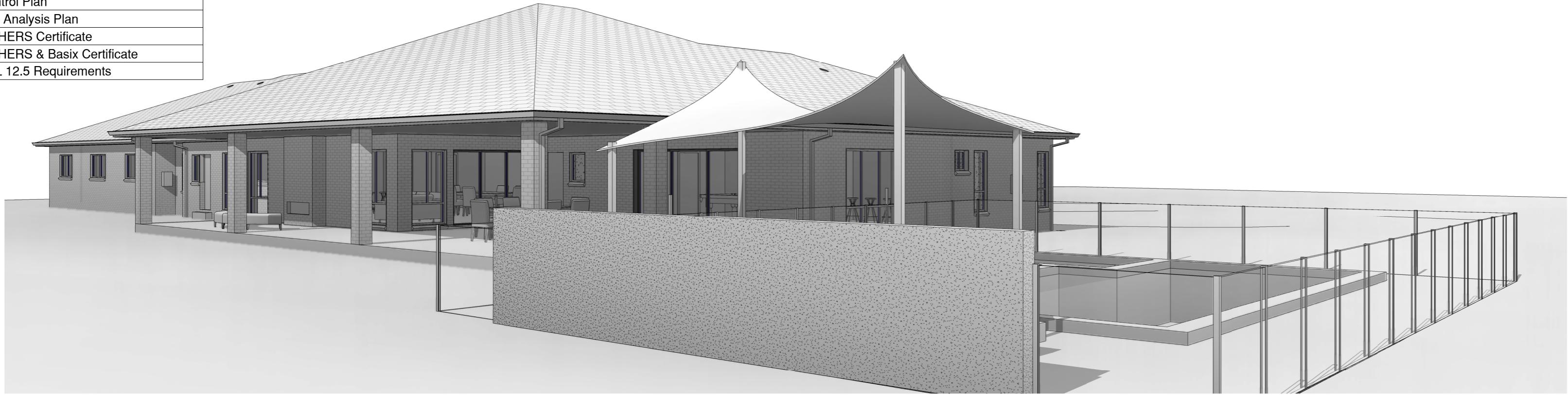


Sheet List	
1	Title Page
2	Overall Site Plan & Tree Removal Plan
3	Site Plan
4	Dwelling Floor Plan
5	Elevations
6	Elevations
7	Shed Plan, Elevations & Section
8	Section A-A & Pool Details
9	Drainage Plan
10	Waste Management & Sediment Control Plan
11	Site Analysis Plan
12	NatHERS Certificate
13	NatHERS & Basix Certificate
14	BAL 12.5 Requirements

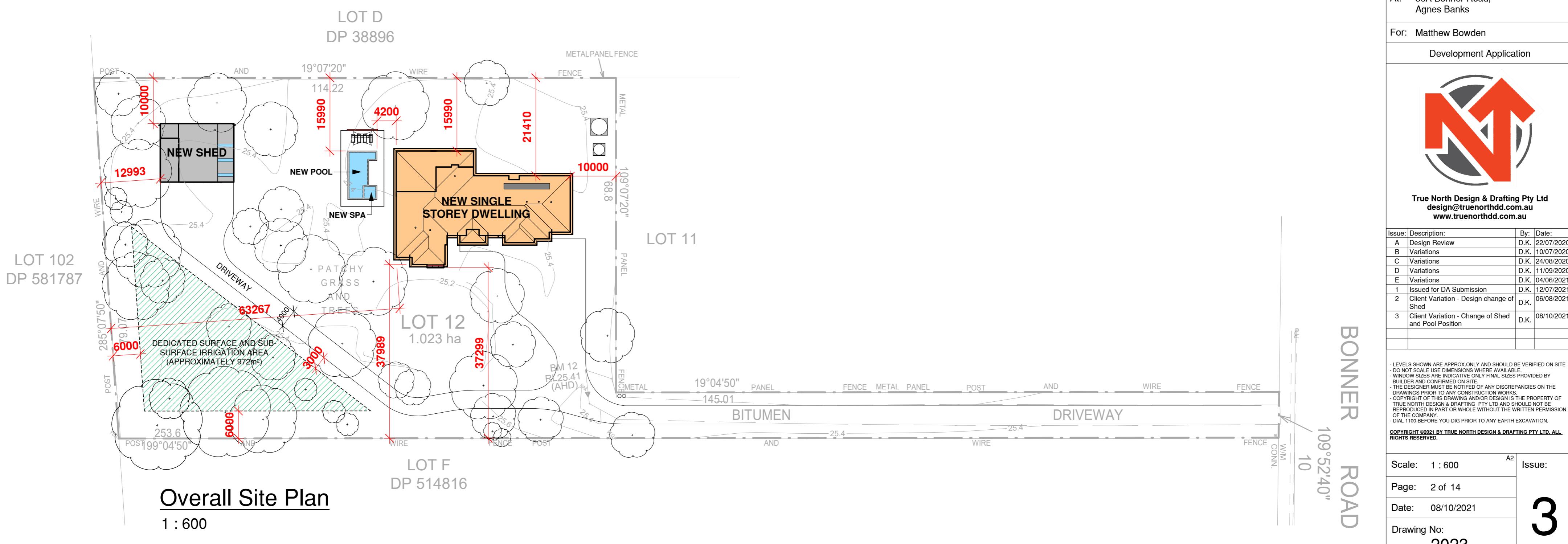
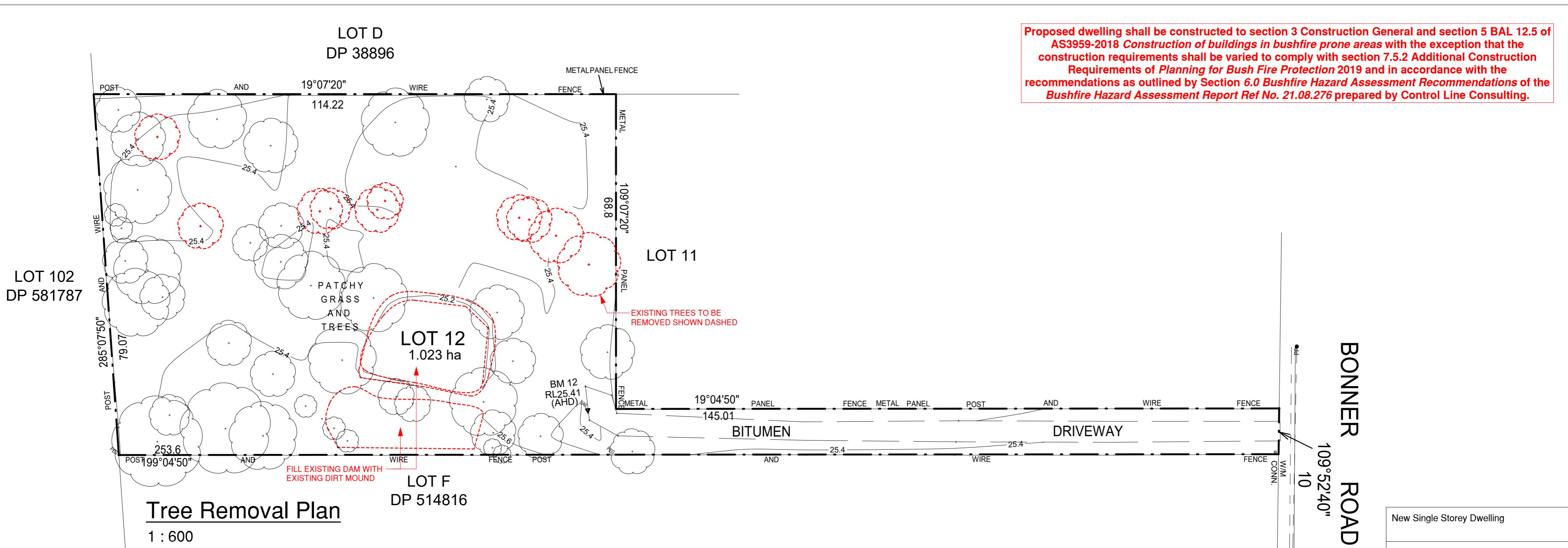


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New Single Storey Dwelling
 At: 36A Bonner Road,
 Agnes Banks
 For: Matthew Bowden
 Development Application
 Scale: A2
 Issue:
 Page: 1 of 14
 Date: 08/10/2021
 Drawing No:
 2023

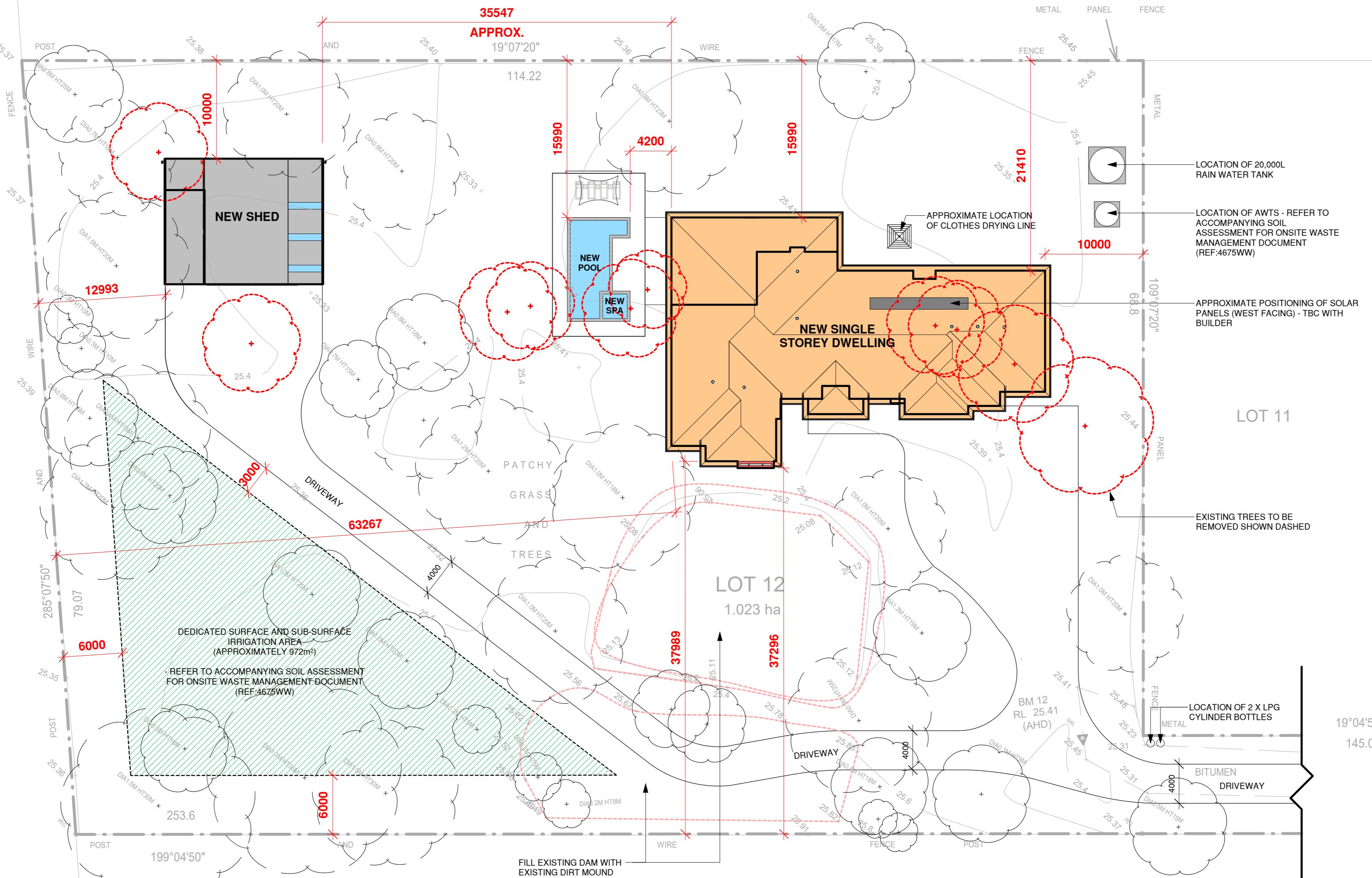
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Gross Building Area	
Living Area	476.01 m ²
Garage	76.37 m ²
Alfresco	106.17 m ²
Porch	12.44 m ²
Detached Shed	166.40 m ²
Pool & Spa	58.12 m ²
Shed Undercover Area	38.40 m ²
Grand total	933.90 m ²

LOT D
DP 38896



Site Legend

= GROUND FLOOR OUTLINE

New Single Storey Dwelling
At: 36A Bonner Road, Agnes Banks
For: Matthew Bowden
Development Application



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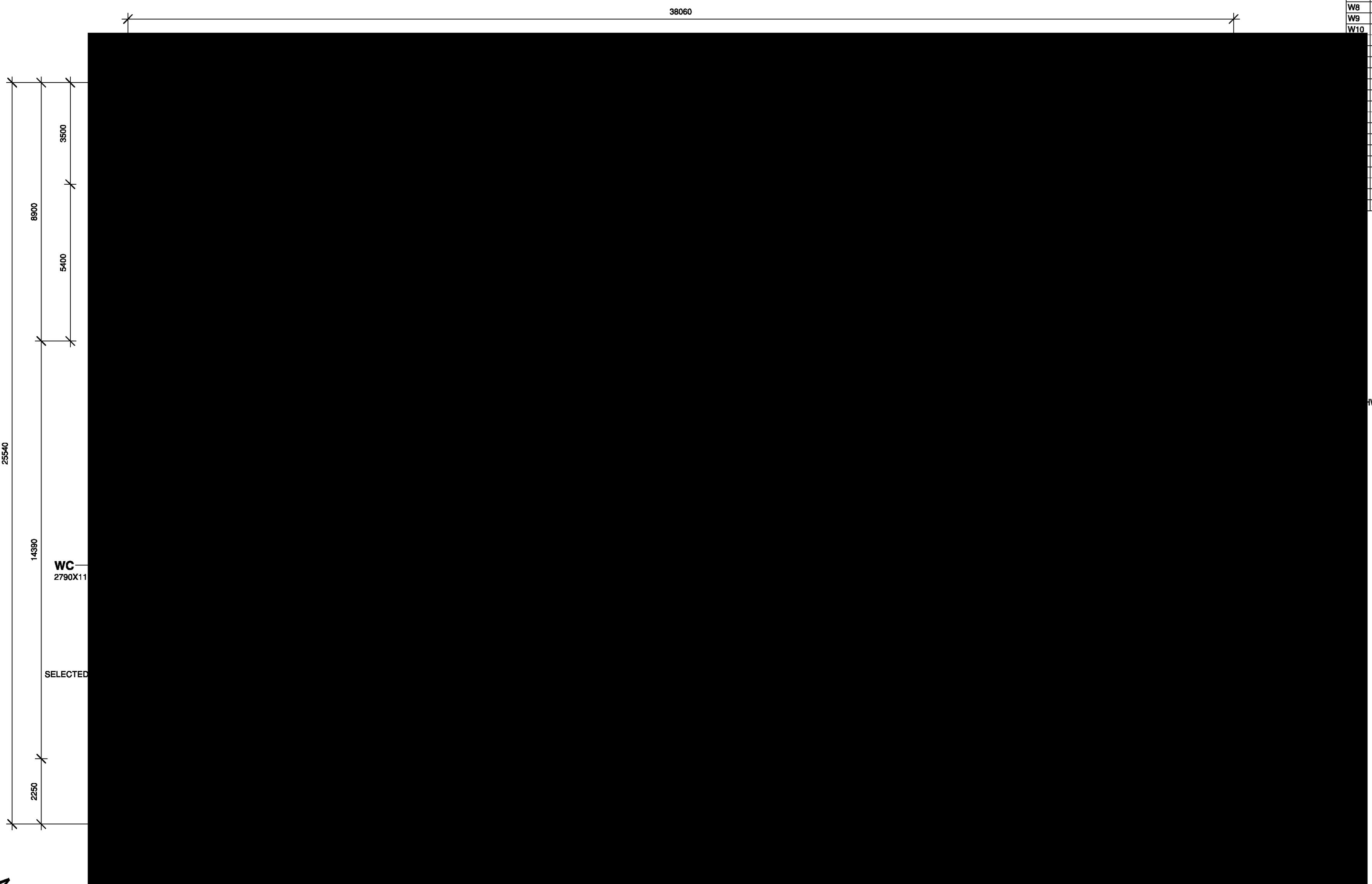
3



Site Plan
1 : 300

S/A
DENOTES SMOKE ALARM
SMOKE ALARMS TO BE HARDWIRED AND
INTERCONNECTED IN ACCORDANCE WITH
AS3786-2014 AND BCA CLAUSE 3.7.5

**CONSTRUCTION TO COMPLY WITH BAL 12.5 - REFER TO PAGE 14 FOR CONSTRUCTION STANDARDS
AND BUSHFIRE HAZARD REPORT (REF NO. 21.08.276)**



Dwelling Floor Plan

1 : 100

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Dwelling Window Schedule					
Mark	Height	Width	Type	Comments	Area
W1	2060	1570	Awning Window		3.23 m ²
W2	2060	1570	Awning Window		3.23 m ²
W3	2060	1570	Awning Window		3.23 m ²
W4	2060	2170	Awning Window		4.47 m ²
W5	2400	3020	Custom Corner Window (Front Panel)		7.25 m ²
W6	2400	1560	Custom Corner Window (Side Panel)		3.74 m ²
W7	1800	850	Awning Window - Obscured Glass		1.53 m ²
W8	1800	850	Awning Window - Obscured Glass		1.53 m ²
W9	600	850	Sliding Window - Obscured Glass		0.51 m ²
W10	2060	2650	Awning Window		5.46 m ²
	2100	3610	Stacker Door		7.58 m ²
	860	610	Awning Window - Obscured Glass		0.52 m ²
	2100	3250	Stacker Door		6.83 m ²
	2060	1210	Awning Window		2.49 m ²
	2060	1210	Awning Window		2.49 m ²
	2060	1210	Awning Window		2.49 m ²
	1030	1570	Sliding Window		1.62 m ²
	2060	850	Awning Window		1.75 m ²
	1030	610	Sliding Window		0.63 m ²
	1460	1570	Awning Window - Obscured Glass		2.29 m ²
	1030	1570	Sliding Window		1.62 m ²
	1030	1570	Sliding Window		1.62 m ²
	1800	610	Awning Window - Obscured Glass		1.10 m ²
	450	3010	Fixed Window		1.35 m ²

New Single Storey Dwelling

At: 36A Bonner Road,
Agnes Banks

For: Matthew Bowden

Development Application



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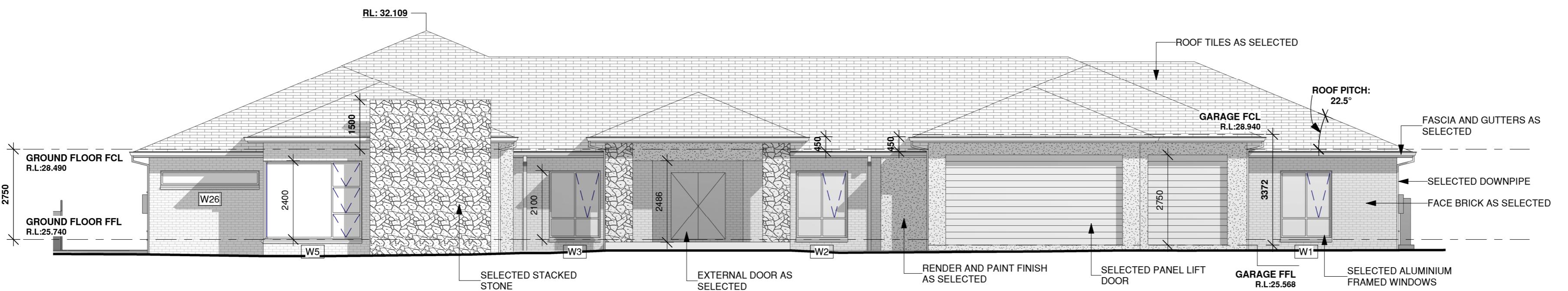
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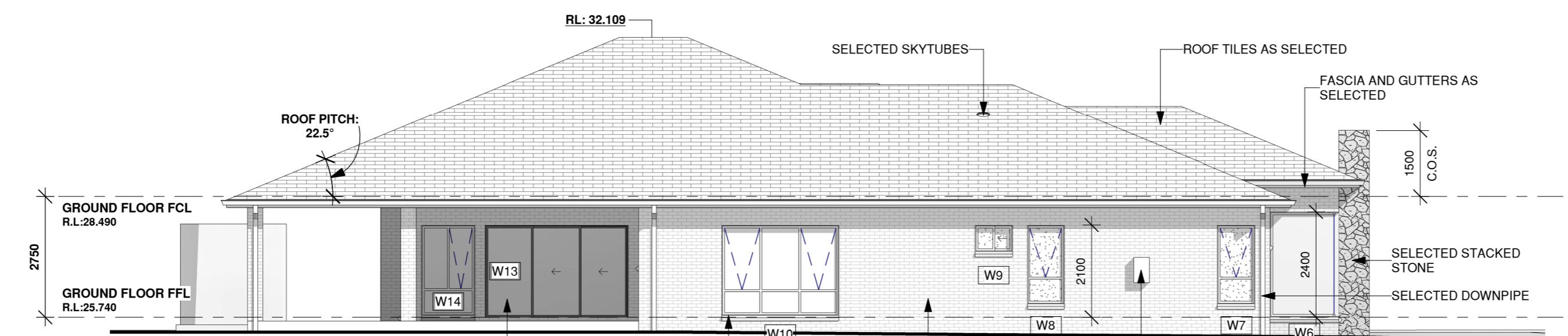
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W17	2060	1210	Awning Window		2.49 m ²
W18	1030	1570	Sliding Window		1.62 m ²
W19	2060	850	Awning Window		1.75 m ²
W20	1030	610	Sliding Window		0.63 m ²
W21	1460	1570	Awning Window - Obscured Glass		2.29 m ²
W22	1030	1570	Sliding Window		1.62 m ²
W23	1030	1570	Sliding Window		1.62 m ²
W24	1030	1570	Sliding Window		1.62 m ²
W25	1800	610	Awning Window - Obscured Glass		1.10 m ²
W26	450	3010	Fixed Window		1.35 m ²



Eastern Elevation

1 : 100



Southern Elevation

1 : 100

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New Single Storey Dwelling

At: 36A Bonner Road,
Agnes Banks

For: Matthew Bowden



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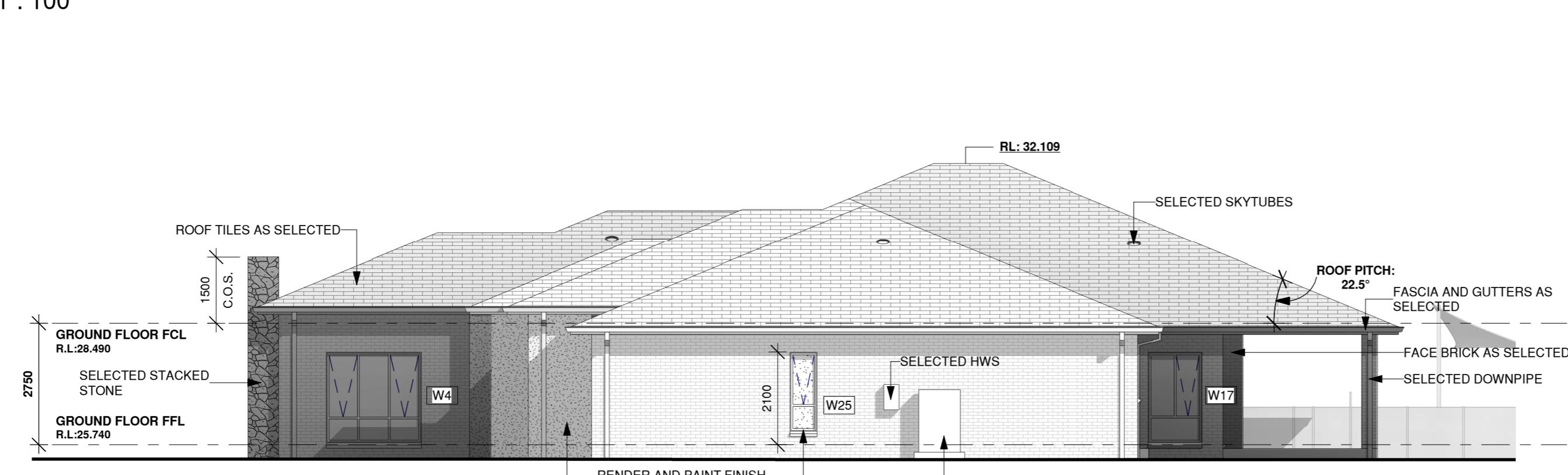
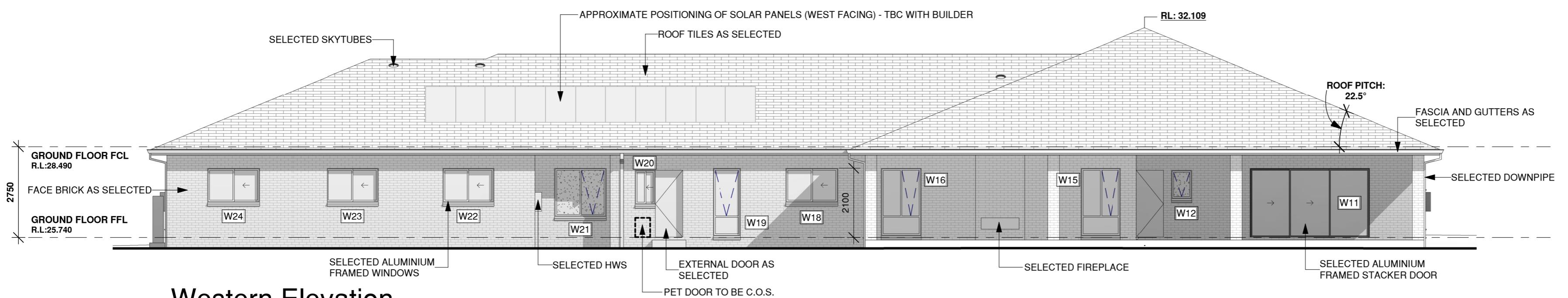
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New Single Storey Dwelling

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Agnes Banks

For: Matthew Bowden



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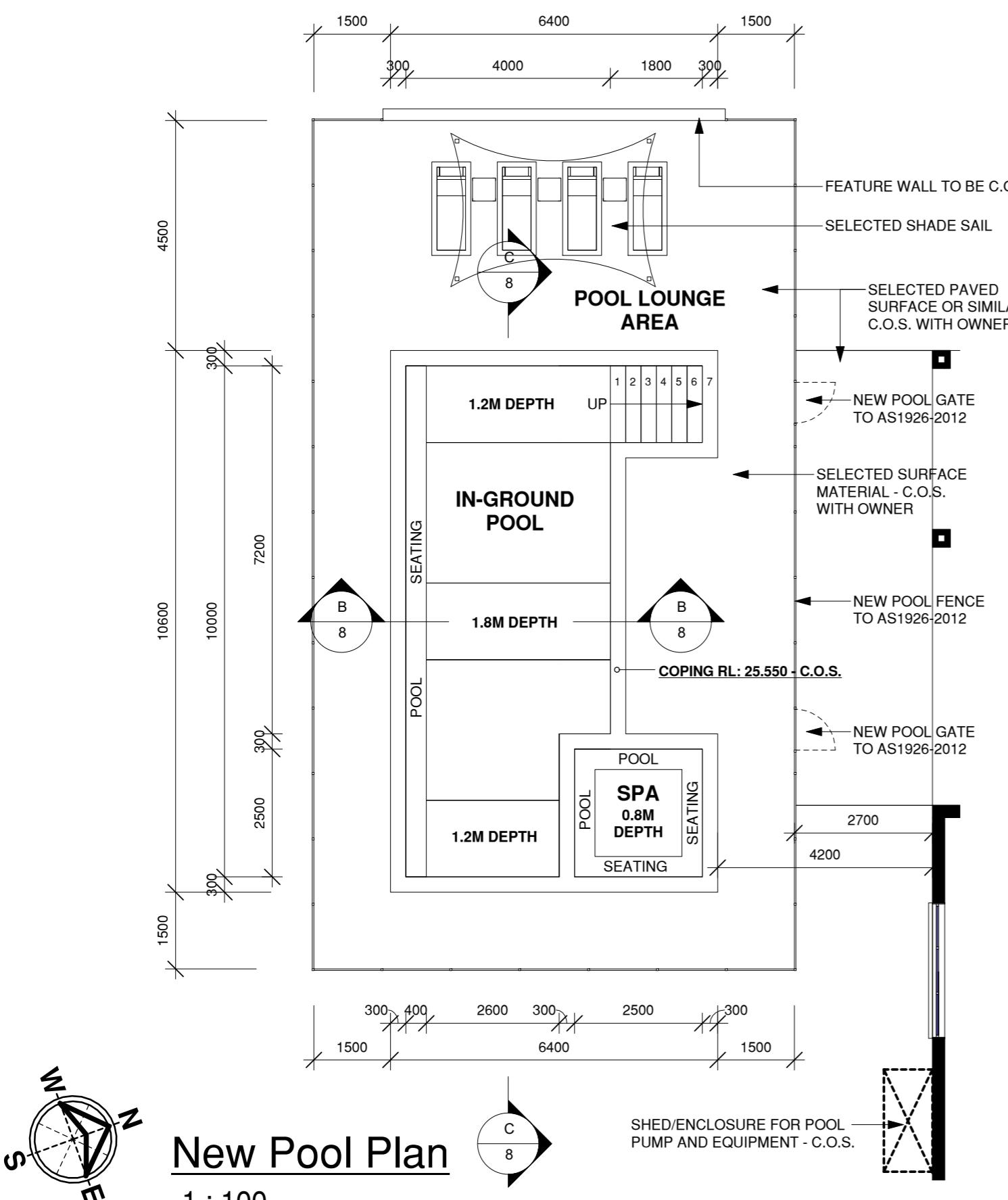
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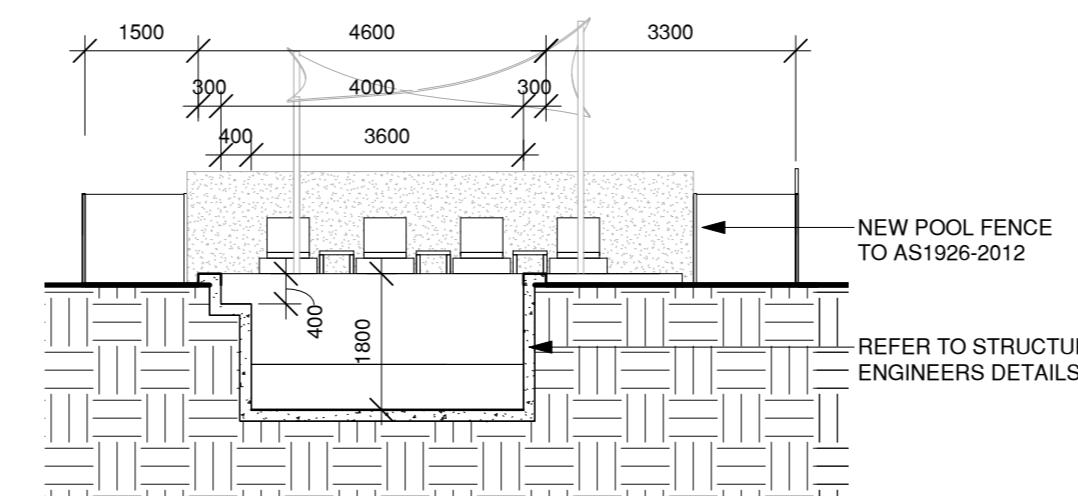
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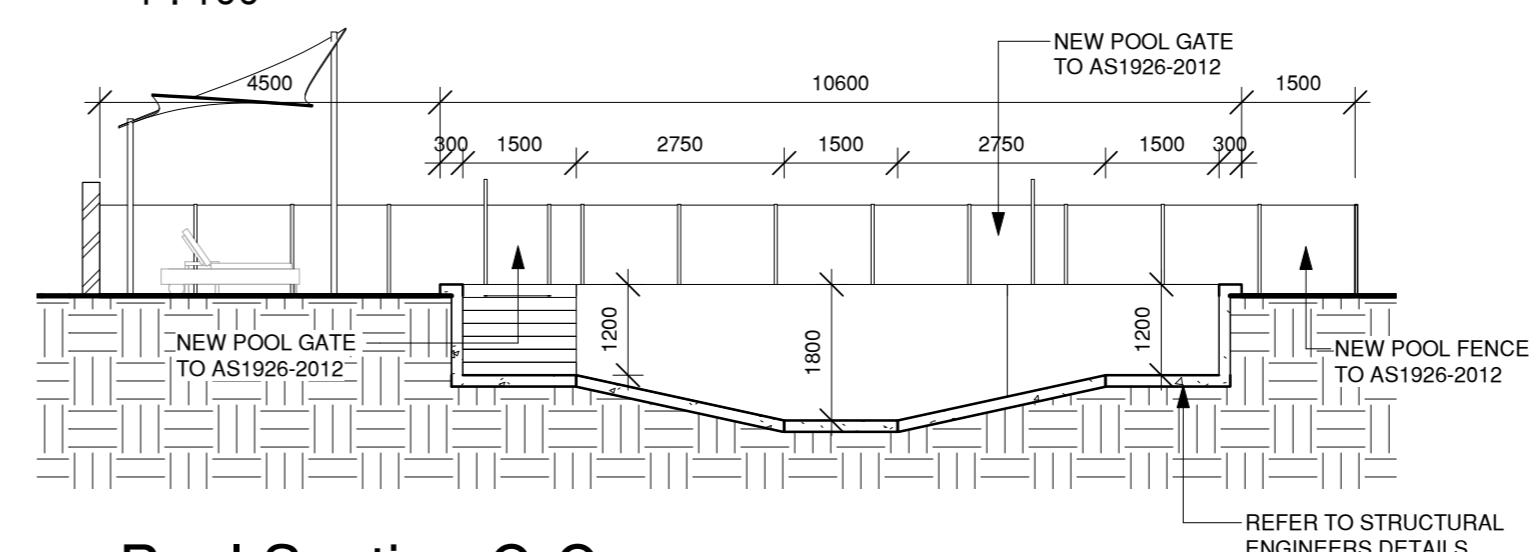
Section A-A

1 : 10



Pool Section B-B

1 : 10



Pool Section C-C

1 : 10

<p>New Single Storey Dwelling</p> <hr/> <p>At: 36A Bonner Road, Agnes Banks</p> <hr/> <p>For: Matthew Bowden</p> <hr/> <p>Development Application</p> <hr/>  <p>True North Design & Drafting Pty Ltd design@truenorthdd.com.au www.truenorthdd.com.au</p>	
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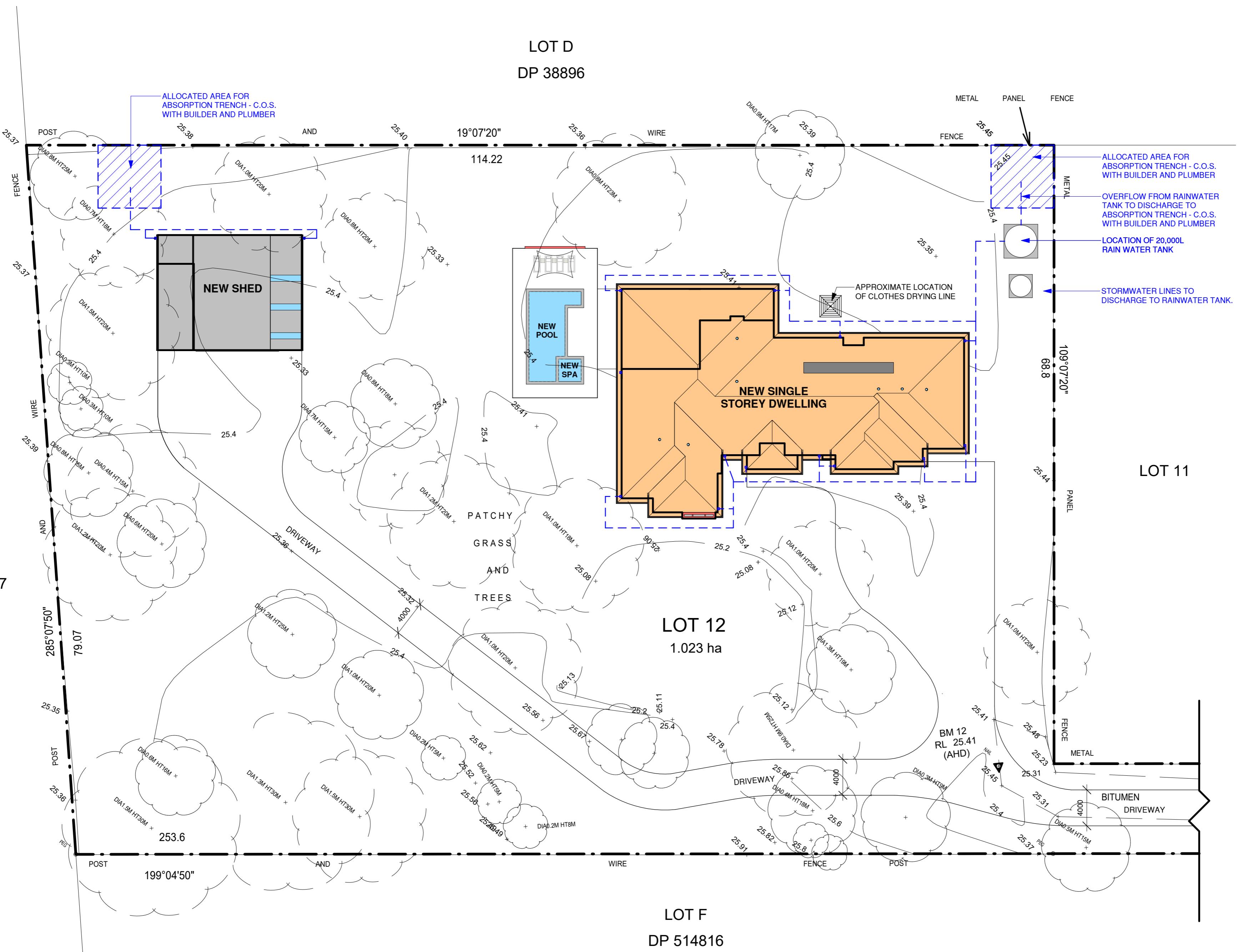
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LOT D
DP 38896

DP 3889

LOT 102
P 581787



Drainage Plan

1 : 300

New Single Storey Dwelling

At: 36A Bonner Road,
Agnes Banks

For: Matthew Bowden

Development Application

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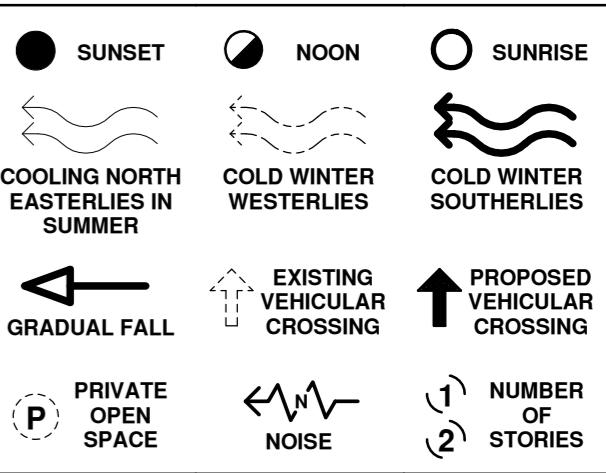
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Site Analysis Legend



LOT D
DP 38896

1

LOT 102
DP 581787

LOT 1

1.023 h

LOT F
DP 51481

Site Analysis Plan

1 : 300

New Single Storey Dwelling

At: 36A Bonner Road,
Agnes Banks

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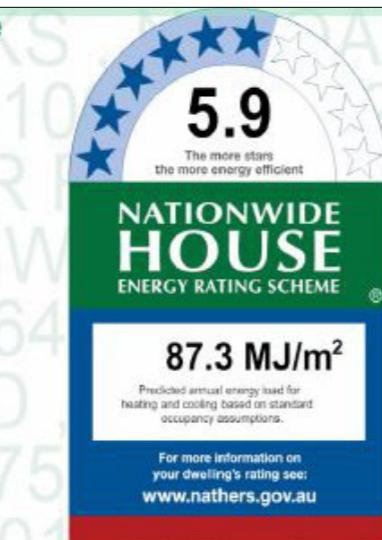
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Date: 08/10/2021

Drawing No: 3

2023

3



Property

Address 36A Bonner Road, AGNES BANKS, NSW, 2753
Lot/DP 12/1237547
NCC Class* 1A
Type New Dwelling

Plans

Main Plan Bowden
Prepared by True North Design

Construction and environment

Assessed floor area (m ²)*	Exposure Type
Conditioned*	410.0
Unconditioned*	98.0
Total	508.0
Garage	73.0

Thermal performance

Heating	Cooling
54.0	33.3
MJ/m ²	MJ/m ²
28	

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the QR code or visit www.hstar.com.au/QR/Barcode/?p=hWooNKvt. When using either link, ensure you are visiting www.hstar.com.au.



National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J3.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.

0006364939-01 NatHERS Certificate 5.9 Star Rating as of 10 Oct 2021

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m ²)	Orientation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
Garage	2750	2410	90	SE
Garage	2750	5410	90	SE
Laundry	2340	820	90	NW
Bathroom	2340	820	90	NW
Entry	2340	1620	90	SE

External wall type

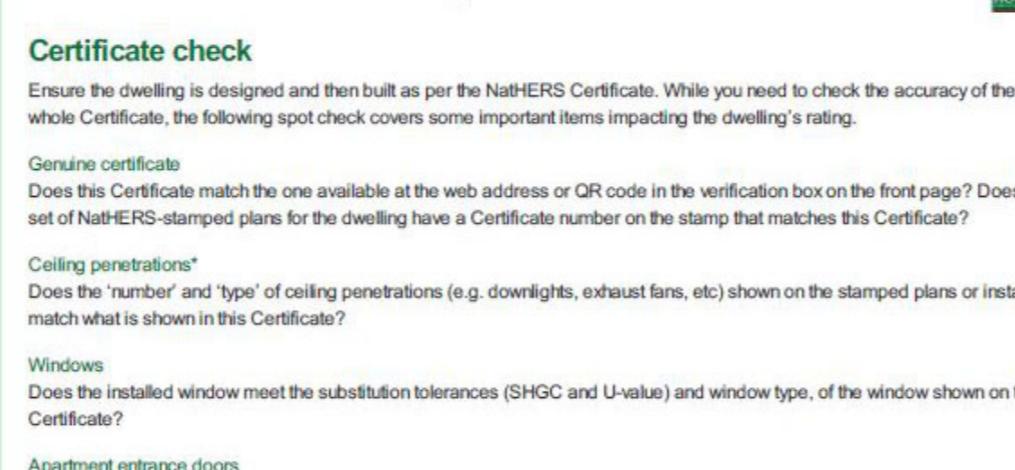
Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-1	Brick Veneer	0.50	Medium	No insulation	No
EW-2	Single Skin Brick	0.50	Medium	No insulation	No
EW-3	Brick Veneer	0.50	Medium	Bulk Insulation R2	No

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Garage	EW-1	3372	1500	NE	600	YES
Garage	EW-2	3372	3200	SE	600	YES
Garage	EW-2	3372	800	NE	3800	YES
Garage	EW-2	3372	6000	SE	600	NO
Garage	EW-1	3372	1500	SW	600	YES
Garage	EW-1	3372	1195	SE	600	YES
Master Suite	EW-3	2750	2000	NE	100	YES

0006364939-01 NatHERS Certificate 5.9 Star Rating as of 10 Oct 2021

The more stars
the more energy efficient



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

Does the 'External Door Schedule' show apartment entrance doors? Please note that an "external door" between the modelled dwelling and a shared space, such as an enclosed corridor or foyer, should not be included in the assessment (because it overstates the possible ventilation) and would invalidate the Certificate.

Exposure*

Has the appropriate exposure level (terrain) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".

Provisional* values

Have provisional values been used in the assessment and, if so, noted in "additional notes" below?

Additional notes

Window and glazed door type and performance

Default* windows

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges
		SHGC lower limit	SHGC upper limit	
No Data Available				

Custom* windows

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges
		SHGC lower limit	SHGC upper limit	
WID-012-04 A	WID-012-04 A Aluminium Awning Window SG 4mmCir	6.4	0.64	0.61 0.67
WID-006-01 A	WID-006-01 A Residential Sliding Window SG 3mm Clear	6.4	0.76	0.72 0.80
WID-011-01 A	WID-011-01 A Architectural Paragon Slacker Door SG 5mm Clear	6.3	0.63	0.60 0.66

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges
		SHGC lower limit	SHGC upper limit	
No Data Available				

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges
		SHGC lower limit	SHGC upper limit	
No Data Available				

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges
		SHGC lower limit	SHGC upper limit	

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0006364939-01 NatHERS Certificate 5.9 Star Rating as of 10 Oct 2021				
Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*	
Hall to guest	Plasterboard	Bulk Insulation R3	No	
Activities	Plasterboard	Bulk Insulation R3	No	
Kitchen/Family	Plasterboard	Bulk Insulation R3	No	
Bathroom	Plasterboard	Bulk Insulation R3	No	
Entry	Plasterboard	Bulk Insulation R3	No	
Ceiling penetrations*				
Location	Quantity	Type	Diameter (mm ²)	Sealed/unsealed
Master Suite	12	Downlights - LED	150	Sealed
Ensuite	5	Downlights - LED	150	Sealed
Ensuite	1	Exhaust Fans	300	Sealed
Office	4	Downlights - LED	150	Sealed
Theatre	4	Downlights - LED	150	Sealed
Bedroom 2	4	Downlights - LED	150	Sealed
Bedroom 3	4	Downlights - LED	150	Sealed
Bedroom 4	5	Downlights - LED	150	Sealed
Guest bed	4	Downlights - LED	150	Sealed
Ensuite Guest	2	Downlights - LED	150	Sealed
Ensuite Guest	1	Exhaust Fans	300	Sealed
Butlers	3	Downlights - LED	150	Sealed
Laundry	3	Downlights - LED	150	Sealed
Bath	2	Downlights - LED	150	Sealed
Bath	1	Exhaust Fans	300	Sealed
WC	1	Downlights - LED	150	Sealed
WC	1	Exhaust Fans	300	Sealed
Hall to guest	4	Downlights - LED	150	Sealed
Activities	7	Downlights - LED	150	Sealed
Kitchen/Family	13	Downlights - LED	150	Sealed
Bathroom	2	Downlights - LED	150	Sealed
Bathroom	1	Exhaust Fans	300	Sealed
Entry	4	Downlights - LED	150	Sealed
Ceiling fans				
Location	Quantity	Diameter (mm)		
No Data Available				

0006364939-01 NatHERS Certificate 5.9 Star Rating as of 10 Oct 2021				
Roof type	Construction	Added insulation (R-value)	Solar absorptance	Roof shade
Foil, Gap Above, Reflective Side Down, Anti-glare Up		0.85		Dark
<ul style="list-style-type: none"> Water <ul style="list-style-type: none"> 20,000 Rain water tank, approx. 80% of roof draining to it, connect to WC, garden tap & washing machine 3 star showerhead 7.5-9 litres/min 4 star wc 4 star taps 58,000 litre pool, no cover with solar heating 3,000 litre spa, no cover with gas heating Thermal <ul style="list-style-type: none"> Medium colour walls Dark colour roof Tiles to living & wet areas Carpet to bedrooms & theatre Wafflepod slab R2.0 wall insulation (incl. Wall between house/garage, excl. Garage external wall) R3.0 ceiling insulation (excl. Garage) Anticor to roof Self sealing exhaust fans to wet areas with shower Weather stripping Downlights Windows (Wideline) Sliding/Fixed Uw 6.4 & shgc 0.76 clear glass Sliding door Uw 6.3 & shgc 0.63 clear glass Awning Uw 6.4 & shgc 0.64 clear glass Energy <ul style="list-style-type: none"> Gas instantaneous HWS 6 stars Three phase reverse cycle a/c Exhaust fan to wet areas, ducted to outside air Rangehood, ducted to outside air Gas cooktop, electric oven External clothesline 4.5 kW PV system 				

Project address			
Project name	MAV052_02		
Street address	36A Bonner Road AGNES BANKS 2753		
Local Government Area	Penrith City Council		
Plan type and plan number	Deposited Plan 1237547		
Lot no.	12		
Section no.	-		
Project type	separate dwelling house		
No. of bedrooms	5		
Project type			
Project type	separate dwelling house		
No. of bedrooms	5		
Site details			
Site area (m ²)	10230		
Roof area (m ²)	730		
Conditioned floor area (m ²)	410.0		
Unconditioned floor area (m ²)	25.0		
Total area of garden and lawn (m ²)	660		

0006364939-01 NatHERS Certificate 5.9 Star Rating as of 10 Oct 2021	
	

Explanatory notes

About this report

A NatHERS report is a comprehensive, dynamic computer modelling evaluation of a home, using the floorplans, elevations and specifications to estimate an energy load. It addresses the building layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings), but does not cover the water or energy use of appliances or energy production in the home.

Ratings are based on a unique climate zone where the home is located and are generated using standard assumptions, including occupancy patterns and thermal settings. The actual energy consumption of a home may vary significantly from the predicted energy load, as the assumptions used in the rating will not match actual usage patterns. For example, the number of occupants and personal heating or cooling preferences will vary.

While the figures are an indicative guide to energy use, they can be used as a reliable guide for comparing different dwelling designs and to demonstrate that the design meets the energy efficiency requirements in the National Construction Code. Homes that are energy efficient use less energy, are warmer on cool days, cooler on hot days and cost less to run. The higher the star rating the more thermally efficient the dwelling is.

Accredited assessors

To ensure the NatHERS Certificate is of high quality, always use an accredited or licensed assessor. NatHERS accredited assessors are members of a professional body called an Assessor Accrediting Organisation (AAO).

Australian Capital Territory (ACT) licensed assessors may only produce assessments for regulatory purposes using software for which they have a licence endorsement. Licence endorsements can be confirmed on the ACT licensing register.

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 ongoing training requirements.

Any questions or concerns about this report should be directed to the assessor in the first instance. If the assessor is unable to address these questions or concerns, the AAO specified on the front of this certificate should be contacted.

Disclaimer
The format of the NatHERS Certificate was developed by the NatHERS Administrator. However the content of each individual certificate is entered and created by the assessor to create a NatHERS Certificate. It is the responsibility of the assessor who prepared this certificate to use NatHERS accredited software correctly and follow the NatHERS Technical Notes to produce a NatHERS Certificate.

The predicted annual energy load in this NatHERS Certificate is an estimate based on an assessment of the building by the assessor. It is not a prediction of actual energy use, but may be used to compare how other buildings are likely to perform when used in a similar way.

Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared the report), including assumptions about occupancy, indoor air temperature and local climate.

Not all assumptions that may have been made by the assessor while using the NatHERS accredited software tool are presented in this report and further details or data files may be available from the assessor.

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans, pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
Entrance door	these signify ventilation benefits in the modeling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terran with no obstructions (e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors)).
Exposure category – open	terran with few obstructions (e.g. grasslands with few well scattered obstructions below 10m; farmland with scattered shrubs, lightly vegetated bush blocks, elevated units (e.g. above 3 floors)).
Exposure category – suburban	terran with numerous closely spaced obstructions below 10m (e.g. suburban housing, heavily vegetated bushland areas).
Exposure category – protected	terran with numerous closely spaced obstructions over 10m (e.g. city and industrial areas).
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 (NCC Class 1 buildings and attached Class 1a buildings. Definitions can be found at www.abcb.gov.au).
Opening percentage	the operable percentage or operable (movable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of medium must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au .
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading device	a device fixed to windows to provide shading e.g. window awnings or screens but excludes eaves.
Shading features	includes neighbouring buildings, fences and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a mounted unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

BASIX® Certificate

Building Sustainability Index www.basix.nsw.gov.au

Single Dwelling

Certificate number: 12326225_02

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



Certificate Prepared by

Name / Company Name: Thermal Performance
ABN (if applicable): 64 137 428 767

Description of project

Project address

Project name: MAV052_02
Street address: 36A Bonner Road AGNES BANKS 2753
Local Government Area: Penrith City Council
Plan type and plan number: Deposited Plan 1237547
Lot no.: 12
Section no.: -

Project type

Project type: separate dwelling house
No. of bedrooms: 5

Site details

Site area (m²): 10230
Roof area (m²): 730
Conditioned floor area (m²): 410.0
Unconditioned floor area (m²): 25.0
Total area of garden and lawn (m²): 660

Assessor details and thermal loads

Assessor number: 20731
Certificate number: 0006364939
Climate zone: 28
Area adjusted cooling load (MJ/m² year): 33
Area adjusted heating load (MJ/m² year): 54
Ceiling fan in at least one bedroom: No
Ceiling fan in at least one living room or other conditioned area: No
Project score

Water: ✓ 43 Target 40
Thermal Comfort: ✓ Pass Target Pass
Energy: ✓ 51 Target 50

Schedule of BASIX commitments

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

Water Commitments		Show on DA plans	Show on CC/CDC plans & specs	Certifier check
Fixtures				
The applicant must install showerheads with a minimum rating of 3 star (> 7.5 but < 9 L/min) in all showers in the development.			✓	✓
The applicant must install a toilet flushing system with a minimum rating of 4 star in each toilet in the development.			✓	✓
The applicant must install taps with a minimum rating of 4 star in the kitchen in the development.			✓	
The applicant must install basin taps with a minimum rating of 4 star in each bathroom in the development.			✓	
Alternative water				
Rainwater tank	The applicant must install a rainwater tank of at least 20000 litres on the site. This rainwater tank must meet, and be installed in accordance with, the requirements of all applicable regulatory authorities.		✓	✓
The applicant must configure the rainwater tank to collect rain runoff from at least 500 square metres of the roof area of the development (excluding the area of the roof which drains to any stormwater tank or private dam).			✓	✓
The applicant must connect the rainwater tank:				
• all toilets in the development				
• the cold water tap that supplies each clothes washer in the development				
• at least one outdoor tap in the development (Note: NSW Health does not recommend that rainwater be used for human consumption in areas with potable water supply.)				
Swimming pool				
The swimming pool must not have a volume greater than 58 kilolitres.			✓	
The swimming pool must be outdoors.			✓	✓
Water Commitments				

Construction Standards to Comply with Australian Standard 3959 - 2009 & Appendix 3 of Planning for Bushfire Protection Bushfire Attack Level (BAL) - 12.5 (Low)

SARKING

Sarking, where used for bushfire protection shall be:
 a. Non-combustible; or
 b. Breather-type sarking complying with AS/NZS4200.1 and with a flammability index of not more than 5 and sarked on the outside of the frame; or
 c. An insulation material conforming to the appropriate Australian Standard for that material.

SUBFLOOR SUPPORTS

This Standard does not provide construction requirements for subfloor supports where the subfloor space is enclosed with:
 1) a wall that complies with the requirements for an external wall below; or
 2) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion resistant steel, bronze or aluminium; or
 3) a combination of Items (a) and (b) above. Where the subfloor space is unenclosed, the support posts, columns, stumps, piers and poles shall be:
 (1) non-combustible material; or
 (2) bushfire-resistant timber (refer to the table at the end of this document); or
 (3) a combination of Items (i) and (ii) above.

NOTE: This requirement applies to the principal building only. See requirements below for verandas, decks, steps, ramps and landings.

FLOORS

1) Elevated floors
 a) Enclosed subfloor space
 The Standard does not provide construction requirements for elevated floors, including bearers, joists and flooring, where the subfloor space is enclosed with -
 i) a wall that complies with the standards for an external wall below; or
 ii) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion resistant steel, bronze or aluminium; or
 iii) a combination of Items (a) and (b) above.
 b) Unenclosed subfloor space
 Where the subfloor space is unenclosed, the bearers, joists and flooring, less than 400 mm above finished ground level, shall be one of the following:
 i) materials that comply with the following:
 (a) bearers and joists shall be -
 i) non-combustible; or
 ii) bushfire-resistant timber (refer to the table at the end of this document); or
 iii) a combination of Items (i) and (ii) above.
 (b) Flooring shall be:
 i) non-combustible; or
 ii) bushfire-resistant timber (refer to the table at the end of this document); or
 iii) timber (other than bushfire-resistant timber), particleboard or plywood flooring where the underside is lined with sarkingtype material or mineral wool insulation; or
 d) a combination of any of Items (i), (ii) or (iii) above; or
 ii) a system complying with AS 1530.8.1

This Standard does not provide construction requirements for elements of elevated floors, including bearers, joists and flooring, if the underside of the element is 400 mm or more above finished ground level.

EXTERNAL WALLS

1) Walls
 The exposed components of an external wall that are less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the wall shall be:
 (a) Non-combustible material such as cavity brick, masonry veneer walls with an outer leaf of clay, concrete, calcium silicate or natural stone, precast or in situ walls of concrete or aerated concrete or earth walling including mud brick; or
 (b) Timber logs of a species with a density of 680 kg/m³ or greater at a 12 percent moisture content; of a minimum nominal overall thickness of 90 mm and a minimum thickness of 70 mm (see Clause 3.11 of Standard); and gauge planed; or
 (c) Cladding that is fixed externally to a timber-framed or a steel-framed wall and is-
 (i) Non-combustible material; or
 (ii) Fibre-cement a minimum of 6 mm in thickness; or
 (iii) Bushfire-resistant timber (refer to the table at the end of this document); or
 (iv) A timber species as specified in Appendix E of the Standard; or
 (v) a combination of any of Items (i), (ii), (iii) or (iv) above; or
 (d) A combination of any of Items (a), (b) or (c) above.

2) Joints

All joints in the external surface material of walls shall be covered, sealed, overlapped, backed or butt-jointed to prevent gaps greater than 3 mm.
 3) Vents and weepholes
 Vents and weepholes in external walls shall be screened with a mesh with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium, except where the vents and weepholes have an aperture less than 3 mm.

EXTERNAL WINDOWS AND DOORS

1) Windows

Window assemblies shall comply with one of the following:
 (a) They shall be completely protected by a bushfire shutter that complies with Note 1 below; or
 (b) They shall be completely protected externally by screens that comply with Note 2; or
 (c) They shall comply with the following:
 (i) For window assemblies less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the window frame, window frames and window joinery shall be made from:
 (A) Bushfire-resistant timber (refer to the table at the end of this document); or
 (B) A timber species as specified in Appendix E of the Standard; or
 (C) Metal; or
 (D) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the door assembly shall satisfy the design load, performance and structural strength of the member.

(v) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.

4) Sliding doors

Sliding doors shall comply with one of the following:
 (a) They shall be completely protected by a bushfire shutter that complies with Note 1 below; or
 (b) They shall be completely protected externally by screens that comply with Note 2; or
 (c) They shall comply with the following:

(i) Any glazing incorporated in sliding doors shall be Grade A safety glass complying with AS 1288.

(ii) Both the door frame supporting the sliding door and the framing surrounding any glazing shall be made from:
 (A) Bushfire-resistant timber (refer to the table at the end of this document); or
 (B) A timber species as specified in Appendix E of the Standard; or
 (C) Metal; or
 (D) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the frame and sash shall satisfy the design load, performance and structural strength of the member.

(iii) Where glazing is less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the window frame, the glazing shall be Grade A safety glass minimum 4 mm thickness, or glass blocks with no restriction on glazing methods.

(iv) Where glazing is other than that specified in Item (iii) above, annealed glass may be used.

(v) The openable portions of windows shall be screened internally or externally with screens that comply with Note 2 below.

2) Screens
 Screening of the openable portions of all windows is required in all BALs to prevent the entry of embers to the building when the window is open. Screening of the openable and fixed portions of some windows is required in some BALs to reduce the effects of radiant heat on some types of glass.
 If the screening is required to reduce the effects of radiant heat on the glass, the screening shall be external so that the glass in the openable portion of the window will be 'protected' when it is shut.
 If the screening is required only to prevent the entry of embers, the screening may be fitted externally or internally.

3) Doors - Side-hung external doors (including French doors, panel fold and bi-fold doors)
 Side-hung external doors, including French doors, panel fold and bi-fold doors, shall comply with one of the following:
 (a) Doors and door frames shall be protected by bushfire shutters that comply with Note 1; or
 (b) Doors and door frames shall be protected externally by screens that comply with Note 2; or
 (c) Doors and door frames shall comply with the following:
 (i) Doors shall be-
 (A) non-combustible; or
 (B) a solid timber, laminated timber or reconstituted timber door, having a minimum thickness of 35 mm for the first 400 mm above the threshold; or
 (C) a door, including a hollow core door, with a non-combustible kick plate on the outside for the first 400 mm above the threshold; or
 (D) a door, including a hollow core door, protected externally by a screen that complies with Clause Note 2 below; or
 (E) a fully framed glazed door, where the framing is made from materials specified for bushfire shutters (See Note 2 below), or
 from a timber species as specified at the end of this document.
 (ii) Where doors incorporate glazing, the glazing shall comply with the glazing requirements for windows.

(iii) Doors shall be tight-fitting to the door frame and to an abutting door, if applicable.
 (iv) Where any part of the door frame is less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the door, that part of the door frame shall be made from:
 (A) Bushfire-resistant timber (refer to the table at the end of this document); or
 (B) A timber species as specified in Appendix E of the Standard; or
 (C) Metal; or
 (D) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the door assembly shall satisfy the design load, performance and structural strength of the member.

(v) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.

5. Roof penetrations

The following apply to roof penetrations:
 (a) Where any part of the roof frame is less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the roof, that part of the roof frame shall be made from:
 (A) Bushfire-resistant timber (refer to the table at the end of this document); or
 (B) A timber species as specified in Appendix E of the Standard; or
 (C) Metal; or
 (D) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the roof assembly shall satisfy the design load, performance and structural strength of the member.

(v) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.

6. External glazing

Glazing shall be Grade A safety glass complying with AS 1288.

7. External doors and windows

External doors and windows shall be made from:

(A) Bushfire-resistant timber (refer to the table at the end of this document); or

(B) A timber species as specified in Appendix E of the Standard; or

(C) Metal; or

(D) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the door assembly shall satisfy the design load, performance and structural strength of the member.

(v) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.

8. External walls

External walls shall be made from:

(A) Bushfire-resistant timber (refer to the table at the end of this document); or

(B) A timber species as specified in Appendix E of the Standard; or

(C) Metal; or

(D) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the wall assembly shall satisfy the design load, performance and structural strength of the member.

(v) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.

9. External windows and doors

External windows and doors shall be made from:

(A) Bushfire-resistant timber (refer to the table at the end of this document); or

(B) A timber species as specified in Appendix E of the Standard; or

(C) Metal; or

(D) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the window and door assembly shall satisfy the design load, performance and structural strength of the member.

(v) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.

10. External walls

External walls shall be made from:

(A) Bushfire-resistant timber (refer to the table at the end of this document); or

(B) A timber species as specified in Appendix E of the Standard; or

(C) Metal; or

(D) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the wall assembly shall satisfy the design load, performance and structural strength of the member.

(v) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.

11. External windows and doors

External windows and doors shall be made from:

(A) Bushfire-resistant timber (refer to the table at the end of this document); or

(B) A timber species as specified in Appendix E of the Standard; or

(C) Metal; or

(D) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the window and door assembly shall satisfy the design load, performance and structural strength of the member.

(v) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.

12. External walls

External walls shall be made from:

(A) Bushfire-resistant timber (refer to the table at the end of this document); or

(B) A timber species as specified in Appendix E of the Standard; or

(C) Metal; or

(D) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the wall assembly shall satisfy the design load, performance and structural strength of the member.

(v) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.

13. External windows and doors

External windows and doors shall be made from:

(A) Bushfire-resistant timber (refer to the table at the end of this document); or

(B) A timber species as specified in Appendix E of the Standard; or

(C) Metal; or

(D) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the window and door assembly shall satisfy the design load, performance and structural strength of the member.

(v) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.

14. External walls

External walls shall be made from:

(A) Bushfire-resistant timber (refer to the table at the end of this document); or

(B) A timber species as specified in Appendix E of the Standard; or

(C) Metal; or

(D) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the wall assembly shall satisfy the design load, performance and structural strength of the member.

(v) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.

15. External windows and doors

External windows and doors shall be made from:

(A) Bushfire-resistant timber (refer to the table at the end of this document); or

(B) A timber species as specified in Appendix E of the Standard; or

(C) Metal; or

(D) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the window and door assembly shall satisfy the design load, performance and structural strength of the member.

(v) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.

16. External walls

External walls shall be made from:

(A) Bushfire-resistant timber (refer to the table at the end of this document); or

(B) A timber species as specified in Appendix E of the Standard; or

(C) Metal; or

(D) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the wall assembly shall satisfy the design load, performance and structural strength of the member.

(v) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.

17. External windows and doors

External windows and doors shall be made from:

(A) Bushfire-resistant timber (refer to the table at the end of this document); or

(B) A timber species as specified in Appendix E of the Standard; or

(C) Metal; or