Application for Planning Approval

Land Use Planning and Approvals Act 1993

APPLICATION NO.

DA2024/004

LOCATION OF AFFECTED AREA

18 & 18A HONEYWOOD DRIVE, HONEYWOOD

DESCRIPTION OF DEVELOPMENT PROPOSAL

DWELLING AND OUTBUILDING

A COPY OF THE DEVELOPMENT APPLICATION MAY BE VIEWED AT www.brighton.tas.gov.au AND AT THE COUNCIL OFFICES, 1 TIVOLI ROAD, OLD BEACH, BETWEEN 8:15 A.M. AND 4:45 P.M, MONDAY TO FRIDAY OR VIA THE QR CODE BELOW. ANY PERSON MAY MAKE WRITTEN REPRESENTATIONS IN ACCORDANCE WITH S.57(5) OF THE LAND USE PLANNING AND APPROVALS ACT 1993 CONCERNING THIS APPLICATION UNTIL 4:45 P.M. ON **08/04/2024**. ADDRESSED TO THE GENERAL MANAGER AT 1 TIVOLI ROAD, OLD BEACH, 7017 OR BY EMAIL AT development@brighton.tas.gov.au. REPRESENTATIONS SHOULD INCLUDE A DAYTIME TELEPHONE NUMBER TO ALLOW COUNCIL OFFICERS TO DISCUSS, IF NECESSARY, ANY MATTERS RAISED.

JAMES DRYBURGH
General Manager

SCAN ME

Brighton
going places

 Notes on individual drawings to be read in conjunction with Construction Notes sheet.

No18 (Lot 1)
1.688ha (16880m2)

EXIST' RSIDENCE

LEGEND
- 2 . sink
- ORG . overflow relief gully (tap over)
- st . 100dia stack with 50dia vent over to air
- 100dia UPVC sewer @1.67% fall to approved wastewater system designed and installed by others

Proposed Outbuilding
Note:
Shed Structure by others
refer structural drawings
Furm Garages and Sheds

100dia UPVC sewer pipe 1.67% fall from exist' RESIDENCE to AWTS

to HONEYWOOD DRIVE

164°47'00" 248.61m

248°03'20" 96.69m

6m wide access at start of battle-axe to accommodate passing bay

BUSHFIRE HAZARD

19000 14000 3325 22000 5000

22000 10000 7000 3000 12000 15000 30000 5500 19000

cut RL 93.50 94.00 95.00 93.45 RL 93.3 RL 93.5 RL 93.40 RL 93.4 RL 93.3 RL 93.7 RL 92.7 RL 93.4 RL 93.55

fall fall fall fall fall

st o2 Proposed fitout org

toe of fill

FFL 93.60

BUSHFIRE HAZARD MANAGEMENT AREA

BUSHFIRE HAZARD

346°07'20" 24.34m 92.00 91.00 90.00 89.00 317°15'20" 50.00m 284°40'00" 30.00m 243°57'20" 55.46m

NOTE:
fall away from buiding 50mm in 1000mm and then 1:10 max (car manoeuvring area) cut and fill to the requirements of NCC (abcb) part 3.2 Earthworks

100dia UPVC sewer pipe 1.67% fall from proposed outbuiding to AWTS

AWTS

NOTE:
waste design
(Rock Solid Geotechnics)

No18A (Lot 2)
1.013ha (10130m2)

350m2 LAA

3000 1000 4600

164°47'00" 377.59m

PART SITE PLAN
Scale: 1.500

HONEYWOOD DRIVE

exist' sealed access

existing modified access driveway approved by Council as part of the subdivision civil works

exist' passing bay on crest

No18 (Lot 1)
1.688ha (16880m2)

EXIST' RESIDENCE

proposed OUTBUILDING

HAZARD MANAGEMENT AREA

2No 10k litre rainwater tanks

end of exist' driveway

proposed UNIT at end BAY of OUTBUILDING

10k litre water tank dedicated to fire fighting

tunnel erosion

filled in erosion channels

No18 (Lot 2)
1.013ha (10130m2)

LOCATION PLAN
Scale: 1.2000

use figure dimensions in preference to scale – all dimensions and levels to be verified on site

AMENDMENTS:
'A'
Carparking spaces added (25-02-2024)
'B'
driveway access amended (11-03-2024)

LYNNELG P/L (drafting)
Glen Harris CC. 290'Q'
PO Box 243
CAIRNS NORTH
QUEENSLAND
Mob: 0402 867929

Client
BRAD ROGERS

project & address:
Proposed Outbuilding
@No18 (Lot 2)
Honeywood Drive
HONEYWOOD

title:
PART SITE PLAN and LOCATION/SEWAGE PLAN and BUSHFIRE HAZARD PLAN

scale: 1:500, 1:2000 GWH
drawn:
date: 01/03/2024
job no: 2023-09
drawing no:
09-Wd01'B'

Notes on individual drawings to be read in conjunction with Construction Notes sheet.

Building Specifications to BAL–12.5 of AS3959–2009 Hazard Management Area

Is to be managed in a minimum fuel condition. This means there is insufficient fuel available to significantly increase the severity of the bushfire attack.

GUIDANCE

Hazard management area to be maintained in a minimum fuel condition

Locate fire hazards such as wood piles, rubish heaps and stored fuels away from habitable buildings

The areas directly adjacent to the building has a significant amount of flammable material removed such that there is little to no material available to burn around the building.

Includes non flammable areas such as paths, driveways, short cropped lawns.

Establishing orchards, vegetable gardens, dams or waste water effluent disposal areas on the fire prone side of the building where practical.

Create wind breaks and radiation sheilds such as non combustable fences and low flammability hedges.

Create and maintain vertical as well as horizontal seperation between ground fuels and tree canopies by pruning.

It is not necessary to remove all vegetation from the defendable space, trees can provide protection from wind borne embers and radiant heat under some circumstances.

BUSHFIRE CONSTRUCTION BAL 12.5 (AS3959)

This specification should be read in conjunction with the accompanying report by Roger Fenwick
The works are to comply with AS3959–2018: Construction of Buildings in Bushfire Prone Areas, The NCC (ABCB 2022) and the Director in bushfire prone area's

Where applicable the construction must also comply with the report from the registered specialist bushfire assessor. Where discrepancies occur, the owner should consult with that specialist consultant, and notify the building designer and the Building Surveyor of any changes required.

The Bushfire Hazard Management Area includes the allotment area only.

It is to be managed in a minimum fuel condition so that there is insufficient fuel available to significantly increase the severity of bushfire attack. The Hazard Management Area is to be maintained in a minimum fuel condition.

Establish orchards, vegetable gardens, dams or waste effluent disposal areas on the fire prone side of the building (downslope & adjacent bushfire prone vegetation).

Create wind breaks and radiant heat shields such as non–combustible fences, and low flammability hedges. Create and maintain horizontal and vertical separation between ground fuels and tree canopies by pruning.

TO ACHIEVE BAL LEVEL 12.5 (generally):

The bushfire construction shall also be in accordance with AS3959. and the Director for Construction in Bushfire Prone Areas. The Builder should review all relevant documentation.

All joints in external surface materials of walls shall be covered, m sealed, overlapped, backed, or butt jointed to prevent gaps greater than 3mm.

Vents and weepholes in external walls shall be screened with corrosion resistant steel, bronze or aluminium screens with a maximum aperture of 2mm maximum.

Metal fascias are to be fixed at 450 maximum centres.

Metal gutters shall be fitted with non–combustible leaf guards.

Roof shall be fully sarked with vapour permeable membrane with a flammability index of not more than 5 when tested to AS 1530.2, located under or over the roof battens. The membrane must cover the entire roof are including the ridge, and be installed so that there are no gaps that would allow the entry of embers where the parking meets facias, gutters, valleys and the like. All gaps throughout corrugated iron profile, under ridge and valley flashings are to be sealed with a mesh or perforated sheet with a maximum aperture of 2mm, made of corrosion resistant steel, bronze or aluminium, or mineral wool, or other non–combustible material.

Roof penetrations, including roof lights, roof ventilators, roof mounted evaporative cooling units, aerials, vent pipes and supports for solar connectors shall be adequately sealed at the roof to prevent gaps greater than 3mm. The material used to seal the penetration shall be non–combustible.

Openings in vented roof lights, roof ventilators, roof mounted evaporative cooling units, aerials, vent pipes shall be sealed with ember guards made from mesh or perforated sheet with a maximum aperture of 2mm, made of corrosion resistant steel, bronze or aluminium, or mineral wool, or other non–combustible material.

Sliding doors shall be toughened glass 5mm minimum, and all framing constructed with: steel, Bushfire resisting timber, or Metal reinforced PVC–U (reinforcing members to be made from aluminium, stainless steel, or corrosion resistant steel).

Glazed hung doors located within 400mm above external ground levels including decks and landings are to be constructed with toughened glass not less than 5mm thick. Where doors are double glazed, this requirement only applies to the outer leaf.

Doors (solid core) and door frames and are to me made of hardwood, or non–combustible external material such as Cement sheeting, or solid timber door not less than 35mm thick, or; any other door protected by steel or aluminum screening not less than 2mm in aperture. The screen frames are to have no gaps greater than 3mm evident, and be constructed of steel, or bushfire resisting timber.

Doors generally shall be tight fitting to the door frames and have draught seals installed around the perimeters.

Openable and fixed portion of windows shall be screened internally or externally with corrosion resistant steel, bronze or aluminium screens with a maximum aperture of 2mm maximum. The fixed portions may not be screened where the glass is 5mm toughened glass, but the openable portion must be screened.

Windows located within 400mm above external ground levels including decks and landings are to be constructed with toughened glass minimum 5mm thick. Where windows are double glazed, this requirement only applies to the outer leaf. Those windows that are toughened glass are to be screened with steel or aluminium screening not less than 2mm in aperture. The screen frames are to have no gaps greater than 3mm evident, and be constructed of steel, aluminium (or similar), or bushfire resisting timber. Screening for toughened glass applies to the openable portion only and may be screened internally or externally.

(For more specific window and door requirements please refer to the relevant section of AS3959 for the relevant BAL Level.

All other windows shall be constructed with annealed glass, and screened with steel or aluminum screening not less than 2mm in aperture. The screen frames are to have no gaps greater than 3mm evident, and be constructed of steel, or bushfire resisting timber. Screening for annealed glass applies to the openable and fixed portions.

Decking located within 300mm of glazed elements (measured horizontally at deck level) that are within 400mm vertically from the deck level shall be made from non–combustible material, or bushfire resisting timber, or a combination of the two.

Where clarification with specific Sections of AS3959–2009 by the Building Designer have been omitted, it has been deemed not required due to the inherent compliance of the documentation as certified by the Building Surveyor with the Australian Standard AS3959.

Specifications contained within this report may be varied by the Owner or Builder with the approval of the Building Surveyor by way of a formal amendment to this report.

BUSHFIRE CONSTRUCTION – VEHICLE ACCESS AND WATER SUPPLY

The works are to comply with AS3959–2009: Construction of Buildings in Bushfire Prone Areas, NCC–2022 (abcb) Part G5 and the Directors Determination for Construction of buildings in bushfire Prone Areas.

The following design and construction requirements apply to the property access:

–All weather construction,
–Load capacity of 20 tonnes, including for bridges and culverts,
–Minimum carriageway width of 4m
–minimum vertical clearance of 4 metres,
–Minimum horizontal clearance of .5m either side of the carriageway,
–Cross falls of less than 3 degrees (1:20, or 5%,
–Dips less than 7 degrees (1:8, or 12.5%) entry & exit angle
–Curves with a minimum inner radius of 10m,
–Maximum gradient of 15 degrees (1:3.5, or 28%) for sealed roads, and 10 degrees (1:5.5, or 18%) fo unsealed roads, and; terminate with a turning erea for fire appliances provided by one of the following:

a. A turning circle with a minimum outer radius of 10m, or;

b. a property access encircling the building, or;

c. a hammered T, or Y turning head 4 metres wide and 8m long.

The distance between the building area to be protected and the water supply must be located within 120m of a fire hydrant, and the distance must be measured as a hose lay, between the fire fighting water point and the furthest part of the building area.

The hardstand for fire appliances to access the dedicated water access point for fire fighting must be no more than 3m from the water access point measured as a hose lay, no closer than 6m from the building area to be protected.

The hardstand must be a minimum width of 3m, and constructed to the same standard as the road, and also be accessible from the road.

The fittings and pipework associated with a fire fighting water point for a static water supply must have a minimum nominal internal diameter of 50mm, and be fitted with a valve with a minimum nominal internal diameter of 50mm, and be metal, or lagged by non–combustible materials if above ground.

If buried, the pipework must be minimum 300mm depth below ground.

The connection point to the water supply must be provided with a DIN, or NEN standard forged Storz 65mm coupling fitted with a suction washer for connection to fire fighting equipment. The coupling must be fitted with a blank cap and securing chain; minim 220mm length.

Where remote off take is installed, ensure the off take is in a position that is visible, accessible to fire fighting equipment, at a working height of 450 to 600mm above ground level, and appropriately protected from possible damage, including damage by vehicles.

BUSHFIRE CONSTRUCTION – STATIC WATER SUPPLY SIGNAGE

Signage: The fire fighting static water supply point must be identified by way of a sign permanently fixed to the exterior of the assembly in a visible location. The sign must comply with either ASD2305–2011, or Tas Fire requirements.

use figure dimensions in preference to scale – all dimensions and levels to be verified on site

AMENDMENTS:

LYNNELG P/L (drafting)
Glen Harris CC. 290'Q'
P.O. Box243
CAIRNS NORTH
Mobile; 0402 867 929
Email:
southeastdesign@iprimus.com.au

client:
BRAD ROGERS

project & address:
Proposed Outbuilding
@No18A (Lot 2)
Honeywood Drive
HONEYWOOD

title:
BUSHFIRE HAZARD NOTES

scale:

drawn:
GWH

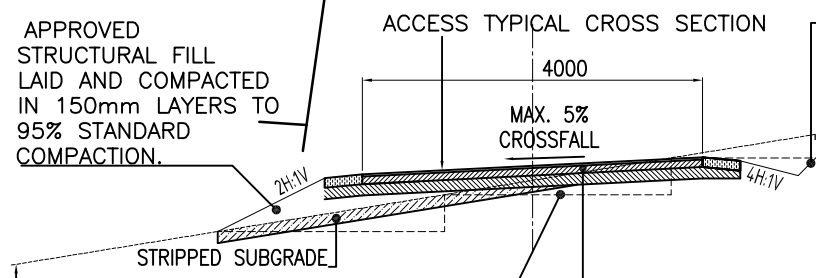
date:
01/03/2024

job no:
2023–01

drawing no:
07–Wd02

Notes on individual drawings to be read in conjunction with Construction Notes sheet.

ACCESS TYPICAL CROSS SECTION



BENCHING TO BASE OF CUT TO FILL EXTENT @ NOM. 3000mm STEPS WHERE NATURAL SURFACE CROSS FALL >10%

ALL BATTERS TO BE CONSTRUCTED OF APPROVED STRUCTURAL FILL TO THE ENGINEERS APPROVAL. PLACE AND COMPACT APPROVED FILL IN MAX 150mm LAYERS, IF NOT ROCK. LOAM AND SOW ALL BATTERS EXCEPT IN ROCK INCLUDING STABILISATION TO PREVENT EROSION, I.E. HYDROMULCHING OR OTHER APPROVED BATTER STABILISATION METHOD.

150mmCOMPACTED THICKNESS, 40mm FCR SUB BASE COURSE
OVER APPROVED STRIPPED AND COMPACTED SUB-GRADE WITH
A MINIMUM C.B.R. OF 6, TO BE CONFIRMED BY SITE MEASUREMENT.
FOR SUB GRADE WITH CBR VALVE OF < 6 > 5 INCREASE TO 180mm OF 40mm FCR SUB BASE COURSE
FOR SUB GRADE WITH CBR VALVE OF < 5 > 4 INCREASE TO 230mm OF 40mm FCR SUB BASE COURSE
FOR SUB GRADE WITH CBR VALVE OF < 4 REFER TO ENGINEER FOR STRENGTHENING REQUIREMENTS

NOTE:
CUT BATTER SLOPES TO BE ADJUSTED TO SUIT VARIABLE SITE CONDITIONS AS DIRECTED BY THE ENGINEER.

C — TYP' 4.0m WIDE SECTION (GRAVEL)
SCALE 1:100

EXIST' RSIDENCE No18 (Lot 1)
1.688ha (16880m2)

existing modified access driveway approved by Council as part of the subdivision civil works

exist' rock pitched table drain

to HONEYWOOD DRIVE

164°47'00" 248.61m

NOTE:
PROPOSED DRIVEWAY TO BE CONSTRUCTED IN ACCORDANCE WITH THE TFS 'BUILDING FOR BUSHFIRE' PROPERTY ACCESS GIDELINES
Minimum access driveway width of 4m
minimum vertical clearance of 4 metres,
Minimum horizontal clearance of .5m either side of the carriageway,
Cross falls of less than 3 degrees (1:20, or 5%),
Dips less than 7 degrees (1:8, or 12.5%) entry & exit angle
and maximum 18% grade for gravel access driveway
Curves with a minimum inner radius of 10m,

end of exist' driveway

2No 10k litre rainwater tanks rainwater tank everflow to connect to dispersion trench to Council and NCC 3.1.3 requirements.

The fire fighting static 10k litre water supply tank must be identified by way of a sign (W) firmly fixed to the tank at a visible location and to comply with either ASD2305–2011 or to Tas Fire Requirements

248°03'20" 96.69m

346°07'20" 24.34m

317°15'20" 50.00m

284°40'00" 30.00m

243°57'20" 55.46m

164°47'00" 377.59m

cut RL 93.50

93.00 92.00 91.00 90.00 89.00

94.00 95.00 96.00

io

toe of cut

dp

FFL 93.60

Proposed fitout

fall to dispersion trench

100dia slotted PVC drain 1% fall to dispersion trench

toe of fill

toe of cut

100dia sub-surface drain to dispersion trench

10000

12000

15000

100dia slotted UPVC sub-surface drain 1% fall to dispersion trench

6m wide access at start of battle-axe to accommodate passing bay

exist' slope 13% max

10m min outer radius for truck turning

exist' slope 12% +/-

table drain 350 deep below edge of drive rock pitch for grades above 10%

450sq' sump

300 wide stormwater cut off drain with trafficable grate over

filled in erosion channels

14000x1500x1000deep stormwater dispersion trench refer detail

No18A (Lot 2)
1.013ha (10130m2)

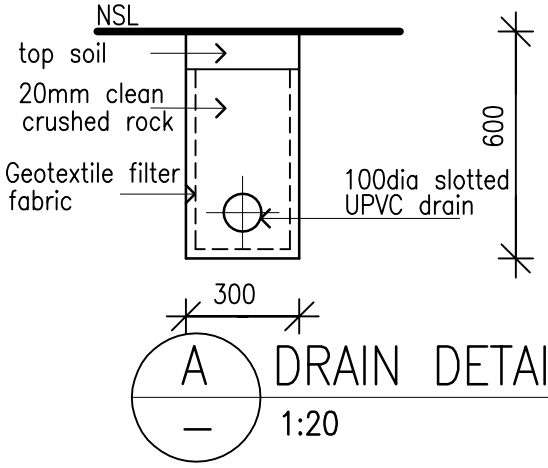
tunnel erosion

NOTE:
where possible
do not unnecessarily remove or disturb topsoil
When construction is completed ensure that dispersive subsoils are covered with an adequate layer of topsoil or geotextile fabric and revegetated where possible
Ensure that drains excavated in or through dispersive soils are revegetated

LEGEND

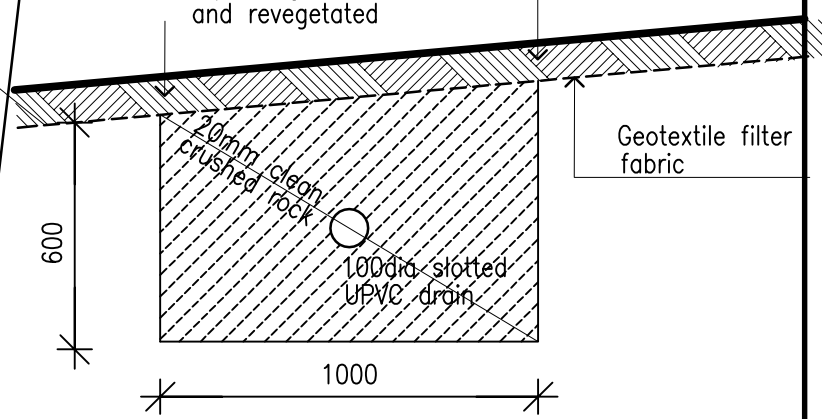
- dp. 100dia UPVC down pipe
- extension of table drain
- exist' rock pitched table drain
- earth water diversion mound
- sediment colection fence
- 100dia UPVC stormwater @1.0% fall minimum to rainwater tank
- 100dia slotted UPVC sub-surface drain @1.0% fall to dispersion trench

PART SITE PLAN
Scale: 1.500



A — DRAIN DETAIL
1:20

NOTE:
The Dispersal Apron is covered with an adequate layer of topsoil, geotextile filter fabric and revegetated



B — DISPERSION TRENCH
1:20
dispersion trench to Council and NCC 3.1.3 requirements.

use figure dimensions in preference to scale – all dimensions and levels to be verified on site

AMENDMENTS:
'A'
driveway access and fire truck turning area amended
cross section of driveway added
(11–03–2024)

LYNNELG P/L (drafting)
Glen Harris CC. 290'Q'
PO Box 243
CAIRNS NORTH
QUEENSLAND
Mob: 0402 867929

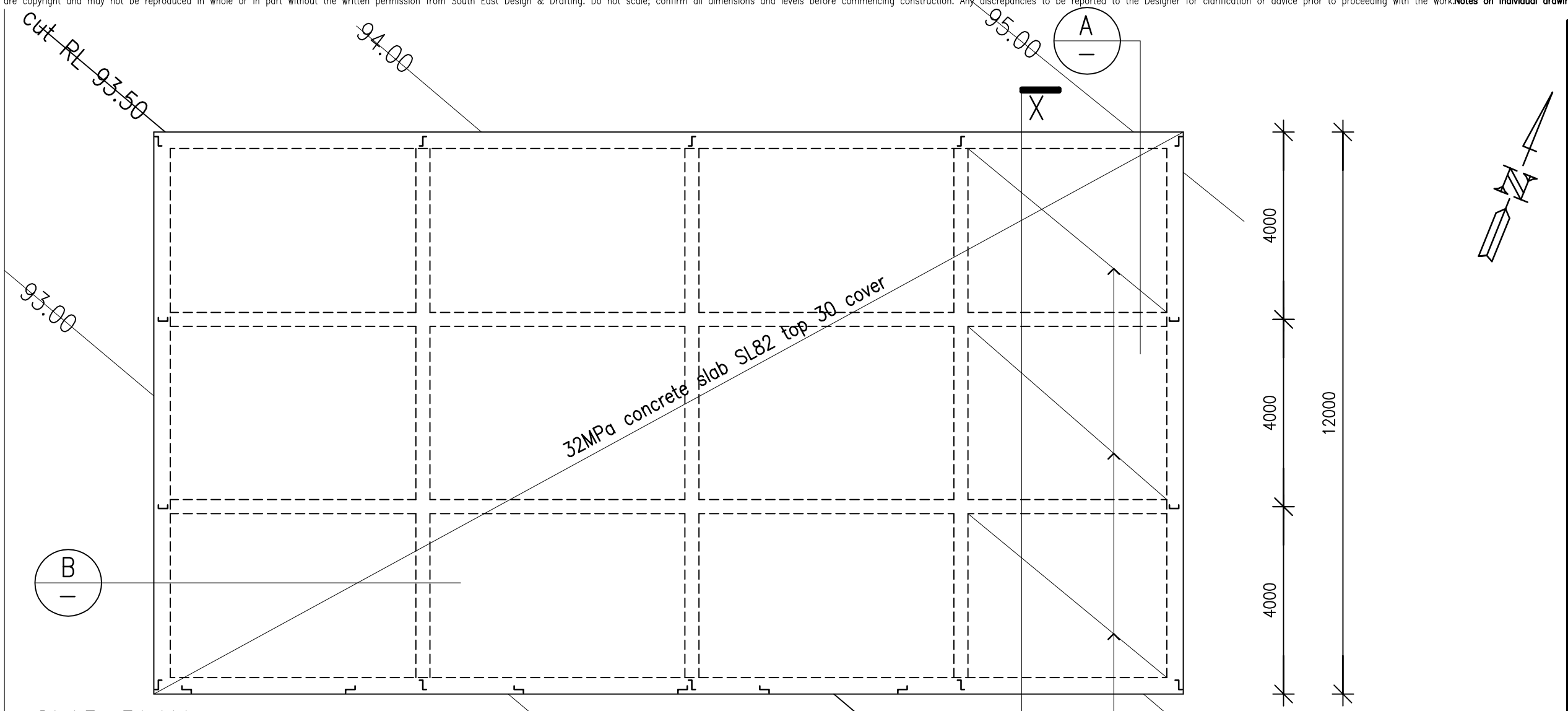
Client
BRAD ROGERS

project & address:
Proposed Outbuilding
@No18A (Lot 2)
Honeywood Drive
HONEYWOOD

title:
STORMWATER MANAGEMENT PLAN & DETAILS

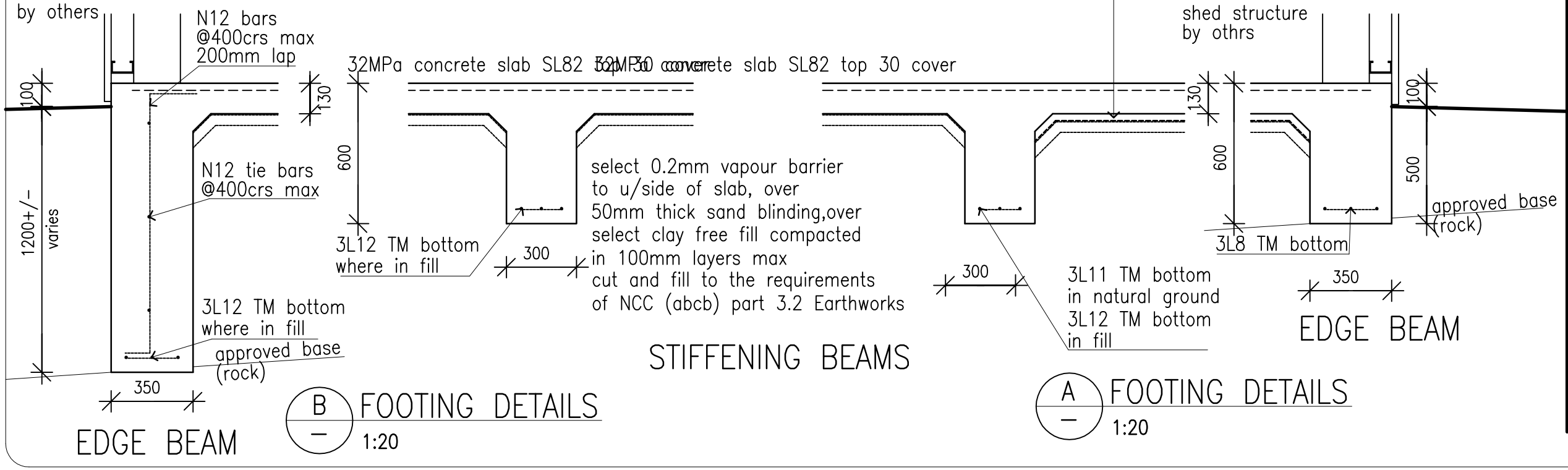
scale: 1:500,1:20
drawn: GWH
date: 01/03/2024
job no: 2023–09
drawing no:
09–Wd03'A'

Notes on individual drawings to be read in conjunction with Construction Notes sheet.



SLAB PLAN
Scale: 1.100

install minimum R0.93 XPS insulation
–30mm Styroboard 350(class IV) or similar.
to under side of 130mm thick RC slab
to Unit inside metal shed only



EDGE BEAM

STIFFENING BEAMS

EDGE BEAM

B — FOOTING DETAILS
1:20

A — FOOTING DETAILS
1:20

use figure dimensions in preference to scale – all dimensions and levels to be verified on site

AMENDMENTS:

LYNNELG P/L
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Mobile; 0402 867 929
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client:
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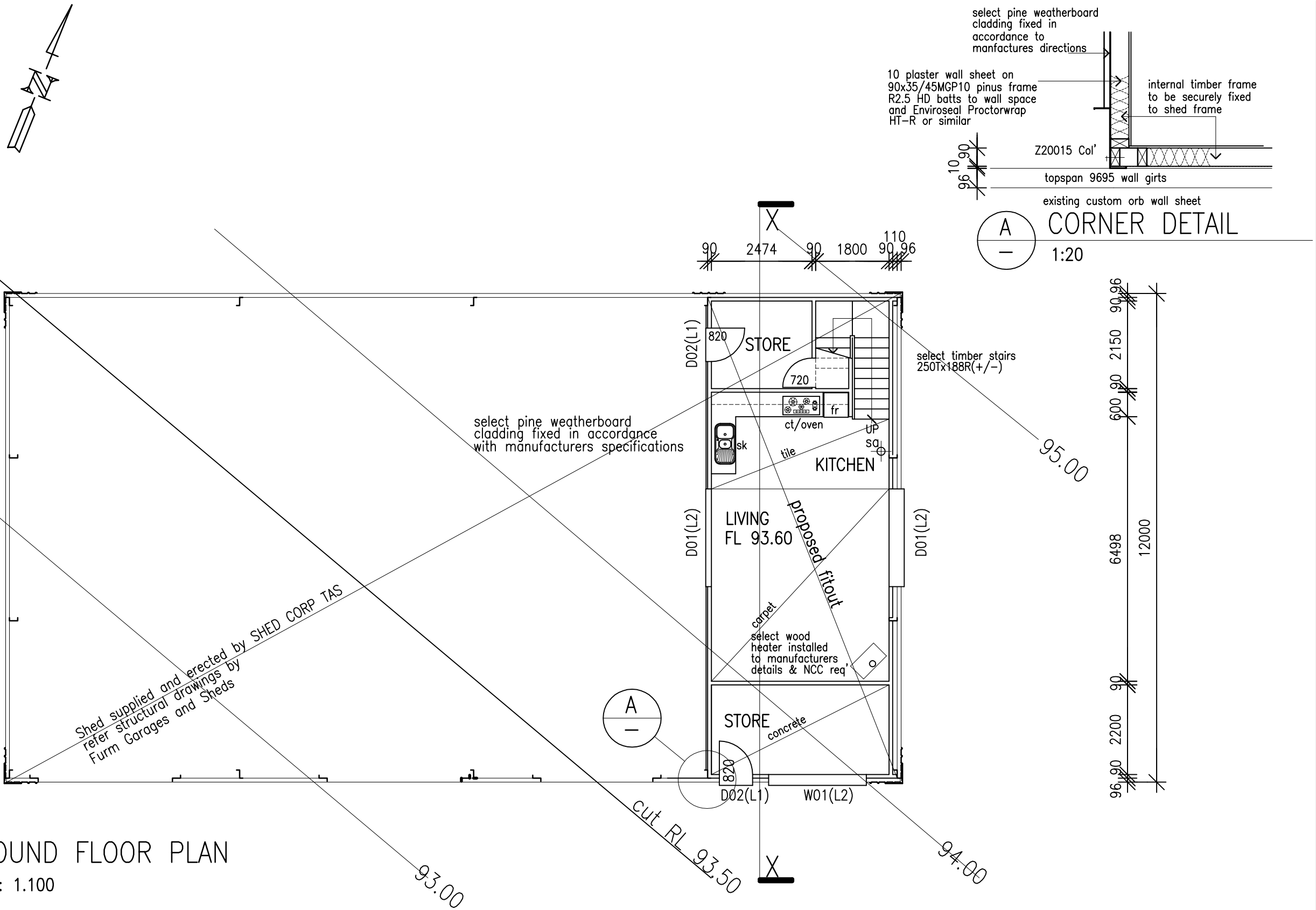
project & address:
Proposed Outbuilding
@No18A (Lot 2)
Honeywood Drive
HONEYWOOD

title:
SLAB PLAN and DETAILS

scale: 1:100,1:20
drawn: GWH
date: 01/03/2024
job no: 2023–01
drawing no:
07–Wd04

Notes on individual drawings to be read in conjunction with Construction Notes sheet.



A — CORNER DETAIL

1:20

GROUND FLOOR PLAN

Scale: 1.100

NOTE:
SHGC–values will need to be equal or higher than specified but will vary depending on window frame construction selected. U–values must be equal or higher than specified.

WINDOW/DOOR SCHEDULE

No	window size	operation	opening size	glass type	frame	orientation	U–values	SHGC–values	lintel size F17 (or LVL equal)
D01	2100Hx2400W	sliding	1.68m2	clear double glazed	powdercoat aluminium	east/west	4.5min	0.61min	L1–240x45
D02	2100Hx820W	swing			powdercoat aluminium	west			L2–120x45

use figure dimensions in preference to scale – all dimensions and levels to be verified on site

AMENDMENTS:

LYNNELG P/L
(drafting)
Glen Harris CC. 290'Q'
PO Box 243
CAIRNS NORTH
QUEENSLAND
Mob: 0402 867929

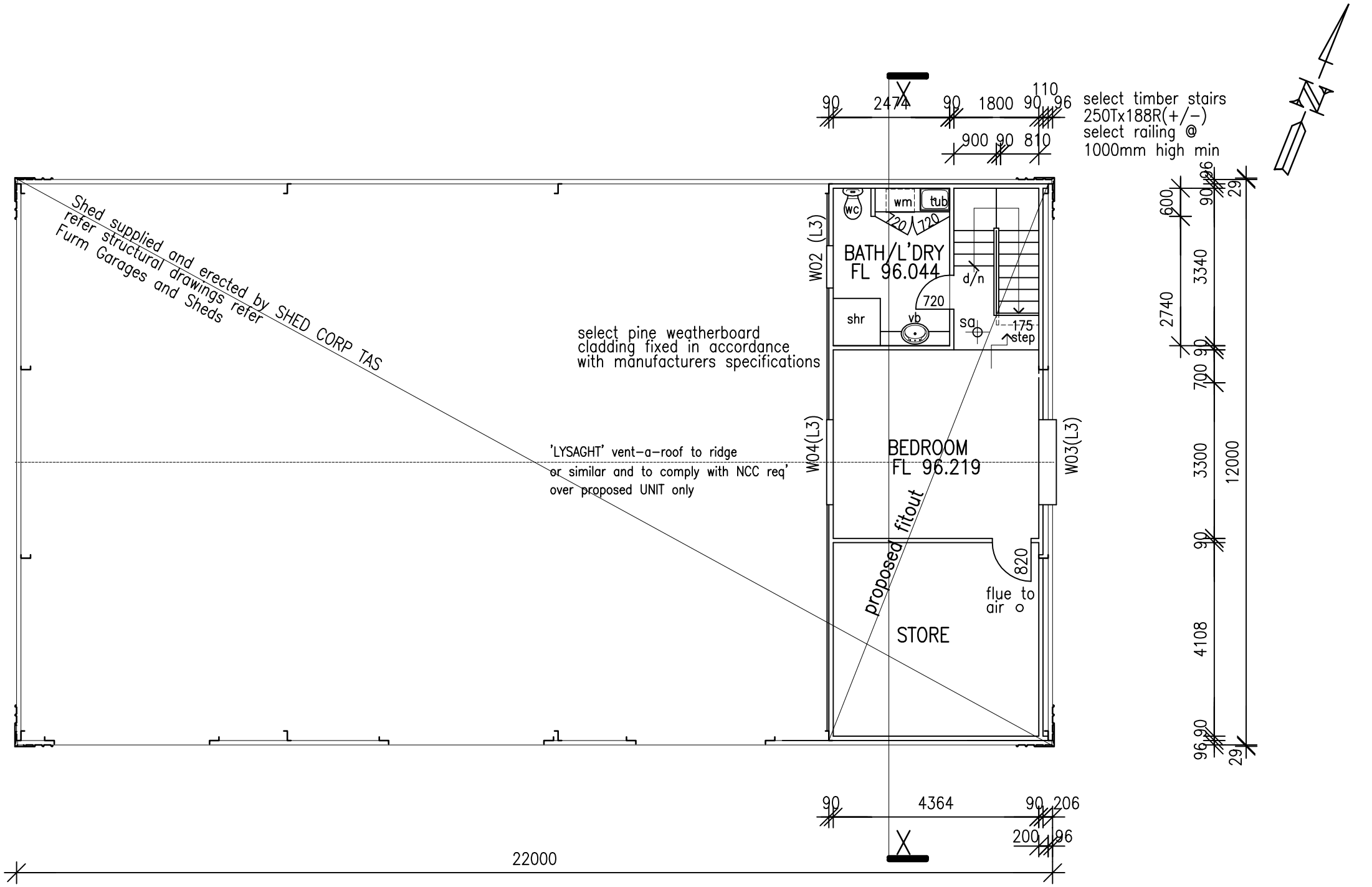
Client
BRAD ROGERS

project & address:
Proposed Outbuilding
@No18A (Lot 2)
Honeywood Drive
HONEYWOOD

title:
GROUND FLOOR PLAN

scale: 1:100
drawn: GWH
date: 01/03/2024
job no: 2023–09
drawing no:
09–Wd05

Notes on individual drawings to be read in conjunction with Construction Notes sheet.



FIRST FLOOR PLAN

Scale: 1.100

NOTE:
SHGC-values will need to be equal or lower than specified but will vary depending on window frame construction selected. U-values must be equal or higher than specified.

WINDOW SCHEDULE

No	window size	operation	opening size	glass type	frame	orientation	U-values	SHGC-values	lintel size F17 (or LVL equal)
W02	1000Hx900W	awning	0.90m2	obscure double glazed	powdercoat aluminium	west	4.5min	0.61min	L3-150x45
W03	1800Hx1800W	awning	1.35m2	clear double glazed	powdercoat aluminium	east	4.5min	0.50min	L3-150x45
W04	1200Hx1800W	awning	1.08m2	clear double glazed	powdercoat aluminium	west	4.5min	0.50min	L3-150x45

AMENDMENTS:

LYNNELG P/L (drafting)
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QUEENSLAND
Mob: 0402 867929

Client
BRAD ROGERS

project & address:
Proposed Outbuilding
@No18A (Lot 2)
Honeywood Drive
HONEYWOOD

title:
FIRST FLOOR PLAN

scale: 1:100
drawn: GWH
date: 01/03/2024
job no: 2023-09
drawing no:
09-Wd06

Notes on individual drawings to be read in conjunction with Construction Notes sheet.

LEGEND & NOTES

DJ	double joist
DS	double stud
roof pitch	11 degrees
ceiling heights	as noted on plans

all timber construction to be in accordance with AS 1684.2 (residential Timber Framed Construction) and the NCC requirements

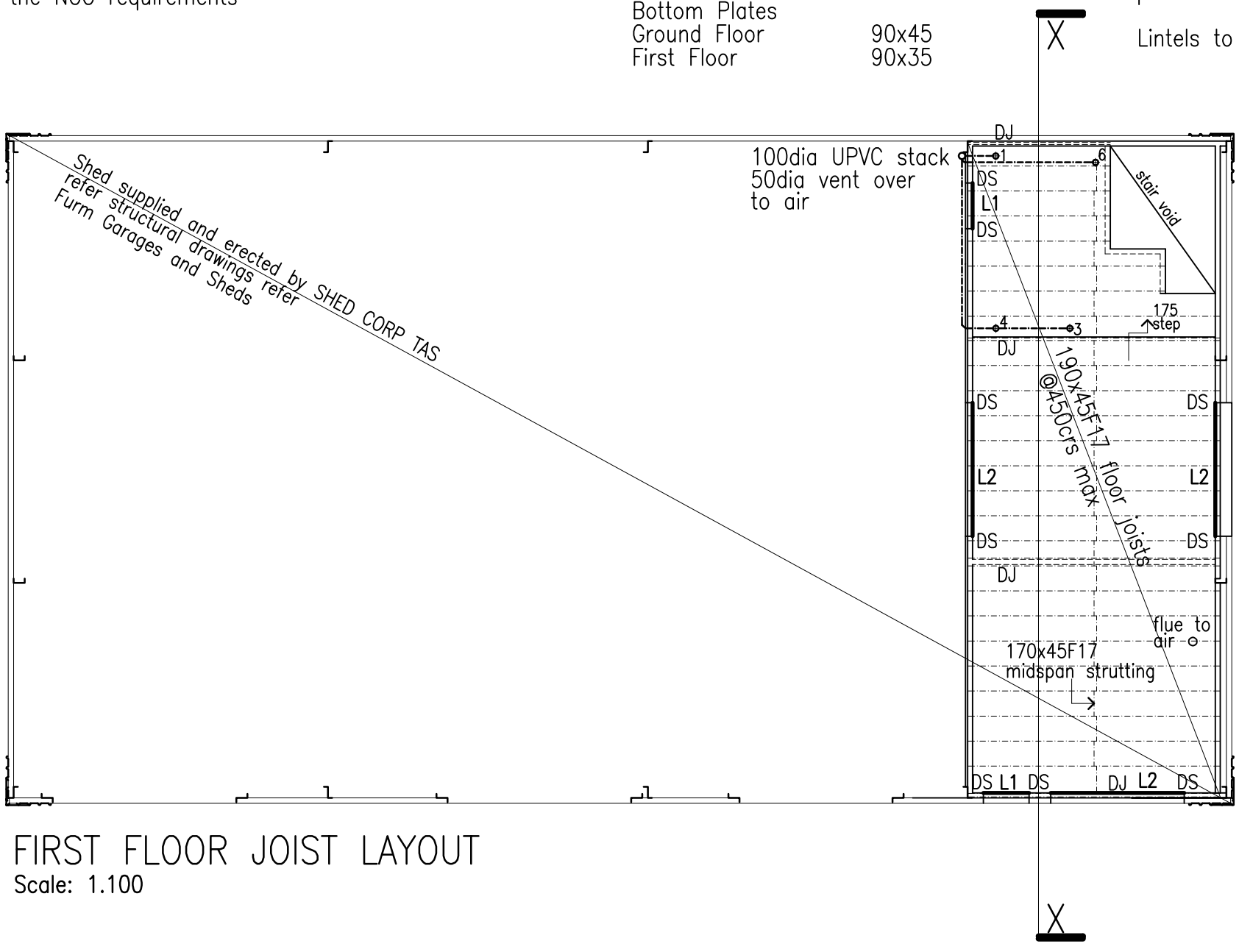
Wall Framing

Wall Framing to be min MGP10 pinus

Common Studs	
Ground Floor	90x45@450crs max
First Floor	90x35@450crs max
Noggings	90x35
Top Plates	
Ground Floor	2/90x45
First Floor	2/90x35
Bottom Plates	
Ground Floor	90x45
First Floor	90x35

Wall Framing Tie Down Fixing

bottom plates to slab	Chemical expansion or fired propriety fasteners to Manufacturer's recommendations Or 1–M10 masonry anchor at 1200crs max
Top & Bottom plates to studs	30x0.8 G.I. strap at 1200crs max 6/30x2.8mmdia each end of strap
Lintels to studs	1800mm span max 30x0.8 G.I. strap 4/30x2.8dia nails each end



FIRST FLOOR JOIST LAYOUT
Scale: 1.100

LINTEL SCHEDULE

'L1' – 120x4517 or LVL Equal
'L2' – 240x45F17 or LVL Equal

use figure dimensions in preference to scale – all dimensions and levels to be verified on site

AMENDMENTS:

LYNNELG P/L (drafting)
Glen Harris CC. 290'Q'
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CAIRNS NORTH
QUEENSLAND
Mob: 0402 867929

Client
BRAD ROGERS

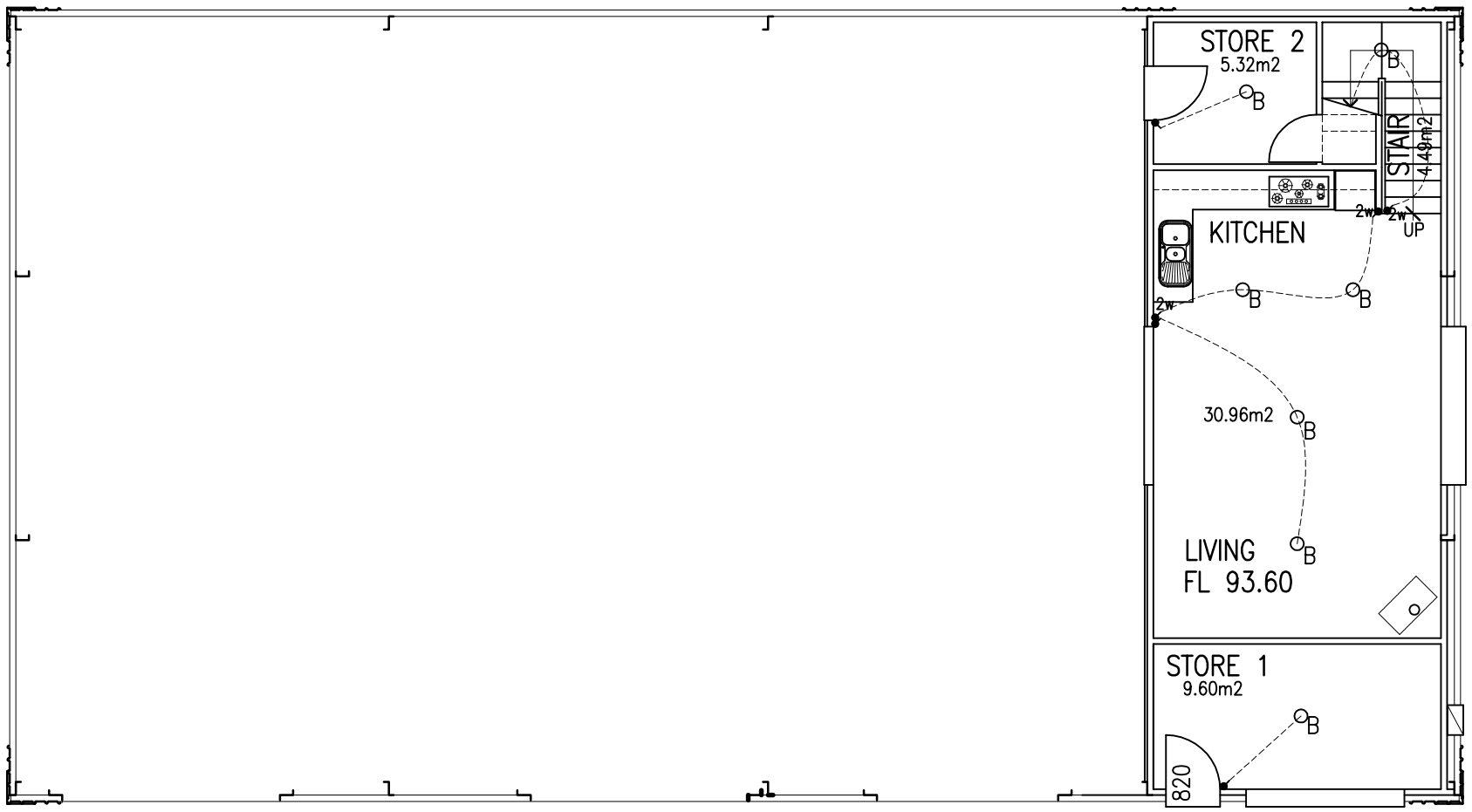
project & address:
Proposed Outbuilding
@No18A (Lot 2)
Honeywood Drive
HONEYWOOD

title:
FIRST FLOOR JOIST LAYOUT and DRAINAGE PLAN

scale:	drawn:
1:100	GWH
date:	job no:
01/03/2024	2023–09

drawing no:
09–Wd07

Notes on individual drawings to be read in conjunction with Construction Notes sheet.



GROUND FLOOR LIGHTING LAYOUT PLAN
Scale: 1.100

LEGEND & NOTES

pb 10 plasterboard lining @2400 off FL
proprietry joining strips & with ventilation panels @3.0mcrs
Maximum ceiling support spacing = 600mm

• Light switch (2w=2way switch

MB Meter box

sa smoke alarms hard wired with battery backup to AS 3786 and part 3.7.2 of current BCA

B surface mounted batten light fitting with 11W LED globes

DL recessed LED downlights (11W) LED globes

3in1 combination light, fan & heat lamp unit (4 Lamp) 4x275 heat lamps & 1x15W fluorescent globe

LED up/down exterior wall light (12W) mounted at 1800mm above FL

external lights must be controlled by a daylight sensor (as shown), or have an average light source efficacy of not less than 40 lumens/W
All bathroom fans to be fitted with backdraught dampers/shutters

Lighting (wattage) allowance

Class 1a: 5w/m2 max

Lighting Wattage to Rooms/m2

Ground Floor Area = 45.86m/2
(229.3 watts allowed)

ROOM	ROOM AREA'S	GLOBE WATTAGE	TOTAL WATTAGE per ROOM	TOTAL WATTAGE ALLOWED/ROOM
Kitchen/Dining	30.95m2	4x20w	80w	154.75w (74.75w extra)
Store 1	9.59m2	1x20w	20w	47.95w (27.95w extra)
Store 2	5.32m2	1x20w	20w	26.6w (6.6w extra)
TOTALS	45.86m2		120.0w	229.3w (109.3w extra)

NOTE: Stair lighting wattage refer First Floor

use figure dimensions in preference to scale – all dimensions and levels to be verified on site

AMENDMENTS:

LYNNELG P/L (drafting)
Glen Harris CC. 290'Q'
PO Box 243
CAIRNS NORTH
QUEENSLAND
Mob: 0402 867929

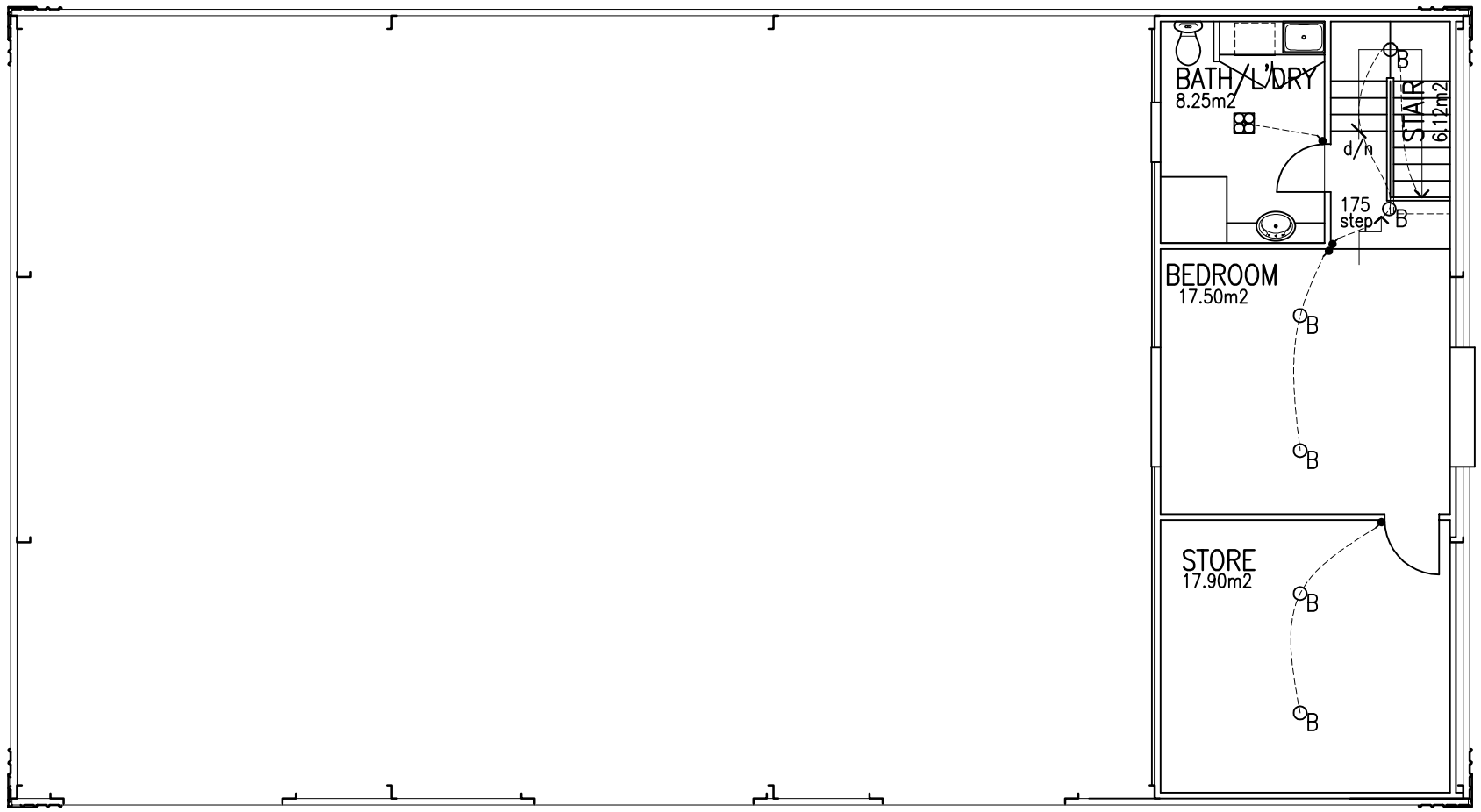
Client
BRAD ROGERS

project & address:
Proposed Outbuilding @No18A (Lot 2) Honeywood Drive HONEYWOOD

title:
LIGHTING LAYOUT PLAN GROUND FLOOR

scale: 1:100
drawn: GWH
date: 01/03/2024
job no: 2023–09
drawing no:
09–Wd08

Notes on individual drawings to be read in conjunction with Construction Notes sheet.



FIRST FLOOR LIGHTING LAYOUT PLAN
Scale: 1.100

LEGEND & NOTES

pb 10 plasterboard lining @2400 off FL
proprietry joining strips & with ventilation panels @3.0mcrs
Maximum ceiling support spacing = 600mm

• Light switch (2w=2way switch

MB Meter box

SA smoke alarms hard wired with battery backup to AS 3786 and part 3.7.2 of current BCA

B surface mounted batten light fitting with 11W LED globes

DL recessed LED downlights (11W) LED globes

3in1 combination light, fan & heat lamp unit (4 Lamp) 4x275 heat lamps & 1x15W fluorescent globe

LED up/down exterior wall light (12W) mounted at 1800mm above FL

external lights must be controlled by a daylight sensor (as shown), or have an average light source efficacy of not less than 40 lumens/W
All bathroom fans to be fitted with backdraught dampers/shutters

Lighting (wattage) allowance

Class 1a: 5w/m2 max

Lighting Wattage to Rooms/m2

Ground Floor Area = 49.79m/2
(248.95watts allowed)

ROOM	ROOM AREA'S	GLOBE WATTAGE	TOTAL WATTAGE per ROOM	TOTAL WATTAGE ALLOWED/ROOM
Bedroom	17.44m2	2x20w	40w	87.2w (47.2w extra)
Bath/L'Dry	8.25m2	1x20w	20w	41.25w (21.25w extra)
Store	17.93m2	2x20w	40w	89.65w (49.65w extra)
Stair	6.17m2	2x15w	30w	30.85w (0.85w extra)
TOTALS	49.79m2		130w	248.95w (118.95w extra)

use figure dimensions in preference to scale – all dimensions and levels to be verified on site

AMENDMENTS:

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Mob: 0402 867929

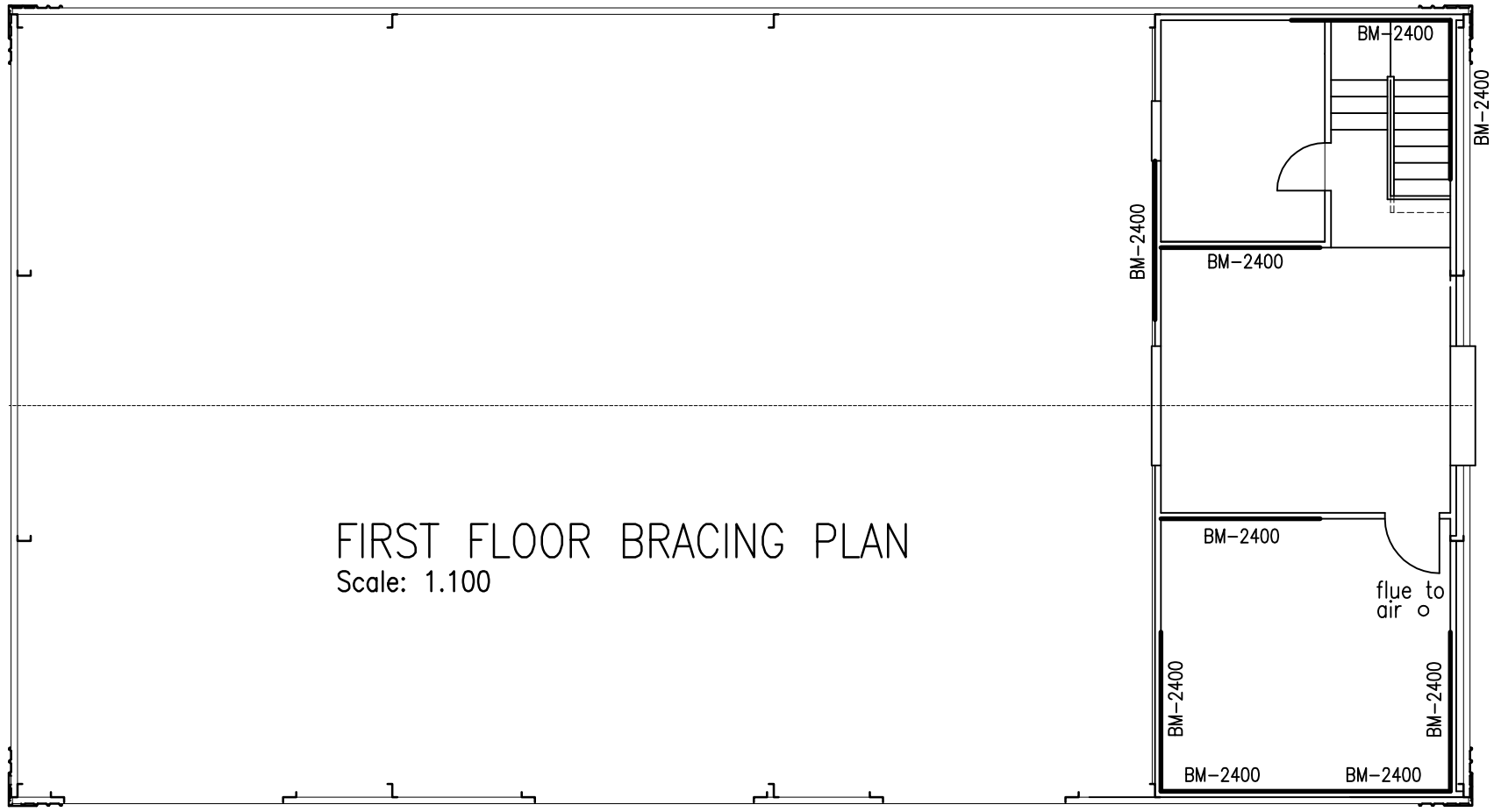
Client
BRAD ROGERS

project & address:
Proposed Outbuilding @No18A (Lot 2) Honeywood Drive HONEYWOOD

title:
LIGHTING LAYOUT PLAN FIRST FLOOR

scale: 1:100
drawn: GWH
date: 01/03/2024
job no: 2023–09
drawing no:
09–Wd09

Notes on individual drawings to be read in conjunction with Construction Notes sheet.



FIRST FLOOR BRACING PLAN
Scale: 1.100

FIRST FLOOR BRACING PLAN
Scale: 1.100

GROUND FLOOR BRACING PLAN
Scale: 1.100

use figure dimensions in preference to scale – all dimensions and levels to be verified on site

AMENDMENTS:

LYNNELG P/L (drafting)
Glen Harris CC. 290'Q'
PO Box 243
CAIRNS NORTH
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Mob: 0402 867929

Client
BRAD ROGERS

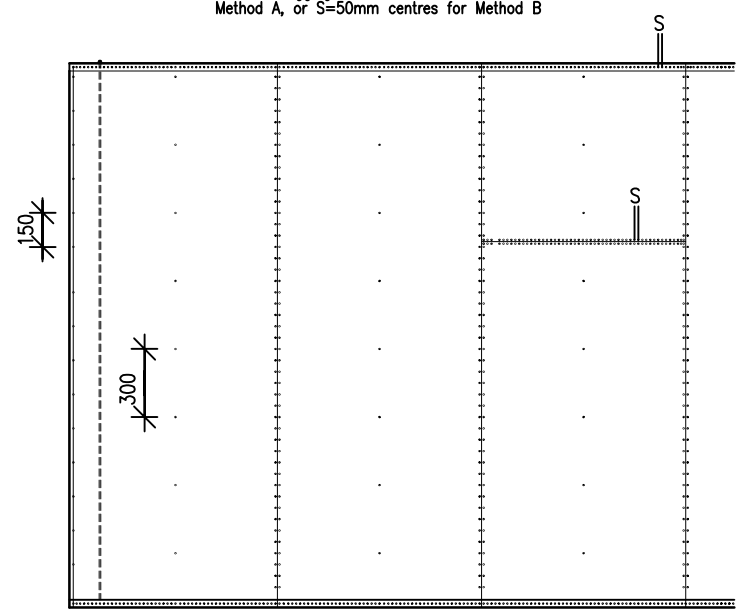
project & address:
Proposed Outbuilding
@No18A (Lot 2)
Honeywood Drive
HONEYWOOD

title:
WALL BRACING PLANS

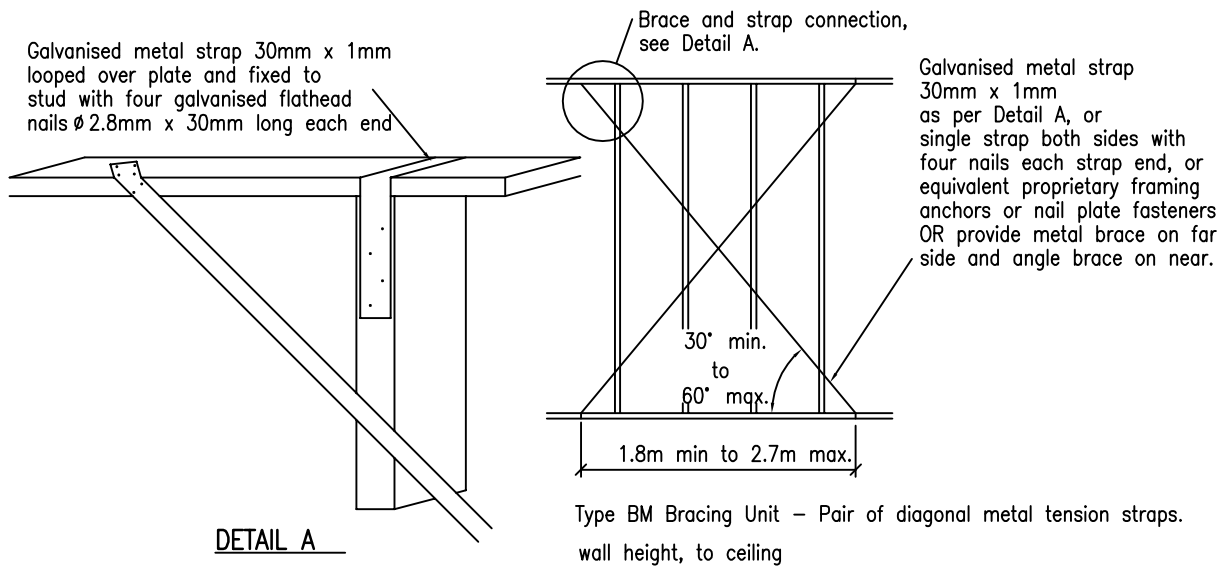
scale: 1:100
drawn: GWH
date: 01/03/2024
job no: 2023-09
drawing no:
09-Wd10

Notes on individual drawings to be read in conjunction with Construction Notes sheet.

Table 8.18(h)–Structral wall bracing (maximum wall height 2.7m)

Type of Bracing			Stress Grade
(h) Plywood– Plywood shall be nailed to frame using 30mmx2.8mm dia galvanized flat head nails or equivalent. For Method A only the minimum bracing panel length shall be 600mm. For Method A, M12 rods shall be used at each end of sheathed section top plate to bottom plate/floor frame, not greater than 150mm from end. Method B has no rods but sheathing shall be nailed to top and bottom plates and any horizontal joints at 50mm centres. Horizontal butt joints permitted, provided nail fixed to nogging at S=150mm centres for Method A, or S=50mm centres for Method B  Method A only: M12 rod top to bottom plate each end of sheathed section Sheathed panels shall be connected to subfloor	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			Method A 5.6 Method B 5.2
	Top and bottom plate			
	–Method A		150	
	–Method B		50	
	vertical edges		150	
	Intermediate studs		300	
	Fixing of bottom plate to floor frame or slab			
	Method A : M12 rods as shown plus a 13kN capacity connection at max. 1200mm centres. Method B : A 13kN capacity connection at each end and intermediately at a max. 1200mm centres.			
NOTE: For plywood fixed to both sides of the wall, see clauses 8.3.6.5 and 8.36.10				

(h)–Structral wall bracing (maximum wall height 2.7m)



Type BM Bracing Unit – Pair of diagonal metal tension straps.

use figure dimensions in preference to scale – all dimensions and levels to be verified on site

AMENDMENTS:

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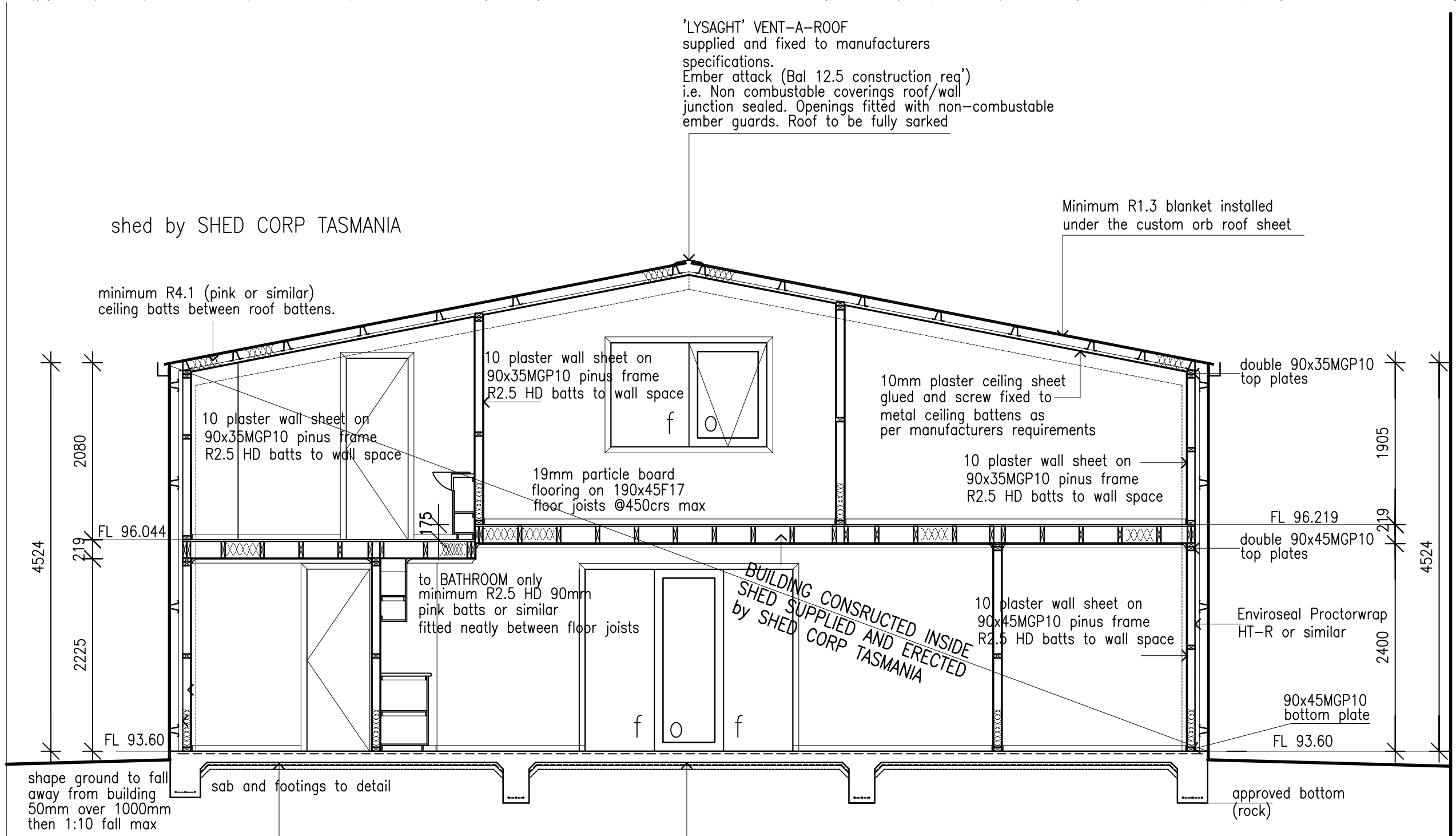
Client
BRAD ROGERS

project & address:
Proposed Outbuilding @No18A (Lot 2) Honeywood Drive HONEYWOOD

title:
WALL BRACING DETAILS

scale:
drawn: GWH
date: 01/03/2024
job no: 2023–09
drawing no:
09–Wd11

Notes on individual drawings to be read in conjunction with Construction Notes sheet.



NOTE:
INTERNAL TIMBER FRAME TO BE SECURLEY FIXED TO SHED FRAME

SECTION X-X
Scale: 1.50

use figure dimensions in preference to scale – all dimensions and levels to be verified on site

AMENDMENTS:

LYNNELG P/L (drafting)
Glen Harris CC. 290'Q'
PO Box 243
CAIRNS NORTH
QUEENSLAND
Mob: 0402 867929

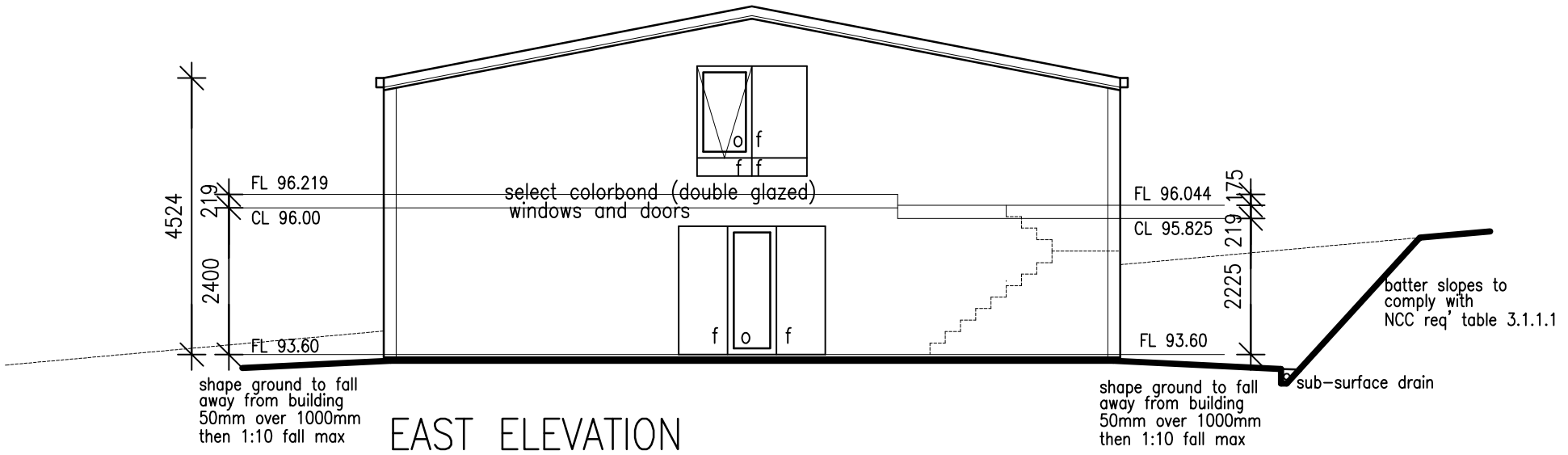
Client
BRAD ROGERS

project & address:
Proposed Outbuilding @No18A (Lot 2) Honeywood Drive HONEYWOOD

title:
SECTION

scale: 1:50
drawn: GWH
date: 01/03/2024
job no: 2023-09
drawing no:
09-Wd12

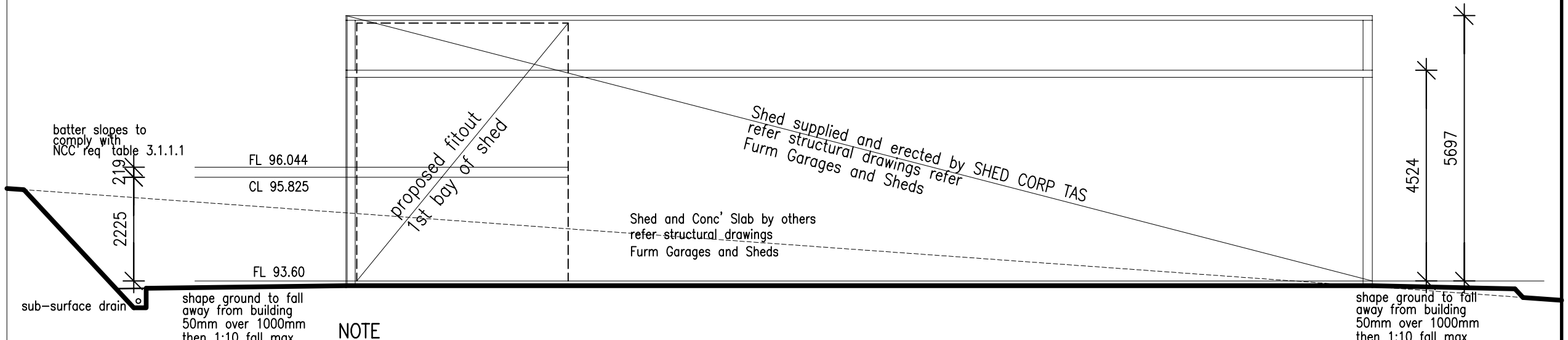
Notes on individual drawings to be read in conjunction with Construction Notes sheet.



EAST ELEVATION

NOTE:

INTERNAL TIMBER FRAME
TO BE SECURLEY FIXED
STEEL SHED FRAME



NOTE
cut and fill to the requirements
of NCC (abcb) part 3.2 Earthworks

NORTH ELEVATION

Scale: 1.100

use figure dimensions in preference to scale – all dimensions and levels to be verified on site

AMENDMENTS:

LYNNELG P/L
(drafting)
Glen Harris CC. 290'Q'
PO Box 243
CAIRNS NORTH
QUEENSLAND
Mob: 0402 867929

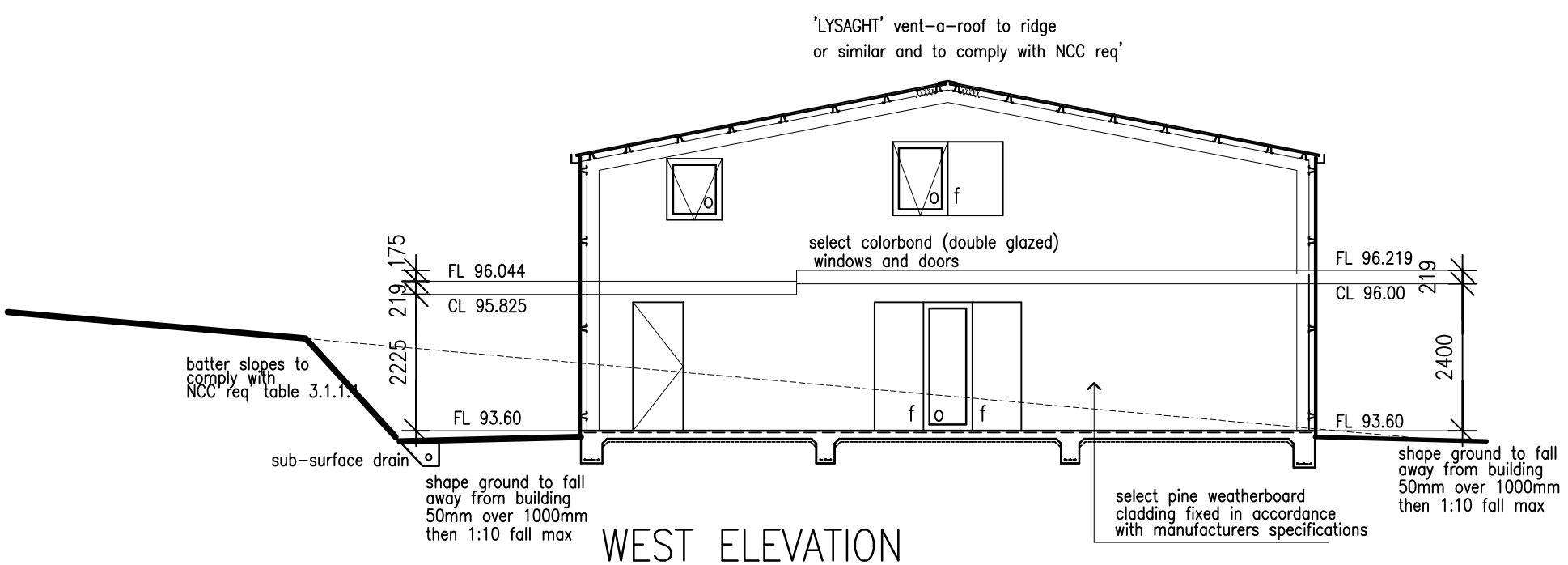
Client
BRAD ROGERS

project & address:
Proposed Outbuilding
@No18A (Lot 2)
Honeywood Drive
HONEYWOOD

title:
ELEVATIONS

scale: 1:100
drawn: GWH
date: 01/03/2024
job no: 2023-09
drawing no:
09-Wd13

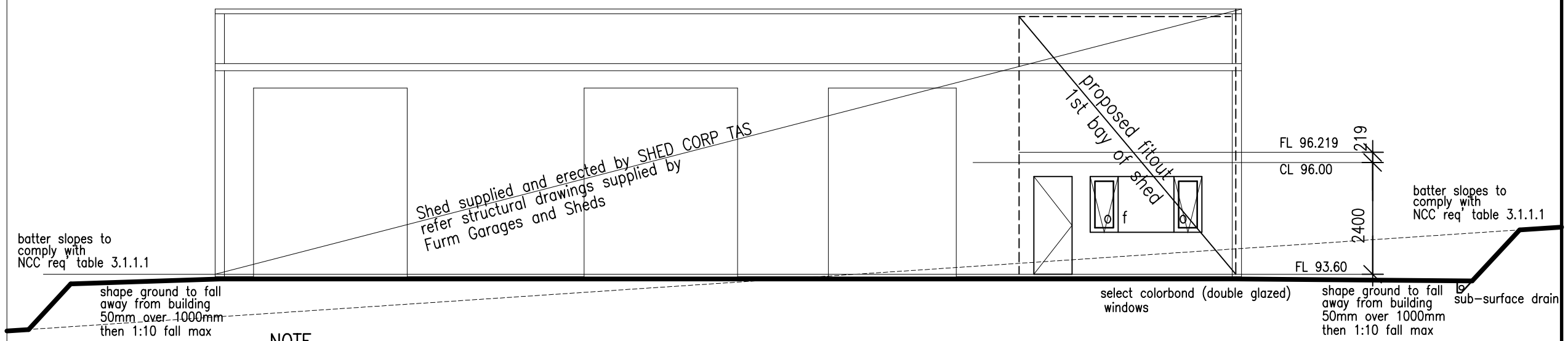
Notes on individual drawings to be read in conjunction with Construction Notes sheet.



WEST ELEVATION
(wall inside shed)

NOTE:
INTERNAL TIMBER FRAME
TO BE SECURLEY FIXED
TO SHED FRAME

NOTE:
INTERNAL TIMBER FRAME
TO BE SECURLEY FIXED
STEEL SHED FRAME



NOTE
cut and fill to the requirements
of NCC (abcb) part 3.2 Earthworks

SOUTH ELEVATION
Scale: 1.100

use figure dimensions in preference to scale – all dimensions and levels to be verified on site

AMENDMENTS:

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(drafting)
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PO Box 243
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Mob: 0402 867929

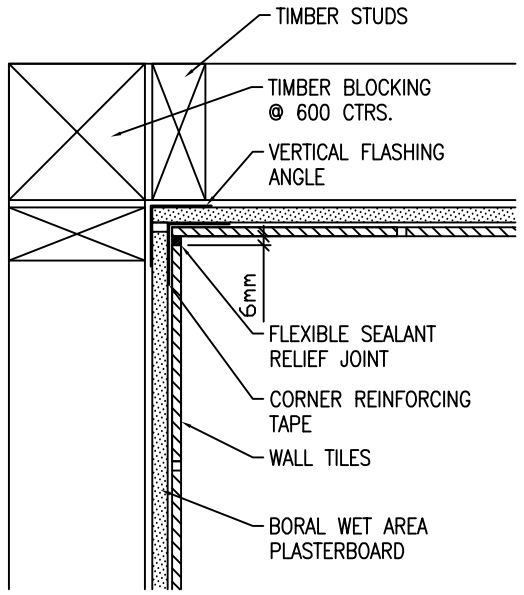
Client
BRAD ROGERS

project & address:
Proposed Outbuilding
@No18A (Lot 2)
Honeywood Drive
HONEYWOOD

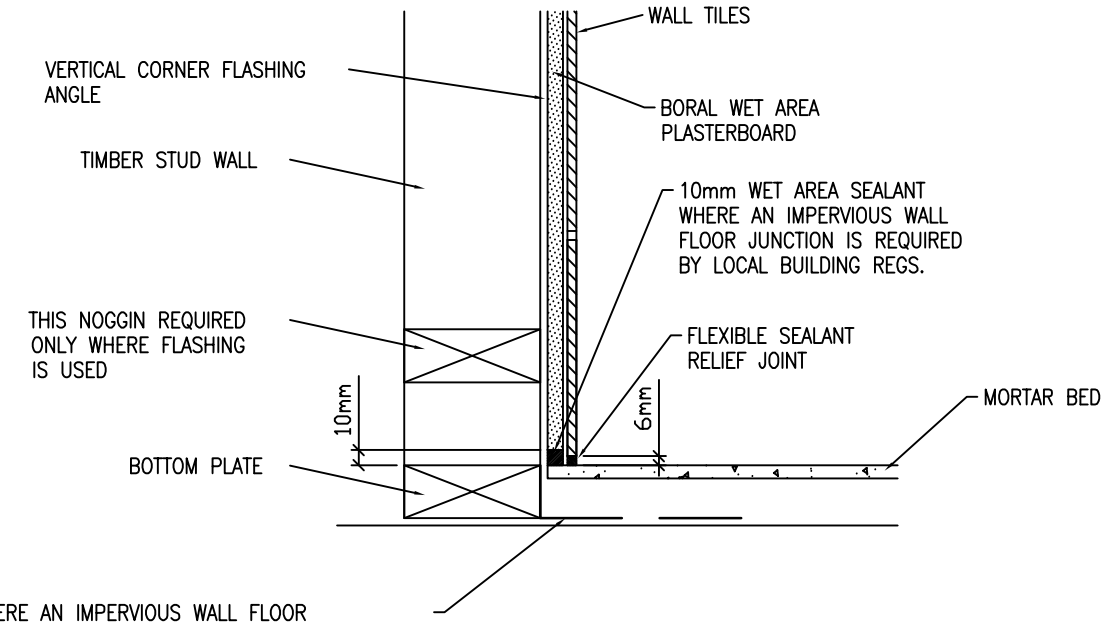
title:
ELEVATIONS

scale: 1:100
drawn: GWH
date: 01/03/2024
job no: 2023-09
drawing no:
09-Wd14

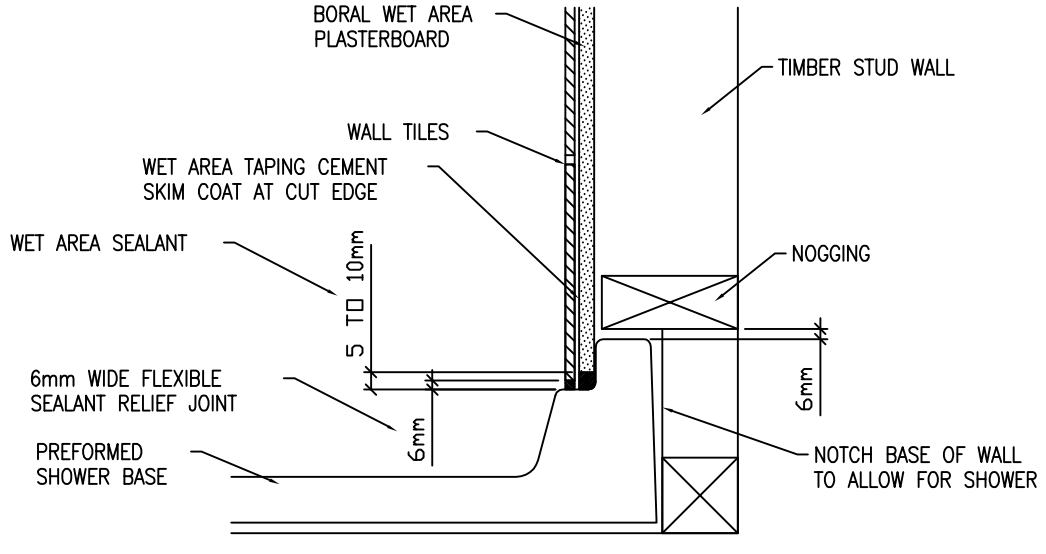
Notes on individual drawings to be read in conjunction with Construction Notes sheet.



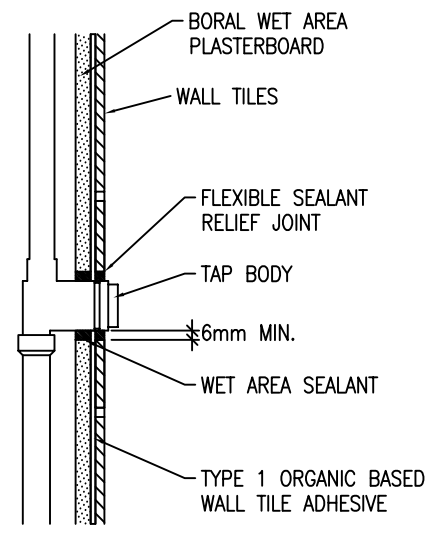
INTERNAL CORNER DETAIL



FLOOR / WALL JUNCTION



SECTION THROUGH PREFORMED SHOWER BASE



TYPICAL PLUMBING PENETRATION

use figure dimensions in preference to scale – all dimensions and levels to be verified on site

AMENDMENTS:

LYNNELG P/L (drafting)
Glen Harris CC. 290'Q'
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CAIRNS NORTH
QUEENSLAND
Mob: 0402 867929

Client
BRAD ROGERS

project & address:
Proposed Outbuilding @No18A (Lot 2) Honeywood Drive HONEYWOOD

title:
WET AREA DETAILS

scale: 1:50
drawn: GWH
date: 01/03/2024
job no: 2023–09
drawing no:
09–Wd15

Notes on individual drawings to be read in conjunction with Construction Notes sheet.

A. GENERAL NOTES

All work and materials to comply with the NCC–2022 (abcb)
Builder must check all dimensions and levels on site before commencing work.
All doors as noted.
Door to sanitary compartment to comply with BCA–2022 F2.0
Door furniture and light switches heights to be advised by owners.
Roof space access opening size 600x600 located as directed.
Wet areas to be waterproofed in compliance with NCC–2022 Part 10.2
Glazing to comply with AS 1288.
Smoke alarms must be powered and installed in compliance with AS 3786 and located as in BCA–2019 Part 3.7.5

ENERGY EFFICIENCY NCC–2019 P 2.6.1

Building Fabric to comply with NCC P 3.12.1
Building Fabric Insulation to be installed in accordance with NCC P 3.12.11
Insulation to roofs to be installed in accordance with NCC P 3.12.12 & fig 3.12.11
External walls to comply with NCC P 3.12.14 and figs 3.12.12 & 13
Floors to comply with NCC P 3.12.15 & figs 3.12.14 & 15
Building sealing to comply with BCA vol 2 part 3.12.3
Air movement to minimum requirements of NCC P 3.12.4
Services to be installed in accordance with NCC P 3.12.5
All insulation R– Values to Walls, Floors and Roofs to comply with NCC P 3.12.12 & fig 3.12.1

2. INSULATION

Roof Construction:
Pitched metal roof/flat ceiling:

1. Minimum R5.0 bulk insulation to ceiling & double sided foil over battens anti–glare side up
   Exterior wall construction refer finishes scedule:
   1. R2.0min insulation batts to stud walls
   2. R2.5min insulation batts to under floor

   Enviroseal Proctorwrap HT–R or similar to achieve min value of 4ug/ns.
   Floor Systems:
   Timber floor with R2.5 insulation batts under

3. BRACING

Wall bracing must comply with AS 1684.2 Timber Framing Code and designed to a wind loading as listed in AS 11700.
Site classification as per residential wind code AS 4055 to be class N2 with a design wind velocity of 40m/s.
Refer to Bracing Plan for type and location of wall bracing.
Wall bracing to be a combination of:
BP – Denoting: (6kn/m)
900 wide plywood sheet bracing panels fixed in accordance with:
Table 8.18 (g)
Table 8.18 (h) B
F11 at 6.0mm thick or,
F14 at 4.0mm thick.
BM – Denoting: (3kn/m)
Metal diagonal tension bracing fixed to frame in accordance with AS 1684.2.
or alternative timber bracing notched into studs and fixed in accordance with Aus Standards.
Roof bracing will be as truss manufacturers specification.

B. CONCRETE NOTES

1. GENERAL

1. Verify all dimensions on site before commencing work.
   Do not scale from these drawings. IF IN DOUBT – ASK. All workmanship and materials shall be in accordance with the relevant SAA Codes.
2. Floor Design for 1.5 KPa live load.

2. CONCRETE

1. All foundation material shall be approved before pouring concrete for a safe bearing capacity of 500 KPa.
   Concrete shall be ready mixed to the requirements of AS 1379. Concrete work shall be constructed in accordance with Section 19 of AS 3600.
2. Concrete strength grade 32MPa, slump 60mm unless noted otherwise.
3. Cover to reinforcement shall be (unless noted otherwise):
   Slab 30mm
4. Place two layers of malthoid or equal over brick wall supporting slabs or beams.
5. Reinforcing fabric shall be lapped, by over–lapping two cross wires. Laps in adjoining sheets shall be staggered.
6. Reinforcing bars shall be lapped 30 bar diameters (minimum 500mm).
7. All reinforcement shall be supported in its correct position during concreting by approved bar chairs, spacers or support bars.

C. TIMBER FRAME

All timber framing must comply with AS 1684 The Timber Framing Code.
Stud frames to be 90x35 MGP10 pinus at 450 ctrs.
Bottom plates to be single 90 x 35 MGP10.
Top plates to be double 90x35 F7.
Noggins to be 90x35 MGP10 at height no greater than 2.7m.
Lintels will be as noted on drawings/window schedule.
Frame to be tied down in compliance with AS 1684.
Wind speed in accordance with Engineers Report.
Roofing will be Colorbond Custom Orb fixed over sisalation with a pitch at 35.0 and 10.0 degrees installed in compliance with AS 1562.2 fully flashed and sealed.
Roof truss system designed and manufactured to AS 1684
70x35F17 HWD roof battens (alt 90x35MGP10 or metal)
Colorbond gutters, fascia, DP and flashings to NCC 2019 Part 3.5.3.
Wall and ceiling linings to be 10mm plasterboard (PB).
To all wet area's 'Boral' wet area plasterboard 10mm (WRB).

D. MASONARY

All brick and blockwork to be constructed in compliance with AS 3700.
DPC and flashing to comply with NCC–2022 Part 5.7
select applied finish to exosed face.

D. STEELWORK NOTES

1. Bolts shall be commercial bolts to AS 1111 and AS 1112 tightened to snug tight fit.
2. Unless otherwise noted :
   welds shall be 6mm continuous.
   bolts shall be M10 UNO.
   cleats shall be 6.0mm plate UNO.
3. Unless otherwise specified all steelwork shall be wire brushed and painted one shop coat of zinc phosphate primer.
4. The Contractor shall provide and leave in place until permanent bracing elements are constructed, such temporary bracing, as necessary to stabilize the structure during erection.
5. Before any fabrication is commenced the Contractor shall submit copies of shop drawings to the Engineer for review. Review does not include checking of dimensions.

E. PLUMBING NOTES

1. All plumbing work to comply with AS 3500 parts 1, 2, 3, & 4, and the and Brighton Council and Tas Water approvals.

DOOR SCHEDULE/NOTES

All internal doors to be select hollow core (sizes as noted on plan)
hung on 110x19mm HWD timber jambs
Note toilet doors to be able to be removable
External Main Entry door to be select solid core/glass
External Exit door to laundry to be solid core with fixed glass panel.
All external Glass sliding doors to be double glazed
(sizes as noted on plan height dimension first)

NOTE:

All doors and working spaces to comply with disability codes of Australia and Local Authorities

WINDOW SCHEDULE/NOTES

All Windows are to be double glazed with select profile
All glazed window and door assemblies in external walls to comply AS 2047
all other glass to comply with AS 1288

Flashings to wall openings
All openings must be adequately flashed using materials that comply with AS/NZS 2904

NOTE: GLAZIER TO VERIFY ALL GLASS PRIOR TO MANUFACTURE OF GLAZING UNITS

Glazing compliance certificate to be provided by glass supplier

Lintel sizes as noted on ROOFING PLAN

use figure dimensions in preference to scale – all dimensions and levels to be verified on site

AMENDMENTS:
'A'
notation reference amended
(08/03/2024)

LYNNELG P/L (drafting)
Glen Harris CC. 290'Q'
P.O. Box243
CAIRNS NORTH
Mobile; 0402 867 929
Email:
southeastdesign@iprimus.com.au

client:
BRAD ROGERS

project & address:
Proposed Outbuilding @No18A (Lot 2) Honeywood Drive HONEYWOOD

title:
NOTES

scale:
drawn:
GWH
date:
01/03/2024
job no:
2023–09
drawing no:
09–Wd16'A'

Notes on individual drawings to be read in conjunction with Construction Notes sheet.

Soil, stormwater management and erosion control

Disturbance of existing soils and vegetation is to be minimised.

Any material tracked onto roads shall be removed immediately by hand or machine cleaning as is appropriate. All construction material is to be stockpiled within the allotment boundary.
All roads and footpaths shall be kept clear of all building materials, rubbish & debris.
Builder is to provide temporary drainage measures to ensure diversion of surface water flows from excavation areas as required.

Provide sediment control sandbags to all road and footpath stormwater discharge points & maintain at regular intervals.

Public safety issues are to be considered at all times. Incorporate traffic control measures to the satisfaction of the superintendent.

All debris & rubbish generated as a result of the building works shall be removed from the site as often as possible. Collection and disposal of waste shall be done by the developer using on site excavator & tipper truck.

Provide temporary silt retention traps at all outfalls, which are to be re-instated at the completion of the building works.

Occupational Health & Safety

Workplace Health & Safety Regulations 2012 (WHS Regulations) require there to be a principal contractor (Builder) for any project with a construction value over $250K.

The Builder shall safely carry out all work in accordance with WHS regulations. The WHS regulations require that before starting work, the builder must identify all of the high risk work that is to be undertaken, develop safe work method statements, and ensure that all work is carried out in accordance with these statements.

Where work is in the proximity of overhead power lines, the builder shall form an appropriate safe work strategy. Where existing power supply needs to be relocated, the builder shall consult with Aurora and all other relevant authorities. Power line relocation shall be conducted in a safe manner, and in accordance with all relevant standards & regulations.

The Code of Practice for construction work is an approved code of practice under Section 274 of the Work Health & Safety Act (the WHS Act).

An approved code of practice is a practical guide to achieving the standards of health, safety and welfare required under the WHS Act, and the Work Health & Safety Regulations (WHS Regulations).

The code provides guidance to principal contractors and other persons conducting a business or undertaking construction work on how to meet the health & safety requirements under the WHS Act and Regulations relating to the construction work.

The code shall be read in conjunction with other codes of practice on specific hazards, and control measures relevant to the construction industry, including, but not limited to:

-Demolition work - Excavation work -Managing clerical risk at the workplace
-managing the risk of falls at the workplace -managing noise and preventing hearing loss at work
-Preventing falls in housing construction -Confined spaces-Hazardous manual tasks
-First aid in the workplace -Safe Design of structures -Handling of Asbestos

General Notes

The builder is expected to have a good knowledge of local construction practices, the National Construction Code (NCC) 2022 , and the administration processes of the Building Act 2018, and the Building Regulations 2018, as well as local council rules and regulations.

A copy of all Planning, Building and Plumbing Permits and all associated documentation endorsed by the local authority must be kept on site at all times during construction.

Where specified, or recommended by other (the Building Designer, Structural Engineer, Soil scientist or geotechnical, or Building Surveyor), sub-soil drainage should be installed prior to construction of footings / slabs.

All wall cladding including fixings, flashings and laps shall be constructed in accordance with the BCA Part 3.5.3, and manufacturers specifications. Minimum clearance under bottom edges of all cladding shall be 50mm minimum unless otherwise noted.
All windows and internal glazing shall be tagged or certified compliant with AS 1288 or AS 2047, and shall comply with the BCA Part 3.6. INSTALLATION OF FREE-STANDING HEATING APPLIANCES (wood heater) MUST COMPLY WITH PART 3.7.3.5 OF THE BCA. THE HEATING APPLIANCE IS TO BE INSTALLED ON A HEARTH AS PER FIGURE 3.7.3.4 (i.e. hearth must extend 400mm from heating appliance). FLUES SHALL BE INSTALLED IN ACCORDANCE WITH AS/NZS 2918. REFER TO ARCHITECTURAL DRAWINGS.

MINIMUM CEILING HEIGHTS SHALL BE GENERALLY 2.4m, UNLESS IN A KITCHEN, HALL, BATHROOM, LAUNDRY OR GARAGE, WHERE A MINIMUM OF 2.1m IS ACCEPTABLE. MINIMUM CEILING HEIGHTS ABOVE THE NOSINGS OF STAIR TREADS MUST BE 2.0m CLEAR.

PROVIDE ARTIFICIAL LIGHTING TO ALL ROOMS IN ACCORDANCE WITH AS/NZS 1680.0. LIGHTING LAYOUT TO BE CO-ORDINATED BETWEEN THE OWNER AND BUILDER.

PROVIDE EXHAUST FANS IN TOILETS, BATHROOMS AND A RANGEHOOD ABOVE KITCHEN HOTPLATES (to be selected by owner). INSTALL AND DUCT TO OUTSIDE AIR IN ACCORDANCE WITH AS 1668.2. REFER TO PLANS FOR LOCATION.

ALL FIBRE CEMENT CLADDING / FLASHINGS SHALL BE INSTALLED AS PER MANUFACTURER'S SPECIFICATIONS. FLASHING AROUND OPENINGS SHALL ALSO COMPLY WITH PART 3.5.3.6 OF BCA, USING MATERIALS THAT COMPLY WITH AS/NZS 2904. REFER TO ARCHITECTURAL DWGS FOR TYPICAL DETAILS.

SMOKE ALARMS SHALL COMPLY WITH PART 3.7.2 OF THE BCA & AS 3786, AND MUST BE DIRECTLY HARDWIRED INTO THE ELECTRICAL SYSTEM. ALARMS MUST BE LOCATED ON THE CEILING IN ALL LEVELS OF THE BUILDING (preferably outside the bedrooms), AND SHALL BE INTERCONNECTED TO ALL SOUND AT ONCE.

Protection of openable Bedroom windows: is to be in accordance with the BCA Part 3.9.2.5 where window is over 2m from the external adjacent ground levels. Where internal bottom sill is less than 1.7m above the internal finished floor level, the opening must be either restricted to 125mm maximum, or a childproof fly screen installed that can withstand 250 N against it.

Wood heater is to be installed b y suitable qualified installer. Installer to provide Form 53 & 54 to council upon commissioning of appliance

use figure dimensions in preference to scale - all dimensions and levels to be verified on site

AMENDMENTS:

LYNNELG P/L (drafting)
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Mobile; 0402 867 929
Email:
southeastdesign@iprimus.com.au

client:
BRAD ROGERS

project & address:
Proposed Outbuilding
@No18A (Lot 2)
Honeywood Drive
HONEYWOOD

title:
GENERAL NOTES

scale:
drawn:
GWH
date:
01/03/2024
job no:
2023-09
drawing no:
09-Wd17

GEOTECH 23-086

ROCK SOLID GEOTECHNICS PTY LTD
Peter Hofto
163 Orielton Road
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TAS 7172

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31/7/2023

Geotechnical Assessment / Classification for Proposed Residential Development

18 Honeywood Drive, Honeywood.

CLIENT: Mr Brad Rogers 0448132246 Bmr_building@hotmail.com

CONTENTS

SUMMARY

A residential development is proposed by Mr Nick Webb at 18 Honeywood Drive, Honeywood (Figures 1 & 2). Sandy topsoils, dispersive clay subsoils and shallow Triassic sandstone underly the site.

The site for the proposed residence is classified as Class 'S' in accordance with AS2870-2011. It is recommended to found the residence directly onto the sandstone bedrock.

Suitable upslope site drainage should be installed prior to the commencement of construction.

The following Wind Load Classifications (AS4055-2012: Wind Loads for Housing) are appropriate.

• Terrain Category Classification	TC2	Open Terrain
• Shielding Classification	NS	No Shielding
• Topographic Classification	T2	
• Wind Load Classification	N3	

INVESTIGATION

The Tasmanian Geological Survey 1:50000 Geological Atlas – 'Richmond' indicates that the site is underlain by Triassic sediments.

A site investigation was completed on Thursday 27 July, 2023. This included the augering of multiple test holes to assess the site for foundation conditions and onsite wastewater disposal (4WD mounted SAMPLA25 mechanical auger with 100mm solid flight augers). The locations of the holes are marked on Figure 1.

It is proposed to construct a new residence on the currently vacant, 1.013ha, internal block, sited on the southern or downslope side of Honeywood Drive. The block lies on the top of a north to south trending ridgeline, and generally slopes at 4-5 degrees down the ridgeline and SW to SE upper flanks. The block steepens on the lower flanks to 6-7 degrees. No seepages or springs were observed on the site. The site is covered in grass, weeds and several mature trees. Sandstone outcrops on the site. Several areas of shallow erosion (tunnel and surface) were observed on the block (as discussed under the sub-heading below - Dispersive Soils). The profiles displayed in Test Holes #1& #2 consisted of:

0.00 – 0.20m	clayey SAND: fine to medium grained, dark brown, 20% clay, trace rootlets – TOPSOIL
0.20 – 0.45m	sandy CLAY: medium plasticity, dark greyish brown, 30% fine to medium grained sand, moist
0.45 – 0.60m	gravelly SAND: fine to medium grained, light brown, 20% fine to medium angular sandstone gravel, dry – EXTREMELY WEATHERED SANDSTONE
0.60m+	Mechanical auger refusal on presumed sandstone bedrock – 0.60m.

The shed site test hole, Test Hole #3 encountered sandstone bedrock at 0.80m depth.

Groundwater was not encountered in any of the holes.

Plate 1 – Development site - looking downslope to the southwest from the driveway.

Plate 2 – Test Hole #1 - House site test hole - looking upslope to the northwest.

DISPERSIVE SOILS

This general area is known for the presence of dispersive soils. Several areas of shallow erosion (tunnel and surface) were observed on the block. Plate 3 (looking downslope to the southeast) shows early-stage tunnel erosion. Plate 4 (House site - looking downslope to the southwest) shows one of two areas infilled with gravelly sand. These areas, running down the slope from adjacent to the proposed house site, can be observed on the aerial photo (Figure 2), and are likely areas of tunnel / surface erosion that have been infilled.

Two samples were attained from the block to assess the site for dispersive soils. The samples were tested for dispersiveness in accordance with the Department of Primary Industries and Water publication *Dispersive Soils and their Management: Technical Reference Manual (2009).*

- The samples were air-dried.
- The samples were placed in jars containing distilled water.
- Samples were left without disturbance for 1 hour.
- Samples were observed and compared with Figure 4 (Field test for aggregate dispersion - *Dispersive Soils and their Management: Technical Reference Manual (2009).*

From Figure 4 both samples were classified as Dispersive.

Plate 3 - looking downslope to the southeast – tunnel erosion.

Plate 4 – House site - looking downslope to the southwest, area of tunnel / open erosion that has been infilled

As both samples were classified as Dispersive it is necessary to discuss measures to "manage and minimise erosion risks".

The risk of erosion developing due to development on this site is significant. Although the dispersive subsoils that exist over the site are vulnerable to erosion when exposed, or when water is permitted to concentrate, the proposed development does not necessarily necessitate significant disturbance of the site. However, erosion could develop if incorrect construction techniques are not followed when excavating the site for the proposed garage.

The Department of Primary Industries and Water publication *Dispersive Soils and their Management: Technical Reference Manual (2009)* 4.0 (Appendix 3) – "Approaches for minimising erosion risk in dispersive soils" suggests measures to reduce the risk of tunnel erosion:

- Identifying and avoiding disturbance to areas with dispersive subsoils.
- Minimising excavation of dispersive soils.
- Not allowing water to pond on the soil surface, or exposed subsoils.
- Keeping sodic sub-soils buried under topsoil.
- Maintaining vegetation cover.

Specific to this site the following measures are suggested to reduce the risk of erosion during construction and development works:

- Where possible do not unnecessarily remove or disturb topsoil.
- When construction has been completed ensure that dispersive subsoils are covered with an adequate layer of topsoil, or geotextile fabric, and revegetated where possible.
- Ensure that drains excavated in (or through) dispersive soils are revegetated.

Control or management of erosion can be achieved by reducing surface exposure of dispersive soils in excavations and cuttings by covering areas with non-dispersive topsoils or geotextile fabric and revegetating the areas.

Storm water should be collected in tanks or discharged into constructed drains.

It is the opinion of the author that sensible development of this site can be achieved and the level of risk to users of the development is acceptable.

I refer the owners to the Department of Primary Industries and Water publication *Dispersive Soils and their Management: Technical Reference Manual (2009)*, when developing the site (Appendix 3).

CONDITIONS OF INVESTIGATION

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This report should not be used for submission for Building or Development Application until RSG has been paid in full for its production. RSG accepts no liability for the contents of this report until full payment has been received.

The results & interpretation of conditions presented in this report are current at the time of the investigation only. The investigation has been conducted in accordance with the specific client's requirements &/or with their servants or agent's instructions.

This report contains observations & interpretations based often on limited subsurface evaluation. Where interpretative information or evaluation has been reported, this information has been identified accordingly & is presented based on professional judgement. RSG does not accept responsibility for variations between interpreted conditions & those that may be subsequently revealed by whatever means.

Due to the possibility of variation in subsurface conditions & materials, the characteristics of materials can vary between sample & observation sites. RSG takes no responsibility for changed or unexpected variations in ground conditions that may affect any

aspect of the project. The classifications in this report are based on samples taken from specific sites. The information is not transferable to different sites, no matter how close (ie. if the development site is moved from the original assessment site an additional assessment will be required).

It is recommended to notify the author should it be revealed that the sub-surface conditions differ from those presented in this report, so additional assessment & advice may be provided.

Investigations are conducted to standards outlined in Australian Standards:

- AS1726-1993: Geotechnical Site Investigations
- AS2870-2011: Residential Slabs and Footings
- AS4055-2012: Wind Loads for Housing
- AS1547-2012: Onsite Domestic Wastewater Management

& as specified in 'Guidelines for Geotechnical Assessment of Subdivisions and Recommended Code of Practise for Site Classification to AS2870 in Tasmania' - Institute of Engineers, Tasmanian Division.

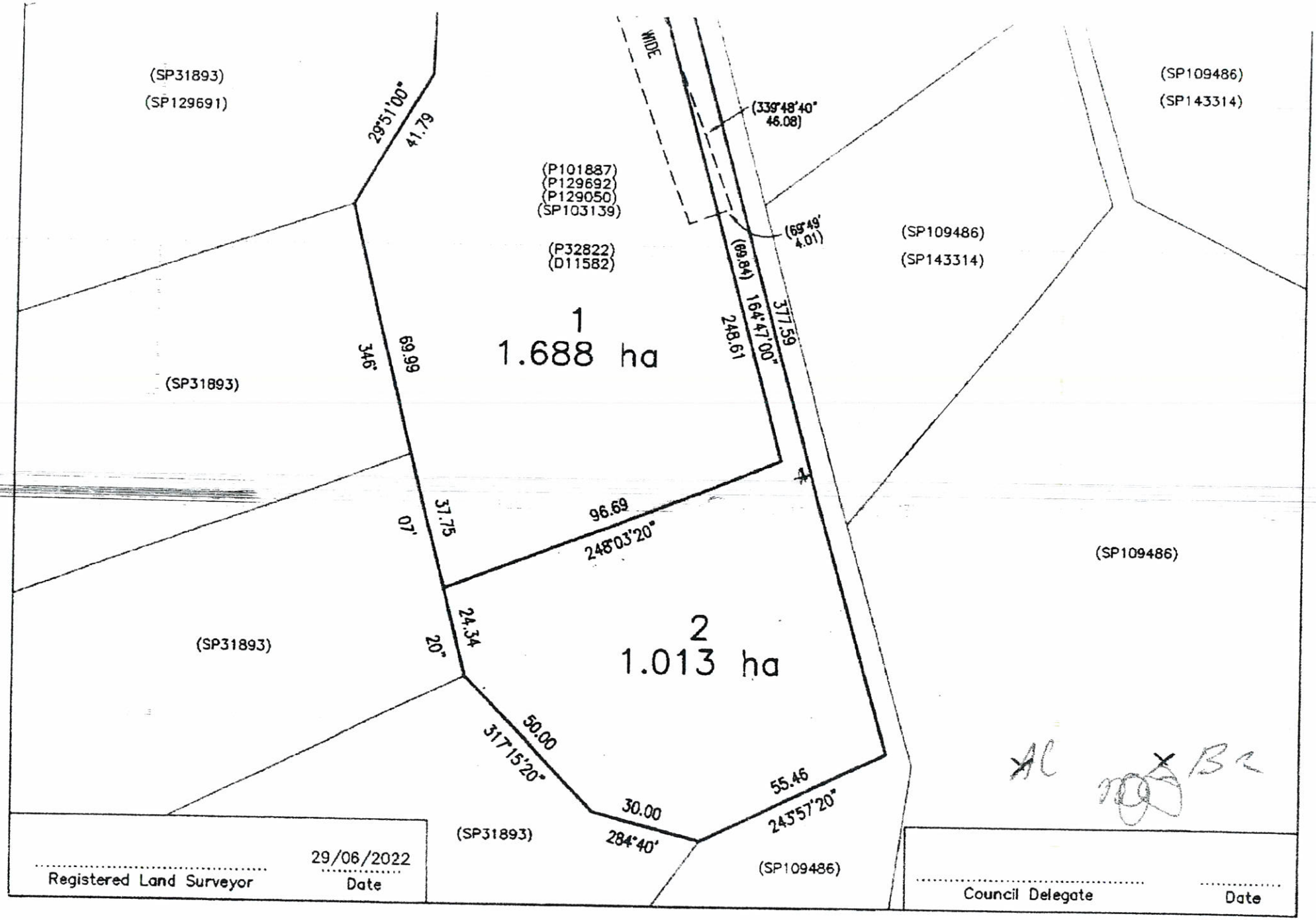
All new developments should subject to strict site maintenance. Attention is drawn to the enclosed information reproduced with the permission from Standards Australia:

- CSIRO Information Sheet No. BTF18 – 'Guide to home-owners on foundation maintenance & footing performance'.

Any assessment that has included an onsite wastewater system design will require a further site visit / inspection once the system has been installed. After the inspection to verify that the system has been installed as per RSG's design a statement will be provided. An additional fee applies for the site visit & issuing the certificate.

RSG is not responsible for the correct installation of wastewater systems. Any wastewater installation is the sole responsibility of the owner/agent and certified plumber. Any variation to the wastewater design must be approved by RSG, and an amended Special Plumbing Permit obtained from the relevant council. The registered plumber must obtain a copy and carefully follow the details in the council issued Special Plumbing Permit. A "Certificate of Completion" will be based on surface visual inspection only, to verify the location of the system. All underground plumbing works are the responsibility of the certified plumber.

PETER HOFTO
ROCK SOLID GEOTECHNICS PTY LTD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29/06/2022
Registered Land Surveyor
Date
Council Delegate
Date

LOCALITY MAP
18 HONEYWOODS AV
HONEYWOOD

TEST HOLE LOCATIONS

GDA94 MGA55 : 523834E, 5268971N 1:846 **Disclaimer and Copyright Notice**

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GDA94 MGA55 : 523834E, 5268971N 1:846 **Disclaimer and Copyright Notice**

APPENDIX 1

CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

Form **55**

To: Mr Brad Rogers *Owner /Agent*

Bmr_building@hotmail.com *Address*

Qualified person details:

Qualified person: Peter Hofto – Rock Solid Geotechnics Pty Ltd

Address: 163 Orielton Road Phone No: 0417960769

Orielton 7172 Fax No:

Licence No: Email address: peter@rocksolidgeotechnics.com.au

Qualifications and Insurance details:
BSc (Hons) – Geology / Geophysics
PI Insurance – Lloyds Underwriting
PL Insurance – CGU Insurance Ltd
(description from Column 3 of the Director of Building Control's Determination)

Speciality area of expertise: Geotechnical Assessment
(description from Column 4 of the Director of Building Control's Determination)

Details of work:

Address: 18 Honeywood Drive, Honeywood Lot No:

Certificate of title No:

The assessable item related to this certificate: Geotechnical Assessment
(description of the assessable item being certified)
Assessable item includes –

	- *a material;* - *a design* - *a form of construction* - *a document* - *testing of a component, building system or plumbing system* - *an inspection, or assessment, performed*

Certificate details:

Certificate type: *(description from Column 1 of Schedule 1 of the Director of Building Control's Determination)*

This certificate is in relation to the above assessable item, at any stage, as part of - *(tick one)*

building work, plumbing work or plumbing installation or demolition work: X

or

a building, temporary structure or plumbing installation:

In issuing this certificate the following matters are relevant –

Documents:

Relevant calculations:

References: AS2870

I certify the matters described in this certificate.

Qualified person:

Signed:

Certificate No: GEOTECH 23-086

Date: 31/7/2023

Foundation Maintenance and Footing Performance:
A Homeowner's Guide

CSIRO

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
1	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 perpends).

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.

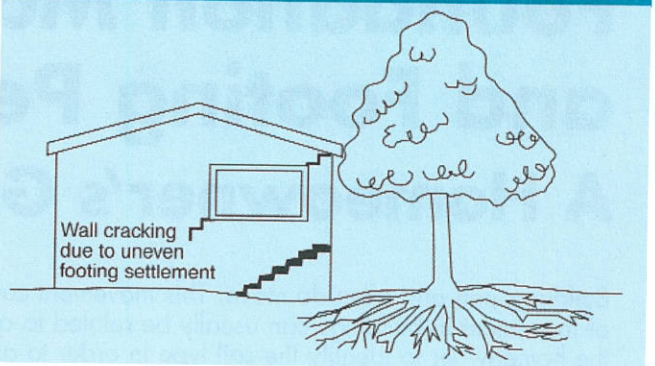
Seasonal swelling/shrinkage in clay

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.

Trees can cause shrinkage and damage



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.

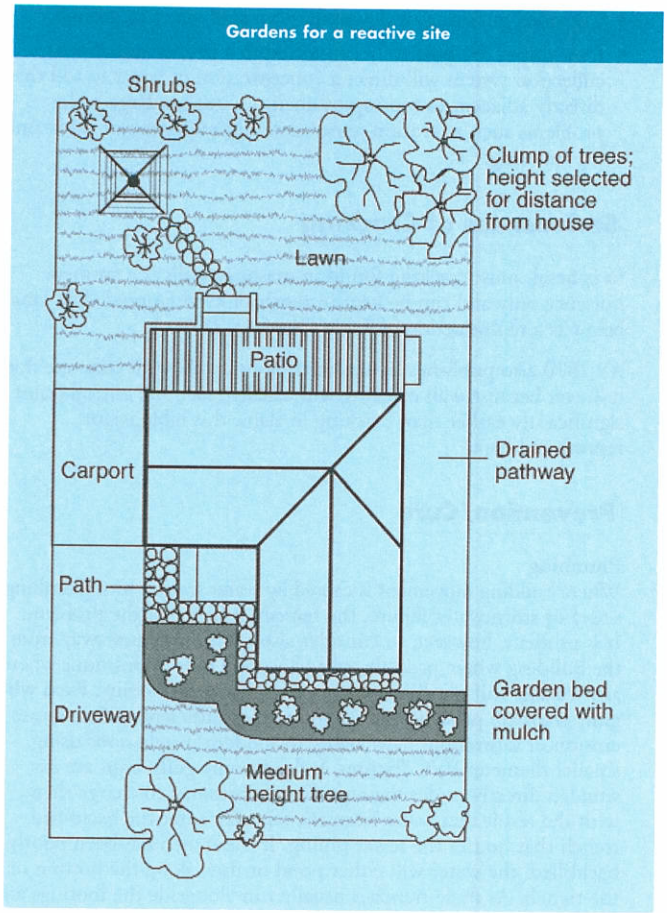
It is, however, sometimes necessary when attempting to prevent water migration that testing be carried out to establish watertable height and subsoil water flows. This subject is referred to in BTF 19 and may properly be regarded as an area for an expert consultant.

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.

Remediation

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.

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DISPERSIVE SOILS *and their* MANAGEMENT

Guidelines for Landholders, Planners and Engineers

1.0 WHY MANAGEMENT OF DISPERSIVE SOILS IS IMPORTANT

In recent years, urban expansion has occurred in areas with dispersive soils. Disturbance of dispersive soils has resulted in tunnel erosion, damage to infrastructure, and environmental harm. Greater awareness of the difficulties posed by development on dispersive soils is required to prevent future damage. Tunnel erosion results in the formation of underground cavities that can collapse causing gully erosion and damage to infrastructure such as optical fibre cables, septic systems, roads, culverts and dwellings. Unlike other forms of erosion, tunnel erosion involves both chemical and physical processes associated with the dispersion of sodic clays. Given the difficulty of repairing tunnel erosion, management effort is focused on prevention of tunnel formation through increased understanding and awareness of the issues associated with construction and development on dispersive soils.

Figure 1. Tunnel and gully erosion resulting from construction of a stormwater culvert in dispersive clay.

2.0 WHERE DO DISPERSIVE SOILS OCCUR?

Dispersive soils and tunnel erosion occur in all municipalities in southern Tasmania, as well as parts of the Northern Midlands, Tamar Valley and Break O'Day municipalities. Dispersive soils are generally associated with soils derived from Triassic sandstone, or Permian mudstone. The location and extent of dispersive soils has not been specifically mapped in Tasmania, although broad scale land systems mapping indicates that approximately 103,000 ha of private freehold land in Tasmania contains a tunnel erosion hazard.

Tunnel erosion mostly occurs on;

- Dispersive, or sodic soils.
- Soils derived from Triassic sandstone and Permian mudstone.
- Deep sedimentary soils.
- North and northeast facing slopes.
- Drainage lines.
- Areas in which vegetation, soils or hydrology have been disturbed.
- Areas with less than 700 mm annual rainfall.

Sustainable Land Use
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3.0 IDENTIFICATION OF DISPERSIVE SOILS

- Dispersive soils can be identified by dribble patterns and pitting (Figure 2).
- Early stages of tunnel erosion can be identified by the development of 'spew holes' and fans of dispersed material ejected from tunnels (Figure 3).
- Simple field tests can be used to identify the presence of dispersive soils.
- For engineering works or infrastructure development, a combination of analytical and physical tests may be required to predict dispersive behaviour in soils.

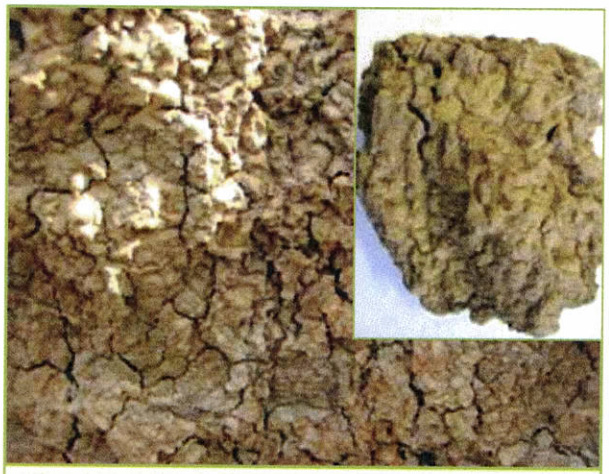

Figure 2 (a). Example of dribble pattern on an exposed subsoil, the photograph was taken from within an actively eroding tunnel system. (b) Dribble patterns on sodic soil ped.

Figure 3. Sediment fans or 'spew holes' are often the first obvious sign of tunnel erosion

SIMPLE TEST FOR IDENTIFYING DISPERSIVE SOILS.

Field testing for dispersive soils can be conducted by observing the behaviour of air dried soil aggregates in distilled water or rainwater.

1) Collect soil aggregates (1-2 cm diameter) from each layer in the soil profile.
2) If moist, dry the aggregates in the sun for a few hours until approximately air dried.
3) Place the aggregates in a shallow glass jar or dish of distilled water or rainwater (not tap water). It may help to place the jar on black card or a dark surface. (Distilled water can be purchased at most supermarkets).
4) Leave the aggregates in water without shaking or disturbing them for 1 hour.
5) Observe and record if you can see a milky ring around the aggregates. Don't worry if the soil collapses or bubbles (figure 4).

Caution: Aggregates may not disperse when they should if they haven't been sufficiently dried. Importantly, while the presence of a milky halo indicates the presence of dispersion, the absence of a milky halo does not necessarily mean that soil will not disperse, especially after disturbance. Further testing using an approved Australian Standard technique may be required.

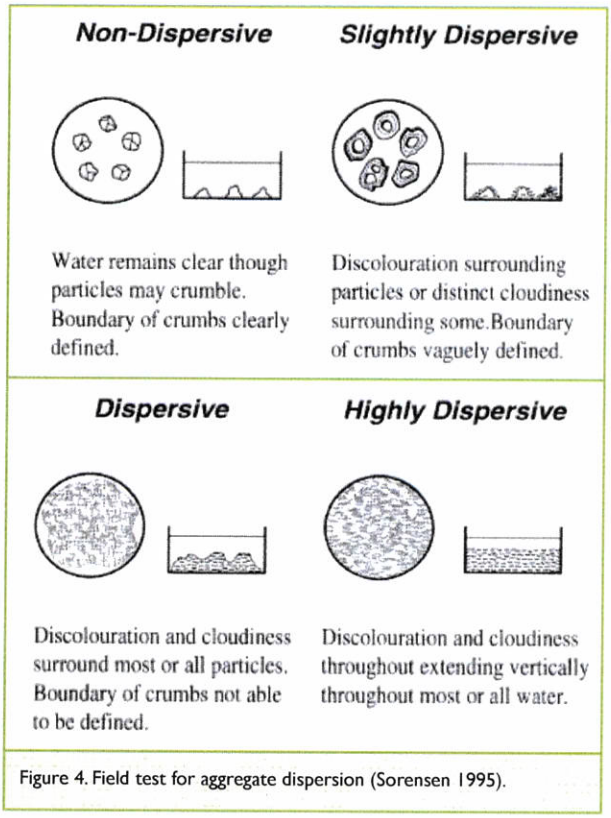

Figure 4. Field test for aggregate dispersion (Sorensen 1995).

4.0 ACTIVITIES THAT INCREASE THE RISK OF INITIATING TUNNEL EROSION

In almost all cases tunnel erosion results from some form of disturbance which allows rainwater to come into direct contact with dispersive subsoils. Activities that increase the risk of exposing dispersive subsoils to rainfall include;

- Removal of topsoil.
- Subsoil excavations (cut and fill).
- Supply of services by trenches.
- Construction of roads and culverts in dispersive soils
- Sewage and grey water disposal systems in dispersive soils
- Dam construction from dispersive clays.

Changes to hydrology, such as concentration of flow in culverts, runoff from hardened areas and ponding of rainfall may also increase the likelihood of tunnel erosion.

Figure 5. Piping failure or tunnel erosion in a dam constructed from soils derived from Permian mudstone. This dam is known to have failed on first filling. The image was taken from the dam floor.

5.0 STRATEGIES TO REDUCE RISK ASSOCIATED WITH DISTURBANCE OF DISPERSIVE SOILS

In order to prevent or repair tunnel erosion it is important to understand that unlike other forms of erosion, tunnel erosion results from chemical processes associated with dispersion of sodic subsoils. The risk of initiating tunnel erosion during construction or development of land containing dispersive soils can be minimised by;

- Identifying and avoiding disturbance to areas with dispersive subsoils.
- Minimising excavation of dispersive soils.
- Not allowing water to pond on the soil surface, or exposed subsoils.
- Keeping dispersive soils buried under topsoil.
- Maintaining vegetation cover.
- Use of gypsum or hydrated lime at appropriate rates.

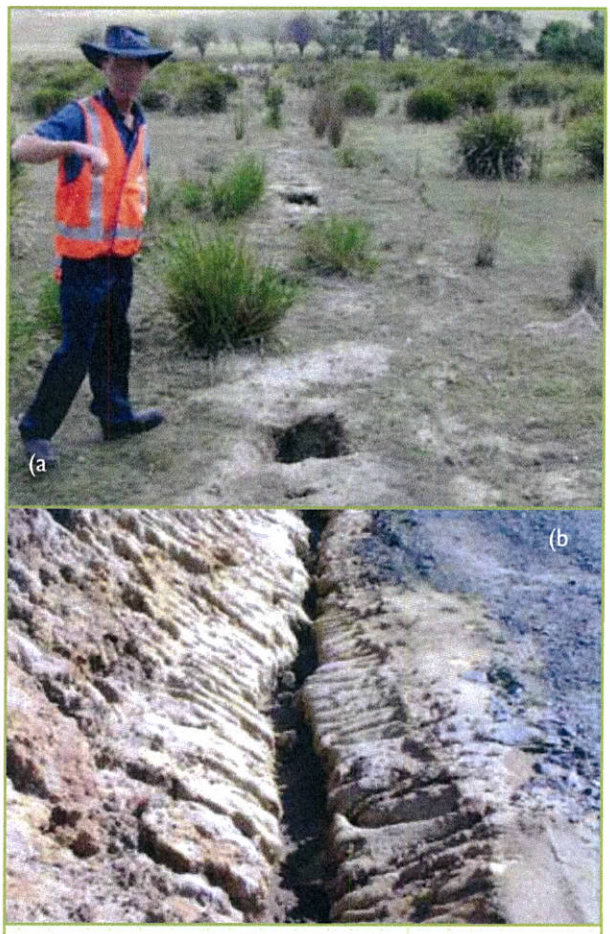

Figure 6 (a). Tunnel erosion resulting from construction of a culvert in dispersive clay (b). Tunnel erosion caused by installation of optical fibre cable in dispersive soil.

RECOMMENDATIONS FOR REDUCING THE RISK OF TUNNEL EROSION IN PERI-URBAN AREAS

- Where possible do not remove or disturb topsoil or vegetation.
- Ensure that dispersive subsoils are covered with an adequate layer of topsoil.
- Avoid construction techniques that result in exposure of dispersive subsoils.
- Do not allow rainwater to pond or sit on exposed dispersive subsoils.
- Use alternatives to 'cut and fill' construction such as pier and post foundations.
- Where possible avoid the use of trenches for the supply of services i.e., water & power.
- If trenches must be used, ensure that repacked spoil is properly compacted, treated with gypsum and topsoiled.
- Consider alternative trenching techniques that do not expose dispersive subsoils.
- Ensure runoff from hard areas is not discharged into areas with exposed dispersive soils.
- If necessary create safe areas for discharge of runoff.
- If possible do not excavate culverts and drains in dispersive soils.
- Ensure that culverts and drains excavated into dispersive subsoils are capped with non-dispersive soil / spoil mixed with gypsum and vegetated.
- Avoid use of septic trench waste disposal systems. Consult your local council about the use of above ground treatment systems.
- Where possible do not construct dams from dispersive soils, or in areas containing dispersive soils.
- If dams are to be constructed from dispersive clays, ensure you consult an experienced, qualified civil engineer or soil specialist before commencing construction.

With all forms of construction on dispersive soils, ensure you obtain advice and support from a suitably experienced and qualified soil professional or civil engineer before commencing work.

6.0 FURTHER INFORMATION

Comprehensive information on the management of dispersive soils in Tasmania is available in the companion document '*Dispersive Soils and Their Management : Technical Reference Manual*'. Hardie 2008, DPIW, Tasmania

Dispersive soils - high risk of tunnel erosion. Fact Sheet 2. Soil and water management on construction sites series, Department of Tourism, Arts and the Environment (DTAE).

Seek advice from your local council, the Department of Primary Industries and Water (DPIW), a suitably qualified and experienced soil specialist, or a civil engineer.

CONTACT DETAILS

Sustainable Land Use
Department of Primary Industries and Water
GPO Box 44, HOBART TAS 7001
Ph. 03 6233 6212 Fax. 03 6223 8603
Web. www.dpiw.tas.gov.au

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APPENDIX 3

Onsite Wastewater System Design – 18 Honeywood Drive, Honeywood

Below find an Onsite Wastewater System design, and the allocation of a Land Application Area (LAA) for a proposed 3-bedroom residence and 1-bedroom shed at 18 Honeywood Drive, Honeywood.

This assessment should be read in conjunction with Site & Soil Evaluation Report (GEOTECH 23-086).

It is proposed to construct a new shed (then a future residence) on the currently vacant, 1.013ha, internal block, sited on the southern or downslope side of Honeywood Drive. The block lies on the top of a north to south trending ridgeline, and generally slopes at 4-5 degrees down the ridgeline and SW to SE upper flanks. The block steepens on the lower flanks to 6-7 degrees. No seepages or springs were observed on the site. The site is covered in grass, weeds and several mature trees. Sandstone outcrops on the site. Several areas of shallow erosion (tunnel and surface) were observed on the block (as discussed under the sub-heading above - Dispersive Soils).

The profile displayed in Test Hole #5 consisted of:

0.00 – 0.20m	clayey SAND: fine to medium grained, dark brown, 20% clay, trace rootlets – TOPSOIL
0.20 – 0.60m	sandy CLAY: medium plasticity, dark greyish brown, 30% fine to medium grained sand, moist
0.60 – 0.70m	gravelly SAND: fine to medium grained, light brown, 20% fine to medium angular sandstone gravel, dry – EXTREMELY WEATHERED SANDSTONE
0.70m+	Mechanical auger refusal on presumed sandstone bedrock – 0.60m.

Groundwater was not encountered in any of the holes.

Table 3 of the 2016 Director's Guidelines for Onsite Wastewater Disposal states'

- If dispersive soils or a limiting layer are encountered within the upper 1m of the soil profile, then the area required must be calculated on the basis of the requirements for Category 6 soil.
- 130m^2 of LAA is required per bedroom = 520m^2 of LAA required for this development.

The site is classified as Class 5 (light CLAY) over BEDROCK with an indicative permeability of 0.12-0.5m/day, and a Design Irrigation Rate (DIR) of 3mm/day.

Plate 5 – Test Hole #4 - Proposed LAA - looking to the south.

COMPLIANCE WITH THE 2016 DIRECTOR'S GUIDELINES FOR ONSITE WASTEWATER

Compliance Table Directors Guidelines for OSWM		
Acceptable Solutions	Performance Criteria	Compliance achieved by
5.1 To ensure sufficient land is available for sustainable onsite wastewater management for buildings.		
A1 A new dwelling must be provided with a LAA that complies with Table 3.	P1 A new dwelling must be provided with a LAA that meets all of the following: a) The LAA is sized in accordance with the requirements of AS/NZS 1547; and b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.	Complies with A1 520m^2 of LAA required for this 3-bedroom residence.
7. Standards for Wastewater Land Application Areas		
A1 Horizontal separation distance from a building to a LAA must comply with one of the following: a) be no less than 6m; b) be no less than: (i) 3m from an upslope boundary or level building; (ii) If primary treated effluent to be no less	P1 The LAA is located so that the risk of wastewater reducing the bearing capacity of a building's foundations is acceptably low.	Complies with A1 Secondary treated effluent. LAA >3m from upslope building. 3° slope.

than 4m plus 1m for every degree of average gradient from a downslope building; (iii) If secondary treated effluent and subsurface application, no less than 2m plus 0.25m for every degree of average gradient from a downslope building.		LAA >2.75m from downslope building.
A2 Horizontal separation distance from downslope surface water to a LAA must comply with (a) or (b) (a) be no less than 100m; or (b) be no less than the following: (i) if primary treated effluent 15m plus 7m for every degree of average gradient to downslope surface water; or (ii) if secondary treated effluent and subsurface application, 15m plus 2m for every degree of average gradient to down slope surface water.	P2 Horizontal separation distance from downslope surface water to a LAA must comply with all of the following: a) Setbacks must be consistent with AS/NZS 1547 Appendix R; b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.	Complies with A2 LAA >100m from downslope surface water.
A3 Horizontal separation distance from a property boundary to a LAA must comply with either of the following: (a) be no less than 40m from a property boundary; or (b) be no less than: (i) 1.5m from an upslope or level property boundary; & (ii) If primary treated effluent 2m for every degree of average gradient from a downslope property boundary; or (iii) If secondary treated effluent and subsurface application, 1.5m plus 1m for every degree of average gradient from a downslope property boundary.	P3 Horizontal separation distance from a property boundary to a LAA must comply with all of the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.	Complies with A3 LAA 1.5m from upslope and side-slope property boundaries. Secondary treated effluent. 3° slope. LAA >4.5m from downslope property boundary.
A4 Horizontal separation distance from a downslope bore, well or similar water supply to a LAA must be no less than 50m and not be within the zone of influence of the bore whether up or down gradient.	P4 Horizontal separation distance from a downslope bore, well or similar water supply to a LAA must comply with all of the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment completed in accordance with Appendix A of AS/NZS 1547 demonstrates that the risk is acceptable.	Complies with A4 No known potable bores in the immediate vicinity of this site.
A5 Vertical separation distance between groundwater & a LAA must be no less than: (a) 1.5m if primary treated effluent; or (b) 0.6m if secondary treated effluent.	P5 Vertical separation distance between groundwater and a LAA must comply with the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment completed in accordance with Appendix A of AS/NZS 1547 that demonstrates that the risk is acceptable.	Complies with A5 Groundwater not encountered.
A6 Vertical separation distance between a limiting layer & a LAA must be no less than: (a) 1.5m if primary treated effluent; or (b) 0.5m if secondary treated effluent.	P6 Vertical setback must be consistent with AS/NZS1547 Appendix R.	Complies with A6 Limiting layer > 0.50m depth.
A7 Nil	P7 A wastewater treatment unit must be located a sufficient distance from buildings or neighbouring properties so that emissions (odour, noise or aerosols) from the unit do not create an environmental nuisance to the residents of those properties.	Complies with P7

WASTEWATER SYSTEM DESIGN:

It is proposed to secondary treat all the residential wastewater in an Aerated Wastewater Treatment System (AWTS), and to apply the effluent into the Land Application Area (LAA) via shallow subsurface irrigation.

This type of wastewater disposal both complies with the Director's Guidelines and is best suited to sites with underlying dispersive soils.

The size of the LAA is conditional on the wastewater load entering the system and the permeability of the site. A Design Irrigation Rate (DIR) of 3mm/day is appropriate.

3-bedroom residence	5 persons occupancy	
1-bedroom shed	2 persons occupancy	
Reticulated water	150 litres/person/day	
Wastewater Load	7 x 150 litres/person/day	1050 litres/day
Design Irrigation Rate (DIR)	3mm/day	Secondary treated effluent
Irrigation Area	1050 / 3 = 350m^2	

Total size of calculated Land Application Area (LAA) is 350m^2.

It is proposed to install the required 350m^2 of irrigation on the southern portion of the block, with wastewater used for subsurface irrigation of lawns.

LAND APPLICATION AREA

The Land Application Area should be constructed as per the following specifications:

- Establishment and maintenance of a minimum of 350m^2 of irrigation area.
- The area is to consist of sub-surface irrigation under designated lawns.
- The LAA will run across the slope.
- Landscaping of the irrigation area is to be always maintained in good order. Such maintenance includes the mowing of the lawns.
- The irrigation area is not to be used for growing vegetables.
- An approved warning sign is to be clearly positioned to inform occupants that reclaimed effluent is used for irrigation.
- The current topsoil should be scoured / ripped to a minimum depth of 200mm, and any rocks removed.

- The drip lines must be rated for use with wastewater (pressure compensated), and organized to cover the entire 350m^2 LAAs @ 0.8m spacings.
- A Vacuum Breaker Valve should be provided at the high points of the LAA, and placed in a valve box to enable inspection.
- A Flush Valve should be provided for the LAA, with piping returning the flush water to the treatment plant. The Flush Valve is to be installed in a valve box to allow inspection and servicing.
- An inline strainer (150-200 mesh) is to be installed to prevent solids from entering the irrigation system.
- A cutoff drain will not be required as the site will lie on the upper crest of the ridgeline.
- The area should not be driven on, as compaction of the subsurface driplines will render the system unserviceable.

Peter Hofto
Rock Solid Geotechnics Pty Ltd

SITE AND SOIL EVALUATION REPORT

Soil Category:		
(as stated in AS/NZS 1547-2000)	Modified Emerson Test Required	No
1,..2,...3,...4,...5,...6	If Yes, Emerson Class No.	
Measured or Estimated Soil Permeability (m/d):	0.12-0.5m/d	
Design Irrigation Rate (DIR)	3mm/day	(Secondary Treated Effluent)
Geology:	Triassic sediments.	
Slope:		3-4 degrees to the S/SW
Drainage lines / water courses:		Nil
Vegetation:		Grass, weeds

Site History: (land use)	Vacant block
Aspect:	S/SW
Pre-dominant wind direction:	Northwest to southwest
Site Stability: Will on-site wastewater disposal affect site stability?	No
Is geological advice required?	No
Drainage/Groundwater:	Not encountered
Depth to seasonal groundwater (m):	Not Encountered
Are surface or sub-surface drains required upslope of the land application area	No

Water Supply:

☑ Reticulated water

Date of Site Evaluation:	27/7/2023
Weather Conditions:	Fine

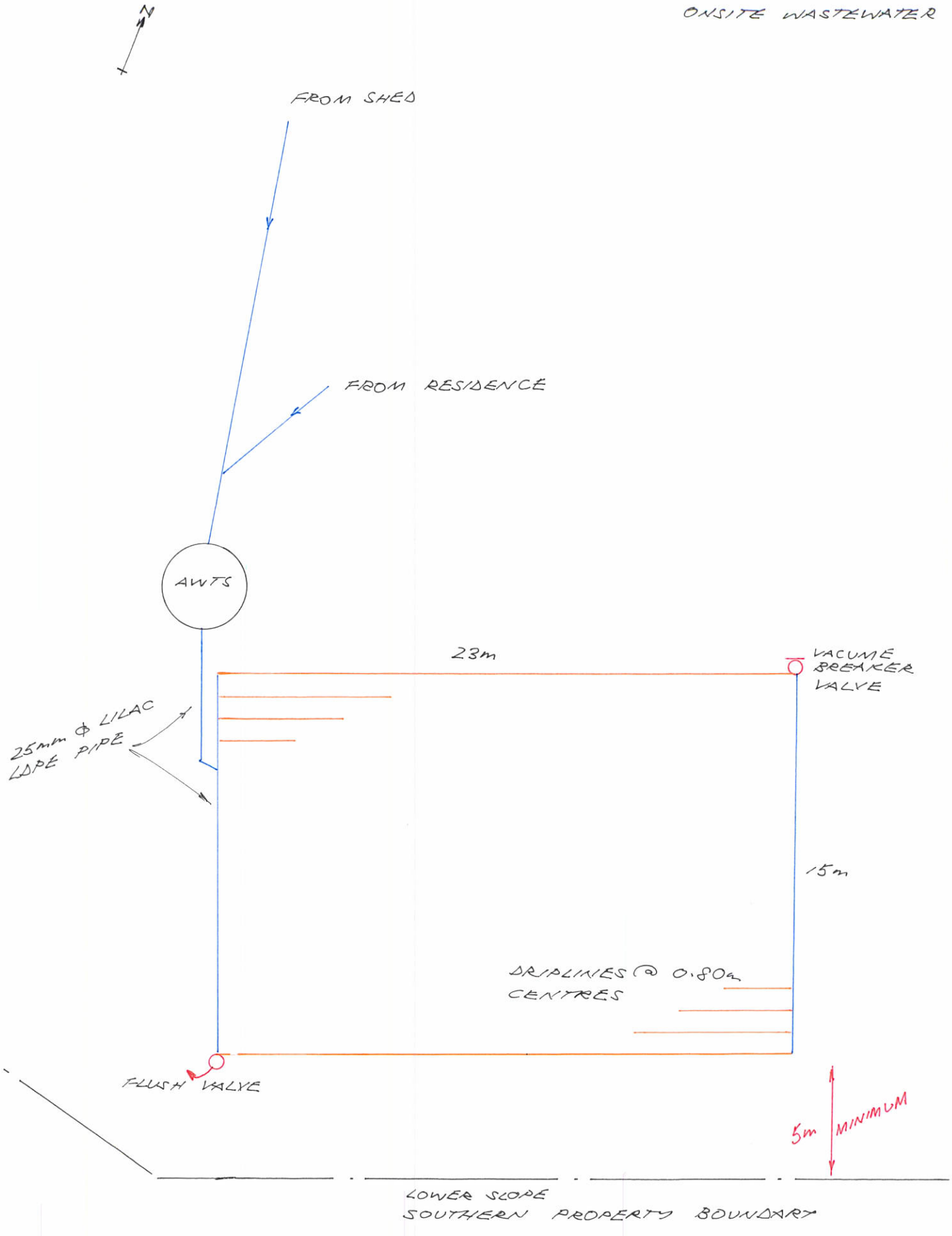
Site Evaluator:

Name:	Peter Hofto
Signed:	
Company:	Rock Solid Geotechnics Pty Ltd
Address:	163 Orielton Road, Orielton TAS 7172
Phone:	0417 960 769
Email:	peter@rocksolidgeotechnics.com.au
Qualifications:	BSc (Hons) – Geology/Geophysics

PLAN
ONSITE WASTEWATER SYSTEM

GDA94 MGA55 : 523834E, 5268971N 1:846 **Disclaimer and Copyright Notice**

PLAN
ONSITE WASTEWATER



SCALE 1:200

CERTIFICATE OF THE RESPONSIBLE DESIGNER

Section 94
Section 106
Section 129
Section 155

Form **35**

To: Mr Brad Rogers *Owner name*

Bmr_building@hotmail.com *Address*

Designer details:

Name: PETER HOFTO

Category: Hydraulic - Restricted

Business name: ROCK SOLID GEOTECHNICS PTY LTD

Phone No: 0417960769

Business address: 163 Orielton Road

Orielton 7172

Fax No:

Licence No: CC 6159I

Email address: peter@rockolidgeotechnics.com.au

Details of the proposed work:

Owner/Applicant: Mr Brad Rogers

Designer's project reference No.: GEOTECH 23-086

Address: 18 Honeywood Drive, Honeywood

Lot No:

Type of work: Building work [ ] Plumbing work [X]

ONSITE WASTEWATER MANAGEMENT SYSTEM

Description of the Design Work (Scope, limitations or exclusions): *(X all applicable certificates)*

Certificate Type:	Certificate	Responsible Practitioner
	X Plumbing design	Plumber-Certifier; Architect, Building Designer or Engineer

	☐ Other (specify)
Deemed-to-Satisfy: X	Performance Solution: ☐ (*X the appropriate box*)

Drawing numbers:	Prepared by: ROCK SOLID GEOTECHNICS P/L	Date: 31/7/2023
Schedules:	Prepared by:	Date:
Specifications:	Prepared by: ROCK SOLID GEOTECHNICS P/L	Date: 31/7/2023
Computations:	Prepared by: ROCK SOLID GEOTECHNICS P/L	Date: 31/7/2023
Performance solution proposals:	Prepared by:	Date:
Test reports:	Prepared by: ROCK SOLID GEOTECHNICS P/L	Date: 31/7/2023

Standards, codes or guidelines relied on in design process:
AS1547-2012 BUILDING ACT 2016

Attribution as designer:

I PETER HOFTO – ROCK SOLID GEOTECHNICS P/L am responsible for the design of that part of the work as described in this certificate;

The documentation relating to the design includes sufficient information for the assessment of the work in accordance with the *Building Act 2016* and sufficient detail for the builder or plumber to carry out the work in accordance with the documents and the Act;

This certificate confirms compliance and is evidence of suitability of this design with the requirements of the National Construction Code.

	Name: (print)	*Signed*	*Date*
Designer:	PETER HOFTO		31/7/2023
Licence No:	CC 6159I		

Assessment of Certifiable Works: (TasWater)

Note: single residential dwellings and outbuildings on a lot with an existing sewer connection are not considered to increase demand and are not certifiable.

If you cannot check ALL of these boxes, LEAVE THIS SECTION BLANK.

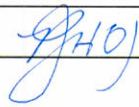
TasWater must then be contacted to determine if the proposed works are Certifiable Works.

I confirm that the proposed works are not Certifiable Works, in accordance with the Guidelines for TasWater CCW Assessments, by virtue that all of the following are satisfied:

- [X] The works will not increase the demand for water supplied by TasWater
- [X] The works will not increase or decrease the amount of sewage or toxins that is to be removed by, or discharged into, TasWater's sewerage infrastructure
- [X] The works will not require a new connection, or a modification to an existing connection, to be made to TasWater's infrastructure
- [X] The works will not damage or interfere with TasWater's works
- [X] The works will not adversely affect TasWater's operations
- [X] The works are not within 2m of TasWater's infrastructure and are outside any TasWater easement
- [X] I have checked the LISTMap to confirm the location of TasWater infrastructure
- [X] If the property is connected to TasWater's water system, a water meter is in place, or has been applied for to TasWater.

Certification:

I PETER HOFTO – ROCK SOLID GEOTECHNICS P/L being responsible for the proposed work, am satisfied that the works described above are not Certifiable Works, as defined within the *Water and Sewerage Industry Act 2008,* that I have answered the above questions with all due diligence and have read and understood the Guidelines for TasWater CCW Assessments.
Note: The Guidelines for TasWater Certification of Certifiable Works Assessments are available at: www.taswater.com.au

	Name: (print)	*Signed*	*Date*
Designer:	PETER HOFTO		31/7/2023

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31/7/2023

Loading Certificate for Onsite Wastewater System - 18 Honeywood Drive, Honeywood

1 System Capacity: (medium/long term)

- 3-bedroom residence, 1-bedroom shed, 7 persons total — 1050 litres/day

2 Design Criteria Summary:

- Secondary Treated Effluent — Aerated Wastewater Treatment System (AWTS)
- Soil Category — Class 5 light clay / Bedrock
- Land Application System — 350m^2 of subsurface irrigation

3 Reserve Area:

- Suitable reserve area if required in the future.

4 Variation from design flows etc:

- The system should successfully assimilate additional peak loadings which may result from occasional social gatherings if this does not exceed use by more than 10 persons in a 24-hour period, or more than 1 temporary resident visitors (ie. up to 8 persons total) for a period not exceeding 4 days. Visitors should be advised of the requirement to minimise time spent in showers, not unduly running taps, and other common-sense water conservation measures.

5 Consequences of overloading the system:

- Long term use by more than 7 residents or equivalent may result in overloading of the system, surfacing of effluent, public and environmental health nuisances, pollution of surface water etc.

6 Consequences of under-loading the system:

- Nil.

7 Consequences of lack of operation, maintenance and monitoring attention:

- The AWTS must be maintained by a contracted maintenance provider.

Peter Hofto
Rock Solid Geotechnics Pty Ltd