity: 0.53 W/m.K, Thickness: 5 mm	0.01
- Wall Cladding - Autoclaved aerated concrete(1)	Conductivity: 0.10 W/m.K, Thickness: 75 mm	0.75
- Air Space	70 mm Airspace, 0.05/0.20 emitt.	1.12
- Bulk Insulation	*Specified R-Value of 0.71 K.m²/W*	0.71
- Wall Cladding - Gypsum plasterboard	Conductivity: 0.17 W/m.K, Thickness: 10 mm	0.06
- Air Film	Wind speed: *none*	0.12
	Achieved	**2.81**
	Required	**2.80**
	Surface Density	**42.9**

Steel Sheet wall cladding on frame with plasterboard internal lining wall - *First floor*

Layer	Specification	R-Value
- Air Film	Wind speed: not more than 3 m/s	0.04
- Wall Cladding - Steel sheeting	Conductivity: 47.50 W/m.K, Thickness: 0.4 mm	0.00
- Air Space	70 mm Airspace, 0.05/0.20 emitt.	1.12
- Bulk Insulation	*Specified R-Value of 1.47 K.m²/W*	1.47
- Wall Cladding - Gypsum plasterboard	Conductivity: 0.17 W/m.K, Thickness: 10 mm	0.06
- Air Film	Wind speed: *none*	0.12
	Achieved	**2.81**
	Required	**2.80**
	Surface Density	**11.9**

Suspended Floors

Suspended timber floor -

Layer	Specification	R-Value[Down] (m².K/W)
- Air Film	Wind speed: *none*	0.16
- Flooring Materials - Particleboard	Conductivity: 0.12 W/m.K, Thickness: 19 mm	0.16
- Bulk Insulation	*Specified R-Value of 0.46 K.m²/W*	0.46
- Air Space	0.9 outer / 0.05 inner	1.28
- Air Film	Non-enclosed sub-floor	(1) 0.20
	Total:	2.26
	Required:	2.25

(1) This value is derived from BCA 2016 Volume 2, Table 3.12.1.5.

Glazing Calculator

Level 1

Floor area (m²): **71.00**
Air movement: **2.000 x Std.**
C_U: **6.418**
C_{SHGC}: **0.168**

Level 1 windows

Name	Facing	HxW (mm)	U	SHGC	Opens	P/H*	Conductance	SHG
Dining								
Dining AW	W	2730 x 4130	2.60	0.53	5%	0.00	2.212	8.366
Entry FW	W	2730 x 920	4.80	0.59	--	0.40	0.910	1.331
Cook/Fam								
Family SD	E	2730 x 6140	2.60	0.53	21%	s: adj. device, w: 0.00	3.288	2.132
						Allowance:	6.418	11.928
						Aggregate:	6.410	11.829
						Compliant:		Yes

* s = summer, w = winter

Level 2

Floor area (m²): **67.50**
Air movement: **1.204 x Std.**
C_U: **5.776**
C_{SHGC}: **0.141**

Level 2 windows

Name	Facing	HxW (mm)	U	SHGC	Opens	P/H*	Conductance	SHG
ENS								
ENS AW	W	2730 x 1810	2.60	0.53	30%	s: adj. device, w: 0.00	1.079	0.812
Stair/Study/Passage								
Study FW	E	2730 x 1980	2.60	0.53	15%	0.00	1.180	3.295
Bed3								
Bed3 AW	E	2730 x 1700	2.60	0.53	14%	0.00	1.013	2.829
Bed2								
Bed2 AW	W	2730 x 1000	2.60	0.53	25%	s: adj. device, w: 0.00	0.596	0.449
Bed1								
Bed1 AW	W	2730 x 3200	2.60	0.53	12%	s: adj. device, w: 0.00	1.907	1.435
						Allowance:	5.776	9.508
						Aggregate:	5.774	8.819
						Compliant:		Yes

* s = summer, w = winter

Air Movement

Room	Floor Area (m²)	Area of Ventilation Openings (m²)	Openable Fraction of Floor Area	Minimum Fraction
Dining	18.7	2.77	14.8%	**5.0%**
Cook/Fam	40.1	3.52	8.8%	**5.0%**
Stair/Study/Passage	15.9	0.81	5.1%	**5.0%**
Bed3	12.1	0.65	5.4%	**5.0%**
Bed2	11.3	0.68	6.0%	**5.0%**
Bed1	13.7	1.05	7.7%	**5.0%**

Disclaimer

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Phone: 1300 308 525
www.sustainabilityhouse.com.au
residential@sustainabilityhouse.com.au

Proposed Building

Provisional Diagnostic Information

FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	16 Adelaide (Kent Town)
Site Exposure	suburban
Client Name	Xtraordinary Constructions
Rated Address	Lot 67 Bucananan Drive WOODFORDE
Accredited Rater	Jim Woolcock
Date	08-05-2017
Reference	Woodforde Development Stage 1 Terraces_Developments_81561

Energy Usage

Type	Energy MJ/m²
Total	128.8
Heating	37.5
Cooling	91.3

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	128.8
Unconditioned Room Area	3.2
Garage Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Dining	18.7	living	Y
Passage	2.1	dayTime	Y
Cook/Fam	40.1	kitchen	Y
Ldry	3.2	unconditioned	N
WC	2.8	dayTime	Y
Stairs	4.1	dayTime	Y
ENS	7.0	nightTime	Y
Stair/Study/Passage	15.9	dayTime	Y
Bed3	12.1	bedroom	Y
Bath	7.5	dayTime	Y
Bed2	11.3	bedroom	Y
Bed1	13.7	bedroom	Y

Proposed Building

Walls

Type	Insulation	Num Reflective Airgaps	Area (m²)
AAC 75mm Panel Stud Wall	2.0	0	174.0
Internal Plasterboard Stud Wall	0.0	0	121.2
Metal Clad Framed	2.0	0	25.9

Floors

Type	Insulation	Ventilation	Area (m²)
CSOG: Slab on Ground	0.0	encl	65.2
CSOG: Slab on Ground	0.0	elevated	5.6
Timber	0.0	encldisc	64.3
Timber	0.0	elevated	3.1

Roofs/Ceilings

Type	Insulation	Area (m²)
Ceil: Ceiling	0.0	65.2
Framed:Flat - Flat Framed (Metal Deck)	4.0	5.6
Cont:Attic-Continuous	4.0	67.4

Windows

Type	U-Value	SHGC	Area (m²)
TND-002-01 A Trend Al Awning Window SG 3Clr	6.54	0.66	17.06
TND-001-01 A Trend Al Sliding Window SG 3Clr	6.44	0.73	14.13

Window Directions

Direction	Area (m²)
W	15.4
E	15.8

Air leakage

Item	Sealed	Unsealed
Unflued Gas Heater	-	0
Downlight	0	0
Heater Flue	-	0
Exhaust Fan	5	0
Chimney	0	0
Generic Vent	-	0

Zone Energy Loads

Proposed Building

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Stairs	20.1	82.2	20.6	84.0
Bed2	10.6	120.2	57.3	650.0
WC	31.9	89.1	1.7	4.8
Bed1	65.6	896.5	187.2	2559.6
Bed3	17.9	215.1	90.6	1092.1
Dining	57.5	1077.1	87.8	1643.3
Stair/Study/Passage	52.6	835.9	39.4	626.3
Passage	23.2	47.7	34.2	70.4
Bath	76.5	576.0	47.2	355.2
Cook/Fam	15.4	617.4	104.3	4184.2
ENS	75.7	529.9	160.9	1125.9

Provisional Diagnostic Information 10-05-2017 09:31:06 Ver:5.2.5 (3.13) Engine Ver:3.13 Accredited Rater:Jim Woolcock Assessor's Accreditation Number:VIC/BDAV/11/1278

Reference Building

Provisional Diagnostic Information

FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	16 Adelaide (Kent Town)
Site Exposure	suburban
Client Name	Xtraordinary Constructions
Rated Address	Lot 67 Bucananan Drive WOODFORDE
Accredited Rater	Jim Woolcock
Date	08-05-2017
Reference	Woodforde Development Stage 1 Terraces_Developments_81561

Energy Usage

Type	Energy MJ/m²
Total	129.0
Heating	37.5
Cooling	91.5

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	128.8
Unconditioned Room Area	3.2
Garage Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Dining	18.7	living	Y
Passage	2.1	dayTime	Y
Cook/Fam	40.1	kitchen	Y
Ldry	3.2	unconditioned	N
WC	2.8	dayTime	Y
Stairs	4.1	dayTime	Y
ENS	7.0	nightTime	Y
Stair/Study/Passage	15.9	dayTime	Y
Bed3	12.1	bedroom	Y
Bath	7.5	dayTime	Y
Bed2	11.3	bedroom	Y
Bed1	13.7	bedroom	Y

Reference Building

Walls

Type	Insulation	Num Reflective Airgaps	Area (m²)
AAC 25mm 0.2E + 70mm 0.05E + R1.27	0.8	2	174.0
Internal Plasterboard Stud Wall	0.0	0	121.2
Metal clad V2	1.5	2	25.9

Floors

Type	Insulation	Ventilation	Area (m²)
CSOG: Slab on Ground	0.0	encl	65.2
CSOG: Slab on Ground	0.0	elevated	5.6
Timber	0.0	encldisc	64.3
Timber	0.5	elevated	3.1

Roofs/Ceilings

Type	Insulation	Area (m²)
Ceil: Ceiling	0.0	65.2
Framed:Flat - Flat Framed (Metal Deck)	1.9	5.6
Cont:Attic-Continuous	1.9	67.4

Windows

Type	U-Value	SHGC	Area (m²)
TIM-006-01 W Timber B DG Argon Fill Clear-Clear	2.60	0.53	54.49
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	2.51

Window Directions

Direction	Area (m²)
W	30.2
E	26.8

Air leakage

Item	Sealed	Unsealed
Unflued Gas Heater	-	0
Downlight	0	0
Heater Flue	-	0
Exhaust Fan	2	3
Chimney	0	0
Generic Vent	-	0

Zone Energy Loads

Reference Building

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Stairs	20.9	85.5	52.7	215.5
Bed2	10.7	121.7	24.7	280.1
WC	34.7	96.8	2.4	6.8
Bed1	47.2	645.3	113.6	1553.4
Bed3	12.5	150.3	72.5	873.9
Dining	61.2	1145.5	179.7	3364.4
Stair/Study/Passage	61.7	981.5	106.6	1694.5
Passage	19.6	40.3	67.7	139.3
Bath	115.0	865.7	41.7	313.7
Cook/Fam	8.4	338.9	74.2	2977.2
ENS	88.3	617.7	144.5	1010.8

Provisional Diagnostic Information 10-05-2017 09:34:21 Ver:5.2.5 (3.13) Engine Ver:3.13 Accredited Rater:Jim Woolcock Assessor's Accreditation Number:VIC/BDAV/11/1278

BUILDING NOTES

NO PROVISION TO HAVE LIFT OFF
NOT LOCATED
TO BE INSTALLED
IN ACCORDANCE WITH THE
NATIONAL CONSTRUCTION CODE
WINDOW SIZES HEIGHT X WIDTH
ALL WINDOWS SET TO BRICKBOND
WEATHER SEALS TO ALL EXTERNAL
EXTERNAL DOORS
THIS PLAN IS SUBJECT TO 6 STAR
ENERGY REQUIREMENTS
EXHAUST FANS & RANGEHOOD
CONTAIN DAMPER SEALS
DOWNLIGHTS TO BE SEALED AND
CONTAIN HEAT COVERS
HARDWIRED SMOKE ALARMS
WITH 9v BATTERY BACK-UP

TERMITE PROTECTION IN ACCORDANCE WITH AS 3660.1/2000
PERIMETER VISUAL BARRIER USING EDGE EXPOSURE 75mm
DPC/DAMP PROOF COURSE TO TOP OF PAVING

SUSTAINABILITY HOUSE

11 May 2017
Job Ref: 81561

BDAV Member - Jim Woolcock
Phone: 1300 308 525 www.sustainabilityhouse.com.au

SITE PLAN

GROUND FLOOR LIVING : 79.25
FIRST FLOOR LIVING : 76.14
PORCH : 2.00
CARPORT : 33.00

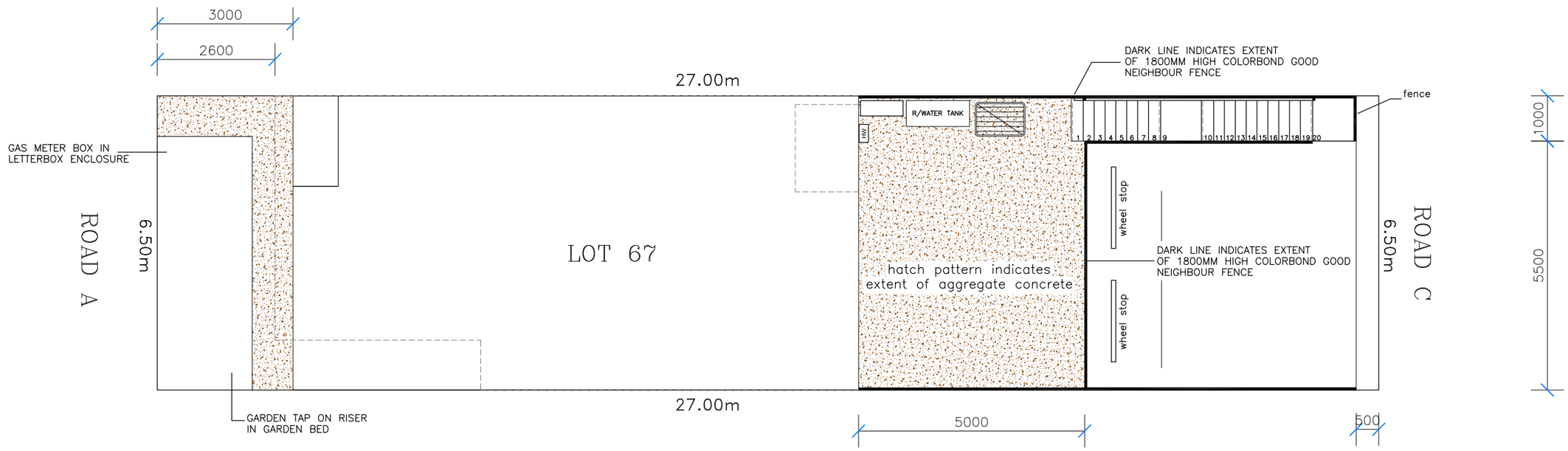
TOTAL : 190.39sq.m.

R/WATER TANK — 1000 litre required rainwater tank plumbed to wc with over flow to street water table

OUTSIDE A/C CONDENSOR (TYPICAL)

HW — hot water service

clothes line



NOTES**
ALL UPPER STOREY FLOORS ARE NOT DESIGNED FOR WATERBED LOADS OR ANY OTHER POINT LOADS DISTRIBUTED OVER FLOOR AREA

STAIRCASE & BALLUSTRADE TO BE IN ACCORDANCE WITH NATIONAL CONSTRUCTION CODE PART 3.9.1 & PART 3.9.2
STAIR CONSTRUCTION & BALLUSTRADES
RISER – MAX 190 / MIN 115
GOING – MAX 355 / MIN 240
QUANTITY (2R+G) – MAX 700 / MIN 550
STAIRS & STAIR BALLUSTRADING BY STAIRLOC Pty. Ltd.

DWG NO. WOO–16.dwg

PAGE NO. 3AW1.1

PROPOSED NEW RESIDENCE
For : Starfish Developments
At : Lot 67 Road A
WOODFORDE – OPTION 1

FIGURED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS. VERIFY ALL DIMENSIONS AND LEVELS BEFORE COMMENCEMENT. ANY DISCREPENCY SHALL BE REPORTED TO THE DESIGNER IMMEDIATELY.

Starfish CONSTRUCTIONS

ENZO CARO SCIO ARCHITECTURE

amended 07.10.06
amended 22.09.16
AMENDED 21.09.16
AMENDED 22.06.16
AMENDED 21.04.16
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

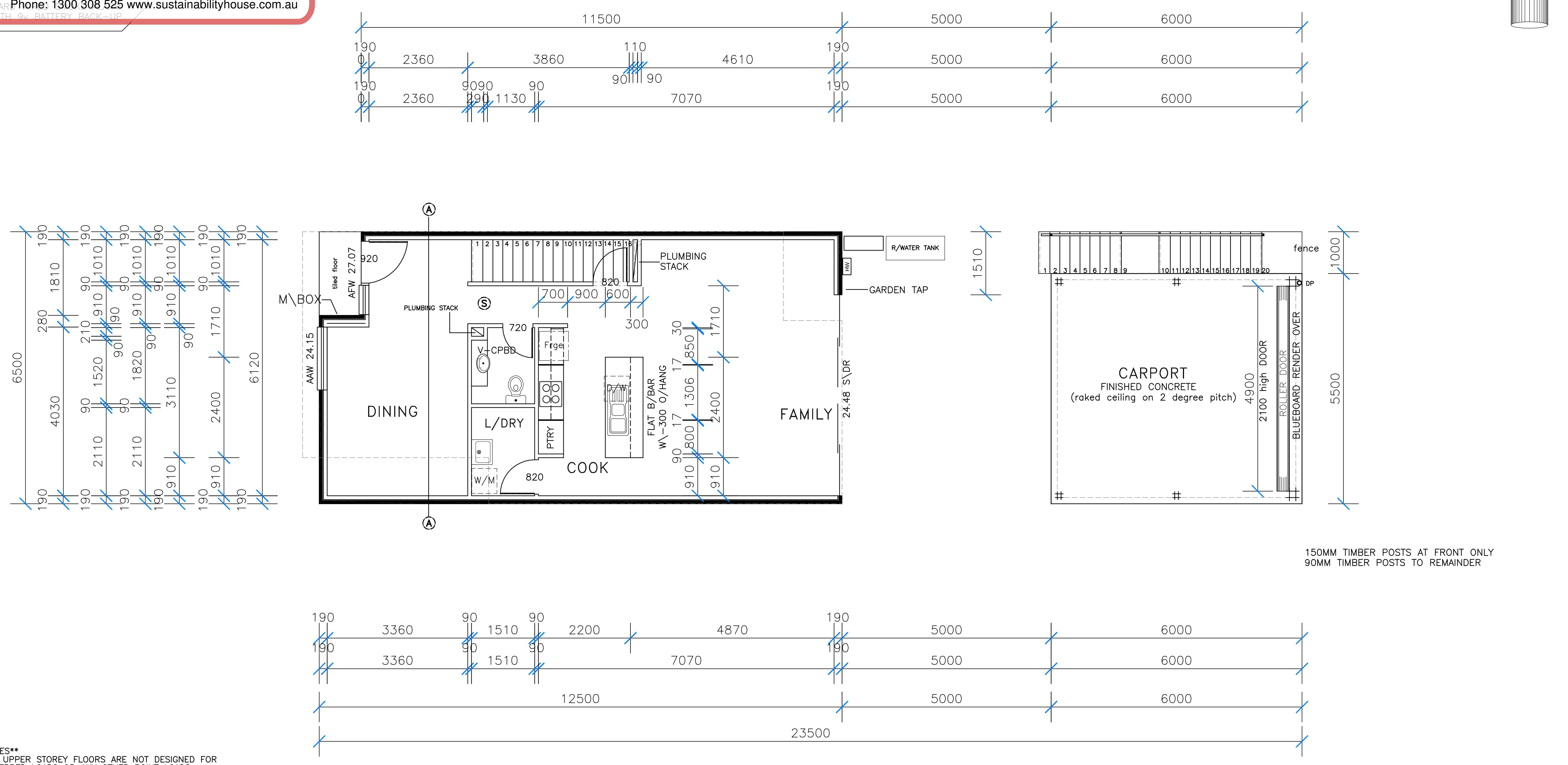
DRAWN	D.J.G.
DATE	30.08.15
SCALE	1 : 100
SHEET	1 OF 10

SUSTAINABILITY HOUSE
11 May 2017
Job Ref: 81561
BDAV Member - Jim Woolcock
Phone: 1300 308 525 www.sustainabilityhouse.com.au

TERMITE PROTECTION IN ACCORDANCE WITH AS 3660.1/2000
PERIMETER : VISUAL BARRIER USING EDGE EXPOSURE 75mm
FROM TOP OF COURSE TO TOP OF PAVING

GROUND FLOOR PLAN

GROUND FLOOR LIVING : 79.25
FIRST FLOOR LIVING : 76.14
PORCH : 2.00
CARPORT : 33.00
TOTAL : 190.39sq.m.



150MM TIMBER POSTS AT FRONT ONLY
90MM TIMBER POSTS TO REMAINDER

NOTES**
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STAIRCASE & BALLUSTRADE TO BE IN ACCORDANCE WITH NATIONAL CONSTRUCTION CODE PART 3.9.1 & PART 3.9.2 STAIR CONSTRUCTION & BALLUSTRADES
RISER – MAX 190 / MIN 115
GOING – MAX 355 / MIN 240
QUANTITY (2R+G) – MAX 700 / MIN 550
STAIRS & STAIR BALLUSTRADING BY STAIRLOC Pty. Ltd.

DWG NO. WOO-16.dwg

PAGE NO. 3AW1.2

PROPOSED NEW RESIDENCE
For : Starfish Developments
At : Lot 67 Road A
WOODFORDE – OPTION 1

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Starfish CONSTRUCTIONS

ENZO CARO SCIO ARCH ITEC TURE

amended 07.10.06
amended 22.09.16
AMENDED 21.09.16
AMENDED 22.06.16
AMENDED 21.04.16
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

DRAWN	D.J.G.
DATE	30.08.15
SCALE	1 : 100
SHEET	2 OF 10

BUILDING NOTES

NO PENETRATIONS TO HAVE LIFT OFF
NOGGINGS TO BE INSTALLED
TERMITE PROTECTION TO BE INSTALLED
IN ACCORDANCE WITH THE
NATIONAL CONSTUCTION CODE
WINDOW SIZES HEIGHT X WIDTH
ALL WINDOWS SET TO BRICKBOND
WEATHER SEALS TO ALL EXTERNAL
EXTERNAL DOORS
THIS PLAN IS SUBJECT TO 6 STAR
ENERGY REQUIREMENTS
EXHAUST FANS & RANGEHOOD TO
CONTAIN DAMPER SEALS
DOWNLIGHTS TO BE SEALED AND
CONTAIN HEAT COVERS
Ⓢ HARDWIRED SMOKE ALARMS
WITH 9v BATTERY BACK-UP

TERMITE PROTECTION IN ACCORDANCE WITH AS 3660.1/2000
PERIMETER VISUAL BARRIER USING EDGE EXPOSURE 75mm
MIN. ABOVE ROOF COURSE TO TOP OF PAVING

SUSTAINABILITY HOUSE

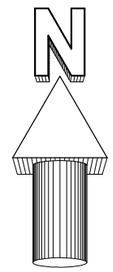
11 May 2017
Job Ref: 81561

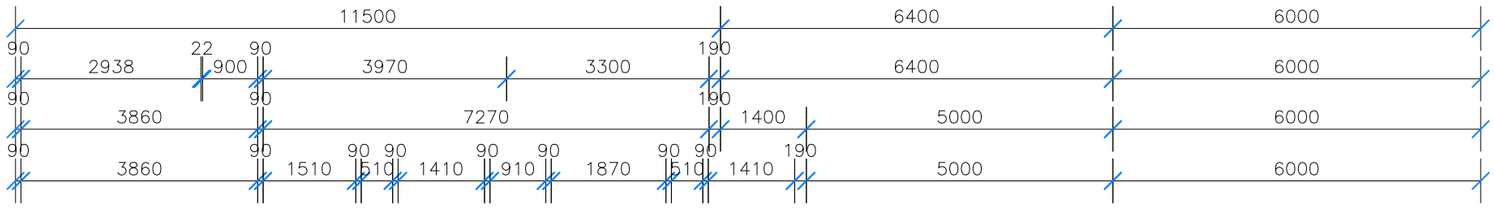
BDAV Member - Jim Woolcock
Phone: 1300 308 525 www.sustainabilityhouse.com.au

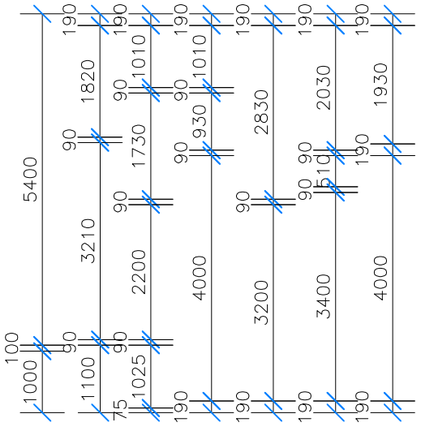
FIRST FLOOR PLAN

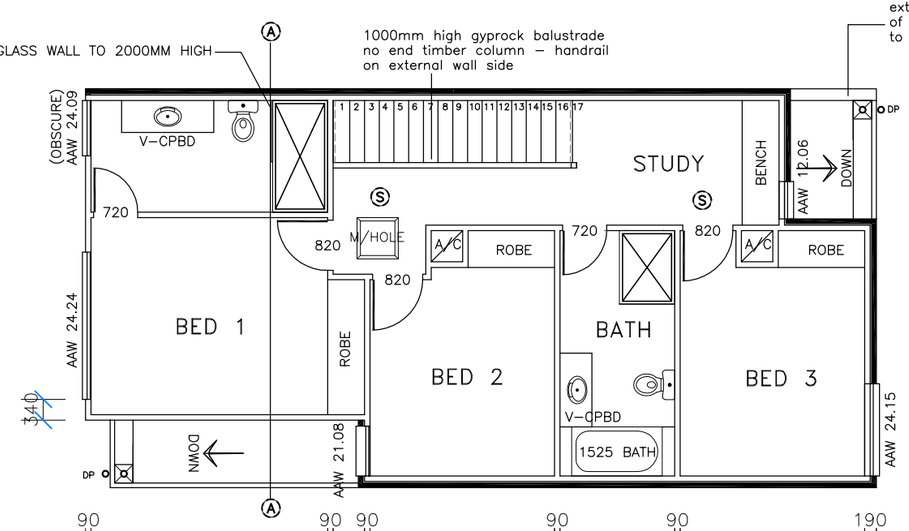
GROUND FLOOR LIVING : 79.25
FIRST FLOOR LIVING : 76.14
PORCH : 2.00
CARPORT : 33.00

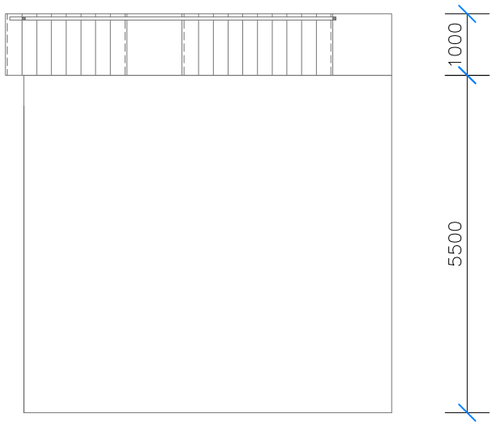
TOTAL : 190.39sq.m.

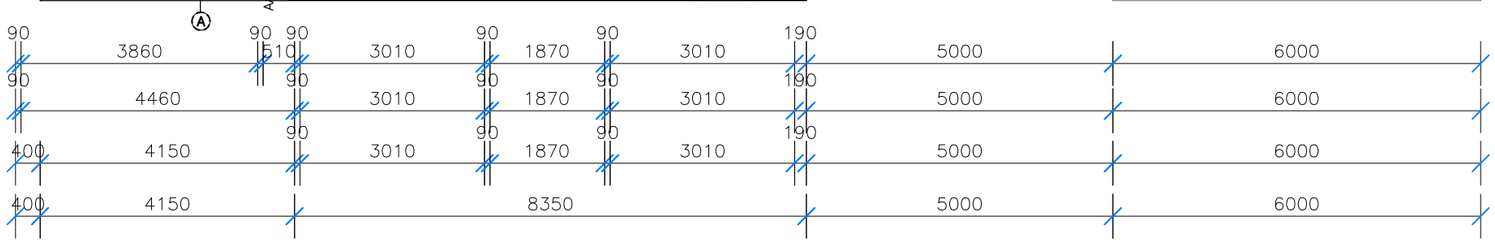












NOTES**
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DISTRIBUTED OVER FLOOR AREA

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WITH NATIONAL CONSTRUCTION CODE PART 3.9.1 & PART 3.9.2
STAIR CONSTRUCTION & BALLUSTRADES
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GOING – MAX 355 / MIN 240
QUANTITY (2R+G) – MAX 700 / MIN 550
STAIRS & STAIR BALLUSTRADING BY STAIRLOC Pty. Ltd.

DWG NO. WOO–16.dwg

PAGE NO. 3AW1.3

PROPOSED NEW RESIDENCE
For :Starfish Developments
At :Lot 67 Road A
WOODFORDE – OPTION 1

FIGURED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS. VERIFY ALL DIMENSIONS AND LEVELS BEFORE COMMENCEMENT. ANY DISCREPENCY SHALL BE REPORTED TO THE DESIGNER IMMEDIATELY.

Starfish CONSTRUCTIONS

ENZO CARO SCIO ARCHITECTURE

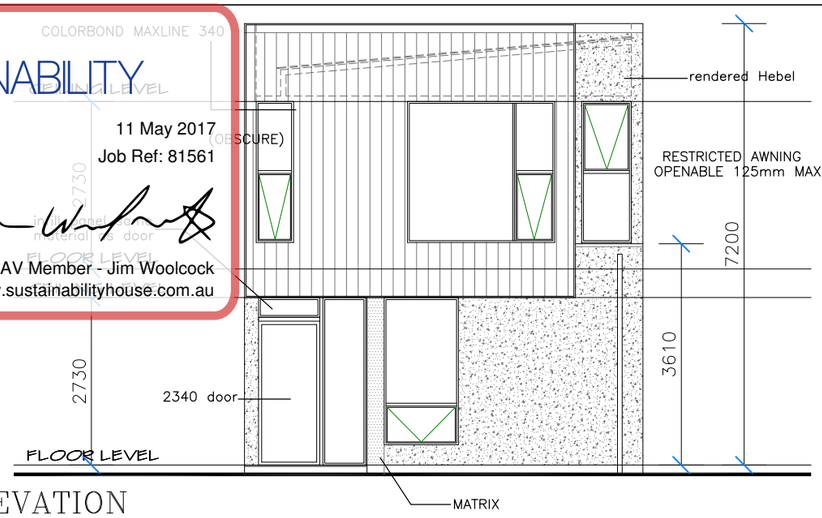
amended 13.10.06
amended 07.10.06
amended 22.09.16
AMENDED 21.09.16
AMENDED 22.06.16
AMENDED 21.04.16
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

DRAWN D.J.G.
DATE 30.08.15
SCALE 1 : 100
SHEET 3 OF 10

SUSTAINABILITY HOUSE

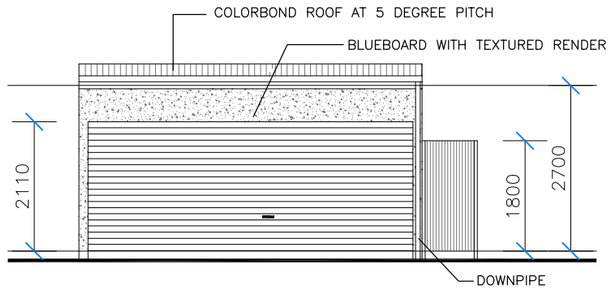
11 May 2017
Job Ref: 81561

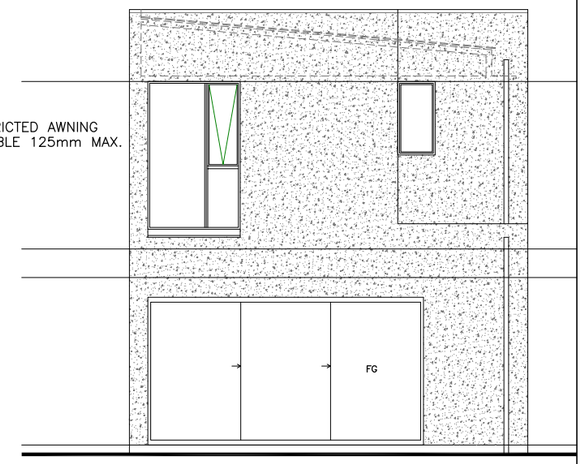
BDAV Member - Jim Woolcock
Phone: 1300 308 525 www.sustainabilityhouse.com.au



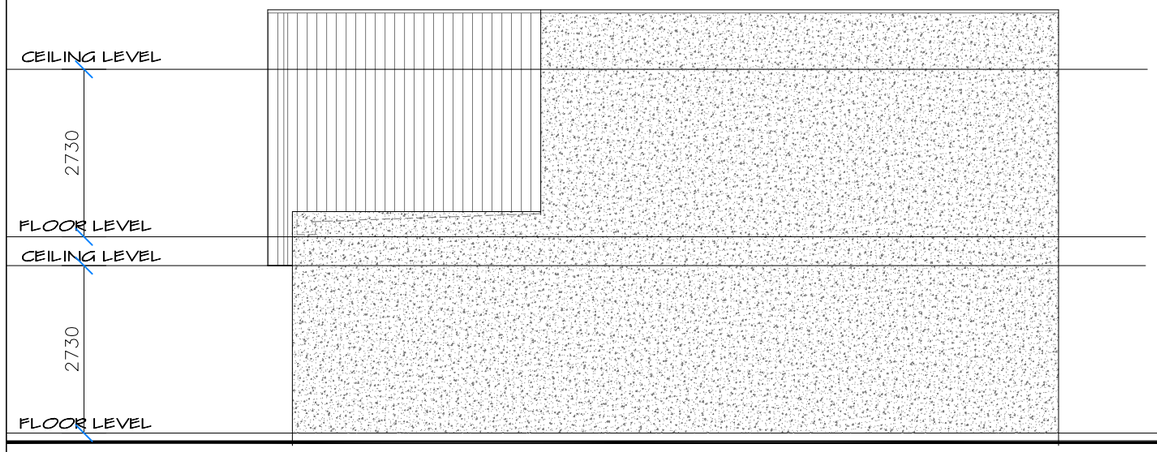
WEST ELEVATION

TERMITE PROTECTION IN ACCORDANCE WITH AS 3660.1/2000
PERIMETER : VISUAL BARRIER USING EDGE EXPOSURE 75mm
FROM DAMPROOF COURSE TO TOP OF PAVING

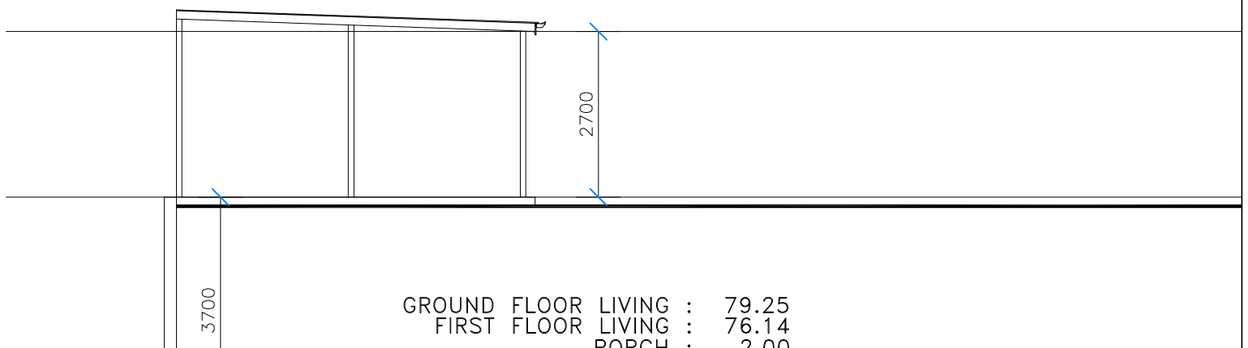




EAST ELEVATION



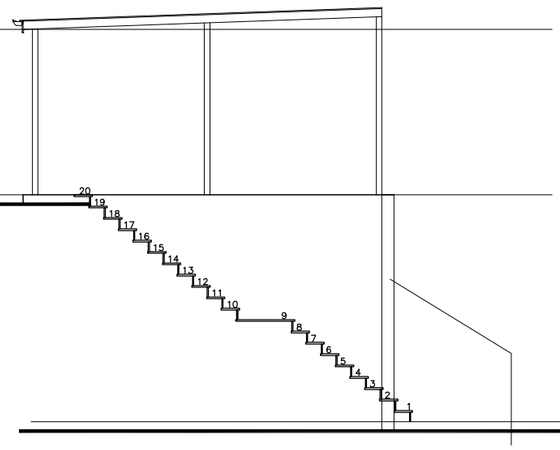
NORTH ELEVATION

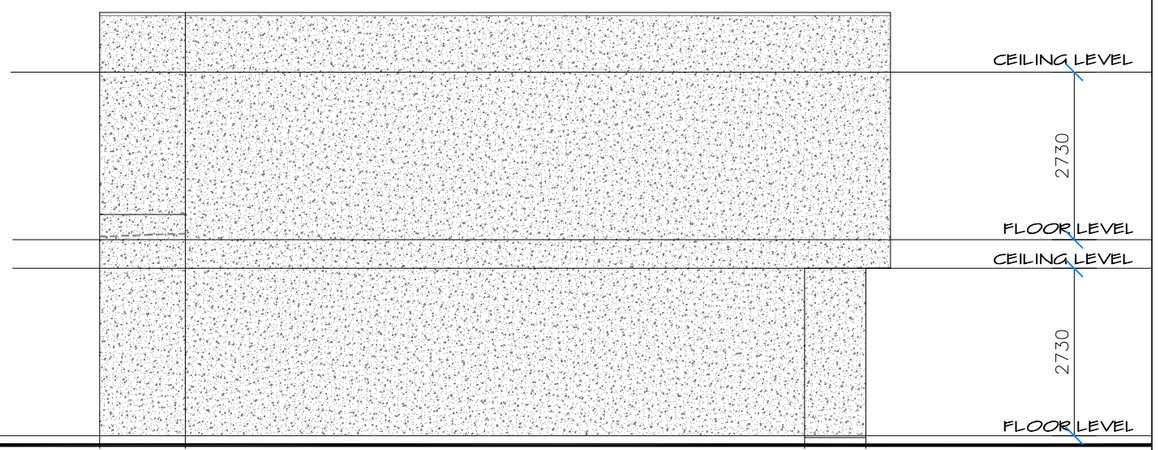


GROUND FLOOR LIVING : 79.25
FIRST FLOOR LIVING : 76.14
PORCH : 2.00
CARPORT : 33.00

TOTAL : 190.39sq.m.

SOUTH ELEVATION





RETAINING WALL AS PER ENGINEERS DETAILS

NOTES**
ALL UPPER STOREY FLOORS ARE NOT DESIGNED FOR WATERBED LOADS OR ANY OTHER POINT LOADS DISTRIBUTED OVER FLOOR AREA

STAIRCASE & BALLUSTRADE TO BE IN ACCORDANCE WITH NATIONAL CONSTRUCTION CODE PART 3.9.1 & PART 3.9.2
STAIR CONSTRUCTION & BALLUSTRADES
RISER – MAX 190 / MIN 115
GOING – MAX 355 / MIN 240
QUANTITY (2R+G) – MAX 700 / MIN 550
STAIRS & STAIR BALLUSTRADING BY STAIRLOC Pty. Ltd.

DWG NO. W00–16.dwg

PAGE NO. 3AW1.4

PROPOSED NEW RESIDENCE
For : Starfish Developments
At : Lot 67 Road A
WOODFORDE – OPTION 1

FIGURED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS. VERIFY ALL DIMENSIONS AND LEVELS BEFORE COMMENCEMENT. ANY DISCREPENCY SHALL BE REPORTED TO THE DESIGNER IMMEDIATELY.

Starfish CONSTRUCTIONS

ENZO CARO SCIO ARCHITECTURE

amended 11.10.06
amended 07.10.06
amended 22.09.16
AMENDED 21.09.16
AMENDED 22.06.16
AMENDED 21.04.16
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

DRAWN	D.J.G.
DATE	30.08.15
SCALE	1 : 100
SHEET	4 OF 10

SUSTAINABILITY HOUSE

11 May 2017

Job Ref: 81561

BDAV Member - Jim Woolcock

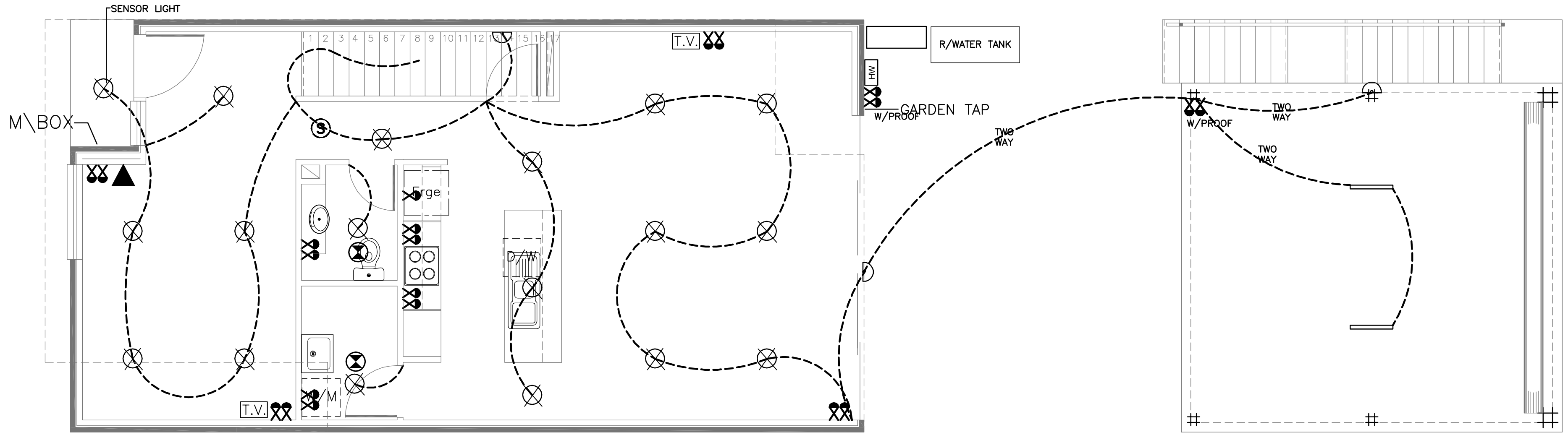
Phone: 1300 308 525 www.sustainabilityhouse.com.au

BUILDING NOTES

TERMITE PROTECTION IN ACCORDANCE WITH AS 3660.1/2000
PERIMETER : VISUAL BARRIER USING EDGE EXPOSURE 75mm
...ROOF COURSE TO TOP OF PAVING

IN ACCORDANCE WITH THE NATIONAL CONSTRUCTION CODE
WINDOW SIZES HEIGHT X WIDTH
ALL WINDOWS SET TO BRICKBOND
WEATHER SEALS TO ALL EXTERNAL EXTERNAL DOORS
THIS PLAN IS SUBJECT TO 6 STAR ENERGY REQUIREMENTS
EXHAUST FANS & RANGEHOOD ... CONTAIN DAMPER SEALS
DOWNLIGHTS TO BE SEALED AND CONTAIN HEAT COVERS
WITH 9v BATTERY BACK-UP

ELECTRICAL PLAN



NOTES :
1. POWER TO BE SUPPLIED FOR ROLLER DOOR

	SINGLE GPO	1
	DOUBLE GPO	21
T.V.	T.V.POINT	4
	LIGHT	
	WALL LIGHT	3
	240V DOWN LIGHT	
	12V DOWN LIGHT	28
	FLURO	2
	2 LIGHT HEATER	
	4 LIGHT HEATER	2
	EXHAUST FAN	2
	DISTRUBUTION BOX	
(S)	SMOKE ALARM	3
	PHONE POINT BY BUILDER	2
DATA	DATA POINT	1
USB	USB POINT	

SINGLE POWER POINTS X 7
NOT SHOWN ON FLOOR PLAN
BEING FOR.......

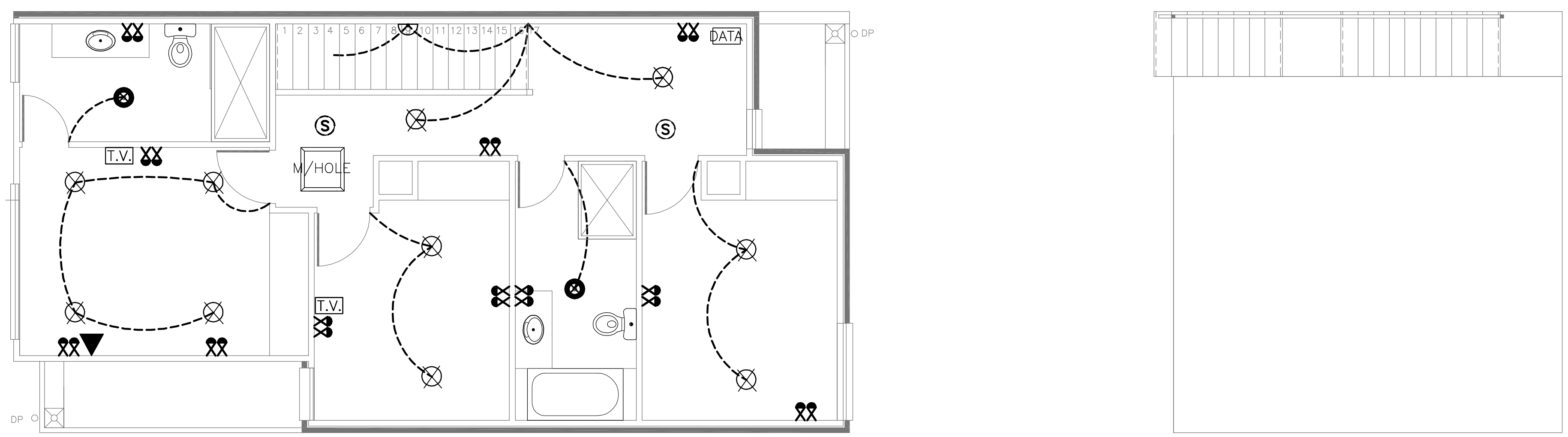
H/PLATE
U/B OVEN
R/HOOD
HOT WATER SERVICE
D\WASHER
AUTO ROLLER DOOR
M\WAVE

GROUND FLOOR LIVING	:	79.25
FIRST FLOOR LIVING	:	76.14
PORCH	:	2.00
CARPORT	:	33.00
TOTAL	:	190.39sq.m.

R/WATER TANK — 1000 litre required rainwater tank plumbed to wc with over flow to street water table

OUTSIDE A/C CONDENSOR (TYPICAL)

HW — hot water service



NOTES**
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STAIRCASE & BALLUSTRADE TO BE IN ACCORDANCE WITH NATIONAL CONSTRUCTION CODE PART 3.9.1 & PART 3.9.2
STAIR CONSTRUCTION & BALLUSTRADES
RISER – MAX 190 / MIN 115
GOING – MAX 355 / MIN 240
QUANTITY (2R+G) – MAX 700 / MIN 550
STAIRS & STAIR BALLUSTRADING BY STAIRLOC Pty. Ltd.

DWG NO. WOO-16.dwg

PAGE NO. 3AW1.5

PROPOSED NEW RESIDENCE
For : Starfish Developments
At : Lot 67 Road A
WOODFORDE – OPTION 1

FIGURED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS. VERIFY ALL DIMENSIONS AND LEVELS BEFORE COMMENCEMENT. ANY DISCREPENCY SHALL BE REPORTED TO THE DESIGNER IMMEDIATELY.

Starfish CONSTRUCTIONS

ENZO CARO SCIO ARCHITECTURE

amended 11.10.06
amended 07.10.06
amended 22.09.16
AMENDED 21.09.16
AMENDED 22.06.16
AMENDED 21.04.16
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

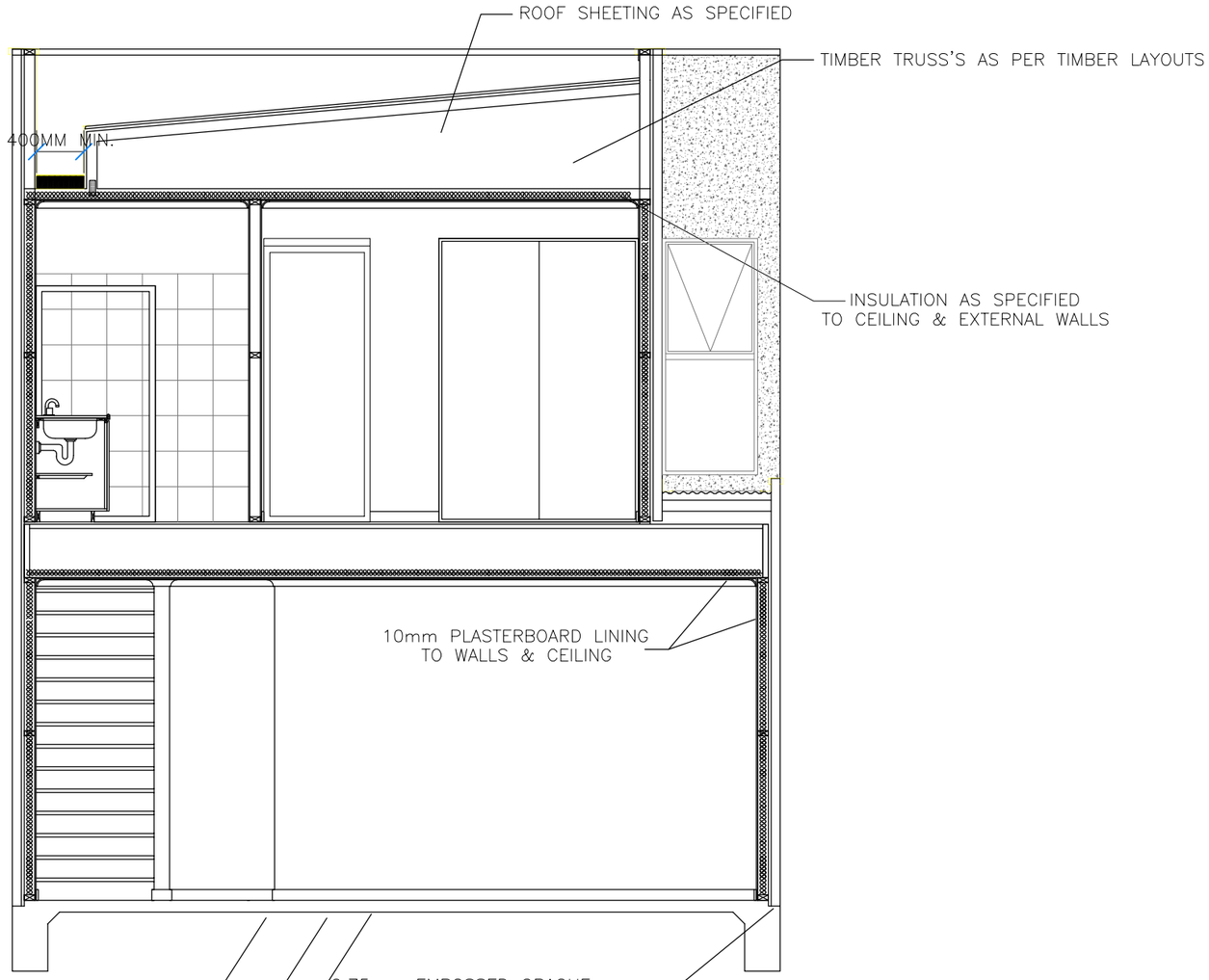
DRAWN	D.J.G.
DATE	30.08.15
SCALE	1 : 100
SHEET	5 OF 10

BUILDING NOTES

TERMITE PROTECTION IN ACCORDANCE WITH AS 3660.1/2000
PERIMETER VISUAL BARRIER USING EDGE EXPOSURE 75mm
DPC MIN 150mm ABOVE ROOF COURSE TO TOP OF PAVING

IN ACCORDANCE WITH THE
NATIONAL CONSTUCTION CODE
WINDOW SIZES HEIGHT X WIDTH
ALL WINDOWS SET TO BRICKBOND
WEATHER SEALS TO ALL EXTERNAL
EXTERNAL DOORS
THIS PLAN IS SUBJECT TO 6 STAR
ENERGY REQUIREMENTS
EXHAUST FANS & RANGEHOOD
CONTAIN DAMPER SEALS
DOWNLIGHTS TO BE SEALED AND
CONTAIN HEAT COVERS
HARD WIRED SMOKE ALARMS
WITH 9v BATTERY BACK-UP

SUSTAINABILITY HOUSE
11 May 2017
Job Ref: 81561
BDAV Member - Jim Woolcock
Phone: 1300 308 525 www.sustainabilityhouse.com.au



SECTION A-A
SCALE 1 : 50

GROUND FLOOR LIVING : 79.25
FIRST FLOOR LIVING : 76.14
PORCH : 2.00
CARPORT : 33.00

TOTAL : 190.39sq.m.

NOTES**
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STAIRCASE & BALLUSTRADE TO BE IN ACCORDANCE WITH NATIONAL CONSTRUCTION CODE PART 3.9.1 & PART 3.9.2
STAIR CONSTRUCTION & BALLUSTRADES
RISER - MAX 190 / MIN 115
GOING - MAX 355 / MIN 240
QUANTITY (2R+G) - MAX 700 / MIN 550
STAIRS & STAIR BALLUSTRADING BY STAIRLOC Pty. Ltd.

DWG NO. WOO-16.dwg

PAGE NO. 3AW1.10

PROPOSED NEW RESIDENCE
For : Starfish Developments
At : Lot 67 Road A
WOODFORDE - OPTION 1

FIGURED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS. VERIFY ALL DIMENSIONS AND LEVELS BEFORE COMMENCEMENT. ANY DISCREPENCY SHALL BE REPORTED TO THE DESIGNER IMMEDIATELY.

Starfish CONSTRUCTIONS
ENZO CARO SCIO ARCHITECTURE

amended 07.10.06
amended 22.09.16
AMENDED 21.09.16
AMENDED 22.06.16
AMENDED 21.04.16
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

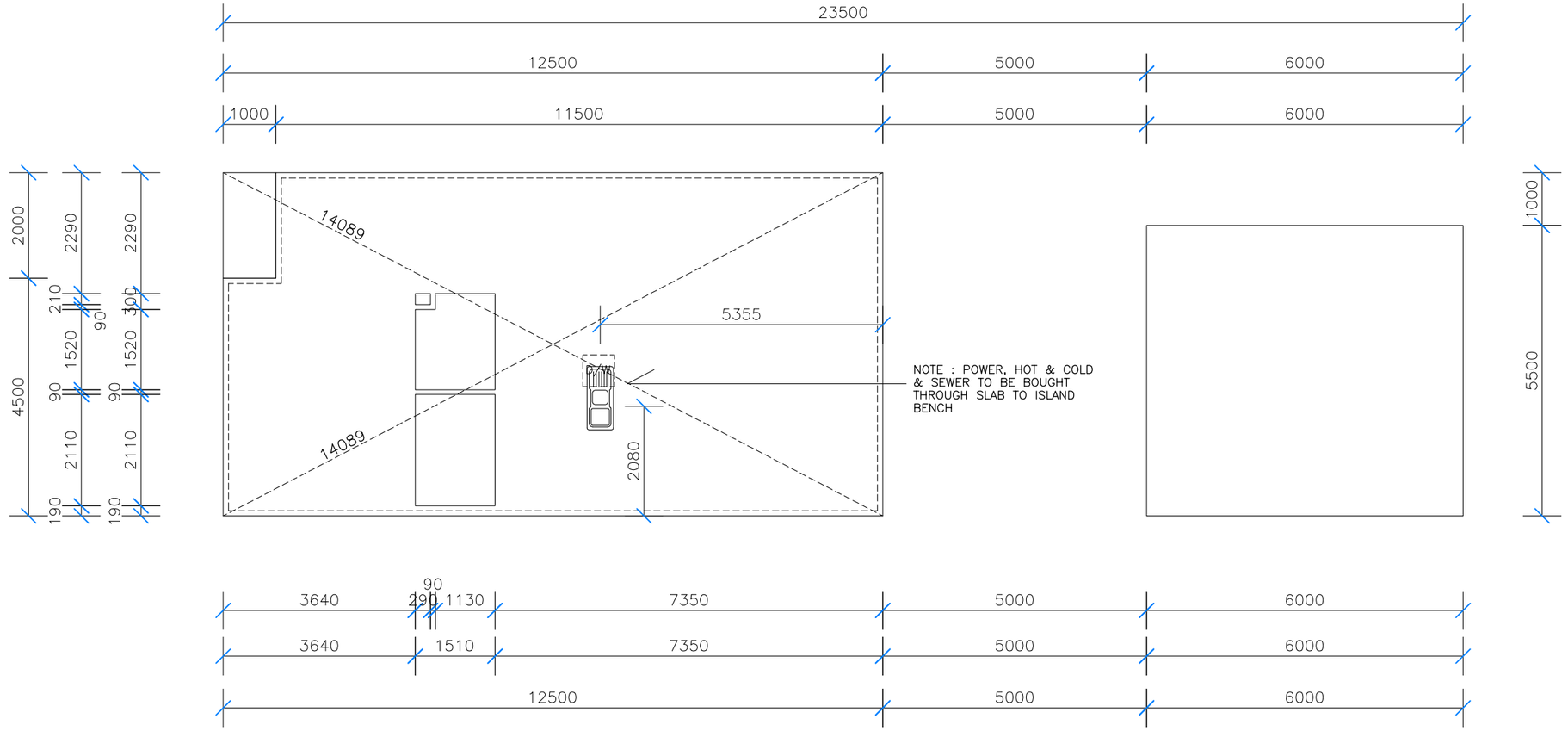
DRAWN D.J.G.
DATE 30.08.15
SCALE 1 : 50
SHEET 10 OF 10

BUILDING NOTES

NO PROVISION TO HAVE LIFT OFF
NO ASBESTOS TO BE INSTALLED
TERMITE PROTECTION IN ACCORDANCE WITH AS 3660.1/2000
PERIMETER : VISUAL BARRIER USING EDGE EXPOSURE 75mm
SLAB : DAMP PROOF COURSE TO TOP OF PAVING
TIMBER TREATED
IN ACCORDANCE WITH THE
NATIONAL CONSTRUCTION CODE
WINDOW SIZES HEIGHT X WIDTH
ALL WINDOWS SET TO BRICKBOND
WEATHER SEALS TO ALL EXTERNAL
EXTERNAL DOORS
THIS PLAN IS SUBJECT TO 6 STAR
ENERGY REQUIREMENTS
EXHAUST FANS & RANGEHOOD TO
CONTAIN DAMPER SEALS
DOWNLIGHTS TO BE SEALED AND
CONTAIN HEAT COVERS
HARDWIRED SMOKE ALARMS
WITH 9v BATTERY BACK-UP

SUSTAINABILITY HOUSE
11 May 2017
Job Ref: 81561
BDAV Member - Jim Woolcock
Phone: 1300 308 525 www.sustainabilityhouse.com.au

CONCRETE SET OUT



GROUND FLOOR LIVING : 79.25
FIRST FLOOR LIVING : 76.14
PORCH : 2.00
CARPORT : 33.00

TOTAL : 190.39sq.m.

NOTES**
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STAIRCASE & BALLUSTRADE TO BE IN ACCORDANCE WITH NATIONAL CONSTRUCTION CODE PART 3.9.1 & PART 3.9.2
STAIR CONSTRUCTION & BALLUSTRADES
RISER – MAX 190 / MIN 115
GOING – MAX 355 / MIN 240
QUANTITY (2R+G) – MAX 700 / MIN 550
STAIRS & STAIR BALLUSTRADING BY STAIRLOC Pty. Ltd.

DWG NO. WOO–16.dwg

PROPOSED NEW RESIDENCE
For :Starfish Developments
At :Lot 67 Road A
WOODFORDE – OPTION 1

FIGURED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS. VERIFY ALL DIMENSIONS AND LEVELS BEFORE COMMENCEMENT. ANY DISCREPENCY SHALL BE REPORTED TO THE DESIGNER IMMEDIATELY.

Starfish CONSTRUCTIONS

ENZO CARO SCIO ARCHITECTURE

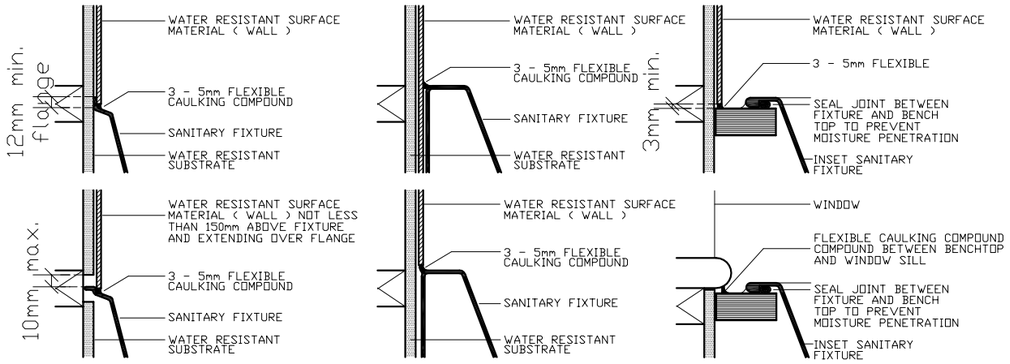
amended 07.10.06
amended 22.09.16
AMENDED 21.09.16
AMENDED 22.06.16
AMENDED 21.04.16
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

DRAWN	D.J.G.
DATE	30.08.15
SCALE	1 : 100
SHEET	6 OF 10

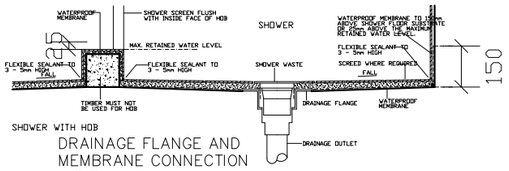
BUILDING NOTES

TERMITE PROTECTION IN ACCORDANCE WITH AS 3660.1/2000
PERIMETER VISUAL BARRIER USING EDGE EXPOSURE 75mm
DAMP PROOF COURSE TO TOP OF PAVING

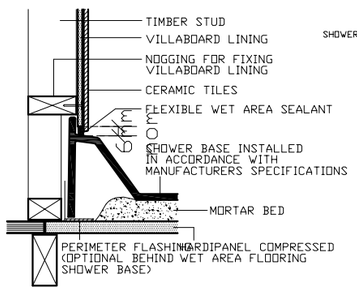
DETAILS TO BE IN ACCORDANCE
WITH AS 3740 & NATIONAL CONSTRUCTION CODE
SA3 & PART 3.8.1



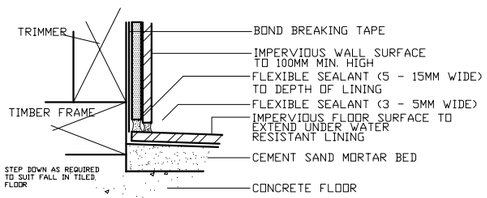
BENCH TOPS AND SANITARY FIXTURES ABUTTING WALLS
N.T.S.



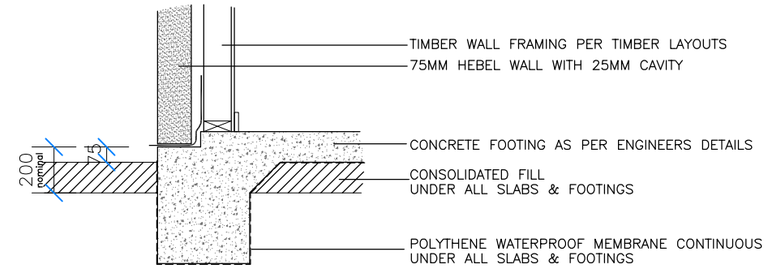
DRAINAGE FLANGE AND MEMBRANE CONNECTION
N.T.S.



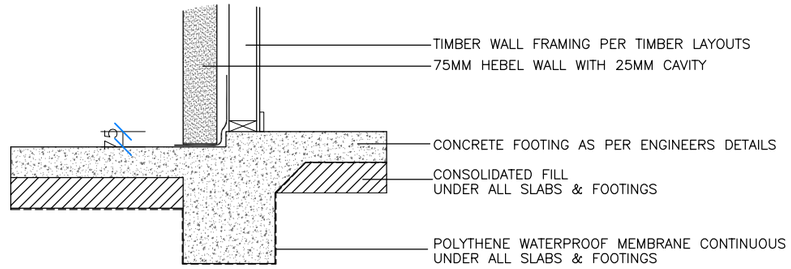
PRE-FORMED SHOWER BASE DETAIL
N.T.S.



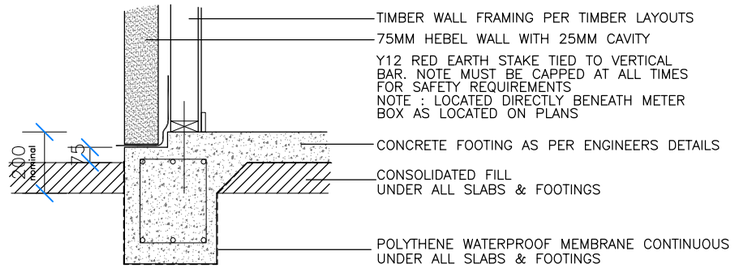
INTERNAL TRAY SHOWER
& IMPERVIOUS WALL JUNCTION
(CATEGORY 1) N.T.S.



Typical Footing Detail
scale 1 : 20



Typical Footing Detail
scale 1 : 20



Earth Stake to MB
scale 1 : 20

GROUND FLOOR LIVING :	79.25
FIRST FLOOR LIVING :	76.14
PORCH :	2.00
CARPORT :	33.00
TOTAL :	190.39sq.m.

NOTES**
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STAIRCASE & BALLUSTRADE TO BE IN ACCORDANCE WITH NATIONAL CONSTRUCTION CODE PART 3.9.1 & PART 3.9.2
STAIR CONSTRUCTION & BALLUSTRADES
RISER – MAX 190 / MIN 115
GOING – MAX 355 / MIN 240
QUANTITY (2R+G) – MAX 700 / MIN 550
STAIRS & STAIR BALLUSTRADING BY STAIRLOC Pty. Ltd.

DWG NO. WOO-16.dwg

PAGE NO. 3AW1.8

PROPOSED NEW RESIDENCE
For : Starfish Developments
At : Lot 67 Road A
WOODFORDE – OPTION 1

FIGURED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS. VERIFY ALL DIMENSIONS AND LEVELS BEFORE COMMENCEMENT. ANY DISCREPENCY SHALL BE REPORTED TO THE DESIGNER IMMEDIATELY.

Starfish CONSTRUCTIONS
ENZO CARO SCIO ARCHITECTURE

amended 07.10.06
amended 22.09.16
AMENDED 21.09.16
AMENDED 22.06.16
AMENDED 21.04.16
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

DRAWN D.J.G.
DATE 30.08.15
SCALE AS SHOWN
SHEET 8 OF 10

BUILDING NOTES

WC DOORS TO HAVE LIFT OFF ... IN ACCORDANCE WITH NATIONAL CONSTRUCTION CODE SECTION 3.8.3
THIS ... TO BE CONSTRUCTED IN ACCORDANCE WITH THE NATIONAL CONSTUCTION CODE
WINDOW SIZES HEIGHT X WIDTH
ALL WINDOWS SET TO BRICKBOND
WEATHER SEALS TO ALL EXTERNAL EXTERNAL DOORS
THIS PLAN IS SUBJECT TO 6 STAR ENERGY REQUIREMENTS
EXHAUST FANS & RANGEHOOD TO CONTAIN DAMPER SEALS
DOWNLIGHTS TO BE SEALED AND CONTAIN HEAT COVERS
(S) HARD WIRED SMOKE ALARM WITH 9v BATTERY BACK-UP

TERMITE PROTECTION IN ACCORDANCE WITH AS 3660.1/2000
PERIMETER : VISUAL BARRIER USING EDGE EXPOSURE 75mm FROM DAMPROOF COURSE TO TOP OF PAVING

SUSTAINABILITY HOUSE
11 May 2017
Job Ref: 81561
BDAV Member - Jim Woolcock
Phone: 1300 308 525 www.sustainabilityhouse.com.au

GROUND FLOOR LIVING	:	79.25
FIRST FLOOR LIVING	:	76.14
PORCH	:	2.00
CARPORT	:	33.00
TOTAL	:	190.39sq.m.

1. FALLS, SLIPS, TRIPS

a) WORKING AT HEIGHTS

DURING CONSTRUCTION

Wherever possible, components for this building should be prefabricated off-site or at ground level to minimise the risk of workers falling more than three metres. However, construction of this building will require workers to be working at heights where a fall in excess of three metres is possible and injury is likely to result from such a fall. The builder should provide a suitable barrier wherever a person is required to work in a situation where falling more than three metres is a possibility.

DURING OPERATION OR MAINTENANCE

For houses or other low-rise buildings where scaffolding is appropriate:
Cleaning and maintenance of windows, walls, roof or other components of this building will require persons to be situated where a fall from a height in excess of three metres is possible. Where this type of activity is required, scaffolding, ladders or trestles should be used in accordance with relevant codes of practice, regulations or legislation.
For buildings where scaffold, ladders, trestles are not appropriate:
Cleaning and maintenance of windows, walls, roof or other components of this building will require persons to be situated where a fall from a height in excess of three metres is possible. Where this type of activity is required, scaffolding, fall barriers or Personal Protective Equipment (PPE) should be used in accordance with relevant codes of practice, regulations or legislation.

ANCHORAGE POINTS

Anchorage points for portable scaffold or fall arrest devices have been included in the design for use by maintenance workers. Any persons engaged to work on the building after completion of construction work should be informed about the anchorage points.

b) SLIPPERY OR UNEVEN SURFACES

FLOOR FINISHES Specified

If finishes have been specified by designer, these have been selected to minimise the risk of floors and paved areas becoming slippery when wet or when walked on with wet shoes/feet. Any changes to the specified finish should be made in consultation with the designer or, if this is not practical, surfaces with an equivalent or better slip resistance should be chosen.

FLOOR FINISHES By Owner

If designer has not not been involved in the selection of surface finishes, the owner is responsible for the selection of surface finishes in the pedestrian trafficable areas of this building. Surfaces should be selected in accordance with AS HB 197:1999 and AS/NZ 4586:2004.

STEPS, LOOSE OBJECTS AND UNEVEN SURFACES

Due to design restrictions for this building, steps and/or ramps are included in the building which may be a hazard to workers carrying objects or otherwise occupied. Steps should be clearly marked with both visual and tactile warning during construction, maintenance, demolition and at all times when the building operates as a workplace.
Building owners and occupiers should monitor the pedestrian access ways and in particular access to areas where maintenance is routinely carried out to ensure that surfaces have not moved or cracked so that they become uneven and present a trip hazard. Spills, loose material, stray objects or any other matter that may cause a slip or trip hazard should be cleaned or removed from access ways.
Contractors should be required to maintain a tidy work site during construction, maintenance or demolition to reduce the risk of trips and falls in the workplace. Materials for construction or maintenance should be stored in designated areas away from access ways and work areas.

2. FALLING OBJECTS

LOOSE MATERIALS OR SMALL OBJECTS

Construction, maintenance or demolition work on or around this building is likely to involve persons working above ground level or above floor levels. Where this occurs one or more of the following measures should be taken to avoid objects falling from the area where the work is being carried out onto persons below.

1. Prevent or restrict access to areas below where the work is being carried out.
2. Provide toeboards to scaffolding or work platforms.
3. Provide protective structure below the work area.
4. Ensure that all persons below the work area have Personal Protective Equipment (PPE).

BUILDING COMPONENTS

During construction, renovation or demolition of this building, parts of the structure including fabricated steelwork, heavy panels and many other components will remain standing prior to or after supporting parts are in place. Contractors should ensure that temporary bracing or other required support is in place at all times when collapse which may injure persons in the area is a possibility.

Mechanical lifting of materials and components during construction, maintenance or demolition presents a risk of falling objects. Contractors should ensure that appropriate lifting devices are used, that loads are properly secured and that access to areas below the load is prevented or restricted.

3. TRAFFIC MANAGEMENT

For building on a major road, narrow road or steeply sloping road:
Parking of vehicles or loading/unloading of vehicles on this roadway may cause a traffic hazard. During construction, maintenance or demolition of this building designated parking for workers and loading areas should be provided. Trained traffic management personnel should be responsible for the supervision of these areas.
For building where on-site loading/unloading is restricted:
Construction of this building will require loading and unloading of materials on the roadway. Deliveries should be well planned to avoid congestion of loading areas and trained traffic management personnel should be used to supervise loading/unloading areas.
For all buildings:
Busy construction and demolition sites present a risk of collision where deliveries and other traffic are moving within the site. A traffic management plan supervised by trained traffic management personnel should be adopted for the work site.

4. SERVICES

GENERAL

Rupture of services during excavation or other activity creates a variety of risks including release of hazardous material. Existing services are located on or around this site. Where known, these are identified on the plans but the exact location and extent of services may vary from that indicated. Services should be located using an appropriate service (such as Dial Before You Dig), appropriate excavation practice should be used and, where necessary, specialist contractors should be used.
Locations with underground power:
Underground power lines MAY be located in or around this site. All underground power lines must be disconnected or carefully located and adequate warning signs used prior to any construction, maintenance or demolition commencing.
Locations with overhead power lines:
Overhead power lines MAY be near or on this site. These pose a risk of electrocution if struck or approached by lifting devices or other plant and persons working above ground level. Where there is a danger of this occurring, power lines should be, where practical, disconnected or relocated. Where this is not practical adequate warning in the form of bright coloured tape or signage should be used or a protective barrier provided.

5. MANUAL TASKS

Components within this design with a mass in excess of 25kg should be lifted by two or more workers or by mechanical lifting device. Where this is not practical, suppliers or fabricators should be required to limit the component mass.
All material packaging, building and maintenance components should clearly show the total mass of packages and where practical all items should be stored on site in a way which minimises bending before lifting. Advice should be provided on safe lifting methods in all areas where lifting may occur.
Construction, maintenance and demolition of this building will require the use of portable tools and equipment. These should be fully maintained in accordance with manufacturer?s specifications and not used where faulty or (in the case of electrical equipment) not carrying a current electrical safety tag.
All safety guards or devices should be regularly checked and Personal Protective Equipment should be used in accordance with manufacturer?s specification.

6. HAZARDOUS SUBSTANCES

ASBESTOS

For alterations to a building constructed prior to 1990:
If this existing building was constructed prior to:
1990 - it therefore may contain asbestos
1986 - it therefore is likely to contain asbestos
either in cladding material or in fire retardant insulation material. In either case, the builder should check and, if necessary, take appropriate action before demolishing, cutting, sanding, drilling or otherwise disturbing the existing structure.

POWDERED MATERIALS

Many materials used in the construction of this building can cause harm if inhaled in powdered form. Persons working on or in the building during construction, operational maintenance or demolition should ensure good ventilation and wear Personal Protective Equipment including protection against inhalation while using powdered material or when sanding, drilling, cutting or otherwise disturbing or creating powdered material.

TREATED TIMBER

The design of this building may include provision for the inclusion of treated timber within the structure. Dust or fumes from this material can be harmful. Persons working on or in the building during construction, operational maintenance or demolition should ensure good ventilation and wear Personal Protective Equipment including protection against inhalation of harmful material when sanding, drilling, cutting or using treated timber in any way that may cause harmful material to be released. Do not burn treated timber.

VOLATILE ORGANIC COMPOUNDS

Many types of glue, solvents, spray packs, paints, varnishes and some cleaning materials and disinfectants have dangerous emissions. Areas where these are used should be kept well ventilated while the material is being used and for a period after installation. Personal Protective Equipment may also be required. The manufacturer?s recommendations for use must be carefully considered at all times.

SYNTHETIC MINERAL FIBRE

Fibreglass, rockwool, ceramic and other material used for thermal or sound insulation may contain synthetic mineral fibre which may be harmful if inhaled or if it comes in contact with the skin, eyes or other sensitive parts or the body. Personal Protective Equipment including protection against inhalation of harmful material should be used when installing, removing or working near bulk insulation material.

TIMBER FLOORS

This building may contain timber floors which have an applied finish. Areas where finishes are applied should be kept well ventilated during sanding and application and for a period after installation. Personal Protective Equipment may also be required. The manufacturer?s recommendations for use must be carefully considered at all times.

7. CONFINED SPACES

EXCAVATION

Construction of this building and some maintenance on the building will require excavation and installation of items within excavations. Where practical, installation should be carried out using methods which do not require workers to enter the excavation. Where this is not practical, adequate support for the excavated area should be provided to prevent collapse. Warning signs and barriers to prevent accidental or unauthorised access to all excavations should be provided.

ENCLOSED SPACES

For buildings with enclosed spaces where maintenance or other access may be required:
Enclosed spaces within this building may present a risk to persons entering for construction, maintenance or any other purpose. The design documentation calls for warning signs and barriers to unauthorised access. These should be maintained throughout the life of the building. Where workers are required to enter enclosed spaces, air testing equipment and Personal Protective Equipment should be provided.

SMALL SPACES

For buildings with small spaces where maintenance or other access may be required:
Some small spaces within this building will require access by construction or maintenance workers. The design documentation calls for warning signs and barriers to unauthorised access. These should be maintained throughout the life of the building. Where workers are required to enter small spaces they should be scheduled so that access is for short periods. Manual lifting and other manual activity should be restricted in small spaces.

8. PUBLIC ACCESS

Public access to construction and demolition sites and to areas under maintenance causes risk to workers and public. Warning signs and secure barriers to unauthorised access should be provided. Where electrical installations, excavations, plant or loose materials are present they should be secured when not fully supervised.

9. OPERATIONAL USE OF BUILDING RESIDENTIAL BUILDINGS

This building has been designed as a residential building. If it, at a later date, it is used or intended to be used as a workplace, the provisions of the Work Health and Safety Act 2011 or subsequent replacement Act should be applied to the new use.

NON-RESIDENTIAL BUILDINGS

For non-residential buildings where the end-use has not been identified:
This building has been designed to requirements of the classification identified on the drawings. The specific use of the building is not known at the time of the design and a further assessment of the workplace health and safety issues should be undertaken at the time of fit-out for the end-user.

For non-residential buildings where the end-use is known:
This building has been designed for the specific use as identified on the drawings. Where a change of use occurs at a later date a further assessment of the workplace health and safety issues should be undertaken.

10.OTHER HIGH RISK ACTIVITY

All electrical work should be carried out in accordance with Code of Practice: Managing Electrical Risks at the Workplace, AS/NZ 3012 and all licensing requirements.
All work using Plant should be carried out in accordance with Code of Practice: Managing Risks of Plant at the Workplace.
All work should be carried out in accordance with Code of Practice: Managing Noise and Preventing Hearing Loss at Work.
Due to the history of serious incidents it is recommended that particular care be exercised when undertaking work involving steel construction and concrete placement. All the above applies.

THESE NOTES MUST BE READ AND UNDERSTOOD BY ALL INVOLVED IN THE PROJECT.
THIS INCLUDES (but is not excluded to): OWNER, BUILDER, SUB-CONTRACTORS, CONSULTANTS, RENOVATORS, OPERATORS, MAINTENORS, DEMOLISHERS.

NOTES**
ALL UPPER STOREY FLOORS ARE NOT DESIGNED FOR WATERBED LOADS OR ANY OTHER POINT LOADS DISTRIBUTED OVER FLOOR AREA

STAIRCASE & BALLUSTRADE TO BE IN ACCORDANCE WITH NATIONAL CONSTRUCTION CODE PART 3.9.1 & PART 3.9.2
STAIR CONSTRUCTION & BALLUSTRADES
RISER – MAX 190 / MIN 115
GOING – MAX 355 / MIN 240
QUANTITY (2R+G) – MAX 700 / MIN 550
STAIRS & STAIR BALLUSTRADING BY STAIRLOC Pty. Ltd.

DWG NO. WOO–16.dwg

PAGE NO. 3AW1.9

PROPOSED NEW RESIDENCE
For :Starfish Developments
At :Lot 67 Road A
WOODFORDE – OPTION 1

FIGURED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS. VERIFY ALL DIMENSIONS AND LEVELS BEFORE COMMENCEMENT. ANY DISCREPENCY SHALL BE REPORTED TO THE DESIGNER IMMEDIATELY.

Starfish CONSTRUCTIONS

ENZO CARO SCIO ARCHITECTURE

amended 07.10.06
amended 22.09.16
AMENDED 21.09.16
AMENDED 22.06.16
AMENDED 21.04.16
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

DRAWN	D.J.G.
DATE	30.08.15
SCALE	NO SCALE
SHEET	9 OF 10

BUILDING NOTES

NO PROVISION TO HAVE LIFT OFF
NO ASBESTOS EXISTS
TERMITE PROTECTION IN ACCORDANCE WITH AS 3660.1/2000
PERIMETER VISUAL BARRIER USING EDGE EXPOSURE 75mm
DPC MIN 150mm ABOVE ROOF COURSE TO TOP OF PAVING
TIMBER TREATED
IN ACCORDANCE WITH THE
NATIONAL CONSTUCTION CODE
WINDOW SIZES HEIGHT X WIDTH
ALL WINDOWS SET TO BRICKBOND
WEATHER SEALS TO ALL EXTERNAL
EXTERNAL DOORS
THIS PLAN IS SUBJECT TO 6 STAR
ENERGY REQUIREMENTS
EXHAUST FANS & RANGEHOOD TO
CONTAIN DAMPER SEALS
DOWNLIGHTS TO BE SEALED AND
CONTAIN HEAT COVERS
Ⓢ HARDWIRED SMOKE ALARMS
WITH 9v BATTERY BACK-UP

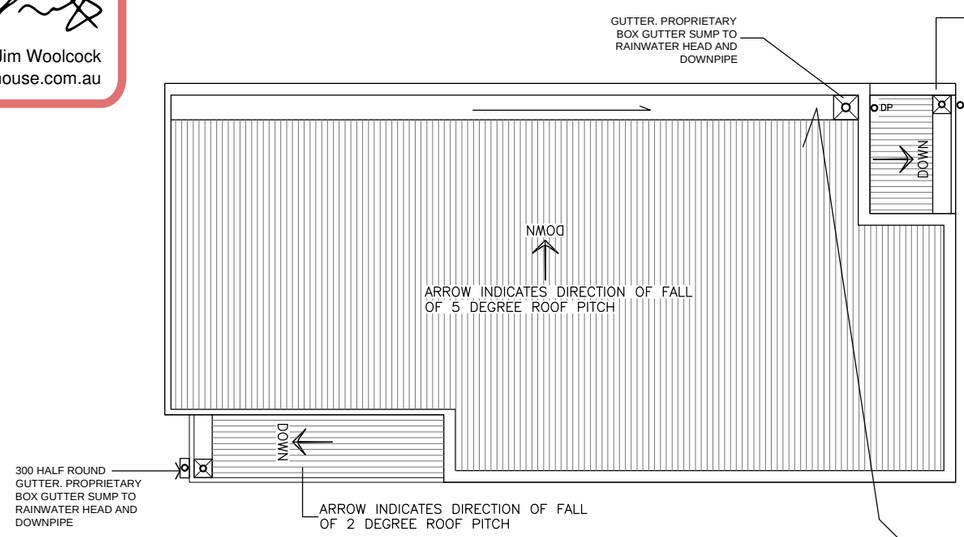
SUSTAINABILITY HOUSE

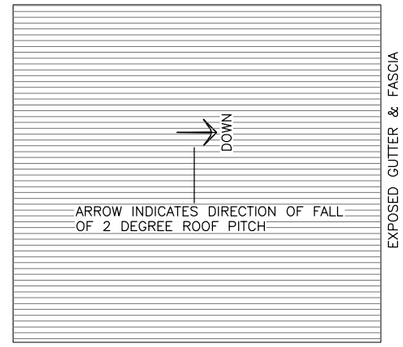
11 May 2017
Job Ref: 81561

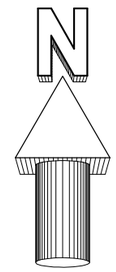
BDAV Member - Jim Woolcock
Phone: 1300 308 525 www.sustainabilityhouse.com.au

ROOF LAYOUT PLAN

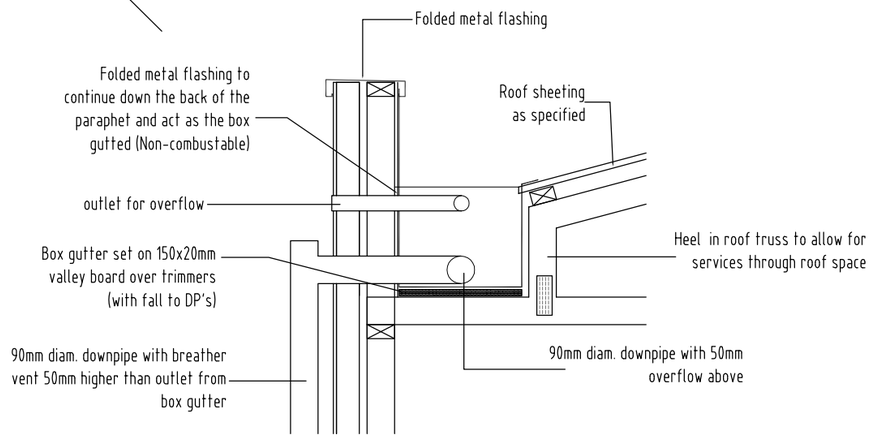
SCALE 1 : 100







GROUND FLOOR LIVING :	79.25
FIRST FLOOR LIVING :	76.14
PORCH :	2.00
CARPORT :	33.00
TOTAL :	190.39sq.m.



PARAPET DETAIL

SCALE : 1 : 20

NOTES**
ALL UPPER STOREY FLOORS ARE NOT DESIGNED FOR WATERBED LOADS OR ANY OTHER POINT LOADS DISTRIBUTED OVER FLOOR AREA

STAIRCASE & BALLUSTRADE TO BE IN ACCORDANCE WITH NATIONAL CONSTRUCTION CODE PART 3.9.1 & PART 3.9.2
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DWG NO. WOO–16.dwg

PAGE NO. 3AW1.7

PROPOSED NEW RESIDENCE
For :Starfish Developments
At :Lot 67 Road A
WOODFORDE – OPTION 1

FIGURED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS. VERIFY ALL DIMENSIONS AND LEVELS BEFORE COMMENCEMENT. ANY DISCREPENCY SHALL BE REPORTED TO THE DESIGNER IMMEDIATELY.

Starfish CONSTRUCTIONS

ENZO CARO SCIO ARCHITECTURE

amended 07.10.06
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AMENDED 21.04.16
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

DRAWN	D.J.G.
DATE	30.08.15
SCALE	AS SHOWN
SHEET	7 OF 10

Part 2.6 - Energy Efficiency

National Construction Code Series
Building Code of Australia 2016, Volume 2

Reference: SH81561
Date: 12 May, 2017

BCA compliance assessment of:
Lot 50 (BCA Class 1a)
Lot 41-69 Bucananan Drive, WOODFORDE SA 5072
BCA Climate Zone 6

Client Reference: Woodforde Development Stage 1 Terraces

Report commissioned by:
Xtraordinary Constructions
PO Box 822, Two Wells SA 5501

On behalf of:
Starfish Developments

Principal Assessor: Jim Woolcock
Member of BDAV, AIBA, HIA and MBA

Competency in ABCB accredited software:
EnergyPlus, Accurate, FirstRate5, BERSPro.

Table of Contents

1. Action Summary

Actions required to comply with Part 2.6

P2.6.1 - Building

Comply with additional requirements

These are additional requirements that need to be complied with because insufficient information was provided to verify them.

1.	*3.12.1.1*	Building fabric thermal insulation must be installed in compliance with this section.
2.	*3.12.1.2(c)*	Thermal breaks are to be installed in any roofs when required by this section.
3.	*3.12.1.4(b)*	Thermal breaks are to be installed in the external walls when required by this section.
4.	*3.12.3.5*	Building sealing for the construction of roofs, walls, and floors must comply with this section.
5.	*3.12.3.6*	Building sealing for the evaporative coolers must comply with this section.

P2.6.2 - Services

Comply with additional requirements

These are additional requirements that need to be complied with because insufficient information was provided to verify them.

6.	*3.12.5.0*	Heated water supplies must comply with NCC 2016 Volume 3 SA B2.2.
7.	*3.12.5.1*	Thermal insulation for central heating water piping and heating and cooling ductwork must comply with this section.
8.	*3.12.5.2*	The level of insulation for the central heating water piping must meet the requirements of this section.
9.	*3.12.5.3*	The installation of heating and cooling ductwork and duct insulation must comply with this section.
10.	*3.12.5.4*	Electrical resistance space heaters must comply with this section.
11.	*3.12.5.5(a)-(c)*	Artificial lighting lamp power density or illumination power density must comply with this section.
12.	*3.12.5.5(d)*	Halogen lamps must be separately switched from fluorescent lamps.
13.	*3.12.5.5(e)*	Artificial lighting must be either controlled by daylight sensors or have an average light source efficacy of at least 40 Lumens/W.
14.	*3.12.5.6*	Heated water supplies must comply with NCC 2016 Volume 3 SA B2.4.

2. Compliance Report

Introduction

Sustainability House was engaged by Xtraordinary Constructions to assess the proposed residential dwelling for compliance with Part 2.6 Energy Efficiency of the National Construction Code Series (NCC), Building Code of Australia (BCA) 2016, Volume 2.

The building is located in WOODFORDE, SA (BCA Climate Zone 6) and is classified as a BCA Class 1a.

Compliance Summary

To comply with Part 2.6 Energy Efficiency a building must meet the Performance Requirements P2.6.1 Building and P2.6.2 Services.

P2.6.1 Building

This Performance Requirement requires a building to have a level of thermal performance that allows for efficient use of energy for artificial heating and cooling appropriate to the function, use, and physical arrangement of the site location.

The assessment was conducted in accordance with BCA 2016, Volume 2, Part 3.12.0(a)(i). This requires a minimum NatHERS star rating to be achieved under part (A) using software approved under the ABCB Protocol for House Energy Rating Software, as well as compliance with each additional item listed in (B) – (F).

(A) For the purposes of the heating and cooling load calculations the approved software package used was FirstRate5 5.2.5, and the applicable NatHERS climate zone is 16 - Adelaide. The minimum required NatHERS star rating for this building is 6 stars in accordance with BCA SA 3.12.0.1(a)(i).

The proposed building design and specification has been assessed to comply with (A) through achieving a NatHERS rating of 6.0 stars.

However compliance could not be fully determined for the additional requirements; (B) building fabric thermal insulation, (C) thermal breaks and (F) building sealing, see the Action Summary and Appendix A for full details.

At the time of assessment, no recessed luminaries have been nominated on the documentation provided. It is the responsibility of the report owner or authorising individuals to notify Sustainability House if recessed luminaries are to be installed as this will require reassessment of the dwelling

P2.6.2 Services

This Performance Requirement requires the domestic services to have features that allow for the efficient use of energy appropriate to the type of service and to obtain energy from a source with a low greenhouse gas intensity.

Supplied information relating to building services has been assessed for compliance with P2.6.2. Where compliance could not be verified the relevant 'Deemed-to-Satisfy' requirements under Part 3.12.5 of BCA 2016, Volume 2 have been stated in full in Appendix B.

Please note: An abbreviated description of all actions required to comply with Performance Requirements P2.6.1 and P2.6.2 is given in the Action Summary on page 3 of this report.

3. Final Building Specification

Building Fabric

Ceiling Insulation

3.12.1.2(e) compensating for a loss of ceiling insulation has been modelled within the NatHERS software. Refer to NatHERS software Certificate.

Floors

There is no concrete in-slab or in-screed heating or cooling systems excluding those in bathroom, amenity area similarly small areas.

Building Sealing

There are no chimneys or flues for open solid-fuel burning appliances.

There are no roof lights.

All the external windows and doors meet the sealing requirements specified in Section 3.12.3.3.

All exhaust fans meet the sealing requirements specified in Section 3.12.3.4.

Services

Class 1 regions

Given that the total area of the internal rooms is 99.70 m², a maximum total of 499 watts for all lighting is permitted.

Verandah, balcony or the like regions

There are no verandah, balcony or the like areas.

4. Assessment Calculations

NatHERS Accredited Software Certificate

The NatHERS accredited software certificate as produced by the rating software, FirstRate5 5.2.5, has been attached at the end of this report.

N.B. The ceiling insulation used in the simulation may have been adjusted to compensate for the loss of insulation resulting from penetrations as described in Appendix A, Section 3.12.1.2(e).

Appendix A - P2.6.1 Building

Section 3.12.1 - Building Fabric

Section 3.12.1.1 - Building fabric thermal insulation

Building fabric thermal insulation must be installed in compliance with BCA 2016, Volume 2, Section 3.12.1.1, as follows:

(a) Where required, insulation must comply with AS/NZS 4859.1 and be installed so that it—
  (i) abuts or overlaps adjoining insulation other than at supporting members such as columns, studs, noggings, joists, furring channels and the like where the insulation must butt against the member; and
  (ii) forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier; and
  (iii) does not affect the safe or effective operation of a domestic service or fitting.

(b) Where required, reflective insulation must be installed with—
  (i) the necessary airspace, to achieve the required R-Value between a reflective side of the reflective insulation and a building lining or cladding; and
  (ii) the reflective insulation closely fitted against any penetration, door or window opening; and
  (iii) the reflective insulation adequately supported by framing members; and
  (iv) each adjoining sheet of roll membrane being—
    (A) overlapped not less than 150 mm; or
    (B) taped together.

(c) Where required, bulk insulation must be installed so that—
  (i) it maintains its position and thickness, other than where it crosses roof battens, water pipes, electrical cabling or the like; and
  (ii) in a ceiling, where there is no bulk insulation or reflective insulation in the external wall beneath, it overlaps the external wall by not less than 50 mm.

Section 3.12.1.2 - Roofs

(c) A roof that—
  (i) is required to achieve a minimum Total R-Value; and
  (ii) has metal sheet roofing directly fixed to metal purlins, metal rafters or metal battens; and
  (iii) does not have a ceiling lining or has a ceiling lining fixed directly to those metal purlins, metal rafters or metal battens (see BCA 2016, Figure 3.12.1.1(b)),

must have a thermal break, consisting of a material with an R-Value of not less than 0.2, installed between the metal sheet roofing and its supporting metal purlins, metal rafters, or metal battens.

Section 3.12.1.4 - External Walls

(b) An external wall that—
  (i) has lightweight external cladding such as weatherboards, fibre-cement or metal sheeting fixed to the metal frame; and
  (ii) does not have a wall lining or has a wall lining that is fixed directly to the metal frame (see BCA 2016, Volume 2, Figure 3.12.1.3(a) and (b)),

must have a thermal break, consisting of a material with an R-Value of not less than 0.2, installed between the external cladding and the metal frame.

Section 3.12.3 - Building Sealing

Section 3.12.3.1 - Chimneys and flues

There are no chimneys or flues for open solid-fuel burning appliances.

Section 3.12.3.2 - Roof lights

There are no roof lights.

Section 3.12.3.3 - External windows and doors

It has been specified that all the external windows and doors (where they exist) comply with Section 3.12.3.3.

Section 3.12.3.4 - Exhaust fans

It has been specified that all the exhaust fans comply with Section 3.12.3.4.

Section 3.12.3.5 - Construction of roofs, walls and floors

(a) Roofs, external walls, external floors and any opening such as a window frame, door frame, roof light frame or the like must be constructed to minimise air leakage in accordance with (b) when forming part of the external fabric of—
  (i) a conditioned space; or
  (ii) a habitable room in climate zones 4, 5, 6, 7 and 8.

(b) Construction required by (a) must be—
  (i) enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or
  (ii) sealed by caulking, skirting, architraves, cornices or the like.

A permanent building ventilation opening that is necessary for the safe operation of a gas appliance is excluded from this requirement.

Section 3.12.3.6 - Evaporative coolers

An evaporative cooler must be fitted with a self-closing damper or the like when serving—

(a) a heated space; or

(b) a habitable room in climate zones 4, 5, 6, 7 or 8.

A permanent building ventilation opening that is necessary for the safe operation of a gas appliance is excluded from this requirement.

Appendix B - P2.6.2 Services

Section 3.12.5 - Services

Section 3.12.5.0

Plumbing Code of Australia (PCA) Part SA B2.2 - General requirements

(a) The design, construction, installation, replacement, repair, alteration and maintenance of a heated water service must be in accordance with the following:

(i) AS/NZS 3500.4 with the following variations:

(A) After clause 1.9.2(b) insert (c), (d), (e) and (f) as follows:

(c) Heated water services in buildings constructed after 19 October 1995 shall have temperature control in accordance with items (a) and (b).

(d) All new solar water installations (including solar heater replacements) shall be in accordance with items (a) and (b).

(e) Where an existing building is altered or extended in such a way that sanitary fixtures used primarily for personal hygiene purposes are installed in a location where, before the alteration or extension, no such fixture existed, the delivery temperature at the fixture shall be in accordance with items (a) and (b).

(d) Where a water heater is replaced, a temperature control device is required where such a device was in place prior to the installation of the replaced water heater. The device must meet the requirements of items (a) and (b).

(B) Substitute clause 5.8(c) as follows:

5.8(c) All new or replacement unvented storage water heaters shall be fitted with new temperature/pressure relief and expansion control valves as shown in Figure 5.7.

(C) Substitute clause 5.11.2.1 as follows:

5.11.2.1 The drain lines from the outlet of the temperature/pressure-relief valve and the expansion control valve on an individual water heater shall not be interconnected; and

(D) Substitute clause 5.11.3(e) as follows:

5.11.3(e) All drain lines shall discharge separately over a gully, tundish or other visible approved outlet.

(ii) Section 3 of AS/NZS 3500.5 with the following variations:

(A) After clause 3.2.2 insert 3.2.2.1 as follows:

3.2.2.1 The requirements of Clause 3.2.2 apply to the following:

(a) Heated water services in buildings constructed after 19 October 1995.

(b) All new solar water heater installations (including solar water replacements).

(c) Where an existing building is altered or extended in such a way that sanitary fixtures used primarily for personal hygiene purposes are installed in a location where, before the alteration or extension, no such fixture existed.

(d) Where a water heater is replaced, a temperature control device is required where such a device was in place prior to the installation of the replaced water heater.

(B) Substitute clause 3.19(c)(i) as follows:

(c)(i) All new or replacement unvented storage water heaters shall be fitted with new temperature/pressure relief and expansion control valves as shown in Figure 5.7.

(C) Substitute clause 3.21.2(a) and (b) as follows:

(a) The drain lines from the outlet of the temperature/pressure-relief valve and the expansion control valve on an individual water heater shall not be interconnected; and

(b) All drain lines shall discharge separately over a gully, tundish or other visible approved outlet.

(iii) The requirements of this Part.

(b) * * * * *

(c) A solar heated water supply system for food preparation and sanitary purposes, where installed in a new building in climate zones 1, 2 or 3, is not required to comply with—

(i) Section 8 of AS/NZS 3500.4; or

(ii) for new Class 1a and Class 10 buildings, Section 3.33 of AS/NZS 3500.5.

Section 3.12.5.1

Thermal insulation for central heating water piping and heating and cooling ductwork must—

(a) be protected against the effects of weather and sunlight; and

(b) be able to withstand the temperatures within the piping or ductwork; and

(c) use thermal insulation material in accordance with AS/NZS 4859.1.

Section 3.12.5.2

Central heating water piping that is not within a conditioned space must be thermally insulated to achieve the minimum material R-Value as follows:

1. All internal flow and return internal piping that is-

(i) within an unventilated wall space; or

(ii) within an internal floor between storeys; or

(iii) between ceiling insulation and a ceiling,

in addition to any hot water piping encased within a concrete floor slab (except that which is part of a floor heating system) must have an R-Value greater than 0.4.

2. All piping located within a ventilated wall space, an enclosed building sub-floor or a roof space that is:

(a) flow and return *piping*; or

(b) cold water supply *piping*—within 500 mm of the connection to the central water heating system; or

(c) relief valve piping *piping*—within 500 mm of the connection to the central water heating system,

must be greater than 0.9, as required for climate zone 6.

3. All piping outside the building or in an unenclosed building sub-floor or roof space that is:

(a) flow and return *piping*; or

(b) cold water supply *piping*—within 500 mm of the connection to the central water heating system; or

(c) relief valve piping *piping*—within 500 mm of the connection to the central water heating system,

must be greater than 1.3, as required for climate zone 6.

Section 3.12.5.3

(a) Heating and cooling ductwork and fittings must—

(i) achieve a minimum material R-Value of 0.4 for fittings, and 1 for heating-only system or cooling-only system including an evaporative cooling system, and 1.5 for combined heating and refrigerated cooling system, as required for climate zone 6 as per table 3.12.5.2.

(ii) be sealed against air loss—

(A) by closing all openings in the surface, joints and seams of ductwork with adhesives, mastics, sealants or gaskets in accordance with AS 4254 for a Class C seal; or

(B) for flexible ductwork, with a draw band in conjunction with a sealant or adhesive tape.

(b) Duct insulation must—

(i) abut adjoining duct insulation to form a continuous barrier; and

(ii) be installed so that it maintains its position and thickness, other than at flanges and supports; and

(iii) where located outside the building, under a suspended floor, in an attached Class 10a building or in a roof space—

(A) be protected by an outer sleeve of protective sheeting to prevent the insulation becoming damp; and

(B) have the outer protective sleeve sealed with adhesive tape not less than 48 mm wide creating an airtight and waterproof seal.

(c) The requirements of (a) do not apply to heating and cooling ductwork and fittings located within the insulated building envelope including a service riser within the conditioned space, internal floors between storeys and the like.

Note: The minimum material R-Value required for ductwork specified in (a)(i) may be reduced by 0.5 for combined heating and refrigerated cooling systems in climate zones 1, 3, 4, 6, and 7 if the ducts are—

(a) under a suspended floor with an enclosed perimeter; or

(b) in a roof space that has insulation of not less than R0.5 directly beneath the roofing.

Section 3.12.5.4

An electric resistance space heating system that serves more than one room must have—

(a) separate isolating switches for each room; and

(b) a separate temperature controller and time switch for each group of rooms with common heating needs; and

(c) power loads of not more than 110 W/m² for living areas, and 150 W/m² for bathrooms.

Section 3.12.5.5

(a) The lamp power density or illumination power density of artificial lighting, excluding heaters that emit light, must not exceed—

(i) 5 W/m² in a Class 1 building; and

(ii) 4 W/m² on a verandah, balcony or the like attached to a Class 1 building; and

(ii) 3 W/m² in a Class 10a building associated with a Class 1 building.

(b) The illumination power density allowance in (a) may be increased by dividing it by the illumination power density adjustment factor for a control device in BCA 2016, Table 3.12.5.3 as applicable.

(c) When designing the lamp power density or illumination power density, the power of the proposed installation must be used rather than nominal allowances for exposed batten holders or luminaires.

(d) Halogen lamps must be separately switched from fluorescent lamps.

(e) Artificial lighting around the perimeter of a building must —

(i) be controlled by a daylight sensor; or

(ii) have an average light source efficacy of not less than 40 Lumens/W.

Section 3.12.5.6

Plumbing Code of Australia (PCA) Part SA B2.4 - Water heater in a heated water supply system

(a) A water heater in a hot water supply system must be—

(i) a solar heater complying with **(b)**; or

(ii) a heat pump water heater complying with **(b)**; or

(iii) a gas water heater complying with **(c)**; or

(iv) an electric resistance heater only in the circumstances described in **(d)**; or

(v) a wood combustion water heater with a tank volume not more than 700 litres and no additional heating mechanisms.

(b) See PCA 2016 Volume 3, SA B2.4(b) for information concerning the compliance requirements for a solar heater or heat pump water heater.

(c) A gas heater must be rated at not less than 5 stars in accordance with AS 4552.

(d) See See PCA 2016 Volume 3, SA B2.4(d) for information concerning the compliance requirements for an electric resistance water heater.

Section 3.12.5.7

It has been specified that no swimming pools are to be installed.

Section 3.12.5.8

It has been specified that no spa pools are to be installed.

Disclaimer

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Phone: 1300 308 525
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residential@sustainabilityhouse.com.au

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: **C053D8YQDR** Date of Certificate: **12 May 2017** ★ Star rating: **6**

Assessor details

Accreditation number:	**VIC/BDAV/11/1278**
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Organisation:	**Sustainability House**
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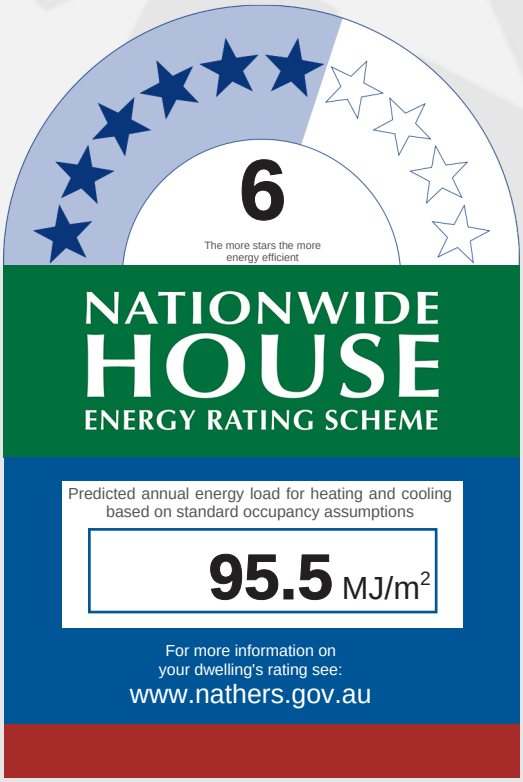
Phone:	**1300308525**
Declaration of interest:	**No potential conflicts of interest to declare**
Software:	**FirstRate5: 5.2.5 (3.13)**
AAO:	**BDAV**



Overview

Dwelling details

Address:	**Lot 50 Bucananan Drive**		
Suburb:	**WOODFORDE**		
State:	**SA**	Postcode:	**5072**
Type:	**New Home**	NCC Class:	**Class 1a**
Lot/DP number:	**-**	NatHERS climate zone:	**16**
Exposure:	**suburban**		

Key construction and insulation materials

(see following pages for details)

Construction:	Wall:	**AAC & Colorbond**
	Roof:	**Metal**
	Floor:	**CSOG**
Insulation:	Wall:	**R2**
	Roof:	**R4**
	Floor:	**-**
Glazing:		**Aluminium Single glazed clear**

Ceiling penetrations

(see following pages for details)

Sealed:	**25**
Unsealed:	**0**
TOTAL:**	**25**

Principal downlight type: **LED**

NOTE: This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceded in construction then this certificate IS NOT VALID and a new certificate is required. Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Net floor area (m^2)

Conditioned:	**92**
Unconditioned:	**2.6**
Garage:	**-**
TOTAL:	**94.6**

Annual thermal performance loads (MJ/m^2)

Heating:	**30.5**
Cooling:	**65**
TOTAL:	**95.5**

Window selection - default windows only

Note on allowable window values: Only a 5% tolerance to the nominated SHGC window values shown on page 2 can be used with this rating.

Note: Only a +/-5% SHGC tolerance is allowed with this rating.

NB: This tolerance ONLY applies to SHGC, the U-value can always be lower but not higher than the values stated on page 2.

If any of the windows selected are outside the 5% tolerance then this certificate is no longer valid and the dwelling will need to be rerated to confirm compliance.

Plan documents

Plan ref/date:	**30/08/15**
Prepared by:	**DJG**

Scan to access this certificate online and confirm this is valid.

https://www.fr5.com.au/QRCodeLanding?PublicId=C053D8YQDR

* Nationwide House Energy Rating Scheme (NatHERS) is an initiative of the Australian, state and territory governments. For more details see www.nathers.gov.au

Building Features

Windows type and performance value

Window ID	Window type	U-value	SHGC
TND-002-01 A	Trend Al Awning Window SG 3Clr	6.54	0.66
TND-001-01 A	Trend Al Sliding Window SG 3Clr	6.44	0.73

Windows schedule

Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Zone name	Outdoor shade
TND-002-01 A	Dining AW	2100	1200	W	Din/Kit/Lounge	No
TND-001-01 A	Lounge SD	2400	3600	E	Din/Kit/Lounge	No
TND-002-01 A	Bed1 AW	2100	1200	W	Bed1	No
TND-002-01 A	ENS AW	1200	450	W	ENS	No
TND-002-01 A	Bed2 AW	2100	1500	E	Bed2	No
TND-001-01 A	Study FW	1200	600	E	Study/Stair/Passage	No

Roof windows and skylight type and performance value

ID	Window type	U-value	SHGC

Roof window and skylight schedule

ID	Roof window/ skylight no.	Area (m^2)	Orientation	Zone name	Outdoor shade	Indoor shade/ diffuser

External wall type

Type	Insulation	Wall wrap
1 : XTRA - AAC 75mm Panel Stud Wall	Glass fibre batt: R2.0 (R2.0)	No
2 : XTRA - Metal Clad Framed	Glass fibre batt: R2.0 (R2.0)	No

External wall schedule

Wall type	Area (m^2)	Orientation	Zone name	Fixed shade	Eaves
1 : XTRA - AAC 75mm Panel Stud Wall	1.7	W	Din/Kit/Lounge	No	No
1 : XTRA - AAC 75mm Panel Stud Wall	7.1	W	Din/Kit/Lounge	No	Yes
1 : XTRA - AAC 75mm Panel Stud Wall	2.7	S	Din/Kit/Lounge	Yes	Yes
1 : XTRA - AAC 75mm Panel Stud Wall	3.8	W	Din/Kit/Lounge	Yes	Yes
1 : XTRA - AAC 75mm Panel Stud Wall	4.9	S	Din/Kit/Lounge	No	No
1 : XTRA - AAC 75mm Panel Stud Wall	9.8	S	Din/Kit/Lounge	No	No
1 : XTRA - AAC 75mm Panel Stud Wall	12.5	E	Din/Kit/Lounge	No	No

Building Features

1 : XTRA - AAC 75mm Panel Stud Wall	31.6	N	Din/Kit/Lounge	No	No
1 : XTRA - AAC 75mm Panel Stud Wall	4.4	S	Ldry	No	No
1 : XTRA - AAC 75mm Panel Stud Wall	9.1	S	Stairs	No	No
2 : XTRA - Metal Clad Framed	10.6	W	Bed1	No	No
1 : XTRA - AAC 75mm Panel Stud Wall	10.1	S	Bed1	No	No
2 : XTRA - Metal Clad Framed	10.1	N	Bed1	Yes	No
1 : XTRA - AAC 75mm Panel Stud Wall	2	W	ENS	Yes	No
1 : XTRA - AAC 75mm Panel Stud Wall	5.8	N	ENS	No	No
1 : XTRA - AAC 75mm Panel Stud Wall	6.6	N	Bath	No	No
1 : XTRA - AAC 75mm Panel Stud Wall	5.2	S	Bed2	Yes	No
1 : XTRA - AAC 75mm Panel Stud Wall	8.2	E	Bed2	No	No
1 : XTRA - AAC 75mm Panel Stud Wall	9.8	N	Bed2	No	No
1 : XTRA - AAC 75mm Panel Stud Wall	17.5	S	Study/Stair/Passage	No	No
1 : XTRA - AAC 75mm Panel Stud Wall	4.1	E	Study/Stair/Passage	Yes	No

Internal wall type

Type	Area (m^2)	Insulation
1 : FR5 - Internal Plasterboard Stud Wall	135.6	

Floors

Location	Construction	Area (m^2)	Sub floor ventilation	Added insulation	Covering
Din/Kit/Lounge	CSOG: Slab on Ground	40.8	Enclosed	0.0	floattimber
Din/Kit/Lounge	CSOG: Slab on Ground	1.8	Enclosed Disconnected	0.0	floattimber
Din/Kit/Lounge	CSOG: Slab on Ground	2.3	Enclosed Disconnected	0.0	floattimber
Ldry	CSOG: Slab on Ground	2.6	Enclosed	0.0	Tiles
Stairs	CSOG: Slab on Ground	3.4	Enclosed	0.0	Carpet
Bed1	Timber	12.1	Enclosed Disconnected	0.0	Carpet
Bed1	Timber	2.3	Elevated	0.0	Carpet
ENS	Timber	5.3	Enclosed Disconnected	0.0	Tiles
Bath	Timber	6.1	Enclosed Disconnected	0.0	Tiles
Bed2	Timber	10.9	Enclosed Disconnected	0.0	Carpet

Building Features

Study/Stair/Passage	Timber	11.9	Enclosed Disconnected	0.0	Carpet

Ceiling type

Location	Material	Added insulation	Roof space above
Din/Kit/Lounge	Plasterboard	0.0	No
Din/Kit/Lounge	Plasterboard	0.0	No
Din/Kit/Lounge	Plasterboard	0.0	No
Din/Kit/Lounge	Plasterboard	0.0	No
Din/Kit/Lounge	Plasterboard	0.0	No
Din/Kit/Lounge	Plasterboard	4.0	No
Din/Kit/Lounge	Plasterboard	4.0	No
Ldry	Plasterboard	0.0	No
Stairs	Plasterboard	0.0	No
Stairs	Plasterboard	0.0	No
Bed1	Plasterboard	4.0	Yes
Bed1	Plasterboard	4.0	Yes
ENS	Plasterboard	4.0	Yes
Bath	Plasterboard	4.0	Yes
Bed2	Plasterboard	4.0	Yes
Study/Stair/Passage	Plasterboard	4.0	Yes

Ceiling penetrations

Location	Number	Type	Width (mm)	Length (mm)	Seal/ unsealed
Din/Kit/Lounge	1	Exhaust Fans	200	500	Sealed
Din/Kit/Lounge	13	Downlights	50	50	Sealed
Ldry	1	Exhaust Fans	0	0	Sealed
Bed1	4	Downlights	50	50	Sealed
ENS	1	Exhaust Fans	200	500	Sealed
Bath	1	Exhaust Fans	200	500	Sealed
Bed2	2	Downlights	50	50	Sealed
Study/Stair/Passage	2	Downlights	50	50	Sealed

Ceiling fans

Location	Number	Diameter (mm)

Building Features

Roof type

Material	Added insulation	Roof colour
Framed:Flat - Flat Framed (Metal Deck)	0.0	dark
Cont:Attic-Continuous	0.0	light

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: **C053D8YQDR** Date of Certificate: **12 May 2017** ★ Star rating: **6**

Additional information

Explanatory notes

About this report

Residential energy ratings address the quality of the building fabric i.e. walls, windows, floors and roof/ceilings. Ratings do not cover the energy or water efficiency of appliances including heating and cooling, hot water, dishwashers, ovens, fridges, TVs etc. or solar panel or water tank requirements. The efficiency or specification of these items is generally covered by other regulations, standards or guidelines.

General Information

A NatHERS House Energy Rating is a comprehensive, dynamic computer modelling evaluation of the floorplans, elevations and specifications to predict an energy load of a home. Not all of us use our homes in the same way, so ratings are generated using standard assumptions. This means homes can be compared across the country.

The actual energy consumption of your home may vary significantly from the predicted energy load figures in this report depending on issues such as the size of your household and your personal preferences, e.g. in terms of heating or cooling.

While the figures are an indicative guide to energy use, they can be used as a reliable guide for comparative purposes between different house designs and for demonstrating that the design meets the required regulatory compliance.

Homes that are energy efficient use less energy, are warmer in winter, cooler in summer and cost less to run. The higher the star rating the more energy efficient.

This NatHERS House Energy Rating report was carefully prepared by your assessor on the basis of comprehensive modelling using standard procedures to rate your home using an underlying engine developed by the Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO).

All information relating to energy loads presented in this report is based on a range of standard assumptions in order to allow for comparisons with reports prepared for other homes and to demonstrate minimum regulatory compliance. The standard assumptions include figures for occupancy, indoor air temperature and are based on a unique climate file for your region.

Accredited Assessors

To ensure you get a high-quality, professional NatHERS House Energy Rating report, you should always use an accredited assessor, accredited assessors are members of a professional body called an Assessor Accrediting Organisation (AAO).

AAOs have specific quality assurance processes in place and continuing professional development requirements to maintain a high and consistent standard of assessments across the country. Non-accredited assessors do not have this level of quality assurance or any on-going training requirements.

If you have any questions or concerns about this report, please direct them to your assessor in the first instance.

If your assessor is unable to address your questions or concerns, please contact their AAO listed under ‘assessor details’. You can also find a range of information about accredited assessors on the AAO websites.

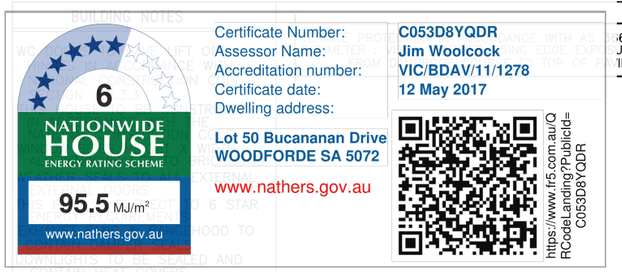
Disclaimer

The energy values quoted are for comparison purposes only; they are not a prediction of actual energy use. This rating only applies to the floor plan, construction details, orientation and climate as submitted and included in the attached drawing set that bears a stamp with the same number as this certificate. Changes to any of these details could affect the rating.

Contact

For more information on the Nationwide House Energy Rating Scheme (NatHERS), visit www.nathers.gov.au

For more information on energy efficient design and insulation visit www.yourhome.gov.au



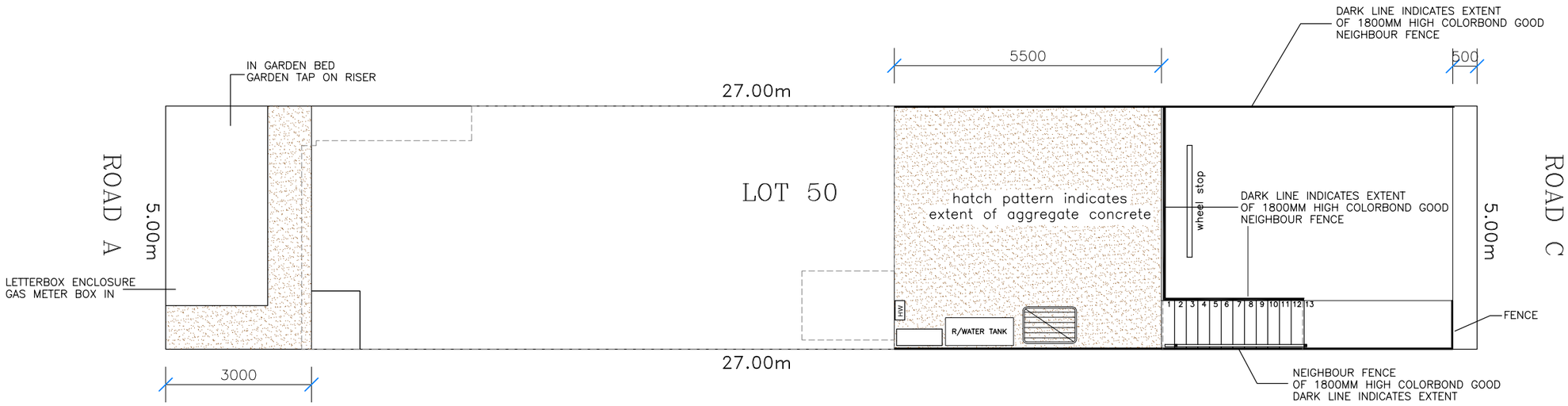
60.1/2000
JRE 75mm
ING

Ⓢ HARD WIRED SMOKE ALARM
WITH 9v BATTERY BACK–UP

SITE PLAN

GROUND FLOOR LIVING : 58.80
FIRST FLOOR LIVING : 55.79
PORCH : 1.20
CARPORT : 24.00

TOTAL : 139.79sq.m.



R/WATER TANK — 1000 litre required rainwater tank plumbed to wc with over flow to street water table

OUTSIDE A/C CONDENSOR (TYPICAL)

HW — hot water service

clothes line

NOTES**
ALL UPPER STOREY FLOORS ARE NOT DESIGNED FOR WATERBED LOADS OR ANY OTHER POINT LOADS DISTRIBUTED OVER FLOOR AREA

STAIRCASE & BALLUSTRADE TO BE IN ACCORDANCE WITH NATIONAL CONSTRUCTION CODE PART 3.9.1 & PART 3.9.2
STAIR CONSTRUCTION & BALLUSTRADES
RISER – MAX 190 / MIN 115
GOING – MAX 355 / MIN 240
QUANTITY (2R+G) – MAX 700 / MIN 550
STAIRS & STAIR BALLUSTRADING BY STAIRLOC Pty. Ltd.

DWG NO. WOO–16.dwg

PAGE NO. 2AW1.1

PROPOSED NEW RESIDENCE
For : Starfish Developments
At : Lot 50 Road A
WOODFORDE

FIGURED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS. VERIFY ALL DIMENSIONS AND LEVELS BEFORE COMMENCEMENT. ANY DISCREPENCY SHALL BE REPORTED TO THE DESIGNER IMMEDIATELY.

Starfish CONSTRUCTIONS

ENZO CARO SCIO ARCHITECTURE

amended 07.10.06
amended 22.09.16
AMENDED 16.09.16
AMENDED 22.06.16
AMENDED 21.04.16
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

DRAWN D.J.G.
DATE 30.08.15
SCALE 1 : 100
SHEET 1 OF 10

Certificate Number: C053D8YQDR
Assessor Name: Jim Woolcock
Accreditation number: VIC/BDAV/11/1278
Certificate date: 12 May 2017
Dwelling address: Lot 50 Bucananan Drive WOODFORDE SA 5072

6 NATIONWIDE HOUSE ENERGY RATING SCHEME
95.5 MJ/m²
www.nathers.gov.au

www.nathers.gov.au

https://www.fr5.com.au/QRCodeLanding?PublicId=C053D8YQDR

60.1/2000
JRE 75mm
ING

GROUND FLOOR PLAN

GROUND FLOOR LIVING : 58.80
FIRST FLOOR LIVING : 55.79
PORCH : 1.20
CARPORT : 24.00

TOTAL : 139.79sq.m.

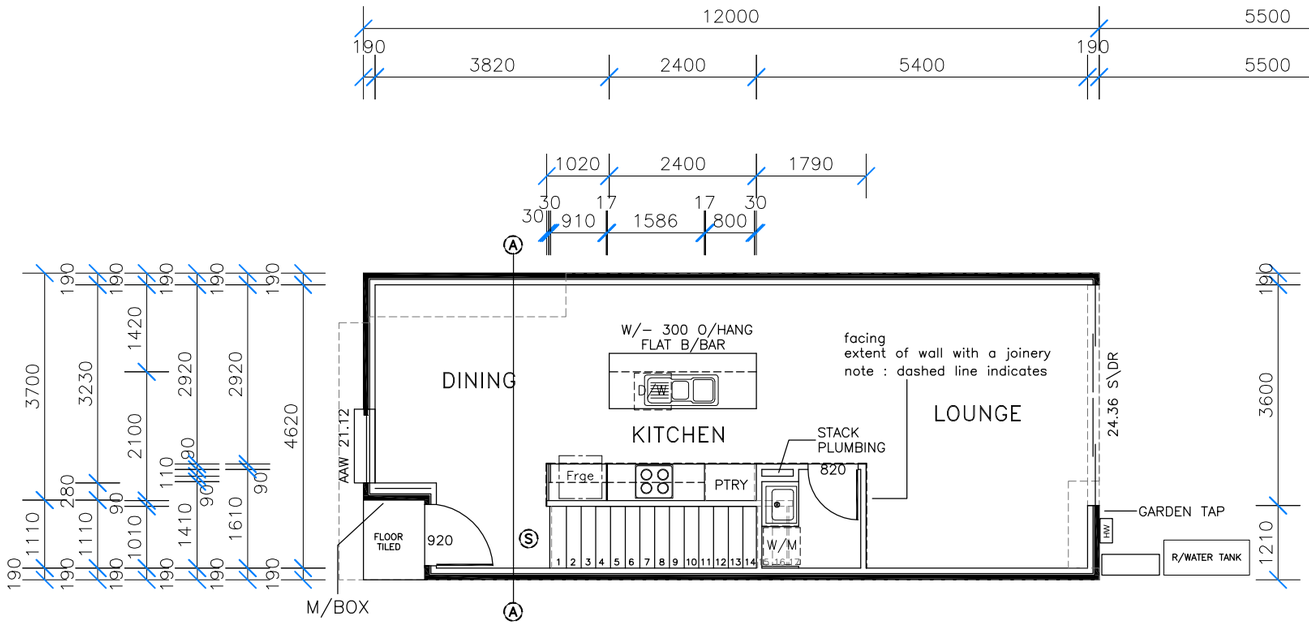
R/WATER TANK — 1000 litre required rainwater tank plumbed to wc with over flow to street water table

OUTSIDE A/C CONDENSOR (TYPICAL)

HW — hot water service

N

Ⓢ HARD WIRED SMOKE ALARM WITH 9v BATTERY BACK–UP



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DWG NO. WOO–16.dwg

PAGE NO. 2AW1.2

PROPOSED NEW RESIDENCE
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At : Lot 50 Road A
WOODFORDE

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Starfish CONSTRUCTIONS

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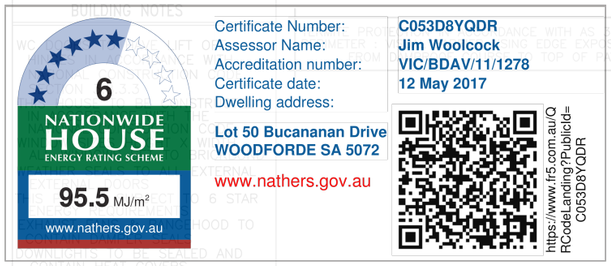
AMENDED 21.04.16
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

DRAWN	D.J.G.
DATE	30.08.15
SCALE	1 : 100
SHEET	2 OF 10



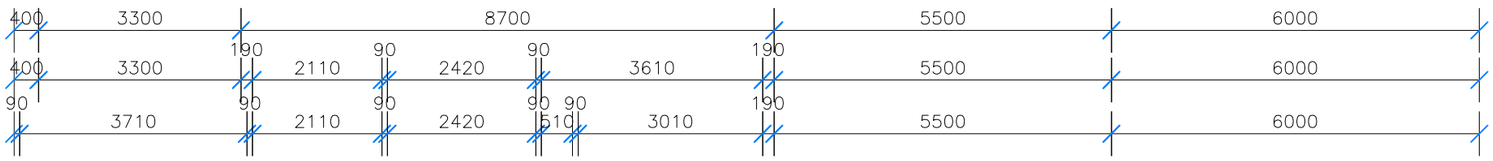
60.1/2000
JRE 75mm
ING

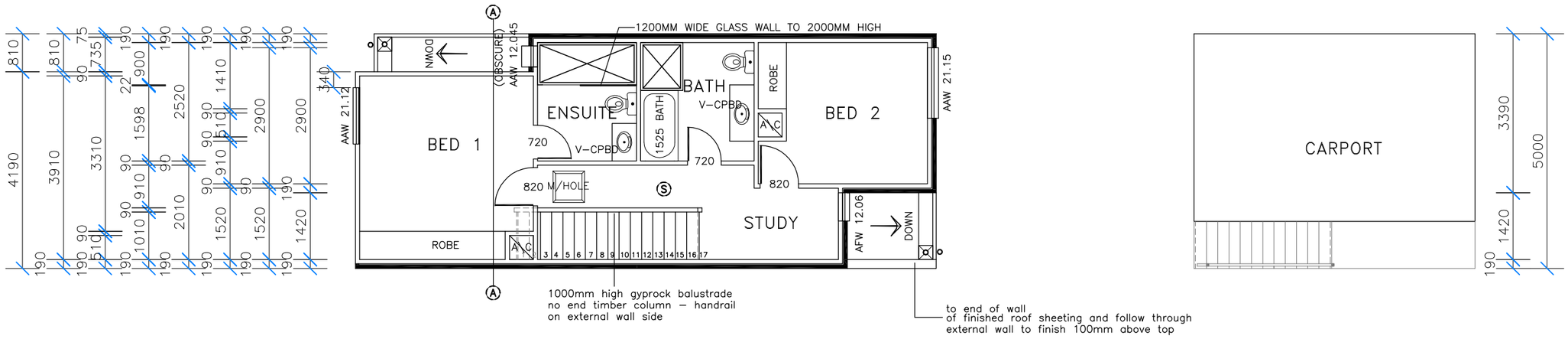
Ⓢ HARD WIRED SMOKE ALARM
WITH 9v BATTERY BACK–UP

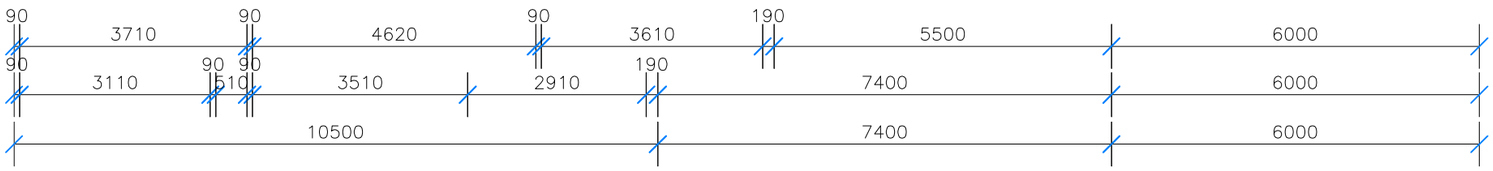
FIRST FLOOR PLAN

GROUND FLOOR LIVING : 58.80
FIRST FLOOR LIVING : 55.79
PORCH : 1.20
CARPORT : 24.00

TOTAL : 139.79sq.m.







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DWG NO. WOO–16.dwg

PAGE NO. 2AW1.3

PROPOSED NEW RESIDENCE
For : Starfish Developments
At : Lot 50 Road A
WOODFORDE

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Starfish CONSTRUCTIONS

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amended 07.10.06
amended 22.09.16
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AMENDED 22.06.16
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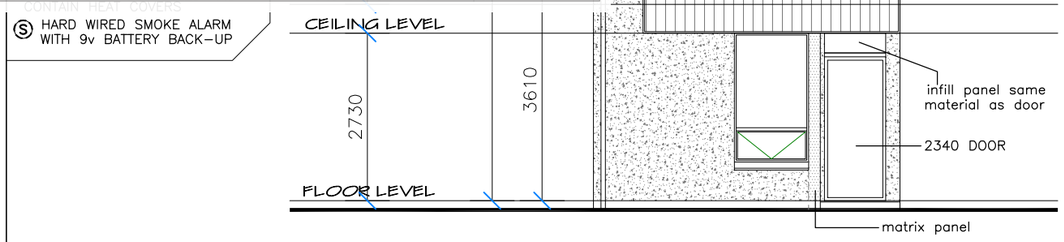
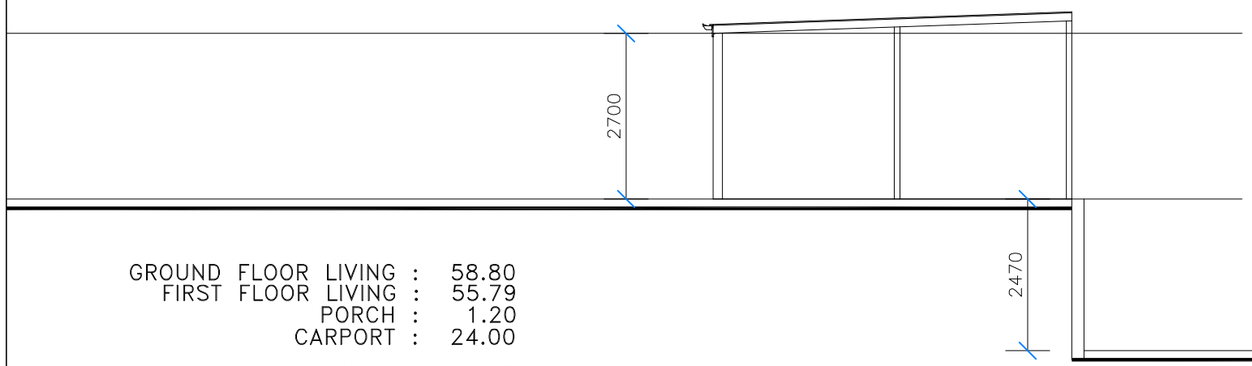
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

DRAWN	D.J.G.
DATE	30.08.15
SCALE	1 : 100
SHEET	3 OF 10



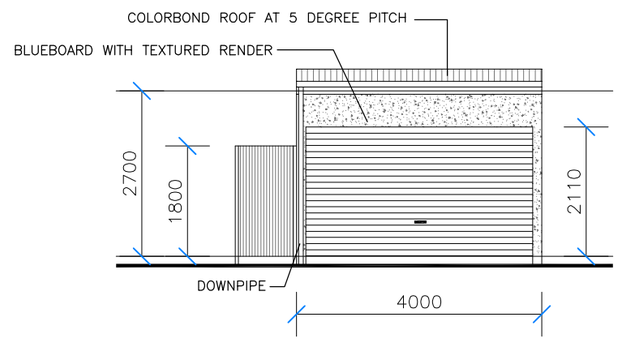
WEST ELEVATION

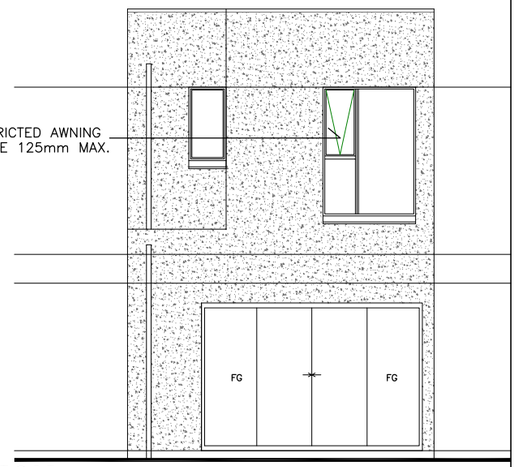


GROUND FLOOR LIVING : 58.80
FIRST FLOOR LIVING : 55.79
PORCH : 1.20
CARPORT : 24.00

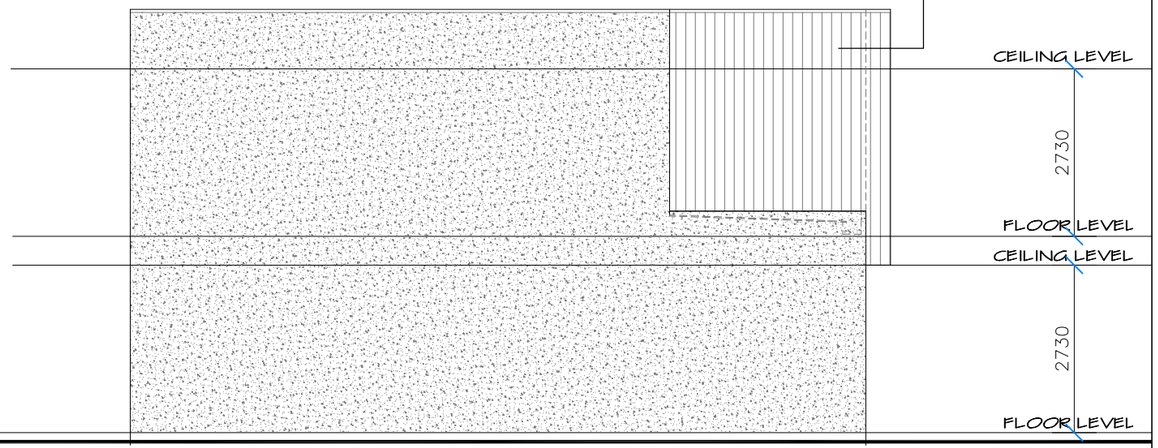
TOTAL : 139.79sq.m.

TERMITE PROTECTION IN ACCORDANCE WITH AS 3660.1/2000
PERIMETER : VISUAL BARRIER USING EDGE EXPOSURE 75mm
FROM DAMPROOF COURSE TO TOP OF PAVING

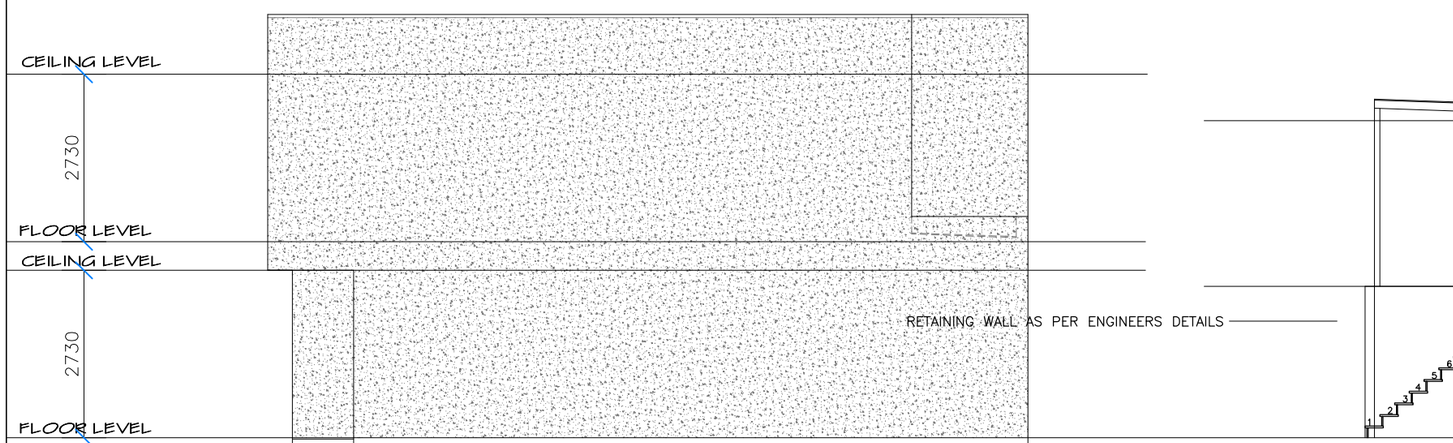


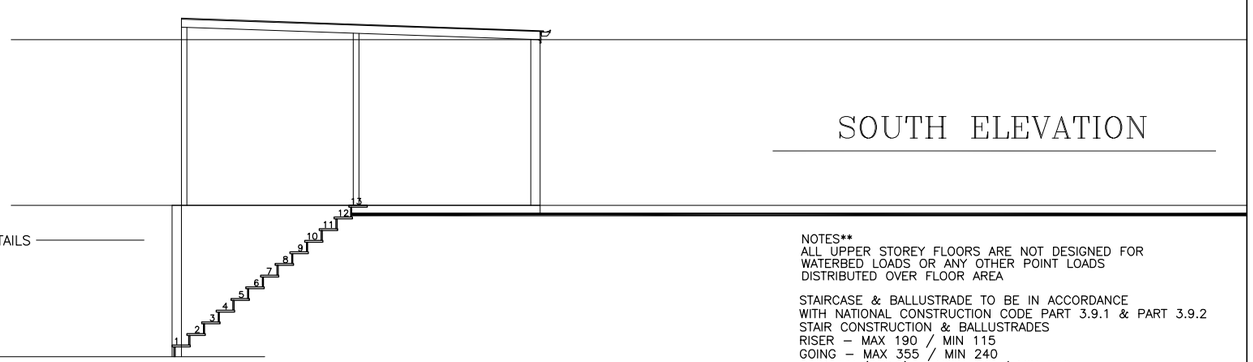


EAST ELEVATION



NORTH ELEVATION





SOUTH ELEVATION

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DWG NO. WOO-16.dwg

PAGE NO. 2AW1.4

PROPOSED NEW RESIDENCE
For : Starfish Developments
At : Lot 50 Road A
WOODFORDE

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Starfish CONSTRUCTIONS

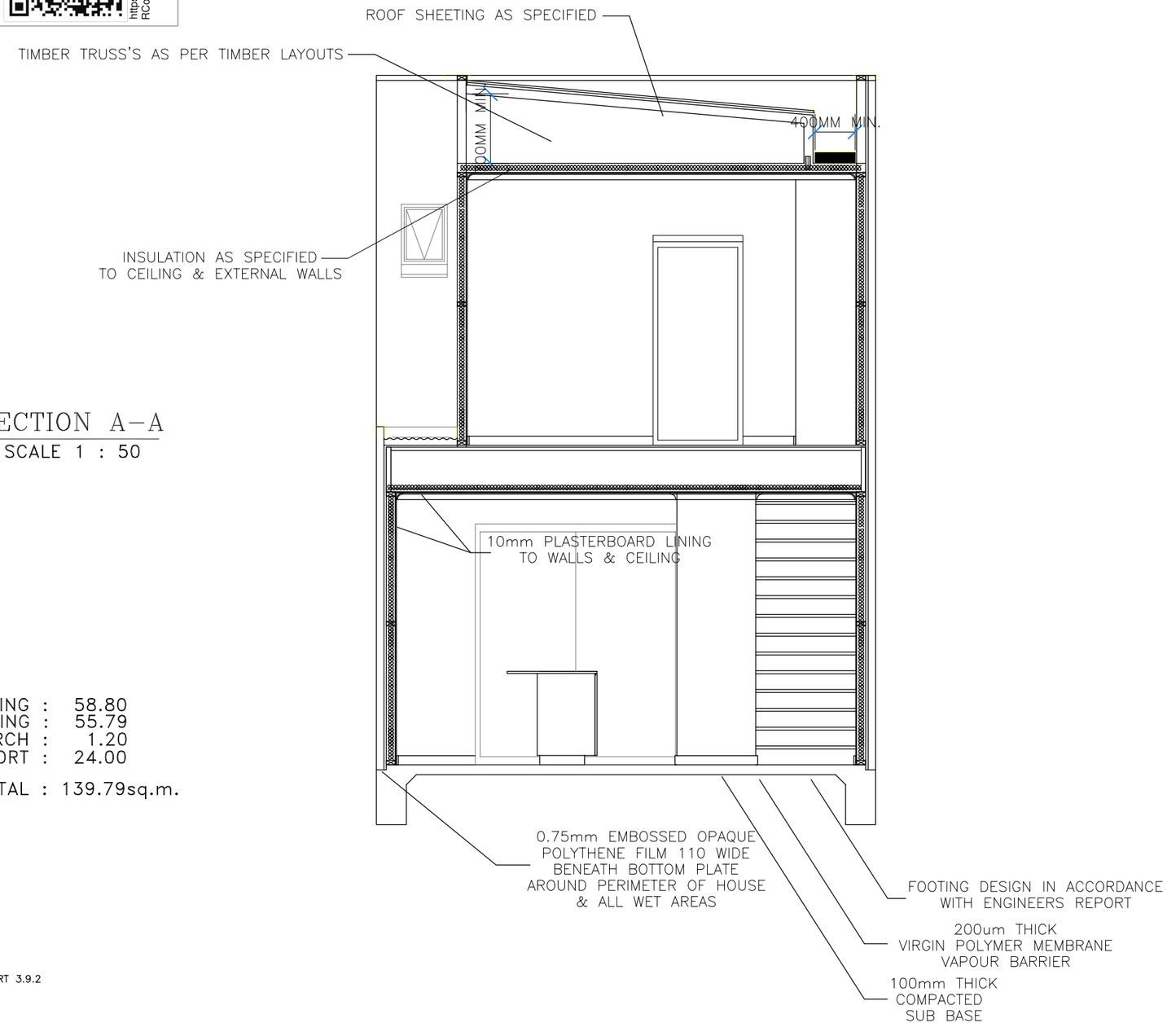
ENZO CARO SCIO ARCHITECTURE

amended 07.10.06
amended 22.09.16
AMENDED 16.09.16
AMENDED 22.06.16
AMENDED 21.04.16
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

DRAWN D.J.G.
DATE 30.08.15
SCALE 1 : 100
SHEET 4 OF 10

60.1/2000
JRE 75mm
ING

Ⓢ HARD WIRED SMOKE ALARM WITH 9v BATTERY BACK-UP



SECTION A-A
SCALE 1 : 50

GROUND FLOOR LIVING :	58.80
FIRST FLOOR LIVING :	55.79
PORCH :	1.20
CARPORT :	24.00
TOTAL :	139.79sq.m.

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STAIRS & STAIR BALLUSTRADING BY STAIRLOC Pty. Ltd.

DWG NO. WOO-16.dwg

PAGE NO. 2AW1.10

PROPOSED NEW RESIDENCE
For : Starfish Developments
At : Lot 50 Road A
WOODFORDE

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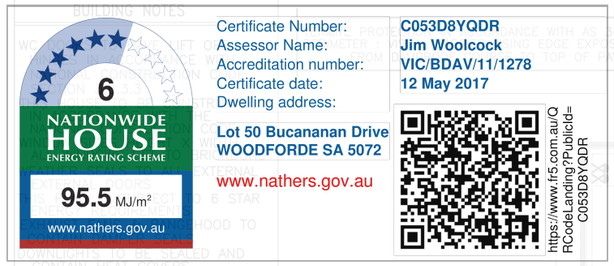
Starfish CONSTRUCTIONS

ENZO CARO SCIO ARCHITECTURE

amended 07.10.06
amended 22.09.16
AMENDED 16.09.16
AMENDED 22.06.16
AMENDED 21.04.16
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

DRAWN D.J.G.
DATE 30.08.15
SCALE 1 : 50
SHEET 10 OF 10



Certificate Number: C053D8YQDR
Assessor Name: Jim Woolcock
Accreditation number: VIC/BDAV/11/1278
Certificate date: 12 May 2017
Dwelling address:

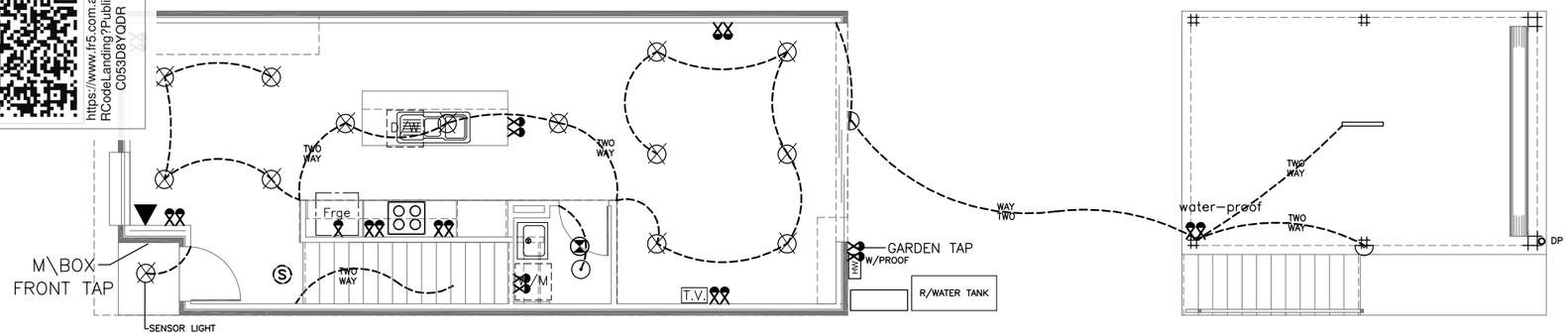
Lot 50 Bucananan Drive
WOODFORDE SA 5072

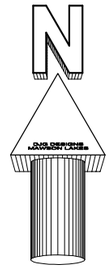
www.nathers.gov.au

https://www.fr5.com.au/QRCodeLanding?PublicId=C053D8YQDR

60.1/2000
JRE 75mm
ING

Ⓢ HARD WIRED SMOKE ALARM WITH 9v BATTERY BACK–UP





	SINGLE GPO	1
	DOUBLE GPO	18
T.V.	T.V.POINT	3
	LIGHT	1
	WALL LIGHT	2
	240V DOWN LIGHT	
	12V DOWN LIGHT	22
	FLURO	1
	2 LIGHT HEATER	
	4 LIGHT HEATER	2
	EXHAUST FAN	1
	DISTRUBUTION BOX	
Ⓢ	SMOKE ALARM	2
	PHONE POINT BY BUILDER	2
DATA	DATA POINT	1
USB	USB POINT	

NOTE : ALL SMOKE DETECTORS TO EACH DWELLING TO BE INTERCONNECTED AS PER NATIONAL CONSTRUCTION CODE

NOTES :
1. POWER TO BE SUPPLIED FOR ROLLER DOOR

SINGLE POWER POINTS X **7**
NOT SHOWN ON FLOOR PLAN
BEING FOR.....

H/PLATE
U/B OVEN
R/HOOD
HOT WATER SERVICE
D\WASHER
AUTO ROLLER DOOR
M\WAVE

ELECTRICAL PLANS

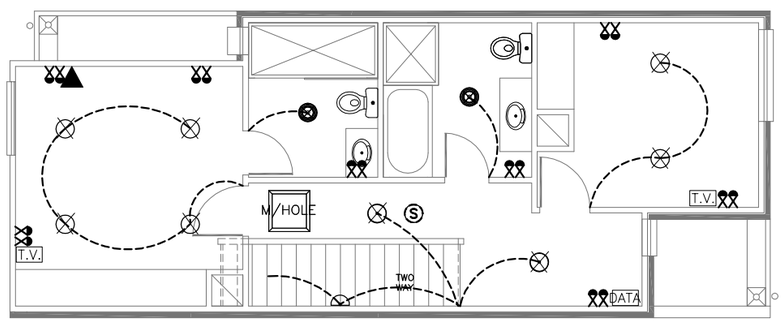
GROUND FLOOR LIVING : 58.80
FIRST FLOOR LIVING : 55.79
PORCH : 1.20
CARPORT : 24.00

TOTAL : 139.79sq.m.

R/WATER TANK — 1000 litre required rainwater tank plumbed to wc with over flow to street water table

OUTSIDE A/C CONDENSOR (TYPICAL)

HW — hot water service



NOTES**
ALL UPPER STOREY FLOORS ARE NOT DESIGNED FOR WATERBED LOADS OR ANY OTHER POINT LOADS DISTRIBUTED OVER FLOOR AREA

STAIRCASE & BALLUSTRADE TO BE IN ACCORDANCE WITH NATIONAL CONSTRUCTION CODE PART 3.9.1 & PART 3.9.2
STAIR CONSTRUCTION & BALLUSTRADES
RISER – MAX 190 / MIN 115
GOING – MAX 355 / MIN 240
QUANTITY (2R+G) – MAX 700 / MIN 550
STAIRS & STAIR BALLUSTRADING BY STAIRLOC Pty. Ltd.

DWG NO. WOO–16.dwg

PAGE NO. 2AW1.5

PROPOSED NEW RESIDENCE
For : Starfish Developments
At : Lot 50 Road A
WOODFORDE

FIGURED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS. VERIFY ALL DIMENSIONS AND LEVELS BEFORE COMMENCEMENT. ANY DISCREPENCY SHALL BE REPORTED TO THE DESIGNER IMMEDIATELY.

Starfish CONSTRUCTIONS

ENZO CARO SCIO ARCHITECTURE

amended 11.10.06
amended 07.10.06
amended 22.09.16
AMENDED 16.09.16
AMENDED 22.06.16
AMENDED 21.04.16
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

DRAWN D.J.G.
DATE 30.08.15
SCALE 1 : 100
SHEET 5 OF 10

Certificate Number: C053D8YQDR
Assessor Name: Jim Woolcock
Accreditation number: VIC/BDAV/11/1278
Certificate date: 12 May 2017
Dwelling address: Lot 50 Bucananan Drive WOODFORDE SA 5072

6 NATIONWIDE HOUSE ENERGY RATING SCHEME
95.5 MJ/m²
www.nathers.gov.au

www.nathers.gov.au

https://www.ir5.com.au/QRCodeLanding?PublicId=C053D8YQDR

60.1/2000
URE 75mm
ING

HARD WIRED SMOKE ALARM WITH 9v BATTERY BACK-UP

GROUND FLOOR LIVING :	58.80
FIRST FLOOR LIVING :	55.79
PORCH :	1.20
CARPORT :	24.00
TOTAL :	139.79sq.m.

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RISER – MAX 190 / MIN 115
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QUANTITY (2R+G) – MAX 700 / MIN 550
STAIRS & STAIR BALLUSTRADING BY STAIRLOC Pty. Ltd.

1. FALLS, SLIPS, TRIPS

a) WORKING AT HEIGHTS

DURING CONSTRUCTION
Wherever possible, components for this building should be prefabricated off-site or at ground level to minimise the risk of workers falling more than three metres. However, construction of this building will require workers to be working at heights where a fall in excess of three metres is possible and injury is likely to result from such a fall. The builder should provide a suitable barrier wherever a person is required to work in a situation where falling more than three metres is a possibility.

DURING OPERATION OR MAINTENANCE
For houses or other low-rise buildings where scaffolding is appropriate:
Cleaning and maintenance of windows, walls, roof or other components of this building will require persons to be situated where a fall from a height in excess of three metres is possible. Where this type of activity is required, scaffolding, ladders or trestles should be used in accordance with relevant codes of practice, regulations or legislation.
For buildings where scaffold, ladders, trestles are not appropriate:
Cleaning and maintenance of windows, walls, roof or other components of this building will require persons to be situated where a fall from a height in excess of three metres is possible. Where this type of activity is required, scaffolding, fall barriers or Personal Protective Equipment (PPE) should be used in accordance with relevant codes of practice, regulations or legislation.

ANCHORAGE POINTS
Anchorage points for portable scaffold or fall arrest devices have been included in the design for use by maintenance workers. Any persons engaged to work on the building after completion of construction work should be informed about the anchorage points.

b) SLIPPERY OR UNEVEN SURFACES

FLOOR FINISHES Specified
If finishes have been specified by designer, these have been selected to minimise the risk of floors and paved areas becoming slippery when wet or when walked on with wet shoes/feet. Any changes to the specified finish should be made in consultation with the designer or, if this is not practical, surfaces with an equivalent or better slip resistance should be chosen.
FLOOR FINISHES By Owner
If designer has not not been involved in the selection of surface finishes, the owner is responsible for the selection of surface finishes in the pedestrian trafficable areas of this building. Surfaces should be selected in accordance with AS HB 197:1999 and AS/NZ 4586:2004.
STEPS, LOOSE OBJECTS AND UNEVEN SURFACES
Due to design restrictions for this building, steps and/or ramps are included in the building which may be a hazard to workers carrying objects or otherwise occupied. Steps should be clearly marked with both visual and tactile warning during construction, maintenance, demolition and at all times when the building operates as a workplace.
Building owners and occupiers should monitor the pedestrian access ways and in particular access to areas where maintenance is routinely carried out to ensure that surfaces have not moved or cracked so that they become uneven and present a trip hazard. Spills, loose material, stray objects or any other matter that may cause a slip or trip hazard should be cleaned or removed from access ways.
Contractors should be required to maintain a tidy work site during construction, maintenance or demolition to reduce the risk of trips and falls in the workplace. Materials for construction or maintenance should be stored in designated areas away from access ways and work areas.

2. FALLING OBJECTS

LOOSE MATERIALS OR SMALL OBJECTS
Construction, maintenance or demolition work on or around this building is likely to involve persons working above ground level or above floor levels. Where this occurs one or more of the following measures should be taken to avoid objects falling from the area where the work is being carried out onto persons below.
1. Prevent or restrict access to areas below where the work is being carried out.
2. Provide toeboards to scaffolding or work platforms.
3. Provide protective structure below the work area.
4. Ensure that all persons below the work area have Personal Protective Equipment (PPE).

BUILDING COMPONENTS
During construction, renovation or demolition of this building, parts of the structure including fabricated steelwork, heavy panels and many other components will remain standing prior to or after supporting parts are in place. Contractors should ensure that temporary bracing or other required support is in place at all times when collapse which may injure persons in the area is a possibility.

Mechanical lifting of materials and components during construction, maintenance or demolition presents a risk of falling objects. Contractors should ensure that appropriate lifting devices are used, that loads are properly secured and that access to areas below the load is prevented or restricted.

3. TRAFFIC MANAGEMENT

For building on a major road, narrow road or steeply sloping road:
Parking of vehicles or loading/unloading of vehicles on this roadway may cause a traffic hazard. During construction, maintenance or demolition of this building designated parking for workers and loading areas should be provided. Trained traffic management personnel should be responsible for the supervision of these areas.
For building where on-site loading/unloading is restricted:
Construction of this building will require loading and unloading of materials on the roadway. Deliveries should be well planned to avoid congestion of loading areas and trained traffic management personnel should be used to supervise loading/unloading areas.
For all buildings:
Busy construction and demolition sites present a risk of collision where deliveries and other traffic are moving within the site. A traffic management plan supervised by trained traffic management personnel should be adopted for the work site.

4. SERVICES

GENERAL
Rupture of services during excavation or other activity creates a variety of risks including release of hazardous material. Existing services are located on or around this site. Where known, these are identified on the plans but the exact location and extent of services may vary from that indicated. Services should be located using an appropriate service (such as Dial Before You Dig), appropriate excavation practice should be used and, where necessary, specialist contractors should be used.
Locations with underground power:
Underground power lines MAY be located in or around this site. All underground power lines must be disconnected or carefully located and adequate warning signs used prior to any construction, maintenance or demolition commencing.
Locations with overhead power lines:
Overhead power lines MAY be near or on this site. These pose a risk of electrocution if struck or approached by lifting devices or other plant and persons working above ground level. Where there is a danger of this occurring, power lines should be, where practical, disconnected or relocated. Where this is not practical adequate warning in the form of bright coloured tape or signage should be used or a protective barrier provided.

5. MANUAL TASKS

Components within this design with a mass in excess of 25kg should be lifted by two or more workers or by mechanical lifting device. Where this is not practical, suppliers or fabricators should be required to limit the component mass.
All material packaging, building and maintenance components should clearly show the total mass of packages and where practical all items should be stored on site in a way which minimises bending before lifting. Advice should be provided on safe lifting methods in all areas where lifting may occur.
Construction, maintenance and demolition of this building will require the use of portable tools and equipment. These should be fully maintained in accordance with manufacturer?s specifications and not used where faulty or (in the case of electrical equipment) not carrying a current electrical safety tag. All safety guards or devices should be regularly checked and Personal Protective Equipment should be used in accordance with manufacturer?s specification.

6. HAZARDOUS SUBSTANCES

ASBESTOS
For alterations to a building constructed prior to 1990:
If this existing building was constructed prior to:
1990 - it therefore may contain asbestos
1986 - it therefore is likely to contain asbestos
either in cladding material or in fire retardant insulation material. In either case, the builder should check and, if necessary, take appropriate action before demolishing, cutting, sanding, drilling or otherwise disturbing the existing structure.

POWDERED MATERIALS
Many materials used in the construction of this building can cause harm if inhaled in powdered form. Persons working on or in the building during construction, operational maintenance or demolition should ensure good ventilation and wear Personal Protective Equipment including protection against inhalation while using powdered material or when sanding, drilling, cutting or otherwise disturbing or creating powdered material.

TREATED TIMBER
The design of this building may include provision for the inclusion of treated timber within the structure. Dust or fumes from this material can be harmful. Persons working on or in the building during construction, operational maintenance or demolition should ensure good ventilation and wear Personal Protective Equipment including protection against inhalation of harmful material when sanding, drilling, cutting or using treated timber in any way that may cause harmful material to be released. Do not burn treated timber.

VOLATILE ORGANIC COMPOUNDS
Many types of glue, solvents, spray packs, paints, varnishes and some cleaning materials and disinfectants have dangerous emissions. Areas where these are used should be kept well ventilated while the material is being used and for a period after installation. Personal Protective Equipment may also be required. The manufacturer?s recommendations for use must be carefully considered at all times.

SYNTHETIC MINERAL FIBRE
Fibreglass, rockwool, ceramic and other material used for thermal or sound insulation may contain synthetic mineral fibre which may be harmful if inhaled or if it comes in contact with the skin, eyes or other sensitive parts or the body. Personal Protective Equipment including protection against inhalation of harmful material should be used when installing, removing or working near bulk insulation material.

TIMBER FLOORS
This building may contain timber floors which have an applied finish. Areas where finishes are applied should be kept well ventilated during sanding and application and for a period after installation. Personal Protective Equipment may also be required. The manufacturer?s recommendations for use must be carefully considered at all times.

7. CONFINED SPACES

EXCAVATION
Construction of this building and some maintenance on the building will require excavation and installation of items within excavations. Where practical, installation should be carried out using methods which do not require workers to enter the excavation. Where this is not practical, adequate support for the excavated area should be provided to prevent collapse. Warning signs and barriers to prevent accidental or unauthorised access to all excavations should be provided.

ENCLOSED SPACES
For buildings with enclosed spaces where maintenance or other access may be required:
Enclosed spaces within this building may present a risk to persons entering for construction, maintenance or any other purpose. The design documentation calls for warning signs and barriers to unauthorised access. These should be maintained throughout the life of the building. Where workers are required to enter enclosed spaces, air testing equipment and Personal Protective Equipment should be provided.

SMALL SPACES
For buildings with small spaces where maintenance or other access may be required:
Some small spaces within this building will require access by construction or maintenance workers. The design documentation calls for warning signs and barriers to unauthorised access. These should be maintained throughout the life of the building. Where workers are required to enter small spaces they should be scheduled so that access is for short periods. Manual lifting and other manual activity should be restricted in small spaces.

8. PUBLIC ACCESS

Public access to construction and demolition sites and to areas under maintenance causes risk to workers and public. Warning signs and secure barriers to unauthorised access should be provided. Where electrical installations, excavations, plant or loose materials are present they should be secured when not fully supervised.

9. OPERATIONAL USE OF BUILDING RESIDENTIAL BUILDINGS

This building has been designed as a residential building. If it, at a later date, it is used or intended to be used as a workplace, the provisions of the Work Health and Safety Act 2011 or subsequent replacement Act should be applied to the new use.

NON-RESIDENTIAL BUILDINGS
For non-residential buildings where the end-use has not been identified:
This building has been designed to requirements of the classification identified on the drawings. The specific use of the building is not known at the time of the design and a further assessment of the workplace health and safety issues should be undertaken at the time of fit-out for the end-user.

For non-residential buildings where the end-use is known:
This building has been designed for the specific use as identified on the drawings. Where a change of use occurs at a later date a further assessment of the workplace health and safety issues should be undertaken.

10.OTHER HIGH RISK ACTIVITY

All electrical work should be carried out in accordance with Code of Practice: Managing Electrical Risks at the Workplace, AS/NZ 3012 and all licensing requirements.
All work using Plant should be carried out in accordance with Code of Practice: Managing Risks of Plant at the Workplace.
All work should be carried out in accordance with Code of Practice: Managing Noise and Preventing Hearing Loss at Work.
Due to the history of serious incidents it is recommended that particular care be exercised when undertaking work involving steel construction and concrete placement. All the above applies.

THESE NOTES MUST BE READ AND UNDERSTOOD BY ALL INVOLVED IN THE PROJECT.
THIS INCLUDES (but is not excluded to): OWNER, BUILDER, SUB-CONTRACTORS, CONSULTANTS, RENOVATORS, OPERATORS, MAINTENORS, DEMOLISHERS.

DWG NO. WOO-16.dwg

PAGE NO. 2AW1.9

PROPOSED NEW RESIDENCE
For :Starfish Developments
At :Lot 50 Road A
WOODFORDE

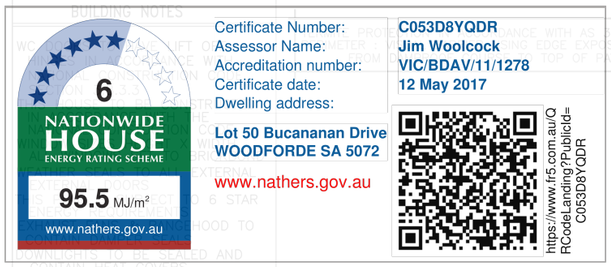
FIGURED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS. VERIFY ALL DIMENSIONS AND LEVELS BEFORE COMMENCEMENT. ANY DISCREPENCY SHALL BE REPORTED TO THE DESIGNER IMMEDIATELY.

Starfish CONSTRUCTIONS

ENZO CARO SCIO ARCHITECTURE

amended 07.10.06
amended 22.09.16
AMENDED 16.09.16
AMENDED 22.06.16
AMENDED 21.04.16
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

DRAWN D.J.G.
DATE 30.08.15
SCALE NO SCALE
SHEET 9 OF 10



Certificate Number: **C053D8YQDR**
Assessor Name: **Jim Woolcock**
Accreditation number: **VIC/BDAV/11/1278**
Certificate date: **12 May 2017**
Dwelling address:

Lot 50 Bucananan Drive
WOODFORDE SA 5072

www.nathers.gov.au

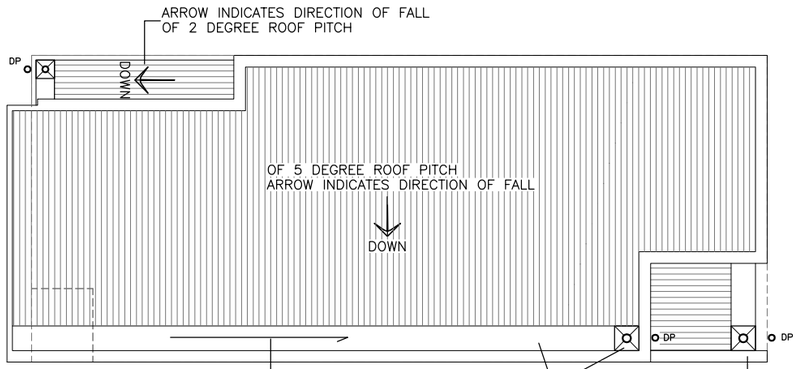
https://www.fr5.com.au/QRCodeLanding?PublicId=C053D8YQDR

60.1/2000
JRE 75mm
ING

Ⓢ HARD WIRED SMOKE ALARM
WITH 9v BATTERY BACK–UP

ROOF LAYOUT PLAN

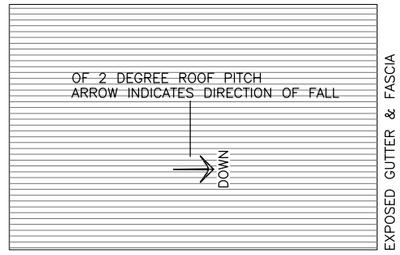
SCALE 1 : 100

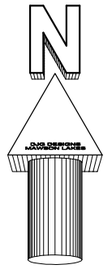


ARROW INDICATES DIRECTION OF FALL OF 400MM WIDE BOX–GUTTER

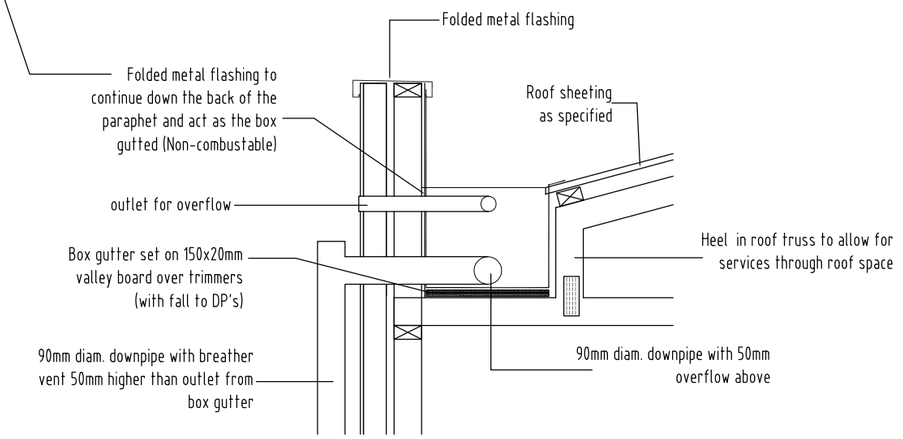
400 HALF ROUND GUTTER. PROPRIETARY BOX GUTTER SUMP TO RAINWATER HEAD AND DOWNPIPE

external wall to finish 100mm above top of finished roof sheeting and follow through to end of wall





GROUND FLOOR LIVING :	58.80
FIRST FLOOR LIVING :	55.79
PORCH :	1.20
CARPORT :	24.00
TOTAL :	139.79sq.m.



PARAPET DETAIL

SCALE : 1 : 20

NOTES**
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STAIR CONSTRUCTION & BALLUSTRADES
RISER – MAX 190 / MIN 115
GOING – MAX 355 / MIN 240
QUANTITY (2R+G) – MAX 700 / MIN 550
STAIRS & STAIR BALLUSTRADING BY STAIRLOC Pty. Ltd.

DWG NO. WOO–16.dwg

PAGE NO. 2AW1.7

PROPOSED NEW RESIDENCE
For : Starfish Developments
At : Lot 50 Road A
WOODFORDE

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Starfish CONSTRUCTIONS

ENZO CARO SCIO ARCHITECTURE

amended 07.10.06
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AMENDED 28.10.15
AMENDED 12.10.15

DRAWN D.J.G.
DATE 30.08.15
SCALE AS SHOWN
SHEET 7 OF 10

Certificate Number: C053D8YQDR
Assessor Name: Jim Woolcock
Accreditation number: VIC/BDAV/11/1278
Certificate date: 12 May 2017
Dwelling address:
Lot 50 Bucananan Drive
WOODFORDE SA 5072
www.nathers.gov.au

6
NATIONWIDE HOUSE ENERGY RATING SCHEME
95.5 MJ/m²
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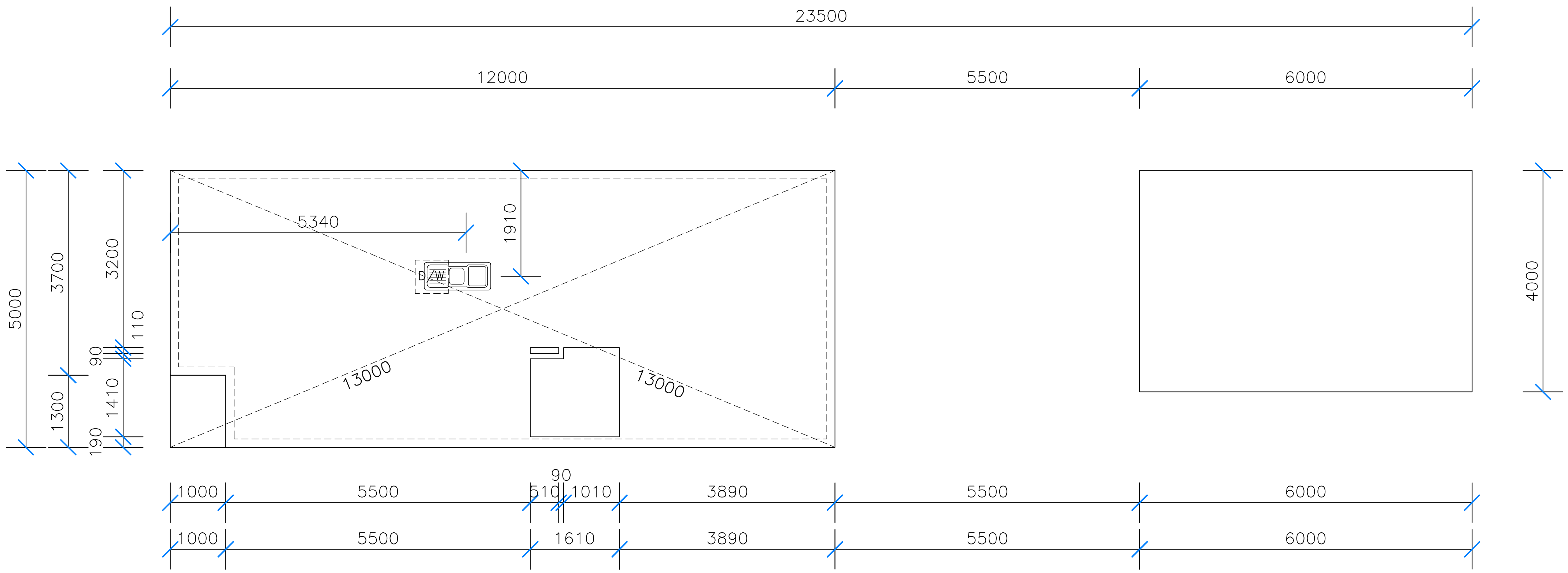
https://www.fr5.com.au/QRCodeLanding?PublicId=C053D8YQDR

Ⓢ HARD WIRED SMOKE ALARM WITH 9v BATTERY BACK–UP

N

CONCRETE SET OUT



GROUND FLOOR LIVING : 58.80
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TOTAL : 139.79sq.m.

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STAIRS & STAIR BALLUSTRADING BY STAIRLOC Pty. Ltd.

DWG NO. WOO–16.dwg

PAGE NO. 2AW1.6

PROPOSED NEW RESIDENCE
For :Starfish Developments
At :Lot 50 Road A
WOODFORDE

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Starfish CONSTRUCTIONS

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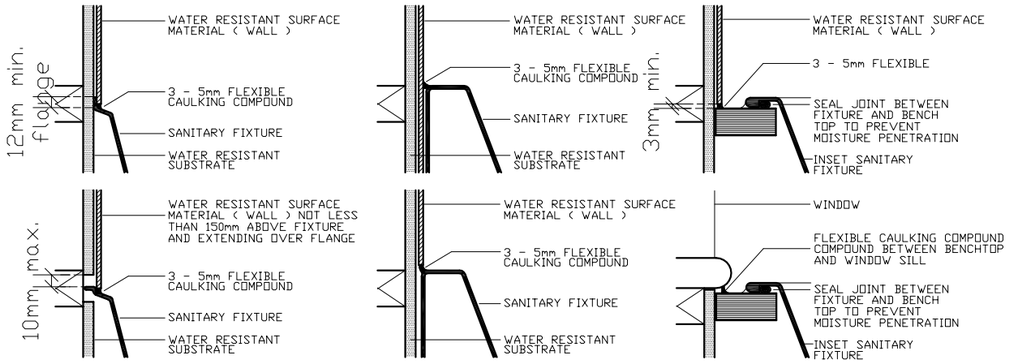
AMENDED 12.10.15

DRAWN	D.J.G.
DATE	30.08.15
SCALE	1 : 100
SHEET	6 OF 10

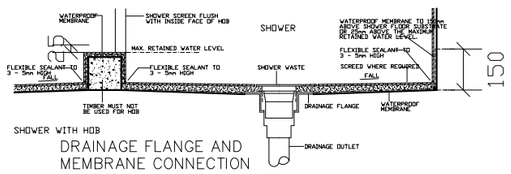
60.1/2000
URE 75mm
ING

TO BE IN ACCORDANCE
AL CONSTRUCTION CODE
RT 3.8.1

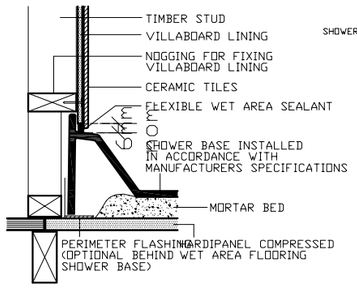
HARD WIRED SMOKE ALARM WITH 9v BATTERY BACK–UP



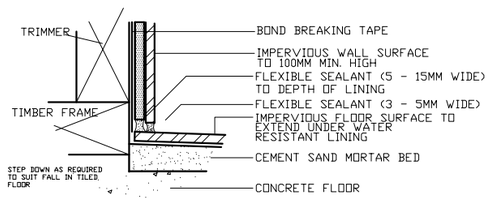
BENCH TOPS AND SANITARY FIXTURES ABUTTING WALLS
N.T.S.



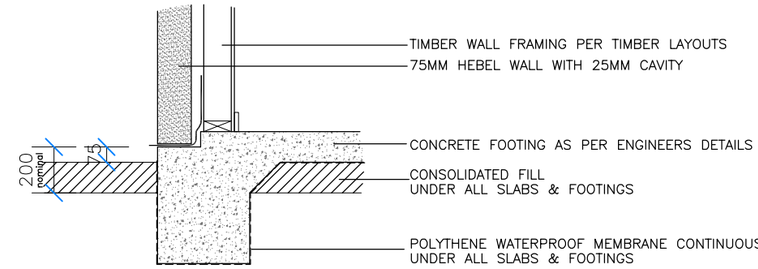
DRAINAGE FLANGE AND MEMBRANE CONNECTION
N.T.S.



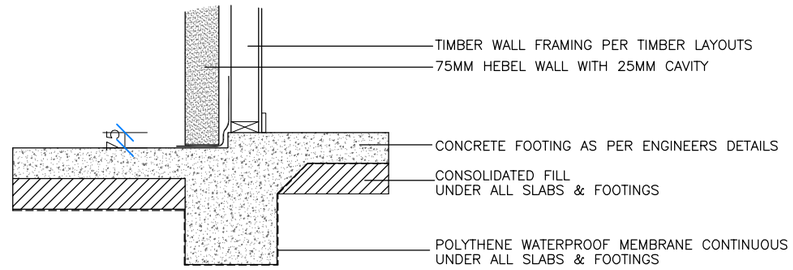
PRE–FORMED SHOWER BASE DETAIL
N.T.S.



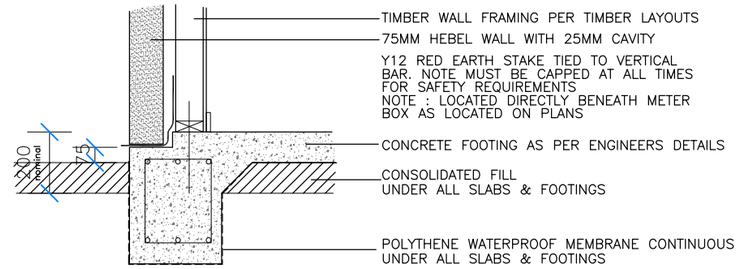
INTERNAL TRAY SHOWER
& IMPERVIOUS WALL JUNCTION
(CATEGORY 1) N.T.S.



Typical Footing Detail
scale 1 : 20



Typical Footing Detail
scale 1 : 20



Earth Stake to MB
scale 1 : 20

GROUND FLOOR LIVING :	58.80
FIRST FLOOR LIVING :	55.79
PORCH :	1.20
CARPORT :	24.00
TOTAL :	139.79sq.m.

NOTES**
ALL UPPER STOREY FLOORS ARE NOT DESIGNED FOR WATERBED LOADS OR ANY OTHER POINT LOADS DISTRIBUTED OVER FLOOR AREA

STAIRCASE & BALLUSTRADE TO BE IN ACCORDANCE WITH NATIONAL CONSTRUCTION CODE PART 3.9.1 & PART 3.9.2
STAIR CONSTRUCTION & BALLUSTRADES
RISER – MAX 190 / MIN 115
GOING – MAX 355 / MIN 240
QUANTITY (2R+G) – MAX 700 / MIN 550
STAIRS & STAIR BALLUSTRADING BY STAIRLOC Pty. Ltd.

DWG NO. WOO–16.dwg

PAGE NO. 2AW1.8

PROPOSED NEW RESIDENCE
For : Starfish Developments
At : Lot 50 Road A
WOODFORDE

FIGURED DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS. VERIFY ALL DIMENSIONS AND LEVELS BEFORE COMMENCEMENT. ANY DISCREPENCY SHALL BE REPORTED TO THE DESIGNER IMMEDIATELY.

Starfish CONSTRUCTIONS
ENZO CARO SCIO ARCHITECTURE

amended 07.10.06
amended 22.09.16
AMENDED 16.09.16
AMENDED 22.06.16
AMENDED 21.04.16
AMENDED 16.11.15
AMENDED 28.10.15
AMENDED 12.10.15

DRAWN D.J.G.
DATE 30.08.15
SCALE AS SHOWN
SHEET 8 OF 10

PO Box 44
Woodside SA 5244
Phone: 08 8408 0400
Fax: 08 8389 7440
mail@ahc.sa.gov.au
www.ahc.sa.gov.au
Direct line: **8408-0534**
File Ref: 17/425 – 17/E15

21 July 2017

Development Assessment Commission
GPO Box 1815
ADELAIDE SA 5001

Dear Sir/Madam

Development No	17/425/473 – 17/E15/473
Proposal	54 two storey and 12 three storey dwellings (total of 66) and associated carports, retaining walls, landscaping and fencing (DAC Relevant Authority)
Subject Land	Norton Summit Road Woodforde SA 5072 Lot:1002 Sec: P626 DP:115165 CT:6187/561 (Approved Lots 119-132, 138-161 and 163-190 within development Lot 1002)

Pursuant to Schedule 10 of the Development Regulations 2008, the Council's Development Assessment Panel considered the application at its meeting on 20 July 2017 and resolved as follows:

The following comments be provided in the report to the Development Assessment Commission.

(1) The DAC is advised to defer consideration of the development application 473/E015/17 pending the supply of further information by the applicant to address the onsite car parking shortfall, overlooking, landscaping and stormwater management concerns raised by the Council and other further information required which is outlined in Appendix A.

If you require further clarification please do not hesitate to contact me on 8408 0534.

Yours sincerely,

Sam Clements
Senior Statutory Planner

Appendix A of Report
Matters requiring addressing/further information

1) The dwellings are an undefined type of dwelling as each dwelling does not hold an exclusive site given that Section 51 Clearance for stage 2 has not yet been achieved and therefore the final approved land division plan has not been lodged with the Lands Titles Office for registration. DAC is urged to reconsider the determination of the dwellings as "detached" on the basis of most recent case law.

2) Council staff highlight that the civil designs (levels for the roads, verges and infrastructure within Stage 2 of the land division) have not yet been submitted to Council and therefore have not been approved. Given dwellings are generally only designed once the road levels and infrastructure have at least been designed (and in most cases constructed), Council highlights that the developer must take responsibility if there is insufficient freeboard to the dwellings from the road which will flood in 1 in 20 year or greater events and/or if there is insufficient grade for stormwater pipes and surface water to be directed to the street via gravity (without pumping). It is Council's preference that the dwellings are not approved until the kerb levels have been designed and therefore floor levels can be conditioned based on their designed height above or below the kerb rather than finished ground levels from bulk earthworks to be undertaken. Given a majority of these allotments are rear mounted, the DAC could condition that the finished floor levels of the proposed dwellings are at least 300mm above the kerb level of at least one street frontage.

3) As Council has not received the engineering designs for stage 2 of the land division, it would need to be verified that the stormwater management masterplan envisaged 74-85% impervious surfaces on these allotments. The stormwater management design (e.g. detention provided and pipe sizes within the road) for stage 2 would need to cater for this percentage of impervious surfaces.

4) The maximum height of the retaining walls (dimensions provided or top and bottom of wall height indicated) proposed should be indicated on the site plans and elevations.

5) Council does not accept the applicant's comment that the associated retaining walls for these dwellings and carports are part of the land division proposal. No retaining walls are described or any details provided within the land division application and therefore no building code assessment was undertaken on this land division. The provision of bulk earthworks plans that show retaining walls which were submitted in the engineering stage of the land division does not exempt the applicants need to achieve development approval. Whilst Council accepts that the retaining walls could be constructed as part of the bulk earthworks for the land division, they need to be documented within this application as they are part and parcel of this development and have not yet received development approval. The applicant could stage this planning consent (if granted) so these walls can be constructed as part of the bulk earthworks for stage 2.

6) Council does not accept the stormwater management can just be addressed in the Building Rules assessment. Given the BCA assessment is generally only concerned with gutter and downpipe sizes to ensure stormwater is kept away from buildings, the 'ground level' stormwater management needs to be adequately addressed and assessed at the planning stage. Also, the planning needs to determine that stormwater is appropriately managed based on the type of allotment(s). Given these are Torrens title allotments and no drainage easements are proposed on the subject allotments, all stormwater networks (e.g. sealed pipe system) would need to be

located entirely within each approved allotment. The applicant should provide stormwater management plans for the each allotment type. These plans should show:

- Pipe sizes and grades
- Top and invert levels of grated inlet pit(s)
- The downpipe locations and the stormwater pipe network to collect roof and surface water
- Paving levels to prove that surface water from the courtyard areas will drain to the central pit or similar with a pipe directed under the dwelling or carport slab to the street (whichever street is lower than the invert level of the pit).

7) The plans and south elevation for dwelling T1.3A.1 are inconsistent. They show the staircase parallel to the rear of the carport on the south elevation.

8) The rear setback of 500mm (carport to laneway) could be reduced to 0m to increase the area available for private open space or storage. Unless this is required to ensure the panel lift doors open within the subject land.

9) Parking Provision – A high proportion of the proposed dwellings only allow for one onsite car-parking space, whereas the Development Plan calls for at least two on-site spaces. This is considered problematic as this could lead to overspill of resident parking in front of dwellings on the street, considering there is room for only one space (or possibly less) to be provided in front of each dwelling. Limited or no visitor parking on the street would therefore be available in such circumstances. As requested by the DAC for the apartment proposal on approved lot 162, the applicant is to provide an on-street car parking allocation plan to prove that this shortfall (and other shortfalls) can be catered for in the street parks and without impacting on the parking (1 per every 2 lots) provided for in the street. In other words, 146 spaces should be provided for in the street as well as the shortfall (thus far 83 spaces) of this and other developments in close proximity to the sites. The statements made in the GTA traffic report supplied as part of the land division proposal should be demonstrated. The on-street parking criteria referred to in the GTA report is found in the *Good Residential Design SA* (1999) guidelines:

> *Performance Criteria*
> *On-street parking*
> *22 Sufficient on-street visitor car parking should be provided for the number and size of proposed dwellings, taking account of:*
> *(a) the size of proposed lots and sites and opportunities for on-site parking;*
> *(b) the availability and frequency of public transport; and*
> *(c) on-street parking demand likely to be generated by non-residential uses such as schools, shops and other community facilities.*
>
> *Design techniques*
> *On-street parking*
> *22 In streets abutting lots to be used for single dwellings, one carparking space provided for every two lots.*

Alternatively, if the on-street car parking of 1 space per every two allotments and the shortfall from these proposed and approved developments cannot be catered for on the street in close proximity to the these sites, the land division plan should be amended back to number of 5m wide allotments originally approved within this area. The revisions to the land division that have occurred (6 revisions) after the approval have increased the number of 5m wide allotments from 10 to 34 in this part of the overall site.

10) Landscaping plans for each allotment width (5m, 6.5m and 8m), excluding the three storey dwellings, to demonstrate that the compact urban area will be softened by front yard landscaping and some privacy provided to the front rooms of dwellings noting the encumbrance does not allow front fencing.

11) Privacy screens are not depicted on all elevations that the carport is above the ground floor level of the dwelling. These carport areas will overlook the courtyards of adjacent dwellings. The applicant is to confirm that 1.7m high privacy screens will be provided on all the rear elevations and wrap around on the stair case side (to the top of the staircase) of all the carports that are located higher than the ground floor level of the dwelling. The screen on the staircase side of the carport is not required if on the road side of a corner allotment.

12) Fixed screens or blade walls that block the 45 degree angle views into the adjacent properties' courtyards from upper level windows should be considered.

13) Greater consideration should be given to energy efficiency in the dwelling designs, such as window canopies on the west facing elevations. Consideration given to providing some retractable or openable shading for the dwellings with north-south orientations (T4 and 5).

14) Details of the colour scheme of all dwellings should be provided. The DAC should consider the implementation of conditions or reserved matters to assess this at a future date.

15) More diversity of rear elevation treatment to all dwellings, including variation to garage door treatments, should be considered to minimise an adverse effect on the amenity of the locality.

16) Street lighting to avoid blackspots in rear lanes should be considered to enhance the safety of Lewis Walk, Cameron Lane and Chisholm Lane, and high level lighting along Reserve frontage of Allotments 179 – 190.

17) A footpath should be incorporated abutting the eastern boundary of Allotments 179 – 190 to provide access to front doors of the dwellings on these allotments.

OFFICE FOR DESIGN + ARCHITECTURE SA

Confidential

File No:
2014/20674/01

Ref No:
11563663

1 June 2017

Nitsan Taylor
Senior Planning Officer
Investment Management, Development Division
Department of Planning, Transport and Infrastructure
Level 5, 50 Flinders Street
Adelaide SA 5000

Email: Nitsan.Taylor@sa.gov.au

For the attention of the Development Assessment Commission

Allotments 101 and 304
25 Glen Stuart Road, Woodforde
Stage 2 Townhouses

Further to the referral 473/E015/17 received 12 May 2017 pertaining to the development application at the above addresses and in my capacity as a non-mandatory referral in the Development Assessment Commission, I would like to offer the following comments for your consideration.

The project has not been presented to the Design Review Panel.

In principle, I support the project team's aspiration to deliver a residential development of the proposed density on this site. This proposal has the potential to become a precedent for future developments of this kind, and therefore must be supported by high quality design, particularly in relation to residential amenity, public realm contribution and architectural expression. As such, I am of the view that the environmental conditions of private open space require further consideration to achieve an appropriate level of amenity for the residents. I also recommend further development of overall landscape and urban design strategies. To achieve the best possible design outcome, I recommend consideration of the following issues.

The sites are part of a new 19 hectare predominantly residential development at the edge of the Adelaide Hills. The subject sites are located towards the north eastern corner of the development area and are in five separate blocks each comprised of 10 to 16 townhouses, all forming parts of Stage Two development. Blocks T1, T4 and T5 are within the street block bound by Buchanan Drive and Anderson Street, being serviced from the rear by Chisholm and Cameron Lanes. Blocks T2 and T3 are located on the corner of Buchanan Drive and Macintyre Brae, and have the rear access from Lewis Walk. Block T3 has a frontage to a narrow reserve to the east. The whole development site generally slopes from the southeast corner towards northwest to the Rostrevor College Oval.

The townhouses in blocks T1, T2, T4 and T5 are two storey, and the T3 townhouses are three storey. The townhouses are built in the style of row dwellings on subdivided residential lots with land sizes varying between 120 and 225 square metres. Each townhouse is built individually with the finished ground floor level following the slope of

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Government of South Australia

File No:
2014/20674/01

Ref No:
11563663

the natural ground, resulting in the streetscape with stepped built form. I support the heights, setbacks and massing of the proposed townhouses, as they are generally consistent with the building forms envisaged for the policy area by the Development Plan.

The townhouses provide the main entry off the primary roads or the reserve frontage. The ground floor generally includes an open plan living area with an associated courtyard space towards the rear of the allotments. Vehicular access is provided from the rear service lanes to separate carport structures. I support the decision to dedicate all vehicle access to the rear lanes. However in most cases, the rear carport is positioned one metre or more above the ground floor and the courtyard level, creating sunken courtyards. While I acknowledge the rational to follow the natural ground level, I am concerned the proposed arrangement has resulted in compromised environmental conditions for the courtyard and the adjoining living area. The provided shadow diagrams suggest that the majority of the courtyards are in shadow for an extended period of time during winter. I recommend review of the private open space strategies to improve the residential amenity for outdoor and indoor spaces.

The architectural expression of the townhouses are familiarly residential. I support this approach, as the proposal includes mixes of complementary building materials and finishes to provide various aesthetic options, while delivering a coherent overall development.

I support the internal planning of the townhouses in general, as the rooms are convincing in terms of size and functional layouts. I also support the provision of access to natural light and ventilation for all habitable rooms. However some second bedrooms, such as one in type T1.3A.1, have the only window in a deep, narrow and roofed alcove, which has resulted in compromised access to effective natural light. I recommend refinement of internal layouts to ensure the residential amenity is optimised.

While I understand the rational of repeating and mirroring floor plans within each block, opportunities exist for some of the dwellings to capitalise on the sites' adjacency to the Rostrevor College Oval and the reserve to maximise the residential amenity and uninterrupted visual connection to the reserve.

The three bedroom townhouses include two car parking spaces within carports, while two bedroom townhouses only include one space. This is below the minimum number prescribed in the Development Plan, where each dwelling is required to provide a minimum of two on-site car parking spaces unless they are "affordable housing". Acknowledging the sites' proximity to a bus stop, I am concerned by the shortfall, as it amounts to 41 spaces for the proposal overall. Additional information should be provided regarding the details of the newly designed surrounding streets to demonstrate their ability to absorb the car parking shortfalls as well as some parking spaces for visitors.

The materials submitted do not include information regarding the front fencing details, except for the dwellings in block T3. Acknowledging that fencing is not necessary categorised as "development", it is my view that careful consideration of private/public threshold treatment is critical in achieving a positive contribution to the public realm. Additional information should also be provided regarding the front entry sequence for the reserve facing dwellings in block T3, including the expected sequence for visitors and deliveries.

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2014/20674/01

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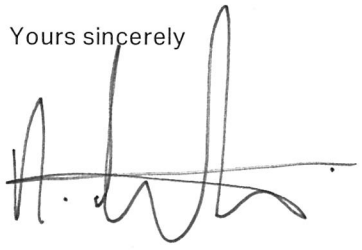
In general, I am concerned by the ground level interface to the rear laneways and lack of activation resulting from the series of garage doors. I recommend development of the overall landscape and urban design strategies, informed by the principles of Crime Prevention through Environmental Design (CPTED), to demonstrate the optimum amenity for the residents and the community at large.

To ensure the most successful design outcome is achieved, the Development Assessment Commission may like to consider conditions or reserved matters to protect the following elements of the proposal:

- Review of private open space strategies to improve the environmental conditions of courtyards.
- Refinement of internal layouts to provide effective access to natural light.
- Provision of additional information to demonstrate the car parking shortfall can be adequately offset by on-street parking.
- Provision of additional information regarding the primary road threshold treatment.
- Provision of additional information regarding the pedestrian entry sequence for dwellings in block T3.
- Provision of additional information regarding the overall landscape and urban design strategies.

Yours sincerely



Nick Tridente
Associate Government Architect

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Government of South Australia

INTRO

7 August 2017

Nitsan Taylor
Senior Planning Officer
Department of Planning, Transport and Infrastructure

Via email: Nitsan.taylor@sa.gov.au

Intro Design Pty Ltd
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Dear Nitsan,

RE: DA 473/E015/17, 25 Glen Stuart Road – Response to Council

Intro act on behalf of Woodforde JV Pty Ltd (the applicant) with respect to the proposed development of 66 dwellings, within the broader land division located at 25 Glen Stuart Road, Woodforde. This correspondence has been prepared in response to Councils letter dated 21 July 2017.

The proponent has reviewed and amended the development application in light of Councils comments. A total of two single garage dwellings have been deleted from terraces 4 and 5, with a further six single garage townhouses being converted to dwellings with double garages. The outcome for the stage 2 townhouse application is the removal of eight single garage dwellings and a reduction of dwellings from 66 to 64.

I respond to each query below:

- *Land Division (item 1)*

The request for land division to be completed is overly onerous and not practical. The land division has been approved with titles created as part of Stage 1. Dwellings were approved as part of Stage 1 prior to titles being created.

- *Detailed Civil Engineering Plans (item 2)*

Generally dwelling Finished Floor Levels (FFLs) will be 300mm above the top of kerb. Carport FFLs will be even with the highest top of kerb point for each allotment. The proponent will provide detailed engineering plans at the building rules consent stage.

- *Stormwater management design (items 3 and 6)*

A letter has been provided by Fyfe who are undertaking the civil design for the allotments. Fyfe find that the stormwater design is adequate for the envisaged impervious areas. This letter is provided as Appendix 01.

A stormwater management plan has been designed for the entire site and approved as part of the land division application. The Fyfe information reinforces

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this original application and demonstrates that the proposed development will function within the approved parameters.

Individual civil design for each allotment will be provided as part of the building rules consent information for each package. I note the provision of such information at the building rules consent stage is anticipated by Schedule 5 Part 1 of the Development Regulations 2008.

- *Retailing Walls (items 4 and 5)*

The application and assessment of the retaining walls will occur as part of the Stage 2 civil design, as the construction of all retaining walls throughout the entire land division is occurring as part of the site civil works. The retaining walls are critical to allowing the broader subdivision to follow the topography of the land. The retaining walls are required for the broader land division to work and as such cannot be subject to the purchase of individual dwellings prior to establishment.

Retaining walls for the Stage 1 townhouses were not approved as part of the planning application for the built form.

- *Inconsistency within plans (item 7)*

The plans have been updated and provided in Appendix 02.

- *Setback of carport to laneway (item 8)*

The 500mm setback serves a range of functions, and is used to facilitate easier turning movements into the garage, and provide a transition in grade between the road and carport FFL.

- *Car parking shortfall (item 9)*

GTA Consultants have provided a car parking analysis response in Appendix 03.

- *Landscaping Plan (item 10)*

A landscaping plan indicating front yard landscaping has been provided in Appendix 04.

- *Carport privacy screens (item 11)*

All carports which have the potential for overlooking are provided with privacy screens to prevent overlooking between properties. This is demonstrated in the updated architectural plans.

- *Upper level fixed screens (item 12)*

In lieu of providing fixed screens or blade walls for privacy reasons, all required upper floor rear windows will have an opaque film installed to any section of window below 1500mm above FFL. The portion of window higher than 1500mm

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above FFL will be translucent glass. The height has been nominated as it represents the nominated height within Schedule 4 of the Development Regulations 2008 for complying development.

- *Energy Efficiency for dwellings (item 13)*

Energy efficiency reports are not required for a planning assessment and consequently have not been prepared. I note the western facing townhouse allotments are typically the most difficult to achieve. Cognisant of this the proponent has provided a copy of the energy assessment prepared as part of the Stage 1 Townhouses. These energy reports demonstrate that the two allotment typologies with west facing orientation can achieve the required rating. A copy of the energy assessment is provided as Appendix 05.

- *Details of colour scheme (item 14)*

Greater detail has been provided on the material board pages in the updated architectural plans with regards to the colours proposed on façade elements.

- *Rear elevation diversity (item 15)*

The design of the rear façade of the dwellings alters window placement and size. The provision of a step in the building assists in breaking up the mass of the façade.

Garage door colours will not be altered. The visual impact of lanes is mitigated through the use of landscaping. The proponent will design the landscaped laneways similar to that approved by Adelaide Hills Council in stage 1 of the project and in line with the landscaping concept approved as part of the original Land Division.

- *Streetlighting in lanes and along reserve frontage (item 16)*

Street lighting in lane and along the reserve frontage will be considered during stage two civil design and, subject to Adelaide Hills Council approval, will be implemented similar to stage one designs.

- *Footpath on eastern boundary of Lots 179-190 (item 17)*

Footpaths in the reserve for the park fronted allotments 179-190 will be considered during stage two civil design and, subject to Adelaide Hills Council approval, will be implemented similar to stage one designs.

Should you require further information, please do not hesitate to contact the undersigned on 0402 424 403.

Yours sincerely

Anthony Gatti
Senior Planning Advisor

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Taylor, Nitsan (DPTI)

From: Enzo Caroscio <enzo@enzocaroscio.com>
Sent: Tuesday, 15 August 2017 2:18 PM
To: Patrick Stabile
Cc: Craig McRostie; Henry Kent
Subject: Woodford Townhouses stage 2

Hi Pat

as discussed the architecture design for Woodford Stage 2 Townhouses is a contemporary aesthetic with expressed white extruded surrounds with a pattern of window and texture solid panels to articulate the facades of each building and to create a considered streetscape pattern.
The terraces are proposed to be built boundary to boundary with a variety of roof forms. In regards to windows we have a variety of types and sizes. The aim is to achieve the maximum outlook and natural light while maintaining privacy and sun control as daylight is only achievable from the front and back. In regards to each dwelling type we have proposed larger windows to the south as their is no direct sun. Windows to the north and west are reduced in size to minis heat gain during summer. Eaves are not proposed due to the row nature of the buildings and the proposed contemporary architectural expression. Having smaller windows is the same as having larger windows with eaves as the same proportion of glass is in direct sunlight. The proposed expressed surrounds to the facade would provide some shading to the north facing windows and also the west. Glass selection and internal blinds would also assist in dealing with the summer heat and ensuring we are achieving compliance with Part J of the Australian Building Code.

Regards
Enzo Caroscio
Architect

ENZO CARO SCIO ARCH ITEC TURE

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Taylor, Nitsan (DPTI)

From: Anthony Gatti <a.gatti@intro.com.co>
Sent: Monday, 26 June 2017 2:09 PM
To: Taylor, Nitsan (DPTI)
Cc: Patrick Stabile (patrick.stabile@starfishdevelopments.com.au)
Subject: 473/E015/17, 66 townhouses - Response to ODASA

Follow Up Flag: Flag for follow up
Flag Status: Flagged

Hi Nitsan,

In response to the ODASA letter dated 1 June 2017. I respond to the following:

Private Open Space

The private open space will not be redesigned. The allotment, dwelling and garaging design has been specifically developed to respond to site conditions and account for the sloping land.

Refinement of Internal Layouts

All habitable spaces have access to natural light and ventilation. Further, the floorplans have been designed to cater for setbacks/POS requirements and site level restrictions, changing the floor plans will affect this balance

The proposed floorplans are market tried and tested in stage 1 where the vast majority of townhouses have sold. Furthermore the purchasers for stage 1 are approximately 80% owner occupiers (who are generally more critical with floorplans)

Car Parking

To achieve the gross densities on site, narrow lot terrace housing is required. Cognisant of the topography of the site, the provision of two on-site parking spaces for every dwelling becomes difficult. To ensure an appropriate quantum of car parking is provided dwelling design provides for unbroken, on-street visitor car parking.

Pedestrian Entrance Block T3

Entry to the townhouses is via the pathways within the entry reserve. Deliveries can be made via the garages and letterboxes (for postal deliveries) which will be located within the rear lane.

Landscape and urban design

Streetscape plantings have been approved as part of the land division application. The laneways as well as the primary street frontage will be landscaped in accordance with this plan.

I trust that the information provided is sufficient for you to finalise your assessment.

Kind Regards,

ANTHONY GATTI
SENIOR PLANNING ADVISOR

Activating human space

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