

24 October 2025

Our reference: 24-8336

Bailey Lennard
41 Clarkes Crossing Close
VACY NSW 2321

Dear Sir/Madam,

Re: 41 CLARKES CROSSING CLOSE, VACY NSW 2421

Construction Certificate No.: 24-8336/01

Thank you for choosing CD Certification to issue the construction certificate and undertake all mandatory inspections for the above property.

Please find attached an electronic copy of the approved **Construction Certificate** for the subject development together with a copy of the stamped plans. We have also uploaded the approval to Council via the NSW Planning Portal for registration.

The Notice of Appointment of Principal Certifier and Notice of Commencement of Building Work form is required to be submitted to Council 48 hours prior to commencement of building work. CD Certification will lodge this form to Council on your behalf after once all pre commencement conditions have been met.

The Principal Certifier role to be undertaken by CD Certification will require mandatory inspections to be completed in line with the attached Notice of Inspections.

Inspection Bookings: Inspections can be booked by phoning our office on (02) 4332 6888 **OR** by emailing inspections@cdcert.com.au .

Cancellations / Rescheduling: Inspections must be cancelled or rescheduled by phone (02) 4332 6888.

Installation Certificates: Installation Certificates relating to Occupation Certificate Applications are to be submitted via email to certificates@cdcert.com.au .

We look forward to working with you throughout this project.

Yours sincerely,



Chris Dan
Director and Building Certifier
CD Certification

CONSTRUCTION CERTIFICATE

Issued under Part 6 the Environmental Planning and Assessment Act 1979

APPLICANT DETAILS

Applicant:	AMC Planning Solutions
Address:	41 Clarkes Crossing Close, VACY NSW 2321
Phone:	0455560300

OWNER DETAILS

Owner:	Mia Mackay and Bradley Smith
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RELEVANT DEVELOPMENT CONSENTS

Consent Authority / Local Government Area:	Dungog Shire Council
Development Consent Number:	DA 156/2024
Development Consent Date:	05/03/2025
NSW Planning Portal Ref Number:	CFT-742359
Construction Certificate Number:	24-8336/01
Date of Issue of Construction Certificate:	24/10/2025

PROPOSAL

Address of Development:	41 Clarkes Crossing Close, Vacy NSW 2421
Lot/ DP:	Lot 5 in DP1291036
BCA Classification:	1a, 10a
Description of Building Works:	Dwelling
Exclusions:	Nil
Value of Construction Certificate (incl. GST)	\$400,000.00
Attachments:	Schedule 1: Approved Plans and Specifications and Supporting Documentation Relied Upon
Critical Stage Inspections:	See attached Notice

REGISTERED CERTIFIER

Registered Certifier:	Chris Dan
Registration No:	BDC2471
Registration Body:	NSW Fair Trading

I certify that building work completed in accordance with the documents accompanying the application for the certificate, including modifications verified by the certifier shown on the documents, will comply with the requirements referred to in the Act, Part 6.

Dated: 24/10/2025



Chris Dan

(note - this information has been taken directly from, and as accepted by, the NSW Government Planning Portal CC application)

SCHEDULE 1: APPROVED PLANS AND SPECIFICATIONS/ SUPPORTING DOCUMENTATION RELIED UPON

1. Endorsed Architectural Plans

Prepared by	Document	Drawing number	Revision	Date
AMC Planning Solutions	Site Plan	DR01	-	21/11/2023
AMC Planning Solutions	Floor Plan	DR02	-	21/11/2023
AMC Planning Solutions	North & South Elevation	DR03	-	21/11/2023
AMC Planning Solutions	East & West Elevation	DR04	-	21/11/2023
AMC Planning Solutions	Section	DR05	-	21/11/2023
AMC Planning Solutions	BASIX	DR06	-	21/11/2023

2. Endorsed Hydraulic Plans

Prepared by	Document	Drawing number	Revision	Date
Positive Fix Consulting Engineers	Cover Sheet & Notes	C01	1	28/08/2024
Positive Fix Consulting Engineers	Details	C05	-	28/08/2024
Positive Fix Consulting Engineers	Infiltration Trench Details	C06	-	28/08/2024

3. Endorsed Structural Plans

Prepared by	Document	Drawing number	Revision	Date
Positive Fix Consulting Engineers	Concrete Plan	17083 Sheet 1 of 4	-	August 2024
Positive Fix Consulting Engineers	Concrete Details / Notes	17083 Sheet 2 of 4	-	August 2024
Positive Fix Consulting Engineers	Bracing Layout Plan	17083 Sheet 3 of 4	-	August 2024
Positive Fix Consulting Engineers	Bracing Details	17083 Sheet 4 of 4	-	August 2024

4. Endorsed other documents

Prepared by	Document	Reference	Date
AMC Planning Solutions	Construction Certificate Application	CC 24-8336	12/05/2025
Mia Mackay and Bradley Smith	Principle Certifier Agreement	CC 24-8336	12/05/2025
Adam Cuthbert	DPIE CC Lodgement Form	CFT-742359	12/05/2025
NSW Land Registry Services	Proof of Property Ownership Certificate of Title	5/1291036 MK McKay & BR Smith	22/02/2024
Dungog Shire Council	Development Consent	DA 156/2024	05/03/2025
CD Certification Pty Ltd	Clause 17 EP&A (Development Certification and Fire Safety) Regulation 2021, Record of Site Inspection		14/05/2025
Ecocert	BASIX Certificate	1738551S_03	19/11/2024
Long Service Corporation	Long Service Levy Payment Receipt	L0000199142	01/09/2025
Hunter Water Corporation	Hunter Water Building Plan Assessment	111897	23/02/2024
NATSPEC	Building Specification		April 2024

AMC Planning Solutions	Construction Site Management Plan	DA 156/2024	Undated
Dungog Shire Council	Section 68 Approval	SA62/2023	16/10/2025
Dungog Shire Council	Section 68 Stamped Approved Plans	SA62/2023	16/10/2025
Positive Fix Pty Ltd	Stormwater Design Certificate	41 Clarkes Crossing Cl, Vacy	16/09/2025
Positive Fix Pty Ltd	Structural Design Certificate	41 Clarkes Crossing Cl, Vacy	16/09/2025
Aspect Development & Survey Pty Ltd	Survey - Contour	0027436	15/06/2023
AMC Planning Solutions	Waste Management Plan	41 Clarkes Crossing Cl, Vacy	November 2024
Rafzan Consulting Engineers	Site Classification Report	Reference No. 100598EB	22/06/2023

NOTICE TO APPLICANT OF MANDATORY CRITICAL STAGE INSPECTIONS

Made under Part 7 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021 - Section 58

APPLICANT DETAILS

Name of the person having benefit of the Development Consent:	Bailey Lennard
Address:	41 Clarkes Crossing Close, VACY NSW 2321
Phone:	0455560300

RELEVANT CONSENTS

Consent Authority / Local Government Area:	Dungog Shire Council
Development Consent Number:	DA 156/2024
Date Issued:	05/03/2025
Construction Certificate Number:	24-8336/01

PROPOSAL

Address of Development:	41 Clarkes Crossing Close, Vacy NSW 2421
Scope of Building Works Covered by this Notice:	Dwelling
Exclusions:	Nil

CERTIFICATION DETAILS

Certifying Authority:	Chris Dan
Accreditation Body:	NSW Fair Trading
Registration No:	BDC2471

I, **Chris Dan** of, **CD Certification** located at 1/8 Teamster Drive, Tuggerah NSW 2259 acting as the principal certifier, hereby give notice in accordance with Section 58 of the Part 7 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021 to the person having the benefit of the development consent that the mandatory critical stage inspections identified in Schedule 1 & Schedule 2 are to be carried out in respect of the building work.

The applicant, being the person having benefit of the development consent is required under Sections 58 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021 to notify the principal contractor (if not an owner-builder) of the applicable mandatory critical stage inspections specified under this notice.

To allow a principal certifier or another certifying authority time to carry out mandatory critical stage inspections, the principal contractor for the building site, or the owner builder, must notify the principal certifier at least 48 hours before building work is commenced at the site if a mandatory critical stage inspection is required before the commencement of the work in accordance with Clause 58 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021.

Failure to request a mandatory critical stage inspection will prohibit the principal certifier under Sections 58 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021 to issue an occupation certificate.

Dated: 24/10/2025

Chris Dan
Director and Building Certifier

SCHEDULE 1: MANDATORY CRITICAL STAGE INSPECTIONS

No.	Critical Stage Inspection	Inspector
1.	After excavation for and prior to placement of any footings	Certifying Authority
2.	Prior to pouring any in-situ reinforced concrete building element	Certifying Authority
3.	Prior to covering of the framework for any floor, wall, roof, or other building element	Certifying Authority
4.	Prior to covering waterproofing in any wet areas	Certifying Authority
5.	Prior to covering any stormwater drainage connections	Certifying Authority
6.	After the building work has been completed & prior to any Occupation Certificate being issued in relation to the building	Principal Certifier

NOTICE OF APPOINTMENT OF PRINCIPAL CERTIFIER

Made under Part 4 & 6 of the Environmental Planning and Assessment Act 1979 Sections 4.19, 6.6, 6.7, 6.12, 6.13 & 6.14

OWNER DETAILS

Name of the person having benefit of the Development Consent:	Mia Mackay and Bradley Smith
Address:	41 Clarkes Crossing Close, Vacy NSW
Phone:	0455560300

RELEVANT CONSENTS

Consent Authority / Local Government Area:	Dungog Shire Council
Development Consent Number:	DA 156/2024
Date Issued:	05/03/2025
Construction Certificate Number:	24-8336/01

PROPOSAL

Address of Development:	41 Clarkes Crossing Close, Vacy NSW 2421
Scope of Building Works Covered by this Notice:	Dwelling

PRINCIPAL CERTIFYING AUTHORITY

Certifying Authority:	Chris Dan
Accreditation Body:	BDC2471
Registration No:	NSW Fair Trading

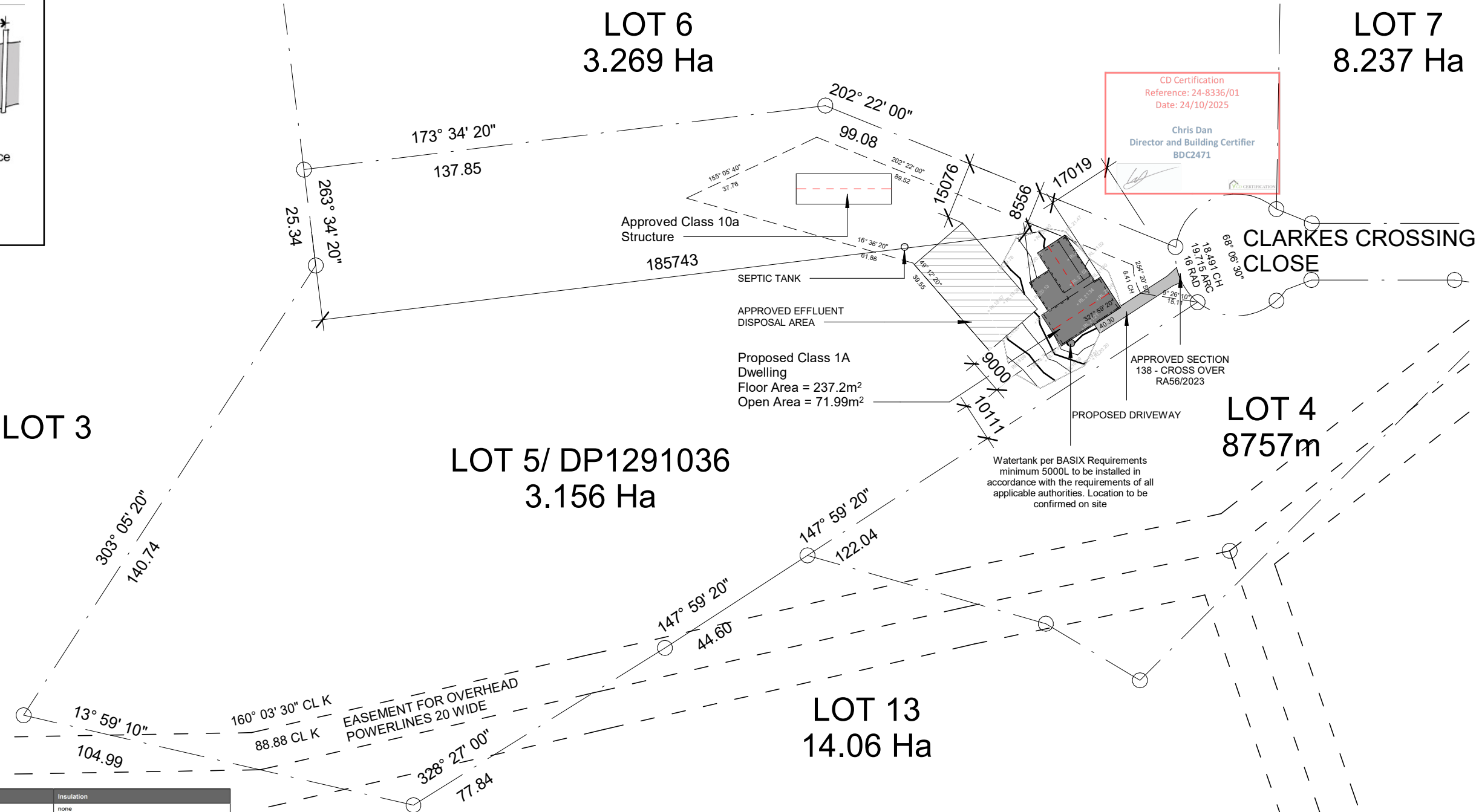
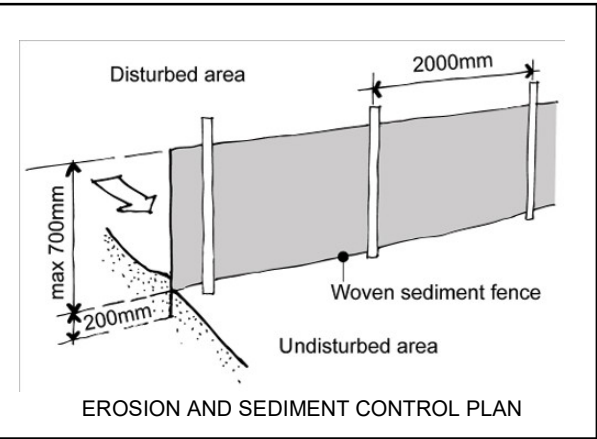
The owner has appointed Chris Dan BDC2471 as the Principal Certifier as stated in the Complying Development Certificate lodged with CD Certification for the building works identified in this notice.

I, Chris Dan, Director and Building Certifier of CD Certification located at 1/8 Teamster Drive, Tuggerah NSW 2259 accept the appointment as Principal Certifier for the building works identified and covered under the relevant Construction Certificate as stated in this Notice.



Chris Dan
Director and Building Certifier

Dated: 24/10/2025



Construction	Area - m²	Insulation
floor - concrete slab on ground, conventional slab.	222	none
garage floor - concrete slab on ground.	0.1	none
external wall: framed (metal clad); frame: light steel frame.	all external walls	fibreglass batts or roll+ foil/sarking
external garage wall: framed (metal clad); frame: light steel frame.	10	not specified+ foil/sarking
internal wall: plasterboard; frame: light steel frame.	100	none
ceiling and roof - flat ceiling / pitched roof, framed - metal roof, light steel frame.	225	ceiling: fibreglass batts or roll; roof: foil/sarking.
ceiling and roof - raked ceiling / pitched or skillion roof, framed - metal roof, light steel frame.	100	ceiling: fibreglass batts or roll; roof: foil/sarking.
Frames		Maximum area - m2
aluminium		45
timber		0
uPVC		0
steel		0
composite		0
Glazing		Maximum area - m2
single		45
double		0
triple		0

1

Site Plan

1 : 1200

DO NOT SCALE DIMENSIONS FROM THIS DRAWING ALL MEASUREMENTS TO BE VERIFIED ON SITE



Smoke Detectors to AS 3786

CD Certification
Reference: 24-8336/01
Date: 24/10/2025

Chris Dan
Director and Building Certifier
BDC2471

The applicant must install showerheads with a minimum rating of 4 star (> 6 but <= 7.5 L/min plus spray force and/or coverage tests) in all showers in the development.

The applicant must install a toilet flushing system with a minimum rating of 3 star in each toilet in the development.

The applicant must install taps with a minimum rating of 3 star in the kitchen in the development.

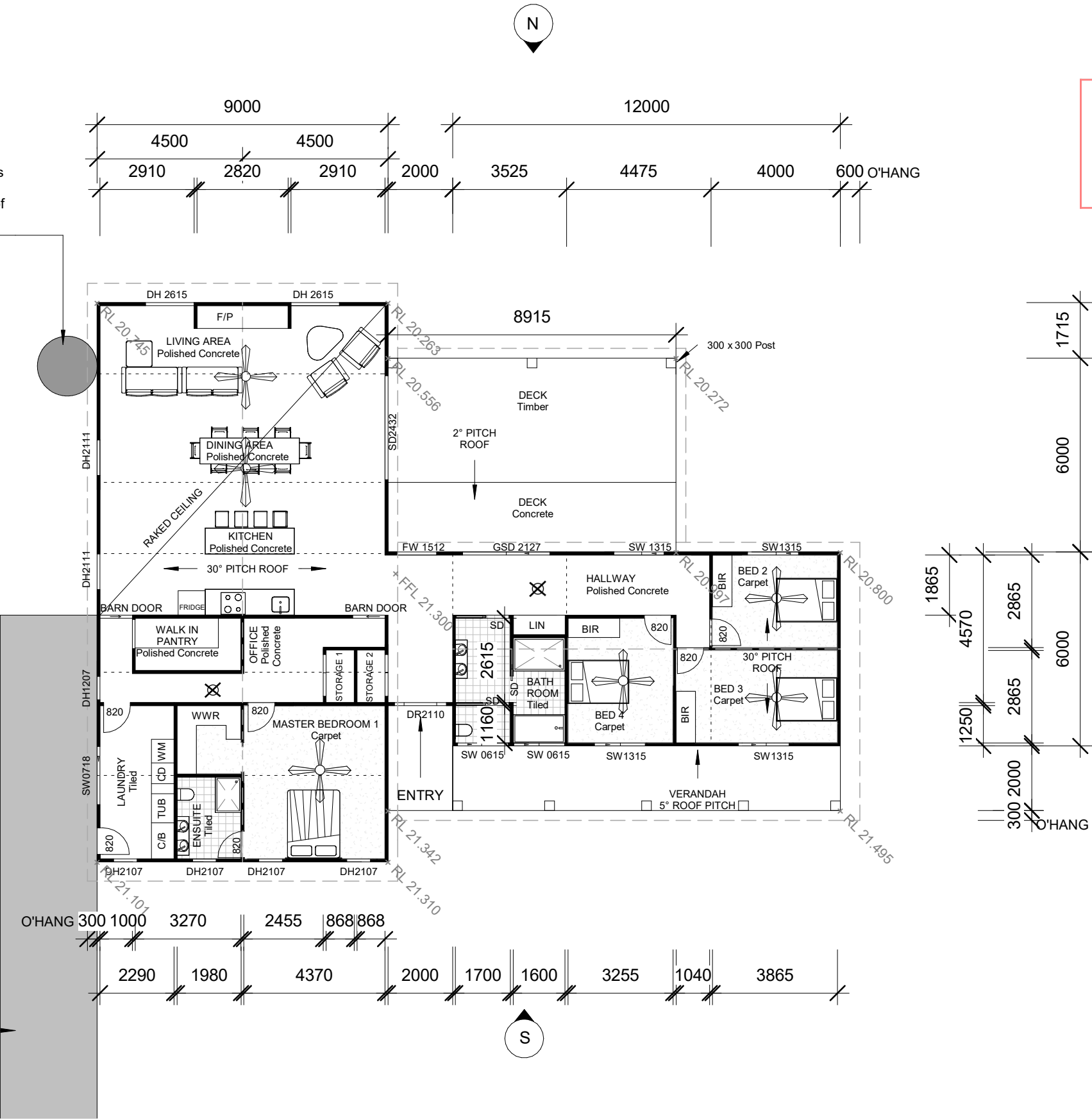
The applicant must install basin taps with a minimum rating of 3 star in each bathroom in the development.

The applicant must install the following hot water system in the development, or a system with a higher energy rating: gas instantaneous with a performance of 5 stars.

The applicant must ensure that a minimum of 80% of light fixtures are fitted with fluorescent, compact fluorescent, or light-emittingdiode (LED) lamps.

DO NOT SCALE DIMENSIONS FROM THIS DRAWING ALL MEASUREMENTS TO BE VERIFIED ON SITE

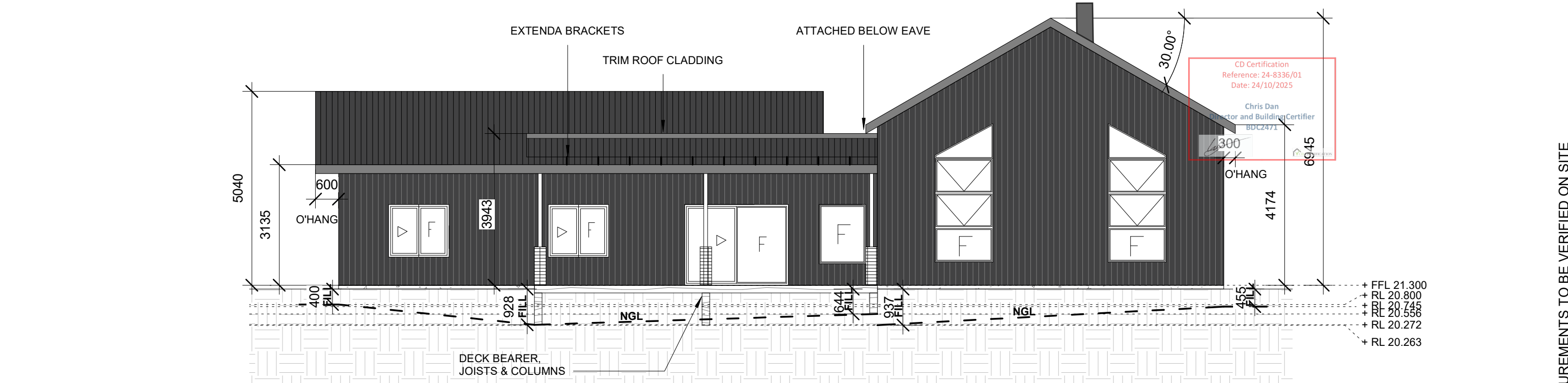
Watertank per BASIX Requirements minimum 5000L to be installed in accordance with the requirements of all applicable authorities. Location to be confirmed on site



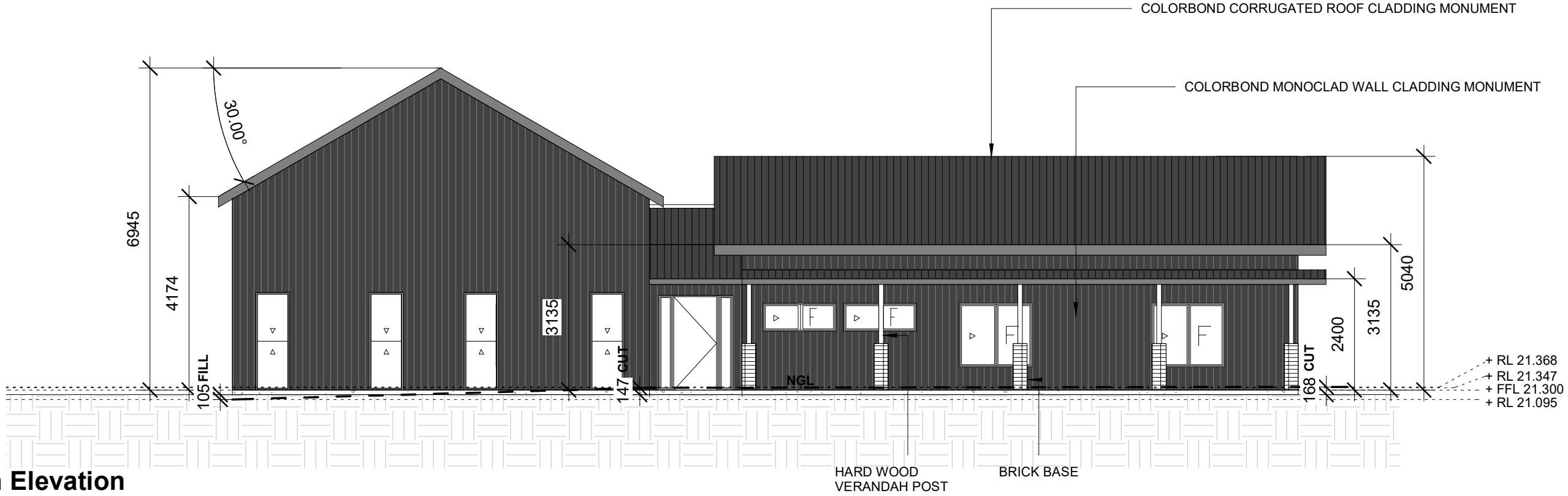
1 Floor Plan
1 : 150

Open Area = 71.99m ²
Floor Area = 237.2m ²
Glazing Ratio = 49.696m ² (20.95%)

	ISSUE	LGA DUNGOG SHIRE COUNCIL	CLIENT MIA MACKAY	PROJECT PROPOSED CLASS 1A DWELLING 41 CLARKES CROSSING CLOSE, VACY 2421 LOT 5 / DP1291036	DATE 21/11/2023	DRAWING DR02 FLOOR PLAN	SCALE 1:150 @ A3 PROJECT NORTH
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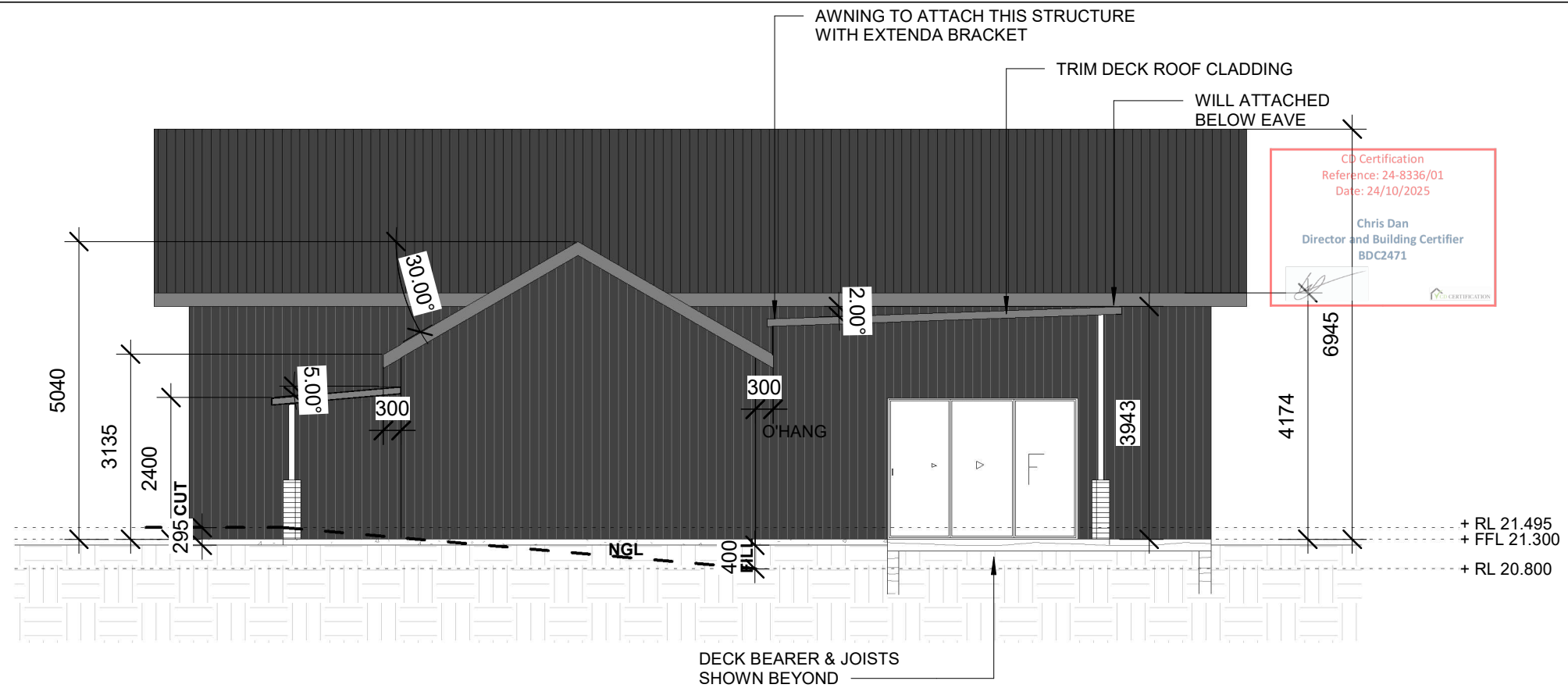
1 North Elevation
1 : 100



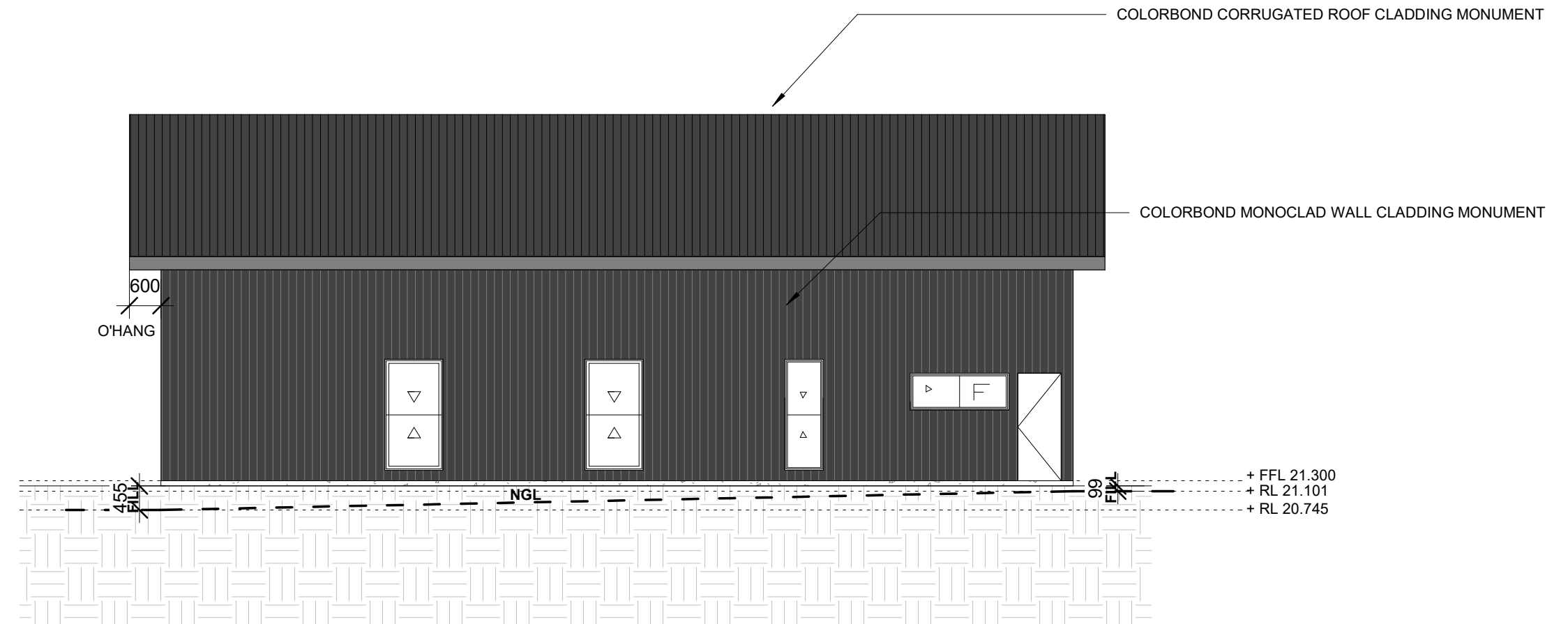
2 South Elevation
1 : 100

DO NOT SCALE DIMENSIONS FROM THIS DRAWING ALL MEASUREMENTS TO BE VERIFIED ON SITE

	ISSUE	LGA	CLIENT	PROJECT	DATE	DRAWING	SCALE
		DUNGOG SHIRE COUNCIL	MIA MACKAY	PROPOSED CLASS 1A DWELLING 41 CLARKES CROSSING CLOSE, VACY 2421 LOT 5 / DP1291036	21/11/2023	DR03 NORTH & SOUTH ELEVATION	1:100 @ A3



1 **East Elevation**
1 : 100



2 **West Elevation**
1 : 100

DO NOT SCALE DIMENSIONS FROM THIS DRAWING ALL MEASUREMENTS TO BE VERIFIED ON SITE

	ISSUE	LGA	CLIENT	PROJECT	DATE	DRAWING	SCALE
		DUNGOG SHIRE COUNCIL	MIA MACKAY	PROPOSED CLASS 1A DWELLING 41 CLARKES CROSSING CLOSE, VACY 2421 LOT 5 / DP1291036	21/11/2023	DR04 EAST & WEST ELEVATION	1:100 @ A3

- Building Specification Notes
- All Building works to comply with the Building Code of Australia.
 - All Earthworks on site to comply with BCA 2022 Part 3.1.1
 - All Concrete footings / Slab to comply with BCA 2022 part 3.2 & 3.2.5.2
 - Termite Protection to comply with 3.1.3 of the BCA 2022 & AS3660.1
 - All Wet areas to comply with BCA 2022 part 3.8.1 & AS3740
 - All insulation to comply with BCA 2022 part 3.12
 - All Glazing to comply with BCA 2022 part 3.6 & AS1288
 - All Storm water comply with BCA 2022 part 3.1.2 and AS3500.3

CD Certification
Reference: 24-8336/01
Date: 24/10/2025

Chris Dan
Director and Building Certifier
BDC2471



STEEL PORTAL FRAME AS PER
ENGINEERS SPECIFICATIONS

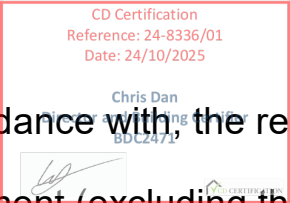


1 Section A/A

1 : 85

	ISSUE	LGA DUNGOG SHIRE COUNCIL	CLIENT MIA MACKAY	PROJECT PROPOSED CLASS 1A DWELLING 41 CLARKES CROSSING CLOSE, VACY 2421 LOT 5 / DP1291036	DATE 21/11/2023	DRAWING DR05 SECTION	SCALE 1:85 @ A3
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- * The applicant must install showerheads with a minimum rating of 4 star (> 6 but <= 7.5 L/min plus spray force and/or coverage tests) in all showers in the development.
- * The applicant must install a toilet flushing system with a minimum rating of 3 star in each toilet in the development.
- * The applicant must install taps with a minimum rating of 3 star in the kitchen in the development.
- * The applicant must install basin taps with a minimum rating of 3 star in each bathroom in the development.
- * The applicant must install a rainwater tank of at least 5000 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 200 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 to:
 - 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.)
- * The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Assessor Certificate requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor to certify that this is the case. The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.
- * The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.
- * The applicant must show on the plans accompanying the development application for the proposed development, the locations of ceiling fans set out in the Assessor Certificate. * The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), the locations of ceiling fans set out in the Assessor Certificate
- * The applicant must construct the floors, walls, roofs, ceilings and glazing of the dwelling in accordance with the specifications listed in the tables on the site plan.
- * The applicant must install windows, glazed doors and skylights as described in the table below, in accordance with the specifications listed in the table on the site plan.
- * The applicant must install the following hot water system in the development, or a system with a higher energy rating: gas instantaneous with a performance of 5 stars.
- * The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 living area: 1-phase airconditioning - non ducted; Energy rating: 5 star (average zone)
- * The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 bedroom: 1-phase airconditioning - non ducted; Energy rating: 5 star (average zone)
- * The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 living area: 1-phase airconditioning - non ducted; Energy rating: 5 star (average zone)
- * The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 bedroom: 1-phase airconditioning - non ducted; Energy rating: 5 star (average zone)
- * The applicant must install the following exhaust systems in the development:
At least 1 Bathroom: individual fan, open to façade; Operation control: manual switch on/off
Kitchen: individual fan, open to façade; Operation control: manual switch on/off
Laundry: natural ventilation only, or no laundry; Operation control: n/a
- * The applicant must ensure that a minimum of 80% of light fixtures are fitted with fluorescent, compact fluorescent, or light-emittingdiode (LED) lamps.
- * The applicant must install a window and/or skylight in the kitchen of the dwelling for natural lighting.
- * The applicant must install a window and/or skylight in 2 bathroom(s)/toilet(s) in the development for natural lighting.
- * The applicant must install a gas cooktop & electric oven in the kitchen of the dwelling.
- * The applicant must install a fixed outdoor clothes drying line as part of the development.



	ISSUE	LGA	CLIENT	PROJECT	DATE	DRAWING	SCALE
		DUNGOG SHIRE COUNCIL	MIA MACKAY	PROPOSED CLASS 1A DWELLING 41 CLARKES CROSSING CLOSE, VACY 2421 LOT 5 / DP1291036	21/11/2023	DR06 BASIX	N/A

PROPOSED RESIDENCE

STORMWATER MANAGEMENT PLAN

41 CLARKES CROSSING CLOSE VACY, NSW

DRAWING LIST:

17083-C01

17083-C02

17083-C03

COVER SHEET & NOTES

STORMWATER MANAGEMENT PLAN

DETAILS 1

CD Certification

Chris Dan

Director and Building Certifier

BDC2471

Notes - General:

- All dimensions are in millimetres U.N.O.
- All dimensions to be checked on site prior to the beginning of any works or ordering materials.
- All workmanship and building materials are to be in strict accordance with relevant building codes.
- Manufacturers instructions shall meet all local council requirements.
- All ground surface levels are to be checked on site prior to works.
- All building elements are to be temporarily braced and kept stable during all construction works
- The whole of the plumbing and drainage work shall be carried out in accordance with the standard water sewerage and drainage requirements of Australian standards AS 3500.3 and the local council.
- Any drawing errors are to be reported to Positive Fix Pty Ltd prior to construction.
- All building materials used are to be new and of the best available quality and conform with the relevant Australian Standards.

02 AUG 2016: A3

Notes - Site Preparation:

- Strip site of all topsoil, vegetation and deleterious matter.
- The final 150mm of fill to be compacted to 100% standard compaction in accordance to current AS2189.
- All concrete footings and ground slab edge beams are to be founded on uniform, firm, natural cut ground to the required minimum bearing capacity. For residential buildings to AS2870 - min 100kPa
- Soft spots to be removed and backfilled with compacted fill in accordance to current AS1289.

02 AUG 2016: A3

Notes - Stormwater:

- ALL SPECIFIED RCP DRAINAGE PIPES SHALL BE CLASS '4' APPROVED SPIGOT AND SOCKET FRC OR RCP PIPES WITH RUBBER RING JOINTS (U.N.O.). ALL DOWNPIPE DRAINAGE LINES SHALL BE SEWER GRADE uPVC WITH SOLVENT WELD JOINTS. (U.N.O.)
- EQUIVALENT STRENGTH REINFORCED CONCRETE PIPES MAY BE USED.
- ALL PIPE JUNCTIONS UP TO AND INCLUDING 450 DIA. AND TAPERS SHALL BE VIA PURPOSE MADE FITTINGS.
- MINIMUM GRADE TO STORMWATER LINES TO BE 1%. (U.N.O.)
- CONTRACTOR TO SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.
- ALL CONNECTIONS TO EXISTING DRAINAGE PITS SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH.
- PRECAST PITS SHALL NOT BE USED UNLESS WRITTEN APPROVAL IS OBTAINED FROM THE ENGINEER.
- WHERE TRENCHES ARE IN ROCK, THE PIPE SHALL BE BEDDED ON A MIN. 50MM CONCRETE BED (OR 75MM THICK BED OF 12MM BLUE METAL) UNDER THE BARREL OF THE PIPE. THE PIPE COLLAR AT NO POINT SHALL BEAR ON THE ROCK. IN OTHER THAN ROCK, PIPES SHALL BE LAID ON A 75MM THICK SAND BED. IN ALL CASES BACKFILL THE TRENCH WITH SAND TO 200MM ABOVE THE PIPE. WHERE THE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH WITH SAND OR APPROVED GRANULAR BACKFILL COMPACTED IN 150MM LAYERS TO 98% STANDARD MAX. DRY DENSITY.
- BEDDING SHALL BE (U.N.O.) TYPE HS2, IN ACCORDANCE WITH CURRENT RELEVANT AUSTRALIAN STANDARDS.
- WHERE STORMWATER LINES PASS UNDER FLOOR SLABS SEWER GRADE RUBBER RING JOINTS ARE TO BE USED.
- WHERE SUBSOIL DRAINAGE LINES PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS UNSLOTTED UPVC SEWER GRADE PIPE SHALL BE USED.
- PROVIDE 3.0M LENGTH OF 100 DIA. SUBSOIL DRAINAGE PIPE WRAPPED IN FABRIC SOCK, AT UPSTREAM END OF EACH PIT.
- CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS, SERVICES AND STRUCTURES ON SITE PRIOR TO COMMENCEMENT OF WORK.

02 AUG 2016: A3



IT IS THE BUILDER'S RESPONSIBILITY TO CONFIRM THE EXACT DEPTH AND LOCATION OF SERVICES ON SITE PRIOR TO CONSTRUCTION. SERVICES NOT SHOWN ON DRAWINGS SHOULD BE REPORTED TO POSITIVE FIX PTY LTD IMMEDIATELY



Positive Fix Pty Ltd
CONSULTING ENGINEERS

Ph. 4954 9177
Email : info@positivefix.com.au
ABN. 81 140 759 931

PROPOSED NEW SHED

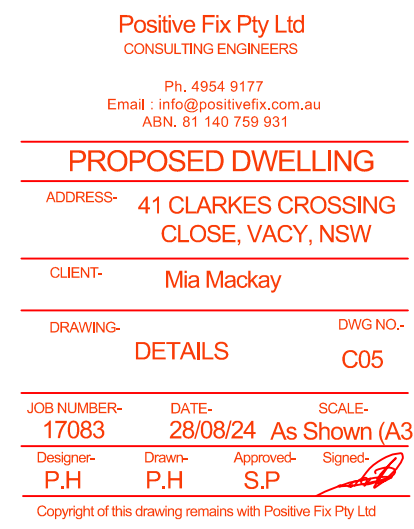
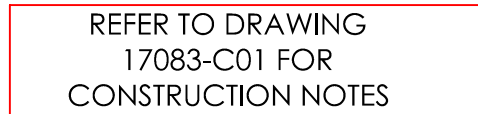
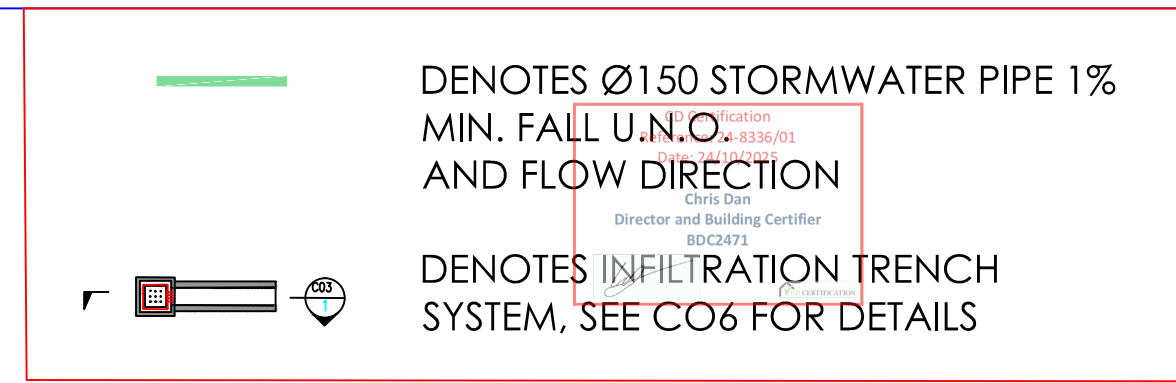
ADDRESS- 41 CLARKES CROSSING
CLOSE VACY, NSW
CLIENT- Mrs Mia Mackay

DRAWING- DWG NO.-
COVER SHEET & NOTES C01-REV1

JOB NUMBER- 17083 DATE- 28/08/2024 SCALE- As Shown (A3)
Designer- SP Drawn- PH Approved- SP Signed- [Signature]

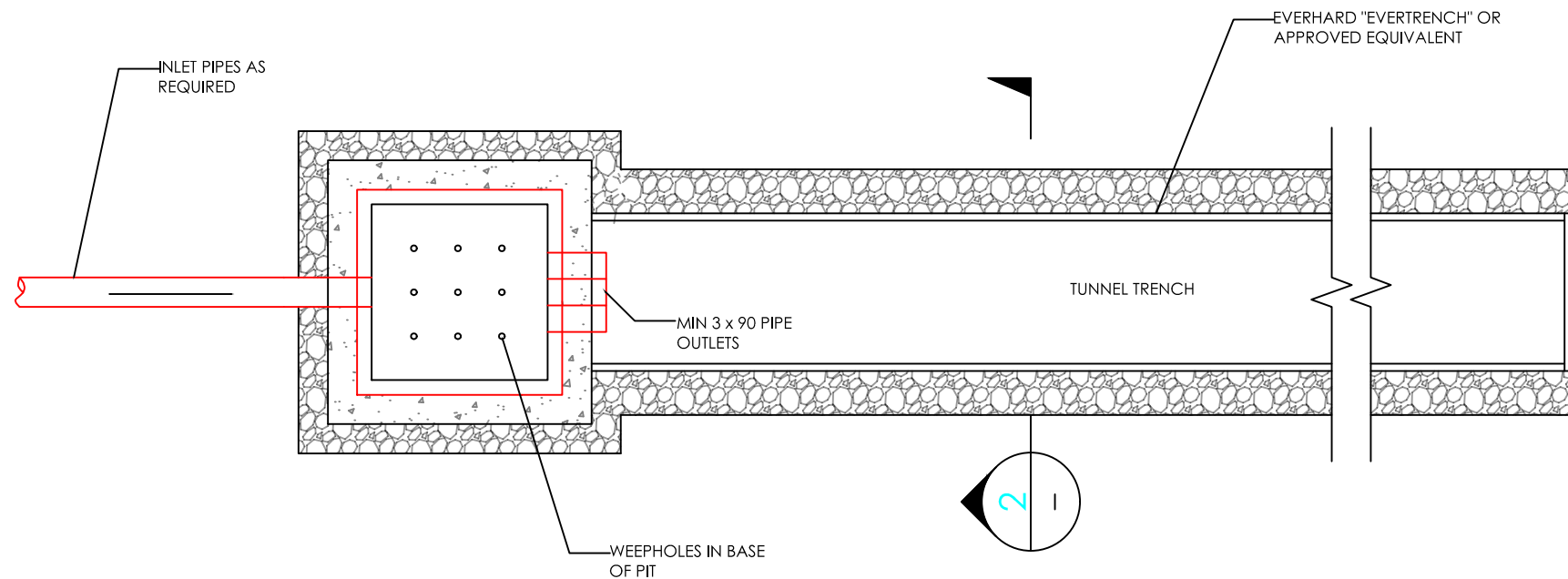
Copyright of this drawing remains with Positive Fix Pty Ltd

0	28/08/2024	ISSUED FOR DEVELOPMENT APPLICATION
No.	Date	Information / Reason for the Proposed Amendments
AMENDMENTS		

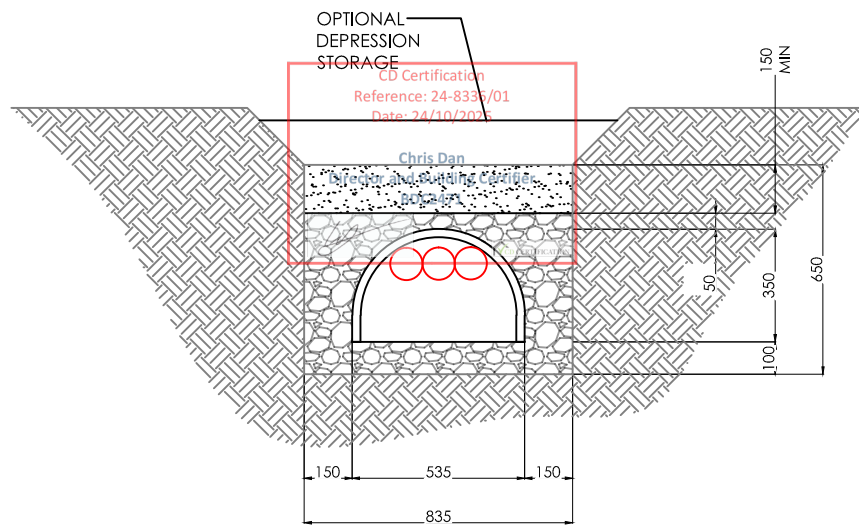


	28/08/2024	ISSUED FOR CONSTRUCTION
No.	Date	Information / Reason for the Proposed Amendments
AMENDMENTS		

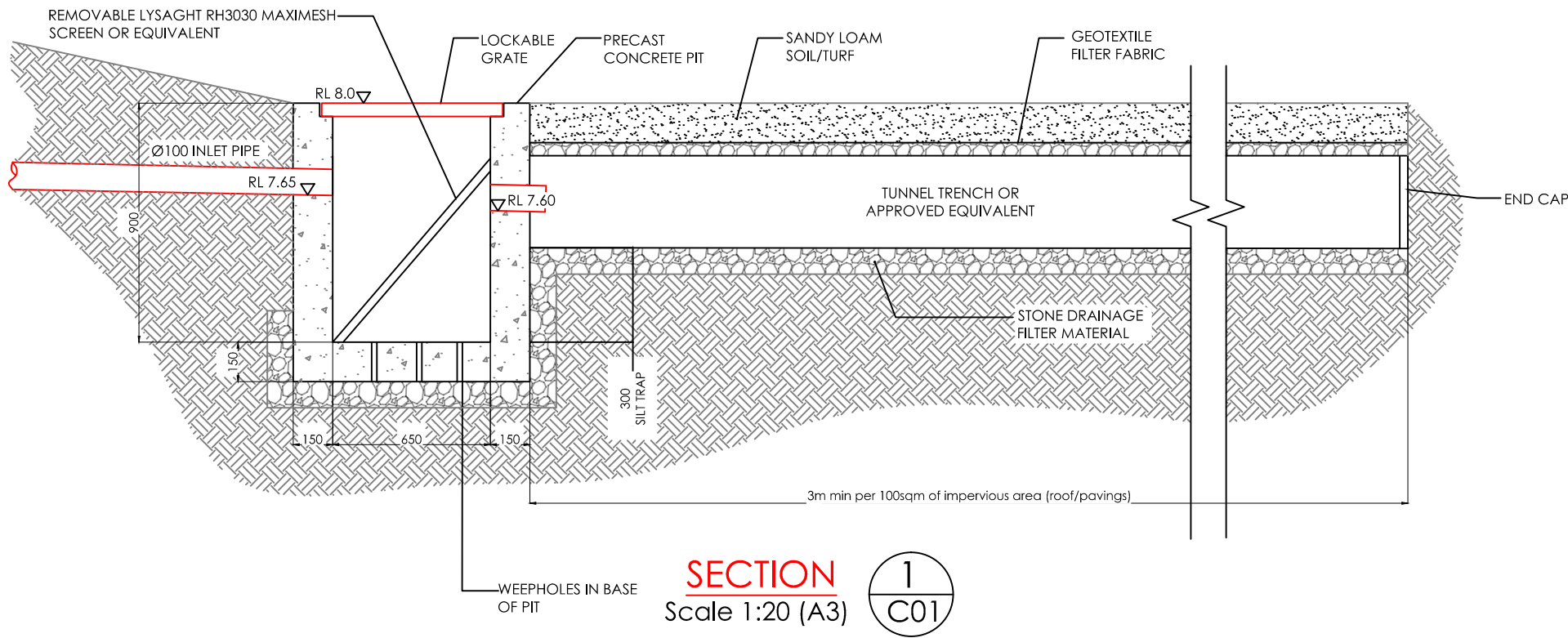
PRINT A3



ONSITE STORMWATER INFILTRATION TRENCH PLAN
Scale 1:20 (A3)



SECTION 2
Scale 1:20 (A3)



SECTION 1
Scale 1:20 (A3)

INFILTRATION TRENCH NOTES

- 1) IN CLEAN SAND CONDITIONS, TRENCHING SHALL BE A MINIMUM OF 1.0m CLEAR OF STRUCTURAL FOUNDATIONS AND PROPERTY BOUNDARIES
- 2) IN CLAY CONDITIONS, TRENCHING SHALL BE A MINIMUM OF 3.0m CLEAR OF STRUCTURAL FOUNDATIONS WITH A SOCKED SUBSOIL DRAIN INSTALLED.REFER TO AUSTRALIAN RUNOFF QUALITY SECTION 11
- 3) THE TRENCHING SHALL BE PLACED LEVEL, WHERE POSSIBLE AND ALONG THE CONTOUR OF THE LAND. DEPTH MAY BE VARIED TO SUIT
- 4) THE TRENCHING SHALL BE PLACED DOWNHILL OF BUILDINGS AND TO ACHIEVE MAXIMUM AREA, SLOPING AWAY FROM THE TRENCH, FOR DISPERSAL OF WATER
- 5) THE DISPERSAL AREA SHOULD BE CHOSEN TO AVOID OVERFLOW TOWARD ANY BUILDING OR TO ADJOINING PROPERTIES

0	28/08/2024	ISSUED FOR CONSTRUCTION
No.	Date	Information / Reason for the Proposed Amendments
AMENDMENTS		



Positive Fix Pty Ltd
CONSULTING ENGINEERS

Ph. 4954 9177
Email : info@positivefix.com.au
ABN. 81 140 759 931

PROPOSED DWELLING

ADDRESS- **41 CLARKES CROSSING
CLOSE VACY, NSW**

CLIENT- **Mrs Mia Mackay**

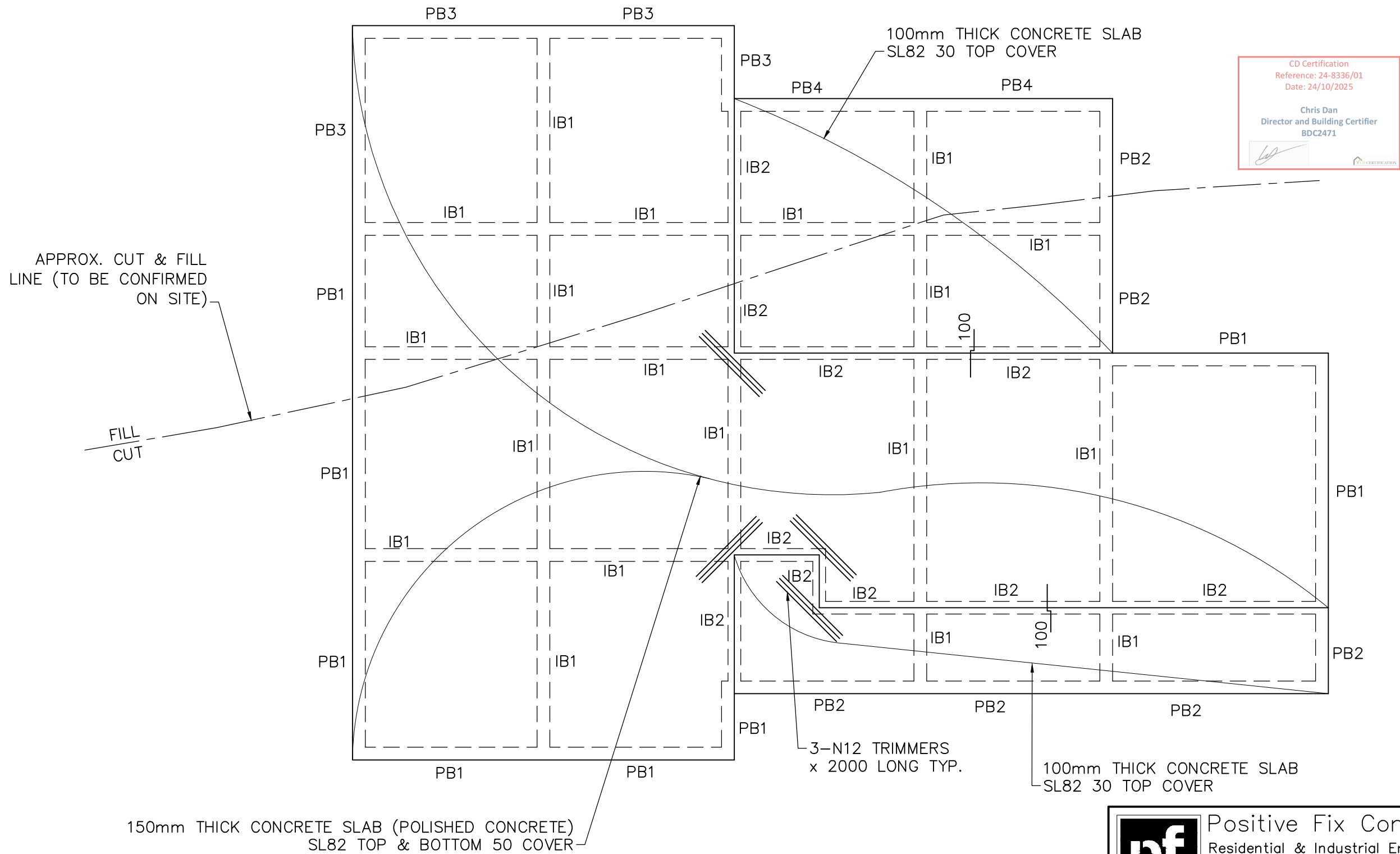
DRAWING- **INFILTRATION TRENCH
DETAILS** DWG NO.- **C06**

JOB NUMBER- **17083** DATE- **28/08/2024** SCALE- **As Shown (A3)**

Designer- **PH** Drawn- **PH** Approved- **SP** Signed-

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PRINT A3

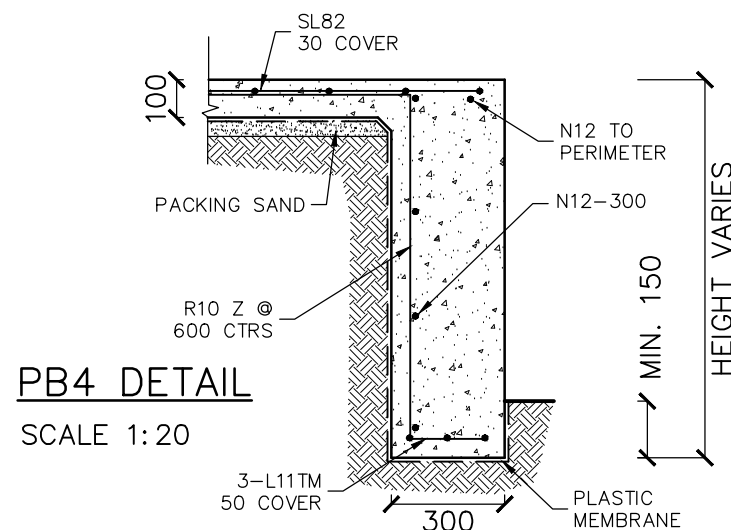
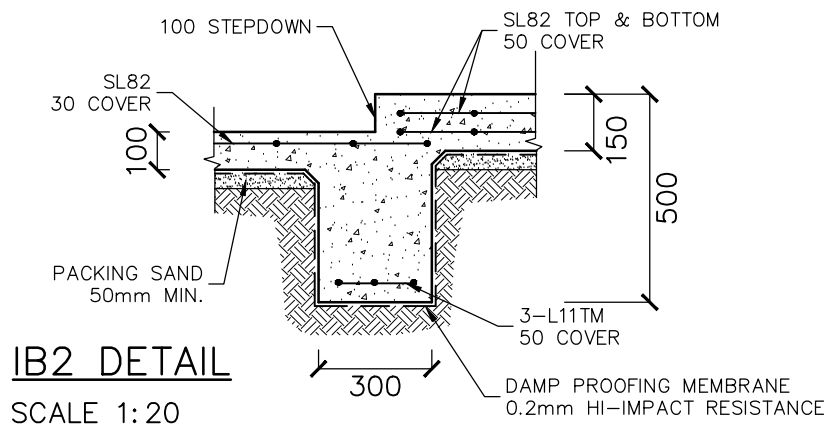
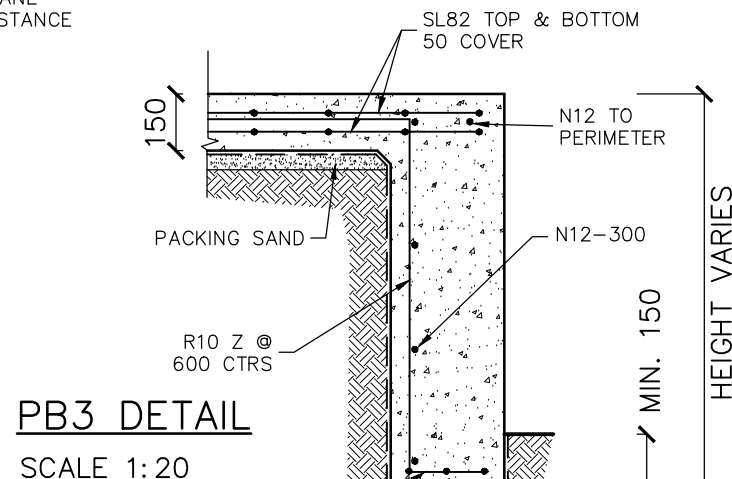
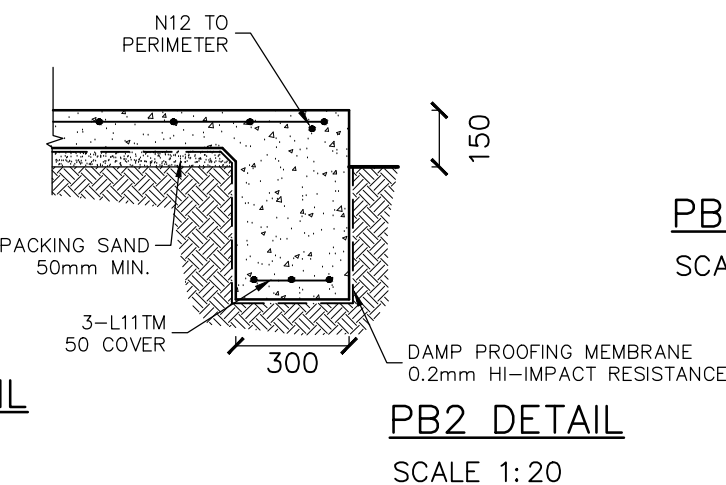
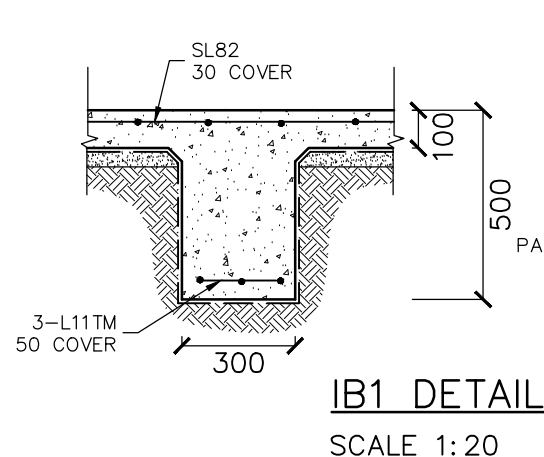
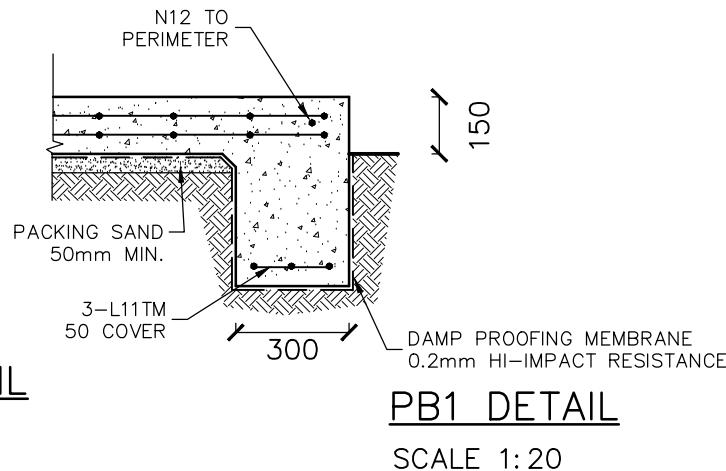
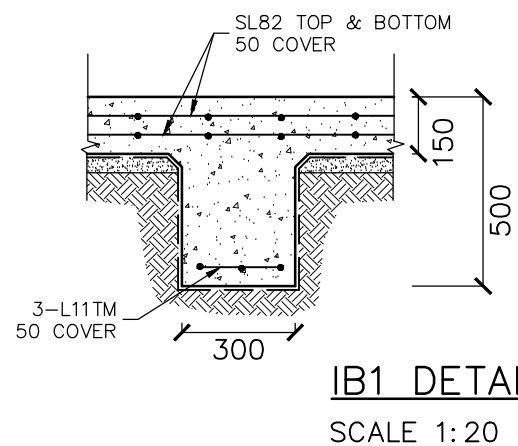


CONCRETE PLAN

SCALE 1:100

SOIL CLASSIFICATION 'H1'
WIND CLASSIFICATION 'N2'
SITE CLASSIFICATION 'P'

				Positive Fix Consulting Engineers Residential & Industrial Engineers	
Salesesh Prasad (B.Eng, MIEAust, CPEng, NRE, RPEQ) Asset Engineer info@positivefix.com.au				PO Box 131 Paterson NSW 2421 www.positivefix.com.au 02 4954 9177	
Client: M. MACKAY					
Project: NEW RESIDENCE 41 CLARKES CROSSING CLOSE, VACY CONCRETE PLAN					
Drawn: JS		Date: AUGUST 2024		Dwg no: 17083	
Approved: 				Rev.	
				Sheet: 1 OF 4	



RESIDENTIAL FOUNDATION NOTES

- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL & OTHER CONSULTANT DRAWINGS & SPECIFICATIONS & WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ALL DISCREPANCIES SHALL BE REFERRED TO THE ARCHITECT FOR DECISION BEFORE PROCEEDING WITH THE WORK.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE & SHALL NOT BE OBTAINED BY SCALING THE STRUCTURAL DRAWINGS.
- SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE VERIFIED BY THE BUILDER.
- DURING CONSTRUCTION, ALL STRUCTURES SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PARTS SHALL BE OVERSTRESSED.
- FOOTINGS HAVE BEEN DESIGNED TO BE FOUNDED ON OR PIERED TO FIRM NATURAL MATERIAL WITH THE FOLLOWING MIN. ALLOWABLE BEARING CAPACITIES:
STRIP FOOTINGS, EDGE BEAMS 150kPa
PIERS, PAD FOOTINGS: 250kPa
- ALL PIERS ARE TO BE FOUNDED A MIN. 300mm INTO FIRM MATERIAL, PIERS TO BE Ø400mm BORED AT MAX. 2000 CTRS EXCEPT TO TWO STOREY SECTION, PIERS TO Ø400mm AT MAX. 1800 CTS U.N.O.
- IF ROCK OR SHALE IS ENCOUNTERED IN THE TRENCHES OR PIERS, THE ENTIRE PERIMETER BEAM & ANY INTERIOR BEAMS SUPPORTING BRICKWORK MUST BE PIERED TO ROCK OR SHALE, BUT THE DIAMETER OF THE PIERS MAY BE REDUCED TO 300mm.
- FOR PIER DEPTHS OF BETWEEN 2 & 3 METRES, PROVIDE 2N12 BARS TO WITHIN 200mm OF THE BOTTOM OF THE PIER, & CRANKED MIN. 400 INTO FOOTING.
- FOR PIER DEPTHS EXCEEDING 3 METRES, PROVIDE A REINFORCING CAGE CONSISTING OF 4N12 BARS WITH 8mm HELICAL TIES AT 150mm PITCH, TO WITHIN 200mm OF THE BOTTOM OF THE PIER, & CRANKED MIN. 400 INTO FOOTING.
- SLAB CONCRETE TO BE CURED IN AN APPROVED MANNER FOR MIN. 7 DAYS.
- ALL CONCRETE TO BE EFFICIENTLY COMPACTED WITH AN APPROVED VIBRATOR.
- MIN. REINFORCEMENT LAPS:
MESH 2 CROSSRODS + 25mm
TM & BAR 500mm
- PROVIDE EXPANSION JOINTS TO EXTERNAL BRICK PERIMETER AT MAX. 6 METRE CT U.N.O. TO AS 3700 REQUIREMENTS (MASONRY CODE) OR AS SHOWN.
- BRICKWORK TO BE ARTICULATED IN ACCORDANCE WITH PART 3.3 OF THE BUILDING CODE OF AUSTRALIA, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- CONCRETE SLAB & FOOTINGS HAVE BEEN DESIGNED TO SATISFY THE PERFORMANCE CRITERIA OF SEC 4 OF AS 2870-2011. (RESIDENTIAL SLAB & FOOTINGS CODE)
- CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE LOCATED TO THE APPROVAL OF THE ENGINEER.
- PIER & SLAB PREPARATIONS TO BE INSPECTED & APPROVED BY THE SUPERVISING ENGINEER OR COUNCIL INSPECTOR PRIOR TO CONCRETE PLACEMENT.
- ALL WALL TIES CONNECTORS, ACCESSORIES, ETC. SHALL BE IN ACCORDANCE WITH AS3700, CURRENT ISSUE.
- ALL WORKS TO BE IN ACCORDANCE WITH AS 3660.1-2001. (TERMITE PROTECTION CODE)
- CONCRETE GRADE FOR CONCRETE SLABS & ISOLATED PIER PADS 25MPa, FOR PIER 20MPa, FOR SUSPENDED DECKS & COLUMNS 32MPa

IN AREAS OF BRITTLE FLOOR COVERINGS, e.g SLATE OR TILES, IT IS RECOMMENDED THAT ONE OF THE FOLLOWING MEASURES BE UTILISED:-

- INCREASE MESH SIZE TO SL92 OR DOUBLE MESH LAYER.
- USE A RUBBERISED FLEXIBLE ADHESIVE BEDDING.
- DELAY PLACING TILES FOR MIN. OF 3 MONTHS.

THE OWNERS ATTENTION IS DRAWN TO C.S.I.R.O. PAMPHLET "FOUNDATION" MAINTENANCE AND FOOTING PERFORMANCE: A HOMEOWNER'S GUIDE". THE OWNER SHOULD COMPLY WITH THE RECOMMENDATIONS OF THIS PAMPHLET. THE SITE ABOUT THE BUILDING PERIMETER AND ALL SERVICE TRENCHES ARE TO BE GRADED TO DRAIN AWAY FROM THE BUILDING PERIMETER.

IF A "STATEMENT OF COMPLIANCE" WITH APPROVED DETAILS IS REQUIRED, THE ENGINEER MUST INSPECT THE WORKS AT THE APPROPRIATE TIME, e.g PRIOR TO CONCRETE FILLING PIERS, FOOTINGS, OR SLAB FORMWORK ETC.



Positive Fix Consulting Engineers

Residential & Industrial Engineers

Salesh Prasad (B.Eng, MIEAust, CPEng, NRE, RPEQ)

Asset Engineer
info@positivefix.com.au

PO Box 131
Paterson NSW 2421
www.positivefix.com.au
02 4954 9177

Client: M. MACKAY

Project: NEW RESIDENCE
41 CLARKES CROSSING CLOSE, VACY
CONCRETE DETAILS / NOTES

Drawn: JS

Date: AUGUST 2024

Dwg no:

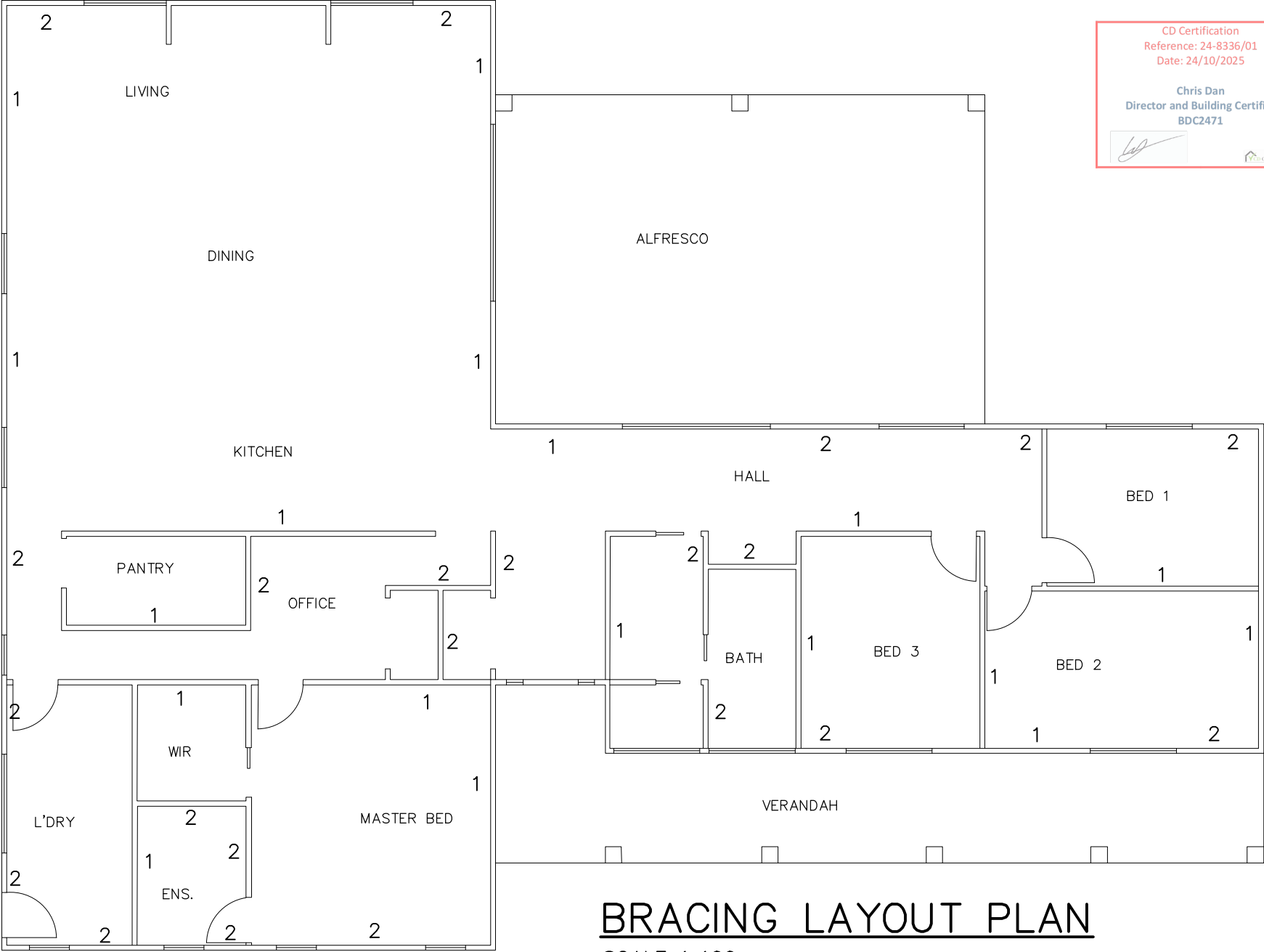
17083

Approved:

Rev.

Sheet:

2 OF 4



CD Certification
Reference: 24-8336/01
Date: 24/10/2025

Chris Dan
Director and Building Certifier
BDC2471

MEMBER SCHEDULE

MARK	MEMBER
1	REFER BRACING DETAIL 1 (SHEET 4)
2	REFER BRACING DETAIL 2 (SHEET 4)

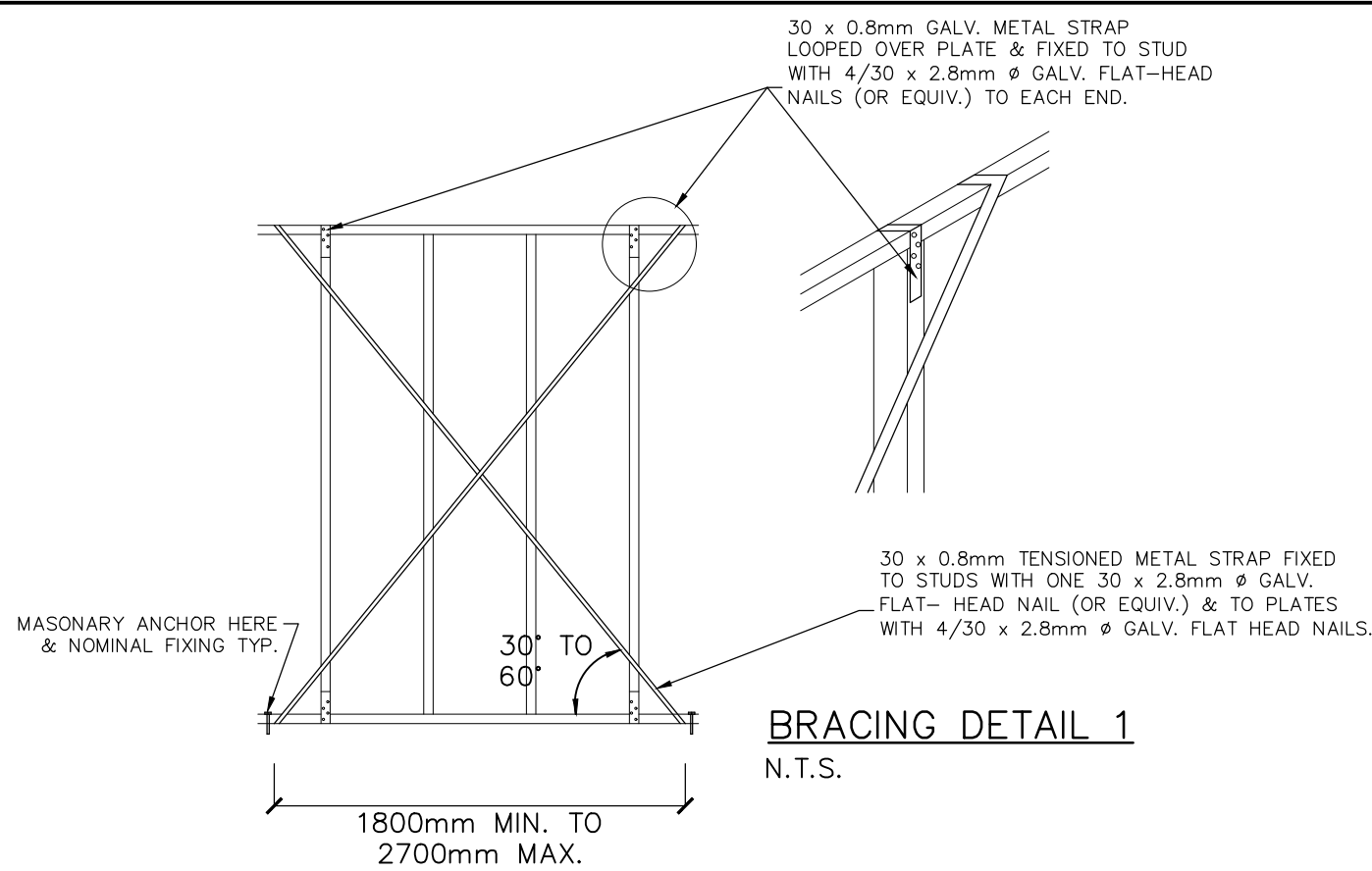


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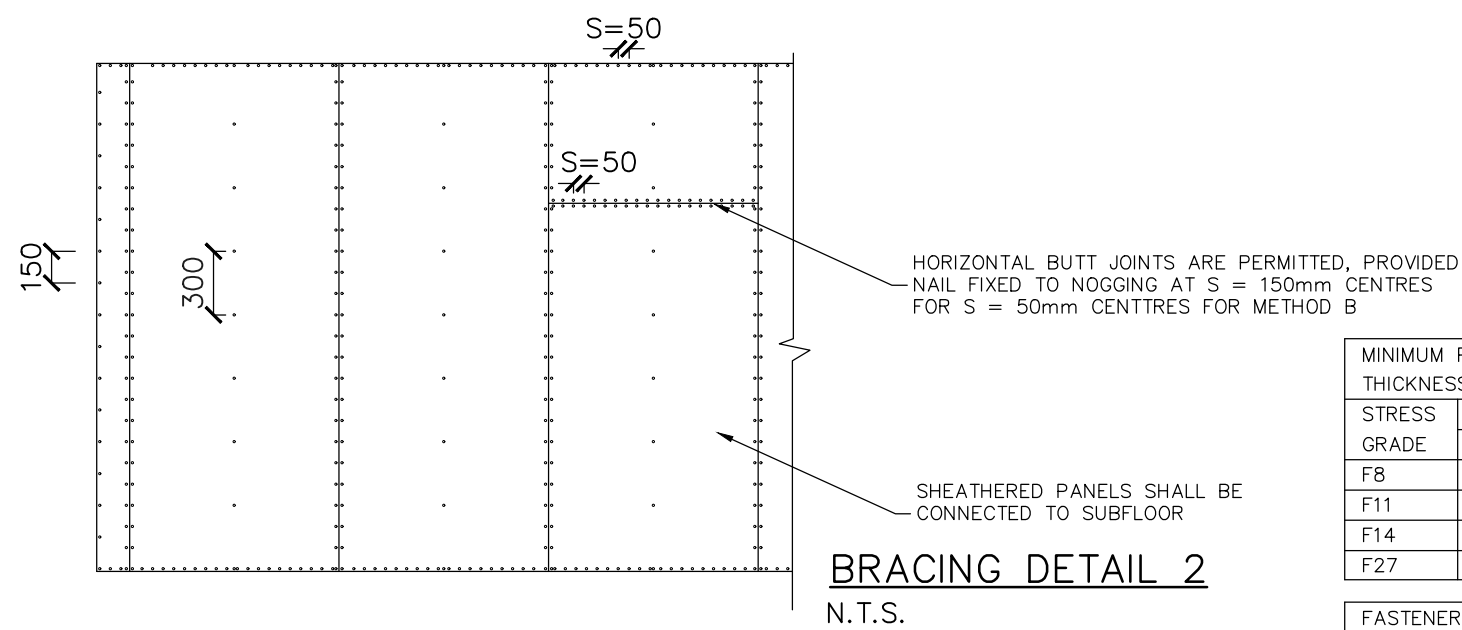
Salesh Prasad (B.Eng, MIEAust, CPEng, NRE, RPEQ)
Asset Engineer
info@positivefix.com.au

PO Box 131
Paterson NSW 2421
www.positivefix.com.au
02 4954 9177

Client: M. MACKAY		
Project: NEW RESIDENCE 41 CLARKES CROSSING CLOSE, VACY BRACING LAYOUT PLAN		
Drawn: JS	Date: AUGUST 2024	Dwg no: 17083
Approved:	Rev.	
		Sheet: 3 OF 4



BRACING DETAIL 1
N.T.S.



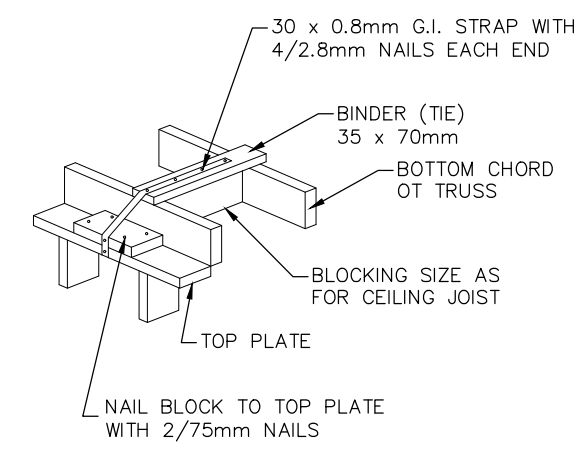
BRACING DETAIL 2
N.T.S.

PLYWOOD SHALL BE NAILED TO FRAME USING 30 x 2.8 Ø GALV. FLAT NAILS OR EQUIV.

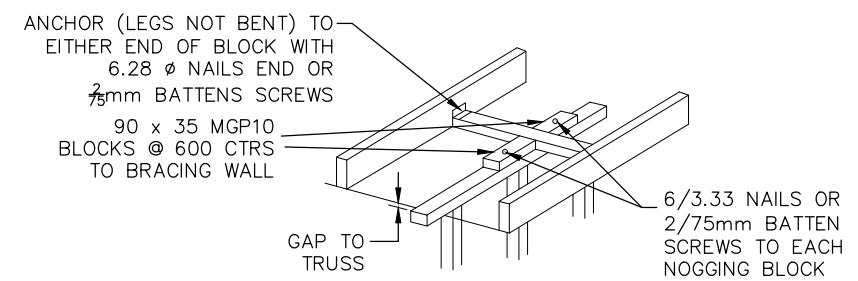
FIXING OF BOTTOM PLATE TO FLOOR FRAME OR SLAB, A 13KN CAPACITY CONNECTION AT EACH END & INTERMEDIATELY AT MAX. 1200mm CTRS.

MINIMUM PLYWOOD THICKNESS, mm		
STRESS GRADE	STUD SPACING mm	
	450	600
F8	7	9
F11	6	7
F14	4	6
F27	4	4.5

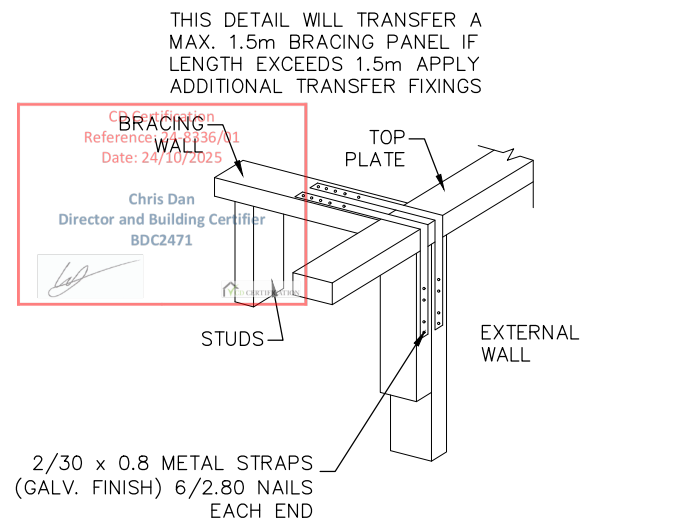
FASTENER SPACING (S) mm	
TOP & BOTTOM PLATE	50
VERTICAL EDGES	150
INTERMEDIATE STUDS	300



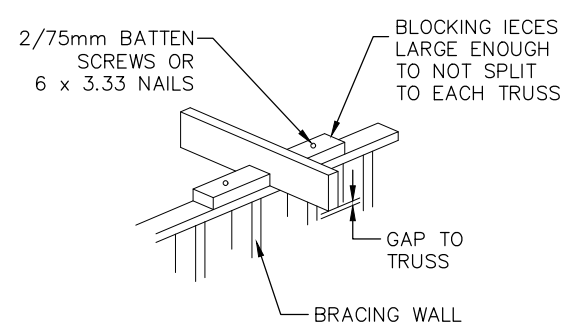
FIXING OF NON- LOADING EXTERNAL WALLS AT MAX. 3000mm CTRS. N.T.S.



FIXING OF TOP OF BRACING WALLS
BRACING WALLS PARRALEL TO TRUSSES. N.T.S.



BRACING WALL TO EXTERNAL WALL JUNCTIO
N.T.S.



FIXING OF TOP OF BRACING WALLS
BRACING WALLS PERPENDICULAR TO TRUSSES. N.T.S.


Positive Fix Consulting Engineers
 Residential & Industrial Engineers
 Salesesh Prasad (B.Eng, MIEAust, CPEng, NRE, RPEQ)
 Asset Engineer
 info@positivefix.com.au

PO Box 131
 Paterson NSW 2421
 www.positivefix.com.au
 02 4954 9177

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Drawn: JS	Date: AUGUST 2024	Dwg no: 17083
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R.R.P \$35.00
6-Pack \$105.00

Why a Simple NATSPEC
DOMESTIC 6-pack

NATSPEC Simple Domestic Specification is provided individually or in packs of six to satisfy the needs of the project; generally three copies as required by your local council, a copy for your records, copies for tendering purposes.

SIMPLE DOMESTIC SPECIFICATION

APRIL 2024

In Australia, there is no law requiring contractors to build your project to Australian Standards, if it is not specified or required under the National Construction Code Series. A specification reduces the number of variations, or extras, by enabling a clear understanding of the acceptable level of quality for the project. Without a specification, such as SIMPLE DOMESTIC SPECIFICATION, you may find a number of small extra items resulting in unexpected, substantial additional cost, and you may not receive the quality you would like. For a specification to be enforceable, it needs to be included or referenced in the contractual agreement between you and your contractor.

SIMPLE DOMESTIC SPECIFICATION is suitable for owner-builders undertaking new domestic building work or alterations and additions, using conventional construction practice under normal conditions covered by Class 1a and Class 10 of the Building Code of Australia.

SIMPLE DOMESTIC SPECIFICATION is a reference specification. It provides a quality statement which defines acceptable materials and workmanship for the building works. It should be included, along with drawings and schedules, as a condition of contract between the owner and the builder.

SIMPLE DOMESTIC SPECIFICATION relies on the 'organiser only' owner taking responsibility for complying with statutory, local government and other mandatory requirements. A comprehensive checklist of project specific information which may require additional documentation, such as drawings or schedules, is included to assist the owner. For work involving extensive structural design, customised airconditioning, prestige finishes or unusual features, facilities or conditions (e.g snow, high winds, earthquake, bushfire zoning and/or marine exposure), the owner is recommended to engage building practitioners to prepare a customised specification.

Building practitioners should use the NATSPEC national building specification system for architects, building designers, landscape architects, structural engineers and services engineers.

NATSPEC//Construction Information

CD Certification
Reference: 24-8336/01
Date: 24/10/2025

Chris Dan
Director and Building Certifier
BDC2471



CD CERTIFICATION

Endorsed by



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mail@natspec.com.au
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Use the current edition

This specification is published annually and is aligned with BCA Volume 2 of the NCC for Class 1 and Class 10 Buildings.

DEFINITIONS

Specifications are written descriptions of the required quality of the built product and its component products.

Drawings are graphic descriptions which define quantity, position and sometimes quality.

Schedules are written selections, often presented as tables, which form an appendix or addition to another document such as the specification or a drawing.

PURPOSE

The quality of a building project is dependent on the documentation included as part of the contract. The adoption of the National Construction Code (NCC) under state and territory building regulation establishes a minimum level of quality of construction. Higher standards of construction and quality of workmanship are achieved through the contractual agreement between the owner and the builder and are not defined by the NCC or administered by the certifying or approval authority. The contract documents include the general conditions of contract, the schedules, the drawings and the specification which complement each other to express the owner's intentions to the builder.

The specification has many roles. It may be:

- A written record of design decisions taken.
- A document demonstrating compliance with statutory requirements.
- An estimating document.
- A tendering document.
- A legal (contractual) document.
- An on-site working document.
- A dispute settlement document.
- A project management tool.

THE FORM OF A SPECIFICATION

NATSPEC SIMPLE DOMESTIC SPECIFICATION is divided into worksections classified, numbered and sequenced according to the National Classification System which corresponds to Australian construction industry practice. Where appropriate, each worksection is divided into three parts:

- **General** including standards, definitions and submission requirements.
- **Products** including details of materials and components.
- **Execution** dealing with the fabrication, installation, erection and completion as part of a project.

METHODS OF SPECIFICATION

NATSPEC SIMPLE DOMESTIC SPECIFICATION uses the well recognised methods of specifying by:

- **Reference:** Where an identifiable printed and published document is incorporated by reference. Such documents may be Australian Standards or manufacturer's technical manuals. The Australian standards referenced in NATSPEC SIMPLE DOMESTIC SPECIFICATION include those which are referenced in the NCC and are relevant to domestic work, have other statutory application, are important to the quality of materials and work in terms of public safety and long-term performance of the building and/or are widely accepted in the building industry.
- **Performance:** That is, by stating a desired end result and the criteria by which the result will be judged for its acceptability.
- **Description:** Detailing the materials, workmanship and installation procedures to be used.
- **Direct:** Specification stating a proprietary trade name product. The owner may specify particular brands or products on the drawings or in the schedules.

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Reference: 24-8336/01
Date: 24/10/2025

Chris Dan
Director and Building Certifier
BDC2471



NATSPEC SIMPLE DOMESTIC SPECIFICATION is a reference specification and does not require editing or amendment. It is intended for inclusion, along with other documents such as drawings and schedules, as a condition of contract for the building works. It assumes all project specific design information is shown on the drawings or in schedules, including the requirements of the consent authority. The Preliminaries worksection provides for the requirements of the drawings and schedules to override conflicting requirements of this reference specification.

National Construction Code

The National Construction Code (NCC), including state and territory variations, is enforced by local authorities and controls domestic construction in Australia, along with the requirements of statutory authorities (e.g. electricity and water supply). This specification has been aligned with BCA Volume 2 of the NCC but any local requirements must take precedence. NATSPEC recommends that the users of this document have ready access to BCA Volume 2 for Class 1 and Class 10 Buildings. It is available online. Go to <https://ncc.abcb.gov.au/> to register.

Work Health and Safety (WHS)

Everyone at a workplace is responsible for complying with stringent Occupational Health and Safety legislation. However, the accountable person has primary control over the workplace and therefore the greatest WHS responsibility. A builder engaged to manage a project and organise the relevant sub-contractors is the accountable person and must make sure that they, their employees and subcontractors work in a safe manner. An owner builder, engaging independent tradespeople as required, is the accountable person responsible for ensuring the tradespeople comply with safety standards. WHS legislation in some states and territories also includes statutory obligations on designers in relation to WHS issues arising out of their designs during and after construction. It is important to note that WHS obligations differ in each state and territory. Go to www.safeworkaustralia.gov.au to see WHS legislation for each.

Standards and tolerances

Check that the building work conforms to requirements of the drawings, schedules and this specification. *Guide to Standards and Tolerances* is a reference document of best construction practice available on the web, describing acceptable standards of workmanship for domestic building work.

Dispute resolution

Many building contracts include dispute resolution provisions and in most states there are dispute resolution services provided and/or mandated under state legislation.

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Date: 24/10/2025

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The following is a checklist of project specific information that may require additional documentation on the drawings or in schedules.

This checklist is provided to assist the owner and does not form part of the contract between the owner and the builder.

0131 Preliminaries

- Prior applications and approvals: List of applications made and approvals received. All items noted in the Local Council Development Approval and Construction Certificate checklist. Conditions of approval that impact design and construction.
- Mine Subsidence Districts: Note conditions of approval.
- Occupied premises: Define.
- Energy efficiency: Approval commitments.
- Site restrictions: Easements, restrictions arising out of actions of adjoining land owners, limitations related to continued occupancy by owner, toxic ground conditions.
- Block and survey pegs for the purpose of setting out, checking or measuring the work.
- Site access: Define access to and within the site, use of the site for temporary works and construction plant, working and storage areas, parking.
- Conditions for work on adjoining property: Define.
- Existing services: If existing services will be used as temporary services, document the conditions of use.
- Temporary services: Define if it is necessary to specify particular requirements such as temporary services for owner facilities if construction activities interfere.
- Items to be supplied by the owner: Define items and any conditions of supply.
- Requirements for dilapidation records on adjoining properties if there is a danger of damage to adjoining property.

0180 Common requirements

- Bushfire-prone areas. AS 3959 (2018) is incorporated in the NCC, but many local authorities have their own requirements which must also be complied with. AS 3959 (2018) defines 6 levels of construction for low to extreme Bushfire Attack Levels (BAL). Consult local councils for any additional bushfire protection requirements.
- Timber durability: See the **Natural and treated timber durability table**. AS 5604 (2022) gives a comprehensive table of the natural durability of timber species.
- Recycled material: Nominate type, certification and source.
- Corrosion environment: Nominate the Corrosion protection environment as defined in the ABCB Housing Provisions (2022) Table 7.2.2a.
- Moisture content: A convenient method for testing the moisture content of new concrete is the hand held hygrometer that is mastic sealed to the surface and left 16 hours overnight. The reading obtained is the relative humidity in the instrument chamber after equalisation with the concrete. A rule of thumb for the approximate drying time for concrete slabs is one month for every 25 mm thickness.

0184 Termite management

- Location: Slab, slab penetrations, slab control joints and footing/slab joints, under slabs, building perimeters, under suspended floors and timber poles and posts.
- Type: Select from concrete slab, sheet materials, woven stainless steel mesh, graded particles, chemical barriers or reticulated systems.
- Termite barrier notice: Locate in the electrical meter box.

0201 Demolition

- Identify items for removal, recycling or re-use.
- Identify items for protection in their existing location.
- Notification of asbestos products.

0221 Site preparation

- Temporary fence: Location. A temporary fence or safety barrier may be required by the local authority.
- Trees and shrubs to be protected. Local authorities often have detailed requirements for protection of trees.
- Trees and shrubs to be removed.
- Include erosion and sedimentation control and any other site management requirements noted by the local authority.
- Soil stockpile locations.

0222 Earthwork

- Site classification to AS 2870 (2011).
- Excavation: Size, levels and extent.
- Surface preparation. AS/NZS 3500.3 (2021) is referenced in BCA (2022) H2D2 for drainage.
- Crawl space under suspended floors: See BCA (2022) H2D5 for subfloor ventilation requirements. The requirements vary for different climate zones. Open spaces under timber floors can be subjected to hot drying wind at times that could shrink the flooring and in these circumstances a vapour barrier is recommended under the flooring. A minimum ground clearance of 400 mm under suspended floors is required for termite inspection. The minimum clearance can be reduced to 150 mm within 2 m of an external wall for sloping sites.
- Placing fill: Requirements for load-bearing fill should be specified by a professional engineer. AS 3798 (2007) gives general advice on earthworks. Inadequate backfilling can lead to differential settlement and damage to paving and landscaping. In reactive clay soils, it is important that service trenches do not act as a conduit to carry moisture into the ground next to the foundations, so impervious material should be used for backfill.

0223 Service trenching

- Trench widths.
- Backfilling material.

0242 Landscape - fences and barriers

- Location, material, manufacturer, height, finish and colour of fencing and gates.
- The construction and maintenance of common fences dividing land with separate titles is covered by state legislation.
- Nominate the hazard class and preservative treatment.
- Barriers for swimming pools: Check the local authority for additional requirements. AS 1926.1 (2012) and AS 1926.2 (2007) are referenced in the NCC for safety barriers to swimming pools. Hazards such as fountains, fish ponds, incinerators, barbecues, and vehicle manoeuvring areas should also be fenced off or otherwise secured.

0250 Landscape - gardening

- Imported topsoil: Composition and supplier.
- Removal and disposal of excess spoil.
- Turf type and turfed areas.
- Schedule of plants: Species, size as supplied and location.

0271 Pavement base and subbase

- Base course material and thickness.

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Issued to: 8336/01
Date: 24/10/2025

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Director and Building Certifier
BDC2471




0274 Concrete pavement

Concrete pavements, except footpaths should be specified by a professional engineer. The requirements for in situ concrete may be varied if it is unreinforced. AS 3727.1 (2016) can then be used for design purposes.

- Site preparation.
- Mix, thickness, grading, location of control joints and finish.
- Concrete strength.
- Reinforcement.
- Type: Select concrete colour, broom finish or stamped finish.
- Curing.

0276 Paving - sand bed

- Set-out.
- Preparation and bedding sand/mortar edge restraint.
- Thickness, grading and laying.
- Cutting.
- Type: Select from clay brick pavers or concrete.
- Pattern: Select from rectangular or interlocking.

0310 Concrete

- Construction notes/specification on structural engineer's drawings.
- Because ground conditions vary so much within Australia, concrete ground slabs or footings are usually designed by a professional engineer, but this is not always necessary. AS 2870 (2011) has 'deemed-to-comply' provisions. The site classification should be determined by the local council engineer or a geotechnical engineer to AS 2870 (2011).
- Formwork: Stripping times and repair. The design of the formwork is the contractor's responsibility. This applies to all formwork types, including conventional, proprietary or purpose-made formwork.
- Ground slab vapour barrier: Note type. Provision of a vapour barrier for external slabs on ground prevents water loss to the subgrade and has the potential to reduce slab curling at edges and corners.
- Concrete strength.
- Reinforcement: Location, cover to reinforcement and splicing.
- Joints.
- Surface finish class: To AS 3610.1 (2018) (Class 1 - 5).
 - Class 2 - high.
 - Class 3 - good.
- Surface finish type: Select from:
 - Machine float: Under dry floor finishes.
 - Steel trowel: Under resilient finishes, garage floors.
 - Wood float: External.
 - Broomed/patterned/coloured: External.
 - Rough scored: Under tiles in a mortar bed.
 - Specify others.
- Slip resistance, if required.
- Curing.

0331 Brick and block construction

For buildings not conforming to the scope of the AS 4773 series, use AS 3700 (2018).

Consult the local approval authority to determine where walls over a certain height require design by a professional engineer.

Energy efficiency requirements in BCA (2022) H6 set out minimum insulation performance requirements for walls, roofs, floor slabs and external glazing depending on climate zone and orientation.

- Masonry units: Brick or block.
- Reinforced blockwork.
- Masonry unit description: Type/size, colour, texture, supplier. Check durability if soil is aggressive or heavily fertilized.
- Mortar type: M3 applies generally, except that M4 applies for interior elements subjected to saline wetting and drying, elements in aggressive soils that are below the damp-proof course or in contact with ground, elements in severe marine environments as defined by AS 4773.1 (2015) clause 4.3.1, elements in saline or contaminated water including tidal and splash zones and elements in especially aggressive environments.
- Mortar colour.
- Damp proof courses.
- Cavity width: Note increased width if wall insulation is required to BCA (2022) H6D2(1)(b)(i).
- Wall ties: Type and location.
- Flashing details.
- Mortar joint types: Select tooled, weatherstruck or raked. Mortar joints which are not completely filled and tooled may not provide adequate weatherproofing. A flush joint which is cut with the trowel without compacting the mortar should not be used externally unless agreed.
- Brick rods.
- Bond patterns.
- Joints.
- Lintels.
- Chasing locations.
- Air vent location: See BCA (2022) H2D5 for subfloor ventilation requirements. The requirements vary for different climate zones.
- Weepholes.
- Weephole guards: Insect only or insect and bushfire ember protection.
- Control joints: Clay bricks grow after they have been fired and concrete slabs shrink after they have been poured. The provision for control joints is based on a minimum age of bricks and supporting concrete. If these ages cannot be complied with, additional joints may be necessary. Refer to AS 4773.2 (2015) Section 7 for control joint details.

0342 Light steel framing

NASH-1 (2005) is cited in the NCC. It sets out the design criteria to comply with the performance requirements of the NCC for steel framing of low-rise housing as well as commercial buildings. Design of structural steelwork, and cold-formed steel framing for applications other than domestic, should be by a professional engineer. The local authority may have requirements for permanent earthing of the frame. Refer to AS/NZS 3000 (2018) Section 5 for earthing arrangements and earthing conductors.

- Framing to NASH-1 (2005) and NASH-2 (2014).
- Cyclonic areas as classified in the ABCB Housing Provisions (2022) Figure 2.2.3.
- Steel roof truss: Type and supplier.

0382 Light timber framing

Detailed requirements for timber framing in areas with ultimate limit state design gust wind speeds up to 40 m/s are set out in AS 1684.4 (2010) but other codes designed for local conditions may be acceptable or mandatory. For cyclonic areas refer to AS 1684.3 (2021).

Design of timber framing to AS 1720.1 (2010) should be by a professional engineer.

- Cyclonic areas as classified in the ABCB Housing Provisions (2022) Figure 2.2.3.
- Framing to the AS 1684 series.
- Bracing.
- Timber roof truss: Supplier.
- Truss type. Design of timber trusses to AS 1720.1 (2010) and AS 1720.5 (2015).
- Fascias and barge boards.

0383 Decking, sheet and panel flooring

- Material and fixings.
- Timber decking selection.
- AAC panels: If required, nominate the following:
 - Acceptable locations of cuts.
 - Support conditions such as slip joints.
 - Fire-resisting and/or acoustic sealants.

0411 Waterproofing - external and tanking

- Extent. To BCA (2022) H2D8.
- Membrane: Manufacturer and type.
- Penetrations, skylights and hatches.
- Movement and control joints.
- Falls, internal roof outlets and overflows.
- Insulation boards.
- Overlaying finishes and protection boards.
- Drainage cell panels.
- Termination details.

0421 Roofing

- Roof tiles: Manufacturer, material, pattern and colour.
- Sheet metal roofing: Manufacturer, profile, finish, BMT and colour.
- Flashing and rainwater goods: Material, finish and colour.
- Roof lights: Selection details. Check the product for compliance, particularly spark arrestor mesh. See BCA (2022) H6D2(1)(b)(i) for thermal performance requirements of roof lights serving a habitable room. See BCA (2022) H3D3 for locating combustible roof lights. See BCA (2022) H7D4 for construction requirements for buildings in bushfire prone areas.
- Roof ventilators: Selection details.

0431 Cladding

- Cladding type: Fibre cement planks or sheeted system, plywood, timber weatherboards, hardboard planks, AAC panels, or EIFS (external insulated finishing system).
- Description: Manufacturer, material, pattern and colour.

0451 Windows and glazed doors

- Performance: For each elevation document the total U-value, solar heat gain coefficient, reflectance %, WERS energy rating % (heating and cooling) and AGWA (Australian Glass and Window Association) Compliance certificate. BCA (2022) H6D2(1)(b)(ii) sets out thermal performance of external glazing. See BCA (2022) H6D2(1)(b)(iii) for sealing of windows and doors.
- Location.
- Size.
- Window rating: To AS 2047 (2014).
- Water penetration resistance: To AS 2047 (2014).

- Door and window type.
- Operation: Swing, sliding or cavity sliding.
- Material: Aluminium, timber, PVC-U.
- Sliding internal doors; removable pelmets.
- Finish and colour.
- Insect/security screens.
- Bushfire screens.
- External glazing systems.

0453 Doors and access panels

- Location.
- Size.
- Door type: Flush solid core, flush hollow core, timber panelled, aluminium framed and glazed.
- Operation: Swing, sliding or cavity sliding doors.
- Material.
- Door frames: Timber, steel, or aluminium.
- Multiple folding doors.
- Sliding internal doors, removable pelmets.
- Security screen doors and bushfire screens.
- Floor clearances.

0454 Overhead doors

- Type: Roller, tilting, sectional, plywood, prefinished steel, stain/clear, paint or powder coated.
- Manufacturer.
- Operation. e.g. Direct manual or motorised.
- Motorised operation: e.g. Direct push-button, key switch, radio remote controller, etc.

0455 Door hardware

- Lock function.
- Lock durability, physical security and keying security. Refer to AS 4145.2 (2008).
- Door furniture style.
- Weatherseal requirements.

0467 Glass components

- Mirrors, shower screens, glass balustrades: To AS 1288 (2021). Where mirrors are required, by AS 1288 (2021) to be Grade A safety glass, ordinary annealed glass may be substituted when the panel is fully backed by and completely adhered to a solid material. Mirrors with backing avoid the distortion problem associated with toughened mirror glass.
- Mirror fixing: Select adhesive (double sided adhesive tape) or mechanical (screw fixing, frame fixing, bead fixing or clip fixing). In wet or moist areas the space behind the mirror should be either well ventilated or entirely sealed.
- Glass balustrades: Framed (post fixing) or frameless (side fixings), pocket fixing (size, set back from concrete, glazing and sealing material). AS/NZS 1170.1 (2002) clause 3.6 deals with imposed loads on barriers, including parapets, balustrades and railings.
- Glazed shower screens: Water shedding details, sliding assemblies.

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0471 Insulation and pliable membranes

- Location on plan and within the building element.
- Energy efficiency: Type, thickness and R-value for floors, walls, ceilings and roofs. See Energy Efficiency BCA (2022) H6, and check state and local council regulations.
- Pliable membranes: Note if acting as vapour permeable, vapour barrier, reflective thermal insulation or together in combination. In cool climates, provide a vapour barrier on the warm side of bulk insulation.
- Slab edge insulation.
- Pipe insulation.

0511 Lining

- Material: Plasterboard, fibre cement, timber/plywood feature lining.
- Trims: Skirtings, cornices, architraves and picture rails.

0551 Joinery

- Layout and location: Kitchen, laundry, study, bedrooms.
- High moisture resistant materials: Plinths, carcasses, drawer fronts, shelves and doors.
- Finishes and colour: Carcass, benchtops, splashbacks, cupboards and internal surfaces.
- Benchtop details.
- Wardrobe carcasses and frames.
- Wardrobe doors and panels.
- Drawer and door hardware, including handles.
- Edge treatment to laminated panels and benchtops e.g. rolled edge or plastic edgestrip.
- Timber stairs and balustrades.
- Trim.

0572 Miscellaneous furniture, appliances and fixtures

- Kitchen appliances: Product selection, colour and connection details for dishwasher, wall oven, cook top, range hood, microwave.
- Laundry appliances: Product selection, colour and connection details for washing machine and dryer.
- All appliances: Compliance with Minimum Energy Performance Standards (MEPS).
- Bathroom fixtures: Towel rails, soap holders, toilet paper holder, handrails, clothes hooks and cabinets.
- General fixtures / appliances: Clothes line, letterbox, street number, door bell.

0611 Rendering and plastering

- Level of finish: See *Guide to Standards and Tolerances*.
- Material, substrate, thickness, joints.
- Finish: wood float (sandy finish), steel trowel (polished) and sponge (smooth textured).
- Cornices.
- Cornice cement.

0621 Waterproofing - wet areas

- Extent: To BCA (2022) H4D2.
- Membrane: Manufacturer and type.
- Shower tray: PVC, copper, stainless steel.

0631 Ceramic tiles

- Location.
- Tile layout.
- Falls.
- Internal tile selection: Floors, skirtings, walls, dado.
- External tile selection: Slip resistance to AS 4586 (2013).
- Grout: Type and colour.

0651 Resilient finishes

- Location.
- Tile layout.
- Product and manufacturer.

0652 Carpets

- Location.
- Product and manufacturer.
- Underlay.
- Edge strip: Type, material and colour.
- Fixing method: Select from covers gripper, direct-stick, or double-bond systems.

0654 Multilayered board flooring

- Location.
- Product and manufacturer.

0655 Timber flooring

- Location.
- Species and manufacturer.
- Profile, width.
- Recycled timber flooring: If stained nail holes are unacceptable, specify remedial work such as coring and plugging with matching timber.

0656 Floor sanding and finishing

- Location.
- Product and manufacturer. Guidance on the properties of coating systems is given in AS 4786.2 (2005) Appendix C. Advice on the properties include edge bonding, fume nuisance, darkening with age, flammability, wear resistance and gloss levels. Coating systems can be selected from the following groups: Oil based finishes, solvent based polyurethane finishes or water based finishes.

0671 Painting

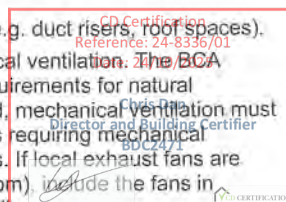
Select your paint and supplier:

- External: Final coat paint type, finish (full, semi, low gloss or flat) and colour for fascias and barges, rainwater goods, eaves, cladding, shutters, balustrades and handrails, posts and beams, and masonry.
- Windows and external doors: Final coat paint type, finish (full, semi, low gloss or flat) for internal, external and mouldings. Front and garage door panels, and frames and windows.
- Internal: Final coat paint type, finish (full, semi, low gloss or flat) and colour: Room by room schedule for walls, ceilings, doors, and frames and joinery.

0702 Mechanical design and install

To allow the design of air conditioning systems:

- Preferences for heating and cooling systems, (e.g. ducted, non-ducted split etc.) otherwise leave to the contractor's choice.
- The extent and performance (R-Values) of insulation for the walls, roof and floor.
- The type, location and performance of windows.
- External shading of windows and intended type of internal shading (e.g. blinds, curtains).
- The preferred location of plant, otherwise leave to the contractor's choice.
- Any provisions for ducts (e.g. duct risers, roof spaces).
- Rooms requiring mechanical ventilation: The BCA requires that where its requirements for natural ventilation are not satisfied, mechanical ventilation must be provided. Identify areas requiring mechanical ventilation on the drawings. If local exhaust fans are required (e.g. for a bathroom), include the fans in Electrical design and install.



- The type of supply, return and exhaust grilles if there is a preference, otherwise leave to the contractor's choice.

It is recommended that the following be provided by tenderers for review before the mechanical tender is accepted:

- Outdoor design conditions, corresponding geographic location and source of data.
- Calculated total and sensible cooling capacities and heating capacity.
- Name of calculation method used.
- Make and model numbers of proposed equipment.
- Compliance of proposed equipment with the Minimum Energy Performance Standard (MEPS).
- Details and locations of controls.
- Total and sensible cooling capacities and heating capacity of the proposed equipment, adjusted for the specified outdoor and indoor conditions and any effects of the proposed plant configuration.
- Any assumptions on which the calculations are based (e.g. that the curtains will be closed at all times).
- Details of any departures from this specification.
- A drawing of the proposed duct, pipe and equipment layout showing proposed zoning. Include an explanation of why the proposed zoning has been chosen.
- Licence numbers and type of licences held by persons responsible for the installation.

Other matters:

- The AIRAH Residential Air Conditioning Best Practice Guideline for each state and territory (available free from www.airah.org.au) sets out industry best practice guidelines for the selection, installation and maintenance of residential air conditioning units. The guideline addresses issues such as energy efficiency and air conditioner noise in a clear and concise manner.
- The plant should have at least 12 months defects liability and maintenance period to make sure it operates through the full range of cooling and heating seasons.

0902 Hydraulic design and install

- Cold water pipe material, otherwise leave to the contractor's choice. In bushfire prone areas, above-ground gas and water pipes, and pipes less than 300 mm below ground are to be metal, not plastic.
- Heated water pipe material, otherwise leave to the contractor's choice.
- Mixing valves if required.
- Water heater location and details e.g. gas instantaneous, electric, and solar or heat pump. Include manufacturer, model/capacity and temperature control for thermostatic mixing valves and special taps.
- Cold and heated water: For insulation of heated water pipes see AS/NZS 3500.4 (2021) Sections 8 which require insulation only at the heater and between the heater and the kitchen sink, document additional insulation, if required. A maximum temperature of 50°C is required by AS/NZS 3500.4 (2021) clause 1.11.2 for all personal hygiene sanitary fixtures. A maximum temperature of 60°C is recommended for kitchen sinks and laundry tubs. This can be achieved by adjusting

tempering values, thermostats, regulating flow e.g. with thermostatic mixing valves, or by using special taps.

- Provisions for additional piping for connecting to irrigation, toilet flushing, laundry, swimming pool top-up and similar uses (if required and permitted).
- External hose cock locations.
- Stormwater detention (if required by local authority, and in addition to any rainwater storage).
- Sanitary plumbing and drainage layout including the location of the connection point to the Network Utility Operator's mains and/or rainwater tanks if required by local authority.
- Sanitary ware items, locations and tapware e.g. sinks, basins, baths, WC, shower trays, laundry tub.
- Location of other plumbed items e.g. dishwasher, washing machine.
- For WCS: P-trap or S-trap, dual or single flush, exhaust ventilation through cistern.
- For sinks and hand basins: Number of tap holes for each (0, 1, 2 or 3).
- Waste disposal unit, if required.
- Rainwater tank (if required): Size, material, location, connections, pump and what rainwater serves. Plastic tanks are not to be used in bushfire prone areas.
- Gas and water meter locations.
- Gas appliance connection points.
- Gas bayonet outlet locations.
- Greywater system (if required): Source of greywater (e.g. laundry), location of the greywater diversion devices, surge tanks and connections to intended use (e.g. irrigation system).

0902 Electrical design and install

- Switchboards: The Electricity Distributor's Service and Installations Rules defines further prohibited locations for switchboards and metering equipment.
- Telecommunications installation: Fees in respect of applications for electricity and telecommunications services are normally paid by the owner. Consider specifying as 'smart-wired'.
- Accessory schedule: Type, function and location of socket-outlets, light switches, dimmers, telephone outlet, data outlet, exhaust fans, circulating fans, and computer outlets.
- Luminaire schedule: Type, product selection, lamp type and location. The Australian Government has introduced a programme to eliminate low efficiency lamps, including incandescent and low voltage halogen reflector types.
- Smoke detection system: To BCA (2022) H3D6. Details of automatic 'back to base' alarms if required.
- Cable/satellite television network operator.
- Intruder alarm system. Method of arming/disarming and details of automatic action on alarm registering i.e. local or 'back to base' or auto dialler.
- Garage door operation.
- Home automation: Full details of location functionality and equipment selected.

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Make sure all subcontractors are aware of the requirements within *0180 Common requirements*.

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0131 PRELIMINARIES

1 GENERAL

1.1 THE SITE

Occupied premises

General: For the parts of the site designated as occupied premises:

- Allow occupants to continue in secure possession and occupancy of the premises for the required period.
- Maintain safe access for occupants.
- Arrange work to minimise nuisance to occupants and for their safety.
- Protect occupants against weather, dust, dirt, water or other nuisance, by such means as temporary screens.

Proposals: Submit details of proposed methods.

- Purpose of submission: For information.
- Timing of submission: Before commencement of work.

Reinstatement

Accessways and services: Do not obstruct or damage roadways and footpaths, drains and watercourses and other existing services in use on or adjacent to the site. Determine the location of such services. Rectify immediately any obstruction or damage to such services and provide temporary services whilst repairs are carried out.

Trees and properties: Do not interfere with or damage trees and properties that are to remain on or adjacent to the site, including adjoining property encroaching onto the site. Rectify immediately any interference or damage to such trees and properties.

Existing services

Service to be continued: Repair, divert or relocate, as documented.

Trenches: If the existing service crosses the line of a required trench, or will lose support when the trench is excavated, provide permanent support for the existing service.

Redundant services: Remove redundant parts and make safe.

Interruptions to services: Minimise the number and duration of interruptions.

1.2 BUILDING THE WORKS

Order of precedence of documents

Precedence: Requirements of the schedules and drawings override conflicting requirements in this reference specification.

Survey marks

Definition: A survey peg, benchmark, reference mark, signal, alignment, level mark or any other mark used or intended to be used for the purpose of setting out, checking or measuring the work.

Care of survey marks: Preserve and maintain the owner's survey marks in their true positions.

Rectification: If the survey marks are disturbed or obliterated, immediately rectify.

Items supplied by owner

General: Materials and other items supplied free of charge to the contractor for installation in the execution of the works, as documented. Unload and take delivery, inspect for defects and take care of the items. If defects are found, advise. Return unused items to the owner.

1.3 MISCELLANEOUS

Contractor and owner to observe confidentiality

Publicity: Do not issue information concerning the project for publication in the media without prior written approval of the owner.

0180 COMMON REQUIREMENTS

1 GENERAL

1.1 PRECEDENCE

General

Requirement: Conform to *0180 Common requirements*, as appropriate, in all worksections.

Schedules and drawings: Requirements of the schedules and drawings override conflicting requirements in this reference specification.

Order of precedence: If there is conflict or inconsistency between the worksections of this specification, the requirements of worksections take precedence over *0180 Common requirements*.

1.2 STANDARDS

Current editions

General: All referenced documents are the editions, with amendments, current on 1st March 2024.

Exception to current editions: If statutory requirements reference other editions or standards, conform to those other editions or standards. If the NCC (2022) references editions other than the current edition, the same editions cited in the NCC (2022) are referenced in each worksection.

1.3 INTERPRETATION

Abbreviations

General: For the purpose of this document the following abbreviations apply:

- BCA: National Construction Code Series Volume 2: Building Code of Australia Class 1 and Class 10 Buildings.
- NCC: National Construction Code.

Definitions

General: For the purposes of this specification, the following definitions apply:

- Contractor: Has the same meaning as builder and is the person or organisation bound to carry out and complete the work under the contract.
- Documented: Documented, as documented and similar terms mean contained in the contract documents.

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- Hot-dip galvanized: Zinc coated to AS/NZS 4680 (2006) after fabrication with coating thickness and mass to AS/NZS 4680 (2006) Table 1.
- Metallic-coated: Steel coated with zinc or aluminium-zinc alloy by a continuous or specialised process.
- Owner: Owner has the same meaning as client, principal or proprietor and is the party to whom the contractor is legally bound to construct the works.
- Professional engineer: To NCC (2022) Schedule 1.
- Proprietary: Identifiable by naming manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.
- Provide: Provide and similar expressions mean supply and install and include development of the design beyond that documented.
- Required: Required by the contract documents, the local council or statutory authorities.
- Supply: Supply, furnish and similar expressions mean supply only.

1.4 BUSHFIRE-PRONE AREAS

General

Conformance: In areas designated as bushfire-prone, conform to statutory and local authority requirements.

Standard: To AS 3959 (2018).

Bushfire Attack Level (BAL): To AS 3959 (2018) and BCA (2022) H7D4, and as documented.

2 PRODUCTS AND MATERIALS

2.1 PROPRIETARY ITEMS

Manufacturer's or supplier's recommendations

General: Provide manufactured items to the manufacturer's or supplier's recommendations.

Proprietary items/systems/assemblies: Assemble, install or fix to substrate to the manufacturer's or supplier's recommendations.

Natural and treated timber durability table

Exposure	Natural durability class to AS 5604 (2022)	Preservative-treated hazard class to the AS/NZS 1604 series
Inside, above ground: Completely protected from the weather, well ventilated, and protected from termites		H1
Inside, above ground: Protected from wetting with nil leaching		H2
Outside, above ground: Subject to periodic moderate wetting	Class 2	H3
In-ground	Class 1	H4 (Severe wetting and leaching) H5 (Extreme wetting and leaching and/or critical uses)

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2.2 SUBSTITUTIONS

General

Identified proprietary items: Identification of a proprietary item does not necessarily imply exclusive preference for the identified item, but indicates the necessary properties of the item.

Alternatives: If alternatives to the documented products, methods or systems are proposed, submit sufficient information to permit evaluation of the proposed alternatives.

2.3 TIMBER

Acclimatisation

General: Acclimatise timber fitouts by stacking them for two weeks in the in-service conditions with air circulation to all surfaces after the following are complete:

- Air conditioning operational.
- Lighting operational.
- Site drainage and stormwater works are complete.
- Space fully enclosed and secure.
- Wet work complete and dry.

Unseasoned timber

General: If unseasoned timber is provided, or variation in moisture content is likely, make allowance for shrinkage, swelling and differential movement.

Durability

General: Provide timbers with natural durability appropriate to the conditions of use, or preservative-treated timber of equivalent durability.

Natural durability class of heartwood: To AS 5604 (2022).

Preservative treatment: To the AS/NZS 1604 series.

Termite resistance: Provide timbers that are naturally termite-resistant or preservative treated, or protect using physical barriers or coatings, as appropriate.

Minimum requirement: To the **Natural and treated timber durability table**.

2.4 STEEL

Durability

General: Provide steel products protected from corrosion to suit the conditions of use.

Internal engineer designed steel members: Remove mill scale, rust, moisture and oil. Coat with a zinc phosphate primer to the manufacturer's instructions.

Built-in products below damp-proof course:

Stainless steel 316 or engineered polymer.

Corrosion resistance

Atmospheric corrosivity category: As defined in AS 4312 (2019), the AS/NZS 2312 series, and as documented.

Minimum external corrosion protection requirements for corrosive environments: Conform to BCA (2022) Volume 2.

Preparation and pre-treatment

Standard: To the AS 1627 series.

Hot-dip galvanizing

General: Galvanize mild steel components (including fasteners) to AS/NZS 1214 (2016), AS 1397 (2021) or AS/NZS 4680 (2006), as appropriate, and in the following conditions:

- Exposed to weather.
- Embedded in masonry.
- Exposed to or in air spaces behind external leaves of masonry walls.
- In contact with chemically treated timber.

2.5 PROTECTIVE COATINGS

General

Atmospheric corrosivity category: To AS 2312.1 (2014) clause 2.3.

Coating designation: To AS 2312.1 (2014) Table 6.3.

CCA (copper chrome arsenic) treated timber

Greasing: Before placing bolts or other metal components in contact with CCA-treated timber, paint contact surfaces or coat in grease or a bituminous coating.

Unseasoned timber

General: Do not fix in contact with steel framing without fully painting the contact surfaces of timber and steel.

2.6 FASTENERS

Self-drilling screws

Standard: To AS 3566.1 (2002).

2.7 VAPOUR BARRIER

General

Vapour barrier to slabs: To AS 2870 (2011) clause 5.3.3.

Minimum thickness: 0.2 mm.

2.8 DAMP-PROOF MEMBRANES

General (Damp-proof)

Damp-proof membrane: To AS 2870 (2011) clause 5.3.3.

Type: High impact resistant polyethylene film, minimum 0.2 mm thick, which has been pigmented and branded by the manufacturer.

3 EXECUTION

3.1 WALL CHASING

Holes and chases

General: If holes and chases are required in masonry walls, make sure structural integrity of the wall is maintained. Do not chase walls with a fire-resistance level or an acoustic rating.

Parallel chases or recesses on opposite faces of a wall: Not closer than 600 mm to each other.

Chasing blockwork: Only chase core-filled hollow blocks or solid blocks that are not documented as structural.

Concrete blockwork chasing table

Block thickness (mm)	Maximum depth of chase (mm)
190	35
140	25
90	20

3.2 MOISTURE CONTENT

Flooring

General: Do not start installation of flooring unless:

- Concrete substrate: The moisture content of the concrete has been tested to AS 1884 (2021) Appendix A and conforms to clause 3.1.
- Plywood substrates and timber flooring products: The moisture content has been tested to AS/NZS 1080.1 (2012) for timber and particleboard or AS/NZS 2098.1 (2006) for plywood, and conforms to the values as follows:
 - Air conditioned buildings: 8 to 10%.
 - Intermittently heated buildings: 10 to 12.5%.
 - Unheated buildings: 12 to 15%.

3.3 FIXING

General

Suitability: If equipment is not suitable for fixing to non-structural building elements, fix directly to structure and trim around penetrations in non-structural elements.

Fasteners

General: Use proprietary fasteners capable of transmitting the loads imposed, and sufficient for the rigidity of the assembly.

3.4 FOOTPATH CROSSING

General

Requirement: Provide footpath and kerb crossings to local authority requirements.

3.5 COMPLETION

General

Removal of temporary work, temporary services and construction plant: Remove within 10 working days after occupation of the works.

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17 CERTIFICATIONS

Final cleaning: Remove rubbish and surplus material from the site and clean the works throughout including interior and exterior surfaces exposed to view. Vacuum clean carpeted and soft surfaces. Clean debris from the site, roofs, gutters, downpipes and drainage systems.

Samples: Remove non-incorporated samples, sample panels and prototypes.

Warranties: Register with manufacturers, as necessary, and provide copies of manufacturer's warranties.

Instruction manuals: Provide the manufacturer's instruction manuals.

Operation: Make sure moving parts operate safely and smoothly.

Surveyor's certificate: Provide a certificate that confirms that the work, including boundary fences, has been correctly located.

Services layout: Provide a plan that shows the location of underground services.

Authority approvals: Provide evidence of approval of the local authority or principal accredited certifier and statutory authorities whose requirements apply to the work.

Keys: Provide two keys for each set of locks keyed alike and two keys for each lock keyed to differ.

0184 TERMITE MANAGEMENT

1 GENERAL

1.1 STANDARDS

General

Standard: To AS 3660.1 (2014).

Termite caps, collars and sheeting

General: To AS 3660.1 (2014) Section 5.

Collars: To AS 3660.1 (2014) clauses 4.3.2.4.2 and 5.3.6.

Granular materials

Standard: To AS 3660.1 (2014) Section 6.

Termite management system notice

Signage: Permanently fix a durable notice in a prominent location to BCA (2022) H1D3(3).

Certification

Requirement: Submit installation certificate to AS 3660.1 (2014) clause A3.

0201 DEMOLITION

1 GENERAL

1.1 STANDARDS

Demolition

Standard: To AS 2601 (2001).

1.2 SUBMISSIONS

Records

Dilapidation record:

- Before demolition: Submit to each owner of each adjoining or adjacent property, a copy of the part of the record relating to that property and obtain their written agreement to the contents.
- Rectification work: Submit written acceptance of rectification works from the owner of each adjoining or adjacent property affected.

2 EXECUTION

2.1 SUPPORT

Temporary support

Existing buildings: Until permanent support is provided, provide temporary support for sections of existing buildings, or parts of buildings, being retained and which normally rely on support from work to be demolished.

2.2 PROTECTION

Encroachment

General: Prevent the encroachment of demolished materials onto adjoining property, including public spaces.

Weather protection

General: If walls or roofs are opened for alterations and additions, provide temporary covers to prevent water penetration. Provide covers to protect existing plant equipment and materials intended for re-use.

Security

General: If walls or roofs are opened for alterations or additions, provide security against unauthorised entry to the building.

2.3 DEMOLITION

Removal of hazardous substances

Standard: To AS 2601 (2001) clause 1.6.2 and Safe Work Australia's *How to safely remove asbestos Code of Practice (2020)*.

Dilapidation record

Purpose: Use the dilapidation record to assess the damage and rectification work arising from the demolition work.

Notice of completion

General: Give at least 5 working days' notice of completion of demolition so that adjoining or adjacent structures may be inspected following completion of demolition.

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0221 SITE PREPARATION

1 EXECUTION

1.1 CONTROL AND PROTECTION

Erosion control

General: Plan and carry out the work to protect natural and stormwater drainage systems from sedimentation by minimising soil erosion and sediment transportation.

Dewatering

Requirement: Keep earthworks free of water. Prevent water flow over freshly laid work.

1.2 TREE PROTECTION

General

Protection: Protect from damage trees which are required to be retained. Provide a temporary fence or safety barrier if required by the local authority. Conform to local authority requirements for protection of trees.

Work near trees

Material placement: Keep the area within the dripline free of sheds and paths, construction material and debris.

Work under trees: Do not remove topsoil from, or add topsoil to, the area within the dripline of the trees.

1.3 SITE CLEARING

Extent

Requirement: Clear only areas occupied by works such as structures, paving, excavation, regrading and landscaping or other areas documented for clearing.

Clearing and grubbing

Clearing: Remove everything on or above the site surface, including rubbish, scrap, grass, vegetable matter and organic debris, scrub, trees, timber, stumps, boulders and rubble.

Turf: Remove turf to a depth just sufficient to include the root zone.

Grubbing: Grub out stumps and roots over 75 mm diameter to a minimum depth as follows:

- Below subgrade under buildings, embankments or paving: 500 mm.
- Below finished surface in unpaved areas: 300 mm.

Backfilling: Fill holes remaining after grubbing with sand material to prevent ponding of water. Compact the material to the relative density of the existing adjacent ground material.

Surplus material

Removal: Take possession of surplus material and remove it from the site.

Disposal

Spoil: Remove cleared and grubbed material from the site and dispose of legally.

0222 EARTHWORK

1 GENERAL

1.1 STANDARDS

General

Earthworks: Conform to the recommendations of those parts of AS 3798 (2007) that are referenced in this worksection.

Site classification: To AS 2870 (2011).

1.2 INTERPRETATION

Definitions

General: For the purposes of this worksection the following definitions apply:

- Bad ground: Ground unsuitable for the works, including fill liable to subsidence, ground containing cavities, faults or fissures, ground contaminated by harmful substances and ground that is, or becomes, soft, wet or unstable.
- Rock: Monolithic material with volume greater than 0.3 m³ that cannot be removed until broken up by rippers or percussion tools.
- Subgrade: The trimmed or prepared earth material on which the pavement, footing or slab is constructed. Generally taken to relate to the upper line of the earth material.
- Zone of influence: A foundation zone bounded by planes extending downward and outward from the bottom edge of a footing, slab or pavement and defining the extent of foundation material having influence on the stability or support of the footings, slab or pavement.

2 EXECUTION

2.1 REMOVAL OF TOPSOIL

General

Extent: Areas of cut or fill and areas to be occupied by structures, pavements and embankments.

Maximum depth: 200 mm.

Disposal: Remove topsoil unsuitable for re-use from the site to AS 3798 (2007) clause 6.1.8.

2.2 EXCAVATION

Extent

Site surface: Excavate the site to the levels and profiles required for the documented structures, pavements, filling and landscaping. Make allowance for compaction, settlement or heaving.

Footings: Excavate to the required sizes and depths. Confirm the foundation conditions meet the design bearing capacity.

Crawl space: Provide a clear space under timber or steel bearers:

- Minimum clearance: 400 mm.



Bearing surfaces

Requirement: Provide even plane bearing surfaces for loadbearing elements including footings. Step to accommodate level changes, as documented. If supporting masonry, make the steps appropriate to the courses.

Existing footings

Requirement: If excavation is required within the zone of influence of an existing footing, provide supports to the footing sufficient to prevent damage arising from the works. Use methods including temporary shoring or underpinning.

Existing services

Utility services: Contact BEFORE YOU DIG AUSTRALIA to identify location of underground utility services pipes and cables.

Grading

External areas: Grade to give falls away from buildings, minimum 1:100.

Subfloor areas: Grade the ground surface under suspended floors to drain ground or surface water away from buildings without ponding.

2.3 PREPARATION FOR FILLING

Preparation

Stripping: Prepare the ground surface before placing fill (including topsoil fill), ground slabs or load bearing elements to AS 3798 (2007) clause 6.1.5. Remove loose material, debris, organic matter and material that inhibits or prevents satisfactory placement of fill layers.

2.4 PLACING FILL

Placing fill

Placement: To BCA (2022) H1D4.

Layers: Place fill in near-horizontal layers of uniform thickness no greater than 150 mm after compaction, deposited systematically across the fill area.

Moisture content: Adjust the moisture content of fill during compaction to achieve the required density.

Base preparation for under slab vapour barrier or damp-proof membrane: Blind the surface with sufficient sand to cover any hard projections. Dampen the sand just before placing the vapour barrier.

0223 SERVICE TRENCHING

1 PRODUCTS

1.1 FILL MATERIALS

General

Backfill material: To AS 3798 (2007) clause 4.4 and as follows:

- Sulfur content: Do not provide fill with sulfur content exceeding 0.5% within 500 mm of concrete and cement bound elements (for example masonry) unless such elements are protected by impermeable membranes or equivalent means.
- In reactive clay: In sites classified M, M-D, H1, H1-D, H2, H2-D, E or E-D to AS 2870 (2011), re-use excavated site material at a moisture content within $\pm 1\%$ of that of the adjoining in situ clay.

2 EXECUTION

2.1 EXCAVATION

General

Requirement: Excavate for underground services in conformance with the following:

- To required lines and levels, with uniform grades.
- Straight between access chambers, inspection points and junctions.
- With stable sides.

2.2 TRENCH BACKFILL

General

Place fill: To AS 3798 (2007) clause 6.2.2 and 6.2.6.

Timing: Backfill service trenches as soon as possible after laying and bedding the service, if possible on the same working day.

Layers: Compact all material in layers not exceeding 150 mm compacted thickness. Compact each layer to the required relative compaction specified before starting the next layer.

2.3 SURFACE RESTORATION

General

Reinstatement: Reinstatement existing surfaces removed or disturbed by trench excavation to match existing and adjacent work.

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0242 LANDSCAPE - FENCES AND BARRIERS

1 PRODUCTS

1.1 TIMBER

Posts and rails

Hardwood: To AS 2082 (2007).

Softwood: To AS 2858 (2023).

Pickets and palings

Hardwood: To AS 2796.1 (1999) Section 8.

– Grade to AS 2796.2 (2006): Select.

Softwood: To AS 4785.1 (2002) Section 7.

Seasoned cypress pine: To AS 1810 (1995) Section 5.

Preservative treatment

Timber type: Provide only timbers with preservative treatment to the documented hazard class.

Cut surfaces: Provide supplementary preservative treatment to all cut and damaged surfaces.

CCA treated timber: If proposed to be used, provide details.

1.2 STEEL

Steel tubes

Posts, rails, stays and pickets: To AS/NZS 1163 (2016).

– Grade: C350L0.

Post and rail finish: Hot-dip galvanized.

1.3 COMPONENTS

Steel panel fencing

Steel framing: Zinc-coated or aluminium/zinc alloy coated steel to AS 1397 (2021).

Steel sheeting: Prepainted to AS/NZS 2728 (2013).

Timber fencing

General: Conform to the timber members in the **Timber fencing sizes table**.

Timber fencing sizes table

Member	Preservative treated soft wood picket (mm)	Preservative treated soft wood paling/lap and cap (mm)	Hardwood or cypress pine paling/lap and cap (mm)
Maximum height	1200	1800	1800
End/corner gate posts	90 x 90	100 x 100	125 x 125 or 100 x 100
Intermediate posts	90 x 90	140 x 45 or 100 x 75	125 x 50 or 100 x 75
Maximum post spacing	2400	2400 or 2700 ^a	2700 ^a
Rails	70 x 40	75 x 50 or 100 x 38	75 x 50 or 100 x 38
Picket/paling size	70 x 19	75, 100 or 150 ^a x 15	100 or 150 ^a x 13
Capping	–	125 x 35	100 x 50
Concrete footing size (diameter x depth)	300 x 600	300 x 600	300 x 600
Earth footing size (diameter x depth)	200 x 600	250 x 600	250 x 600

a. Three rail fences only

Gates

General: As documented.

Barriers for swimming pools

Design, construction and performance: To AS 1926.1 (2012).

Location of barriers for private swimming pools: To AS 1926.2 (2007).

2 EXECUTION

2.1 GENERAL

Installation

Requirement: Adopt local industry practices for set-out, clearing of vegetation, excavation, minimum footing size, materials, components and erection.

0250 LANDSCAPE - GARDENING

1 GENERAL

1.1 STANDARDS

Soils

Site and imported topsoil: To AS 4419 (2018).

Composts, soil conditioners and mulches: To AS 4454 (2012).

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2 PRODUCTS**2.1 MATERIAL****Topsoil**

Requirement: Topsoil containing organic matter, able to support plant life and free from stones, contaminants and weeds.

Source: If the topsoil of documented quality cannot be provided from material recovered from site, provide imported topsoil.

Turf

Description: Cultivated turf of even thickness, free from weeds and other foreign matter, as documented.

Supplier: A specialist grower of cultivated turf.

Plants

General: Provide plants in conformance with the local authority approval requirements.

3 EXECUTION**3.1 GENERAL****Weed eradication**

Herbicide: Eradicate weeds using environmentally acceptable methods, such as a non-residual glyphosate herbicide in any registered formulae, at the recommended maximum application rate.

Watering

General: Conform to local restrictions.

Turf: Water immediately after laying turf until the topsoil is moistened to its full depth. Maintain moisture to this depth.

Planting: Thoroughly water the plants before planting, immediately after planting, and as required to maintain growth rates free of stress.

0271 PAVEMENT BASE AND SUBBASE**1 PRODUCTS****1.1 BASE AND SUBBASE MATERIAL****Granular material**

Requirement: Provide unbound granular materials, including blends of two or more different materials which when compacted develop structural stability and are uniform in grading and physical characteristics.

Crushed rock

Requirement: Provide crushed rock as follows:

- Base: 20 mm nominal.
- Subbase: 40 mm nominal.

2 EXECUTION**2.1 SUBGRADE PREPARATION****General**

Requirement: Prepare the subgrade to 0222 Earthwork.

2.2 PLACING BASE AND SUBBASE**General**

Weak surfaces: Do not place material on a surface that is weakened by moisture and is unable to support, without damage, the construction plant required to perform the works.

Spreading: Spread material in uniform layers without segregation.

Moisture content: Maintain wet mixed materials at the required moisture content before and during spreading. Add water to dry mixed materials through fine sprays to the entire surface of the layer after spreading, to bring the material to the required moisture content.

Compacted layer thickness: 200 mm maximum and 100 mm minimum. Provide layers of equal thickness in multilayer courses.

2.3 BASE AND SUBBASE COMPACTION**General**

Construction operation: Compact each layer of fill to the required depth and density, as a systematic construction operation.

Minimum relative compaction table

Item description	Minimum dry density ratio (modified compaction) to AS 1289.5.2.1 (2017)
Subbase	95%
Base	98%

Compaction requirements

General: Apply uniform compactive effort, over the whole area to be compacted, until the required density is achieved or until failure is acknowledged.

Equipment: Use rollers appropriate to the materials and compaction requirements documented.

0274 CONCRETE PAVEMENT**1 GENERAL****1.1 STANDARDS AND REQUIREMENTS****Concrete**

Specification and supply: To AS 1379 (2007).

Materials and construction: To AS 3600 (2018).

Residential pavements: To AS 3727.1 (2016).

Vapour barrier

Requirement: Conform to 0180 Common requirements.



Grading

General: Grade paving to even falls to drain away from buildings to drainage outlets without ponding.

Minimum fall for drainage:

- Vehicle traffic pavements: 1:40.
- Other pavements: 1:100.

0276 PAVING - SAND BED

1 PRODUCTS

1.1 MATERIALS

Concrete and clay pavers

Standard: To AS/NZS 4455.2 (2010).

Sand

Bedding and joint filling: Well-graded and free of deleterious materials such as soluble salts that may cause efflorescence.

Mortar

Mix proportions (cement:sand): 1:3.

2 EXECUTION

2.1 GENERAL

Preparation

General: Trim the subgrade to the required profile and to suit the thickness of pavers and sand bed. Compact to a firm, even surface.

Base course

General: Conform to 0271 *Pavement base and subbase*.

Edge restraint

Perimeter: If not provided by other structures, provide edge restraints to bedding and units.

Type: Bed units in mortar at least 40 mm thick.

Drainage: Position edge restraint and pavers so that the tops of the pavers are slightly above the front edge of the edge restraint.

Bedding course

Preparation: Remove all loose material from the prepared base.

Geotextile: Place fabric between the base course and the bedding sand and lap 150 mm at joints.

Bedding sand: Screed uncompacted sand over prepared base uniformly to achieve a 30 mm thick layer. Maintain sand at a uniform loose density and moisture content.

Grading

General: Grade paving to even falls to drain away from buildings to drainage outlets without ponding.

Minimum fall for drainage:

- Vehicle traffic pavements: 1:40.
- Other pavements: 1:100.

Laying

General: Lay pavers on the screeded sand bedding to the documented set-out and pattern.

Joints: 2 to 5 mm in width.

Cut courses: 50 mm minimum plan dimension. On footpaths and other linear elements, use at least two cut courses and maintain symmetry.

Compaction: Compact the sand bedding after laying paving units with a vibrating plate compactor and appropriate hand methods, and continue until lipping between adjoining units is eliminated.

Joint filling: Spread dry sand over the paving units and fill the joints by brooming. Carry out one or more passes with the vibrating plate compactor and refill the joints with sand. Repeat the process until the joints are completely filled.

0310 CONCRETE

1 GENERAL

1.1 STANDARDS AND REQUIREMENTS

General

Formwork design and construction: To AS 3610.1 (2018) and AS 3610.2 (Int) (2023).

Plywood formwork: To AS 6669 (2016).

Reinforced concrete construction: To AS 3600 (2018).

Specification and supply of concrete: To AS 1379 (2007).

Residential ground slabs and footings: To AS 2870 (2011).

Design

Formwork: The design of the formwork is the contractor's responsibility.

Vapour barrier or damp-proof membrane

Requirement: Conform to 0180 *Common requirements*.

0331 BRICK AND BLOCK CONSTRUCTION

1 GENERAL

1.1 STANDARD

General

Materials and construction: To the AS 4773 series.

2 PRODUCTS

2.1 DURABILITY

General

Exposure environment: To AS 4773.1 (2015) clause 4.3.

Exposure locations: To AS 4773.1 (2015) clause 4.4.

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CD CERTIFICATIONS

2.2 MATERIALS

Masonry units

Standard: To AS/NZS 4455.1 (2008) and AS/NZS 4455.3 (2008).

Salt attack resistance grade: To AS 4773.2 (2015) Table 2.1.

Mortar materials

Mortar class: To AS 4773.1 (2015) Table 3.1.

Sand: Fine aggregate with a low clay content, free from efflorescing salts and deleterious matter selected for colour and grading.

2.3 BUILT-IN COMPONENTS

General

Durability class of built-in components: To AS 4773.1 (2015) Table 4.1.

Steel lintels

Angles and flats: Sizes to AS 4773.1 (2015) Table 12.2.

Cold-formed proprietary lintels: Designed to AS/NZS 4600 (2018).

Corrosion protection: To AS 2699.3 (2020).

Cutting: Do not cut after galvanizing.

Wall ties

Standard: To AS 2699.1 (2020).

Type: A.

Corrosion protection: To AS 2699.1 (2020).

Flashings and damp-proof courses

Standard: To AS/NZS 2904 (1995).

3 EXECUTION

3.1 GENERAL

Mortar mixing

General: Measure volumes accurately to the documented proportions. Machine mix for at least six minutes. If the initial set of the cement has taken place, discard the mortar. Do not retemper.

Storage and handling

Masonry units: Store above the surface of the ground and cover to prevent entry of rainwater and contaminants. Locate away from surface and ground water runoff.

Mortar materials: Protect from contamination and as follows:

- Sand: Store away from surface and ground water runoff and allow for free drainage of rainwater.
- Cement and lime: Store bags in a dry, under cover and above ground environment.

Bond

Type: Stretcher bond.

Minimum clearance for timber frame shrinkage

General: In timber framed masonry veneer construction, provide clearances to allow for long-term shrinkage of timber including at windows, doors, thresholds, at the underside of eaves where the masonry and soffit meet and as follows:

- Single storey (slab on ground): 10 mm.
- Two storey (slab at lower floor): 32 mm.

- Additional clearance: Accommodate additional shrinkage of unseasoned floor timbers.

Joining to existing

General: Provide a control joint where joining to existing structures. Do not tooth new masonry into existing work unless approved by a professional engineer.

Mortar joints

General: Set out masonry with joints of uniform width and the minimum of cutting of masonry units.

Solid and cored units: Lay on a full bed of mortar. Fill perpend solid. Cut mortar flush.

Hollow units: Face-shell bedded: Fill perpend solid. Cut mortar flush.

Joint thickness: 10 mm.

Finish: Conform to the following:

- Externally: Tool to give a dense water-shedding finish.
- Internally: If wall is to be plastered, do not rake more than 10 mm to give a key.

3.2 FACEWORK

Cleaning

General: Clean progressively as the work proceeds to remove mortar smears, stains and discolouration. Do not erode joints if using pressure spraying.

Acid solution: Do not use.

Colour mixing

Distribution: In facework, distribute the colour range of units evenly to prevent colour concentrations and banding.

Sills and thresholds

General: Solidly bed sills and thresholds and lay them with the top surfaces draining away from the building.

Minimum size of unit: Three quarters full width.

3.3 SUBFLOOR WORK

Access openings

General: In internal walls, provide door-width openings beneath doorways to give access to underfloor areas.

Air vent location

General: Provide air vents to give adequate cross ventilation to the space under suspended ground floors.

3.4 CAVITY WORK

Cavity width

General: Construct minimum cavity widths in conformance with the following:

- Masonry veneer walls: 25 mm between the masonry leaf and any insulation or services placed within the cavity.
- Cavity masonry walls: 35 mm between the masonry leaf and any insulation or services placed within the cavity.

3.5 DAMP-PROOF COURSES

Location

General: Locate damp-proof courses as follows:

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- Timber floors: In the first course below the level of the underside of ground floor timbers in internal walls and inner leaves of cavity walls.
- Cavity walls built off slabs on ground: In the bottom course of the outer leaf, continuous horizontally across the cavity and up the inner face bedded in mortar, turned 30 mm into the inner leaf one course above. Project 10 mm beyond the external slab edge and turn down 45°.
- Masonry veneer construction built off slabs on ground: In the bottom course of the outer leaf, continuous horizontally across the cavity. Fastened to the inner frame 75 mm above floor level.
- Internal walls built off slabs on ground: In the first course above floor level.
- Walls adjoining infill floor slabs on membranes: In the course above the underside of the slab in internal walls and inner leaves of cavity walls. Project 40 mm and dress down over the membrane turned up against the wall.

Height: Not less than:

- 150 mm above the adjacent finished ground level.
- 75 mm above the finished paved or concrete areas that slope away from the wall.
- 50 mm above the finished paved or concreted areas that slope away from the wall and are protected from the direct effect of the weather.

Installation

General: Lay in long lengths. Sandwich damp-proof courses between mortar.

Laps: Lap the full width of angles and intersections and 150 mm at joints.

Steps: Step as necessary, but not more than two courses per step for brickwork and one course per step for blockwork.

3.6 FLASHINGS

Location

General: Locate flashings as follows:

- Floors: Full width of outer leaf immediately above slab or shelf angle, continuous across cavity and up the inner face bedded in mortar, turned 30 mm into the inner leaf two courses above for brick and one course above for block. If the slab supports the outer skin and is not rebated, bed the flashing in a suitable sealant.
- Under sills: 30 mm into the outer leaf bed joint one course below the sill, extending up across the cavity and under the sill in the inner leaf or the frame for masonry veneer. Extend at least 150 mm beyond the reveals on each side of the opening.
- Over lintels to openings in cavity walls: Full width of outer leaf immediately above the lintel, continuous across cavity, turned 30 mm into the inner leaf two courses above for brick and one course above for block or turned up at least 150 mm against the inner frame and fastened to it. Extend at least 150 mm beyond the ends of the lintels.
- At abutments with structural frames or supports: Vertically flash in the cavity from 150 mm wide

material, wedged and grouted into a groove in the frame opposite the cavity.

- At jambs: Vertically flash jamb, extending 75 mm into the cavity, interleaved with the sill and head flashing at each end. Fix to jambs.
- At roof abutments with cavity walls: Cavity flash immediately above the roof and overflash the roof apron flashing.

Installation

General: Sandwich flashings between mortar except where on lintels.

Pointing: Point up joints around flashings, filling voids.

Weepholes

Requirement: Locate weepholes to external leaves of cavity walls in the course immediately above flashings, and cavity fill, and at the bottoms of unfilled cavities.

Form: Open perpend.

Maximum spacing: 1200 mm.

Weephole guards: Provide insect barrier.

0342 LIGHT STEEL FRAMING

1 GENERAL

1.1 STANDARDS

General

Design, materials and protection: To AS/NZS 4600 (2018).

Residential and low-rise steel framing: To NASH-1 (2005) (National Association of Steel Housing) and NASH-2 (2014) Standard.

2 EXECUTION

2.1 GENERAL

Frame fabrication

Length: Cut members accurately to length so that they fit firmly against abutting members.

Service holes: If not pre-punched, form holes by drilling or punching, conforming to the requirements of NASH-2 (2014).

Swarf: Immediately remove swarf and other debris from cold-formed steel framing.

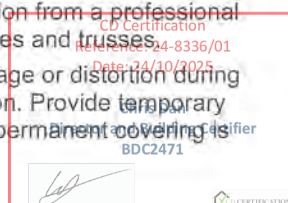
Prefabricated wall frames and trusses

Assembly: Factory assemble wall frames and trusses.

Bracing: Provide details of bracing.

Certification: Obtain certification from a professional engineer for the erected frames and trusses.

Protection: Protect from damage or distortion during storage, transport and erection. Provide temporary protection for members until permanent covering is in place.



Site work

Requirement: On-site welded connections are not permitted.

Unseasoned or CCA treated timber

General: Do not fix in contact with framing without fully painting the timber and/or the steel.

Earthing

Requirement: To AS/NZS 3000 (2018). Provide temporary earthing during erection until the permanent earthing is installed.

Protection

General: Restore coatings that have been damaged by welding or other causes. Thoroughly clean affected areas back to base metal and coat with a zinc rich organic primer.

Metal separation: Install lagging to separate non-ferrous service pipes and accessories from the framing.

Grommets: Provide grommets to isolate piping and wiring from cold-formed steel framing.

Site cut holes: Provide plastic bushes or grommets to site cut holes.

Decks and balconies

Attachment to external walls: To BCA (2022) H1D11.

Vermin barriers

Brick veneer barrier: Close nail 10 mm galvanized steel wire mesh to the underside of the bottom plate of external stud walls, extending across the cavity for building into brickwork.

Anti-ponding boards

Standard: To AS 4200.2 (2017).

Fascia, valley and barge boards

Requirement: Fix fascia, valley gutter boards and barge boards in conformance with the manufacturer's recommendations.

Bracing: Provide details of bracing.

Certification: Obtain certification from a professional engineer for the erected frames.

Protection: Protect from damage or distortion during storage, transport and erection. Provide temporary protection for members until permanent covering is in place.

Timber fasteners

Metal washers: Provide washers to the heads and nuts of all bolts and coach screws.

Connectors: Press connector plates fully into the frame members. Knots not permitted in plate area.

Joints

Requirement: Locate joints only over supports;

- Minimum bearing of bearers: 50 mm.
- Minimum bearing of joists: 30 mm.

Priming

Steel: Before fixing, prime steel which is not galvanized or metallic-coated.

Decks and balconies

Attachment to external walls: To BCA (2022) H1D11.

Vermin barriers

Brick veneer barrier: Close nail 10 mm galvanized steel wire mesh to the underside of the bottom plate of external stud walls, extending across the cavity for building into brickwork.

Damp-proof course

Requirement: Provide damp-proof courses under the bottom plate of stud walls built off slabs or masonry dwarf walls, as documented and as follows:

- External walls (not masonry veneer): Turn up at least 75 mm on the inside and tack. Project 10 mm beyond the external slab edge or dwarf wall and turn down at 45°.
- Walls of bathrooms, shower rooms and laundries: Turn up at least 150 mm on the wet side and tack to studs.

Flashings

Location: Provide flashings to external openings sufficient to prevent the entry of moisture. Form trays at the ends of sill flashings.

Masonry veneer construction: Extend flashing across cavities and build into brickwork.

Anti-ponding boards

Standard: To AS 4200.2 (2017).

Fascia, valley and barge boards

Requirement: Fix fascia, valley gutter boards and barge boards.

0382 LIGHT TIMBER FRAMING

1 GENERAL

1.1 STANDARDS

General

Residential timber framed construction: To AS 1684.2 (2021), AS 1684.3 (2021) or AS 1684.4 (2010), as appropriate.

Nailplated roof trusses: To AS 1720.5 (2015).

2 EXECUTION

2.1 GENERAL

Fabrication

Length: Cut members accurately to length so that they fit firmly against abutting members.

Service holes: Form holes by drilling.

Prefabricated wall frames and trusses

Assembly: Factory assemble wall frames and trusses.

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0383 DECKING, SHEET AND PANEL FLOORING**1 GENERAL****1.1 STANDARDS****General**

Timber flooring and decking: To AS 1684.2 (2021), AS 1684.3 (2021) or AS 1684.4 (2010), as appropriate.

Slip resistance

Classification: To AS 4586 (2013).

2 PRODUCTS**2.1 DECKING****New timber decking**

Standard:

- Preservative-treated softwood to AS 4785.1 (2002) Section 4.
- Hardwood to AS 2796.1 (1999) Section 4.

Composite decking

General: Proprietary composite decking boards, as documented.

2.2 SHEET FLOORING**Plywood**

Standard: To AS/NZS 2269.0 (2012).

Plywood certified formaldehyde emission level to AS/NZS 2269.0 (2012): Class E₁.

Surface grade: CD.

Bond: Type A to AS/NZS 2754.1 (2016).

Durability: Preservative treatment to AS/NZS 1604.1 (2021) Table F.1.

Particleboard

Particleboard: To AS/NZS 1860.1 (2017), Class 1.

Compressed fibre cement sheet

Standard: To AS/NZS 2908.2 (2000).

Category: Minimum 4.

Classification:

- External: Type A.
- Internal: Type B.

Autoclaved aerated concrete (AAC) panels

Standard: To AS 5146.1 (2015).

Accessories: To the manufacturer's recommendations for the AAC panel system.

3 EXECUTION**3.1 PREPARATION****Timber decking on steel joists**

General: Screw fix seasoned battens to the steel joists so that their top surfaces are aligned.

- Batten size: Minimum 35 mm thick.
- Spacing of fasteners: Less than 600 mm.

3.2 FIXING DECKING**Timber decking**

Standard: To AS 1684.2 (2021), AS 1684.3 (2021) or AS 1684.4 (2010) as appropriate.

Installation: Lay in long lengths with the ends of each board firmly butted to the next and firmly in contact with the joists. Stagger the end joints and locate them centrally over joists.

Minimum gap between edges of seasoned boards: 4 mm.

Minimum number of spans across support: 3.

Nailing:

- General: Make sure the boards are in contact with the joists at the time of nailing, particularly where boards are machine nailed. If nails are to be less than 10 mm from ends of boards, predrill nail holes 0 to 1 mm undersize.
- Top nailing: Double nail at each bearing with hot-dip galvanized or stainless steel nails driven flush. Offset nails at intermediate fixings or skew nail 10° in opposite directions.

Sealing: Apply one coat of water repellent preservative and one coat of finish coat to top surface of joists and all surfaces of boards before fixing.

Composite decking

Installation: To manufacturer's recommendations.

3.3 FIXING SHEET FLOORING**Particleboard flooring**

Installation: To AS 1860.2 (2006).

Plywood flooring

Installation: To AS 1684.2 (2021), AS 1684.3 (2021) or AS 1684.4 (2010), as appropriate.

Compressed fibre cement flooring

General: To manufacturer's recommendations.

Installation: Lay the length of the sheets at right angles to the joists. Stagger the end joints and locate centrally over joists. Apply adhesive to edges of sheets and firmly butt join together.

Minimum number of spans across supports: 2.

Fixing: Predrill screw holes with 1 mm clearance over screw diameter and countersink. Fix with corrosion-resistant countersunk screws.

Spacing of fasteners:

- Sheet edge and intermediate: Less than 450 mm.
- Corners and sheet edges: At least 12 mm from sheet edges and 50 mm from corners.

Wet area flooring: Stop screw heads with sealant.

3.4 AAC PANEL FLOORING**Standard**

General: To AS 5146.3 (2018).

Subfloor

Requirement: Conform to AS 5146.3 (2018) Table 3.4 for maximum joist spacing.

Cutting

General: Do not cut panels, except in documented locations.

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Cut edges: Protect exposed reinforcing with anti-corrosion agent to manufacturer's recommendations.

AAC panel installation

Requirement: Install panels to manufacturer's recommendations and as follows:

- Minimum end bearing length: Greater of 60 mm or span/80.
- Minimum edge bearing length: 60 mm.
- Apply construction adhesive between the panels and the joists and screw fix the panels to the joists. Conform to AS 5146.3 (2018) Section 6.
- Progressively apply AAC adhesive to joints between adjacent panels.
- Fit panels snugly together to fully bed adhesive.

Control joints

Requirement: Provide minimum 10 mm wide control joints as follows:

- Spaced at maximum 8 m centres in floors up to 100 mm thick.
- Where AAC panels abut adjacent building elements.

Slip joints

General: Provide slip joints to allow for differential movement as documented.

Sealant

Locations: Install fire-resisting and acoustic sealant as documented and as follows:

- At all control joints.
- At services penetrations.

0411 WATERPROOFING - EXTERNAL AND TANKING

1 GENERAL

1.1 STANDARDS

Below ground waterproofing

Membrane design and installation: To BS 8102 (2022).

External waterproofing

Membrane materials: To AS 4654.1 (2012).

Membrane design and installation: To AS 4654.2 (2012).

2 PRODUCTS

2.1 MEMBRANES AND ACCESSORIES

Membrane systems

Requirement: Proprietary membrane system suitable for the intended external waterproofing.

Tanking system

Requirement: Proprietary membrane system suitable for the intended below ground tanking.

Internal roof outlets

General: Proprietary funnel shaped sump cast into the roof slab, set flush with membrane, with a

removable grating and provision for sealing the membrane into the base of the outlet.

Flashings

Requirement: Flexible waterproof flashings compatible with the waterproof membrane system.

3 EXECUTION

3.1 PREPARATION

Substrates

General: Prepare substrates as follows:

- Clean and remove any deposit or finish that may impair adhesion of membranes.
- Remove excessive projections.
- Fill voids and hollows and cracks.

Falls

General: Verify that falls in substrates are greater than 1:100.

Joints and fillets

Internal corners:

- Liquid applied membranes: Provide 15 x 15 mm 45° fillets.
- Sheet membranes: Provide 40 x 40 mm 45° fillets.

Fillet material: Cement or plastic.

External corners: Round or arris edges.

Control joints: Prepare all substrate joints to suit the membrane system.

Priming

Compatibility: If required, prime the substrates with compatible primers for adhesion of the membrane system.

3.2 INSTALLATION

Ambient conditions

Requirement: Do not install in conditions outside the manufacturer's recommendations.

Protection

Damage: Protect membrane from damage during installation and for the period after installation until the membrane achieves its service characteristics that resist damage.

Drains

General: Prevent moisture from tracking under the membranes at drainage locations.

Overflows: Apply a bond breaker to the perimeter of the overflow outlet at its junction with the surface to which the membrane will be fixed. Turn the membranes into the overflow to prevent moisture from tracking behind the membrane.

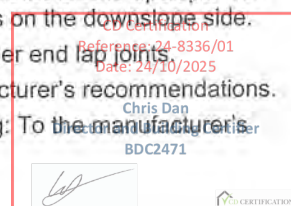
Sheet membrane joints

Orientation of laps: Lap sheets on the upslope side of the roof fall over sheets on the downslope side.

End laps generally: Stagger end lap joints.

Lap sizes: To the manufacturer's recommendations.

Lap formation and sealing: To the manufacturer's recommendations.



Movement and control joints

General: Install membranes to accommodate control joints in the substructure.

Bond breakers: Size to allow the membrane to accommodate movement.

Membrane terminations

Membrane upturns: Provide upturns above the maximum water level expected from the exposure conditions of rainfall intensity and wind, as follows:

- Height: > 150 mm.
- Anchoring: Secure sheet membranes along the top edge.
- Edge protection: Protect edges of the membrane.

Vertical upward terminations: As documented.

Above vertical upward terminations: Waterproof the structure above the termination to prevent moisture entry behind the membrane.

Horizontal terminations: Do not provide. Use vertical terminations.

Membrane penetrations

Vertical penetrations: Provide overflashing fixed to the substrate for vertical penetrations including pipes, ducts and vents.

Membrane at balcony doors and windows

Requirement: Install membrane before fixing door or window frames.

Hobless and flush thresholds: Install membrane before fixing door or window frames. Provide a continuous grated drain abutting the external face of the door or window sill.

Membrane around skylights and hatches

Requirement: Install membranes to upstands prior to the installation of the skylight or hatch.

Curing of liquid membrane systems

General: To the manufacturer's recommendations.

Overlaying finishes on membranes

Compatibility: If a membrane is to be overlaid with another system such as tiles, pavers, ballast, insulation or soil, provide an overlaying system that is compatible with and will not cause damage to the membrane.

Slip sheet: If the topping or bedding mortar is structurally sufficient to not require bonding to the substrate, lay a double slip sheet over the membrane to separate it from the topping or bedding mortar.

Membrane protection boards: If the membrane is overlaid, topped or backfilled against, provide a protection board to protect the membrane from hydrostatic pressure, wear and puncture.

Drainage cell panels: Provide lightweight, high strength modular drainage cell against below ground or subsoil walls.

Filter fabric: Provide an open weave geotextile fabric to drainage cell panels to reduce soil and fines ingress into drainage system.

3.3 COMPLETION**Reinstatement**

Extent: Repair or replace faulty or damaged work. If the work cannot be repaired satisfactorily, replace the whole area affected.

0421 ROOFING**1 PRODUCTS****1.1 COMPONENTS****Fasteners**

Prefinished exposed fasteners: Finish with an oven baked polymer coating to match the roofing material.

Insulation spacers

Description: Proprietary spacer system to prevent excessive compression of insulation between roof sheeting and framing.

1.2 MATERIALS**Sheet metal roofing**

Standard: To AS 1562.1 (2018).

Corrosion protection: To BCA (2022) H1D7(2).

Roof tiling

Standard: To AS 2049 (2002).

Battens: To AS 2050 (2018).

Ancillaries: Provide accessories compatible with the tiles, necessary to complete the tiling.

Plastic sheet roofing

Unplasticised polyvinyl chloride (PVC-U) sheet: To AS 4256.2 (2006).

Glass fibre reinforced polyester (GRP) sheet: To AS 4256.3 (2006).

Polycarbonate: To AS 4256.5 (2006).

Skylights

Standard: To AS 4285 (2019).

Skylights (roof lights) in bushfire-prone areas: To AS 3959 (2018).

Roof windows

Standard: To AS 4285 (2019).

Description: A proprietary window system designed for non-vertical installation in roofs pitched greater than 15° and less than 90°.

Roof windows (roof lights) in bushfire-prone areas: To AS 3959 (2018).

Roof ventilators

Description: A proprietary roof ventilator system, including framing, fixing, trim, seals, accessories and flashings.

Finish: Match adjacent roofing.

Roof plumbing goods

Standard: To AS/NZS 3500.3 (2021).

Flashings and cappings

Standard: To AS/NZS 2904 (1995).

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2 EXECUTION

2.1 GENERAL

Installation

General: To the manufacturer's recommendations.

Sheet metal roofing: To AS 1562.1 (2018).

Roof tiling: To AS 2050 (2018).

Plastic sheet roofing: To AS 1562.3 (2006).

Ventilation of roof space

General: To BCA (2022) H4D9.

2.2 ROOF PLUMBING

Jointing sheet metal rainwater goods

Sealing: Seal fasteners and mechanically fastened joints. Fill the holes of blind rivets with silicone sealant.

Flashings

Upstands: Flash projections above or through the roof with two part flashings consisting of a base flashing and a cover flashing, with at least 100 mm vertical overlap. Provide for independent movement between the roof and the projection.

Wall abutments: If a roof abuts a wall, provide overflashing as follows:

- In masonry, planked cladding or concrete: Step in courses to the roof slope. Interleave with damp-proof course, if any.
- Raking in masonry: Build into the full width of the outer leaf. Turn up within cavity, sloping inward across the cavity and fixed to or built in to the inner leaf at least 75 mm above.

Gutters

Minimum slope of eaves gutters: 1:200.

Minimum width overall of valley gutters: 400 mm.

Eaves gutter overflow measures: To BCA (2022) H2D6.

Downpipes

General: Prefabricate downpipes to the required section and shape where possible. Connect heads to gutter outlets and, if applicable, connect feet to rainwater drains.

Downpipe support: Provide supports and fixings for downpipes.

0431 CLADDING

1 PRODUCTS

1.1 MATERIALS

Autoclaved aerated concrete (AAC) panels

Requirement: Proprietary AAC panels.

Standard: To AS 5146.1 (2015).

Joint adhesive: Proprietary adhesive to manufacturer's recommendations.

Control joints: At all external and internal corners, adjacent to all openings and at maximum 6 m centres.

Fibre cement (FC) planks

Requirement: Proprietary single faced fibre cement building planks.

Standard: To AS/NZS 2908.2 (2000). Type A Category 3.

Plank thickness: 7.5 mm.

Joints and edges: PVC-U extrusion.

Corners: Preformed metal joining pieces.

Fibre cement (FC) sheets

Standard: To AS/NZS 2908.2 (2000).

Cladding, eaves and soffit linings: Type A Category 3.

Compressed cladding: Type A Category 5.

Sheet cladding: A proprietary system of single faced fibre cement sheets:

- Arrangement: Set out in even panels with joints coinciding with framing.
 - Sheet thickness: 6 mm.
 - Joints, corners and edges: PVC-U extrusion.
- Eaves lining: Single faced fibre cement:
- Sheet thickness: 4.5 mm.
 - Joints: PVC-U extrusion.

Hardboard planks

Requirement: Proprietary wet process fibreboard planks.

Standard: To AS/NZS 1859.4 (2018).

Classification: Exterior.

Plank thickness: 9.5 mm.

Joints and edges: PVC-U extrusions.

External corners: Preformed metal joining pieces.

Internal corners: Scribed.

Plastic sheets

Requirement: Proprietary plastic sheets.

Unplasticised polyvinyl chloride (PVC-U) sheet: To AS 4256.4 (2006).

Glass fibre reinforced polyester (GRP) sheet: To AS 4256.3 (2006).

Polycarbonate: To AS 4256.5 (2006).

Profiled sheet metal

Standard: To AS 1562.1 (2018).

1.2 COMPONENTS

Flashing material

Standard: To AS/NZS 2904 (1995).

2 EXECUTION

2.1 GENERAL

Cladding

Installation: To the manufacturer's recommendations.

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0451 WINDOWS AND GLAZED DOORS**1 GENERAL****1.1 STANDARDS****General**

Selection and installation: To AS 2047 (2014).

Glazing

Glass type and thickness: To AS 1288 (2021), if no glass type or thickness is nominated.

Quality requirements for cut-to-size and processed glass: To AS/NZS 4667 (2000).

2 PRODUCTS**2.1 GENERAL****Glass**

Safety glass: To AS 2208 (2023).

Aluminium frame finishes

Powder coating: To AS 3715 (2002).

Anodising: To AS 1231 (2000):

- Thickness:
 - . Internal: 15 µm.
 - . External: 20 µm.

Flashings

Standard: To AS/NZS 2904 (1995).

Window labelling and certification

Requirement: To AS 2047 (2014) Section 8.

Protection of openable windows

Fall prevention: To BCA (2022) H5D3.

Testing: To AS 5203 (2016).

2.2 COMPONENTS**Insect screens**

Aluminium framed screens:

- Aluminium extruded or folded box frame sections with mesh fixing channel, mitred, staked and screwed at corners. If necessary to adapt to window opening gear, provide an extended frame section.
- Mesh: Bead the mesh into the frame channel with a continuous resilient gasket, so that the mesh is taut and without distortion.

Bushfire screens and seals

Protection: Protect glazed windows and doors from the ingress of embers.

Standard: To AS 3959 (2018).

Security window grilles

Standard: To AS 5039.1 (2023).

Installation: To AS 5040 (2003).

2.3 HARDWARE**Hardware documented generically**

General: Provide hardware of sufficient strength and quality to perform its function, appropriate to the intended conditions of use, compatible with

associated hardware, and fabricated with fixed parts firmly joined.

3 EXECUTION**3.1 INSTALLATION****Preglazing**

Window assemblies and glazed doors: Supply inclusive of glazing, shop preglazed.

Weatherproofing

Flashings and weatherings: Install flashings, weather bars, threshold plates, drips, storm moulds, joint sealant and pointing to prevent water penetrating the building between the window frame and the building structure under prevailing service conditions, including normal structural movement of the building.

Fixing

Packing: Pack behind fixing points with durable full width packing.

Prepared masonry openings: If fixing of timber windows to prepared anchorages needs fastening from the frame face, sink the fastener heads below the surface and fill the depression flush with a material compatible with the surface finish.

Trim

General: Provide mouldings, architraves, reveal linings, and other internal trim using materials and finishes matching the window frames. Install to make neat and clean junctions between frames and the adjoining building surfaces.

0453 DOORS AND ACCESS PANELS**1 PRODUCTS****1.1 FRAMES****Aluminium frames**

Construction: Assembled from aluminium sections, including accessories such as buffers, pile strips, strike plates, fixing ties or brackets and cavity flashing, with provision for fixing documented hardware and seals.

Timber frames

Hardwood: To AS 2796.1 (1999).

- Grade: Select.

Softwood: To AS 4785.1 (2002).

- Grade: Select.

Joints:

- Morticed head and through tenons.

- Trenched head:

- . Bare faced tenons on jambs.
- . Full let-in jambs.

Construction: Assembled from timber sections, with provision for fixing documented hardware including rebates for door seals, if documented.

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1.2 DOORS

General

Doors: Proprietary products manufactured for interior or exterior applications and for the finish required.

Flush panel doors

General: Provide flush panel doors of balanced construction, as documented.

Tolerances

Standard: To AS 2688 (2017) clauses 4.1 and 5.3.

Security screen doors

Standard: To AS 5039.1 (2023).

Bushfire screens and seals

Protection: Protect glazed windows and doors from the ingress of embers.

Standard: To AS 3959 (2018).

1.3 SLIDING INTERNAL DOORS

Face mounted

General: Provide overhead track supports and head and jamb linings appropriate to the arrangement of the door, and removable pelmets at the head to allow access to the wheel carriages for adjustment.

Wheel carriages: Fully adjustable precision ball race type providing smooth, quiet operation.

Cavity sliding

Door assemblies: Proprietary product comprising steel and timber frame construction with rigid steel top, base and rear supporting members and incorporating the overhead door track, ball race type wheel carriages, guides, stops, split jamb linings and removable pelmet.

1.4 ANCILLARY MATERIALS

Flashings

Standard: To AS/NZS 2904 (1995).

2 EXECUTION

2.1 GENERAL

Security screen doors

Installation: To AS 5040 (2003).

Ceiling access

General: Trim an opening and provide a loose access panel of minimum size 600 x 400 mm.

Under floor access

Requirements: Provide a frame and a door, minimum size 620 mm wide x 600 mm high, complete with padbolt.

Priming

General: Prime timber door leaves on top and bottom edges before installation.

2.2 FRAMES

Timber frames

Building into masonry: Screw galvanized steel brackets twice to jambs and build in.

Fixing to masonry openings: Use proprietary expansion anchors and screw twice through jambs at each fixing.

Fixing to stud frame openings: Back screw twice to jambs at each fixing.

Heads of fasteners: Conceal if possible, otherwise sink the head below the surface and fill the depression flush with a material compatible with the surface finish.

Finishing

Trim: Provide mouldings, architraves, reveal linings, and other internal trim using materials and finishes matching the door frames to make neat and clean junctions between the frame and the adjoining building surfaces.

Weatherproofing

Flashings and weatherings: Install flashings, weather bars, threshold plates, drips, storm moulds, caulking and pointing to prevent water from penetrating the building between the door frame and the building structure under the prevailing service conditions, including normal structural movement of the building.

0454 OVERHEAD DOORS

1 GENERAL

1.1 STANDARD

General

Garage doors: To AS/NZS 4505 (2012).

0455 DOOR HARDWARE

1 PRODUCTS

1.1 COMPONENTS

Hinges

Requirement: Provide 3 hinges for external doors and door leaves over 2040 mm in height and 600 mm in width. Conform to the **Hinges table**.

Hinges table

Size of door (mm x mm)	Number of hinges (per door leaf)	Size of hinges (steel)
2040 x 920	3	100 x 75 x 2.5 mm
2040 x 1020	4	100 x 100 x 2.5 mm
2400 x 1020	4	100 x 100 x 2.5 mm

Locksets

External doors: Push-button key and knob set and a double-cylinder dead bolt to each door.

Internal doors:

- Generally: Passage sets.
- Bathrooms, showers and toilets: Privacy sets.
- Sliding patio doors and windows: Keylockable surface mounted bolts.

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Keying

Requirement: Key doors (excluding garage doors) alike and key windows alike.

2 EXECUTION**2.1 INSTALLATION****Supply**

Delivery: Deliver door hardware items, ready for installation, in individual complete sets for each door, as follows:

- Clearly labelled to show the intended location.
- In a separate dust and moisture proof package.
- Including the necessary templates, accessories, fixings and fixing instructions.

Mounting height

Door lockset mounting heights: 1000 mm above finished floor to centreline of spindle.

Locks

Cylinders: Fix vertically and with consistent key alignment.

Door stops

Fixing: Fix on the floor, skirting or wall, as appropriate, to prevent the door or door furniture striking the wall or other surface.

0467 GLASS COMPONENTS**1 GENERAL****1.1 SUBMISSIONS****Certification**

Barrier design: Submit a professional engineer's certificate confirming conformance with AS/NZS 1170.1 (2002) clause 3.6, AS/NZS 1170.2 (2021) and AS 1288 (2021) Section 7.

Sealant compatibility: Submit statements from all parties to the installation certifying the compatibility of sealants and glazing systems to all substrates.

2 PRODUCTS**2.1 MIRRORS****Reflective surface**

Type: Silver layer deposited on the glass or glazing plastic.

Protective coatings: Copper free coating, at least 5 µm thick, and 2 coats of mirror backing and edge sealing paint having a total dry film thickness of at least 50 µm.

Safety glass mirrors

Type: Grade A safety glass to AS 1288 (2021).

Safety compliance: To AS 2208 (2023).

2.2 GLAZED SHOWER SCREENS**General**

Type: Proprietary system comprising either frameless Grade A safety glass, or frames of

extruded aluminium, stainless steel, or PVC-U, assembled around Grade A safety glass to form fixed panels and sliding, hinged or pivoted doors.

Glass: To AS 1288 (2021) clause 5.8 and Appendix D.

2.3 GLASS BARRIERS**Glass barrier systems**

Requirement: To AS 1288 (2021) Section 7 and as documented.

Glass: Grade A safety glass.

0471 INSULATION AND PLIABLE MEMBRANES**1 GENERAL****1.1 INTERPRETATION****Definitions**

General: For the purposes of this worksection the following definition applies:

- Pliable building membrane: To AS 4200.1 (2017) and equivalent to sarking-type materials as defined in the NCC.

2 PRODUCTS**2.1 MATERIALS****Acoustic insulation**

Bulk insulation:

- Mineral fibre blankets and batts: Glass wool or rock wool bonded with thermosetting resin.
- Polyester blankets and batts: Thermally bonded polyester fibres.

Thermal insulation

General: To AS/NZS 4859.1 (2018).

Pliable building membrane

Standard: To AS 4200.1 (2017) and BCA (2022) H6D2(1)(b)(i).

3 EXECUTION**3.1 GENERAL****Acoustic insulation**

General: Firmly butt together with no gaps except as follows:

- Access openings and vents: Do not obstruct.
- Light fittings: To AS/NZS 3000 (2018) clause 4.5.
- Electrical cables: To AS 3999 (2015) clause 2.6.

Thermal insulation

Standard: To AS 3999 (2015) and BCA (2022) H6D2(1)(b)(i).

Pliable building membrane

Standard: To AS 4200.2 (2017) and BCA (2022) H6D2(1)(b)(i).

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3.2 FLOORS

Under suspended framed floors

Fibre batts: Fit tightly between framing members. If other support is not provided, staple nylon twine to the framing and stretch tight.

Below concrete slab on ground

Rigid cellular insulation boards:

- Laying pattern: Stretcher bond, with edges tightly butted.
- Damp-proof membrane: Lay over insulation.

3.3 WALLS

Framed walls

Fibre batts: Friction fit between framing members. If other support is not provided, staple nylon twine to the framing and stretch tight.

Thermal break strips: Provide to steel framing with lightweight external cladding:

- Screw fixing: Button head screws at 1 m centres.
- Adhesive fixing: Wallboard adhesive walnuts at 1 m centres.

Vapour permeable (breathable) membrane

Requirement: Provide a vapour permeable membrane behind external facing material that does not provide permanent weatherproofing or that may be subject to condensation forming on the internal face, including the following:

- Boards or planks fixed vertically or diagonally.
- Boards or planks fixed in exposed locations if wind driven rain can penetrate the joints.
- Unpainted or unsealed cladding.
- Masonry veneer.

Installation: Run the vapour permeable membrane horizontally on the outer face of external wall framing, over the flashing, from the bottom plate up. Pull taut over the framing and fix to framing members. Seal across the wall cavity at the top.

Horizontal laps: At least 150 mm wide, lapped to make sure water is shed to the outer face of the membrane.

3.4 CEILINGS

Framed ceilings

Fibre batts: Fit tightly between framing members.

3.5 ROOFS

Metal roofs

Fibre batts: Fit tightly between framing members.

Fibre blanket for sound insulation: Install over the roof framing, reflective thermal insulation (if any), and mesh support, so that the blanket is in continuous contact with the underside of the metal roofing sheets.

Combined fibre blanket and reflective insulation: Lay facing reflective insulation face downwards over safety mesh.

Thermal break strips: Provide to steel framing supporting sheet metal roofing.

Pliable building membranes

Vapour barrier: Lay over the roof framing with sufficient sag to allow the bulk insulation to achieve

its full thickness. Overlap all edges 150 mm and seal all joints with pressure sensitive adhesive tape. Water control (sarking) membrane: Provide sarking under tile and shingle roofing.

0511 LINING

1 GENERAL

1.1 STANDARDS

Plasterboard

Standard: To AS/NZS 2588 (2018).

Fibre cement

Standard: To AS/NZS 2908.2 (2000).

Wall and ceiling linings: Type B, Category 2.

Minimum thickness: 4.5 mm.

2 EXECUTION

2.1 PLASTERBOARD

Installation

Gypsum plasterboard: To AS/NZS 2589 (2017).

Supports

General: Install timber battens or proprietary cold-formed galvanized steel furring channels as follows:

- If framing member spacing exceeds the recommended spacing.
- If direct fixing of the plasterboard is not possible due to the arrangement or alignment of the framing or substrate.
- If the lining is the substrate for tiled finishes.
- If required to support fixtures.

Joints

Flush joints: Provide recessed edge sheets and finish flush using perforated paper reinforcing tape.

External corner joints: Make joints over metallic-coated steel corner beads.

Control joints: Provide purpose-made metallic-coated control joint beads at not more than 12 m centres in plasterboard linings or 7.2 m centres in fibre cement lining in walls and ceilings and to coincide with structural control joints.

Wet areas: Install additional supports, flashings, trim and sealants as required.

Joints in tiled areas: Do not apply a topping coat after bedding perforated paper tape in bedding compound.

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0551 JOINERY

1 PRODUCTS

1.1 MATERIALS

Certification

Timber based products: Label panels under the authority of a recognised certification scheme applicable to the product. Locate the brand on faces or edges that will be concealed in the works.

Joinery timber

Hardwood for trim: To AS 2796.1 (1999).

Hardwood for furniture: To AS 2796.3 (1999).

Seasoned cypress pine: To AS 1810 (1995).

Softwood for trim: To AS 4785.1 (2002).

Softwood for furniture: To AS 4785.3 (2002).

Finished sizes for milled timber: Not less than the documented dimension unless qualified by a term such as nominal, out of or ex, to which industry standards for finished sizes apply.

Plywood

Interior use generally: To AS/NZS 2270 (2006).

Interior use, exposed to moisture: To AS/NZS 2271 (2004).

Plywood formaldehyde emission class to AS/NZS 2270 (2006) and AS/NZS 2271 (2004): E1.

Wet process fibreboard (including hardboard)

Standard: To AS/NZS 1859.4 (2018).

Particleboard

Standard: To AS 1859.1 (2017).

Particleboard formaldehyde emission class to AS 1859.1 (2017): E1.

Dry process fibreboard (including medium density fibreboard)

Standard: To AS/NZS 1859.2 (2017).

Dry process fibreboard formaldehyde emission class to AS/NZS 1859.2 (2017): E1.

Decorative overlaid wood panels

Standard: To AS/NZS 1859.3 (2017).

High pressure decorative laminate (HPDL) sheets

Standard: To AS/NZS 2924.1 (2024).

Minimum thickness: Conform to the following:

- For horizontal surfaces fixed to a continuous substrate: 1.2 mm.
- For vertical surfaces fixed to a continuous substrate: 0.8 mm.
- For post formed laminate fixed to a continuous substrate: 0.8 mm.
- For vertical surfaces fixed intermittently, including to studs: 3.0 mm.
- For edge strips: 0.4 mm.

1.2 JOINERY ASSEMBLIES

General

Standard: To AS 4386 (2018).

1.3 WARDROBE, CUPBOARD AND DRAWER UNITS

Plinths, carcasses, drawer fronts, shelves and doors

Material: Select from the following:

- Overlaid high moisture resistant particleboard.
- Overlaid high moisture resistant medium density fibreboard.

Thickness: 16 mm.

Adjustable shelves: Support on proprietary pins in holes bored at equal spacing of 32 mm centres vertically.

Fasteners: Conceal with finish.

Drawer fronts: Rout for drawer bottoms.

Drawer and door hardware

Hinge types: Concealed metal hinges with the following features:

- Nickel-plated.
- Adjustable for height, side and depth location of door.
- Integrated soft and self-closing action.
- Hold-open function.

Slides: Metal runners and plastic rollers with the following features:

- 30 kg loading capacity.
- Integrated soft and self-closing action.
- Closure retention.
- White thermoset powder coating or nickel plated.

Hardware

Requirement: Provide details of handles and locks.

1.4 WORKING SURFACES

Laminated benchtops

Material: High moisture-resistant particleboard or medium density fibreboard.

Finish: High pressure decorative laminate sheet.

Exposed edges: Conform to one of the following:

- Extend laminate over shaped nosing, finishing more than 50 mm back on underside. Splay outside corners at 45°.
- Provide solid timber profiled edge.

Minimum thickness: 32 mm.

Balance underside: Extend laminate to the undersides of benchtops if subject to excessive moisture from equipment such as dishwashers.

Stone benchtops

General: Provide stone benchtops within the visual range of the approved samples.

Material: Natural stone.

Splashbacks

Glass: 6 mm toughened colourback glass to AS 2208 (2023).

Stainless steel: Type 304, No. 4 finish.

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2 EXECUTION

2.1 JOINERY

General

Joints: Provide materials in single lengths where possible. If joints are necessary, make them over supports.

Framing: Frame and trim where necessary for openings, including those required by other trades.

Fasteners

Installation: Secure plinths and carcasses to floors, walls, or both at not more than 600 mm centres.

Visibility: Do not provide visible fasteners except in the following locations:

- Inside cupboards and drawer units.
- Inside open units, in which case provide proprietary caps to conceal fixings.

Adhesives

General: Provide adhesives to transmit the loads imposed and for the rigidity of the assembly, without causing discolouration of finished surfaces.

Finishing

Junctions with structure: Scribe plinths, benchtops, splashbacks, ends of cupboards, kickboards and returns to follow the line of structure.

Edge strips: Finish exposed edges of sheets with edge strips that match sheet faces.

Benchtops

Stone benchtops: Repair mud veins or lines of separation that are integral to the selected pattern with resin fillers and back lining.

Installation: Fix to carcass at least twice per 600 mm length of benchtop.

Joint sealing: Fill joints with sealant matching the finish colour and clamp with proprietary mechanical connectors.

Edge sealing: Seal to walls and carcasses with a sealant, that matches the finish colour.

Glass splashbacks

Adhesive: Fix with non-acidic silicone adhesive. Apply at the rate recommended by the manufacturer.

Installation: Clean the back of the glass panel and apply walnuts of adhesive together with double-sided adhesive tape for temporary support, and affix directly to the substrate.

2.2 TRIM

General

Requirement: Provide timber or medium density fibreboard trim, such as architraves, beads, mouldings, stops, and skirtings, to make neat junctions to openings and between components, finishes and adjacent surfaces.

Proprietary items: Provide complete with installation accessories.

Fixing

Masonry walls: Screw with wall plugs at 600 mm centres maximum.

Stud walls: Nail to plate or framing at 600 mm centres maximum.

0572 MISCELLANEOUS FIXTURES AND APPLIANCES

1 PRODUCTS

1.1 COMPONENTS

General

Requirement: Provide kitchen and laundry appliances, and bathroom and other fixtures as documented.

1.2 PROPRIETARY STAIR SYSTEM

General

Materials, design and construction: To BCA (2022) H5D2.

Balustrades: To BCA (2022) H5D3.

Requirement: Provide details of stairs, including proposed finishes, before fabrication and/or construction.

0611 RENDERING AND PLASTERING

1 PRODUCTS

1.1 MATERIALS AND COMPONENTS

Aggregates

Sand: Fine, sharp, well-graded sand with a clay content between 1% and 5% and free from efflorescing salts.

Mixes

General: Select a mix proportion to suit the conditions of application.

Measurement: Measure binders and sand by volume using buckets or boxes. Do not allow sand to bulk by absorption of water.

Plaster mixing: Machine mix for 3 to 6 minutes.

Strength of successive coats: Make sure successive coats are no richer in binder than the coat to which they are applied.

Cement

Standard: To AS 3972 (2010).

Type: GP.

Lime

Limes for building: To AS 1672.1 (1997).

Lath

General: Provide a proprietary product for use with plaster.

Internal: Expanded metal to AS 1397 (2021) coating class Z350, minimum.

External: Stainless steel or PVC-U.

Beads

General: Provide a proprietary product for use with plaster.

Internal: Metallic-coated sheet to AS 150, minimum.

External: Stainless steel or PVC-U.

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Mix proportion table - Cement render, by volume

Mix type	Substrate		Upper and lower limits of proportions by volume		
			Cement	Lime	Sand
Single or multi-coat systems with integral finishing treatments Base coats in multi-coat systems with cement or gypsum finishes	CRS	Dense and smooth concrete and masonry	1	0	3
			1	0.5	4.5
	CRM	Regular clay or concrete masonry	1	0.5	4.5
			1	1	6
	CRW	Lightweight concrete masonry and other weak substrates	1	1	6
			1	2	9
Second coat - internal	CRF	Cement render base coats	1	1	6
			1	2	9
Second coat - external	CRF	Cement render base coats	1	1	5
			1	2	6

Water

General: Clean and free from any deleterious matter.

2 EXECUTION

2.1 PREPARATION

Substrates

General: Prepare substrates as follows:

- Clean and free from any deposit or finish that may impair adhesion of render or plaster.
- If framed or discontinuous, support members in full lengths without splicing.
- If solid or continuous, remove excessive projections and fill voids and hollows with render or plaster stronger than the first coat and not weaker than the substrate.

Absorbent substrates: If suction is excessive, control it by dampening but avoid over-wetting. Do not render or plaster substrates showing surface moisture.

Dense concrete: If not sufficiently rough to provide a mechanical key, roughen to remove 2 mm of the laitance and expose the aggregate before applying a bonding treatment.

Painted surfaces: Remove paint and hack the surface at close intervals.

Untrue substrates: If the substrate is not sufficiently true for conformity with the thickness limits for the render or plaster system, or has excessively uneven suction resulting from variations in the composition of the substrate, apply additional coats without exceeding the thickness limits for the substrate or system.

Beads

Location: Fix beads as follows:

- Angle beads: At all external corners.
- Drip beads: At all lower terminations of external render.
- Beads for control of movement: At all control joints.
- Stop beads: At all terminations of render or plaster and junctions with other materials and render or plaster systems.

Joints in beads: Provide dowels to maintain alignment.

Mechanical fixing to substrate: ≤ 300 mm centres.

Bonding treatment

General: If bonding treatment is required to the substrate, throw a wet mix onto the substrate. Mix proportions to the following:

- Cement render (cement:sand): 1:2.
- Gypsum plaster (gypsum:sand): 1:2.

Curing: Cure as follows:

- Keep continuously moist for 5 days or more and allow to dry before applying render or plaster coats.
- Protect cement render from direct sun and drying winds for at least 16 hours after application.

Thickness: ≥ 3 and < 6 mm.

Embedded items

General: If there are water pipes and other embedded items, sheath them to allow for thermal movement.

Lath

Location: Provide lath as follows:

- Chases: If chases or recesses are 50 mm wide or greater, fix lath extending 75 mm or more beyond each side of the chase or recess.
- Masonry and concrete substrates: If mechanical key cannot be attained by scabbling and bonding, fix lath.
- Metal and other non-porous backgrounds: Fix lath to provide a key.

Weepholes

Requirement: Keep opening free of render. Maintain consistent opening size.

2.2 APPLICATION

Control joints

General: Provide joints in the finish to coincide with control joints in the substrate. Make sure that the joint in the substrate is not bridged during rendering or plastering.

Size:

- Depth: Extend the joint right through the render or plaster and reinforcement to the substrate.
- Width: 3 mm, or the same width as the substrate joint, whichever is greater.

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Damp-proof courses: Do not continue render or plaster across damp-proof courses.

Rendering or plastering on lath: Provide control joints to divide the rendering or plastering area into rectangular panels 10 m² or less.

V-joints: Provide V-joints, cut right through the render or plaster to the substrate, at the following locations:

- Abutments with metal door frames.
- Abutments with other finishes.
- Junctions between different substrates.

Tolerances

General: Finish plane surfaces within a tolerance of 6 mm in 2400 mm, determined using a 2400 mm straightedge placed anywhere in any direction. Finish corners, angles, edges and curved surfaces within equivalent tolerances.

Render and plaster thickness table

Substrate	Render and plaster, total thickness of single or multi-coat work (mm)
Brickwork and blockwork	12 min
Lightweight concrete and blocks	12 min
Metal lath measured from the face of the lath.	18 min

Curing

General: Prevent premature or uneven drying out and protect from the sun and wind.

Keeping moist: If a proprietary curing agent is not used, keep the render or plaster moist as follows:

- Base coats and single coat systems: Keep continuously moist for 2 days and allow to dry for 5 days before applying further render or plaster coats.
- Finish coats: Keep continuously moist for 2 days.

0621 WATERPROOFING - WET AREAS

1 GENERAL

1.1 STANDARDS

Waterproofing wet areas

Standard: To AS 3740 (2021).

2 PRODUCTS

2.1 MEMBRANES AND ACCESSORIES

Membranes

Standard: To AS/NZS 4858 (2004).

Membrane system

Requirement: Proprietary membrane system suitable for the intended internal wet area waterproofing.

Shower tray

General: Purpose-made jointless shower tray, with wall upstands at least 50 mm higher than the hob upstands. Set hob on the inside of the tray upstands.

3 EXECUTION

3.1 PREPARATION

Substrates

General: Prepare substrates as follows:

- Clean and remove any deposit or finish that may impair adhesion of membranes.
- If walls or floors are framed or discontinuous, make sure support members in full lengths without splicing.
- If floors are solid or continuous remove excessive projections and fill voids, hollows and cracks.

Concrete substrates: Cure for more than 28 days.

Bond breakers

Requirement: After the priming of surfaces, provide bond breakers at all wall/floor, hob/wall junctions and at control joints where the membrane is bonded to the substrate.

3.2 INSTALLATION

Ambient conditions

Requirement: Do not install in conditions outside the manufacturer's recommendations.

Protection

Damage: Protect membrane from damage during installation and for the period after installation until the membrane achieves its service characteristics that resist damage and an overlaying finish is installed.

Extent of waterproofing

Waterproof or water resistant surfaces: To the requirements of BCA (2022) H4D2.

Drainage connections

Floor wastes: Turn membrane down 50 mm minimum into the floor waste leak control flanges and adhere to form a waterproof connection.

Vertical membrane terminations

Upstands:

- Shower areas with hobs and step-downs: Minimum 150 mm above the highest finished tile level of the shower area or 25 mm above the maximum retained water level, whichever is the greater.
- Shower areas without hobs: Minimum 150 mm above the highest finished tile level of the floor within the shower area.

Anchoring: Secure sheet membranes along the top edge.

Edge protection: Protect edges of the membrane.

Waterproofing above terminations: Waterproof the structure above the termination to prevent moisture entry behind the membrane using tiler's angle and finish overlaps.

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Door jambs and architraves

Requirement: If the bottom of doorjambs and architraves do not finish above the floor tiling, waterproof their surfaces below tile level to provide a continuous seal between the perimeter flashing to the wall/floor junction and the water stop angle.

Showers with hobs

Masonry or concrete hob: Extend membrane over the hob and into the room at least 50 mm.

Metal hob: Provide metal angle with height at least 15 mm above the finished floor level of the floor outside the shower. Terminate the membrane within 5 mm from the top of the angle. Seal the gap between the shower screen and the angle.

Unenclosed showers

Requirement: Extend membrane at least 1500 mm into the room from the shower rose outlet on the walls and floor.

Curing of liquid membrane systems

General: To the manufacturer's recommendations.

Curing: Allow membrane to fully cure before tiling.

Overlaying finishes on membranes

Requirement: Protect waterproof membranes with compatible water-resistant surface materials that do not cause damage to the membrane.

Bonded or partially bonded membrane: If the topping or bedding mortar is to be bonded to the membrane, provide sufficient control joints in the topping or bedding mortar to reduce the movement over the membrane.

3.3 COMPLETION

Protection

General: Keep traffic off membrane surfaces until bonding has set or for 24 hours after laying, whichever period is the longer.

Reinstatement

Extent: Repair or replace faulty or damaged work. If the work cannot be repaired satisfactorily, replace the whole area affected.

0631 CERAMIC TILING

1 GENERAL

1.1 STANDARDS

Tiling

General: Conform to the recommendations of AS 3958 (2023).

Slip resistance

Stair treads, ramps and landings: Classification to AS 4586 (2013).

2 PRODUCTS

2.1 MATERIALS

Adhesives

Standard: To AS ISO 13007.1 (2020).

PVA (polyvinyl acetate) based adhesives: Do not use in wet areas or externally.

Mortar materials

Cement type to AS 3972 (2010): GP.

Sand: Fine aggregate with a low clay content selected for grading, sharp and free from efflorescing salts.

Bedding mortar

Mix proportion (cement:sand), by volume: Select proportions from the range 1:3 to 1:4 for satisfactory adhesion. Provide minimum water.

Water

General: Clean and free from any deleterious matter.

Grout

Cement-based proprietary grout: Mix with water. Fine sand may be added as a filler in wider joints. Terracotta tiles: Use proprietary polymer modified grout.

General purpose cement based grout: Mix with fine sand. Provide minimum water consistent with workability.

Pigments for coloured grout: Colourfast fillers compatible with the grout material. For cement-based grouts, provide lime-proof natural or synthetic metallic oxides compatible with cement.

3 EXECUTION

3.1 APPLICATION

Preparation of substrate

General: Conform to the following:

- Clean off any deposit or finish that may impair adhesion or location of tiles.
- Compatible with all components of floor system.

Floor finish dividers

General: Finish tiled floors at junctions with differing floor finishes with a corrosion-resistant metal dividing strip fixed to the substrate using mechanical fixings, with top edge flush with the finished floor. If changes of floor finish occur at doorways, make the junction directly below the closed door.

Bath ventilation

General: If required, ventilate the space below fully enclosed baths with at least 2 vermin proofed ventilating tiles.

Falls and levels

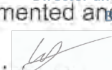
Requirement: Grade floor tiling to even and correct falls to floor wastes and elsewhere as required. Make level junctions with walls. If falls are not required, lay level.

Fall: Conform to falls as documented and the following:

- Falls to floor wastes: 1:80 minimum.

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- Continuous fall of floor plane to floor waste: 1:50 maximum.

Change of finish: Maintain finished floor level across changes of floor finish including carpet.

Sealant joints

General: Provide joints filled with anti-fungal modified silicone sealant and finished flush with the tile surface where tiling joins sanitary fixtures and at internal corners of walls.

0651 RESILIENT FINISHES

1 GENERAL

1.1 STANDARDS

General

Installation: To AS 1884 (2021).

2 PRODUCTS

2.1 MATERIALS

Wet process fibreboard (hardboard) underlay

Standard: To AS/NZS 1859.4 (2018).

Classification: General purpose medium board, manufactured specifically as flooring underlay.

Thickness: 5.5 mm.

3 EXECUTION

3.1 PREPARATION

Substrates

General: To AS 1884 (2021) Section 3.

Concrete substrates

Substrate rectification: Conform to the following:

- Surface treatments: Mechanically remove any incompatible surface treatments, including the following:
 - Sealers and hardeners.
 - Curing compounds.
 - Waterproofing additives.
 - Surface coatings and contamination.
- Surface quality: Remove projections and fill voids and hollows with a self-smoothing self-levelling compound compatible with the adhesive. Allow filling or levelling compound to dry to manufacturer's recommendations.

Cleaning: Remove loose materials or dust.

Timber, plywood and particleboard substrates

Substrate rectification: Remove projections. If conformance to a planeness tolerance of 4 mm in 2 m determined using a 2 m straightedge cannot be achieved, provide an underlay in brick pattern with joints avoiding substrate joints.

Cleaning: Remove loose materials or dust.

3.2 INSTALLATION

General

Fixtures: Remove door stops and other fixtures, and refix in positions undamaged on completion of the installation.

Sheet set-out

General: Set out sheets to give the minimum number of joints. Position joints away from areas of high stress. Run sheet joints parallel with the long sides of floor areas, vertically on non-horizontal surfaces.

Tile set-out

General: Set out tiles from centre of room. If possible, cut tiles at margins only to give a cut dimension of at least 100 mm x full tile width. Match edges and align patterns. Arrange the cut tiles so that any variation in appearance is minimised.

Plank set-out

General: Set out planks from the centre of the room. Align patterns, texture and grain in one direction.

Joints

Non-welded: Butt edges together to form tight neat joints showing no visible open seams.

Chemical welding: Apply seaming compound 100 mm wide to the substrate centrally under the seam. Roll the seam until the compound is forced up into the joint. Clean off flush using a damp cloth.

Junctions

General: Scribe neatly up to returns, edges, fixtures and fittings. Finish flush with adjoining surfaces.

3.3 COMPLETION

Protection

Finished floor surface: Keep traffic off floors for a minimum of 24 hours after laying or until bonding has set, whichever period is longer. Avoid contact with water for minimum 7 days after laying.

Cleaning

General: Clean the finished surface. Buff and polish. Before the date for practical completion, mop and leave the finished surface clean and undamaged on completion.

0652 CARPETS

1 PRODUCTS

1.1 MATERIALS

Carpet

Minimum grade: Residential Medium Duty under the Australian Carpet Classification Scheme.

Total VOC emission tested to ISO 10580 (2010): < 0.5 mg/m²/h.

Wet process fibreboard (hardboard) underlay

Standard: To AS/NZS 1859.4 (2018).

Classification: General purpose medium board, manufactured specifically as flooring underlay.

Thickness: 5.5 mm.

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Soft underlay

Standard: To AS 4288 (2003).

Hot-melt adhesive tapes

General: Glass fibre and cotton thermoplastic adhesive-coated tape 60 mm wide on a 90 mm wide metal foil base and backed with silicone-coated release paper.

Preformed carpet grippers

General: Architectural plywood carpet grippers with 3 rows of corrosion-resistant angled pins of length appropriate to the carpet type to AS 2455.1 (2019) clause 1.5.4.

Edge strips and threshold strips

General: Heavy duty metal moulding or extruded edge strip appropriate to the floor covering type, capable where necessary of accommodating varying levels of adjacent floor finishes.

2 EXECUTION

2.1 PREPARATION

Substrate

Cleaning concrete surfaces: Mechanically remove the following surface treatments:

- Sealers and hardeners.
- Curing compounds.

Cleaning timber surfaces: Remove oil, grease and traces of applied finishes.

Concrete substrate rectification: Remove projections and fill voids and hollows with a levelling compound compatible with the adhesive.

Timber substrate rectification: Remove projections. If conformance to a flatness tolerance of 6 mm in 3000 mm, determined using a 3000 mm straightedge placed anywhere in any direction cannot be achieved, fix a hardboard underlay in brick pattern. Make sure joints do not coincide with substrate joints.

Fixtures: Remove door stops and other fixtures. Refix in position undamaged on completion of the installation.

2.2 INSTALLATION - CARPET

Standard

General: To AS 2455.1 (2019) Section 3 and the manufacturer's recommendations.

Edge strips and threshold strips

Location: At exposed edges of the carpet, and at junctions with different floor finishes or finishes of a different thickness. Where edge strips occur at doorways, locate the junctions directly below the closed door.

0654 MULTILAYERED BOARD FLOORING

1 PRODUCTS

1.1 MATERIALS

Flooring panels

General: Provide proprietary flooring system, as documented.

Storage and handling

General: Deliver flooring to site in unbroken boxes. Store in dry conditions equivalent to those suitable for the installation of the flooring, preferably in the installation location, a minimum 100 mm above the subfloor, to the manufacturer's recommendations. Do not store in areas with wet plaster or paint.

Material

Multilayered board flooring: Manufactured board flooring with a decorative wearing surface layer bonded to a core layer such as solid timber, high-density plywood, HDF or polymer based material.

Floating flooring underlay

General: If the flooring is not provided with an integrated underlay, provide proprietary closed cell foam sheeting with acoustic properties if required, compatible with the subfloor, any levelling compound and the documented flooring.

Adhesive fixed flooring acoustic underlay

General: Provide proprietary acoustic underlay, if required, compatible with the subfloor, any levelling compound and the documented flooring, fixed to subfloor with compatible adhesive.

Adhesive

Requirement: Polyurethane or polymer adhesive, to the flooring manufacturer's recommendations, compatible with the subfloor, underlay and documented flooring.

2 EXECUTION

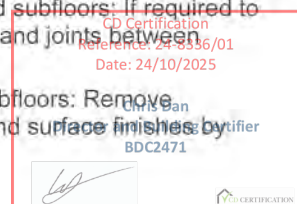
2.1 PREPARATION

Cleaning

Requirement: Prior to installation remove loose material, dust and any deposits or existing finishes from the subfloor that may impair any adhesive performance or the location and functioning of expansion or control joints.

Rectification: Conform to the following:

- Solid or continuous subfloors: Remove excessive projections and fill voids and hollows with a self-smoothing levelling compound compatible with the flooring including any adhesive.
- Plywood and particleboard subfloors: If required to achieve a smooth finish, sand joints between sheets.
- Existing timber flooring subfloors: Remove cupping, rough material and surface finishes by rough sanding.



2.2 INSTALLATION

Trial set-out

General: Prepare a trial panel set-out to each area, as follows:

- Maximise the size of equal margins of cut panels.
- Locate control joints.

Laying multilayered board flooring

Method: To the manufacturer's recommendations.

Expansion and control joints: Provide as follows:

- Against vertical building elements: Provide allowance for expansion of between 8 to 15 mm, to manufacturer's recommendations.

Ventilation: Provide adequate ventilation appropriate for moisture curing.

0655 TIMBER FLOORING

1 PRODUCTS

1.1 GENERAL

Storage and handling

General: Deliver timber flooring to site in unbroken plastic wrapping or packs. Store in dry conditions equivalent to those suitable for the installation of the floor, preferably in the installation location, a minimum 100 mm above the subfloor, to the supplier or manufacturer's recommendations. Do not store in areas of wet plaster or paint.

Adhesive

Requirement: A flooring adhesive (polyurethane or polymer) to the flooring manufacturer's recommendations, compatible with the subfloor, underlay and documented flooring.

1.2 SHEET SUBFLOOR

Plywood

Standard: To AS/NZS 2269.0 (2012).

Formaldehyde emission class to AS/NZS 2269.0 (2012): Class E1.

Particleboard

Particleboard: To AS/NZS 1860.1 (2017), Class 1.

Formaldehyde emission class to AS/NZS 1860.1 (2017): Class E1.

1.3 STRIP FLOORING

New timber

General: Conform to the **Grading table**.

Grading table

Product	Standard	Grade
Hardwood	AS 2796.2 (2006)	High Feature Grade if available for the species selected, otherwise Select Grade
Seasoned cypress pine	AS 1810 (1995)	1
Softwood - pinus ssp	AS 4785.2 (2002)	Appearance
Softwood - other	AS 4785.2 (2002)	Select

Recycled timber

Standard: To FWPA PN06.1039 (2008).

- Grading: To Section 5.1.

2 EXECUTION

2.1 FIXING TIMBER FLOORING

Battens for strip flooring on steel joists

General: Fix seasoned battens along the steel joists with countersunk screws so that their top surfaces are aligned.

- Batten size: Minimum 35 mm thick.
- Spacing of fasteners: < 600 mm.

Control joints

Requirement: To the manufacturer's recommendations or as follows if undocumented:

- Perimeters: Provide 10 mm wide expansion joints against vertical building elements.
- Strip flooring: For floors greater than 6000 mm (measured perpendicular to the run of the boards), provide for intermediate expansion using one of the following methods:
 - Regular spaced gaps: Provide a gap of 1.5 mm every 800 mm.
 - Intermediate expansion joints: Provide 12 mm wide cork filled expansion joints at maximum widths of 6000 mm. Install cork 2 mm proud of floor surface and sand flat with the floor.
- Fixing: Provide adhesive fixing in addition to mechanical fixing with staples, nails or cleats.

Strip flooring

General: Blend floor boards to ensure a relatively even distribution of the colour range and grade features throughout the floor.

Installation: Lay in straight and parallel lines with each board firmly butted to the next and firmly in contact with the subfloor. If laid over joists or battens, cramp as required to bring the boards tight at edges.

Strip flooring direct mechanically fixed to joists: To the AS 1684 series and as follows:

- Boards up to 135 mm: Top nail or secretly fix.
- Boards over 135 mm wide: Top nail to joists.
- Top nailing boards 80 to 135 mm wide: Fix with 2 nails at each joist crossing. Punch nails 3 mm below finished surfaces.

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- Top nailing boards over 135 mm wide: Fix with 3 nails at each joist crossing. Punch nails 3 mm below finished surfaces.
- Plain end flooring: If nails are less than 12 mm from ends of boards, pre-drill nail holes 0.8 mm undersize.
- Secret fixing: Fix with one staple or cleat at each joist crossing, angled at 45° through the base of the tongue.
- Adhesive: Use a 6 to 10 mm bead of polyurethane adhesive along each joist for both secret fixing and top nailing.

Strip flooring direct mechanically fixed to battens:

- Boards up to 135 mm: Top nail or secretly fix.
- Boards over 135 mm wide: Top nail to minimum 35 mm thick seasoned battens.
- Top nailing boards 80 to 135 mm wide: Fix with 2 nails at each batten crossing. Punch nails 3 mm below finished surfaces.
- Top nailing boards over 135 mm wide: Fix with 3 nails at each batten crossing. Punch nails 3 mm below finished surfaces.
- Plain end flooring: If nails are less than 12 mm from ends of boards, pre-drill nail holes 0.8 mm undersize.
- Secret fixing: Fix with one staple or cleat at each batten crossing, angled at 45° through the base of the tongue.
- Adhesive: Use a 6 to 10 mm bead of polyurethane adhesive along each joist for both secret fixing and top nailing.

2.2 COMPLETION

Protection

General: Provide protection as follows:

- Floors: With MDF taped at all butt joints. Do not cover with sheet plastic.
- Stair treads: Full MDF or plywood casing.

0656 FLOOR SANDING AND FINISHING

1 GENERAL

1.1 STANDARDS

General

Timber flooring - sanding and finishing: To AS 4786.2 (2005) and the recommendations of Australasian Timber Flooring Association (ATFA) *Solid timber flooring industry standard (2022)*.

0671 PAINTING

1 GENERAL

1.1 STANDARDS

Painting

General: To the recommendations of those parts of AS/NZS 2311 (2017) referenced in this worksection.

2 PRODUCTS

2.1 PAINTING MATERIALS

Handling

Delivery: Deliver paints to the site in the manufacturer's labelled and unopened containers.

Low VOC emitting paints

VOC limits for low odour/low environmental impact paint types:

- Primers and undercoats: < 65 g/litre.
- Low gloss white or light coloured latex paints for wall areas: < 16 g/litre.
- Coloured low gloss latex paints: < 16 g/litre.
- Gloss latex paints for timber doors and trims: < 75 g/litre.

Combinations

General: Do not combine products from different manufacturers in a system.

Clear timber finish systems: Provide only the combinations of putty, stain and sealer recommended by the manufacturer of the topcoat.

Putty and fillers

Material: To the recommendation of the paint system manufacturer, suitable for the substrate and compatible with the primer.

Tinting

General: Provide only products that are colour tinted by the manufacturer or supplier.

3 EXECUTION

3.1 PREPARATION

Order of work

Other trades: Complete the work of other trades as far as practicable within the area to be painted, except for the installation of fittings, floor sanding and laying flooring materials.

Clear finishes: Complete clear timber finishes before applying opaque paint finishes in the same area.

Protection

General: Clean the area and protect from dust contamination. Use drop sheets and masking agents to protect surfaces, including finished surfaces and adjacent surfaces during painting.

Fittings and furniture: Remove door furniture, switch plates, light fittings and other fittings. Store and protect against damage. Refix in position on completion of painting.

Substrates

General: Prepare substrates to receive the documented painting systems to the manufacturer's recommendations and as follows:

- Generally: Clean the substrate surface without damaging the substrate or the surroundings.
- Timber surfaces where clear finishes will be applied: Prepare the surface so that its attributes will show through the clear finish without blemishes, including the following:
 - Remove bruises.
 - Remove discolourations, including staining by oil, grease and nail heads.
 - Bleach where necessary to match the timber colour sample.
 - Fine sanding, with the last abrasive no coarser than 220 grit, so that there are no scratches across the grain.

Filling: Conform to the following:

- Generally: Fill cracks and holes with fillers, sealants, putties or grouting cements as appropriate for the finishing system and substrate, and sand smooth.
- Timber surfaces where clear finishes will be applied: Provide filler or putty tinted to match the surface.

Unpainted surfaces

Standard: To AS/NZS 2311 (2017) Section 3.

Previously painted surfaces

Preparation of a substrate in good condition: To AS/NZS 2311 (2017) clause 7.4.

Preparation of a substrate in poor condition: To AS/NZS 2311 (2017) clause 7.5.

Preparation of steel substrates with protective coatings: To AS 2312.1 (2014) Section 8 and AS 1627.1 (2003).

3.2 APPLICATION

Light levels

General: ≥ 400 lux.

Paint application

Standard: To AS/NZS 2311 (2017) Section 6.

Timing: Apply the first coat immediately after substrate preparation and before contamination of the substrate can occur. Apply subsequent coats after the manufacturer's recommended drying period has elapsed.

Priming timber before fixing

General: Before fixing in position, apply 1 coat of wood primer and 2 coats to end grain to the back of the following:

- External fascia boards.
- Timber door and window frames.
- Tops and bottoms of external doors.
- Associated trim and glazing beads.
- Timber board cladding.

Spraying

General: If the application is by spraying, use conventional or airless equipment that conforms to the following:

- Satisfactorily atomises coating being applied.
- Does not require coating to be thinned beyond the maximum amount recommended by the manufacturer.
- Does not introduce oil, water or other contaminants into the applied coating.

Coatings with known health hazards: Not permitted on site.

Sanding

Clear finishes: Sand the sealer, using abrasives no coarser than 320 grit, without cutting through the colour. Take special care with round surfaces and edges.

Repair

Requirement: Clean off marks, paint spots and stains progressively and restore damaged surfaces to their original condition. Touch up new damaged decorative paintwork or misses with the paint batch used in the original application.

Repair of galvanizing

Cleaning: For galvanized surfaces that have been subsequently welded, power tool grind to remove all surface contaminants, including rust and weld splatter. Prime affected area immediately after cleaning.

Primer: Type 2 organic zinc rich coating for the protection of steel to AS/NZS 3750.9 (2009).

Services

General: Paint new services and equipment if not embedded, except chromium, anodised aluminium, GRP, PVC-U, stainless steel, non-metallic flexible materials and normally lubricated machined surfaces. Repaint proprietary items only if damaged.

Wet paint warning

Notice: Place notices in a conspicuous location and do not remove until the paint is dry.

3.3 PAINT SYSTEMS

Paint system description

Primers and undercoats: Provide primers and undercoats recommended by the manufacturer of the selected final coat as suitable for the substrate and the final coat.

Number of coats: Unless specified as one or two coat systems, each paint system consists of at least 3 coats.

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Paint final coat table

Final coat	Applicable Australian Standard
Interior	
Flat latex	AS 3730.1 (2006)
Floor varnish - moisture cured	AS 3730.27 (2006)
Floor varnish - two pack isocyanate cured	AS 3730.27 (2006)
Low gloss latex	AS 3730.3 (2006)
Semi-gloss latex	AS 3730.2 (2006)
Gloss latex	AS 3730.12 (2006)
Exterior	
Full gloss solvent-borne	AS 3730.6 (2006)
Flat latex	AS 3730.7 (2006)
Low gloss latex	AS 3730.8 (2006)
Semi-gloss latex	AS 3730.9 (2006)
Gloss latex	AS 3730.10 (2006)
Stain, lightly pigmented	AS 3730.28 (2006)
Latex stain, opaque	AS 3730.16 (2006)
Paving	
Paving paint, semi-gloss	AS 3730.29 (2006)
Paving paint, gloss	AS 3730.29 (2006)

0702 MECHANICAL DESIGN AND INSTALL**1 GENERAL****1.1 DESIGN****Air conditioning design**

Outdoor design conditions: Use outdoor design conditions listed in AIRAH DA09 (2022) or ASHRAE Handbook - Fundamentals (2021) for:

- The location geographically closest to the site.
- Comfort (or non-critical process) conditions.

Indoor design conditions:

- Summer: 24°C dry bulb, 50% relative humidity.
- Winter: 21°C dry bulb.

Heating and cooling performance: Maintain the air conditioned spaces, as measured at the points of control, within the documented cooling and heating indoor design conditions at the highest cooling and heating loads due to the combination of loads imposed by the outdoor design conditions, countering solar loads, loads due to system and other losses, and building fabric, lighting and internal equipment loads.

Building fabric loads: Allow for loads from the construction documented.

Temperature variation: Limit the temperature difference in air conditioned spaces served by the same zone or system to 2°C as follows:

- Between any 2 points in the space from floor level to 1500 mm above floor level.
- More than 2000 mm from cooking equipment and more than 1000 mm from any other appliance.

- When outside conditions are in the range specified above.
- After the plant has been operating for one hour.
- With the temperatures measured in the same 5 minute period.

Zoning: Divide the systems into temperature controlled zones to meet the specified permissible limits in temperature variation and the system divisions documented.

Fresh air: Supply fresh air to spaces with air conditioning systems via the air handling system.

Heating: Reverse cycle.

Ambient noise emitted: Lower than the level that can be heard within a habitable room in any neighbouring premises, regardless of whether any door or window to that room is open.

2 PRODUCTS**2.1 AIR CONDITIONING EQUIPMENT****Standards**

Ducted air conditioners: To AS/NZS 3823.1.2 (2012).

Non-ducted air conditioners: To AS/NZS ISO 5151 (2023).

Controls

General: Provide the following functions:

- Temperature control for each zone located to accurately sense zone temperature.
- Fan speed selection for multi and variable speed fans.
- Day/night zone changeover if scheduled.
- Time switch for each system with at least 6 temperature programs per day, separate programs for each day of the week, manual set point override and vacation temperature set back.

0802 HYDRAULIC DESIGN AND INSTALL**1 GENERAL****1.1 STANDARDS****General**

Plumbing and drainage: To the AS/NZS 3500 series and the PCA (2022).

2 EXECUTION**2.1 INSTALLATION****Connections to mains**

General: Excavate to locate and expose the connection points and connect to the Network Utility Operator and gas Network Operator mains. On completion, backfill and compact the excavation and reinstate surfaces and elements that have been disturbed such as roads, pavements, kerbs, footpaths and nature strips to original condition.

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Metering: Provide metering, valves and fittings to Network Utility Operator requirements.

Piping

Embedded pipes: Do not embed pipes that operate under pressure in concrete or surfacing material.

Concealment: If practicable, conceal piping and fittings requiring maintenance or servicing so that they are accessible within non-habitable enclosed spaces such as roof spaces, subfloor spaces and ducts. Keep pipelines in subfloor spaces at least 150 mm above ground and make sure access can be provided throughout for inspection. Provide at least 25 mm clearance between adjacent pipelines (measured from the piping insulation where applicable).

Cover plates: If exposed piping emerges from wall, floor or ceiling finishes, provide cover plates of non-ferrous metal, finished to match the piping, or of stainless steel.

Pipe support materials: The same as the piping, or galvanized or non-ferrous metals, with bonded PVC-U or glass fibre woven tape sleeves where needed to separate dissimilar metals.

2.2 FINISHES

General

Exposed piping: Finish exposed piping, including fittings and supports as follows:

- In internal locations such as toilet and kitchen areas: Chrome-plated copper piping to AS 1192 (2004) service condition 2, bright.
- Externally and steel piping or worn fittings internally: Paint.
- In concealed but accessible spaces (including cupboards and non-habitable enclosed spaces): Leave copper and plastic unpainted except for identification marking. Prime steel piping and iron fittings.

Valves: Finish valves to match connected piping.

2.3 COLD AND HEATED WATER

Standards

General: To AS/NZS 3500.1 (2021) and AS/NZS 3500.4 (2021).

Water heaters

Location: Locate water heaters where they can be maintained or replaced without damaging adjacent structures, fixtures or finishes.

Tariff: Install so that the heating system qualifies for the tariff concession or subsidy offered by the electricity distributor.

Isolating valves: Provide isolation valves to water heaters.

Types:

- Electric storage water heaters: To the NCC cited AS 1056.1 (1991).
 - . Energy performance: To AS/NZS 4692.2 (2005).
- Gas storage water heaters: To AS/NZS 5263.1.2 (2020). If a flue damper is available for the water heater supplied, provide one.
 - . Energy performance: To AS/NZS 4552.2 (2010).

- . Star rating: ≥ 5 stars to the NCC cited AS 4552 (2005).

- Solar water heaters: To AS/NZS 2712 (2007).

- Heat pump water heaters: To AS/NZS 2712 (2007).

- . Safety: To AS/NZS 60335.2.40 (2023).

- . Performance evaluation: To AS/NZS 5125.1 (2014).

- Gas instantaneous water heaters: To AS/NZS 5601.1 (2022).

- Electric instantaneous water heaters: To AS/NZS 60335.2.35 (2013).

Heated water temperature

Standard: To AS/NZS 3500.4 (2021).

2.4 STORMWATER

Standards

General: To AS/NZS 3500.3 (2021).

Downpipe connections

General: Turn up branch pipelines with bends to meet the downpipe, finishing horizontally 50 mm (nominal) above finished ground or pavement level.

Subsoil drains

Requirement: Provide subsoil drains to intercept groundwater seepage and prevent water build-up behind walls and under pavements. Connect subsoil drains to surface drains or to the stormwater drainage system as applicable.

Trench width: Minimum 450 mm.

Piping: Provide proprietary perforated plastic pipe.

Geotextiles: UV stabilised, permeable, polymeric, woven or non-woven textile material used in contact with soil/rock material.

Filter sock: Provide a permeable polyester sock capable of retaining particles of 0.25 mm and greater. Securely fit or join the sock at each joint.

Pits

Metal access covers and grates: To AS 3996 (2019).

Cover levels: Locate the top of covers or gratings, including frames as follows:

- In paved areas: Flush with the paving surface.
- In landscaped areas: 25 mm above finished surface.
- Gratings taking surface water runoff: Locate to receive the runoff without ponding.

2.5 WASTEWATER

Standards

General: To AS/NZS 3500.2 (2021).

Cleaning

General: During construction, use temporary covers to openings and keep the system free of debris. On completion, clean and flush the system.

Septic tanks

Standard: To AS/NZS 1546.1 (2008).

Vent pipes

Requirement: Provide upstream and downstream vents to AS/NZS 3500.2 (2021).

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Staying to roof: If fixings for stays penetrate the roof covering, seal the penetrations and make watertight.

Terminations: Provide vent cowls of the same material as the vent pipe.

2.6 RAINWATER STORAGE SYSTEMS

Standards

Design, installation, maintenance and repairs: To the recommendations of SA HB 230 (2008).

Metal tanks and rainwater goods: To AS/NZS 2179.1 (2014).

Products in contact with drinking water: Tested to AS/NZS 4020 (2018).

Rotationally moulded tanks: To AS/NZS 4766 (2020).

Water filters for drinking water: If rainwater is used for drinking water, conform to AS 3497 (2021) and the requirements of the statutory authorities having jurisdiction.

2.7 FUEL GAS

Standard

Reticulated gas systems: To AS/NZS 5601.1 (2022).

Buried pipes

Warning tape: During backfilling, lay plastic warning tape 300 mm above buried piping, for the full length of the piping.

- Type: Minimum 100 mm wide, with GAS PIPE UNDER marked continuously.

Commissioning

General: On completion of installation and testing, turn on isolating and control valves, and purge and charge the system.

0902 ELECTRICAL DESIGN AND INSTALL

1 GENERAL

1.1 DESIGN

Maximum demand and spare capacity

Maximum demand: Calculation method to AS/NZS 3000 (2018) Appendix C. Submit a copy of the calculations.

Spare capacity: Provide the following:

- > 10% spare capacity in mains and submains.
- > 25% spare capacity in final subcircuits.

Spare spaces: Provide switchboards with $\geq 25\%$ spare positions for future single phase circuit breakers.

Protection

Fault protection: Automatic disconnection to AS/NZS 3000 (2018) clause 2.4.

1.2 STANDARDS

General

Electrical installation: To AS/NZS 3000 (2018).

Selection of cables: To AS/NZS 3008.1.1 (2017).

Communications cable systems: To AS/CA S008 (2020), AS/CA S009 (2020) and AS 11801.1 (2019).

Grid connected photovoltaic systems: To AS/NZS 4509.1 (2009), AS/NZS 4509.2 (2010), AS/NZS 4777.1 (2016) and AS/NZS 4777.2 (2020).

2 EXECUTION

2.1 GENERAL

Applications and compliance

General: Submit all necessary applications for electricity supply. Liaise with the electricity distributor and conform to the electricity distributor's Service and Installation Rules.

Consumers mains and metering

General: Provide consumers mains, associated services and all necessary fault and overload current protection equipment to AS/NZS 3000 (2018) Section 3, the electricity distributor's standards and the Service and Installation Rules. Connect consumer mains to the electricity distributor mains.

Switchboards

Standard: To AS/NZS 61439.1 (2016) and AS/NZS 61439.3 (2016).

Construction: Enclosed type with a hinged lid.

Protective devices: Provide circuit breakers and residual current devices.

Material: Metallic-coated sheet steel.

Location: Verify the selected location conforms to AS/NZS 3000 (2018), the electricity distributor's standards and the Service and Installation Rules before proceeding.

Accessories

General: Provide accessories required for a complete installation including but not limited to switches, dimmers, socket outlets, and telecommunications outlets. Provide accessories of the same style, and from the same manufacture.

Mounting: Flush mount accessories to the wall (or ceiling) unless noted otherwise. Provide proprietary wall boxes in masonry and wall brackets or wall boxes in stud walls.

Wiring

Sequence of work: Install conduits and cables before the installation of wall and ceiling linings, and before any external landscaping works.

Installation: Do not penetrate damp-proof courses. Run wiring in cavity tied against inner brick surface.

Minimum conduit diameter: 20 mm.

Conduits for future use: Provide a non-metallic drawstring having a breaking strength greater than 100 kg.

Labelling

General: Provide labels including control and circuit equipment ratings, functional units, notices for operational and maintenance personnel, incoming and outgoing circuit rating, sizes and origin of supply.

Telecommunications cables: Label telecommunications cables, cross connects and

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AS/NZS 5263		Gas appliances
AS/NZS 5263.1.2	2020	Gas fired water heaters for hot water supply and/or central heating
AS/NZS 5601		Gas installations
AS/NZS 5601.1	2022	General installations
AS 5604	2022	Timber - Natural durability ratings
AS 6669	2016	Plywood - Formwork
AS 11801		Information technology - Generic cabling for customer premises
AS 11801.1	2019	General requirements (ISO/IEC 11801-1:2017, MOD)
AS 11801.4	2019	Single-tenant homes (ISO/IEC 11801-4:2017, MOD)
AS ISO 13007		Ceramic tiles - Grouts and adhesives
AS ISO 13007.1	2020	Terms, definitions and specifications for adhesives
AS/NZS 14763		Information Technology - Implementation and operation of customer premises cabling
AS/NZS 14763.2	2020	Planning and installation (ISO/IEC 14763-2 (ED. 2.0) MOD)
AS/NZS 60335		Household and similar electrical appliances - Safety
AS/NZS 60335.2.35	2013	Particular requirements for instantaneous water heaters
AS/NZS 60335.2.40	2023	Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers
AS/NZS 60598		Luminaires
AS/NZS 60598.1	2017	General requirements and tests (IEC 60598-1, Ed. 8.0 (2014) MOD)
AS/NZS 61439		Low-voltage switchgear and controlgear assemblies
AS/NZS 61439.1	2016	General rules (IEC 61439-1, Ed. 2.0 (2011), MOD)
AS/NZS 61439.3	2016	Distribution boards intended to be operated by ordinary persons (DBO) (IEC 61439-3, Ed 1.0 (2012), MOD)
SA HB 230	2008	Rainwater tank design and installation handbook
BCA H1D3	2022	Class 1 and 10 buildings - Structure - Site preparation
BCA H1D4	2022	Class 1 and 10 buildings - Structure - Footings and slabs
BCA H1D7	2022	Class 1 and 10 buildings - Structure - Roof and wall cladding
BCA H1D11	2022	Class 1 and 10 buildings - Structure - Attachment of framed decks and balconies to external walls of buildings using a waling plate
BCA H2D6	2022	Class 1 and 10 buildings - Damp and weatherproofing - Roof and wall cladding
BCA H3D6	2022	Class 1 and 10 buildings - Fire safety - Smoke alarms and evacuation lighting
BCA H4D2	2022	Class 1 and 10 buildings - Health and amenity - Wet areas
BCA H4D9	2022	Class 1 and 10 buildings - Health and amenity - Condensation management
BCA H5D2	2022	Class 1 and 10 buildings - Safe movement and access - Stairway and ramp construction
BCA H5D3	2022	Class 1 and 10 buildings - Safe movement and access - Barriers and handrails
BCA H6D2	2022	Class 1 and 10 buildings - Energy efficiency - Application of Part H6
BCA H7D4	2022	Class 1 and 10 buildings - Ancillary provisions and additional construction requirements - Construction in bushfire prone areas
NCC	2022	National Construction Code
NCC Schedule 1	2022	Schedule 1 Definitions
PCA	2022	National Construction Code Series Volume 3 - Plumbing Code of Australia
AIRAH DA09	2022	Air conditioning load estimation and psychrometrics
ATFA STF	2022	Solid timber flooring industry standard
FWPA PN06.1039	2008	Interim industry standard - Recycled timber - Visually graded recycled decorative products
NASH		NASH Standard Residential and Low-rise Steel Framing
NASH-1	2005	Design criteria
NASH-2	2014	Design solutions
SWA Asbestos removal	2020	How to safely remove asbestos Code of Practice
BS 8102	2022	Protection of below ground structures against water ingress. Code of practice.
ASHRAE Handbook F	2021	ASHRAE Handbook - Fundamentals
ISO 10580	2010	Resilient, textile and laminate floor coverings - Test method for volatile organic compound (VOC) emissions

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CORPORATE INFORMATION

NATSPEC is the trading name of Construction Information Systems Limited, ABN 20 117 574 606.

NATSPEC, founded in 1975, is a national not-for-profit organisation that is owned by the design, build, construct and property industry through professional associations and government property groups. It is impartial and is not involved in advocacy or policy development.

NATSPEC's major service is the provision of the comprehensive national specification systems endorsed by government and professional bodies. NATSPEC, the National Building Specification, is for all building structures, with specialist packages for architects, interior designers, landscape architects, structural engineers, service engineers and domestic owners. AUS-SPEC is the Local Government specification system for the life-cycle management of assets. Packages include Urban and Open Spaces, Roadworks and Bridges, Public Utilities, and Maintenance. NATSPEC is also the publisher of the National BIM Guide and associated documents.

NATSPEC's objective is to improve the quality of construction in Australia through its updating services and via the provision of information, tools, products and other services.

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// Air Conditioning and Mechanical Contractors'
Association of Australia

// Australian Elevator Association

// Australian Institute of Architects

// Australian Institute of Building

// Australian Institute of Building Surveyors

// Australian Institute of Quantity Surveyors

// Construction Industry Engineering Services Group

// Consult Australia

// Department for Infrastructure and Transport (SA)

// Department of Energy and Public Works (QLD)

// Department of Finance (Federal)

// Department of Finance (WA)

// Department of Infrastructure, Planning and Logistics (NT)

// Department of Treasury and Finance (TAS)

// Department of Treasury and Finance (VIC)

// Engineers Australia

// Major Projects Canberra

// Master Builders Australia

// Public Works Advisory (NSW)

// Standards Australia

CONTACT INFORMATION

NATSPEC//

PHONE	1300 797 142
FAX	1300 797 143
EMAIL	mail@natspec.com.au
WEB	www.natspec.com.au

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BASIX[®]Certificate

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

Single Dwelling

Certificate number: 1738551S_03

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

Secretary

Date of issue: Tuesday, 19 November 2024

To be valid, this certificate must be submitted with a development application or lodged with a complying development certificate application within 3 months of the date of issue.



Project summary

Project name	41 Clarkes Crossing Close, VACY_03
Street address	41 CLARKES CROSSING Close VACY 2421
Local Government Area	Dungog Shire Council
Plan type and plan number	Deposited Plan DP1291036
Lot no.	5
Section no.	-
Project type	dwelling house (detached)
No. of bedrooms	4

Project score

Water	✓ 52	Target 40
Thermal Performance	✓ Pass	Target Pass
Energy	✓ 72	Target 70
Materials	✓ -7	Target n/a

Certificate Prepared by

Name / Company Name: Ecocert

ABN (if applicable): 35601193257

Description of project

Project address	
Project name	41 Clarkes Crossing Close, VACY_03
Street address	41 CLARKES CROSSING Close VACY 2421
Local Government Area	Dungog Shire Council
Plan type and plan number	Deposited Plan DP1291036
Lot no.	5
Section no.	-
Project type	
Project type	dwelling house (detached)
No. of bedrooms	4
Site details	
Site area (m²)	31560
Roof area (m²)	325
Conditioned floor area (m²)	205.0
Unconditioned floor area (m²)	18.0
Total area of garden and lawn (m²)	100
Roof area of the existing dwelling (m²)	0

Assessor details and thermal loads		
Assessor number	DMN/21/2060	
Certificate number	HR-51BIRN-02	
Climate zone	28	
Area adjusted cooling load (MJ/ m².year)	22	
Area adjusted heating load (MJ/ m².year)	38	
Project score		
Water	✔ 52	Target 40
Thermal Performance	✔ Pass	Target Pass
Energy	✔ 72	Target 70
Materials	✔ -7	Target n/a

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 4 star (> 6 but <= 7.5 L/min plus spray force and/or coverage tests) in all showers in the development.		✓	✓
The applicant must install a toilet flushing system with a minimum rating of 3 star in each toilet in the development.		✓	✓
The applicant must install taps with a minimum rating of 3 star in the kitchen in the development.		✓	
The applicant must install basin taps with a minimum rating of 3 star in each bathroom in the development.		✓	
Alternative water			
Rainwater tank			
The applicant must install a rainwater tank of at least 5000 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 200 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 to: - 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.)		✓ ✓ ✓	✓ ✓ ✓

Thermal Performance and Materials commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
Simulation Method			
Assessor details and thermal loads			
The applicant must attach the certificate referred to under "Assessor Details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for an occupation certificate for the proposed development.			
The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			
The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX certificate, including the Cooling and Heating loads shown on the front page of this certificate and the "Construction" and "Glazing" tables below.			
The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Assessor Certificate requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor to certify that this is the case. The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.	✓	✓	✓
The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✓	✓
The applicant must show on the plans accompanying the development application for the proposed development, the locations of ceiling fans set out in the Assessor Certificate. The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), the locations of ceiling fans set out in the Assessor Certificate.	✓	✓	✓

Thermal Performance and Materials commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
Construction			
The applicant must construct the floors, walls, roofs, ceilings and glazing of the dwelling in accordance with the specifications listed in the tables below.	✓	✓	✓
The applicant must show through receipts that the materials purchased for construction are consistent with the specifications listed in the tables below.			✓

Construction	Area - m ²	Insulation
floor - concrete slab on ground, conventional slab.	222	none
garage floor - concrete slab on ground.	0.1	none
external wall: framed (metal clad); frame: light steel frame.	all external walls	fibreglass batts or roll+ foil/sarking
external garage wall: framed (metal clad); frame: light steel frame.	10	not specified+ foil/sarking
internal wall: plasterboard; frame: light steel frame.	100	none
ceiling and roof - flat ceiling / pitched roof, framed - metal roof, light steel frame.	225	ceiling: fibreglass batts or roll; roof: foil/sarking.
ceiling and roof - raked ceiling / pitched or skillion roof, framed - metal roof, light steel frame.	100	ceiling: fibreglass batts or roll; roof: foil/sarking.

Thermal Performance and Materials commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
Glazing			
The applicant must install windows, glazed doors and skylights as described in the table below, in accordance with the specifications listed in the table.	✓	✓	✓

Frames	Maximum area - m2
aluminium	45
timber	0
uPVC	0
steel	0
composite	0

Glazing	Maximum area - m2
single	45
double	0
triple	0

Energy Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
Hot water			
The applicant must install the following hot water system in the development, or a system with a higher energy rating: gas instantaneous with a performance of 5 stars.	✓	✓	✓
Cooling system			
The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 living area: 1-phase airconditioning - non ducted; Energy rating: 5 star (average zone)		✓	✓
The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 bedroom: 1-phase airconditioning - non ducted; Energy rating: 5 star (average zone)		✓	✓
Heating system			
The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 living area: 1-phase airconditioning - non ducted; Energy rating: 5 star (average zone)		✓	✓
The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 bedroom: 1-phase airconditioning - non ducted; Energy rating: 5 star (average zone)		✓	✓
Ventilation			
The applicant must install the following exhaust systems in the development: At least 1 Bathroom: individual fan, open to façade; Operation control: manual switch on/off		✓	✓
Kitchen: individual fan, open to façade; Operation control: manual switch on/off		✓	✓
Laundry: natural ventilation only, or no laundry; Operation control: n/a		✓	✓
Artificial lighting			
The applicant must ensure that a minimum of 80% of light fixtures are fitted with fluorescent, compact fluorescent, or light-emitting-diode (LED) lamps.		✓	✓
Natural lighting			
The applicant must install a window and/or skylight in the kitchen of the dwelling for natural lighting.	✓	✓	✓

Energy Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
The applicant must install a window and/or skylight in 2 bathroom(s)/toilet(s) in the development for natural lighting.	✓	✓	✓
Other			
The applicant must install a gas cooktop & electric oven in the kitchen of the dwelling.		✓	
The applicant must install a fixed outdoor clothes drying line as part of the development.		✓	

Legend

In these commitments, "applicant" means the person carrying out the development.

Commitments identified with a  in the "Show on DA plans" column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).

Commitments identified with a  in the "Show on CC/CDC plans and specs" column must be shown in the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.

Commitments identified with a  in the "Certifier check" column must be certified by a certifying authority as having been fulfilled, before a final occupation certificate (either interim or final) for the development may be issued.

APPLICATION FORM and CERTIFICATION CONTRACT

Issued under Division 4.5, Sections 4.27 & 4.28 of the Environmental Planning & Assessment Act 1979

Application Type and NSW Planning Portal Reference		
☐ Complying Development Certificate (CDC) ☒ Construction Certificate (CC)	Portal Reference No: CFT-742359	
Details of the Applicant/s		
Name of Applicant / Company Name and Authorised Contact (Director/Secretary) AMC Planning Solutions		ABN (if applicable)
Address 41 Clarkes Crossing Close Vacy NSW 2321	Email admin@amcplanning.com.au	Phone/Mobile (Private for CD Certification Use) 0455560300
Phone/Mobile (Public) for use with CDC Applications Only: (Provide a Contact Number for inclusion in the Neighbour Notification Letters which are required to be issued under the SEPP Code. There is no obligation to discuss this application with your neighbours but we are required to provide contact details for this purpose. If a number is not provided we will use the Phone/Mobile number (Private for CD Certification Use).		Office Use Only Date Application Received 12/5/2025
Complying Development – The application is to be assessed under:- (Leave this section blank if applying for a Construction Certificate)		
☐ State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 (nominate which part if known) ☐ Part 3 ☐ Part 3a ☐ Part 3b ☐ Part 3c ☐ Part 3d ☐ Part 4 ☐ Part 4A ☐ Part 5 ☐ Part 5a ☐ Part 7 ☐ Part 8		
☐ State Environmental Planning Policy (Housing) 2021		
☐ State Environmental Planning Policy (Transport & Infrastructure) 2021		
Development Application Consent Details (Leave this section blank if applying for a Complying Development Certificate)		
Development Consent No. DA 156/2024	Approval Authority: (Name of Council) Dungog Shire Council	Date of Determination. 05/03/25
Development Site Details		
Address 41 Clarkes Crossing Close Vacy NSW 2321		Local Council Authority Dungog Shire Council
Lot No. 5	Section No.	DP/SP No. 1291036
The Development		
Classification of Building/s under the Building Code of Australia: (if known) 1(a), 10(a)		
Description of Building Work to be carried out: (e.g. New Dwelling, Alterations & Additions, Shed, Dual Occupancy, Swimming Pool, Deck etc.) Dwelling		
Estimated Cost of the Development: (The Contract price or, if there is no contract, a genuine and accurate estimate for all labour and material costs with all demolition and construction required for the development including the cost of construction of any building and the preparation of a building for the purpose for which it is to be used (such as the costs of installing plan, fittings, fixtures and equipment. GST is to be included)) \$ 400,000		
Asbestos: Advise if any bonded asbestos material or friable asbestos material will be disturbed, repaired or removed when carrying out the development and, if yes, advise the estimated amount in m² format.		☒ N/A ☐ _____ m ²

Owners Consent/Applicants Agreement

and Declaration

(Please note that this section must be signed and consented to by all registered owner/s of the property)

By signing this agreement, you consent and agree to:

- 1) I/We hereby apply for a Construction Certificate (CC); Complying Development Certificate (CDC); Occupation Certificate (OC) or any other application or modification required or related to this development.
- 2) We consent to the principal certifier (PC), or an accredited certifier, or consent authority, entering the subject property at any reasonable time, for the purpose of carrying out any mandatory critical stage inspection as required by the Act, or a regulatory inspection where required.
- 3) Where a Complying Development application requires neighbour notification in accordance with the Environmental Planning & Assessment Regulation 2021, I/we agree to allow Chris Dan Certification Pty Ltd T/as CD Certification to notify occupants of neighbouring properties of the subject site with the applicant name, address, phone number and notification plan (pre-approval notification – Clause 134), and/or details of the approved development (pre-construction notification – Clause 148).
- 4) I/We acknowledge that I/we must comply with all relevant DA or CDC conditions and/or pre-conditions of consent nominated in the approval documentation prior to works commencing, and that the PC can't be appointed until all pre-conditions have been complied with.
- 5) I/We advise that building works have not commenced, and will not commence, until 2 days after the Appointment of PC and Notice of Commencement have been provided to Council.
- 6) I/We declare that all the information provided is true and correct. I/We also understand that, if incomplete, the application may be delayed or rejected, and further information may be requested.
- 7) I/We agree to receive approval documentation via electronic communication. Hard copy approval documentation can be provided on request.
- 8) I/We have freely chosen to engage Cristinel Dan (Chris Dan) BDC2471.
- 9) I/We have read Chris Dan Certification Pty Ltd T/as CD Certification Fee Proposal and Contract for Certification Work comprising this Contract, Annexure A – Scope of Services, Annexure B – Development Certification Services Agreement and Annexure C – Prescribed Information Sheet issued by NSW Fair Trading) and understand the role and responsibilities of each party to the Contract.
- 10) I/We consent and provide permission to Chris Dan Certification Pty Ltd to update any discrepancies in the NSW Planning Portal.
- 11) I/We agree to the execution of the Contract.
- 12) By signing this agreement electronically, I/we agree to be legally bound by the terms of this agreement.

Owner 1	Sign/Print Name	Owner 2	Sign/Print Name
Print Name: Mia Mackay	Date: 12/05/25	Print Name: Bradley Smith	Date: 12/05/25
Owner 3	Sign/Print Name	Owner 4	Sign/Print Name
Print Name:	Date: 12/05/25	Print Name:	Date: 12/05/25

Applicant/s Consent

Name of applicant/s

AMC Planning Solutions

Signature of applicant/s

Date

B.Lennard

Digitally signed by B.Lennard
DN: cn=B.Lennard, o=AMC Planning Solutions,
email=bailey@amcplanning.com.au
Date: 2025.05.12 13:49:14 +10'00'

12/05/25

Development Statistics

(Please tick the appropriate Box and answer the following questions)

✓	Walls	Code	✓	Roof	Code	✓	Floor	Code	✓	Frame	Code
☐	Brick (double)	11	☐	Tiles	10	☒	Concrete / Slab	20	☐	Timber	40
☐	Brick (veneer)	12	☐	Concrete / Slate	20	☐	Timber	40	☒	Steel	60
☐	Concrete / stone	20	☐	Fibre Cement	30	☐	Other	80	☐	Aluminium	70
☐	Fibre Cement	30	☒	Steel	60	☐	Not Specified	90	☐	Other	80
☐	Timber	40	☐	Aluminium	70				☐	Not Specified	90
☐	Curtain Glass	50	☐	Other	80						
☒	Steel	60	☐	Not Specified	90						
☐	Aluminium Cladding	70									
☐	Timber/ Weatherboard	40									
☐	Other	80									
☐	Non Specified	90									
Gross site area (m²):				3.156Ha		Number of dwellings to be demolished:				0	
Gross floor area of existing building (m²)						Number of dwellings to be constructed:				1	
Gross floor area of new building work (m²)						Is the building attached, detached (i.e. free standing) or semi-detached?				free standing	
Number of pre-existing dwellings on the site:				Nil		Does the site contain a dual occupancy:				No	
What are the current uses of the building (if vacant state vacant):				Vacant		How many stories will the building have:				1	
What will be the new building uses (if changed):				Residential							

Construction Site Management Plan

AMC Planning Solutions

Project: Proposed Class 1A Dwelling
Address: 41 Clarkes Crossing Close, Vacy NSW 2421
Lot/DP: Lot 5 / DP1291036
LGA: Dungog Shire Council
Prepared For: Development Application DA156/2024

1. Protective Fencing and Hoardings

- Temporary security fencing will be installed around the building envelope to prevent unauthorised access.
- Fencing will consist of 1.8 m high mesh panels secured to ground stays.
- Signage with builder contact details and safety warnings will be affixed.
- No fencing will obstruct the public road or easements.

2. Public Safety

- Signage to be installed at entry points warning of active construction and directing deliveries.
- A safety induction process will be implemented for all site visitors.
- Temporary barriers and exclusion zones to prevent public access to hazardous areas.

3. Pedestrian and Vehicular Access Points

- Vehicular access for construction traffic will be via the **approved driveway crossover on Clarkes Crossing Close**.
- A stabilised site entry/exit pad (e.g., crushed rock) will be constructed to minimise sediment tracking.
- Pedestrian access is not permitted through the site during construction.

4. Tree Protection Measures

- No on-site trees are marked for removal. Existing vegetation outside the building envelope is to be retained and protected.
- Any trees within proximity of the works will be fenced off in accordance with **AS 4970-2009** using high-visibility barricades with a **Tree Protection Zone (TPZ)**.
- No stockpiling, trenching or machinery movement will occur inside the TPZ.

5. Bulk Earthworks

- Minor cut and fill will be required to achieve building platform levels (refer to RLs on plans).
- Topsoil stripping, trenching for services, and slab preparation to be carried out using small-scale excavation equipment.
- All earthworks will include erosion and sediment control measures (e.g., silt fencing, straw bales, sediment basin as needed).

6. Site Storage and Sheds

- A secure site shed will be positioned adjacent to the building envelope, near the proposed driveway access.
- Material storage will be contained within a designated laydown zone away from tree protection zones and drainage paths.
- Storage of fuels and chemicals will be secondary-contained and covered.

7. Construction Equipment

- The following equipment is expected onsite:
 - Small to mid-size excavator
 - Skid steer loader
 - Delivery trucks
 - Concrete pump
 - Power tools and generators (with noise controls)
- Equipment will be parked/stored on-site overnight within the fenced area.

8. Waste, Dust, Noise and Vibration Control

- A **lidded waste bin** will be maintained onsite for all general and construction waste.
- Recycling of materials (e.g., offcuts, pallets) will be prioritised where possible.
- Dust control measures include:
 - Regular wetting down of exposed soil
 - Covering of stockpiles
- Noise and vibration mitigation:
 - Compliance with allowable work hours: **7:00 am – 6:00 pm Mon–Sat**
 - Use of muffled machinery
 - Monitoring of vibration near any retained structures or boundaries

9. Temporary Toilets

- A **portable toilet** will be installed on a level area near the site entrance.
- The toilet will be serviced regularly and placed a minimum of 1.5 m from boundaries and watercourses.



Dungog Shire Council
PO Box 95
DUNGOG NSW 2420
T: (02) 4995 7777 F: (02) 4995 7750
E: shirecouncil@dungog.nsw.gov.au
W: dungog.nsw.gov.au
ABN 62 610 350 056

NOTICE OF DETERMINATION OF A DEVELOPMENT APPLICATION

Application number	DA 156/2024; PAN-491010
Applicant	AMC Planning Solutions 76 Kesterton Rise, NORTH ROTHBURY NSW 2335
Description of development	Dwelling
Property	LOT: 5 DP: 1291036, 41 Clarkes Crossing Close VACY
Determination	Approved, subject to conditions Consent Authority Dungog Shire Council
Date of determination	05 March 2025
Date from which the consent operates	05 March 2025
Date on which the consent lapses	05 March 2030

Under section 4.18(1) of the EP&A Act, notice is given that the above development application has been determined by the granting of consent using the power in section 4.16(1)(a) of the EP&A Act, subject to the conditions specified in this notice.

REASONS FOR THE DETERMINATION & CONSIDERATION OF COMMUNITY VIEWS

The determination decision was reached for the following reasons:

- The proposed development, subject to the recommended conditions, is consistent with the objectives of the applicable environmental planning instruments, being; Dungog Local Environmental Plan 2014 and relevant State Environmental Planning Policies
- The proposed development is, subject to the recommended conditions, consistent with the objectives of the Dungog Council Development Control Plan No 1.
- The proposed development is considered to be of an appropriate scale and form for the site and the character of the locality.
- The proposed development, subject to the recommended conditions, will not result in unacceptable adverse impacts upon the natural or built environments.
- The proposed development is a suitable and planned use of the site and its approval is within the public interest.

REASONS WHY THE CONDITIONS HAVE BEEN IMPOSED

The following conditions are applied to:

- Confirm and clarify the terms of Council's Approval;
- Identify modifications and additional requirements that will result in improved compliance, development and environmental outcomes;
- Prevent, minimise, and/or offset adverse environmental impacts including economic and social impacts;
- Set standards and measures for acceptable environmental performance; and
- Provide for the ongoing management of the development.

Right of appeal / request a review of the determination

If you are dissatisfied with this determination:

Request a review

You may request a review of the consent authority's decision under section 8.3(1) of the EP&A Act. The application must be made to the consent authority within 6 months from the date that you received the original determination notice provided that an appeal under section 8.7 of the EP&A Act has not been disposed of by the Court.

Rights to appeal

You have a right under section 8.7 of the EP&A Act to appeal to the Court within 6 months after the date on which the determination appealed against is notified or registered on the NSW planning portal.

The Dictionary at the end of this consent defines words and expressions for the purposes of this determination.

A handwritten signature in black ink, appearing to be 'N. Greenhalgh', written in a cursive style.

Nicholas Greenhalgh

SENIOR BUILDING/DEVELOPMENT OFFICER

Person on behalf of the consent authority

For further information, please contact Nicholas Greenhalgh

Terms and Reasons for Conditions

Under section 88(1)(c) of the EP&A Regulation, the consent authority must provide the terms of all conditions and reasons for imposing the conditions other than the conditions prescribed under section 4.17(11) of the EP&A Act. The terms of the conditions and reasons are set out below.

GENERAL CONDITIONS

1.	Approved Plans and Supporting Documentation			
	Development must be carried out in accordance with the following approved plans and supporting documentation (stamped by Council), except where the conditions of this consent expressly require otherwise.			
	Plan No.	Revision No.	Plan Title.	Drawn By.
				Dated.
	DR01 to DR06	1		AMC Planning solutions
	DR01		HWC Site plan	21/11/2023
2.	Document Title.	Version No.	Prepared By.	Dated.
	BASIX Certificate	1		19/11/2024
	SoEE			November 2024
	WMP			November 2024
	In the event of any inconsistency between the approved plans and the supporting documentation, the approved plans prevail. In the event of any inconsistency between the approved plans and a condition of this consent, the condition prevails.			
	Reason: To ensure all parties are aware of the approved plans and supporting documentation that applies to the development			
2.	Public Utilities			
	Any relocation or alterations of public utilities made necessary as a result of the development are to be carried out at no cost to Council.			
	Reason: To maintain public infrastructure.			

BUILDING WORK

BEFORE ISSUE OF A CONSTRUCTION CERTIFICATE

3.	Payment of Building and Construction Industry Long Service Levy
	Before the issue of a construction certificate, the applicant is to ensure that the person liable pays the long service levy as calculated at the date of this consent to the Long Service Corporation or Council under section 34 of the <i>Building and Construction Industry Long Service Payments Act 1986</i> and provides proof of this payment to the certifier
	Reason: To ensure the long service levy is paid.
4.	Construction site management plan
	Prior to the issue of a construction certificate, the applicant must ensure a construction site management plan is prepared before it is provided to and approved by the certifier. The plan must include the following matters where applicable to this development: • location and materials for protective fencing and hoardings to the perimeter on the site • provisions for public safety • pedestrian and vehicular site access points and construction activity zones • protective measures for on-site tree preservation (including in accordance with AS 4970-2009 Protection of trees on development sites and Council's DCP, if applicable) and trees in adjoining public domain (if applicable) • details of any bulk earthworks to be carried out • location of site storage areas and sheds • equipment used to carry out all works • a garbage container with a tight-fitting lid, dust, noise and vibration control measures • location of temporary toilets. The applicant must ensure a copy of the approved construction site management plan is kept on-site at all times during construction.
	Reason: To require details of measures that will protect the public, and the surrounding environment, during site works and construction.
5.	Onsite Wastewater Management System
	Prior to the issue of the construction certificate an application for the installation or Modification of an onsite sewage management system is to be lodged with council's Environmental services department for approval. The system shall be designed in accordance with AS/NZS 1547:2012 and the Environmental & Health Protection Guidelines.
	Reason – To ensure that suitable on-site sewage management is provided to the development and to protect public health and the environment.

BEFORE BUILDING WORK COMMENCES

6.	Signs on site A sign must be erected in a prominent position on any site on which building work or demolition work is being carried out: • showing the name, address and telephone number of the principal certifier for the work, and • showing the name of the principal contractor (if any) for any building work and a telephone number on which that person may be contacted outside working hours, and • stating that unauthorised entry to the work site is prohibited. Any such sign is to be maintained while the building work or demolition work is being carried out, but must be removed when the work has been completed. Note: This does not apply in relation to building work or demolition work that is carried out inside an existing building that does not affect the external walls of the building. Reason: Prescribed condition EP&A Regulation.
7.	Compliance with Home Building Act In the case of residential building work for which the <i>Home Building Act 1989</i> requires there to be a contract of insurance in force in accordance with Part 6 of that Act, that such a contract of insurance is in force before any building work authorised to be carried out by the consent commences. Reason: Prescribed condition EP&A Regulation.
8.	Home Building Act requirements

	Residential building work within the meaning of the Home Building Act 1989 must not be carried out unless the principal certifier for the development to which the work relates (not being the council) has given the council written notice of the following information — (a) In the case of work for which a principal contractor is required to be appointed— (i) the name and licence number of the principal contractor, and (ii) the name of the insurer by which the work is insured under Part 6 of that Act, (b) In the case of work to be done by an owner-builder— (i) the name of the owner-builder, and (ii) if the owner-builder is required to hold an owner-builder permit under that Act, the number of the owner-builder permit. If arrangements for doing the residential building work are changed while the work is in progress so that the information notified becomes out of date, further work must not be carried out unless the principal certifier for the development to which the work relates (not being the Council) has given the Council written notice of the updated information. (c) In the case of work for which a principal contractor is required to be appointed— (i) the name and licence number of the principal contractor, and (ii) the name of the insurer by which the work is insured under Part 6 of that Act, (d) In the case of work to be done by an owner-builder— (i) the name of the owner-builder, and (ii) if the owner-builder is required to hold an owner-builder permit under that Act, the number of the owner-builder permit. If arrangements for doing the residential building work are changed while the work is in progress so that the information notified becomes out of date, further work must not be carried out unless the principal certifier for the development to which the work relates (not being the Council) has given the Council written notice of the updated information.
	Reason: Prescribed condition EP&A Regulation.
9.	Issue of Construction Certificate Prior to the commencement of work for the construction of the dwelling, it will be necessary to obtain a Construction Certificate. Where Council is not the Principal Certifying Authority (PCA), the proponent or private certifier shall submit a Construction Certificate to Council prior to building works commencing on the subject allotment. Reason: Statutory requirement.

DURING BUILDING WORK

10.	Onsite wastewater treatment system The on-site sewage management works must be inspected during construction of the wastewater disposal area by Dungog Shire Council to verify compliance with this consent and the Australian Standards. Reason - To ensure public health and safety.
11.	Hours of work The principal certifier must ensure that building work, demolition or vegetation removal is only carried out between: • 7.00am to 6.00pm on Monday to Friday • 8.00am to 1.00pm on Saturday The principal certifier must ensure building work, demolition or vegetation removal is not carried out on Sundays and public holidays, except where there is an emergency. Unless otherwise approved within a construction site management plan, construction vehicles, machinery, goods or materials must not be delivered to the site outside the approved hours of site works. Note: Any variation to the hours of work requires Council's approval. Reason - To protect the amenity of the surrounding area.
12.	Site conditions Approved toilet facilities are to be provided, at or in the vicinity of the work site on which the work involved in the erection or demolition of a building is being carried out, at the rate of one toilet for every twenty (20) persons employed at the site. The provision of toilet facilities in accordance with the Clause must be completed before any other work is commenced. Reason: To ensure adequate facilities for onsite workers, while protecting health and the environment.
13.	Site conditions Measures shall be implemented to prevent vehicles tracking sediment, debris, soil and other pollutants onto any road. Reason: To ensure runoff and site debris do not impact road users and local stormwater systems and waterways.
14.	Site conditions All building materials, plant and equipment is to be placed on the building site. Building materials, plant and equipment (including water closets), are not to be placed on footpaths, roadways, public reserves etc. Reason: To protect the public, and the surrounding environment, during site works and construction.

15.	Compliance with the Building Code of Australia
	Building work must be carried out in accordance with the requirements of the BCA.
	Reason: (Prescribed condition - EP&A Regulation).
16.	Procedure for critical stage inspections
	While building work is being carried out, any such work must not continue after each critical stage inspection unless the principal certifier is satisfied the work may proceed in accordance with this consent and the relevant construction certificate.
	Reason: To require approval to proceed with building work following each critical stage inspection.
17.	Implementation of the site management plans
	While vegetation removal, demolition and/or building work is being carried out, the applicant must ensure the measures required by the approved construction site management plan and the erosion and sediment control plan are implemented at all times.
	The applicant must ensure a copy of these approved plans is kept on site at all times and made available to Council officers upon request.
18.	Implementation of BASIX commitments
	While building work is being carried out, the applicant must undertake the development strictly in accordance with the commitments listed in the BASIX certificate(s) approved by this consent, for the development to which the consent applies.
	Reason: To ensure BASIX commitments are fulfilled in accordance with the BASIX certificate (prescribed condition under EP&A Regulation).
19.	Construction noise
	While building work is being carried out and where no noise and vibration management plan is approved under this consent, the applicant is to ensure that any noise caused by demolition, vegetation removal or construction does not exceed an LAeq (15 min) of 5dB(A) above background noise, when measured at any lot boundary of the property where the construction is being carried out.
	Reason: To protect the amenity of the neighbourhood
20.	Responsibility for changes to public infrastructure
	While building work is being carried out, the applicant must pay any costs incurred as a result of the approved removal, relocation or reconstruction of infrastructure (including ramps, footpaths, kerb and gutter, light poles, kerb inlet pits, service provider pits, street trees or any other infrastructure in the street footpath area).
	Reason: To ensure payment of approved changes to public infrastructure.
21.	Uncovering relics or Aboriginal objects

	While demolition or building work is being carried out, all such works must cease immediately if a relic or Aboriginal object is unexpectedly discovered. The applicant must notify the Heritage Council of NSW in respect of a relic and notify the Secretary of the Department of Planning, Industry and Environment and the Heritage Council of NSW in respect of an Aboriginal object. Building work may recommence at a time confirmed by either the Heritage Council of NSW or the Secretary of the Department of Planning, Industry and Environment. In this condition: “relic” means any deposit, artefact, object or material evidence that: (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and (b) is of State or local heritage significance; and “Aboriginal object” means any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction and includes Aboriginal remains.
	Reason: To ensure the protection of objects of potential significance during works.
22.	Imported Fill
	While building work is being carried out, the principal certifier must be satisfied all soil removed from or imported to the site is managed in accordance with the following requirements: a) All excavated material removed from the site must be classified in accordance with the EPA’s Waste Classification Guidelines before it is disposed of at an approved waste management facility and the classification and the volume of material removed must be reported to the principal certifier. b) All fill material imported to the site must be Virgin Excavated Natural c) Material as defined in Schedule 1 of the <i>Protection of the Environment Operations Act 1997</i> or a material identified as being subject to a resource recovery exemption by the NSW EPA.
	Reason: To ensure soil removed from the site is appropriately disposed of and soil imported to the site is safe for future occupants.
23.	Waste management

	While building work, demolition or vegetation removal is being carried out, the principal certifier must be satisfied all waste management is undertaken in accordance with the approved waste management plan. Upon disposal of waste, the applicant is to compile and provide records of the disposal to the principal certifier, detailing the following: • The contact details of the person(s) who removed the waste • The waste carrier vehicle registration • The date and time of waste collection • A description of the waste (type of waste and estimated quantity) and whether the waste is expected to be reused, recycled or go to landfill • The address of the disposal location(s) where the waste was taken • The corresponding tip docket/receipt from the site(s) to which the waste is transferred, noting date and time of delivery, description (type and quantity) of waste. Note: If waste has been removed from the site under an EPA Resource Recovery Order or Exemption, the applicant is to maintain all records in relation to that Order or Exemption and provide the records to the principal certifier and Council. Reason: To require records to be provided, during construction, documenting that waste is appropriately handled.
24.	Erosion and Sediment Control The control of erosion and the prevention of silt discharge into drainage systems and waterways will be necessary in accordance with Landcom's 'Soil and Construction – Managing Urban Stormwater - Current edition. Sediment and erosion control measures are to be implemented prior to the commencement of any earthworks and shall be maintained until satisfactory completion and restoration of site earthworks, including revegetation of all exposed areas. Reason: To prevent the migration of sediments to adjoining land.
.	Survey Report Prior to placement of any concrete a survey report prepared by a registered surveyor shall be provided to the Principle Certifier confirming the dwelling is to be constructed wholly within the Building Envelope as identified in DP 1291036 Reason: To ensure the dwelling is consistent with the terms of the Deposited Plan and associated 88B instrument.

BEFORE ISSUE OF AN OCCUPATION CERTIFICATE

25.	Onsite wastewater treatment system Prior the issue of an occupation certificate, the principal certifier must ensure a satisfactory final inspection of the on-site sewage management system has been undertaken by Council and an Approval to Operate the on-site sewage management system has been issued Reason – To ensure public health and safety
-----	--

26.	Installation of Stormwater Provisions detailed on the Section 88B Instrument
	Prior to the issue of an Occupation Certificate, the principal certifier must ensure that following stormwater provisions have been installed on the site: (a) Stormwater is conveyed into a above-ground rainwater tank, with overflow being conveyed into the rainwater garden. (b) The rainwater garden must have: i. a minimum surface area of 30 square metres; ii. an extended detention volume of 4 cubic metres; iii. an extended depth of 0.2 metres; iv. a filter area of 8 square metres; and v. a filter depth of 400 millimetres.
	Reason: To ensure stormwater works are carried out in accordance with the Section 88B Instrument.

This consent contains the conditions imposed by the consent authority which are to be complied with when carrying out the approved development. However, this consent is not an exhaustive list of all obligations which may relate to the carrying out of the development under the EP&A Act, EP&A Regulation and other legislation.

Some of these additional obligations are set out in the Conditions of Development Consent: Advisory Notes (See Annexure 1). The consent should be read together with the Conditions of development consent: advisory notes to ensure the development is carried out lawfully.

The approved development must be carried out in accordance with the conditions of this consent. It is an offence under the EP&A Act to carry out development that is not in accordance with this consent.

Dictionary

The following terms have the following meanings for the purpose of this determination (except where the context clearly indicates otherwise):

Approved plans and documents means the plans and documents endorsed by the consent authority, a copy of which is included in this notice of determination.

AS means Australian Standard published by Standards Australia International Limited and means the current standard which applies at the time the consent is issued.

Building work means any physical activity involved in the erection of a building.

Certifier means a council or a person that is registered to carry out certification work under the Building and Development Certifiers Act 2018.

Construction certificate means a certificate to the effect that building work completed in accordance with specified plans and specifications or standards will comply with the requirements of the EP&A Regulation and Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021.

Council means Dungog Shire Council

Court means the Land and Environment Court of NSW.

EPA means the NSW Environment Protection Authority.

EP&A Act means the Environmental Planning and Assessment Act 1979.

EP&A Regulation means the Environmental Planning and Assessment Regulation 2021.

Independent Planning Commission means Independent Planning Commission of New South Wales constituted by section 2.7 of the EP&A Act.

Occupation certificate means a certificate that authorises the occupation and use of a new building or a change of building use for an existing building in accordance with this consent.

Principal certifier means the certifier appointed as the principal certifier for building work or subdivision work under section 6.6(1) or 6.12(1) of the EP&A Act respectively.

Site work means any work that is physically carried out on the land to which the development the subject of this development consent is to be carried out, including but not limited to building work, subdivision work, demolition work, clearing of vegetation or remediation work.

Stormwater drainage system means all works and facilities relating to:

- the collection of stormwater,
- the reuse of stormwater,
- the detention of stormwater,
- the controlled release of stormwater, and
- connections to easements and public stormwater systems.

Strata certificate means a certificate in the approved form issued under Part 4 of the Strata Schemes Development Act 2015 that authorises the registration of a strata plan, strata plan of subdivision or notice of conversion.

Subdivision certificate means a certificate that authorises the registration of a plan of subdivision under Part 23 of the Conveyancing Act 1919.

Subdivision works certificate means a certificate to the effect that subdivision work completed in accordance with specified plans and specifications will comply with the requirements of the EP&A Regulation.

Sydney district or regional planning panel means Hunter and Central Coast Regional Planning Panel.

ANNEXURE 1

Department of Planning and Environment
Conditions of Consent: Advisory Notes



Condition of consent: advisory notes

In addition to the conditions of the development consent, the following advisory notes may be relevant for a person involved in carrying out the development approved under the consent and should be read in conjunction with the Notice of Determination.

The advisory notes do not form part of the development consent. However, they provide information on how the obligation to lawfully carry out the approved development can be met.

General Advice – Consent

Complying with conditions of the Development Consent

Your development consent contains the conditions of consent that must be met to lawfully complete your development. If a condition requires further reports, payment of scheduled fees or an inspection, the condition is to be met at your expense unless otherwise specified in the condition.

Read all of the conditions of consent carefully before you start work and note which conditions must be met at each stage of the development. Liaise regularly with your builder and principal certifier to ensure all conditions are satisfied. If you have any questions regarding a condition, you can contact council's duty planner or an industry professional with relevant expertise for clarification.

Complying with the conditions of your consent will help avoid delays, or worse – a costly fine from council.

Application of prescribed conditions

In addition to the conditions of this consent, prescribed conditions may also apply. If prescribed conditions within Division 2 Part 4 of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation) related to your development and were in force at the time your application was lodged, these conditions must be met whether or not they were specified within this consent.

Bonds and Security Deposits

For some development, a bond or security deposit may be applied to ensure public infrastructure like roads and footpaths are not left damaged as a result of your development. Conditions for bonds and security deposits can vary so be sure that you understand the obligations to avoid forfeiting part or all of the amount paid.

Contact your local Council for more information about bonds and security deposits.

Contributions

If your development requires a contribution; for example works in kind or a monetary contribution towards shared public infrastructure such as parks or drainage infrastructure; the requirement will be conditioned within the development consent, and may be subject to consumer price index (CPI) increase.

Further information about local contributions can be found on the Department of Planning, and Environment's website.

<https://www.planning.nsw.gov.au/local-infrastructure-contributions-policy>

Long Service Levy

The New South Wales Parliament has imposed a levy on building and construction work costing \$250,000 and above (inclusive of GST). The levy is paid into a fund administered by the Long Service Corporation, and from this fund, the Corporation makes long service payments to building and construction workers.

The Levy is payable for building and construction projects costing \$250,000 and above (inclusive of GST) and is payable to Council, or directly to the Long Service Corporation. Evidence of payment of the levy is required to obtain a Construction Certificate.

The Long Service Corporation website has further information about the long service levy, including how to calculate your contribution on the approved development.

[https://www.longservice.nsw.gov.au/bci/levy/about-the-levy/long-service-levy#:~:text=The%20New%20South%20Wales%20Parliament,GST\)%20in%20New%20South%20Wales.&text=The%20current%20levy%20rate%20is,more%20\(inclusive%20of%20GST](https://www.longservice.nsw.gov.au/bci/levy/about-the-levy/long-service-levy#:~:text=The%20New%20South%20Wales%20Parliament,GST)%20in%20New%20South%20Wales.&text=The%20current%20levy%20rate%20is,more%20(inclusive%20of%20GST)

Offences and Penalties

Only the approved development of this consent may be carried out on your land in accordance with the approved plans. Other development on the land to which the development consent does not apply must be carried out according to law.

A person carrying out unauthorised work may be charged with a criminal offence under the EP&A Act 1979 and if convicted, a monetary penalty may be applied.

Retirement of biodiversity credits

If your consent conditioned the requirement to retire biodiversity credits, this may be satisfied by payment to the Biodiversity Conservation Fund of an amount equivalent to the class and number of ecosystem credits or number of species credits, as calculated by the Biodiversity Assessment Method (BAM) Credit Calculator .The BAM Credit Calculator can be found here <https://www.lmbc.nsw.gov.au/offsetpaycalc>

<https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity-offsets-scheme/offset-obligations-and-credit-trading/offsets-payment-calculator>

General Advice – Construction Construction Certificate

A Construction Certificate may be required before building work approved under the development consent can lawfully start.

A Construction Certificate confirms your detailed plans comply with the Building Code of Australia and are consistent with the approved plans, documents and conditions of consent in accordance with EP&A Regulation.

Having a Construction Certificate means you can commence building work on the site in accordance with the approved plans. Private accredited certifiers and local councils can issue Construction Certificates.

Any works undertaken without a Construction Certificate will be unauthorised and you will not be able to obtain an Occupation Certificate for those works at the completion of building work.

Further advice about Construction Certificates is available on the Department of Planning and Environment's website.

<https://www.planning.nsw.gov.au/Assess-and-Regulate/Development-Assessment/Your-guide-to-the-DA-process/Development-assessment-and-construction-approval-processes/Stage-5-Get-your-Construction-Certificate-and-organise-construction>

Subdivision Works Certificate

Your development consent may require you to obtain a Subdivision Works Certificate before you can start works relating to subdivision. A Subdivision Works Certificate operates in the same manner as a construction certificate, but for subdivision works.

Private accredited certifiers and local councils can issue Subdivision Works Certificates. The issuing of a Subdivision Works Certificate does not negate the need for a Construction Certificate for other building works associated with the approved development.

Further information about Subdivision Works Certificates is available on the Department of Planning and Environment's website.

<https://www.planning.nsw.gov.au/-/media/Files/DPE/Factsheets-and-faqs/faqs-EPandA-Part-6-subdivision-works-certificates-2019-08-30.pdf?la=en>

Appointing a Principal Certifier

A Principal Certifier (PC) (previously known as a principal certifying authority or PCA) is the only person/ body who can issue partial or final occupation certificates.

A PC must be appointed by the landowner before work commences. A builder cannot appoint the PC unless they are also the landowner.

A PC can be either an accredited private or Council certifier. The PC will inspect work during construction to ensure the works completed are consistent with the approved plans and comply with required building standards. However, it remains your responsibility to ensure all conditions of development consent are met.

If the appointed PC changes for any reason, all building works must stop until another PC has been appointed, and Council has been notified 2 days in advance in writing.

If the development consent allows for two different types of development that each require a separate PC, each PC is only engaged for one development type. Further advice on finding and appointing a PC can be found on the NSW Fair Trading Website.

<https://www.fairtrading.nsw.gov.au/housing-and-property/building-and-renovating/preparing-to-build-and-renovate/finding-and-appointing-a-certifier>

Utilities and authorities

It is your responsibility to find out if the land associated with the approved development is affected by utility assets above and below ground before you start approved work. Damage to these utilities can be avoided through a 'Dial Before You Dig' enquiry on 1100 or <https://www.1100.com.au/>

You may be required to liaise with relevant authorities and utility providers for some works depending on the circumstances of your development consent. This may include -

- Energy authorities, providers and operators
- Water authorities
- Telecommunications providers and operators

- Australia post
- Transportation authorities and operators
- Other state and Federal government departments

Please allow for the necessary approvals and charges imposed by the above authorities that may be associated with potential impacts of your development on infrastructure owned by a utility provider. For example, a utility authority may have specific safety requirements, or only allow authorised representatives to complete the work in the vicinity of underground infrastructure such as gas, water or power.

Fire safety

Ensuring your development is safe from risk of fire is important. Fire safety provisions are considered during the initial development application and further details are assessed before the issue of the construction certificate.

A Fire Safety Certificate may be required prior to obtaining an occupation certificate. If fire safety measures beyond those approved under the development consent are required prior to obtaining a Fire Safety Certificate under the EP&A Regulation, you must ensure these are met through a modification to the initial application.

Further information relating to building fire safe developments can be found on the Fire and Rescue NSW website

<https://www.fire.nsw.gov.au/page.php?id=9140>

Further information about Fire Safety can also be found in the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021

<https://legislation.nsw.gov.au/view/whole/html/inforce/current/sl-2021-0689>

Contaminated land and materials

The potential for workers to be exposed to contaminants during construction works should be minimised through the development and implementation of a construction WH&S management plan including induction procedures.

Asbestos contamination is widespread in urban areas in NSW, and you should be aware of the dangers associated with handling asbestos material that may unknowingly be present on the site.

If asbestos is found during work, ensure the removal, transportation and disposal, regardless of quantity, is carried out in a safe and professional manner. Further information and regulation around handling asbestos can be found here

- Work Health and Safety Act 2011
- Work Health and Safety Regulation 2017
- Safe Work Australia Code of Practice - How to Manage and Control Asbestos in the Workplace
- Safe Work Australia Code of Practice - How to Safely Remove Asbestos
- Protection of the Environment Operations Act 1997; and
- Protection of the Environment Operations (Waste) Regulation 2014

If contamination is unexpectedly found during works, all work should cease and the consent authority and the Environmental Protection Authority (EPA) should be notified as soon as possible and consider if a Remediation Action Plan (RAP), or amendment to an approved RAP, is required.

If contamination occurs as result of works, the local council or the EPA have the authority to issue clean up notices, and in some cases fines, so please ensure the RAP or waste management plan are followed appropriately.

Virgin Excavated Natural Material – EPA advice, and applying for waste recovery exemption

Virgin Excavated Natural Material (VENM) is undisturbed, uncontaminated, and chemically stable soil. If your development required additional soil material, you may be required to provide evidence the soils is classed as VENM.

Information about soil classification can be found on the EPA website

<https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/virgin-excavated-natural-material>

In addition to the above, you may want to use alternative fill material to VENM. You can apply for an exemption under the waste recovery framework to use a select list of materials as a substitute for VENM.

Further information about waste recovery exemptions can be found on the EPA website

<https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/resource-recovery-framework>

Tree Preservation

Your development consent may require you to protect existing trees on or around the site from the impacts of the approved development. All trees should be protected unless otherwise noted within the consent, this includes trees located on adjoining land.

The development consent may allow for the protection of trees that are located on adjoining Council land. Please ensure you seek the permission of the landowner to access private lands if needed.

Please refer to local council policy for advice on appropriate measures for preserving trees not covered by this consent, including overhanging branches and underground roots that may be impacted by the approved development.

General Advice – Occupation

Occupation Certificate

An Occupation Certificate may be required before the development can be lawfully occupied or used as intended. This includes both habitable and non-habitable developments.

An Occupation Certificate confirms the development has been completed. Having an occupation certificate means you will be able to commence using the development for the occupation or as otherwise intended. You may not use the development as intended without an Occupation Certificate if one is required.

Further advice about Occupation Certificates is available on the Department of Planning and Environment's website.

<https://pp.planningportal.nsw.gov.au/post-consent-certificates/occupation-certificate>

Licenses to operate/ Change of use

You may decide to change the use of the completed development in the future. This may require a separate development application for the proposed change of use. Some changes of use may be approved as complying development. Some uses may also require additional inspections, licenses or approvals before the new use can start such as medical facilities, food and beverage providers or liquor and gambling outlets.

Useful contacts for further information

BASIX Information

1300 650 908 weekdays 2:00pm - 5:00pm or info@service.nsw.gov.au

<https://www.planningportal.nsw.gov.au/basix>

Department of Fair Trading

13 32 20

<https://www.fairtrading.nsw.gov.au/>

Dial Prior to You Dig

1100

<https://www.1100.com.au/>

Long Service Payments Corporation

131441

<https://www.longservice.nsw.gov.au/>

NSW Food Authority

Notification for your food-based business

1300 552 406

<https://nswfoodauthority.transactcentral.com/contactcentre/servlet/SmartForm.html?formCode=OLNOTIFY01>

NSW Health

Information on asbestos and safe work practices.

<https://www.health.nsw.gov.au/environment/factsheets/Pages/asbestos-and-health-risks.aspx>

Water Efficiency Labelling and Standards (WELS)

<https://www.waterrating.gov.au/>

SafeWork NSW – Workplace Health and Safety Regulator

<https://www.safework.nsw.gov.au/>

13 10 51

Icare – Insurance and Care NSW

<https://www.icare.nsw.gov.au/>

SIRA – State Insurance Regulatory Authority

<https://www.sira.nsw.gov.au/>

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Apply for certificate

Select the certificate action you would like to apply for	Construction certificate
Select the type of certificate you wish to apply for	Certificate for the full development
Is the application for modification of a current construction certificate?	No
Which approval type is this certificate in relation to?	
Please enter the DA number that the consent authority has provided(e.g. DA/22/2023).	DA156/2024
Was the DA applied for via the NSW Planning Portal?	Yes
Please provide the portal application reference number (PAN)	PAN-491010
Has the DA been determined?	Yes
Date of determination of the DA Case	5/03/25
Is the development exempt from the State Environmental Planning Policy (Sustainable Buildings) 2022 Chapter 3 relating to non-residential buildings, for any of the following reasons? - The DA was submitted on the NSW Planning Portal before 1st October 2023 - The DA was submitted on the NSW Planning Portal on or after 1st October 2023 but was deemed exempt due to the reasons outlined in Chapter 3.1.	Yes
Site address #	1
Street address	41 CLARKES CROSSING CLOSE VACY 2421
Local government area	DUNGOG
Lot / Section Number / Plan	5/-/DP1291036 ☒
Primary address?	Yes
Planning controls affecting property	Land Application LEP Land Zoning Height of Building Floor Space Ratio (n:1) Minimum Lot Size Heritage Land Reservation Acquisition Foreshore Building Line Bushfire Prone Land Land near Electrical Infrastructure

Applicant details

Title	
First given name	Adam
Other given name/s	

Family name	Cuthbert
Contact number	0455560300
Email	admin@amcplanning.com.au
Address	76 KESTERTON RISE NORTH ROTHBURY 2335
Is the applicant a company?	Yes
Name	AMC Planning Solutions
ABN	
ACN	
Trading Name	AMC PLANNING SOLUTIONS PTY LTD

Developer details

Name	
ABN	
ACN	
Trading Name	
Email	
Address	

Land owner details

Owner/s of the Development Site	There are one or more owners of the development site and I am NOT one of them
Owner Builder?	No
Title	
First given name	Mia
Other given name/s	
Family name	Mackay
Contact number	
Email	miamackay1@gmail.com
Address	41 CLARKES CROSSING CLOSE VACY 2421
Company name (if applicable)	
ABN/ACN	
Owner Builder?	No
Title	
First given name	Bradley
Other given name/s	
Family name	Smith
Contact number	
Email	miamackay1@gmail.com
Address	41 CLARKES CROSSING CLOSE VACY 2421
Company name (if applicable)	
ABN/ACN	
I declare that I have shown this document, including all attached drawings, to the owner(s) of the land, and that I have obtained their consent to submit this application.	
Who will be doing the building work?	Not determined at this time

Builder or Principal contractor details

Builder Type	A Company , business , government entity or other similar body
Company Name	
ABN	
ACN	
Trading Name	
Billing Address	
Email Address	

Long Service Levy

Have you paid the Long Service Levy?	No
Are there any security or site conditions which may impact on the person undertaking the inspection? eg: locked gates, dogs, animals etc	No
Provide details	

Payer details

Payer Type	Individual
Company Name	
ABN	
ACN	
Trading Name	
Billing Address	
Email ID	
Title	
First given name	Mia
Other given name/s	
Family name	Mackay
Contact number	
Email	miamackay1@gmail.com
Billing address	41 CLARKES CROSSING CLOSE VACY 2421

Proposed development details

Selected common application types	Erection of a new structure
Selected development types	Dwelling House
Class of development	1(a), 10(a)
Please provide a detailed description of the development	Dwelling
Estimated Development Cost	\$400,000.00
Please provide the estimated development cost including GST	\$400,000.00

Information to be collected for the Australian Bureau of Statistics

Total site area (m2)	0
Existing gross floor area (m2)	0
Total Net Lettable Area (m2))	0
Proposed gross floor area (m2)	0
What are the current uses of all parts of the building (s)/land? (if vacant please state)	vacant
What is the proposed use of all parts of the building (s)/land?	dwelling
Is the proposed building is attached, detached (i.e. free standing) or semi-detached?	

Ultimate height of the development (m)	1
Number of pre-existing dwellings on site	0
Number of storeys proposed in the new building(s)	0
Number of proposed lots	

Materials to be used

Walls	Steel (60)
Roof	Steel (60)

Floor	Concrete (20)
Frame	Steel (60)

Fire safety measures

Are you proposing to carry out alterations/modifications to existing 'relevant fire safety systems'?	No
Are proposed fire safety measures to be installed in the building?	No

Registered certifier

The applicant has selected the following certifying organisation to assess this application

Company name	CHRIS DAN CERTIFICATION PTY. LTD.
Trading name	CD Certification
ABN	14614224896
ACN	614 224 896
Address	1/8 Teamster Close, TUGGERAH NSW 2259
Email	support@cdcert.com.au

Principal certifier

The applicant has selected the following certifying organisation to assess this application

Company name	CHRIS DAN CERTIFICATION PTY. LTD.
Trading name	CD Certification
ABN	14 614 224 896
ACN	614 224 896
Address	1/8 Teamster Close, TUGGERAH NSW 2259
Email	support@cdcert.com.au

Declarations

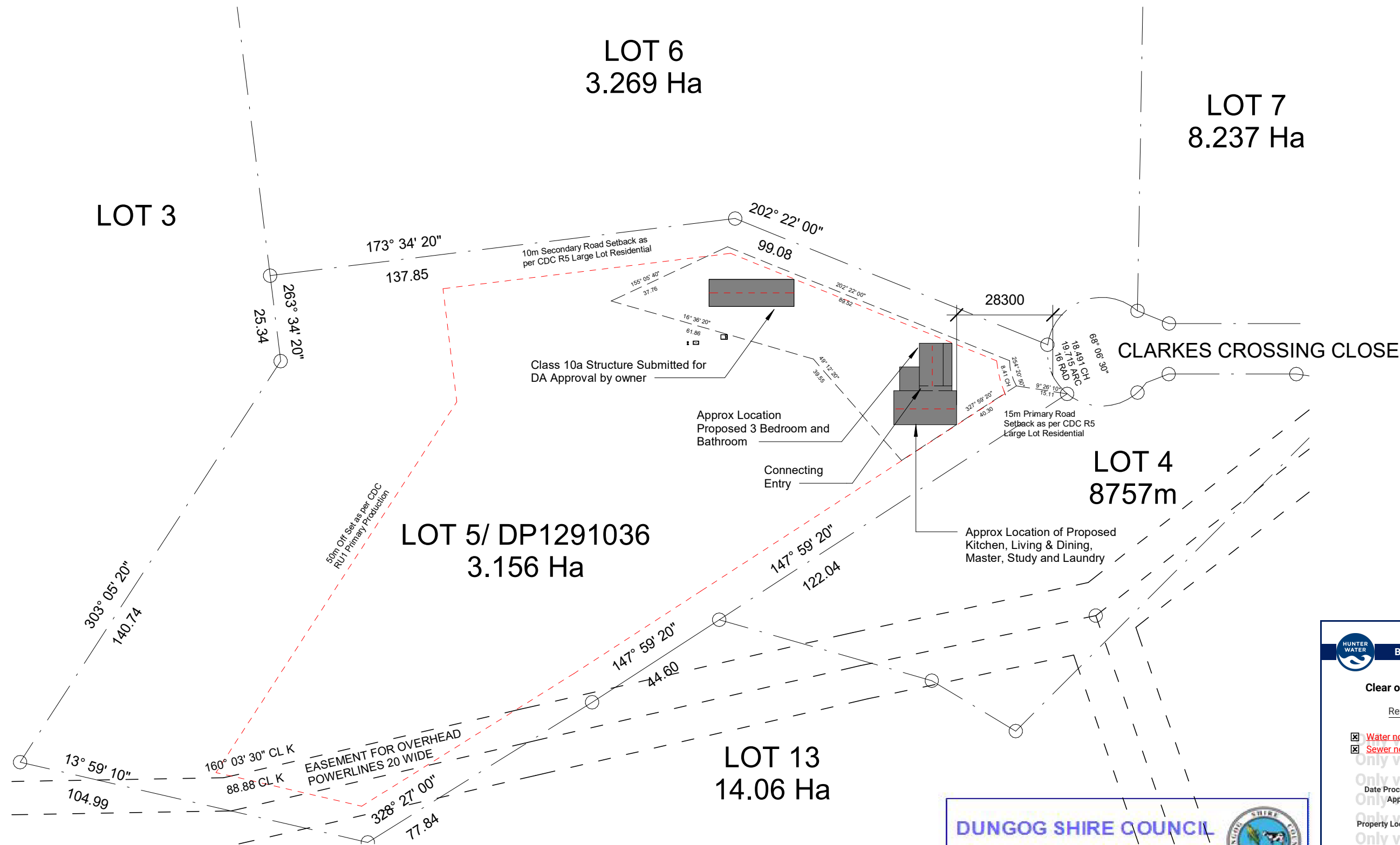
I declare that all the information in the application and checklist is, to the best of my knowledge, true and correct	Yes
I agree to the appropriately delegated assessment officers attending the site for the purpose of inspection	Yes
I/we own the subject land, consent to this application and consent to Council officers entering the premises during normal office hours for the purpose of conducting inspections relative to this application. I accept that all communication regarding this application will be through the nominated applicant. In the case of an owners corporation, a seal is required, or if crown land, written authorisation of the relevant statutory authority.	Yes
I have read and agree to the collection and use of my personal information as outlined in the Privacy Notice.	Yes
I declare that all works that are the subject of the relevant consent have been completed and that all conditions that are required to be satisfied prior to the issue of this certificate have been satisfied	Yes
I agree to pay any required NSW Planning Portal Service Fee/s specified under Part 9, Schedule 4 of the Environmental Planning and Assessment Regulation 2021 to the Department of Planning, Housing and Infrastructure.	Yes

Review of application

What is the outcome of your review?	Accept application
Additional certifier comments	N/A
Certifier reference number	CC 24-8336

Has the applicant paid the application fees?	Yes
Enter the date the application was lodged into the certifier's system	12/05/25

DO NOT SCALE DIMENSIONS FROM THIS DRAWING ALL MEASUREMENTS TO BE VERIFIED ON SITE



1

Site Plan

1 : 1200

DUNGOG SHIRE COUNCIL

Development Application No 156/2024
Date 5th March 2025

Approved subject to compliance with conditions on Development Consent.

HUNTER WATER BUILDING PLAN ASSESSMENT

Clear of Hunter Water Assets

Reference No: 111897

☒ Water not available for connection
☒ Sewer not available for connection

Only valid for 111897
Only valid for 111897
Only valid for 111897
Only valid for 111897

Date Processed: 23 February 2024
Applicant: AMC planning Solutions - Adam Cuthbert

Property Location: 41 CLARKES CROSSING CL VACY NSW 2421

PLEASE TAKE INTO CONSIDERATION

This is not a compliance certificate. This stamp indicates that Hunter Water has undertaken an initial assessment of the proposed development to identify possible impacts to our infrastructure. Conditions of Hunter Water easements apply. For information on Hunter Water's processes please refer to our 'Land Development Manual' on our website or contact us on 1300 657 657. Version 3.3 (22 December 2021)

	ISSUE	LGA	CLIENT	PROJECT	DATE	DRAWING	SCALE
		DUNGOG SHIRE COUNCIL	MIA MACKAY	PROPOSED DWELLING 41 CLARKES CROSSING CLOSE, VACY 2421 LOT 5 / DP1291036	21/11/2023	DR01 SITE PLAN	1:1200 @ A3  PROJECT NORTH



Levy Receipt

Date: 01/09/2025

Development applicant

mia mackay
47 DURHAM RD EAST GRESFORD NSW 2311 AU

Development details

Application type:	Construction Certificate
Application no.:	Cc/24-8336
Approving authority:	DUNOG SHIRE COUNCIL
Site address:	41 CLARKES CROSSING CL VACY NSW 2421

Levy details

Levy no.:	L0000199142
Cost of works (incl. GST):	\$400,000.00
Levy payable:	\$1,000.00
Total levy paid:	\$1,000.00

Note: If this payment was made via the LSC portal the payment will be processed on behalf of LSC by Service NSW (ABN 37 552 837 401) and will appear as Service NSW on your statement.

PRINCIPAL CERTIFIER SERVICES AGREEMENT

Section 81A (2)(b)(ii) or (c) or (4)(b)(ii) or (c), 86(1) and (2) of the Environmental Planning & Assessment Act 1979.

SECTION A. Introduction					
I consent to Cristinel Dan (Chris Dan) BDC2471 being appointed as the PC for the development and is authorised to carry out the certification work which is the of this agreement and the Application Form and Certification Contract in terms of the Environmental Planning and assessment Act 1979 and Regulations made thereunder.					
SECTION B Parties to the Agreement (being all owner/s of the property)					
Owner(s) Name(s)					
Mia MACKay and Bradley Smith					
Address:-		41 Clarkes Corssing Close Vacy			
Telephone		Mobile		Email Address	
		0455560300		miamackay1@gmail.com	
SECTION C. Location of where the building work is to be carried out					
Address:-		41 Clarkes Crossing Close Vacy NSW 2321			
SECTION D. Description of the development					
Briefly describe the building work					
Dwelling					
SECTION E. Details of Principal Contractor/Owner Builder					
Builder's name or owner builder			Builder's Licence or OB Permit No.		
BUILDT CONSTRUCTION COMPANY PTY LTD			462533C		
Address:-		Thornton NSW 2322		Builder's ABN:- 674 293 291	
Daytime Telephone		Mobile		Email	
SECTION F. Notice of Commencement of Work					
Estimated date of commencement of work:-					
SECTION G. Details of the Development Consent & Construction Certificate (office use only)					
DA Consent CC No.	DA 156/2024 CC 24-8336	DA Approval Date: CC Approval Date.	5/3/2025	Council: Certifier.	Dungog Shire Council Cristinel Dan (Chris Dan) BDC2471
SECTION H. Signature of all Owners of the Property					
By signing this agreement, you consent and agree to:					
1) I/we have freely chosen to engage Cristinel Dan (Chris Dan) BDC2471 as the Principal Certifier for the proposed development.					
2) I/We have read and accept the conditions outlined in the Application Form and Certification Contract and agree to abide by the terms of the Scope of Services, Restrictions and Limitations forming the basis of the Contract.					
3) I/We understand the roles and responsibilities of the Owner and the Registered Certifier.					
4) I/We confirm that we have read and understood the accompanying Fee Proposal, Contract and that you understand your rights and responsibilities and those of the Certifier.					
5) I/We confirm that we have read the accompanying prescribed information sheet issued by Fair Trading.					
6) I/We give consent to CD Certification to update any discrepancies in the NSW Planning Portal with respect to this application.					
Owner 1		Sign/Print Name		Owner 2	
Print Name: Mia Mackay		Date: 12/05/25		Print Name: Bradley Smith	
Owner 3		Sign/Print Name		Owner 4	
Print Name:		Date: 12/05/25		Print Name:	
				Date: 12/05/25	

Infocert Document Summary

Order ID:	20003
Process Date:	22/02/2024 02:37 pm
Search Reference:	5/1291036
Search Address:	41 Clarkes Xing Cl, Vacy NSW 2421, Australia

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NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 5/1291036

SEARCH DATE TIME EDITION NO DATE

22/2/2024 2:37 PM 2 13/3/2023

LAND

LOT 5 IN DEPOSITED PLAN 1291036
AT VACY
LOCAL GOVERNMENT AREA DUNGOG
PARISH OF GRESFORD COUNTY OF DURHAM
TITLE DIAGRAM DP1291036

FIRST SCHEDULE

MIA KAY MACKAY
BRADLEY ROSS SMITH
AS JOINT TENANTS (T AS916097)

SECOND SCHEDULE (9 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 QUALIFIED TITLE. CAUTION PURSUANT TO SECTION 28J(1) AND 28J(1A)
OF THE REAL PROPERTY ACT, 1900. ENTERED 1.12.1997 BK 4179 NO 898
3 DP647054 EASEMENT FOR WATER SUPPLY 5 METRE(S) WIDE
APPURTENANT TO THE LAND ABOVE DESCRIBED
4 DP1291036 RESTRICTION(S) ON THE USE OF LAND REFERRED TO AND
NUMBERED (2) IN THE S.88B INSTRUMENT
5 DP1291036 RIGHT OF CARRIAGEWAY 3 METRE(S) WIDE APPURTENANT TO
THE LAND ABOVE DESCRIBED
6 DP1291036 POSITIVE COVENANT REFERRED TO AND NUMBERED (7) IN THE
S.88B INSTRUMENT
7 DP1291036 RESTRICTION(S) ON THE USE OF LAND REFERRED TO AND
NUMBERED (8) IN THE S.88B INSTRUMENT
8 DP1291036 EASEMENT FOR OVERHEAD POWER LINE(S) 20 METRE(S) WIDE
AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE
DIAGRAM
9 AS916098 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

Search for Bailey Lennard PRINTED ON 22/2/2024

*Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. Infocert an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

INSPECTION REPORT – 24-8336 – 2. Pre-Commencement CC**41 Clarkes Crossing Close, Vacy NSW 2421****APPLICANT DETAILS**

Applicant: AMC Planning Solutions
Address: C/- 41 Clarkes Crossing Close, Vacy NSW 2321
Phone: 0455560300

RELEVANT CONSENTS

Local Government Area: Dungog Shire Council
Development Applications (if applicable) DA 156/2024
Construction Certificate Number 24-8336

PROPOSAL

Address of Development: 41 Clarkes Crossing Close, Vacy NSW 2421
Lot / DP: 5 / DP1291036
Land Use Zoning: N/A
Scope of Building Works Covered by this Notice: Dwelling

INSPECTION DETAILS

Inspector: Chris Dan
Inspection date and time: 14/05/2025 12:00 PM
Registration No.: BDC 2471

INSPECTION RESULTS

We have attended the above property and completed an inspection. The areas inspected and the overall outcome of the inspection are listed below, together with any specific defects noted or documents required.

Inspection Area	Inspection Outcome	Reinspections
1. Pre-Commencement CC	Satisfactory (no issues)	No re-inspections required for this inspection.

SIGNED BY:

Chris Dan – Inspector
14/05/2025

APPENDIX

Details of any current fire safety measures in the existing building/s on site that will be affected by the proposed development is attached if applicable.

NA

The plans and specifications that accompany this application adequately and accurately depict the existing site conditions.

Yes

Are there any features of the site, or of any building on the site, that would result in the proposed development either not being complying development or not complying with the Building Code of Australia.

No

Has any building work authorised by the complying development certificate has been commenced on this site.

No



Dungog Shire Council
PO Box 95
DUNGOG NSW 2420
T: (02) 4995 7777 F: (02) 4995 7750
E: shirecouncil@dungog.nsw.gov.au
W: dungog.nsw.gov.au
ABN 62 610 350 056

Ref: SA62/2023;

Ms M K MacKay
45 Durham Road
EAST GRESFORD NSW 2311

NOTICE OF DETERMINATION OF APPLICATION - MODIFICATION
Local Government Act, 1993

Pursuant to Section 99 of the Local Government Act 1993, notice is hereby given of the determination by the consent authority of:-

Septic Application No.	SA62/2023
Portal Reference Number:	S68-2025-18898
Date of original determination:	12 February 2023
Date of Section 68 Modification Determination:	16 October 2025
Proposed Development:	Sewage Management Facility – AWTS – to connect dwelling into system
Property Description:	LOT: 5 DP: 1291036, 41 Clarkes Crossing Close VACY 2421

The application has been determined by granting of approval as detailed in Schedule 1 and subject to conditions in Schedule 2.

Your plans and specifications, duly endorsed, are enclosed.

Should you wish, you may seek to have this determination reviewed by Council in accordance with Section 100 of the Local Government Act. Arrangements for this review should be made to Council's Building Department within 28 days after the date of determination.

Yours faithfully,

Jason Marks
ENVIRONMENTAL HEALTH OFFICE

Modification Summary

Application Number (S68 #)	Determination Date	Modification Description
S68-2025-18898	16 October 2025	Connect residence



Dungog Shire Council
PO Box 95
DUNGOG NSW 2420
T: (02) 4995 7777 F: (02) 4995 7750
E: shirecouncil@dungog.nsw.gov.au
W: dungog.nsw.gov.au
ABN 62 610 350 056

SCHEDULE 1 APPROVAL UNDER SECTION 68 OF THE LOCAL GOVERNMENT ACT

Modification of an existing Sewage Management Facility this can be changed depending on modification type

Note: A separate approval is required to operate this system

INSPECTIONS REQUIRED FOR THIS APPLICATION

Two (2) working days notification for the following inspections is required.

- a) **Site Pre-approval**
- b) **Final**

Please phone Council on **(02) 4995 7777** during office hours for the above inspections.
Please quote the relevant Development Application Number.

SCHEDULE 2

1. All plumbing and drainage work is to be carried out by a plumber licensed with Department of Fair Trading.
2. Approval has been given for an approved size and brand of septic tank, if a different tank is used, notification must be given to Council.
3. The Septic Tank to be used is to be approved by the NSW Department of Health, issued with a licence from Standards Australia and is to display an Australian Standard Licence mark.
4. The septic tank installation is to be installed strictly in accordance with the attached plan approved by Council.
5. The septic tank is to be located not less than 1.5 metres from any building and access must be provided for desludging. Electrical connections, pumps, tank lids, inspection and manhole covers must be located above the 1 in 100 flood level.
6. Liquid trade waste generated on the premises must not be discharged into the septic tank.
7. In the case of on-site systems such as absorption trenches and evapotranspiration areas, trenches are not to be covered until inspected by Council.
8. The Sewage Management Facility will require an ongoing Approval to Operate and be subject to Council inspections for which a fee will be charged.

9. The Sewage Management Facility Approval to Operate will be subject to annual renewal.
10. The Aerated Wastewater Treatment System is to be installed and operated in accordance with the conditions outlined in this approval and the requirements and conditions of the NSW Department of Health, relating to the installation and operation of aerated wastewater systems.
11. The aerated wastewater system is to be serviced by a council approved contractor and in accordance with the schedule and servicing requirements set by NSW Department of Health for the accreditation of this model and make of system.
12. Effluent is to be irrigated in designated effluent irrigation areas that are non-recreational and identified by approved signage.
13. The irrigation areas must be located outside buffer zones (see attachment) and above the 1 in 20 year flood level.
14. The irrigation area is to be planted with appropriate vegetation/shrubs. Recreational lawn areas of domestic premises shall not be used for the disposal of effluent from aerated septic tanks.
15. Gypsum and organic material should be worked into the topsoil to improve permeability of irrigation area.
16. The owner shall maintain the irrigation area in regard to adequate cover, elimination of weeds and maintenance of plants and shrubs.
17. The irrigation pump should be of sufficient size to effectively distribute effluent to the irrigation area.
18. In-line irrigation valves (where installed) must be accessible to the householder and operated at a frequency to prevent ponding and excessive use of any one area.
19. Irrigation lines are to be buried to minimum 150mm and permanently established in the designated areas.
20. There is to be no cross connection between any irrigation pipework and a potable water supply.
21. All irrigation pipework and fittings shall comply with all parts of AS1477 or AS2698.2.
22. Soaker hoses, common garden sprinklers and standard water hoses and fittings are not to be used to irrigate from the approved system.
23. A surface water diversion drain should be constructed upslope of the irrigation area.
24. A 300mm earth bund should be constructed downslope of each irrigation area to contain wet weather runoff. Discharge or runoff into stormwater easements or other drainage channels is strictly prohibited.
25. A reserve irrigation area of equivalent size is to be available for future use if required.
26. Refer to Installation Firm site diagram for location.

27. The irrigation area is to be a minimum of 500m² utilising 625 lineal metres of subsurface dripline and be divided into two separate zones.
28. The irrigation area shall be constructed in accordance with the Council approved irrigation plan.
29. The irrigation must be installed in the position indicated in the plan provided and in accordance with AS/NZ 1547:2012 and manufacturers' standards.
30. Irrigation shall be via a pressure compensating dripline installed a minimum of 150mm below the surface level.
31. A filter that incorporates root inhibitor or a brand of pipe that incorporates root inhibitor shall be used.
32. Automatic flush valves and a vacuum valve must be installed in accordance with the plan.
33. An application of 500g/m² of gypsum shall be ripped into the top 200mm of the Land Application Area to improve the permeability of the soil.
34. Turf or grass seed the irrigation area.
35. Any sheds/garage connected to the on-site sewage management system shall not be adapted nor used for habitable, commercial, industrial or rural industry purposes without the prior written consent of Council. Be advised such uses without prior consent is an offence under the provisions of the Environmental Planning & Assessment Act 1979 and may result in Council instigating legal proceedings.
36. Prior to the issue of an Occupation Certificate for the dwelling/building connected to the On-site Sewage Management System a satisfactory final inspection of the On-Site Sewage Management System shall be undertaken by Council.
37. **Installation Certification:** The installation of the sewage management facility (including land application area) shall be certified. Certification shall be undertaken by the manufacturer, designer or installer as appropriate. Certification shall be identify that all components of the tank, treatment system and land application area have been installed in accordance with the approved design and plan. Certification shall be in writing and provided to Council within twenty-eight (28) days of completion of installation.

ADVICE

The approval becomes invalid if the work is not substantially commenced within a period of five (5) years from the date hereon.

Please note that this approval does not imply of grant consent on behalf of any other authority or owner i.e. Environmental Protection Authority or any other Government Department or authority.

RIGHT OF APPEAL

Should you be aggrieved by this determination including the conditions of approval, an appeal may be lodged with the Registrar, Land and Environment Court of NSW, PO Box K199, HAYMARKET NSW 2000.

Approved subject to compliance with conditions on
Approval to Operate



Figure 1 is a schematic diagram of the O'Hang section. It shows a vertical profile with various elevation points and distances. The total height is 17300. Key points and distances from the bottom are: 2535, 2670, 3200, 3670, 2200, 3360, 2200, 9580, 600, and 1625. The top is labeled 'O'HANG'.

This is a detailed architectural floor plan of a house, oriented with North (N) at the top and South (S) at the bottom. The plan includes the following rooms and features:

- Living Area:** Polished Concrete, featuring a fireplace (F/P) and a raked ceiling.
- Dining Area:** Polished Concrete, with a dining table and chairs.
- Kitchen:** Polished Concrete, with a kitchenette and a 30° pitch roof.
- Walk in Pantry:** Polished Concrete, with a refrigerator (FRIDGE) and a barn door.
- Office:** Polished Concrete, with a desk and chair.
- Storage:** Two storage rooms (STORAGE 1 and STORAGE 2).
- Master Bedroom 1:** Carpet, with a walk-in wardrobe (WWR) and a 30° pitch roof.
- Laundry:** Tiled, with a washing machine (WM) and a tub.
- Ensuite:** Tiled, with a toilet and shower.
- Bath Room:** Tiled, with a bathtub and shower.
- Bed 2:** Carpet, with a 30° pitch roof.
- Bed 3:** Carpet, with a 30° pitch roof.
- Bed 4:** Carpet, with a 30° pitch roof.
- Hallway:** Polished Concrete, connecting the bedrooms and living areas.
- Entry:** Polished Concrete, with a door (DR2110) leading to the master bedroom.
- Verandah:** 5° roof pitch, located at the front of the house.
- Deck:** Timber and Concrete, with a 2° pitch roof.
- Dimensions:** The overall width is 9000 and the overall depth is 12000. The plan includes numerous smaller dimensions for individual rooms and sections.
- Roofs:** The plan shows various roof pitches, including 2°, 30°, and 5°.
- Other Features:** The plan includes a north arrow (N) and a south arrow (S), as well as various structural notes and room labels.



Approved subject to compliance with conditions
on Development Consent.

Open Area = 71.99m ²
Floor Area = 237.2m ²
Glazing Ratio = 49.696m ² (20.95%)

DO NOT SCALE DIMENSIONS FROM THIS DRAWING ALL MEASUREMENTS TO BE VERIFIED ON SITE

1

1 : 150



1:150 @ A3

Ⓐ A3

PROJECT NORTH



RAFZAN
Consulting Engineers

BOREHOLE & LABORATORY TEST REPORT

LOT 5 41 CLARKES CROSSING CLOSE VACY

Thursday, 22 June 2023

Prepared by Rafeletos Zanuttini Pty Ltd

ABN 35079047466 PO Box 91 Kingsgrove NSW 1480
Level 2, No 103 Vanessa Street Kingsgrove NSW 2208
Ph 0295549311 F 0295549764 admin@rafzan.com.au



RAFZAN
Consulting Engineers

DATE : 22/06/2023
OUR REFERENCE: 100598EB
YOUR REFERENCE: MACKAY
LOCATION: LOT 5 41 CLARKES CROSSING CLOSE VACY



PROPERTY FEATURES

Property locality :	Rural area
Existing building :	Previously undeveloped
Building platform :	Not constructed
Exposed rock visible :	Not evident
Signs of soil reactivity :	No significant signs evident
Natural site slope :	Gentle fall
Retaining walls :	No significant retaining walls visible
Environmental exposure :	Not significant
Significant Trees :	No significant trees

WIND CLASSIFICATION

Wind Region :	A
Terrain Category :	TC2.5
Topographic Classification :	T0
Shielding Classification :	Partial
Wind Classification :	N1

SITE INVESTIGATION

Fill encountered :	No
Soft or collapsing soils :	No
Floating boulders encountered :	No
Presence of bedrock or shale :	Yes
Seepage evident during borehole:	No
Approximate soil bearing pressure (kPa) :	800

RESULTS AND RECOMMENDATIONS

Approx pier depth (mm) :	Variable to bedrock
Site Classification :	Refer to Laboratory test report below
Comments :	

FIELD INVESTIGATION:

BOREHOLE 1	
Depth mm	Material description
00	----- Surface level -----
100	Organic loamy topsoil
200	-----
300	Appears undisturbed and natural
400	orange brown
500	Clayey material
600	-----
700	red orange brown grey
800	clayey sand
900	moist and firm
1000	
1100	
1200	---- Refusal on Sandstone ----
1300	
1400	
1500	

Taken : 25m from front boundary

BOREHOLE 2	
Depth mm	Material description
00	----- Surface level -----
100	Organic loamy topsoil
200	
300	-----
400	brown
500	Clayey material
600	moist and soft
700	-----
800	orange grey brown
900	clayey sand
1000	moist and firm
1100	
1200	
1300	
1400	
1500	---- Borehole Discontinued ----

Taken : 35m from front boundary

CERTIFICATION

ENGINEER : David Zanuttini.
B.E. MIE Aust.



Notations:

- Provide piercing through any uncontrolled fill, founded to natural ground. The extent of piercing shall be established on site.
- Where rock is encountered, the slab and footings are to be founded or pierced to rock. The extent of piercing determined on site.
- Some difficult soil conditions may require the use of helical screw piers or driven piles at the discretion of the engineer.
- This report is based on observations and investigations by Rafeletos Zanuttini Pty Ltd for the purpose of establishing design criteria to be adopted exclusively by Rafeletos Zanuttini Pty Ltd for the design of any future slab and/or footing system.
- This report is to be read in conjunction with any other design documentation and instructions given by Rafeletos Zanuttini
- The site conditions at the time of issuing this report shall be confirmed by the client prior to and during any construction works.
- This report does not include any field or laboratory assessment of the acid sulfate soils or salinity requirements of the site, and is to be investigated by the client if specifically required. However it is advised that certain Sydney councils such as Camden, Fairfield, Wollondilly etc have adopted a council wide acid sulfate soils policy and that all properties within these councils need to be designed and constructed to saline affected requirements unless site specific testing is undertaken and confirms otherwise.
- Deep excavations may encounter bedrock or shale, in such circumstances deeper piers to even bearing may be required.

SHRINK SWELL TEST RESULTS

DATE	22/06/2023
JOB NUMBER	100598EB
CLIENT	MACKAY
LOCATION	LOT 5 41 CLARKES CROSSING CLOSE VACY

Hs-max adopted	2.3 m
Encountered bedrock depth (m)	1.2
Encountered water table depth (m)	Not encountered
Encountered fill material	No

Test Proceedure	AS1289 7.1.1
Applied load	25 kPa
Water used	Distilled

Estimated Inert Inclusions	0-10 %
Initial moisture content of soil sample	19.9 %
Final moisture content of saturated test sample	26.2 %

Shrinkage strain	2.4 %
Swell strain	8.4 %
Shrink Swell Index	3.7 %

Ys value	42 mm
----------	-------

Site Classification	H1
---------------------	----

Slab Design Classification	H1
----------------------------	----

Foundation Maintenance and Footing Performance: A Homeowner's Guide



BTf 18
replaces
Information
Sheet 10/91

Buildings can and often do move. This movement can be up, down, lateral or rotational. The fundamental cause of movement in buildings can usually be related to one or more problems in the foundation soil. It is important for the homeowner to identify the soil type in order to ascertain the measures that should be put in place in order to ensure that problems in the foundation soil can be prevented, thus protecting against building movement.

This Building Technology File is designed to identify causes of soil-related building movement, and to suggest methods of prevention of resultant cracking in buildings.

Soil Types

The types of soils usually present under the topsoil in land zoned for residential buildings can be split into two approximate groups – granular and clay. Quite often, foundation soil is a mixture of both types. The general problems associated with soils having granular content are usually caused by erosion. Clay soils are subject to saturation and swell/shrink problems.

Classifications for a given area can generally be obtained by application to the local authority, but these are sometimes unreliable and if there is doubt, a geotechnical report should be commissioned. As most buildings suffering movement problems are founded on clay soils, there is an emphasis on classification of soils according to the amount of swell and shrinkage they experience with variations of water content. The table below is Table 2.1 from AS 2870, the Residential Slab and Footing Code.

Causes of Movement

Settlement due to construction

There are two types of settlement that occur as a result of construction:

- Immediate settlement occurs when a building is first placed on its foundation soil, as a result of compaction of the soil under the weight of the structure. The cohesive quality of clay soil mitigates against this, but granular (particularly sandy) soil is susceptible.
- Consolidation settlement is a feature of clay soil and may take place because of the expulsion of moisture from the soil or because of the soil's lack of resistance to local compressive or shear stresses. This will usually take place during the first few months after construction, but has been known to take many years in exceptional cases.

These problems are the province of the builder and should be taken into consideration as part of the preparation of the site for construction. Building Technology File 19 (BTf 19) deals with these problems.

Erosion

All soils are prone to erosion, but sandy soil is particularly susceptible to being washed away. Even clay with a sand component of say 10% or more can suffer from erosion.

Saturation

This is particularly a problem in clay soils. Saturation creates a bog-like suspension of the soil that causes it to lose virtually all of its bearing capacity. To a lesser degree, sand is affected by saturation because saturated sand may undergo a reduction in volume – particularly imported sand fill for bedding and blinding layers. However, this usually occurs as immediate settlement and should normally be the province of the builder.

Seasonal swelling and shrinkage of soil

All clays react to the presence of water by slowly absorbing it, making the soil increase in volume (see table below). The degree of increase varies considerably between different clays, as does the degree of decrease during the subsequent drying out caused by fair weather periods. Because of the low absorption and expulsion rate, this phenomenon will not usually be noticeable unless there are prolonged rainy or dry periods, usually of weeks or months, depending on the land and soil characteristics.

The swelling of soil creates an upward force on the footings of the building, and shrinkage creates subsidence that takes away the support needed by the footing to retain equilibrium.

Shear failure

This phenomenon occurs when the foundation soil does not have sufficient strength to support the weight of the footing. There are two major post-construction causes:

- Significant load increase.
- Reduction of lateral support of the soil under the footing due to erosion or excavation.
- In clay soil, shear failure can be caused by saturation of the soil adjacent to or under the footing.

GENERAL DEFINITIONS OF SITE CLASSES

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites with only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which can experience moderate ground movement from moisture changes
H	Highly reactive clay sites, which can experience high ground movement from moisture changes
E	Extremely reactive sites, which can experience extreme ground movement from moisture changes
A to P	Filled sites
P	Sites which include soft soils, such as soft clay or silt or loose sands; landslip; mine subsidence; collapsing soils; soils subject to erosion; reactive sites subject to abnormal moisture conditions or sites which cannot be classified otherwise

Tree root growth

Trees and shrubs that are allowed to grow in the vicinity of footings can cause foundation soil movement in two ways:

- Roots that grow under footings may increase in cross-sectional size, exerting upward pressure on footings.
- Roots in the vicinity of footings will absorb much of the moisture in the foundation soil, causing shrinkage or subsidence.

Unevenness of Movement

The types of ground movement described above usually occur unevenly throughout the building's foundation soil. Settlement due to construction tends to be uneven because of:

- Differing compaction of foundation soil prior to construction.
- Differing moisture content of foundation soil prior to construction.

Movement due to non-construction causes is usually more uneven still. Erosion can undermine a footing that traverses the flow or can create the conditions for shear failure by eroding soil adjacent to a footing that runs in the same direction as the flow.

Saturation of clay foundation soil may occur where subfloor walls create a dam that makes water pond. It can also occur wherever there is a source of water near footings in clay soil. This leads to a severe reduction in the strength of the soil which may create local shear failure.

Seasonal swelling and shrinkage of clay soil affects the perimeter of the building first, then gradually spreads to the interior. The swelling process will usually begin at the uphill extreme of the building, or on the weather side where the land is flat. Swelling gradually reaches the interior soil as absorption continues. Shrinkage usually begins where the sun's heat is greatest.

Effects of Uneven Soil Movement on Structures

Erosion and saturation

Erosion removes the support from under footings, tending to create subsidence of the part of the structure under which it occurs. Brickwork walls will resist the stress created by this removal of support by bridging the gap or cantilevering until the bricks or the mortar bedding fail. Older masonry has little resistance. Evidence of failure varies according to circumstances and symptoms may include:

- Step cracking in the mortar beds in the body of the wall or above/below openings such as doors or windows.
- Vertical cracking in the bricks (usually but not necessarily in line with the vertical beds or perpend).

Isolated piers affected by erosion or saturation of foundations will eventually lose contact with the bearers they support and may tilt or fall over. The floors that have lost this support will become bouncy, sometimes rattling ornaments etc.

Seasonal swelling/shrinkage in clay

Swelling foundation soil due to rainy periods first lifts the most exposed extremities of the footing system, then the remainder of the perimeter footings while gradually permeating inside the building footprint to lift internal footings. This swelling first tends to create a dish effect, because the external footings are pushed higher than the internal ones.

The first noticeable symptom may be that the floor appears slightly dished. This is often accompanied by some doors binding on the floor or the door head, together with some cracking of cornice mitres. In buildings with timber flooring supported by bearers and joists, the floor can be bouncy. Externally there may be visible dishing of the hip or ridge lines.

As the moisture absorption process completes its journey to the innermost areas of the building, the internal footings will rise. If the spread of moisture is roughly even, it may be that the symptoms will temporarily disappear, but it is more likely that swelling will be uneven, creating a difference rather than a disappearance in symptoms. In buildings with timber flooring supported by bearers and joists, the isolated piers will rise more easily than the strip footings or piers under walls, creating noticeable doming of flooring.



As the weather pattern changes and the soil begins to dry out, the external footings will be first affected, beginning with the locations where the sun's effect is strongest. This has the effect of lowering the external footings. The doming is accentuated and cracking reduces or disappears where it occurred because of dishing, but other cracks open up. The roof lines may become convex.

Doming and dishing are also affected by weather in other ways. In areas where warm, wet summers and cooler dry winters prevail, water migration tends to be toward the interior and doming will be accentuated, whereas where summers are dry and winters are cold and wet, migration tends to be toward the exterior and the underlying propensity is toward dishing.

Movement caused by tree roots

In general, growing roots will exert an upward pressure on footings, whereas soil subject to drying because of tree or shrub roots will tend to remove support from under footings by inducing shrinkage.

Complications caused by the structure itself

Most forces that the soil causes to be exerted on structures are vertical – i.e. either up or down. However, because these forces are seldom spread evenly around the footings, and because the building resists uneven movement because of its rigidity, forces are exerted from one part of the building to another. The net result of all these forces is usually rotational. This resultant force often complicates the diagnosis because the visible symptoms do not simply reflect the original cause. A common symptom is binding of doors on the vertical member of the frame.

Effects on full masonry structures

Brickwork will resist cracking where it can. It will attempt to span areas that lose support because of subsided foundations or raised points. It is therefore usual to see cracking at weak points, such as openings for windows or doors.

In the event of construction settlement, cracking will usually remain unchanged after the process of settlement has ceased.

With local shear or erosion, cracking will usually continue to develop until the original cause has been remedied, or until the subsidence has completely neutralised the affected portion of footing and the structure has stabilised on other footings that remain effective.

In the case of swell/shrink effects, the brickwork will in some cases return to its original position after completion of a cycle, however it is more likely that the rotational effect will not be exactly reversed, and it is also usual that brickwork will settle in its new position and will resist the forces trying to return it to its original position. This means that in a case where swelling takes place after construction and cracking occurs, the cracking is likely to at least partly remain after the shrink segment of the cycle is complete. Thus, each time the cycle is repeated, the likelihood is that the cracking will become wider until the sections of brickwork become virtually independent.

With repeated cycles, once the cracking is established, if there is no other complication, it is normal for the incidence of cracking to stabilise, as the building has the articulation it needs to cope with the problem. This is by no means always the case, however, and monitoring of cracks in walls and floors should always be treated seriously.

Upheaval caused by growth of tree roots under footings is not a simple vertical shear stress. There is a tendency for the root to also exert lateral forces that attempt to separate sections of brickwork after initial cracking has occurred.

The normal structural arrangement is that the inner leaf of brickwork in the external walls and at least some of the internal walls (depending on the roof type) comprise the load-bearing structure on which any upper floors, ceilings and the roof are supported. In these cases, it is internally visible cracking that should be the main focus of attention, however there are a few examples of dwellings whose external leaf of masonry plays some supporting role, so this should be checked if there is any doubt. In any case, externally visible cracking is important as a guide to stresses on the structure generally, and it should also be remembered that the external walls must be capable of supporting themselves.

Effects on framed structures

Timber or steel framed buildings are less likely to exhibit cracking due to swell/shrink than masonry buildings because of their flexibility. Also, the doming/dishing effects tend to be lower because of the lighter weight of walls. The main risks to framed buildings are encountered because of the isolated pier footings used under walls. Where erosion or saturation cause a footing to fall away, this can double the span which a wall must bridge. This additional stress can create cracking in wall linings, particularly where there is a weak point in the structure caused by a door or window opening. It is, however, unlikely that framed structures will be so stressed as to suffer serious damage without first exhibiting some or all of the above symptoms for a considerable period. The same warning period should apply in the case of upheaval. It should be noted, however, that where framed buildings are supported by strip footings there is only one leaf of brickwork and therefore the externally visible walls are the supporting structure for the building. In this case, the subfloor masonry walls can be expected to behave as full brickwork walls.

Effects on brick veneer structures

Because the load-bearing structure of a brick veneer building is the frame that makes up the interior leaf of the external walls plus perhaps the internal walls, depending on the type of roof, the building can be expected to behave as a framed structure, except that the external masonry will behave in a similar way to the external leaf of a full masonry structure.

Water Service and Drainage

Where a water service pipe, a sewer or stormwater drainage pipe is in the vicinity of a building, a water leak can cause erosion, swelling or saturation of susceptible soil. Even a minuscule leak can be enough to saturate a clay foundation. A leaking tap near a building can have the same effect. In addition, trenches containing pipes can become watercourses even though backfilled, particularly where broken rubble is used as fill. Water that runs along these trenches can be responsible for serious erosion, interstrata seepage into subfloor areas and saturation.

Pipe leakage and trench water flows also encourage tree and shrub roots to the source of water, complicating and exacerbating the problem.

Poor roof plumbing can result in large volumes of rainwater being concentrated in a small area of soil:

- Incorrect falls in roof guttering may result in overflows, as may gutters blocked with leaves etc.

- Corroded guttering or downpipes can spill water to ground.
- Downpipes not positively connected to a proper stormwater collection system will direct a concentration of water to soil that is directly adjacent to footings, sometimes causing large-scale problems such as erosion, saturation and migration of water under the building.

Seriousness of Cracking

In general, most cracking found in masonry walls is a cosmetic nuisance only and can be kept in repair or even ignored. The table below is a reproduction of Table C1 of AS 2870.

AS 2870 also publishes figures relating to cracking in concrete floors, however because wall cracking will usually reach the critical point significantly earlier than cracking in slabs, this table is not reproduced here.

Prevention/ Cure

Plumbing

Where building movement is caused by water service, roof plumbing, sewer or stormwater failure, the remedy is to repair the problem. It is prudent, however, to consider also rerouting pipes away from the building where possible, and relocating taps to positions where any leakage will not direct water to the building vicinity. Even where gully traps are present, there is sometimes sufficient spill to create erosion or saturation, particularly in modern installations using smaller diameter PVC fixtures. Indeed, some gully traps are not situated directly under the taps that are installed to charge them, with the result that water from the tap may enter the backfilled trench that houses the sewer piping. If the trench has been poorly backfilled, the water will either pond or flow along the bottom of the trench. As these trenches usually run alongside the footings and can be at a similar depth, it is not hard to see how any water that is thus directed into a trench can easily affect the foundation's ability to support footings or even gain entry to the subfloor area.

Ground drainage

In all soils there is the capacity for water to travel on the surface and below it. Surface water flows can be established by inspection during and after heavy or prolonged rain. If necessary, a grated drain system connected to the stormwater collection system is usually an easy solution.

It is, however, sometimes necessary when attempting to prevent water migration that testing be carried out to establish watertable height and subsoil water flows. This subject is referred to in BTF 19 and may properly be regarded as an area for an expert consultant.

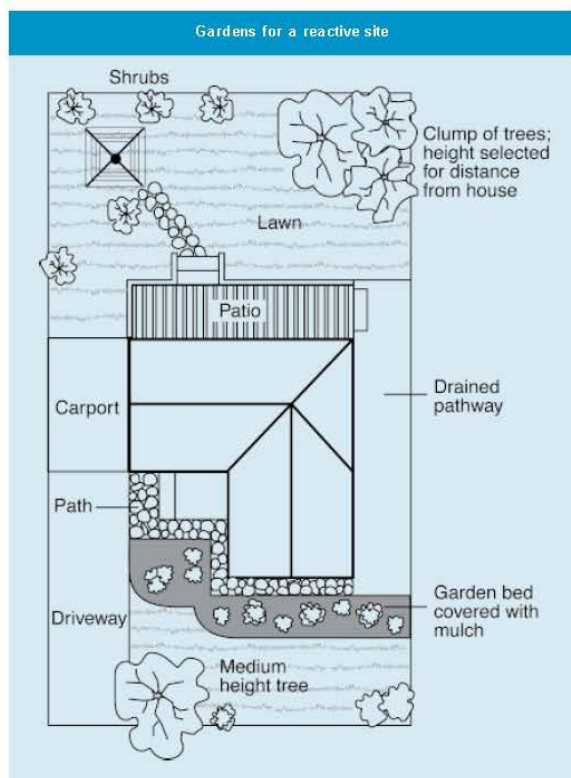
Protection of the building perimeter

It is essential to remember that the soil that affects footings extends well beyond the actual building line. Watering of garden plants, shrubs and trees causes some of the most serious water problems.

For this reason, particularly where problems exist or are likely to occur, it is recommended that an apron of paving be installed around as much of the building perimeter as necessary. This paving

CLASSIFICATION OF DAMAGE WITH REFERENCE TO WALLS

Description of typical damage and required repair	Approximate crack width limit (see Note 3)	Damage category
Hairline cracks	<0.1 mm	0
Fine cracks which do not need repair	<1 mm	1
Cracks noticeable but easily filled. Doors and windows stick slightly	<5 mm	2
Cracks can be repaired and possibly a small amount of wall will need to be replaced. Doors and windows stick. Service pipes can fracture. Weathertightness often impaired	5-15 mm (or a number of cracks 3 mm or more in one group)	3
Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Window and door frames distort. Walls lean or bulge noticeably, some loss of bearing in beams. Service pipes disrupted	15-25 mm but also depend on number of cracks	4



should extend outwards a minimum of 900 mm (more in highly reactive soil) and should have a minimum fall away from the building of 1:60. The finished paving should be no less than 100 mm below brick vent bases.

It is prudent to relocate drainage pipes away from this paving, if possible, to avoid complications from future leakage. If this is not practical, earthenware pipes should be replaced by PVC and backfilling should be of the same soil type as the surrounding soil and compacted to the same density.

Except in areas where freezing of water is an issue, it is wise to remove taps in the building area and relocate them well away from the building – preferably not uphill from it (see BTF 19).

It may be desirable to install a grated drain at the outside edge of the paving on the uphill side of the building. If subsoil drainage is needed this can be installed under the surface drain.

Condensation

In buildings with a subfloor void such as where bearers and joists support flooring, insufficient ventilation creates ideal conditions for condensation, particularly where there is little clearance between the floor and the ground. Condensation adds to the moisture already present in the subfloor and significantly slows the process of drying out. Installation of an adequate subfloor ventilation system, either natural or mechanical, is desirable.

Warning: Although this Building Technology File deals with cracking in buildings, it should be said that subfloor moisture can result in the development of other problems, notably:

- Water that is transmitted into masonry, metal or timber building elements causes damage and/or decay to those elements.
- High subfloor humidity and moisture content create an ideal environment for various pests, including termites and spiders.
- Where high moisture levels are transmitted to the flooring and walls, an increase in the dust mite count can ensue within the living areas. Dust mites, as well as dampness in general, can be a health hazard to inhabitants, particularly those who are abnormally susceptible to respiratory ailments.

The garden

The ideal vegetation layout is to have lawn or plants that require only light watering immediately adjacent to the drainage or paving edge, then more demanding plants, shrubs and trees spread out in that order.

Overwatering due to misuse of automatic watering systems is a common cause of saturation and water migration under footings. If it is necessary to use these systems, it is important to remove garden beds to a completely safe distance from buildings.

Existing trees

Where a tree is causing a problem of soil drying or there is the existence or threat of upheaval of footings, if the offending roots are subsidiary and their removal will not significantly damage the tree, they should be severed and a concrete or metal barrier placed vertically in the soil to prevent future root growth in the direction of the building. If it is not possible to remove the relevant roots without damage to the tree, an application to remove the tree should be made to the local authority. A prudent plan is to transplant likely offenders before they become a problem.

Information on trees, plants and shrubs

State departments overseeing agriculture can give information regarding root patterns, volume of water needed and safe distance from buildings of most species. Botanic gardens are also sources of information. For information on plant roots and drains, see Building Technology File 17.

Excavation

Excavation around footings must be properly engineered. Soil supporting footings can only be safely excavated at an angle that allows the soil under the footing to remain stable. This angle is called the angle of repose (or friction) and varies significantly between soil types and conditions. Removal of soil within the angle of repose will cause subsidence.

Where erosion has occurred that has washed away soil adjacent to footings, soil of the same classification should be introduced and compacted to the same density. Where footings have been undermined, augmentation or other specialist work may be required. Remediation of footings and foundations is generally the realm of a specialist consultant.

Where isolated footings rise and fall because of swell/shrink effect, the homeowner may be tempted to alleviate floor bounce by filling the gap that has appeared between the bearer and the pier with blocking. The danger here is that when the next swell segment of the cycle occurs, the extra blocking will push the floor up into an accentuated dome and may also cause local shear failure in the soil. If it is necessary to use blocking, it should be by a pair of fine wedges and monitoring should be carried out fortnightly.

This BTF was prepared by John Lewer FAIB, MIAMA, Partner, Construction Diagnosis.

The information in this and other issues in the series was derived from various sources and was believed to be correct when published.

The information is advisory. It is provided in good faith and not claimed to be an exhaustive treatment of the relevant subject.

Further professional advice needs to be obtained before taking any action based on the information provided.

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Positive Fix Pty Ltd
Consulting Engineers
Web-Site: www.positivefix.com.au
E-mail: info@positivefix.com.au

Ph : 02 4954 9177
PO Box 131 Paterson
NSW 2421

Residential & Industrial Engineers

16th September 2025

Mia Mackay
41 Clarkes Crossing Road
Vacy, NSW

Re: Certificate of Stormwater Management System Design at
41 Clarkes Crossing Road, Vacy, NSW

This is to confirm that Stormwater Management System Design, Job Number 17083, dated 28/08/2024, done by Positive Fix Pty Ltd, at the above address complies with the Condition 26 of Development Consent DA 156/2024 and adheres to the requirements of AS3500 – Australian Standards for Stormwater Management Design.

Please feel free to contact undersigned, should you have any questions.

Yours sincerely,

Satesh Prasad (BEng, MIE Aust, CPEng #2272843, RPEQ # 17847, Civil/Mech)
Asset Engineer
Positive Fix Pty Ltd



Residential & Industrial Engineers

16th September 2025

Mia Mackay
41 Clarkes Crossing Road
Vacy, NSW

Re: Certificate of Engineering Design for Proposed Dwelling
At 41 Clarkes Crossing Road, Vacy, NSW

Positive Fix Pty Ltd confirms that the engineering design for the proposed dwelling at 41 Clarkes Crossing Road, Vacy, NSW has been completed by suitably qualified engineers and in accordance with relevant Australian Standards and guidelines and complies with the site classification report prepared by Rafzan Consulting Engineering, Reference No. 100598EB, Dated 22/06/2023.

The structural engineering design by Positive Fix, Dr Nos. 17083, sheets 1 to 4, dated August 2024, has been in accordance with the following relevant Australian Standards and Section B of NCC 2022 Amendment 1 and other relevant standards.

- AS/NZS 1170.0, 1 and 2: Structural Design Actions.
- AS 4100 – Steel Structures.
- AS 3600 – Concrete Structures.
- AS 1684 – Residential Timber Framed Construction.

Please feel free to contact undersigned if you have any questions.
Yours faithfully,

Saleshe Prasad (BEng, MIEAust, CPEng, NER #2272843, RPEQ # 17847, Civil/Mech)
Asset Engineer
Positive Fix Pty Ltd



NORTH

MGA
DP 1291036

LOCALITY SKETCH

UBD AREA: REVISION:
MAP: REF:
GPS S
E

LIMIT OF SURVEY FOR TENDER PURPOSES

SEWER NOT AVAILABLE
FOR THIS LOT

 DIAL BEFORE
YOU DIG
www.1100.com.au

NOTE:
THIS CONTOUR & DETAIL SURVEY IS **FOR TENDER PURPOSES ONLY**
& IS CARRIED OUT UNDER CLAUSE 9 OF THE SURVEYING & SPATIAL
INFORMATION REGULATION 2017.
IT MAY NOT FULFIL ALL THE REQUIREMENTS OF A DEVELOPMENT
APPLICATION (DA) OR A COMPLYING DEVELOPMENT CONSENT (CDC).
THE POSITION OF STRUCTURES & IMPROVEMENTS SHOWN ARE
APPROXIMATE ONLY. IF A DA OR CDC IS TO BE LODGED, IT IS
RECOMMENDED THE BOUNDARIES BE SURVEYED MORE ACCURATELY
& THE CONTOUR & DETAIL SURVEY BE UPDATED TO REFLECT THIS
ACCURACY. IF THE POSITION OF THE PROPOSED RESIDENCE IS
CRITICAL TO EXISTING STRUCTURES, ADDITIONAL SURVEY WORK
MAY BE REQUIRED TO ENSURE FINAL DESIGN SATISFIES THE CLIENT.
FOR ANY PROPOSED STRUCTURES IN RELATION TO A BOUNDARY,
A REGISTERED SURVEYOR MUST CARRY OUT A BOUNDARY SURVEY,
SETOUT SURVEY OR IDENTIFICATION SURVEY FOR THE PROPOSED WORKS.



F) THIS SURVEY MAY NOT FULFILL ALL THE REQUIREMENTS OF A DEVELOPMENT APPLICATION (D.A) OR A COMPLYING DEVELOPMENT CONSENT (CDC).

SYMBOLS & ABBREVIATIONS							
GP	GULLY PIT	-E ² -	OVERHEAD ELEC LINE	TK	TOP of KERB		
	SIP	SEWER INLET PIT	-S ² -	SEWER LINE	RTK	ROLL TOP KERB	
	SIC	SEWER INSPECTION COVER	SP	POWER POLE		VC	VEHICLE CROSSING
	MH	SEWER MANHOLE	SLP	LIGHT POLE	INV	INVERT	
	SMWH	STORMWATER MANHOLE	EC	ELECTRICITY CONDUIT	KO	KERB OUTLET	
	W/M	WATER METER	ECT	ELEC & TELE CONDUIT	TTT	TOP OF BANK	
	EL	ELECTRICITY BOX	TC	TELECOM CONDUIT	BOB	BOTTOM OF BANK	
	TP	TELECOMMUNICATIONS PIT	WC	WATER CONDUIT	ORSP	PRESSURE SEWER PUMP PIT	
	TD	TELECOMMUNICATIONS DOME	G	GAS CONDUIT	DPSVP	PRESSURE SEWER VALVE PIT	
	HYD	WATER HYDRANT	GM	GAS METER	FP	FLUSHING POINT	
	R/W	REFILLIED WATER HYDRANT	GD	GAS DISC	OL	OVERHEAD LINE	
	SV	STOP VALVE					

PO BOX 161
KINGSGROVE NSW 1480
DX 11392
HURSTVILLE

OUR REFERENCE	62/1065247/375748	
LOT 5	DP 1291036	SECTION
DATUM A.H.D.	SSM 102139	SOURCE SCIMS 31.07.23
ORIGIN OF LEVELS	REDUCED LEVEL	22.589
SURVEYED AB/MD	DATE	15.06.2023
DRAWN RGJ	DATE	16.06.2023
SCALE 1: 500	A3 SHEET	

SUBURB: VACY

Identification No. 693

WASTE MANGEMENT PLAN

Proposed Class 1a Dwelling Structure

For: Mia Mackay

At: 41 Clarkes Crossing Close Vacy 2421

Lot 5 / - / DP1291036

Site Details:

Location: 41 Clarkes Crossing Close Vacy 2421

Site Area: 3.156ha

Land Zoning: R5 Large Lot Residential

Existing use of the site: Vacant Land

Waste Management Table – Demolition

			Reuse and Recycling		Disposal
Type Of Materials	Estimate Volume	Estimate weight	On site	Off Site	Off site
Excavation Material					
Green Waste Tree Removal					
Bricks					
Tiles					
Concrete					
Timber					
Plasterboard					
Metals					
Asbestos					

Waste Management Table – Construction

			Reuse and Recycling		Disposal
Type Of Materials	Estimate Volume	Estimate weight	On site	Off Site	Off site
Excavation Material	Nil	Nil	N/A	N/A	N/A
Green Waste	Nil	Nil	N/A	N/A	N/A
Bricks	Nil	Nil	N/A	N/A	N/A
Tiles	Nil	Nil	N/A	N/A	N/A
Concrete	Nil	Nil	N/A	N/A	N/A
Timber	Nil	Nil	N/A	N/A	N/A
Plasterboard	Nil	Nil	N/A	N/A	N/A
Metals	Nil	Nil	N/A	N/A	N/A

NO ADDITIONAL WASTE WILL BE GENERATED FROM THIS DEVELOPMENT ON SITE.

