Landscape and Visual Effects Compliance Review

Proposed Smart Steel Shed

Size 10m x 12.3m x 4.8m

Foundation – Concrete slab

Address – Lot 3 Ocean Vista Way, Okiato 0272

Site overview

Landscape and Visual Effects Compliance Review

Summary

This Landscape and Visual Effects Compliance Review verifies compliance with the approved Landscape and Visual Effects Assessment and Recommendations dated 22nd April 2022 as pertains to RC 2220804 in respect of erecting a coloursteel Smart Steel Shed on Lot 3 Ocean Vista Way, Okiato 0272 (DP 595923).

The Landscape and Visual Effects Assessment for the subdivision is attached at Appendix A.

The subdivision Landscape Plan is attached at Appendix B

The Drawing Schedule for the proposed shed is attached at Appendix C

Applicable parts of the assessment are included in the body of this Compliance Review with appropriate detail of the proposed works demonstrating compliance with the recommendations of the approved Landscape and Visual Effects Assessment.

Landscape and Visual Effects Compliance Review

Proposed Smart Steel Shed

Size 10m x 12.3m x 4.8m

Foundation – Concrete slab

Address - Lot 3 Ocean Vista Way

Para 6.5 of Visual Effects Assessment

Viewpoints

Viewpoint 1

This view of the site is from Franklin Road within the residential area of Opua located approximately 1.6km away to the southwest of the site.

Comment;

The proposed shed on Lot 3 is not visible from Viewpoint 1.

Viewpoint 2

This viewing position is located around the Opua wharf area next to the Opua Cruising Club. The site is located approximately 1.1km away and forms the backdrop view of the vegetated headland that is located next to the Coastal Residential area of Okiato.

Comment;

The proposed shed on Lot 3 is not visible from Viewpoint 2.

Viewpoint 3

This viewing position is located on the Opua wharf and has a similar aspect as in Viewpoint 2. The assessment of potential adverse effects is the same as for the view from next to the Cruising Club.

Comment;

The proposed shed on Lot 3 is not visible from Viewpoint 3.

Viewpoint 4

This viewing position is on the car ferry looking east towards the site. The view from the for the passengers on the ferry is constantly changing and momentary as they pass by. They have 360-degree views of the Veronica Chanel and the residential development located within the Opua and Okiato areas and the commercial area and wharf at Opua.

Comment;

The proposed shed on Lot 3 is not visible from Viewpoint 4.

Viewpoint 5

This view depicts what passing motorist on Aucks Road approximately 400m to the east of the site see as they drive towards Okiato. Their view of the site is fleeting as they pass by.

Comment;

The proposed shed on Lot 3 is not visible from Viewpoint 5.

Viewpoint 6

This view of the site is from a private driveway off Aucks Road, approximately 500m away to the east of the site. This location is the transition between the Coastal Living zone and the General Coastal zone.

Comment;

The proposed shed on Lot 3 is not visible from Viewpoint 6.

Viewpoint 7

This viewing position is located on Aucks Road approximately 700m away to the east of the site. A fleeting view will be obtained as motorists pass by. The assessment of effects for this viewing position and viewer group is the same as for Viewpoint 5.

Comment;

The proposed shed on Lot 3 is not visible from Viewpoint 7.

Viewpoint 8 is a post subdivision position and is located along the main subdivision access way at the access to Lot 3. The upper half of the proposed shed will be temporarily, partially visible, until such time as the new native landscape plantings grow. Thereafter, all views of the proposed shed will be obscured.

Para 8 Building and Landscape Design Guidelines.

Para 8.1 Building Design Guidelines

Vegetation Clearance

The area of vegetation clearance on each lot is between 1,040m² and 1670m² as shown on the Williams & King Plan contained in Appendix 2.

The Shed is positioned within an existing cleared area of Lot 3.

Refer Appendix C. Drawing Schedule for the Proposed Shed – Sheet 2 of 10.

Sheet 2 shows the position of the proposed shed within the cleared area of Lot 3.

Landscape and Visual Effects Compliance Review

Building Form

Building style, colour and form play a significant role in determining how well a building fits into the landscape. Buildings of a similar size, scale and mass to each other and painted recessively appear to belong and are less visually obtrusive.

Similarly, buildings that reflect regional architectural styles appear to belong more readily than 'imported styles'.

Various building styles are possible; however, the following general guidelines will assist in diminishing the visual impact of structures in the landscape:

1. Building form shall flow with and follow the topography of the site.

Comment;

The proposed shed has a recessive blending IRONSAND colour scheme.

The proposed shed foundation pad is set down below the top of the hill and the shed roof line is below the surrounding tree line.

2. The form of larger buildings shall be broken up or indented to provide visual interest and shadows.

Comment;

The proposed shed is a single building with a footprint of 123m2. The shed has a hip at 4.8m and a gable roof at 10deg.

3. Stepping a building down a slope rather than constructing one single tall downhill façade shall be required.

Comment;

The proposed shed is positioned down slope on a levelled platform on natural ground. The slope above the proposed shed is retained by a specific design timber retaining wall. The proposed shed can be considered to blend with the site.

4. The maximum building height on Lots 3 – 10 shall be 8m above existing ground level.

Comment;

The proposed shed has a roof apex height of approximately 5.7m. The shed platform is 2.4m below the

hill giving a net above ground height of 3.3m

Building Materials and Finishes.

The visual effects of the building sites will be lessened if recessive colours from the A and B Group of the BS 5252 colour chart are used.

The light reflectance values for the exterior roof colours shall not exceed 30% and the exterior walls shall not exceed 40%.

It is recommended to use natural and textural materials, and make use of architectural features such as verandahs, pergolas and large eves to create shadow.

These will all cast shadows on windows and ranch sliders thus limiting the reflectivity of the facades of the house.

Comment;

The proposed shed is clad with IRONSAND with 5 rib .55thk Maxam coloursteel sheeting for both roof and walls and has an LRV of 9. The colour blends well with the environment and is considered recessive and is consistent with the other building colours of the adjacent Lot 1 (Harris Point Chalets) of the same subdivision.

All shed window frames are Ironsand colour on aluminium joinery with Low-E type glazing with an LVR of 8%

Ancillary Structures

All ancillary structures which are separate from the primary residence (such as guest quarters, garages, storage sheds) shall be designed to complement and integrate with the primary residence, especially in colour.

Comment;

The proposed shed will be an ancillary structure to a future house design on Lot 3 and as such its design, colouring and structure has been selected to compliment the future house design.

Other ancillary structures to the shed ie water tanks, retaining walls, car park, septic systems are all earthy colours.

Earthworks

Earthworks shall be graded gradually into adjacent contours. Earthworks that create sharp and large batters that are difficult to revegetate should be avoided.

Comment;

The earthworks east of the proposed shed platform fade into the continuing down slope. This area is part of the existing cleared area and will be landscaped and replanted with low height native plant species.

The earthworks immediately west of the shed platform are to be retained by a design specific timber retaining wall.

The carpark is an area of part cut / part fill with a metalled surface. The southern downhill side of the carpark is retained by a design specific timber retaining wall.

The area between the carpark timber retaining wall and the main access way will be landscaped with native trees and other plants.

Water tanks

Water tanks, if not placed underground, shall be designed to integrate with the overall design of the main structures. Tanks that are placed above ground shall be screened by the landscape amenity plantings.

Comment;

Two (2) Karaka green 30,000 ltr water tanks are to be located adjacent to the shed. The water tanks will be screened by landscape native plantings between the boundary of Lots 3 and 4.

The water tanks are accessible from the car park area specifically for Fire and Emergency. One water tank is dedicated for the purpose of fire suppression. The water tanks are supplied by roof rainwater collection. Storm water overflow from the water tanks is diverted to the site storm water drainage system as shown on Sheets 3 and 9 of Shed Drawings in Appendix C.

Driveways and Parking Areas

Parking areas shall be integrated with the overall design of the residence and landscaping.

If site contours would otherwise require extensive excavation to form parking spaces, vehicle and or boat storage should be separated from the house. Driveways should follow the natural contours of the land and avoid sharp angles or long straight sections.

Driveways shall be designed to suit rural character and formed with dark grey concrete oxide, or use chip seal or loose road metal. The use of swales to provide drainage should be encouraged.

Comment;

The parking area for the proposed shed is integrated in the longer term design and parking area for a future house on Lot 3.

The southern side of the car park is retained with a specific design timber retaining wall < 1.3m in height (max) tapering to 0.2m with integral drainage coil draining to the main stormwater drains for Lot 3 and the wider subdivision storm water drainage and swales.

The access way and carpark areas are formed with compacted metal.

Batters alongside the access way are supported by boulder style rock walls and swale drains.

Para 8.2 Landscape Design Guidelines

To assist with the appropriate landscaping of the outdoor living areas directly around the building footprints the following Landscaping Design Guidelines are recommended.

Landscaping

Any future landscaping by future owners on and around the building shall be compatible with and complementary to the existing natural landscape patterns and elements, and its bush setting.

Comment;

The landscaping and planting of native species for Lot 3 and around the proposed shed is consistent with the overall landscaping of the property and is complimentary to the existing natural landscape patterns as a whole.

Outdoor Living Areas

These areas shall be designed to integrate with the overall design of the new

residence and other structures around the main dwelling and provide a flow between indoor and outdoor living areas. The materials used for outdoor areas should be compatible with the materials used for the construction of the main buildings on the site. The use of natural materials such as wood or stone, which enhance the natural landscape are encouraged.

Comment;

The overall design and integration of the proposed shed into the future longer term consideration for the Lot take account of colours and materials selected and the wide use of boulder features.

Swimming Pools

Swimming pools, and any associated fencing and infrastructure, are permitted provided they are integrated in an unobtrusive way with the main residence and the rest of the landscaping, and their construction does not involve excessive grading or material alterations to the existing topography.

In addition, all swimming pools must comply with all applicable governmental and local authority regulations concerning swimming pool enclosure, particularly the Fencing of Swimming Pools Act 1987.

Comment;

A swimming pool is not part of the proposed shed development.

Grading and Drainage

All grading and changes to the contours of the house site should blend with its natural form and disturb the existing topography as little as possible. Landscaping should avoid excessive cuts and fills and should not disturb existing natural drainage paths.
In relation to all areas which are graded or altered by landscaping work the new lot owner should control silt run off and the bare areas replanted following the grading or alteration.

Comment;

All site surface preparation ensures that all stormwater is directed into drainage channels, drains and swales which distribute stormwater as detailed in Sheets 3 and 9 of the Shed Drawing Schedule of Appendix C.

All stormwater drainage channels, drains and swales are consistent with and join to the stormwater drainage system of the subdivision. Ref Drawing Schedule, J3146, Sheets 400, 410, 420 and 421 Rev 3 AS BUILT plans (On file with FNDC)

Silt run off due to newly prepared / finished surfaces is minimal due to the long established nature of the site and minimal new earthworks. Any silt run off is controlled by established gahnia grasses and temporary catch pits in drains under construction.

Longer term, Landscape planting includes extensive use of flaxes and other wet rooted plants in areas of drains and catchpits.

Outdoor Lighting

All exterior lighting should be shielded from neighbouring properties. There should be no pole lights or floodlights used. Any lighting on accessways should be ground mounted and no more than 500mm high. Lighting should be subdued.

Where external lights are necessary, downward-facing lights with hoods should be

used to limit light spillage and limit adverse effects on nocturnal wildlife outside the site.

Comment;

Exterior lighting on the shed will be provided by low lux LED hooded wall mounted lights.

Any access way and car parking lighting will be at ground level with solar low lux LED hooded lights.

Conclusion

The proposed shed design and shed location on Lot 3 Ocean Vista Way has been designed such that it is sensitive to the coastal landscape character and blends with the local environment.

The proposal meets with the recommendations of the Landscape and Visual Effects Assessment of Appendix A.

Owners of Lot 3 have provided immediate neighbours with the proposed shed drawing set of appendix C. All immediate neighbours have signed sheet 1 of 10 indicating their approval of the proposal.

In respect of the positioning of the proposed shed at 5m off the boundary between Lot 3 and Lot 4. The owners of Lot 4 have also signed their agreement on sheet 4 of the Shed Drawing Set of Appendix C to the positioning of the shed on Lot 3.

Peter and Leanne Maloney
Owners
Lot 3 Ocean Vista Way

Attachments;

Appendix A – Landscape and Visual Effects Assessment – Subdivision at 319 Aucks Rd Okiato.

Appendix B – Landscape Plan for subdivision.

Appendix C – Drawing Schedule for Proposed Shed on Lot 3 DP 595923

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier **1151162**
Land Registration District **North Auckland**
Date Issued 19 March 2024

Prior References
NA62/76

Estate Fee Simple
Area 1.2397 hectares more or less
Legal Description Lot 3 Deposited Plan 595923
Registered Owners
Peter Maloney and Leanne Gaye Maloney

Interests

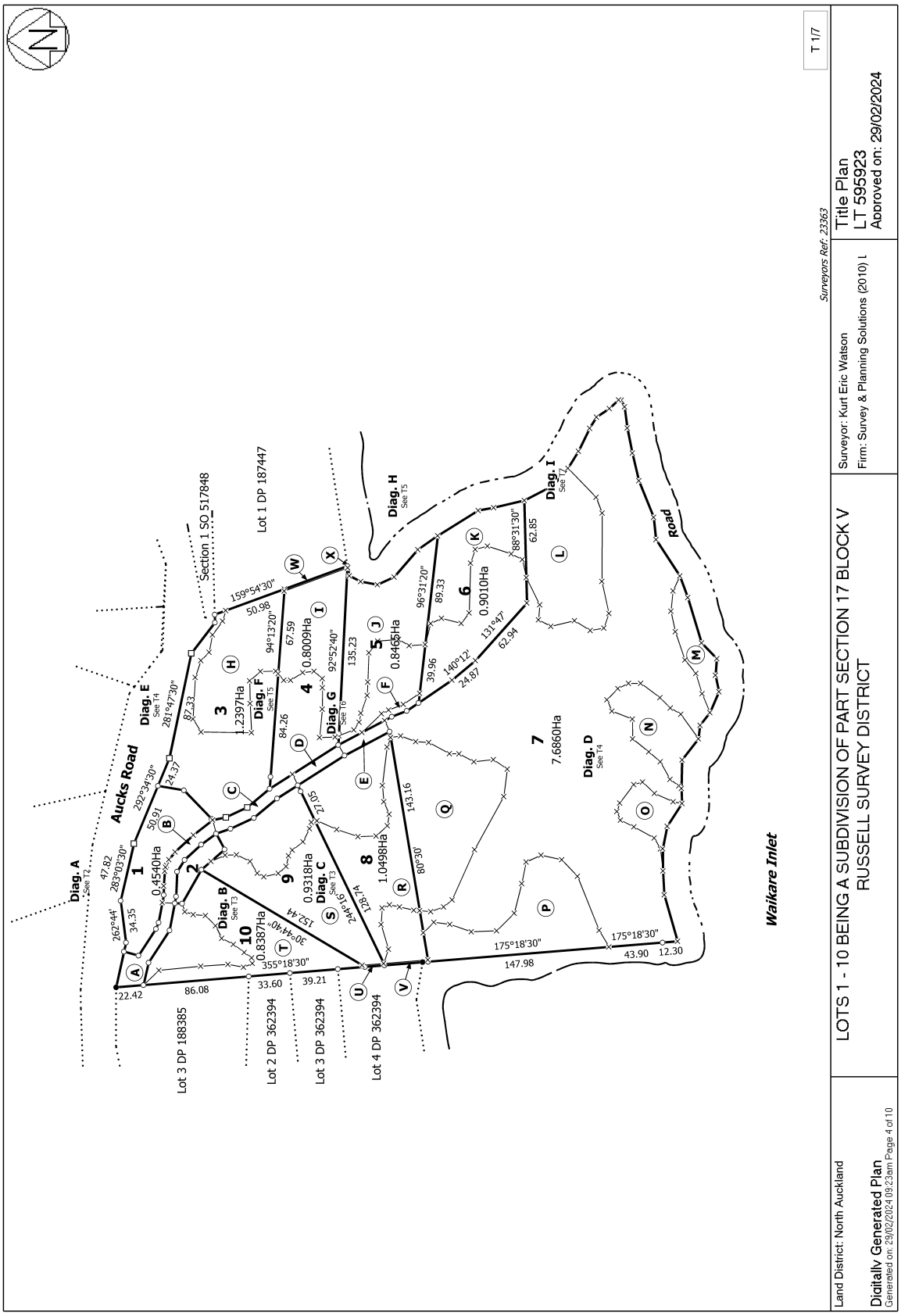
12111298.2 Mortgage to (now) Property Funding Trustees Limited - 12.5.2021 at 12:36 pm

12935249.2 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 19.3.2024 at 12:13 pm

Appurtenant hereto is a right of way, right to convey water, electricity & telecommunications and a right of way (pedestrian) created by Easement Instrument 12935249.5 - 19.3.2024 at 12:13 pm

Some of the easements created by Easement Instrument 12935249.5 are subject to Section 243 (a) Resource Management Act 1991(see DP 595923)

Land Covenant in Covenant Instrument 12935249.6 - 19.3.2024 at 12:13 pm (Limited as to duration)


N
T 1/7
Surveyors Ref: 23363
Title Plan
LT 595923
Approved on: 29/02/2024
Surveyor: Kurt Eric Watson
Firm: Survey & Planning Solutions (2010) L
LOTS 1 - 10 BEING A SUBDIVISION OF PART SECTION 17 BLOCK V
RUSSELL SURVEY DISTRICT
Land District: North Auckland
Digitally Generated Plan
Generated on: 29/02/2024 09:23am Page 4 of 10
Aucks Road
Waikare Inlet
Section 1 SO 517848
Lot 1 DP 187447
Lot 3 DP 188385
Lot 2 DP 362394
Lot 3 DP 362394
Lot 4 DP 362394
Diag. A
Diag. B
Diag. C
Diag. D
Diag. E
Diag. F
Diag. G
Diag. H
Diag. I
1 0.4540Ha
2
3 1.2397Ha
4 0.8009Ha
5 0.8465Ha
6 0.9010Ha
7 7.6860Ha
8 1.0498Ha
9 0.9318Ha
10 0.8387Ha
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
22.42
86.08
33.60
39.21
147.98
43.90
12.30
50.91
24.37
87.33
84.26
67.59
50.98
135.23
39.96
24.87
62.94
62.85
89.33
143.16
147.14
152.44
72.05
34.35
47.82
262°44'
283°03'30"
292°34'30"
281°47'30"
159°54'30"
94°13'20"
92°52'40"
96°31'20"
131°47'
140°12'
88°31'30"
80°30'
175°18'30"
355°18'30"
30°44'40"
24°47'10"

DRAWING SCHEDULE - PETER and LEANNE MALONEY - Lot 3 Ocean Vista Way , Okiato, Russell 0272

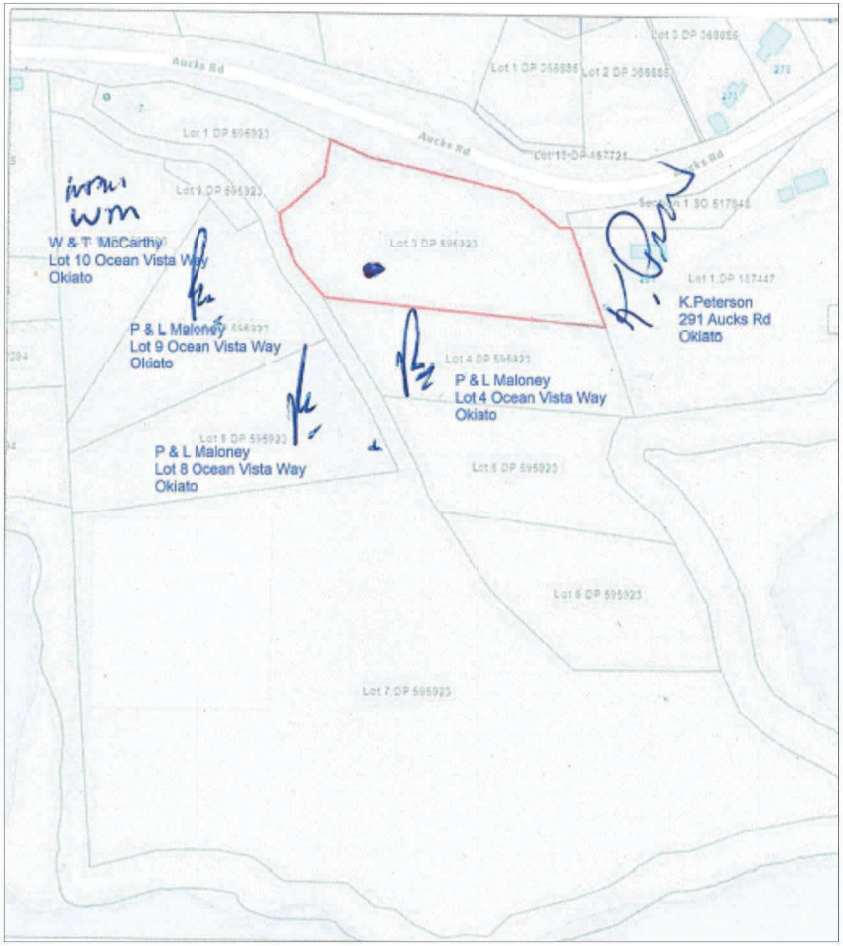
LOT 3 DP 595923

ENGINEERING DRAWING LIST

To be read in conjunction with 23457 Peter Maloney Shed - Stamped Drawings

Revision Date		12.07.2024	22.07.2024	29.07.2024	14.08.2024	13.09.2024	08.10.2024	21.10.2024	12.11.2024
Sheet	Title	Revision							
1	DRAWING SCHEDULE	A	B	C	D	E	F	G	H
2	SITE PLAN - OVERVIEW	A	B	C	C	E	E	F	G
3	SITE PLAN - PERMEABLE SURFACES - CUT / FILL <300m3 - STORMWATER	A	B	C	D	E	E	F	G
4	SHED POSITION ON SITE	A	B	C	D	E	F	G	H
5	SHED - VIEW NNE	A	B	C	C	D	D	E	F
6	SHED - VIEW ENE	A	B	C	C	D	E	F	G
7	SHED - VIEW WSW	A	B	C	C	D	D	E	F
8	SHED - FLOOR PLAN - WET AREA - WATER HEATING	A	B	C	C	D	D	D	E
9	SHED - DRAINAGE PLAN	A	B	C	D	E	E	E	F
10	SHED - PLATFORM TIMBER RETAINING WALL	A	B	C	C	D	D	D	D
11	WET ROOM - GENERAL VIEW - FREE STANDING					A	A	A	A
12	WET ROOM - STRUCTURE					A	A	A	A
13	WET ROOM - STRUCTURE - DETAIL					A	A	A	A
14	WET ROOM - STUD FIXING					A	A	A	A
15	WET ROOM - LINTEL FIXING					A	A	A	A
16	WET ROOM - DETAIL - SHOWER - PENETRATIONS					A	A	A	A
17	ELECTRICAL					A	A	A	B
18	ACCESSWAY & CAR PARK RETAINING WALL - DETAIL					A	A	A	A
19	WINDOWS SHROUDS								A
20	PORCH - DETAIL								A
21	PORCH - BRACKETS - FITTINGS								A

LOCALITY PLAN



Rev	NAME	DETAIL	DATE
Rev H	P. Maloney	Added west &south potch & window shrouds	12.11.2024
Rev G	P. Maloney	Deemed Permitted Boundary Activity	21.10.2024
Rev F	P. Maloney	Accessway and Carpark retaining wall design added Dwg 18	08.10.2024
Rev E	P. Maloney	Detail - Septicsystem, Water tanks, BP envelope,Total cut/fill, Added Shts 11 - 15	13.09.2024
Rev D	P. Maloney	Added watertank stormwater overflow, Water tank for Fire Service,	14.08.2024
Rev C	P. Maloney	Added Drawing Schedule Page 1 of 10	29.07.2024
Rev B	P. Maloney	Added pageto set	22.07.2024
Rev A	P. Maloney	Initial	12.07.2024

	NAME	SIGNATURE	DATE
DRAWN	P. Maloney		12.07.2024
CHK'D			
APPV'D			

Revision H

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS

DO NOT SCALE DRAWING

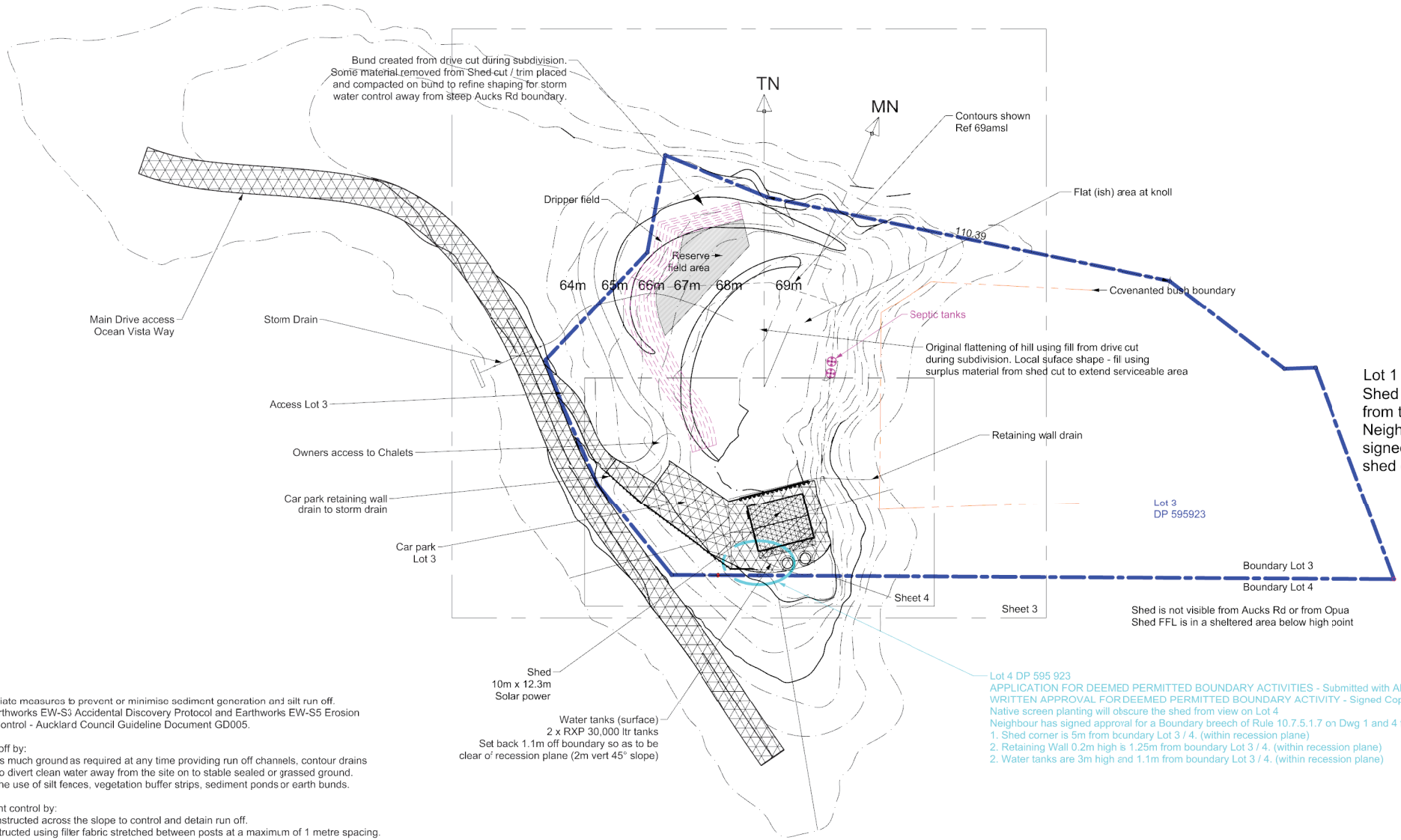
Title: DRAWING SCHEDULE

DWG NO. 1

A3

SCALE:1:75

SHEET 1



Provide appropriate measures to prevent or minimise sediment generation and silt run off.
Comply with Earthworks EW-S3 Accidental Discovery Protocol and Earthworks EW-S5 Erosion and Sediment Control - Auckland Council Guideline Document GD005.

Prevent silt run off by:
Exposing only as much ground as required at any time providing run off channels, contour drains or earth bunds to divert clean water away from the site on to stable sealed or grassed ground.
Capture silt by the use of silt fences, vegetation buffer strips, sediment ponds or earth bunds.

Provide sediment control by:
Earth bunds constructed across the slope to control and detain run off.
Silt fences constructed using filter fabric stretched between posts at a maximum of 1 metre spacing.
Pump water from trenches and other areas of the site using methods to prevent sediment entering any drain or watercourse. Filter dirty water before discharging into drainage system.

Rev	NAME	DETAIL	DATE
Rev G	P. Maloney	Added west & south potch & window shrouds	12.11.2024
Rev F	P. Maloney	Neighbour approval of boundary breech added	21.10.2024
Rev E	P. Maloney	Updated page number	13.09.2024
Rev D	P. Maloney	Added Septic system detail - water tanks recession plane	13.09.2024
Rev C	P. Maloney	Added Drawing List Sht 1 and Retaining Wall dgw Sht 10	29.07.2024
Rev B	P. Maloney	Added page to set	22.07.2024
Rev A	P. Maloney	Initial	12.07.2024

	NAME	SIGNATURE	DATE
DRAWN	P. Maloney		12.07.2024
CHK'D			
APPV'D			

Revision G

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLMETERS

DO NOT SCALE DRAWING

Title:

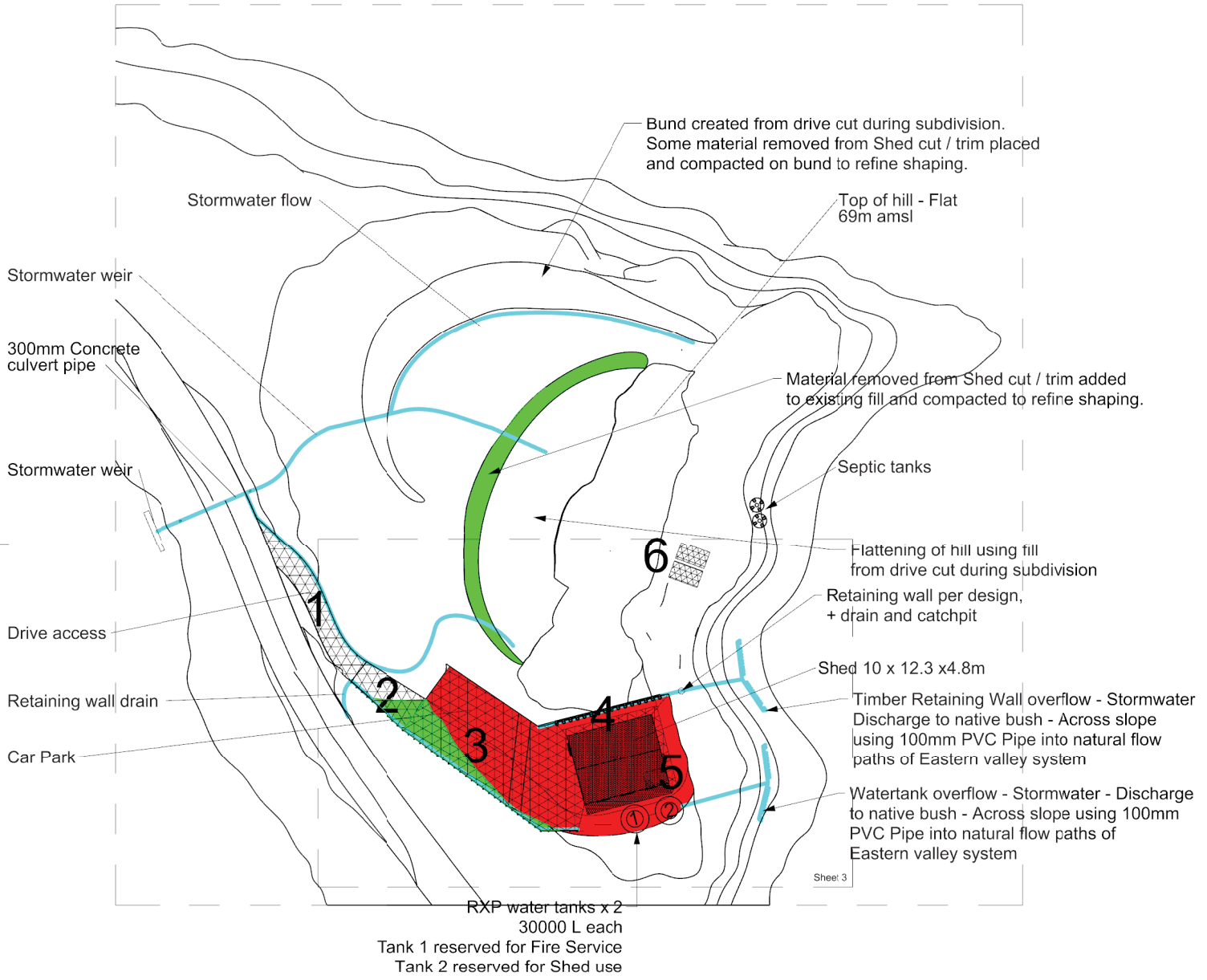
SITE PLAN - OVERVIEW

DWG NO. 2

A3

SCALE:1:75

SHEET 2



Impermeable surfaces

	Accessway	1	70m2
	Accessway	2	44m2
	Car Park	3	296m2
	Service area	4	24m2
	Shed roof incl porch	5	141m2
	Portable greenhouse	6	20m2
	Total impermeable area = 595 / 12397 = 4.79%		**595m2**

Complies with FDNC Rule 10.7.5.1.6

CUT & FILL VOLUMES

CUT	Shed platform Trim / Cut	-143 m3

- Initial cut shaping 2017 during pine logging of site.
- Area used to store mulch and slash 2018 - 2022
- Area tidyup slash removed, mulch distributed around property 2023

FILL	Access - Carpark Fill	+43 m3
FILL	Surplus Fill to hill shaping	+100 m3
	TOTAL CUT + FILL	**286m3**

Complies with FDNC Rule 12.3
Total cut + fill < 300m3

STORMWATER MANAGEMENT

Complies with FDNC Rule 10.7.5.1.6
Stormwater report not required - Impermeable area is less than <600m2

Storm water flow from Lot 3 as shown directed into wider subdivision storm water swale drains using natural flow paths.

Rev	NAME	DETAIL	DATE
Rev G	P. Maloney	Added west & south potch & window shrouds	12.11.2024
Rev F	P. Maloney	Permeable and CUT & FILL total updated to include skid greenhouses	21.10.2024
Rev E	P. Maloney	Added stormwater detail, water tanks detail - TOTAL cut/fill m3 added	13.09.2024
Rev D	P. Maloney	Added Water tank stormwater overflow, Fire tank detail	14.08.2024
Rev C	P. Maloney	Added drawing schedule	29.07.2024
Rev B	P. Maloney	Cut fill - Storm water detail added	22.07.2024
Rev A	P. Maloney	Initial	12.07.2024

	NAME	SIGNATURE	DATE
DRAWN	P. Maloney		12.07.2024
CHK'D			
APPV'D			

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS

Revision G

DO NOT SCALE DRAWING

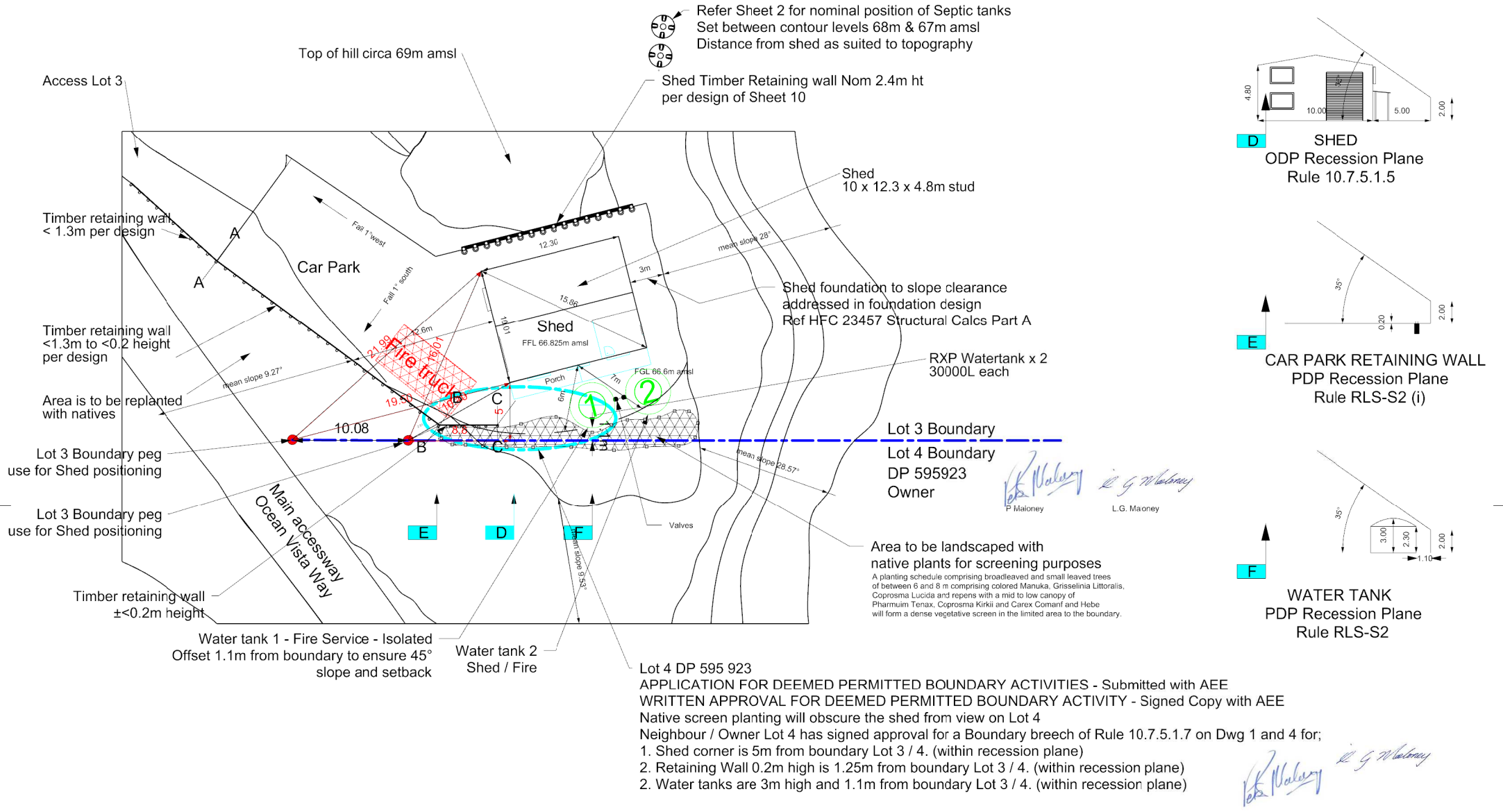
TITLE: Site Plan - Permeable surfaces, Total cut/fill <300m3 Stormwater flows for site, Retaining walls and water tank overflow

DWG NO. 3

A3

SCALE:1:75

SHEET 3



SHED
ODP Recession Plane
Rule 10.7.5.1.5

CAR PARK RETAINING WALL
PDP Recession Plane
Rule RLS-S2 (i)

WATER TANK
PDP Recession Plane
Rule RLS-S2

Lot 4 DP 595 923
APPLICATION FOR DEEMED PERMITTED BOUNDARY ACTIVITIES - Submitted with AEE
WRITTEN APPROVAL FOR DEEMED PERMITTED BOUNDARY ACTIVITY - Signed Copy with AEE
Native screen planting will obscure the shed from view on Lot 4
Neighbour / Owner Lot 4 has signed approval for a Boundary breech of Rule 10.7.5.1.7 on Dwg 1 and 4 for;
1. Shed corner is 5m from boundary Lot 3 / 4. (within recession plane)
2. Retaining Wall 0.2m high is 1.25m from boundary Lot 3 / 4. (within recession plane)
2. Water tanks are 3m high and 1.1m from boundary Lot 3 / 4. (within recession plane)

Rev	NAME	DETAIL	DATE
Rev H	P. Maloney	Added west & south potch & window shrouds	12.11.2024
Rev G	P. Maloney	Deemed Permitted Boundary Activity, Shed, Retaining wall, water tanks	21.10.2024
Rev F	P. Maloney	Accessway & Car Park view A-A, B-B, C-C detail added	08.10.2024
Rev E	P. Maloney	Addition of Septic system position and water tanks BP slope clearance	13.09.2024
Rev D	P. Maloney	Addition of Fire dedicated water tank detail & valving	14.08.2024
Rev C	P. Maloney	Addition of shed location dims and colour code of Lot 3 boundary	29.07.2024
Rev B	P. Maloney	Addition page to drawing set	22.07.2024
Rev A	P. Maloney	Initial	12.07.2024

	NAME	SIGNATURE	DATE
DRAWN	P. Maloney		12.07.2024
CHK'D			
APPV'D			

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS

Revision H

DO NOT SCALE DRAWING

TITLE:

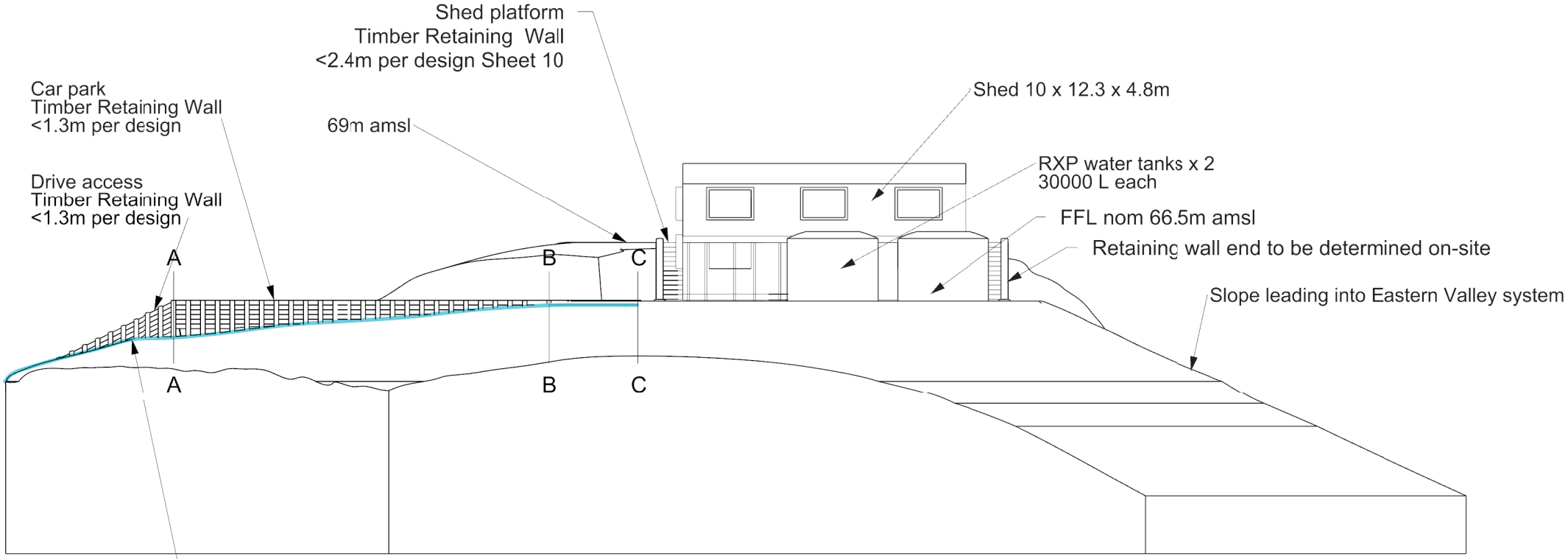
Shed - Position on Site

DWG NO. 4

A3

SCALE:1:75

SHEET 4



View NNE 345°
Shed looking at Southern wall and water tanks

Retaining wall drain connects to Ocean Vista Way swale drains and natural stormwater system

Rev	NAME	DETAIL	DATE
Rev F	P. Maloney	Added west & south potch & window shrouds	12.11.2024
Rev E	P. Maloney	Added crosssection ref A-A, B-B, C-C	21.10.2024
Rev D	P. Maloney	Addition of sheets 11 - 15 in drawing set	13.9.2024
Rev C	P. Maloney	Addition of Drawing list	29.07.2024
Rev B	P. Maloney	Addition page to drawing set	22.07.2024
Rev A	P. Maloney	Initial	12.07.2024

	NAME	SIGNATURE	DATE
DRAWN	P. Maloney		12.07.2024
CHK'D			
APPV'D			

Revision F

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS

DO NOT SCALE DRAWING

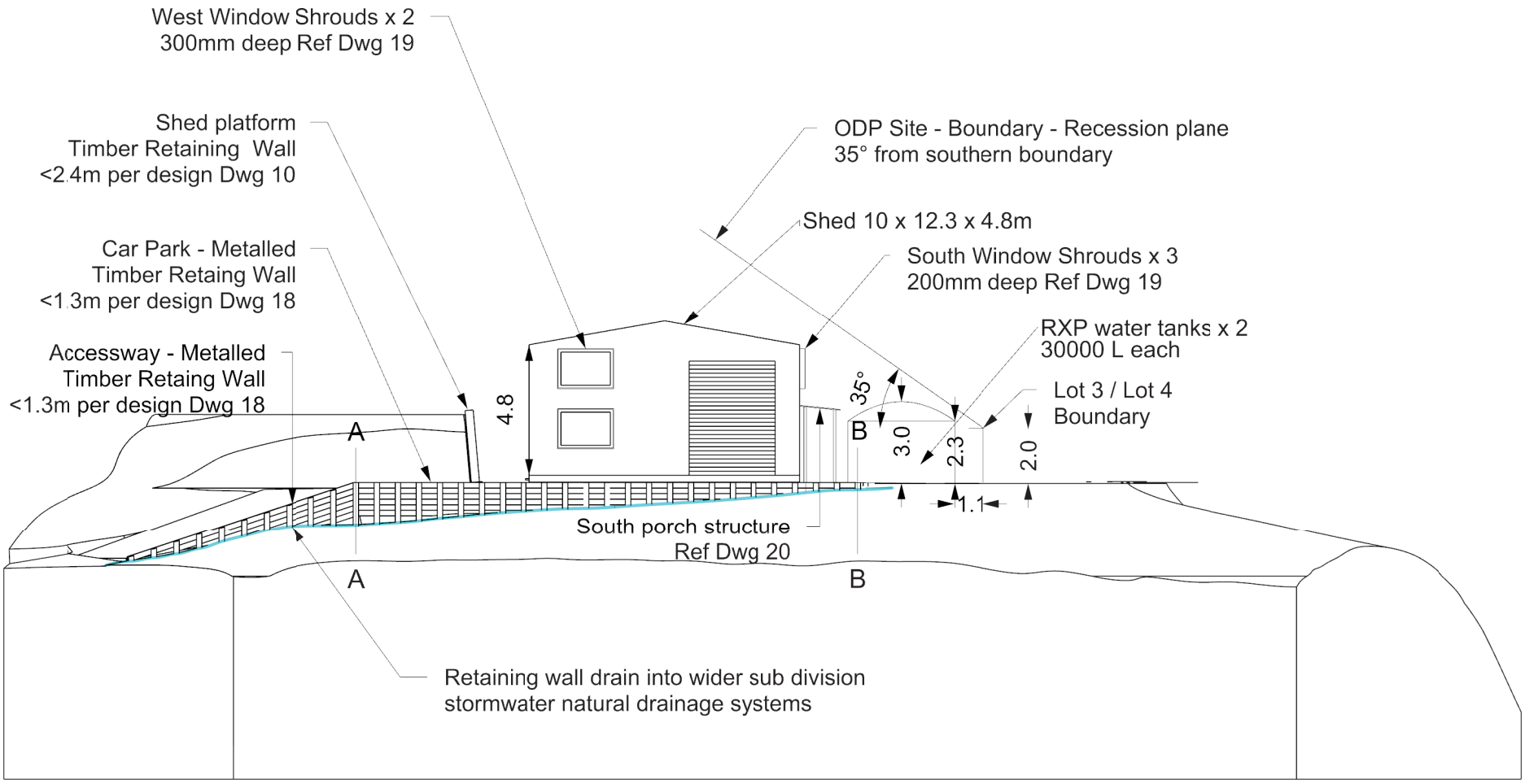
TITLE: Shed - View NNE

DWG NO. 5

A3

SCALE:1:75

SHEET 5



View ENE 078°
Shed looking at Main door

Rev	NAME	DETAIL	DATE
Rev G	P. Maloney	Added west & south potch & window shrouds	12.11.2024
Rev F	P. Maloney	Added cross secton ref A-A, B-B	21.10.2024
Rev E	P. Maloney	Accessway & Car Park retaining way Dwg nr added	08.10.2024
Rev D	P. Maloney	Water tanks repositioned to suit BP envelope	13.09.2024
Rev C	P. Maloney	Addition of Drawing Schedule	29.07.2024
Rev B	P. Maloney	Addition page to drawing set	22.07.2024
Rev A	P. Maloney	Initial	12.07.2024

	NAME	SIGNATURE	DATE
DRAWN	P. Maloney		12.07.2024
CHK'D			
APPV'D			

Revision G

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS

DO NOT SCALE DRAWING

TITLE:

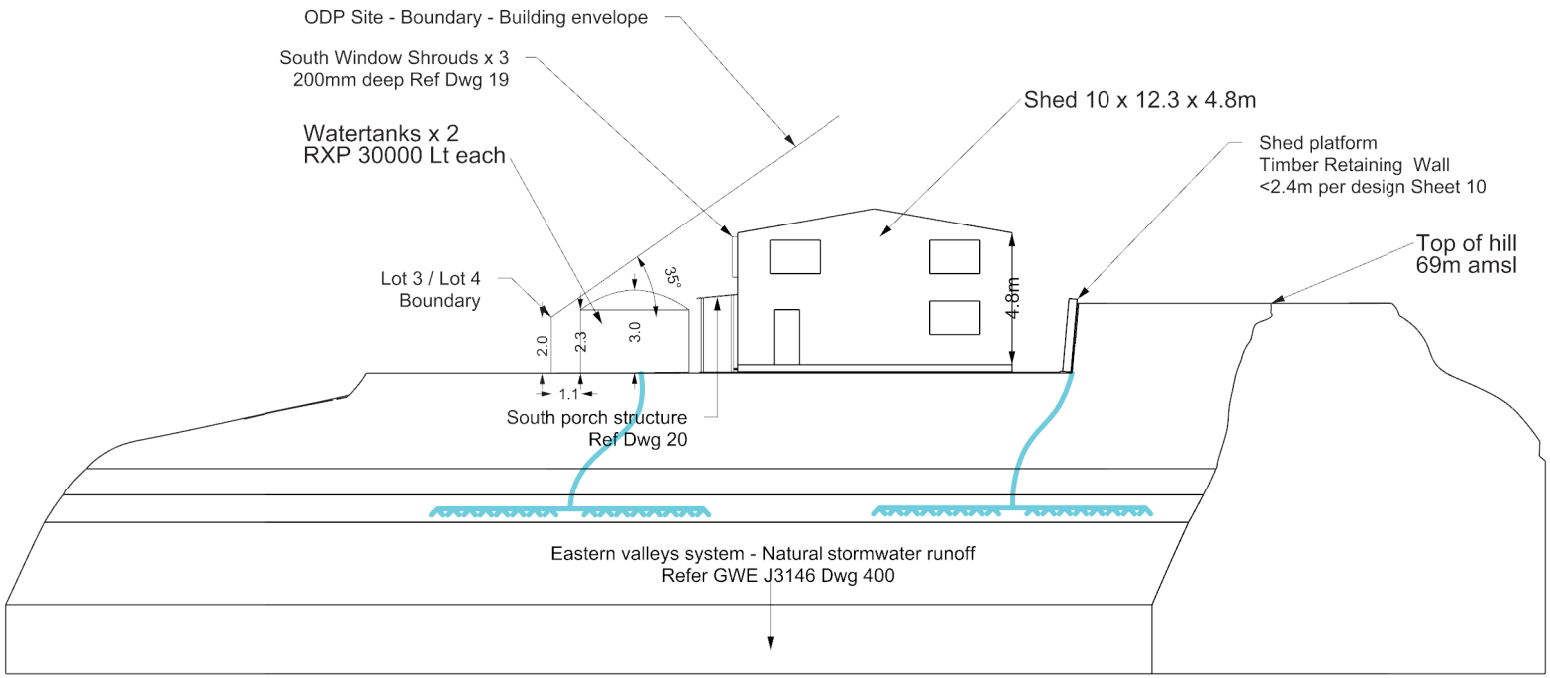
Shed - View ENE

DWG NO. 6

A3

SCALE:1:75

SHEET 6



View WSW 284°
Shed looking at PA Door

Rev	NAME	DETAIL	DATE
Rev F	P. Maloney	Added west & south potch & window shrouds	12.11.2024
Rev E	P. Maloney	Added ODP recession plane on south boundary	21.10.2024
Rev D	P. Maloney	Repositioned water tanks for site boundary envelope	13.09.2024
Rev C	P. Maloney	Addition Drawing Schedule	29.07.2024
Rev B	P. Maloney	Addition page to drawing set	22.07.2024
Rev A	P. Maloney	Initial	12.07.2024

	NAME	SIGNATURE	DATE
DRAWN	P. Maloney		12.07.2024
CHK'D			
APPV'D			

Revision F

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS

DO NOT SCALE DRAWING

TITLE:

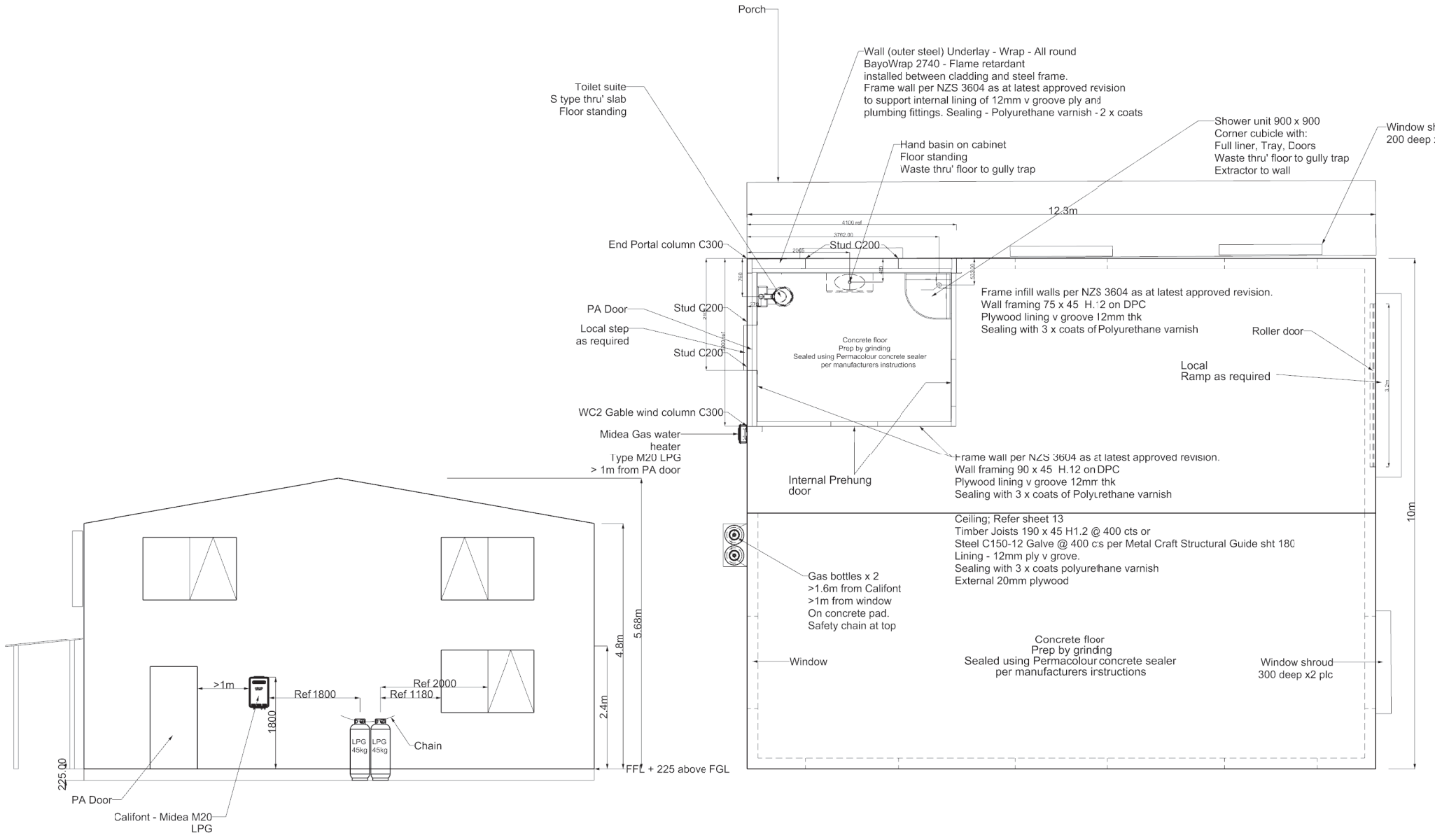
Shed - View WSW

DWG NO. 7

A3

SCALE:1:75

SHEET 7



Rev	NAME	DETAIL	DATE
Rev E	P. Maloney	Added west & south potch & window shrouds	12.11.2024
Rev D	P. Maloney	Added floor penetration detail	13.09.2024
Rev C	P. Maloney	Addition of Drawing Schedule & NZS 3604 ref added	23.07.2024
Rev B	P. Maloney	Wet room detail, sealing, structure, califont	22.07.2024
Rev A	P. Maloney	Initial	12.07.2024

	NAME	SIGNATURE	DATE
DRAWN	P. Maloney		12.07.2024
CHK'D			
APPV'D			

Revision E

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS

DO NOT SCALE DRAWING

TITLE:

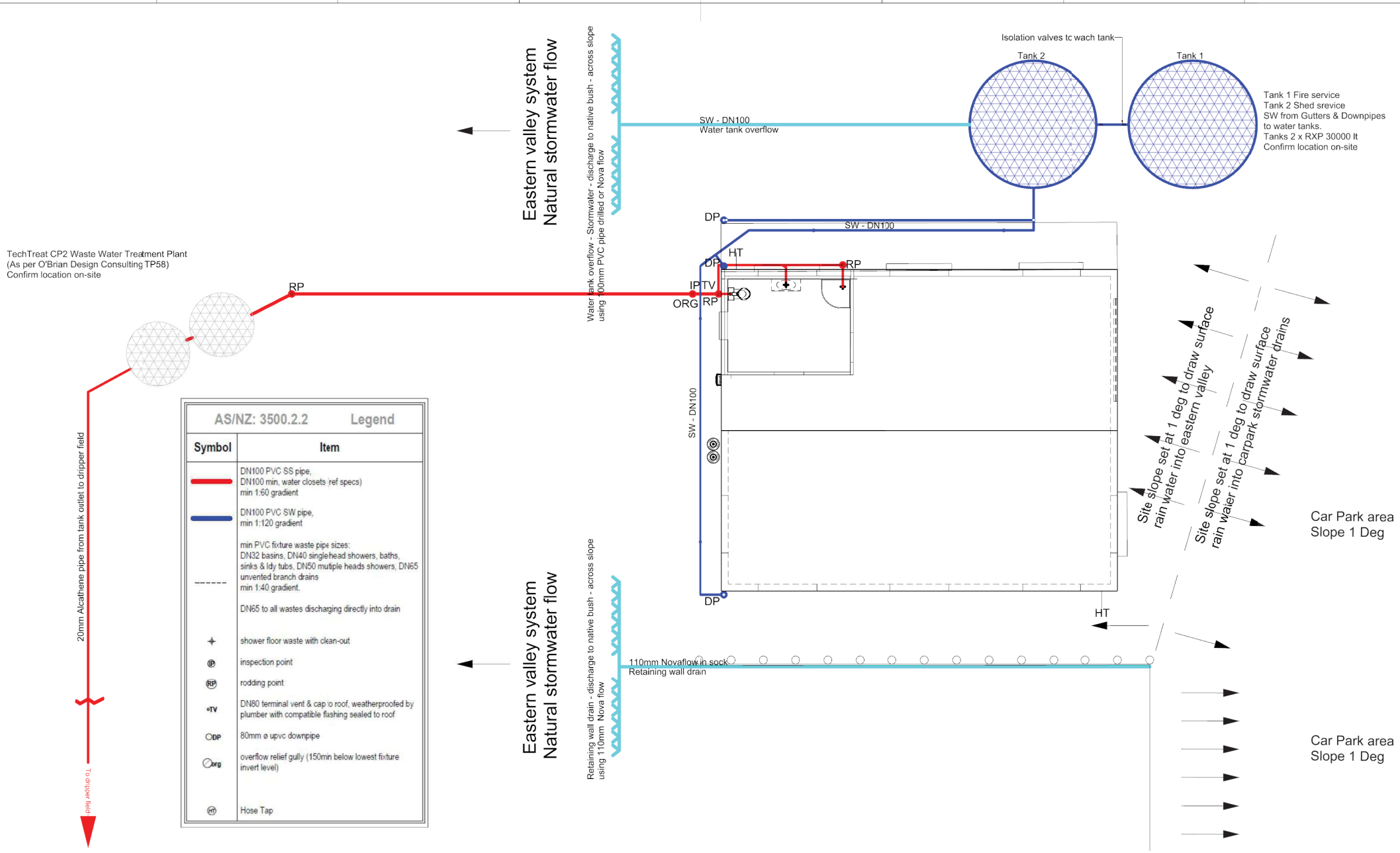
Shed - Floor Plan

DWG NO. 8

A3

SCALE:1:75

SHEET 8



Rev	NAME	DETAIL	DATE
Rev F	P. Maloney	Added west & south potch & window shrouds	12.11.2024
Rev E	P. Maloney	Addition of septictank positon and slope	13.09.2024
Rev D	P. Maloney	Addition of Stormwater discharge and Fire tank details	14.08.2024
Rev C	P. Maloney	Addition of Drawing Schedule	29.07.2024
Rev B	P. Maloney	Detail added	22.07.2024
Rev A	P. Maloney	Initial	12.07.2024

	NAME	SIGNATURE	DATE
DRAWN	P. Maloney		12.07.2024
CHK'D			
APPV'D			

Revision F

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS

DO NOT SCALE DRAWING

TITLE:

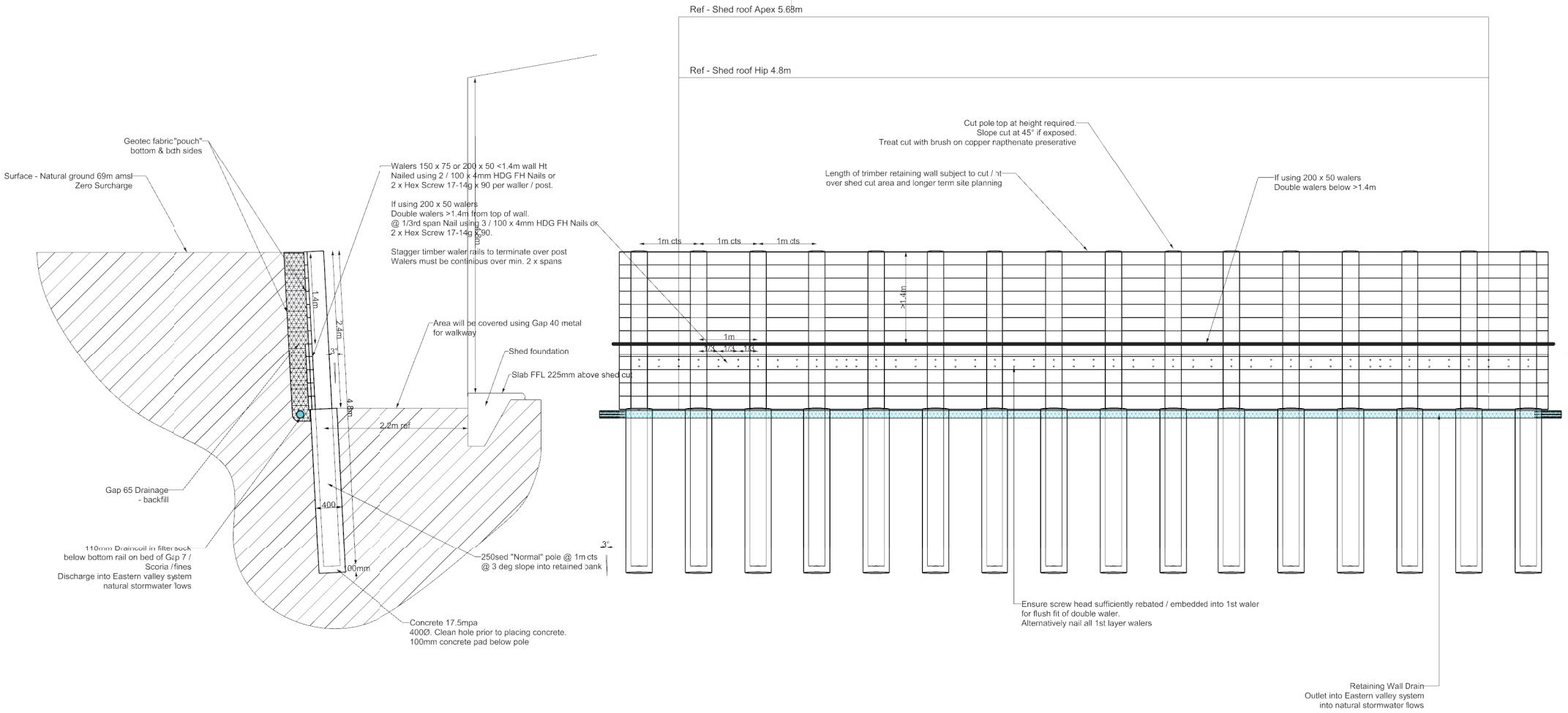
Shed - Drainage Plan

DWG NO. 9

A3

SCALE:1:100

SHEET 9



Design by Tom Lanigan Structural Design - Summary - Refer PS1

n - Height	Pole Dia D (mm)	Centres (m)	Pile dia Dp (m)	Embed't L (m)	Rails (DxB)(mm)	Rails Alt (Ht - DxB)(mm)	Double rails - Mid span Nail 2 x 100 HDG or 2 x 17-14g Hex Screw
2.2	225	1.0	0.4	1.30	150 x 75	<1.4m 200 x 50	>1.4m 2 x 200 x 50
2.4	250	1.0	0.4	1.45	150 x 75	<1.4m 200 x 50	>1.4m 2 x 200 x 50
2.6	275	1.0	0.4	1.60	150 x 75	<1.4m 200 x 50	>1.4m 2 x 200 x 50

Drawing assumes D = H

Rev	NAME	DETAIL	DATE
Rev E			
Rev D	P. Maloney	Retaining wall drainage to stormwater natural flows	13.09.2024
Rev C	P. Maloney	Addition of Drawing Schedule	29.07.2024
Rev B	P. Maloney	Revised double waler nail / screw schedule, added 1m pole spacing	29.07.2024
Rev A	P. Maloney	Initial	28.07.2024

Tom Lanigan CPEng
MIPENZ No. 57353

	NAME	SIGNATURE	DATE
DRAWN	P. Maloney		28.07.2024
CHK'D			
APPV'D			

Revision D

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS

DO NOT SCALE DRAWING

TITLE:

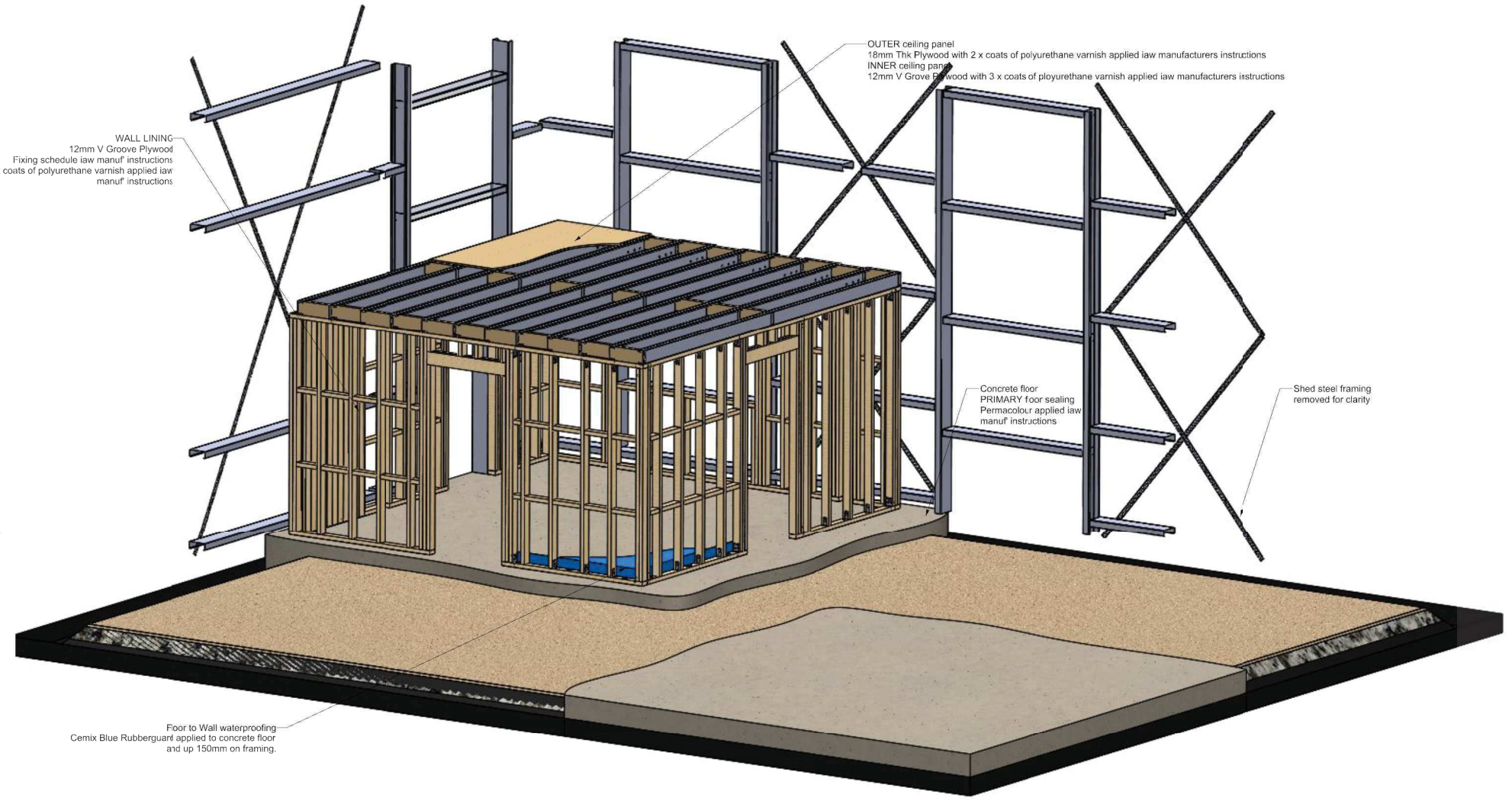
Shed - Platform Timber Retaining Wall

DWG NO. 10

A3

SCALE:1:100

SHEET 10



WET ROOM - FREE STANDING

Wet room dimensions to be determined on site

Rev	NAME	DETAIL	DATE
E			
D			
C			
B			
A	P.Maloney	Wet room detail	13.09.24

	NAME	SIGNATURE	DATE
DRAWN	P.Maloney		13.09.24
CHK'D			
APPV'D			

Revision A

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS

DO NOT SCALE DRAWING

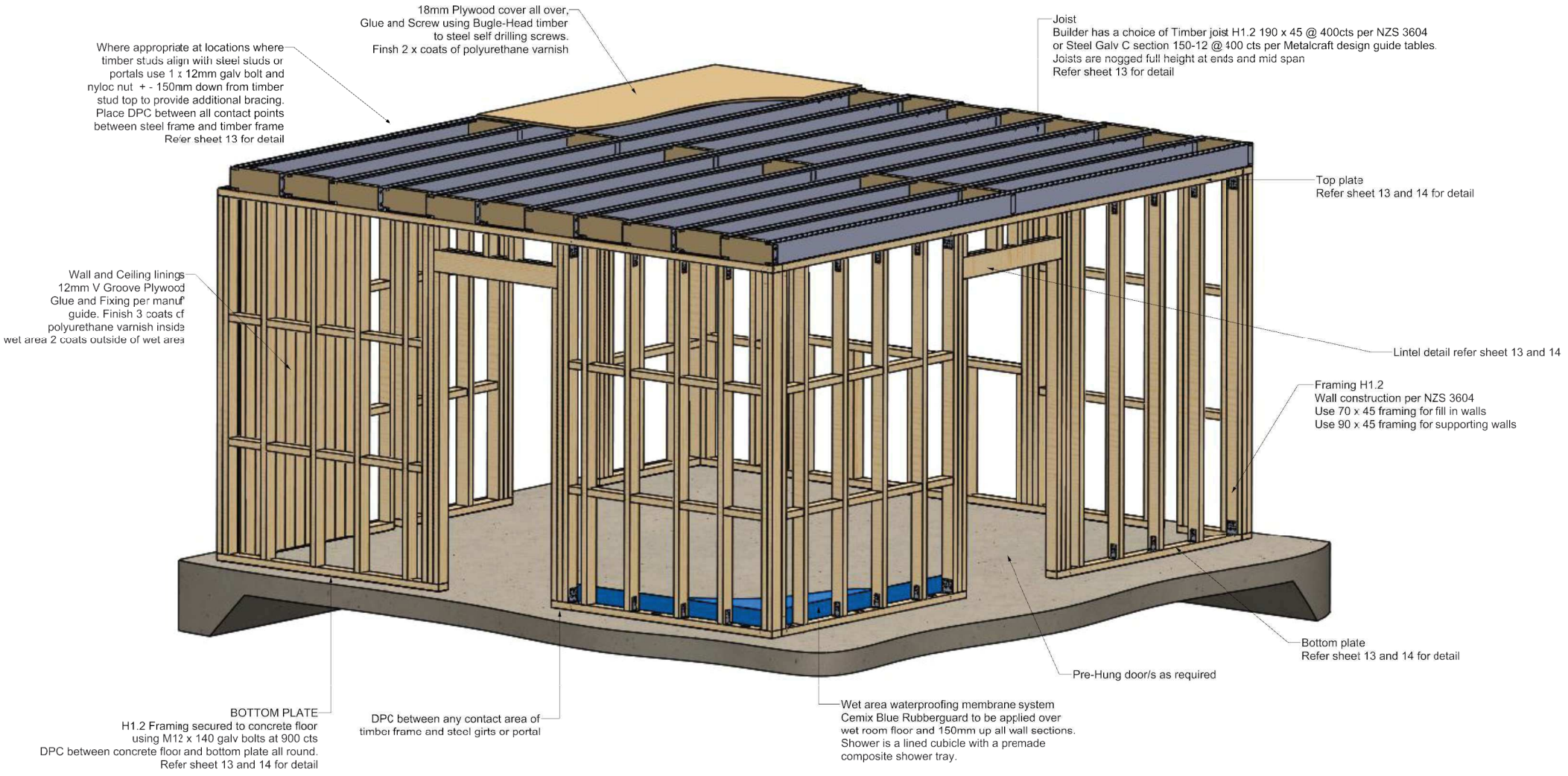
TITLE: Wet Area - General view

DWG NO. 11

A3

SCALE:1:50

SHEET 11



FREE STANDING TIMBER STRUCTURE

Rev	NAME	DETAIL	DATE
E			
D			
C			
B			
A	P.Maloney	Wet room structure	13.09.24

	NAME	SIGNATURE	DATE
DRAWN	P.Maloney		13.09.24
CHK'D			
APPV'D			

Revision: A

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS

DO NOT SCALE DRAWING

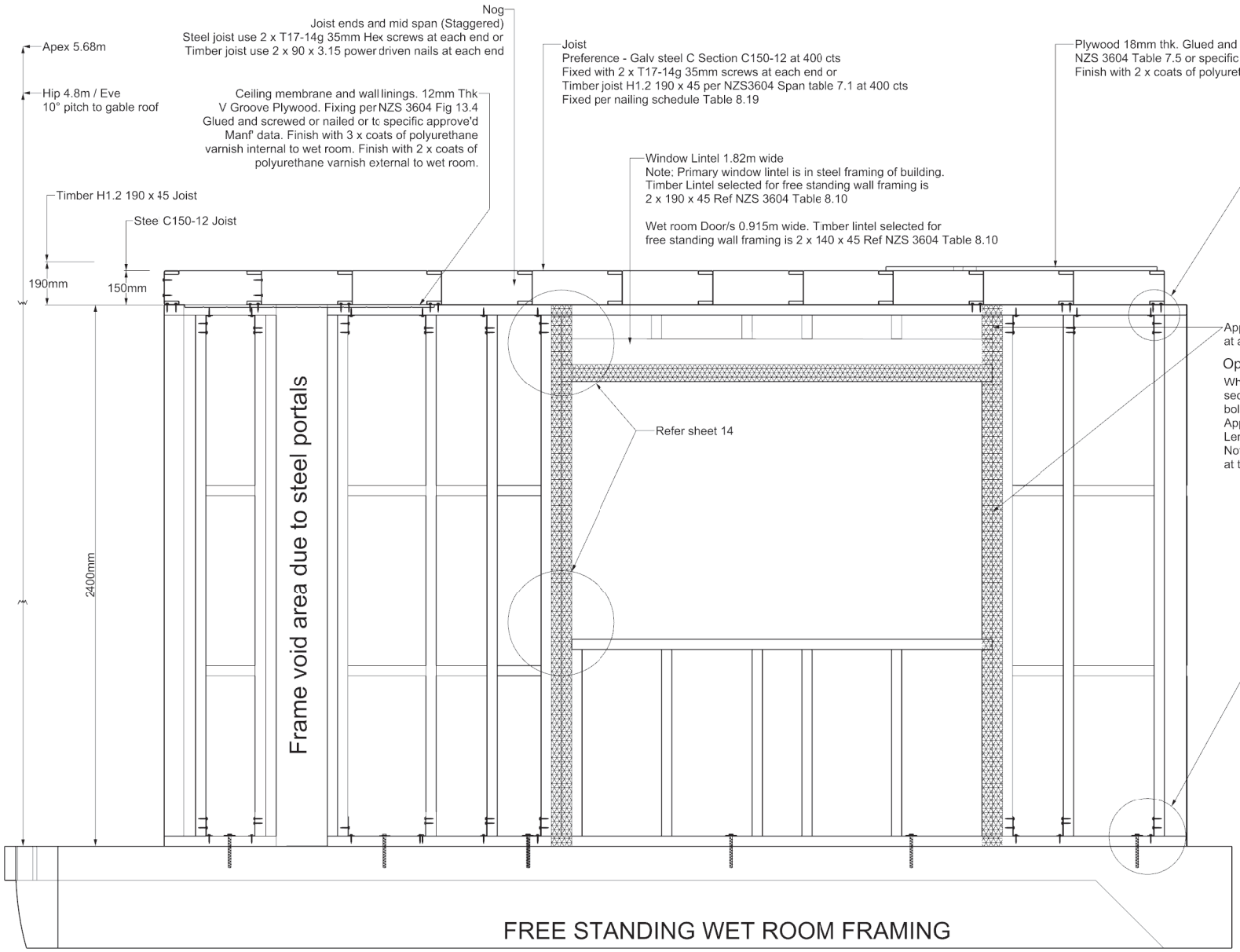
TITLE: Wet Room - Structure

DWG NO. 12

A3

SCALE:1:50

SHEET 12



FREE STANDING WET ROOM FRAMING

Applies to all wall framing

Rev	NAME	DETAIL	DATE
E			
D			
C			
B			
A	P.Maloney	Wet room structure	13.09.24

	NAME	SIGNATURE	DATE
DRAWN	P.Maloney		13.09.24
CHK'D			
APPV'D			

TITLE: Wet Room - Structure

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS

DWG NO. 13

A3

Revision A

DO NOT SCALE DRAWING

SCALE:1:50

SHEET 13

MiTek LUMBERLOK

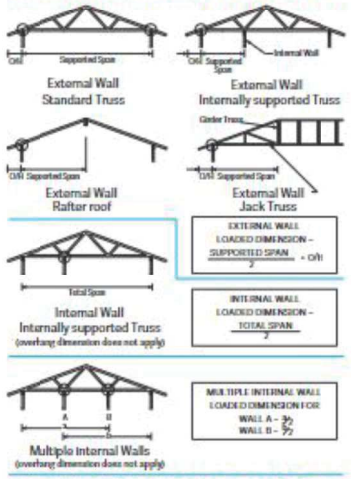
2024 EDITION V1

STUD TO TOP PLATE FIXING SCHEDULE
ALTERNATIVE TO TABLE 8.18 NZS 3604:2011

NOTE:

- All fixings are designed to resist vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20kPa
- Refer to Table 8.19 NZS 3604:2011 for nailing schedule to resist lateral loads
- These fixings assume the correct choice of rafter/truss to top plate connections have been made
- For gable end walls where the adjacent rafter/truss is located within 1200mm and with a maximum verge overhang of 750mm, select stud to top plate fixing using a loaded dimension of 1.5m
- All fixings assume top plate thickness of 45mm maximum
- Wall framing arrangements under girder trusses are not covered in this schedule
- All timber selections are as per NZS 3604:2011

LOADED DIMENSION DEFINITION



FIXING SELECTION CHART

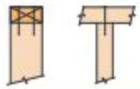
(Suitable for walls supporting roof members at 600, 900 or 1200mm crs.)
Wind Zones L, M, H, VH, EH, as per NZS 3604:2011

Loaded Dimension (m) Stud Centres			Light Roof Wind Zone					Heavy Roof Wind Zone				
300mm	400mm	600mm	L	M	H	VH	EH	L	M	H	VH	EH
3.0	2.3	1.5	A	A	B	B	B	A	A	B	B	B
4.0	3.0	2.0	A	A	B	B	B	A	A	B	B	B
5.0	3.8	2.5	A	B	B	B	B	A	A	B	B	B
6.0	4.5	3.0	A	B	B	B	B	A	A	B	B	B
7.0	5.3	3.5	A	B	B	B	B	A	A	B	B	B
8.0	6.0	4.0	A	B	B	B	B	A	A	B	B	B
9.0	6.8	4.5	B	B	B	B	B	A	A	B	B	B
10.0	7.5	5.0	B	B	B	B	B	A	A	B	B	B
11.0	8.3	5.5	B	B	B	B	B	A	A	B	B	B
12.0	9.0	6.0	B	B	B	B	B	A	A	B	B	B

FIXING OPTIONS

FIXING TYPE A 0.7kN

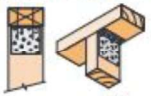
2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.



FIXING TYPE B 4.7kN

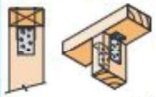
CHOOSE ANY OF THE 3 OPTIONS BELOW

2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.



Plus LUMBERLOK 6kN Stud Anchor (CPC80)

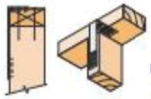
2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.



Plus 2 x LUMBERLOK CPC40

Recommended for internal wall options to avoid lining issues

2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.



Plus LUMBERLOK Stud Strap (one face only)

NOTE:
To calculate the number of B type fixings required, divide the wall length by the stud centres, add 1 to this figure and locate this number of fixings as evenly as possible along the wall length. This figure includes the start and end studs in each wall length.

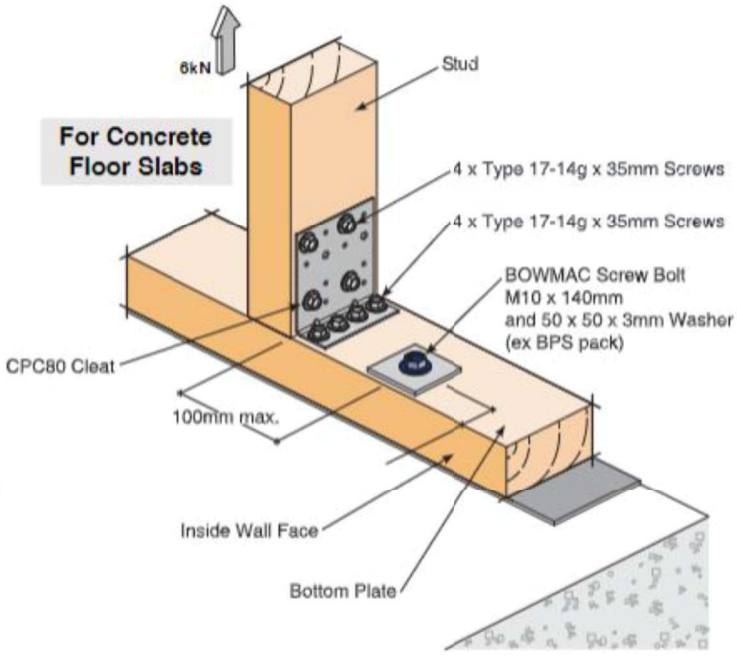
MiTek LUMBERLOK

2024 EDITION V1

6kN STUD TO BOTTOM PLATE FIXING

→ Ideal as retro fit fixing after lining/cladding is installed

For Concrete Floor Slabs



Code: SBP
Material: CPC80 1.55mm G300 Z275 Galvanised Steel
Packed: 2 x CPC80 Cleats
16 x Type 17-14g x 35mm Hex Head Galvanised Screws

Available from leading Builders Supply Merchants throughout New Zealand

Rev	NAME	DETAIL	DATE
E			
D			
C			
B			
A	P.Maloney	Wet room structure top & bottom plate fixing	13.09.24

	NAME	SIGNATURE	DATE
DRAWN	P.Maloney		13.09.24
CHK'D			
APPV'D			

Revision A

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS

DO NOT SCALE DRAWING

TITLE: Wet Room - STUD FIXING

DWG NO. 14

A3

SCALE:1:50

SHEET 14

01/2017

LUMBERLOK®

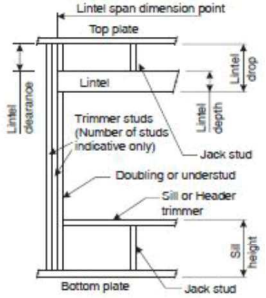
LINTEL FIXING SCHEDULE

ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12
NZS 3604:2011

NOTE:

- All fixings are designed for vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20kPa.
- Refer to Table 8.19 NZS 3604:2011 for nailing schedule to resist horizontal loads.
- These fixings assume the correct choice of rafter/truss to top plate connections have been made.
- All fixings assume bottom plate thickness of 45mm maximum. Note: TYLOK options on timber species.
- Wall framing arrangements under girder trusses are not covered in this schedule.
- All timber selections are as per NZS 3604:2011.

DEFINITIONS



Lintel Supporting Girder Trusses

Roof Tributary Area	Light Roof Wind Zone			Heavy Roof Wind Zone		
	L, M, H	VH	EH	L, M, H	VH	EH
8.6m²	G	G	H	G	G	H
11.6m²	G	H	H	G	G	H
12.1m²	G	H	H	G	H	H
15.3m²	H	H	-	G	H	H
19.1m²	H	-	-	G	H	-
20.9m²	H	-	-	H	H	-
21.8m²	H	-	-	H	-	-
34.3m²	-	-	-	H	-	-

NOTES:
1. Roof Tributary Area = approx. 1/2 x (Total roof area on girder and rafter trusses supported by lintel)
2. Assumed girder truss is at mid-span or middle third span of lintel
3. Use similar fixings for both ends of lintel
4. All other cases require specific engineering design

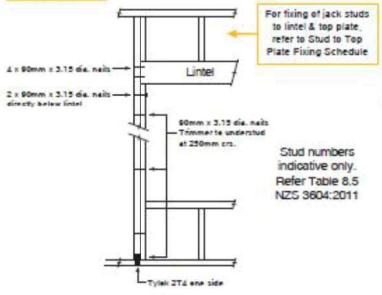
Lintel Span (m)	Loaded Dimension (m) (See Fig. 1.8 NZS 3604:2011)	Light Roof Wind Zone					Heavy Roof Wind Zone				
		L	M	H	VH	EH	L	M	H	VH	EH
1.0	2.0	E	E	E	F	F	E	E	E	E	F
	3.0	E	E	F	F	F	E	E	E	F	F
	4.0	E	F	F	F	G	E	E	F	F	F
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	E	F	F	G	G	E	E	F	F	G
1.2	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	E	F	F	F	E	E	F	F	F
	4.0	E	F	F	G	G	E	E	F	F	G
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	F	F	G	G	H	E	E	F	G	G
1.5	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	F	F	F	G	E	E	F	F	F
	4.0	E	F	F	G	G	E	E	F	F	G
	5.0	F	F	G	G	H	E	E	F	G	G
	6.0	F	F	G	H	H	E	E	F	G	H
2.0	2.0	E	F	F	F	G	E	E	F	F	F
	3.0	E	F	F	G	G	E	E	F	F	G
	4.0	F	F	G	G	H	E	E	F	G	G
	5.0	F	F	G	H	H	E	E	F	G	H
	6.0	F	G	G	H	H	E	F	G	H	H
2.4	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	G	H	E	E	F	G	G
	4.0	F	F	G	H	H	E	E	F	G	H
	5.0	F	G	G	H	H	E	F	G	H	H
	6.0	F	G	H	H	-	E	F	G	H	H
3.0	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	H	H	E	E	F	G	H
	4.0	F	G	G	H	H	E	F	G	H	H
	5.0	F	G	H	H	-	E	F	G	H	H
	6.0	F	G	H	-	-	E	F	G	H	-
3.6	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	F	G	H	H	E	F	G	G	H
	4.0	F	G	H	H	-	E	F	G	H	H
	5.0	F	G	H	-	-	E	F	G	H	-
	6.0	G	H	H	-	-	E	F	H	-	-
4.2	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	H	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
4.5	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.4	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
4.8	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.2	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	H	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
5.1	2.0	F	F	G	H	H	E	F	G	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.5	F	G	H	-	-	E	F	G	H	-
	4.0	G	G	H	-	-	E	F	H	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	G	H	-	-
5.4	2.0	F	F	G	H	H	E	F	G	G	H
	2.8	F	G	H	H	-	E	F	G	H	H
	3.0	F	G	H	-	-	E	F	G	H	-
	4.0	G	H	H	-	-	E	F	H	-	-
	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	G	H	-	-

MiTek®

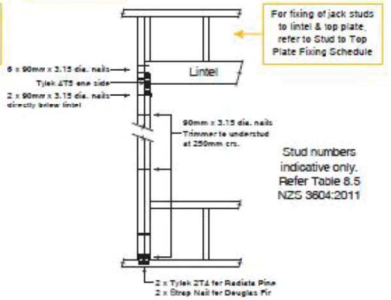
LINTEL FIXING OPTIONS

LUMBERLOK®

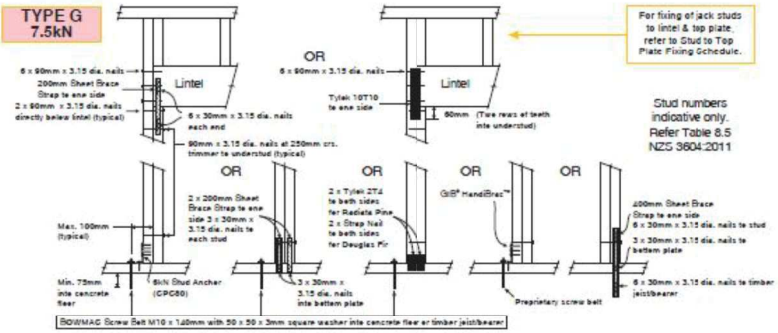
TYPE E 1.4kN



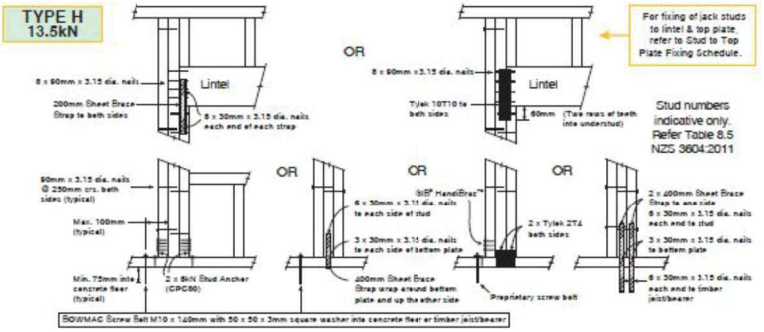
TYPE F 4.0kN



TYPE G 7.5kN



TYPE H 13.5kN



MiTek®

Rev	NAME	DETAIL	DATE
E			
D			
C			
B			
A	P.Maloney	Wet room structure Lintel fixing	13.09.24

	NAME	SIGNATURE	DATE
DRAWN	P.Maloney		13.09.24
CHK'D			
APPV'D			

TITLE: Wet Room - LINTEL FIXING

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS

DWG NO. 15

A3

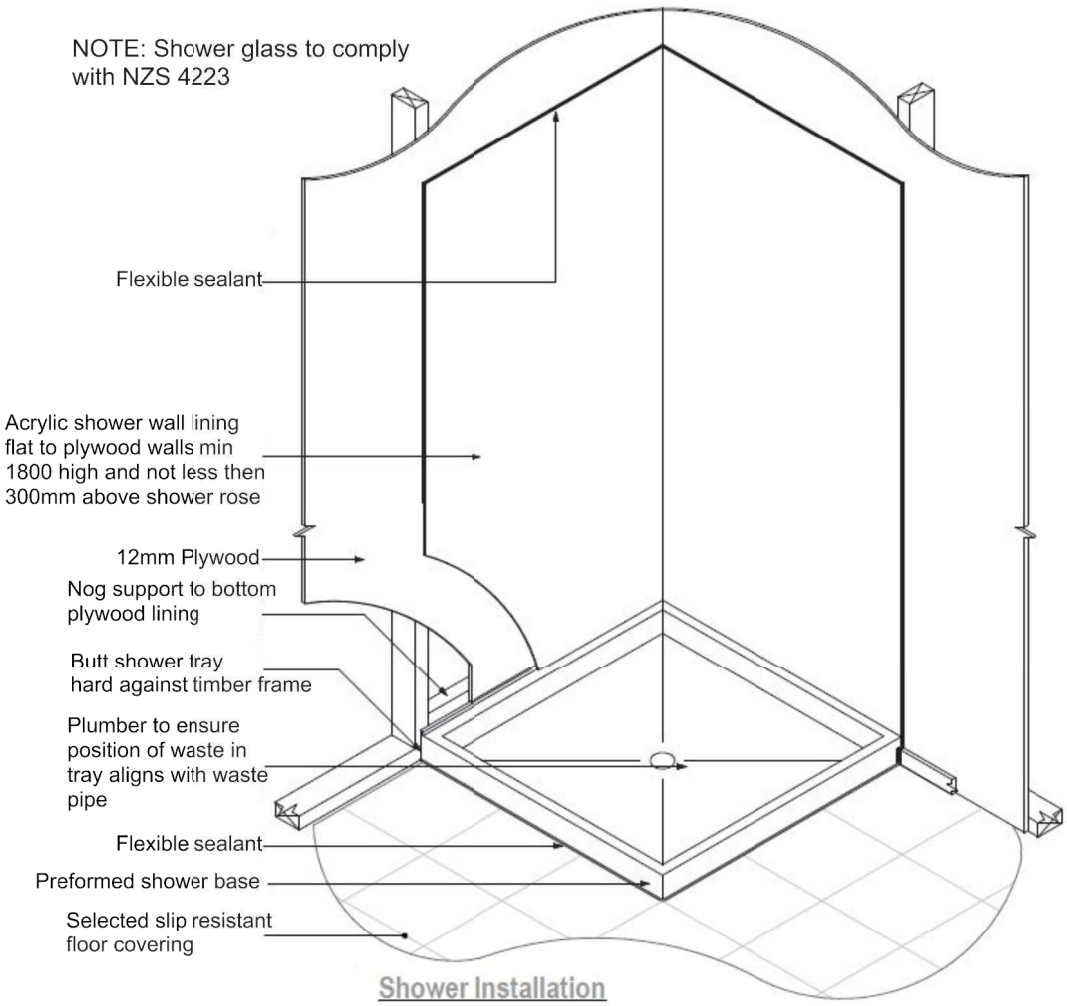
Revision A

DO NOT SCALE DRAWING

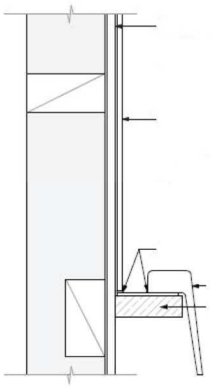
SCALE:1:50

SHEET 15

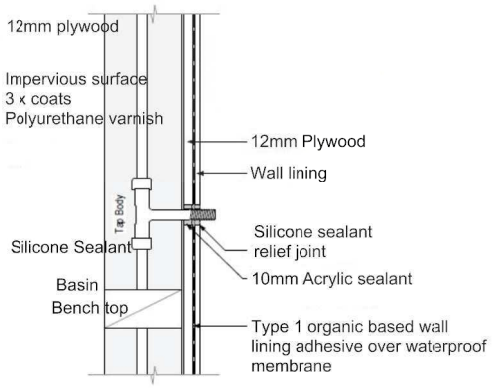
NOTE: Shower glass to comply with NZS 4223



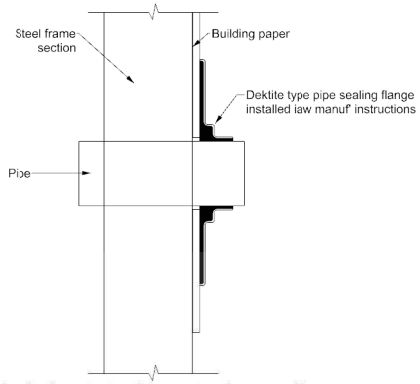
Shower Installation



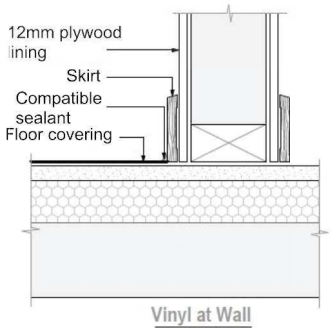
Tub, Sink, & Basin



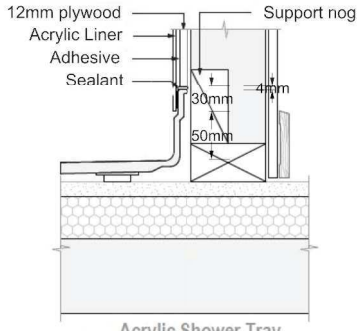
Typical Plumbing Penetration



Typical sheet steel penetration sealing



Vinyl at Wall



Acrylic Shower Tray

Rev	NAME	DETAIL	DATE
E			
D			
C			
B			
A	P.Maloney	Wet room detail and penetrations	13.09.24

	NAME	SIGNATURE	DATE
DRAWN	P.Maloney		13.09.24
CHK'D			
APPV'D			

Revision A

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS

DO NOT SCALE DRAWING

TITLE:

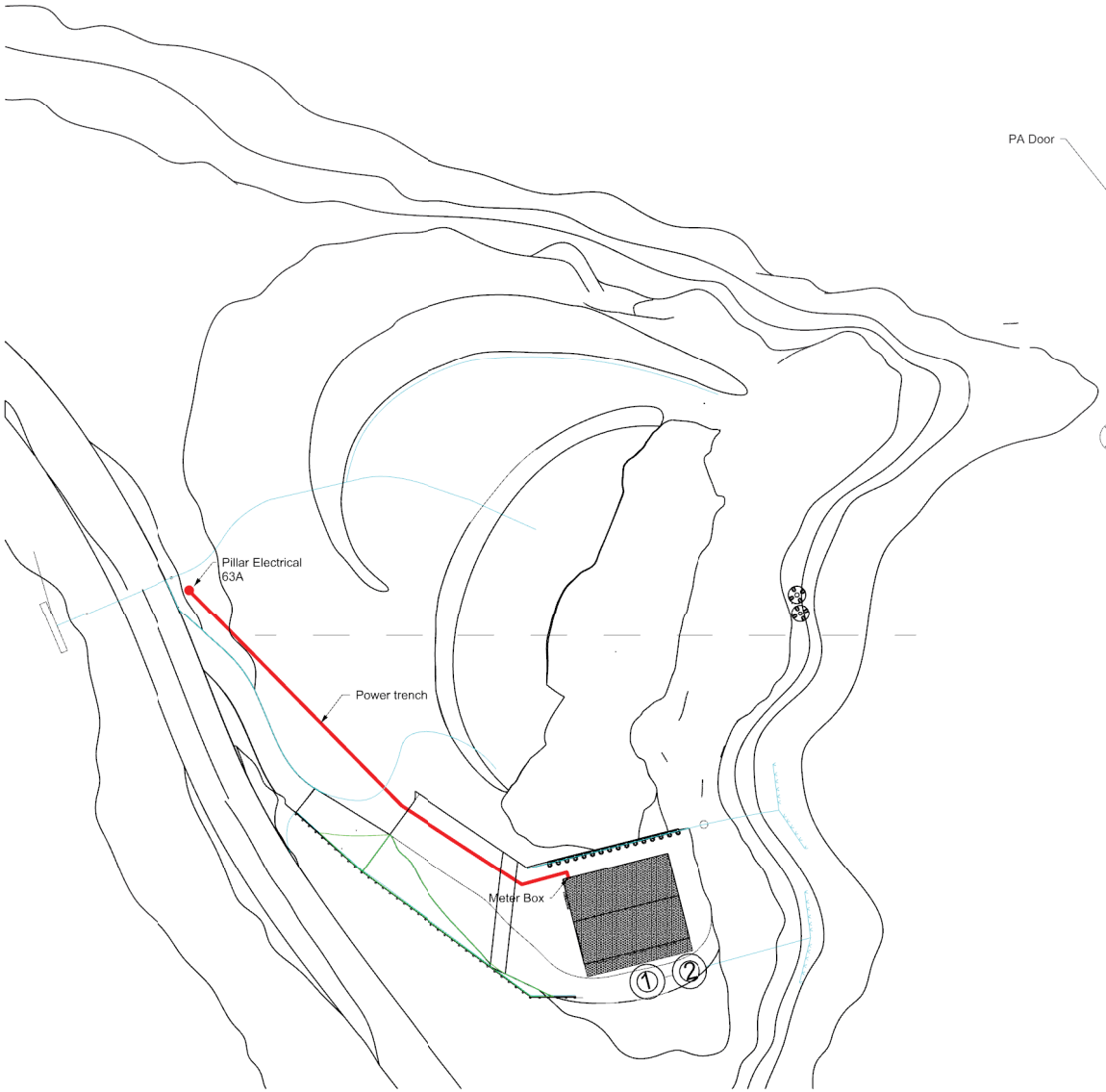
Wet Room - Detail - Shower & Penetrations

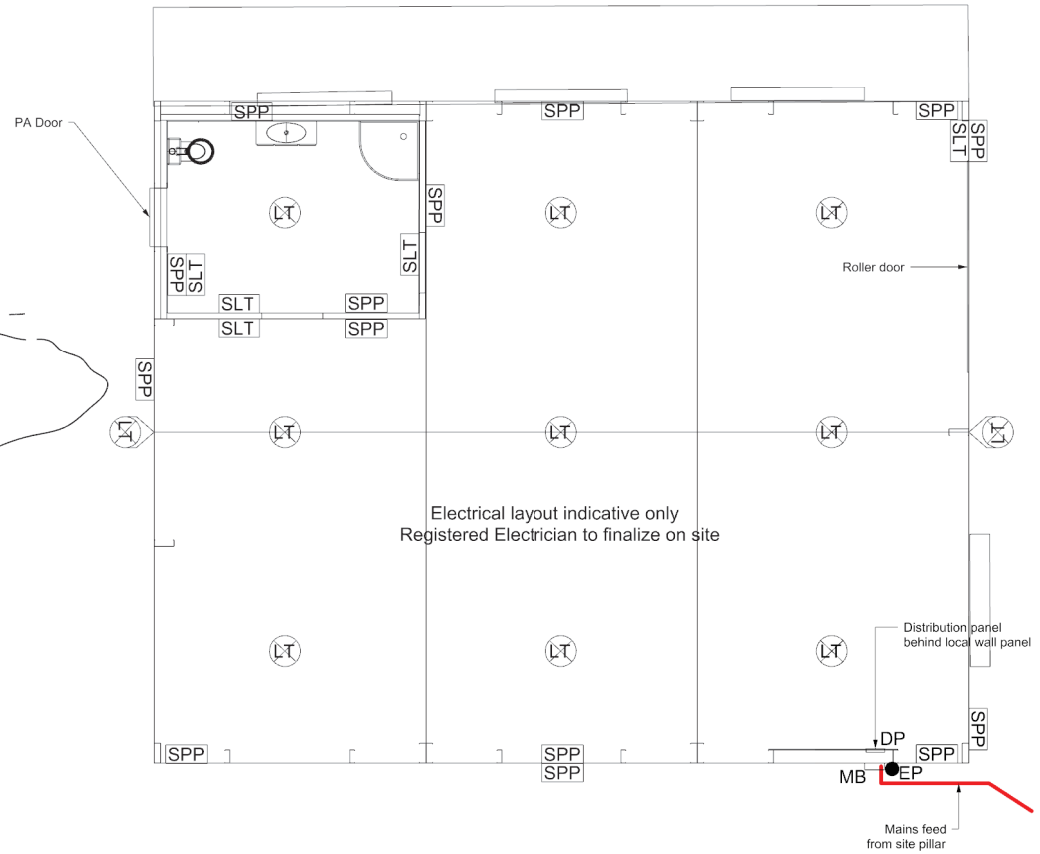
DWG NO. 16

A3

SCALE:1:50

SHEET 16





LEGEND

SPP	Switched Power Point
SLT	Switched Light Point
LT	Led light
	EP - Earth Point
DP	Distribution Panel
MB	Meter Box
LT	Hooded sensor LT

Rev	NAME	DETAIL	DATE
Rev E			
Rev D			
Rev C			
Rev B	P. Maloney	Added west & south potch & window shrouds	12.11.2024
Rev A	P. Maloney	Electric power supply	13.09.2024

	NAME	SIGNATURE	DATE
DRAWN	P. Maloney		12.07.2024
CHK'D			
APPV'D			

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS

Revision B

DO NOT SCALE DRAWING

TITLE:

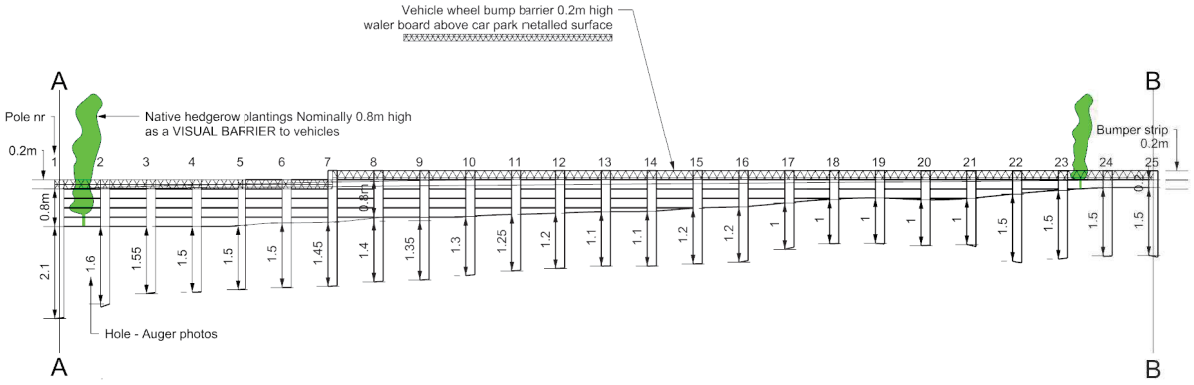
Site Plan - Electric power

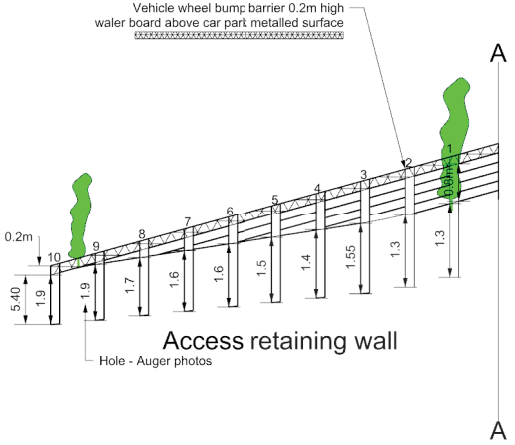
DWG NO. 17

A3

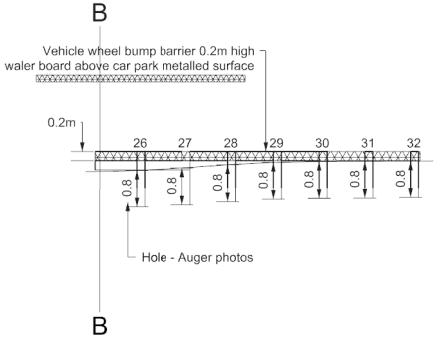
SCALE:1:75

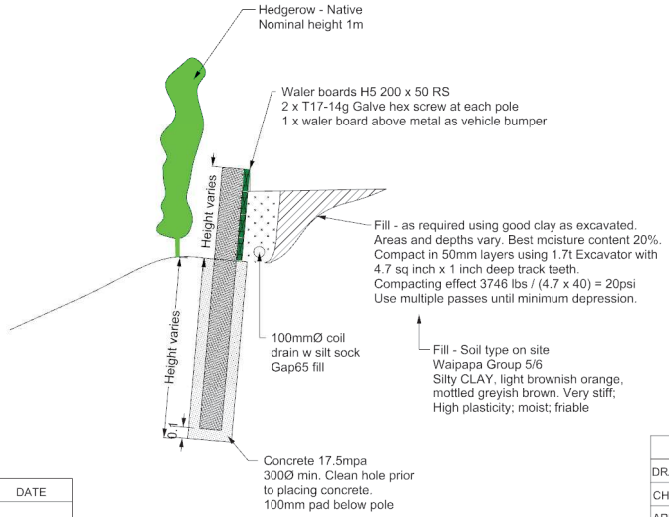
SHEET 17





Access retaining wall



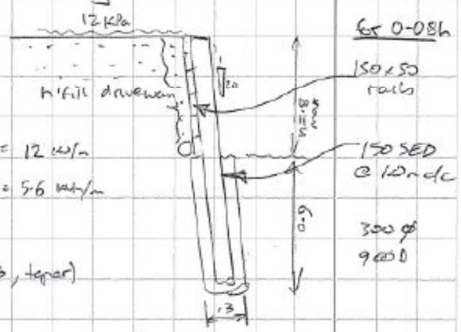


Rev	NAME	DETAIL	DATE
Rev E			
Rev D			
Rev C			
Rev B			
Rev A	P. Maloney	Car Park Retaining wall design carried from GWE J3146	08.10.2024

Tom Lanigan
Structural Design
E: tomlanigan1ho@gmail.com
Mob: 0276 177 830

CLIENT: Pete Maloney / GWE
JOB: 319 Aucks Rd, Russell
Driveway Pole Wall
SHEET
JOB No.: 2971
DATE: 29-5-23

a) 0.8m High timber
design for h = .8 + .25 = 1.1m
use ka @
$P^* = 1.5 \times .33 \left(12 \times 1.1 + 18 \times 1.1^2/2\right) = 12$ kN/m
$M^* = \ldots = \left(\ldots 1.1^2/2 \times \ldots 1.1^3/6\right) = 5.6$ kNm/m



$\phi M_n = 6.8$ kNm ($k_1 = .6$, taper)

Brans / Render $\beta = \frac{12}{9.1 \times 100 \times .5 \times .83 \times .3} = .11$ $\left(s = \frac{10}{4 \times 3} = .83\right)$
$e = \frac{5.6}{12} = .47$

$\Delta = .11\left(1 + \sqrt{\frac{2 + 4 \times .47}{.11}}\right) = .66 \times .25 = 9$m

for 0-0.8h
150 x 50 rails
150 SED @ 1.0m c/c
300 ϕ 9400 D

b) for 1.4h (= 1.7 incl Perdas)
for h=1.4
225 SED @ 1m c/c
300 ϕ Piles 1400 D

$P^+ = 1.5 \times .33 \left(12 \times 1.7 + 18 \times 1.7^2/2\right) = 23.2$ kN
$M^+ = \ldots = \left(\ldots \frac{1.7^2}{2} \times \ldots 1.7^3/6\right) = 23.4$ kNm/m $\angle \phi M_n = 246$ ($k_1 = .6$, taper)

$\beta = \frac{23.2}{9.1 \times 100 \times .5 \times .3 \times .83} = .21$
$e = \frac{23.4}{23.2} \approx 1$
$\Delta = .21\left(1 + \sqrt{\frac{2 + 4 \times 1}{.21}}\right) = 1.13 \times .25 = 1.4$

as per (a) + (b), design taihoi poles for h=1.25 (Perdas)

try 1.2h = 1.45 equiv m^*: $1.5 \times .33 \left(12 \times 1.45^2/2 + 18 \times 1.45^3/6\right) = 9.5$ kNm
200 SED
ok

$\angle \phi M_n = 12$ kNm ($k_1 = .6$, 10m taper @ $\ell = 1.5$)

+ pole is $h = 1.7 + .25 = 1.55$ equiv → $M^* = 10.8$ kNm $< \phi M_n = 12$ ∴ ok

	NAME	SIGNATURE	DATE
DRAWN	P. Maloney		12.07.2024
CHK'D			
APPV'D			

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS

Revision A

DO NOT SCALE DRAWING

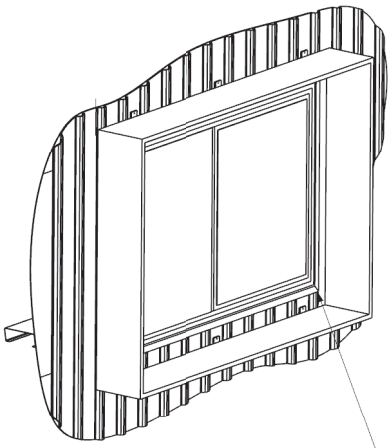
TITLE:
Car Park & Access Timber Retaining Wall design

DWG NO. 18

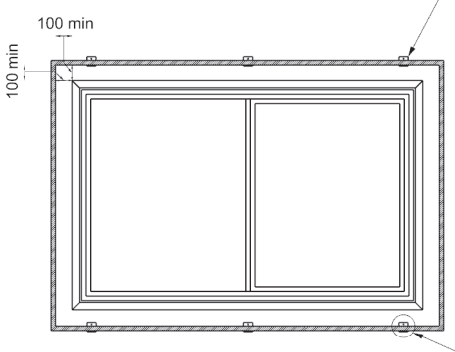
A3

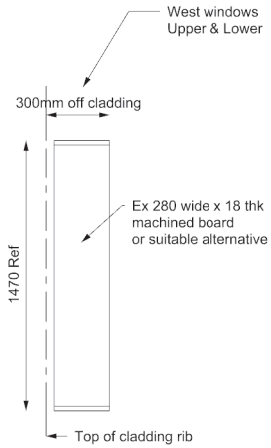
SCALE:1:75

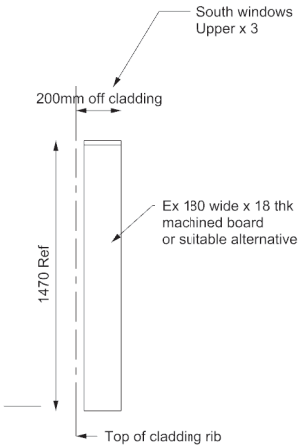
SHEET 18

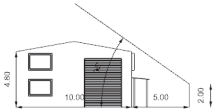


Taping and wrap not shown for clarity.
Refer Shed Stamped Drawings 23457

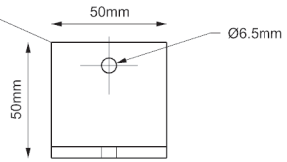


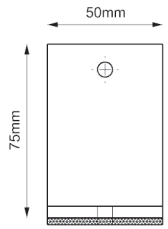


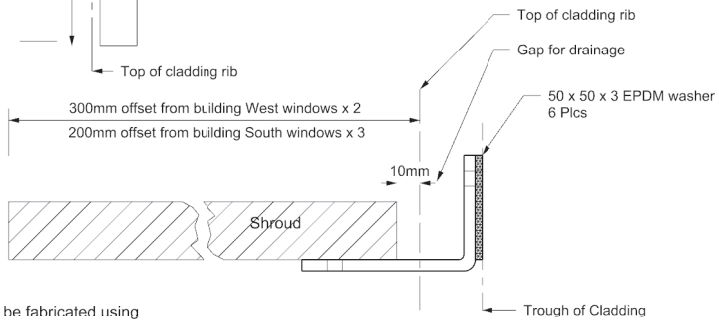


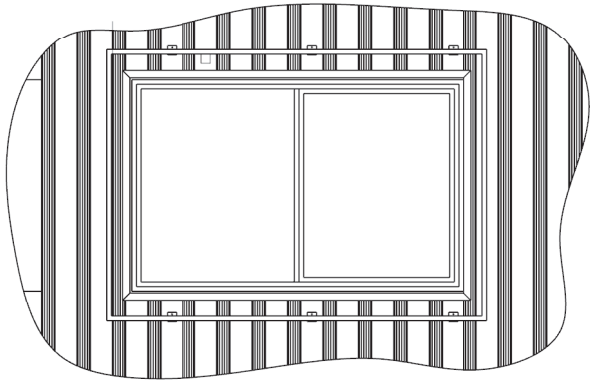


SHED - Window Shroud
Typical West / South









Bracket may be fabricated using
50 x 75 x 5 angle - Aluminum - Painted to match. or
50 x 75 x 5 angle - Steel - Painted with Etch Galv and top coat to match. or
Bowmac B51 Galv steel bracket with top coat to match

Attach using;
14gT17 x 35 Galv Hex screws to shroud at 6 Plcs
14gT17 x 75 Galv Hex screws through predrilled cladding and steel frame into timber nogging at 6 Plcs or
6mm dia Galv bolt, washers, nyloc nut if thru' steel C Section frame
Ensure 50 x 50 x 3 EPDM washer is siliconed and placed between bracket and cladding as seal at 6 Plcs

Rev	NAME	DETAIL	DATE
Rev H			
Rev G			
Rev F			
Rev E			
Rev D			
Rev C			
Rev B			
Rev A	P. Maloney	Window Shrouds	12.11.2024

	NAME	SIGNATURE	DATE
DRAWN	P. Maloney		12.11.2024
CHK'D			
APPV'D			

Revision A

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS

DO NOT SCALE DRAWING

TITLE:

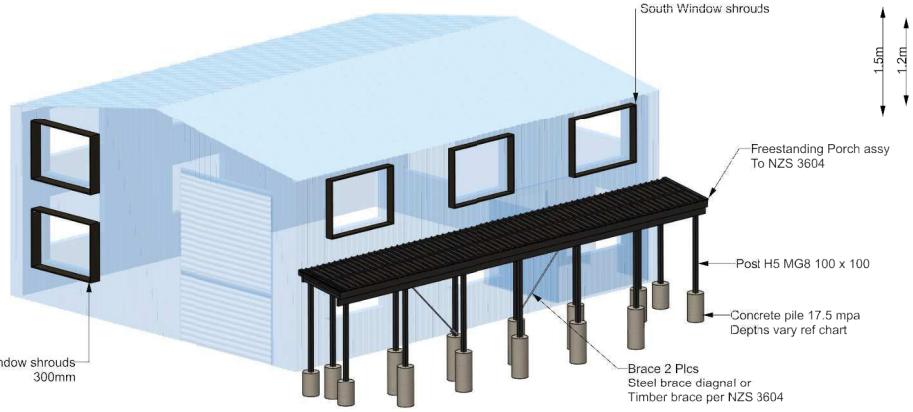
Shed - Window Shrouds

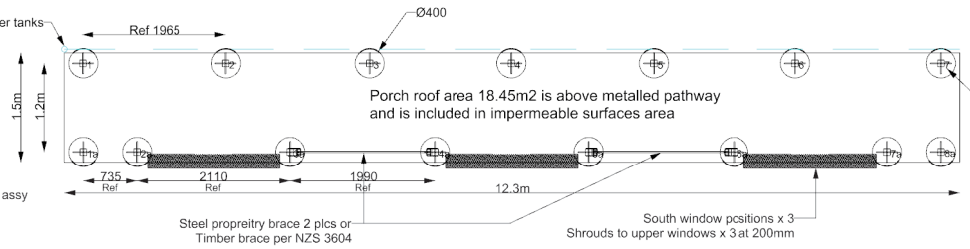
DWG NO. 19

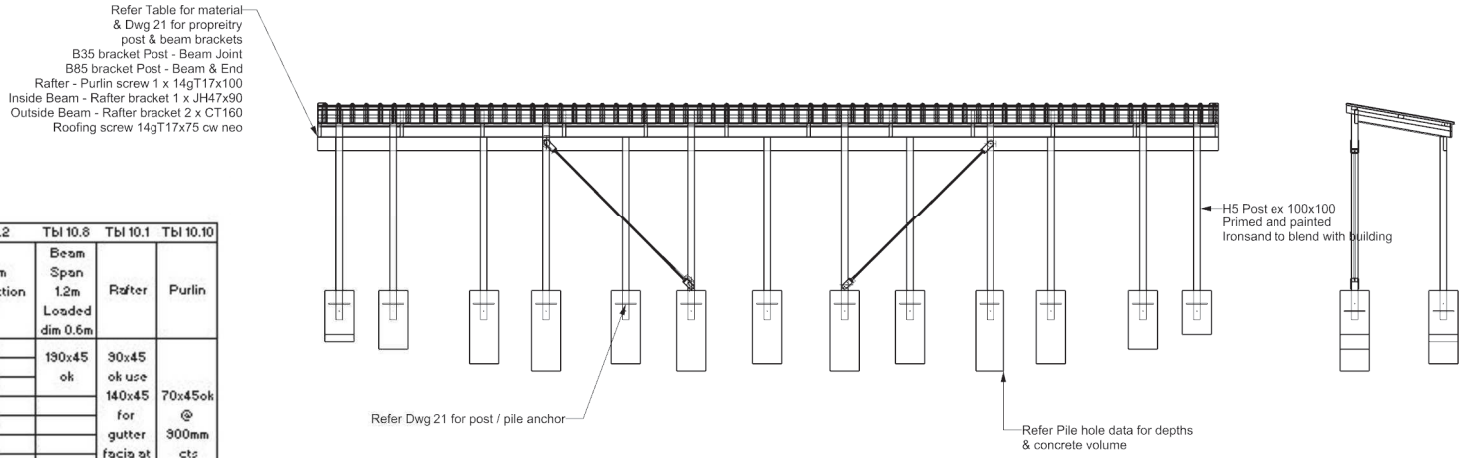
A3

SCALE:1:75

SHEET 19







NZS3604
Porch data

Fig 3.1		Figl 3.1	Tbl 3.2	Concrete footing	Post	Tbl 3.2	Tbl 10.8	Tbl 10.1	Tbl 10.10
Post Type	Pole Nr	Roof area m2	Footing M3*	Footing 17.5mpa Depth(m) @ 400 mm Dia + 2 x 12mm steel pins		Beam Connection Kn	Beam Span 1.2m Loaded dim 0.6m	Rafter	Purlin
C	1	0.33	0.08	0.7	H5100 x 100	2.5	190x45 ok	90x45 ok use 140x45 for gutter facia at 1120 mm cts	70x45ok @ 900mm cts
A	2	1.47	0.12	1.00	H5100 x 100	4.3			
A	3	1.47	0.12	1.00	H5100 x 100	4.3			
A	4	1.47	0.12	1.00	H5100 x 100	4.3			
A	5	1.47	0.12	1.00	H5100 x 100	4.3			
A	6	1.47	0.12	1.00	H5100 x 100	4.3			
C	7	0.83	0.07	0.6	H5100 x 100	2.5			
C	1a	0.37	0.03	Use 0.6	H5100 x 100	2.5			
A	2a	1.07	0.09	0.8	H5100 x 100	4.3			
A	3a	1.54	0.13	1.10	H5100 x 100	4.3			
A	4a	1.54	0.13	1.10	H5100 x 100	4.3			
A	5a	1.54	0.13	1.10	H5100 x 100	4.3			
A	6a	1.54	0.13	1.10	H5100 x 100	4.3			
A	7a	1.07	0.09	0.8	H5100 x 100	4.3			
C	8a	0.37	0.03	Use 0.6	H5100 x 100	2.5			

Rev	NAME	DETAIL	DATE
Rev H			
Rev G			
Rev F			
Rev E			
Rev D			
Rev C			
Rev B			
Rev A	P. Maloney	Porch structure	12.11.2024

	NAME	SIGNATURE	DATE
DRAWN	P. Maloney		12.11.2024
CHK'D			
APPV'D			

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS

DO NOT SCALE DRAWING

Revision A

TITLE:

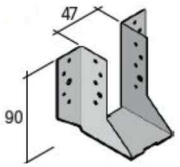
Shed - Porch Structure

DWG NO. 20

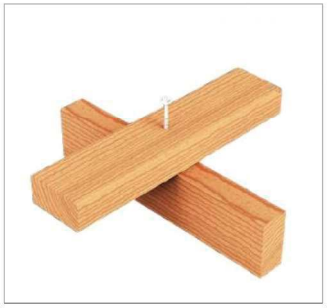
A3

SCALE:1:75

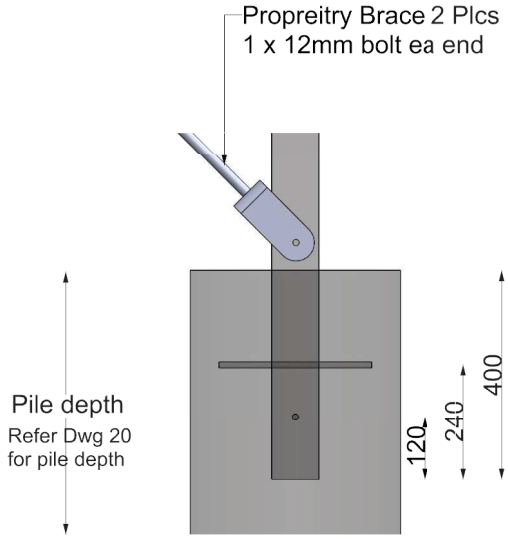
SHEET 20



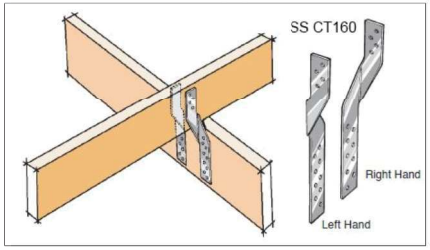
SS JH47 Uplift 4.7kn screwed Nailed 6kn
Use at Rafter / Beam on shed side



Rafter / Purlin Uplift 5.5kn
Purlin 75 x 50 on flat secured using
1 x 14gT17x100mm long



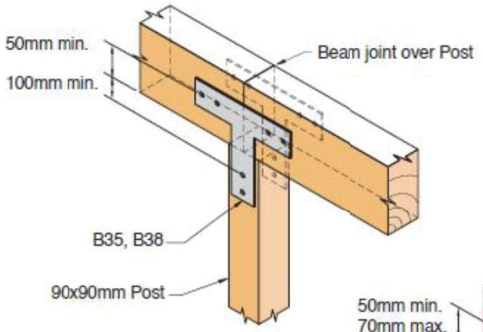
Cast-In Anchors Post - Pile
2 x M12mm steel rods @ 300mm ea
90 deg offset
Cast-In anchor / post selected to
increase individual pole bracing



SS CT160 Uplift 10.5kn (Pair) Nailed
Use at Rafter / Outside beam

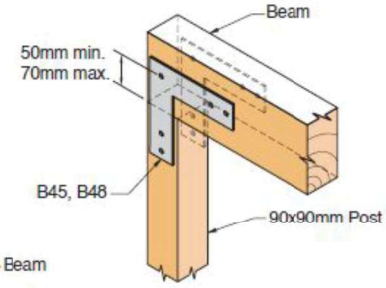
MiTek BOWMAC

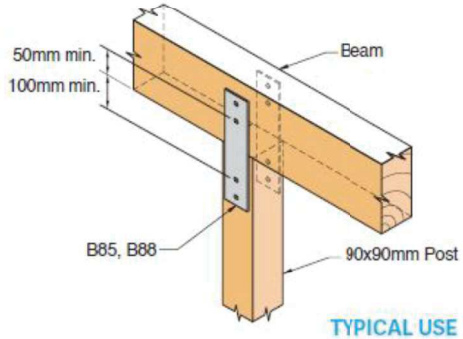
BUILDING WITH BOWMAC®
STRAP, T & L BRACKETS



BRACKET RANGE
- B35, B38 (T)
- B45, B48 (L)
- B85, B88 (Strap)

FIXING NOTE
- All bolt holes accommodate M12 Bolt unless noted.





TYPICAL USE

Bracket	Uplift ULS Capacity per pair of brackets
B35 (T)	24.0kN
B38 (T)	30.3kN
B45 (L)	14.5kN
B48 (L)	25.0kN
B85, B88	16.3kN

NOTE
- All T's, L's & Straps have two width selections of 50mm and 75mm

BOWMAC® Structural Brackets Design Details

Job No.: CH1000
Revise Date: 05/2023
Sheet No.: Sheet 7

Rev	NAME	DETAIL	DATE
Rev H			
Rev G			
Rev F			
Rev E			
Rev D			
Rev C			
Rev B			
Rev A	P. Maloney	Porch structure fixings	12.11.2024

	NAME	SIGNATURE	DATE
DRAWN	P. Maloney		12.11.2024
CHK'D			
APPV'D			

Revision A

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS

DO NOT SCALE DRAWING

TITLE:

Shed - Porch structure fittings

DWG NO. 21

A3

SCALE:1:75

SHEET 21

Far North District Council

Private Bag 752, Memorial Ave
Kaikohe 0440, New Zealand
Freephone: 0800 920 029
Phone: (09) 401 5200
Fax: (09) 401 2137
Email: ask.us@fndc.govt.nz
Website: www.fndc.govt.nz

Office Use Only
Application Number:

APPLICATION FOR DEEMED PERMITTED BOUNDARY ACTIVITIES

Pursuant to Section 87AAB & 87AAD of the Resource Management Act 1991 (the Act)

To qualify to be a deemed permitted boundary activity, a proposed activity must meet the following criteria:

- The proposal must require resource consent due to the infringement of one or more boundary rules in a **district plan**
- The proposal must not infringe **any other district rules**
- The infringement must not relate to **public boundaries**
- The owners of all allotments with an infringed boundary have **given written approval** to the proposal, including **signing the site plans**

Prior to, and during, completion of this application form, please refer to Resource Consent Guidance Notes and Schedule of Fees and Charges – both available on the Council's web page.

1. Pre-Lodgement Meeting

Have you met with a Council Resource Consent representative to discuss this application prior to lodgement? Yes / No XX

Liz Searle - Senior Planner

2. Applicant Details:

Name/s: Peter and Leanne Maloney

Electronic Address for Service (E-mail): petecompheli@gmail.com

Phone Numbers: Work: 0274836952 Home: 0274836952

Postal Address: (*or* alternative method of service under section 352 of the Act): Lot 3 Ocean Vista Way , Okiato 0272

Post Code: 0272

3. Address for Correspondence: *Name and address for service and correspondence (if using an Agent write their details here).*

Name/s: Same as above

Electronic Address for Service (E-mail):

Phone Numbers: Work: Home:

Postal Address: (*or* alternative method of service under section 352 of the Act):

Post Code:

All correspondence will be sent by email in the first instance. Please advise us if you would prefer an alternative means of communication.

4. Details of Property Owner/s and Occupier/s: *Name and Address of the Owner/Occupiers of the land to which this application relates (where there are multiple owners or occupiers please list on a separate sheet if required)*

Name/s: Peter and Leanne Maloney

Property Address/: Location: Lot 3 DP 595923
Ocean Vista Way, Okiato 0272

5. Application Site Details:

Location and/or Property Street Address of the proposed activity:

Site Address/ Location: Lot 3 DP 595923
Ocean Vista Way, Okiato 0272

Legal Description: Lot 3 DP 595923 Val Number: 00413-11206

Certificate of Title: 1151162

Please remember to attach a copy of your Certificate of Title to the application, along with relevant consent notices and/or easements and encumbrances (**search copy must be less than 6 months old**)

Site Visit Requirements:
Is there a locked gate or security system restricting access by Council staff? Yes / No XX
Is there a dog on the property? Yes / No XX
Please provide details of any other entry restrictions that Council staff should be aware of, e.g. health and safety, caretaker's details. This is important to avoid a wasted trip and having to re-arrange a second visit.

Owners occupy Managers Cottage in neighboring Chalet Park of Lot 1.
Owners will open the gate ahead of appointment time of site visit

6. Description of the Boundary Activity:

(Insert description of the activity in sufficient detail for the consent authority to be satisfied that the activity is a permitted boundary activity under section 87AAB of the Act)

Owners wish to erect an ironsand colored 10m x 12.3m steel shed on Lot 3 DP595923. The proposed shed is not visible from Aucks Rd or Opua or from any point off site. Once native plantings have grown the shed will no longer be visible from the accessway, Ocean Vista Way. The south eastern corner of the shed is offset 5m with the boundary of Lot 3 and Lot 4. Refer Maloney - Shed Drawing Schedule sheets 1 thru' 18.

The only affected adjacent property owner is at 291 Aucks Rd Okiato 170m away to the east. The Owners of 291 Aucks Rd, Okiato have signed Sheet 1 of 18 of the Maloney - Shed Drawing Schedule giving their approval for the shed. The applicants are also the owners of Lots 1, 2, 4, 5, 6, 7, 8 and 9 of the balance of the subdivision and accordingly give permission as immediate neighboring Owners for the shed on Lot 3.

Additionally, although not an adjoining Lot, the Owners of Lot 10 of the subdivision have signed their permission for the shed on Lot 3.

7. Other Consent required/being applied for under different legislation(more than one circle can be ticked):

Visual Amenity Rule due to shed size

⊗ Building Consent (BC ref # if known)

⊗ Other (please specify)

8. National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health:

The site and proposal may be subject to the above NES. In order to determine whether regard needs to be had to the NES please answer the following (further information in regard to this NES is available on the Council's planning web pages):

Is the piece of land currently being used or has it historically ever been used for an activity or industry on the Hazardous Industries and Activities List (HAIL)? O Yes ⊗ No O Don't Know

9. Boundary Activity details:

Refer Maloney - Shed Drawing Schedule sheets 1 thru' 18

- ☒ Plan (drawn to scale) of the site at which the activity is to occur, showing the height, shape, and location on site of the proposed activity*
- ☒ Full name and address of each owner (other than the applicant) of the site to which the proposed activity relates*
- ☒ Full name and address of each owner of an allotment with an infringed boundary to which the proposed activity relates*
- ☒ Written approval and a signed plan from each owner of an allotment with an infringed boundary*
- ☒ Site photos Google image of site and Drawing Schedule

*denotes mandatory information

Please attach the above to this application.

10. Billing Details:

This identifies the person or entity that will be responsible for paying any invoices or receiving any refunds associated with processing this resource consent. Please also refer to Council's Fees and Charges Schedule.

Name/s: Peter and Leanne Maloney

Electronic Address for Service (E-mail): lgmaloney0@gmail.com

Phone Numbers: Work: 0274836951 Home: 0274836951

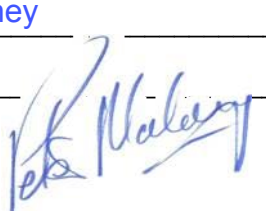
Postal Address: (*or* alternative method of service under section 352 of the Act) 70 Ocean Vista Way, Okiato 0272

Post Code: 0272

Fees Information: An instalment fee for processing this application is payable at the time of lodgement and must accompany your application in order for it to be lodged. Please note that if the instalment fee is insufficient to cover the actual and reasonable costs of work undertaken to process the application you will be required to pay any additional costs. Invoiced amounts are payable by the 20th of the month following invoice date. You may also be required to make additional payments if your application requires notification.

Declaration concerning Payment of Fees: I/we understand that the Council may charge me/us for all costs actually and reasonably incurred in processing this application. Subject to my/our rights under Sections 357B and 358 of the RMA, to object to any costs, I/we undertake to pay all and future processing costs incurred by the Council. Without limiting the Far North District Council's legal rights if any steps (including the use of debt collection agencies) are necessary to recover unpaid processing costs I/we agree to pay all costs of recovering those processing costs. If this application is made on behalf of a trust (private or family), a society (incorporated or unincorporated) or a company in signing this application I/we are binding the trust, society or company to pay all the above costs and guaranteeing to pay all the above costs in my/our personal capacity.

Name: Peter Maloney (please print)

Signature:  (signature of bill payer – mandatory) Date: 16.08.2024

Important Information:

Privacy Information: Once this application is lodged with the Council it becomes public information. If there is sensitive information in the proposal please advise. The information you have provided on this form is required so that your application for a consent pursuant to the Resource Management Act 1991 can be processed under that Act. The information will be stored on a public register and held by the Far North District Council. The details of your application may also be made available to the public on the Council's website, www.fndc.govt.nz. These details are collected to inform the general public and community groups about all consents which have been issued through the Far North District Council.

Declaration: The information I have supplied with this application is true and complete to the best of my knowledge.

Name: Peter Maloney (please print)

Signature: _____ (signature) Date: 16.08.2024

Checklist (please tick if information is provided)

- X Payment (cheques payable to Far North District Council)
- X A current Certificate of Title (Search Copy not more than 6 months old)
- X Copies of any listed encumbrances, easements and/or consent notices relevant to the application
- X Applicant / Agent / Property Owner / Bill Payer details provided
- X Location of property and description of proposal
- X Written approvals and a signed plan from each owner of an allotment with an infringed boundary
- X Copies of other relevant consents associated with this application
- X Location and Site plans
- X Elevations / Floor plans — Refer Maloney - Shed - Drawing Schedule Sheets 1 thru' 18
- X Topographical / contour plans

Note to applicant

You must include all information required by this form. If all information is not included, the consent authority will return this to you and the correct information must be supplied before a written notice permitting your activity can be provided.

In order to be eligible for a deemed permitted boundary activity, the activity must meet the definition of boundary activity under section 87AAB(1) of the Act.

You must provide written approval from all owners of allotments with infringed boundaries under section 87BA(1) of the Act 1991.

If all of the information required under section 87BA(1) of the Act is provided to the consent authority, the consent authority must notify you of your permitted boundary activity within 10 working days after the date on which it receives the information.

You must pay the charge (if any) payable to the consent authority for the deemed permitted boundary activity under the Act.

If signing on behalf of a trust or company, please provide additional written evidence that you have signing authority.

Only one copy of an application is required, but please note for copying and scanning purposes, documentation should be

UNBOUND **SINGLE SIDED** **NO LARGER THAN A3 in SIZE**

Far North District Council

WRITTEN APPROVAL FOR DEEMED PERMITTED BOUNDARY ACTIVITY
s87BA of the Resource Management Act 1991

1. **Name of person giving written approval (Full Name):**

Peter and Leanne Maloney

2. **I am the owner of the property at:**

Lot 4 Ocean Vista Way Okiato 0272

3. **Address of the property subject to the proposal:**

Lot 3 Ocean Vista Way Okiato 0272

4. **Are you signing on behalf of other owners?** Yes / ~~No~~ X

If Yes, List their names: We are the owners
Peter and Leanne Maloney

- I have authority to sign on behalf of the other owners of the property listed in 4*.
- I confirm that I have read the description of the activity and seen and signed the site plans attached.
- In signing this written approval, I confirm that I understand the proposal and understand that the consent authority will permit the applicant to undertake the activity (provided they have supplied the correct information, including all other written approvals required).
- I understand that I may not withdraw my written approval.

~~* If signing on behalf of a trust, company or other owners, please provide additional written evidence that you have signing authority.~~

Signature: _____(signature) Date: 16.08.2024

5. **Contact Details:**

Contact Person: Peter Maloney

Electronic Address for Service: (E-mail) petecompheli@gmail.com

Phone Numbers: Work: 0274836952 Home: 0274836952

Postal Address: (*or* alternative method of service under s352 of The Act) 319 Aucks Rd Okiato 0272

Post Code: 0272

Note to person signing written approval

- You should only sign this form if you fully understand the proposal. You should seek expert or legal advice if you need the proposal or deemed permitted boundary activity process explained to you.
- Conditional written approvals cannot be accepted, and written approvals cannot be withdrawn once provided.
- There is no obligation to sign this form, and no reasons need to be given.
- If you do not sign this form, resource consent may be required for the activity and you may have the opportunity to submit on the application.

Refers RC 2250099 - RMALUC in respect of proposed SHED position 5m off boundary

Far North District Council

Office Use Only
Application Number:

Private Bag 752, Memorial Ave
Kaikohe 0440, New Zealand
Freephone: 0800 920 029
Phone: (09) 401 5200
Fax: (09) 401 2137
Email: ask.us@fndc.govt.nz
Website: www.fndc.govt.nz

APPLICATION FOR DEEMED PERMITTED BOUNDARY ACTIVITIES

Pursuant to Section 87AAB & 87AAD of the Resource Management Act 1991 (the Act)

To qualify to be a deemed permitted boundary activity, a proposed activity must meet the following criteria:

- The proposal must require resource consent due to the infringement of one or more boundary rules in a **district plan**
- The proposal must not infringe **any other district rules**
- The infringement must not relate to **public boundaries**
- The owners of all allotments with an infringed boundary have **given written approval** to the proposal, including **signing the site plans**

Prior to, and during, completion of this application form, please refer to Resource Consent Guidance Notes and Schedule of Fees and Charges – both available on the Council's web page.

1. Pre-Lodgement Meeting

Have you met with a Council Resource Consent representative to discuss this application prior to lodgement? Yes / No XX

Liz Searle - Senior Planner

2. Applicant Details:

Name/s: Peter and Leanne Maloney

Electronic Address for Service (E-mail): petecompheli@gmail.com

Phone Numbers: Work: 0274836952 Home: 0274836952

Postal Address: (*or* alternative method of service under section 352 of the Act): Lot 3 Ocean Vista Way , Okiato 0272

Post Code: 0272

3. Address for Correspondence: *Name and address for service and correspondence (if using an Agent write their details here).*

Name/s: Same as above

Electronic Address for Service (E-mail):

Phone Numbers: Work: Home:

Postal Address: (*or* alternative method of service under section 352 of the Act):

Post Code:

All correspondence will be sent by email in the first instance. Please advise us if you would prefer an alternative means of communication.

4. Details of Property Owner/s and Occupier/s: *Name and Address of the Owner/Occupiers of the land to which this application relates (where there are multiple owners or occupiers please list on a separate sheet if required)*

Name/s: Peter and Leanne Maloney

Property Address/: Location: Lot 3 DP 595923 Ocean Vista Way, Okiato 0272

5. Application Site Details:

Location and/or Property Street Address of the proposed activity:

Site Address/ Location: Lot 3 DP 595923 Ocean Vista Way, Okiato 0272

Legal Description: Lot 3 DP 595923 Val Number: 00413-11206

Certificate of Title: 1151162

Please remember to attach a copy of your Certificate of Title to the application, along with relevant consent notices and/or easements and encumbrances (**search copy must be less than 6 months old**)

Site Visit Requirements:

Is there a locked gate or security system restricting access by Council staff? Yes / No XX

Is there a dog on the property? Yes / No XX

Please provide details of any other entry restrictions that Council staff should be aware of, e.g. health and safety, caretaker's details. This is important to avoid a wasted trip and having to re-arrange a second visit.

Owners occupy Managers Cottage in neighboring Chalet Park of Lot 1.
Owners will open the gate ahead of appointment time of site visit

6. Description of the Boundary Activity:

(Insert description of the activity in sufficient detail for the consent authority to be satisfied that the activity is a permitted boundary activity under section 87AAB of the Act)

Owners wish to place 2 x 30000 lt water tanks behind a steel shed on Lot 3 DP595923 1.1m from the southern boundary with Lot 4. Each water tank is 2.3m high at the outer edge 3.9m diameter with the tank dome at 3m high. The tanks are within the Lot 3 southern boundary recession plane. Native screen plantings will be planted along the southern boundary of Lot 3. The water tanks will not be visible generally off site and once native plantings have grown the water tanks will not be visible from the adjacent Lot 4. Refer Maloney - Shed Drawing Schedule sheets 1 thru' 18.

The only affected adjacent property owner is Lot 4 Ocean Vista Way Okiato. The Owners of Lot 4 Ocean Vista Way Okiato have signed Sheets 1 and 4 of 18 of the Maloney - Shed Drawing Schedule giving their approval for the shed.

7. Other Consent required/being applied for under different legislation(more than one circle can be ticked):

Visual Amenity Rule due to shed size

⊗ Building Consent (BC ref # if known)

⊗ Other (please specify)

8. National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health:

The site and proposal may be subject to the above NES. In order to determine whether regard needs to be had to the NES please answer the following (further information in regard to this NES is available on the Council's planning web pages):

Is the piece of land currently being used or has it historically ever been used for an activity or industry on the Hazardous Industries and Activities List (HAIL)? O Yes ⊗ No O Don't Know

9. Boundary Activity details:

Refer Maloney - Shed Drawing Schedule sheets 1 thru' 18

- ☒ Plan (drawn to scale) of the site at which the activity is to occur, showing the height, shape, and location on site of the proposed activity*
- ☒ Full name and address of each owner (other than the applicant) of the site to which the proposed activity relates*
- ☒ Full name and address of each owner of an allotment with an infringed boundary to which the proposed activity relates*
- ☒ Written approval and a signed plan from each owner of an allotment with an infringed boundary*
- ☒ Site photos Google image of site and Drawing Schedule

*denotes mandatory information

Please attach the above to this application.

10. Billing Details:

This identifies the person or entity that will be responsible for paying any invoices or receiving any refunds associated with processing this resource consent. Please also refer to Council's Fees and Charges Schedule.

Name/s: Peter and Leanne Maloney

Electronic Address for Service (E-mail): lgmaloney0@gmail.com

Phone Numbers: Work: 0274836951 Home: 0274836951

Postal Address: (*or* alternative method of service under section 352 of the Act) 70 Ocean Vista Way, Okiato 0272

Post Code: 0272

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Name: Peter Maloney (please print)

Signature:  (signature of bill payer – mandatory) Date: 16.08.2024

Important Information:

Privacy Information: Once this application is lodged with the Council it becomes public information. If there is sensitive information in the proposal please advise. The information you have provided on this form is required so that your application for a consent pursuant to the Resource Management Act 1991 can be processed under that Act. The information will be stored on a public register and held by the Far North District Council. The details of your application may also be made available to the public on the Council's website, www.fndc.govt.nz. These details are collected to inform the general public and community groups about all consents which have been issued through the Far North District Council.

Declaration: The information I have supplied with this application is true and complete to the best of my knowledge.

Name: Peter Maloney (please print)

Signature: _____ (signature) Date: 16.08.2024

Checklist (please tick if information is provided)

- [x] Payment (cheques payable to Far North District Council)
- [x] A current Certificate of Title (Search Copy not more than 6 months old)
- [x] Copies of any listed encumbrances, easements and/or consent notices relevant to the application
- [x] Applicant / Agent / Property Owner / Bill Payer details provided
- [x] Location of property and description of proposal
- [x] Written approvals and a signed plan from each owner of an allotment with an infringed boundary
- [x] Copies of other relevant consents associated with this application
- [x] Location and Site plans
- [x] Elevations / Floor plans
- [x] Topographical / contour plans

Refer Maloney - Shed - Drawing Schedule Sheets 1 thru' 18

Note to applicant

You must include all information required by this form. If all information is not included, the consent authority will return this to you and the correct information must be supplied before a written notice permitting your activity can be provided.

In order to be eligible for a deemed permitted boundary activity, the activity must meet the definition of boundary activity under section 87AAB(1) of the Act.

You must provide written approval from all owners of allotments with infringed boundaries under section 87BA(1) of the Act 1991.

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If signing on behalf of a trust or company, please provide additional written evidence that you have signing authority.

Only one copy of an application is required, but please note for copying and scanning purposes, documentation should be

UNBOUND **SINGLE SIDED** **NO LARGER THAN A3 in SIZE**

Far North District Council

WRITTEN APPROVAL FOR DEEMED PERMITTED BOUNDARY ACTIVITY
s87BA of the Resource Management Act 1991

1. **Name of person giving written approval (Full Name):**

Peter and Leanne Maloney

2. **I am the owner of the property at:**

Lot 4 Ocean Vista Way Okiato 0272

3. **Address of the property subject to the proposal:**

Lot 3 Ocean Vista Way Okiato 0272

4. **Are you signing on behalf of other owners?** Yes / No X

If Yes, List their names: We are the owners
Peter and Leanne Maloney

- I have authority to sign on behalf of the other owners of the property listed in 4*.
- I confirm that I have read the description of the activity and seen and signed the site plans attached.
- In signing this written approval, I confirm that I understand the proposal and understand that the consent authority will permit the applicant to undertake the activity (provided they have supplied the correct information, including all other written approvals required).
- I understand that I may not withdraw my written approval.

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Signature: _____(signature) Date: 16.08.2024

5. **Contact Details:**

Contact Person: Peter Maloney

Electronic Address for Service: (E-mail) petecompheli@gmail.com

Phone Numbers: Work: 0274836952 Home: 0274836952

Postal Address: (*or* alternative method of service under s352 of The Act) 319 Aucks Rd Okiato 0272

Post Code: 0272

Note to person signing written approval

- You should only sign this form if you fully understand the proposal. You should seek expert or legal advice if you need the proposal or deemed permitted boundary activity process explained to you.
- Conditional written approvals cannot be accepted, and written approvals cannot be withdrawn once provided.
- There is no obligation to sign this form, and no reasons need to be given.
- If you do not sign this form, resource consent may be required for the activity and you may have the opportunity to submit on the application.

Refers RC 2250099 - RMALUC in respect of proposed WATER TANK position 1.1m off boundary

Far North District Council

Office Use Only
Application Number:

Private Bag 752, Memorial Ave
Kaikohe 0440, New Zealand
Freephone: 0800 920 029
Phone: (09) 401 5200
Fax: (09) 401 2137
Email: ask.us@fndc.govt.nz
Website: www.fndc.govt.nz

APPLICATION FOR DEEMED PERMITTED BOUNDARY ACTIVITIES

Pursuant to Section 87AAB & 87AAD of the Resource Management Act 1991 (the Act)

To qualify to be a deemed permitted boundary activity, a proposed activity must meet the following criteria:

- The proposal must require resource consent due to the infringement of one or more boundary rules in a **district plan**
- The proposal must not infringe **any other district rules**
- The infringement must not relate to **public boundaries**
- The owners of all allotments with an infringed boundary have **given written approval** to the proposal, including **signing the site plans**

Prior to, and during, completion of this application form, please refer to Resource Consent Guidance Notes and Schedule of Fees and Charges – both available on the Council's web page.

1. Pre-Lodgement Meeting

Have you met with a Council Resource Consent representative to discuss this application prior to lodgement? Yes / No XX

Liz Searle - Senior Planner

2. Applicant Details:

Name/s: Peter and Leanne Maloney

Electronic Address for Service (E-mail): petecompheli@gmail.com

Phone Numbers: Work: 0274836952 Home: 0274836952

Postal Address: (*or* alternative method of service under section 352 of the Act): Lot 3 Ocean Vista Way , Okiato 0272

Post Code: 0272

3. Address for Correspondence: *Name and address for service and correspondence (if using an Agent write their details here).*

Name/s: Same as above

Electronic Address for Service (E-mail):

Phone Numbers: Work: Home:

Postal Address: (*or* alternative method of service under section 352 of the Act):

Post Code:

All correspondence will be sent by email in the first instance. Please advise us if you would prefer an alternative means of communication.

4. Details of Property Owner/s and Occupier/s: *Name and Address of the Owner/Occupiers of the land to which this application relates (where there are multiple owners or occupiers please list on a separate sheet if required)*

Name/s: Peter and Leanne Maloney

Property Address/: Location: Lot 3 DP 595923 Ocean Vista Way, Okiato 0272

5. Application Site Details:

Location and/or Property Street Address of the proposed activity:

Site Address/ Location: Lot 3 DP 595923 Ocean Vista Way, Okiato 0272

Legal Description: Lot 3 DP 595923 Val Number: 00413-11206

Certificate of Title: 1151162

Please remember to attach a copy of your Certificate of Title to the application, along with relevant consent notices and/or easements and encumbrances (**search copy must be less than 6 months old**)

Site Visit Requirements:

Is there a locked gate or security system restricting access by Council staff? Yes / No XX

Is there a dog on the property? Yes / No XX

Please provide details of any other entry restrictions that Council staff should be aware of, e.g. health and safety, caretaker's details. This is important to avoid a wasted trip and having to re-arrange a second visit.

Owners occupy Managers Cottage in neighboring Chalet Park of Lot 1.
Owners will open the gate ahead of appointment time of site visit

6. Description of the Boundary Activity:

(Insert description of the activity in sufficient detail for the consent authority to be satisfied that the activity is a permitted boundary activity under section 87AAB of the Act)

Owners wish to place an SED retaining wall 0.2m high x 8m long terminating a car park area servicing a steel shed on Lot 3 DP595923. The retaining wall is 1.25m from the southern boundary with Lot 4. Native screen plantings will be planted along the southern boundary of Lot 3. The retaining wall will not be visible generally off site and once native plantings have grown the retaining wall will not be visible from the adjacent Lot 4. Refer Maloney - Shed Drawing Schedule sheets 1 thru' 18.

The only affected adjacent property owner is Lot 4 Ocean Vista Way Okiato. The Owners of Lot 4 Ocean Vista Way Okiato have signed Sheets 1 and 4 of 18 of the Maloney - Shed Drawing Schedule giving their approval for the shed.

7. Other Consent required/being applied for under different legislation(more than one circle can be ticked):

Visual Amenity Rule due to shed size

⊗ Building Consent (BC ref # if known)

⊗ Other (please specify)

8. National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health:

The site and proposal may be subject to the above NES. In order to determine whether regard needs to be had to the NES please answer the following (further information in regard to this NES is available on the Council's planning web pages):

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9. Boundary Activity details:

Refer Maloney - Shed Drawing Schedule sheets 1 thru' 18

- ☒ Plan (drawn to scale) of the site at which the activity is to occur, showing the height, shape, and location on site of the proposed activity*
- ☒ Full name and address of each owner (other than the applicant) of the site to which the proposed activity relates*
- ☒ Full name and address of each owner of an allotment with an infringed boundary to which the proposed activity relates*
- ☒ Written approval and a signed plan from each owner of an allotment with an infringed boundary*
- ☒ Site photos Google image of site and Drawing Schedule

*denotes mandatory information

Please attach the above to this application.

10. Billing Details:

This identifies the person or entity that will be responsible for paying any invoices or receiving any refunds associated with processing this resource consent. Please also refer to Council's Fees and Charges Schedule.

Name/s: Peter and Leanne Maloney

Electronic Address for Service (E-mail): lgmaloney0@gmail.com

Phone Numbers: Work: 0274836951 Home: 0274836951

Postal Address: (*or* alternative method of service under section 352 of the Act) 70 Ocean Vista Way, Okiato 0272

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Name: Peter Maloney (please print)

Signature:  (signature of bill payer – mandatory) Date: 16.08.2024

Important Information:

Privacy Information: Once this application is lodged with the Council it becomes public information. If there is sensitive information in the proposal please advise. The information you have provided on this form is required so that your application for a consent pursuant to the Resource Management Act 1991 can be processed under that Act. The information will be stored on a public register and held by the Far North District Council. The details of your application may also be made available to the public on the Council's website, www.fndc.govt.nz. These details are collected to inform the general public and community groups about all consents which have been issued through the Far North District Council.

Declaration: The information I have supplied with this application is true and complete to the best of my knowledge.

Name: Peter Maloney (please print)

Signature: _____ (signature) Date: 16.08.2024

Checklist (please tick if information is provided)

- [x] Payment (cheques payable to Far North District Council)
- [x] A current Certificate of Title (Search Copy not more than 6 months old)
- [x] Copies of any listed encumbrances, easements and/or consent notices relevant to the application
- [x] Applicant / Agent / Property Owner / Bill Payer details provided
- [x] Location of property and description of proposal
- [x] Written approvals and a signed plan from each owner of an allotment with an infringed boundary
- [x] Copies of other relevant consents associated with this application
- [x] Location and Site plans
- [x] Elevations / Floor plans
- [x] Topographical / contour plans

Refer Maloney - Shed - Drawing Schedule Sheets 1 thru' 18

Note to applicant

You must include all information required by this form. If all information is not included, the consent authority will return this to you and the correct information must be supplied before a written notice permitting your activity can be provided.

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You must provide written approval from all owners of allotments with infringed boundaries under section 87BA(1) of the Act 1991.

If all of the information required under section 87BA(1) of the Act is provided to the consent authority, the consent authority must notify you of your permitted boundary activity within 10 working days after the date on which it receives the information.

You must pay the charge (if any) payable to the consent authority for the deemed permitted boundary activity under the Act.

If signing on behalf of a trust or company, please provide additional written evidence that you have signing authority.

Only one copy of an application is required, but please note for copying and scanning purposes, documentation should be

UNBOUND **SINGLE SIDED** **NO LARGER THAN A3 in SIZE**

Far North District Council

WRITTEN APPROVAL FOR DEEMED PERMITTED BOUNDARY ACTIVITY
s87BA of the Resource Management Act 1991

1. **Name of person giving written approval (Full Name):**

Peter and Leanne Maloney

2. **I am the owner of the property at:**

Lot 4 Ocean Vista Way Okiato 0272

3. **Address of the property subject to the proposal:**

Lot 3 Ocean Vista Way Okiato 0272

4. **Are you signing on behalf of other owners?** Yes / No X

If Yes, List their names: We are the owners
Peter and Leanne Maloney

- I have authority to sign on behalf of the other owners of the property listed in 4*.
- I confirm that I have read the description of the activity and seen and signed the site plans attached.
- In signing this written approval, I confirm that I understand the proposal and understand that the consent authority will permit the applicant to undertake the activity (provided they have supplied the correct information, including all other written approvals required).
- I understand that I may not withdraw my written approval.

~~* If signing on behalf of a trust, company or other owners, please provide additional written evidence that you have signing authority.~~

Signature: _____ (signature) Date: 16.08.2024

5. **Contact Details:**

Contact Person: Peter Maloney

Electronic Address for Service: (E-mail) petecompheli@gmail.com

Phone Numbers: Work: 0274836952 Home: 0274836952

Postal Address: (*or* alternative method of service under s352 of The Act) 319 Aucks Rd Okiato 0272

Post Code: 0272

Note to person signing written approval

- You should only sign this form if you fully understand the proposal. You should seek expert or legal advice if you need the proposal or deemed permitted boundary activity process explained to you.
- Conditional written approvals cannot be accepted, and written approvals cannot be withdrawn once provided.
- There is no obligation to sign this form, and no reasons need to be given.
- If you do not sign this form, resource consent may be required for the activity and you may have the opportunity to submit on the application.

Refers RC 2250099 - RMALUC in respect of proposed SED RETAINING WALL position 1.25m off boundary

CORE
ENGINEERING SOLUTIONS

GEOTECHNICAL REPORT

LOT 3 DP 595923
319 AUCKS ROAD, RUSSELL

Core Engineering Solutions Limited

Geotechnical Report

Geotechnical Investigation and Assessment Report for a Proposed New Shed Build, at: Lot 3 DP 595923, 319 Aucks Road, Russell

Prepared by:

Joel Scheepens
BSc (Geology)

Reviewed by:

Cole Anderson
CPEng, CMEngNZ, BE (Hons)

Approved for Release by:

Cole Anderson
CPEng, CMEngNZ, BE (Hons)

Date:	23 May 2024
Reference:	24-0222
Client:	Peter Maloney
Status:	FINAL
Revision:	NA
Revision Date:	NA
CES QA:	GTv1.0 22012024

TABLE OF CONTENTS

EXECUTIVE SUMMARY

REPORT APPLICABILITY and PLAN REVIEW
Specifically, on this site, this report is provided to accord solely with the Client development proposal and the information made available to CES at the time of report writing.
No building plans (only indicative) have been provided at the time of report writing. We strongly recommend that CES be engaged to undertake a review of both this report and finalised plans (when available), to confirm appropriateness and alignment with the recommendations provided therein, or otherwise.

GROUND CONDITIONS	See Section 6
The investigated site consists of very stiff; Silty CLAY and Clayey SILT, with up to approximately 0.7m FILL (comprised very stiff; CLAY minor organic material and Silty CLAY) overlying. Refer: 'BH Logs' in the report appendices.	
The natural soils on-site are assessed as Moderately Sensitive to Sensitive and in terms of expansiveness are classified as **CLASS M, Moderately Expansive**.	
No groundwater was encountered in the boreholes during investigations.	
At the time of report writing, CES are unaware of any mapped stability hazards associated with the property. The FNDC GIS Liquefaction Hazards map indicates the property is within a "Liquefaction damage is Unlikely" area.	
Based on the results of our investigation, we consider the site to be **Class C** in accordance with NZS1170.5:2004	

FOUNDATIONS and RETAINING	See Section 7
All foundations will require Specific Engineering Design (SED) to account for expansive soils in accordance with AS2870:2011 and the NZ Building Code (NZBC). Any proposed foundations / structures located on or within 5m of a slope at or exceeding 18° should be designed to resist up to 1.0m of lateral soil creep. Soil parameters for foundation design as per Section 7.1.1.	
Reinforced Concrete Slab / Raft Type Slab on Engineered Fill	Design in accordance with Sections 7.1.1 and 7.1.2.
Excavated Shallow Footings	Design in accordance with Sections 7.1.1 and 7.1.3.
Retaining Structures	Designed and constructed in accordance with Section 7.2.

CONSTRUCTION and STORMWATER
• All works must be undertaken in accordance with the Health and Safety at Work Act 2015. • Services Present. The Development Designer will need to confirm the locations of all on-site / adjacent services prior to the commencement of design / any construction works, etc. • It is strongly recommended that no construction works are undertaken until the appropriate Consent / Approvals, etc. have been granted. • All earthworks should be undertaken in accordance with both the District and Regional rules. • Site Specific Inspection Requirements (at the time of report writing) are provided in Section 7.4.2. • Site Specific Earthworks Requirements are provided in Section 7.5.2. • Stormwater run-off from the development should be appropriately controlled and managed on-site both in accordance with the New Zealand Building Code and as per Council requirements.

1 INTRODUCTION

This Geotechnical Report (GR) has been prepared by Core Engineering Solutions Ltd. (CES) for Peter Maloney (the "Client") in accordance with instructions received from them with regard to the above property, and in accordance with the short form agreement dated 09 May 2024.

The purpose of CES's work was to evaluate the surface and subsurface conditions at the site by undertaking a geotechnical investigation to determine the suitability of the site for the proposed development.

This report presents the results of the geotechnical investigation, describes the existing conditions, details any identifiable geological hazards affecting the site and provides geotechnical recommendations against the requirements of NZS3604:2011 where appropriate.

This report is provided to accord solely with both the Client development proposal and the information available to CES at the time of report writing. Unless specified in the above SFA, no design works, or construction inspections are included.

Throughout this report, the term 'Engineer' means a Chartered Professional Geotechnical Engineer or their Agent, unless otherwise stated.

The geotechnical assessment is based on site conditions as observed during the site walkover and site investigation fieldworks carried out by CES on 10 May 2024.

Should you have any queries concerning this report, please send as an email to: jobs@coreeng.nz ensuring the subject line has the Report "Job Number" followed by the "property address".

1.1 CLIENT SUPPLIED & OTHER INFORMATION

In preparing this GR, we have also reviewed the following information:

Client Supplied Information	
Document Type	**Reference**
Site Suitability Report (SSR)	TMC Consulting Engineers. (07/04/2017). *Site Suitability Report – 319 Aucks Road, Russell.* Job Ref: S0216 – J00497.
Subdivision Suitability Report	GWE Consulting Engineers. (01/09/2021). *Site Suitability Assessment Preliminary Geotechnical Report - 319 Aucks Road, Russell.* Job Ref: J3146.
Draft Site Plan	Proposed shed site marked on the following site plan: Reyburn & Bryant. (20/03/2017). *Proposed Access & Building Platforms over Part Section 17 Block V Russell Sd.* Job Ref: E14162.
Draft Site Plan	Marked up aerial image showing the location of the proposed shed and potential future dwelling structures, provided by the client on 06/05/2024.
Other Information	
Document Type	**Reference**
LiDAR DEM	Northland Regional Council (NRC) provided Digital Elevation Model (DEM), captured by RPS Group between December 2018 to February 2020.
FNDC GIS Hazard Mapping	FNDC GIS Liquefaction Hazard Map

Table 1: Client Supplied & Other Information

This report must be read in conjunction with the above documentation and is based solely on our fieldwork assessment and the supplied / 3rd party available information to CES at the time of report writing. CES cannot warrant the accuracy, validity, etc. of any of the supplied / 3rd party available information.

1.2 DEVELOPMENT CHANGES

Should any additional relevant information become available, or the development proposals, plans, etc. change, then CES must be contacted in the first instance to review the changes. The purpose of the review being to ensure that this report and the geotechnical recommendations contained therein remain appropriate, or advise otherwise.

1.3 FINAL PLANS

We strongly recommend as follows:

i. Once the final plans for the proposed development is known, that the plans be reviewed by CES, to;

- Verify that the recommendations contained in this report remain valid, and;
- That with regard to geotechnical aspects only, that the proposed foundation design both aligns satisfactorily with the recommendations provided in the CES GR and is appropriate.

2 DEVELOPMENT PROPOSAL

The Client has indicated that an approximate 123 m² shed is to be constructed at the western end of the section.

We understand that the shed is to be supported on a reinforced concrete slab with shallow load bearing footings.

In addition, the design proposal includes the construction of an engineered cut/fill building platform to accommodate the shed foundation.

Refer; 'Site Plan' in the report appendices.

3 SITE DESCRIPTION

The property (legally described as Lot 3 DP 595923) is located to the south of Aucks Road. The property is sized at approximately 12,397 m^2 and is irregular in shape.

The property is currently accessed via a shared right of way (ROW) to the south of Aucks Road.

The property has general fall to the east of between approximately 0-40°. The ground in the area of the proposed shed has a slope to the east of between approximately 0-10°. There is an approximately 20-25° southern facing slope approximately 1.0 m to the south of the proposed shed location, and an approximately 20-40° eastern facing slope approximately 5.0 m to the east of the proposed shed location.

The property is generally covered in native bush and small to medium sized trees. The area of the proposed shed has been mostly cleared of vegetation and generally consists of exposed soil and patches of long grass.

Other than two steel shipping containers, at the time of report writing the property was clear of any permanent dwellings or structures.

Earthworks on site. The area of the proposed shed and the immediate surrounds have previously been cut and filled to create platforms and access ways. During the site investigation, the owner stated that the proposed shed site was previously used as a filling area / dumping ground for material from logging operations that were previously undertaken on the property.

At the time of report writing, no records of the design, construction and certification of these earthworks has been provided.

Stormwater run-off currently exhibits sheet flow behaviour.

The walkover of the proposed building site undertaken at the time of the site fieldworks provided no evidence of recent or historic ground movement on or adjacent to the proposed shed site.

All service locations, depths, etc. will need to be confirmed by the Development Designer prior to both the design of the foundations, etc. and construction works. Design to allow both for any disturbance or surcharge on the services and comply with Asset Owners off-set, etc. requirements.

Approval is required from Council / Asset Owners to construct within the minimum required offsets or over Council / other services.

Legal Description	Lot 3 DP 595923
Area	12,397 m^2
District Council	Far North District Council
Potable Water	Rainwater tanks
Stormwater Disposal	Onsite disposal

Table 2: Property Details

Figure 1 – View of proposed shed site facing north-east.

Figure 2 – View of proposed building site facing south-east.

4 DESKTOP STUDY

4.1 GEOLOGY

Local geology at the property is noted on the GNS Science New Zealand Geology Web Map, Scale 1: 250,000 as; *Waipapa Group sandstone and siltstone (Waipapa terrane).*

Key name	Waipapa Group sandstone and siltstone (Waipapa terrane)
Simple name	Basement (Eastern Province) sedimentary rocks
Main rock name	greywacke
Stratigraphic age	Y-J
Description	Massive to thin bedded, lithic volcaniclastic metasandstone and argillite, with tectonically enclosed basalt, chert and silceou
Subsidiary rocks	argillite chert basalt
Key group	Waipapa composite terrane
Stratigraphic lexicon name	Waipapa Group
Terrane equivalent	Waipapa composite terrane
Absolute age (min)	154.0 million years
Absolute age (max)	270.0 million years
Rock group	greywacke
Rock class	clastic sediment
Code	TrJ.sst
QMAP sheet name	Whangarei

Table 3 - Geology Type

Tonkin and Taylor undertook a report and stability analysis of the Whangarei region titled: "Coastal Structure Plan Slope Instability Hazard Potential And Effluent Disposal Potential Oakura To Langs Beach." August 2005. The report stated the following regarding Waipapa Group:

The Waipapa Group of rocks predominantly comprises shattered Triassic to Jurassic age (140 to 200 million years old) greywacke and argillite. In their unweathered form these rocks are dark bluish grey, and strong (typically with unconfined compressive strength greater than 50 MPa), due to low-grade metamorphism of the sediments.

Waipapa Group rockmass generally comprises very closely to extremely closely spaced (<20 mm to 60 mm) joints, present in numerous joint sets at various orientations. The greywacke rockmass also tends to contain many sheared and crushed zones. However, despite the rock being very fractured, the high intact rock strength gives the Waipapa Group a relatively high overall rockmass shear strength.

The Waipapa Group usually has a deep weathering profile ranging from unweathered greywacke and argillite at 10 m to 20 m below the surface; through to highly weathered to completely weathered rock close to the surface. The latter materials typically form a soil mass (i.e. a regolith) of very stiff to hard light brown gravelly and clayey silts. Residual soil derived from these materials typically comprises very stiff silty clays and clayey silts, typically containing predominantly non-swelling kaolinitic clays (i.e. not subject to large changes in volume due to changes in moisture content).

These soils are generally only present in the top 2 m on low gradient slopes, such as ridgelines and flats, and in the top 1m on steep slopes. Groundwater is usually deeper than 5 m due to the relatively high fracture permeability of the rockmass, the steepness and relatively high relief of the slopes.

Slopes that are underlain by Waipapa Group materials are generally characterised by moderate to steep sided slopes (15° to >30°) with minor shallow seated slippage and gully erosion within the soil mantle generally only within the steepest slopes (i.e. >30°). The slopes can generally stand at moderately steep gradients due to the relatively high strength of the rockmass and overlying soil mass.

The geology at the building site is to be confirmed as part of site investigations.

4.2 NATURAL HAZARDS

4.2.1 Site Stability

At the time of report writing, CES are unaware of any mapped stability hazards associated with the property.

4.2.2 Liquefaction

The FNDC GIS Liquefaction Hazards map indicates the property is within a "Liquefaction damage is Unlikely" area.

4.3 AERIAL PHOTOGRAPHY

From a review of the aerial photography dating back to 1971, no significant signs of land movement were visible. It is noted that the property used to covered in dense bush and was cleared sometime between 2016 and 2018, according to Google Earth Imagery.

Figure 3 – Historic aerial photograph dated 1971, showing the property (Source Retrolens). Please note that the boundary locations marked are approximate.

Figure 4 - Historic aerial photograph dated 1981, showing the property location (Source Retrolens). Please note that the boundary locations marked are approximate.

Figure 5 - Historic Google Earth photograph dated 2018, showing the property location (Source Google Earth). Please note that the boundary locations marked are approximate.

4.4 DIGITAL ELEVATION MODEL

A review has been undertaken of the Northland Regional Council (NRC) provided Digital Elevation Model (DEM), captured by RPS Group between December 2018 and February 2020. The property has general fall to the east of between approximately 0-40°. The ground in the area of the proposed shed has a slope to the east of between approximately 0-10°.

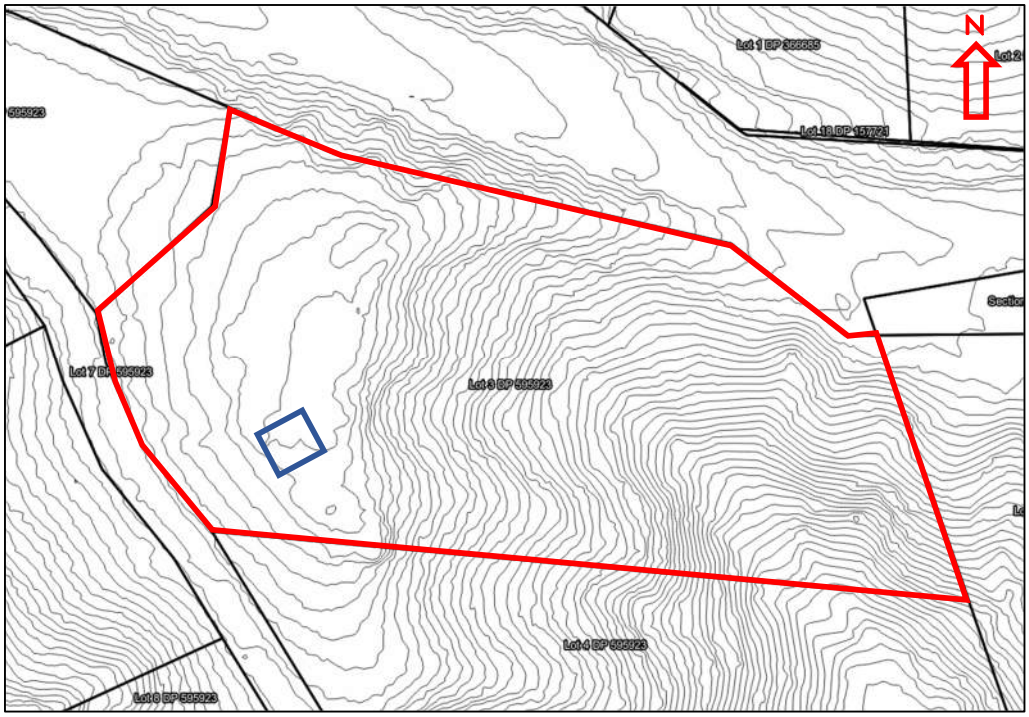


Figure 6 –NRC DEM LiDAR of site, showing the property boundaries and approximate proposed shed location.

5 SITE INVESTIGATION SUMMARY

The purpose of the following intrusive fieldworks investigation was to provide information on the general soil profile, the variability, relative density and strength of soils together with any observed groundwater levels within the proposed building site area.

CES undertook a shallow ground investigation comprising 2 hand auger boreholes (BH) of 50 - 75 mm diameter to depths of up to 3.0 m below ground level (bgl).

Scala Penetrometer tests (SP) were undertaken commencing from ground level adjacent to the boreholes to a depth of up to 1.5 m. SP tests were restarted in the base of the boreholes to depths of up to 3.9 m to assess the strength and consistency of the strata beyond the depth of the boreholes.

Two further SP tests were carried out to a depth of 1.5 m to determine if homogeneous and uniform soil conditions exist across the investigated building site.

Refer, 'Borehole Logs & Scala Penetrometer Data' and for the approximate locations of the BH and SP tests that are shown on the 'Site Plan' in the report appendices.

Where possible, in cohesive materials, in-situ hand undrained shear vane tests were carried out at 0.3 m depth intervals in accordance with the New Zealand Geotechnical Society (NZGS); Guidelines for Hand Held Shear Vane Testing, August 2001, and classified for soil sensitivity in accordance with the NZGS Field Classification Guidelines; Table 2.10, December 2005.

Classification of the recovered soil borehole arisings was carried out in accordance with the "Field Description of Soil and Rock", NZGS, December 2005.

6 FINDINGS AND CONCLUSIONS

6.1 GROUND CONDITIONS

The ground conditions encountered during the shallow ground investigation have been interpreted from the recovered arisings, BH logs, shear vane and Scala Penetrometer testing undertaken.

The natural subsurface conditions encountered are considered to be generally consistent with the published geological information.

The investigated site consists of very stiff; Silty CLAY and Clayey SILT, with up to approximately 0.7m FILL (comprised very stiff; CLAY minor organic material and Silty CLAY) overlying. Refer: 'BH Logs' in the report appendices.

Similar natural soils were encountered during both the TMC and GWE site investigations.

During the site investigation soil moisture conditions encountered ranged from dry to wet.

It should be noted that actual ground conditions may vary across the investigated development site, and in some locations may differ from those described.

A summary of our field investigations is below.

Test (BH)	Location	Termination Depth (m)	Fill Depth Overlying (m)	Groundwater depth (m)	In-situ Shear Strengths / Remould Strengths (kPa)
BH1	Eastern corner of shed	3.0	0.7	-	190 kPa (46 kPa) to >213kPa
BH2	Western corner of shed	1.8	0.6	-	182kPa (58 kPa) to >213kPa

Table 4: Summary of hand augered boreholes conducted

Test (SP)	Location	Starting Depth (m)	Termination Depth (m)	Blows per 100mm
BH1	Eastern corner of shed	0	1.2	1-20+
		3.0	3.9	2-11
BH2	Western corner of shed	0	1.5	1-10
		1.8	2.9	3-8
SP3	Southern corner of shed	0	1.5	3-9
SP4	Northern corner of shed	0	1.5	2-12

Table 5: Summary of Scala Penetrometer testing undertaken

Refer to appendices for Site Plan, Bore Logs and CPT data.

6.2 SOIL SHEAR STRENGTHS

Uncontrolled FILL soils

Shear vane dial readings (corrected) of the FILL soils tested in the Boreholes ranges from 173 kPa (61 kPa remoulded) to in excess of 213 kPa.

Where the shear vane refused within the FILL soils, it was noted as unable to penetrate (UTP).

Where measurable, the average of peak and remoulded shear strength ratio for the site soils investigated was 2.8 indicating that these soils are Moderately Sensitive as per the NZGS Guidelines.

Natural Soils

Shear vane dial readings (corrected) of the natural soils tested in the Boreholes ranges from 182 kPa (58 kPa remoulded) to in excess of 213 kPa.

Where the shear vane refused within the natural soils, it was noted as unable to penetrate (UTP)

Where measurable, the average of peak and remoulded shear strength ratio for the site soils investigated ranged between 3.0 to 4.1 indicating that these soils are generally Moderately Sensitive as per the NZGS Guidelines.

Similar shear strengths within the natural soils were noted during both the TMC and GWE site investigations.

6.3 EXPANSIVE SOILS

6.3.1 General

The GWE Subdivision Suitability Report conservatively categorised the soils onsite as Class H1 (Highly Expansive). However, the TMC Site Suitability Report categorises the soils onsite as Class M (Moderately Expansive) in terms of AS2870:2011.

Based on the results of our fieldwork investigation, along with our knowledge and experience with these soils, we concur with the TMC soil expansiveness classification and therefore, classify the investigated site as CLASS M, Moderately Expansive in terms of AS2870:2011.

A Characteristic Surface Movement (y_s) of 40 mm should be used in foundation design.

Reworking or exposure of these soils during wet weather or winter months can damage these soils resulting in much lower bearing capacities, the potential for seasonal shrinkage / swelling and slab cracking.

These soils do not meet the NZS3604:2011 definition of 'Good Ground'. Foundations / structures will therefore need to be designed accordingly and care must be taken when both planning and undertaking the site earthworks. Refer, 'Notes' in the report appendices and Section 7.

6.3.2 Effects of Tree Roots

A wide range of tree and shrub species have high groundwater demands during summer months. The effect of such moisture demands on expansive soils can be substantial and can lead to differential building settlement, or conversely foundation construction too soon after their removal can result in soil swelling and raising foundations and/or slabs as the soils rehydrate.

Particularly high-water demand species include, but not limited to;

Gum, Willow, Cypress/Radiata Pine, Oak, Poplar, Ficus (Fig trees), Elm, Norfolk Pine.

Planting of trees should be avoided near the foundation of a building on expansive soils as they can cause damage due to drying of the clay at substantial distances. To reduce, but not necessarily eliminate, the possibility of damage, tree planting should be restricted to a minimum distance from the building as follows:

i.) 1.5 x mature height of tree for Class E; Extremely Expansive soil sites.
ii.) 1 x mature height of tree for Class H; Highly Expansive soil sites.
iii.) 0.75 x mature height of tree for Class M; Moderately Expansive soil sites.

Where groups or rows of trees are involved, the planting distance from the building should be increased. Removal of existing trees from the site can also produce similar problems.

In addition to the above, care should be taken to avoid:

- having significant trees positioned where their roots could migrate beneath foundations, and
- constructing foundations on soils that have been differentially excessively desiccated by nearby trees, whether still existing, or recently removed.

The level to which these measures are implemented depends on the expansivity of the site soils. The above planting distances and measures apply mainly to masonry buildings and masonry veneer buildings. For frame buildings clad with timber or sheeting, lesser precautions *may* be appropriate.

Alternatively, the foundation system may be designed for the effect of trees in accordance with Appendix H of AS2870:2011.

6.3.3 Effects of Engineered Hardfill on Soil Expansivity

To aid in mitigating the effects of expansive soils at the building site, compacted hardfill can be placed beneath the building footprint. The purpose of the non-expansive hardfill is to reduce the characteristic surface movement (y_s) across the building footprint and therefore reduce the design forces on the foundation.

The existing cleared ground level should be undercut, extending a minimum of 1m outside the building footprint, and then replaced with engineered compacted, tested and approved hardfill. Specific Engineering Design (SED) will be required to calculate the specific surface movement reduction for varying depths of engineered hardfill.

6.3.4 Soil Creep

As Expansive Clay soils exhibit a shrink/swell behaviour, where there is movement within the depth of soil affected by (typically seasonal) changes in soil moisture and soil temperature.

Where this occurs on slopes (generally exceeding 18°) this can result in slow surface movement downslope within the upper clay soil profile, known as "surface creep".

Based on our site observations, there is potential for soil creep on the steeper slopes to the south and east of the proposed shed site. Accordingly, foundations located within 5m of slopes over 18° will need to account for this creep movement in the upper soil layer (up to approximately 1.0m bgl). Refer Section 6.6.1 and 7.1.

6.4 GROUNDWATER

Groundwater was not encountered during the intrusive fieldwork investigation.

During the site investigation soil moisture conditions encountered ranged from dry to wet.

Groundwater levels may rise during wet winter conditions or following periods of heavy or prolonged rainfall / other events. and potentially due to tidal conditions.

Considering both the investigated site topography and ground conditions, along with the proposed development, the use of drainage control measures is generally not anticipated during construction works.

No ground water was encountered during both the TMC and GWE site investigations.

6.5 SCALA PENETROMETER TEST RESULTS

Scala Penetrometer test values in terms of (number of blows /100mm ground penetration) were noted commencing adjacent to, and at the base of BH: 1-2 and two other locations.

This testing was undertaken to provide an indicative allowable bearing capacity of the site soils encountered with depth and to determine any uniformity in ground conditions across the investigated site, refer; 'Scala Penetrometer Resistance Test Results' in the report appendices.

- The blow counts: 1 blow being the lowest and 20+ blows being the highest– all after initial equipment seating blows.
- Blow counts within the natural soils generally increased with depth.
- Blow counts within the FILL soils were variable and didn't follow a general trend.
- Refusal (20+ blows/100mm) was encountered at 1.2m bgl in BH1 within natural soils.

In general terms of soil bearing capacity, NZS3604:2011 for the Construction of Timber-Framed Buildings defines 'Good Ground' as having an allowable bearing capacity of at least 100 kPa: indicatively 5 blows per 100 mm.

6.6 NATURAL HAZARDS

6.6.1 Site Stability

The property is not currently mapped for stability risk.

Local geology at the property both mapped and as investigated is: Waipapa Group (TJw).

The site soils encountered are also considered to be generally consistent with the published geological information.

Based on our experience and recent soil stability mapping undertaken in the Northland Region with the: Waipapa Group (TJw), indicative soil instability potential ranges are as follows:

Low <18°; Medium 18-45° and High >45°.

The ground in the area of the proposed shed has a slope to the east of between approximately 0-10° and is proposed to be excavated near level. There is an approximately 25° southern facing slope within 1.0 m to the south of the proposed shed location.

A review of historical aerial photography commencing from 1971 provides no clear evidence of previous instability at the property, refer also; 'Section 4.3.'

No recent or historic natural ground movement was evident at the proposed building site or in the immediate surrounds at the time of the fieldwork investigation. However, based on our site observations, there is potential for soil creep on the steeper slopes to the south and east of the proposed shed site.

No evidence of natural ground movement was provided by the fieldworks and ground investigation testing.

We have therefore provided our foundation recommendations to align with both the soil instability ranges and the above observations.

Please refer also, report Sections: 'Foundations', 'Earthworks', 'Retaining' and 'Stormwater and Drainage'.

<u>Site Stability: Summary</u>

Based on our observations and findings as described herein, we believe on reasonable grounds that the investigated site is considered stable for the currently proposed development on the basis that all recommendations provided in this report are followed and correctly implemented.

6.6.2 Liquefaction and Seismic Setting

There are no active faults currently mapped within the Northland region (refer; NZS 1170.5:2004 Table 3.3), while the whole Northland peninsula is generally regarded as tectonically stable.

Earthquake risk in Russell is therefore considered to be relatively low.

Considering the:

- Regional seismic risk,
- depth of any groundwater (not encountered),
- lack of active faults near the property, and
- the cohesive soil types encountered,

Based on the information currently available and our findings, it is our current opinion that there is a low risk of ground rupture and liquefaction induced settlement at the property.

Proposed structures will need to be designed to account for seismic shaking and ground motions.

Based on the results of our investigation, we consider the site to be **Class C** in accordance with NZS1170.5:2004.

Natural Hazards: Summary

No shed plans provided.

Specifically on this site: Once the final arrangement, design, details, etc. of the proposed development have been finalised, CES should be engaged to review the plans, advise accordingly and thereafter provide comments with regard to the Building Act 2004.

7 RECOMMENDATIONS

7.1 FOUNDATIONS

7.1.1 General

FILL / other onsite. All excavations will require inspection and testing by Chartered Professional Geotechnical Engineer or their Agent who is familiar with this site and the contents of this suitability report. Where unsuitable materials are encountered, they should in general, be undercut and replaced with Engineer approved compacted fill, or as otherwise recommended by the Engineer.

The results of our investigation indicate that the soils onsite do not meet the NZS3604:2011 definition of 'Good Ground'. All foundations will require Specific Engineering Design (SED), and to account for Moderately Expansive soils (CLASS M) in accordance with AS2870:2011.

Any proposed foundations / structures located on or within 5m of a slope at or exceeding 18° should be designed to resist up to 1.0m of lateral soil creep. Alternatively, foundations / structures should be setback a minimum of 5.0m away from any slope exceeding 18°.

The final depth of foundations, etc. may be governed by structural loads. This aspect can be addressed during the foundation design process.

From the site soil investigation and assessment, the following soil parameters are considered appropriate for design purposes for the foundation, subject to onsite confirmation by the Inspecting Engineer:

Soil Type	Layer Depth	Drained Soil Parameters			Undrained Soil Parameters
		Internal soil friction angle,	Soil cohesion, c'	Soil Unit Weight, γ	Undrained Shear Strength, Cu
FILL	0.0 – 0.7 m bgl	25°	2 kPa	17 kN/m^3	50 kPa
Natural Silty CLAY & Clayey SILT	0.7 – 3.0 m bgl	32°	5 kPa	18 kN/m^3	100 kPa

Table 6: Soil parameters for Foundation Design

Based on the information provided to CES at the time of report writing we understand that the new dwelling is to be supported on a reinforced concrete slab with shallow load bearing footings.

A description of the foundations follows with design parameters and Engineer Inspection requirements as above.

7.1.2 Reinforced Concrete Slab / Raft Type Slab on Engineered Fill

A Characteristic Surface Movement (y_s) of 40 mm should be used in the design of the slab foundation for CLASS M (Moderately Expansive) soils. Alternatively, load bearing footings should be embedded the minimum depth as specified in Section 7.1.3 below.

Alternatively, the slab can be placed on Engineer approved compacted hardfill that also extends a minimum of 1.0 m out beyond the building footprint to reduce the value of y_s (see Section 6.3.3). The depth of the above hardfill layer is to be confirmed by the Designer during the detailed design process.

Once all unsuitable Organic, etc. material has been removed and replaced with approved Engineered hardfill, an Uncorrected Ultimate Bearing Capacity of 300 kPa may then be assumed.

For filling to form a final subgrade for the slab, it is recommended that clean, well graded compacted hardfill is used such as; GAP 20 to GAP 65, or as otherwise approved by the Engineer.

7.1.3 Excavated Shallow Footings

The soil parameters provided above should be used in the foundation design. Provided foundations are embedded in Engineer approved competent natural soils, an Uncorrected Ultimate Bearing Capacity of 300 kPa may then be assumed. In addition to the parameters and requirements, etc. provided above, for shallow foundations in expansive soils:

- The detailed design of the foundations will determine the final foundation depths, etc. and provide an appropriate embedment depth to minimise ground swelling and shrinkage effects in alignment with the soil expansivity class. A minimum founding depth of 0.6 m below cleared ground levels into Engineer approved competent soils is recommended to mitigate against the shrink-swell effects of CLASS M (Moderately Expansive) soils.

- Embedment into competent materials and as above, etc. to be checked and approved by the Inspecting Engineer.

Specifically, on this site, pile holes / footings and arisings will need to be inspected by an Engineer familiar with both the contents of this report and the site to ensure that all piles are sufficiently embedded in the appropriate materials.

7.1.4 Foundations Adjacent to or Above Services

Subsequent to confirmation of all services by Development Designer:

Foundations / structures adjacent to or above any underground services such as Council sanitary sewer, stormwater lines and other assets must be supported on piles to both a design specification and embedment to meet both the Council / Asset owners and Design Engineers requirements.

Foundations within the line of influence from the services should comprise bored piles that both extend to well below the invert level of the pipe and with side clearances to the pipe in accordance with the above requirements.

If driven piles are to be used, these must be pre- drilled to the level of the pipe invert prior to driving to the design sets, and / or as per the Council / Asset Owners requirements.

The bearing capacities provided above are considered appropriate for bridging pile design.

7.1.5 Foundation Care and Maintenance

The recommendations provided in Section 6.3 to mitigate the risk from the effects of expansive soils do not necessarily remove the other risks of external influences affecting, the moisture in, and the potential behaviour, etc. of these foundation soils.

In addition to the effects of tree roots and moisture, etc. summarised in Section 6.3., we recommend that Homeowners familiarise with the "Homeowners Guide" published by CSRIO, with particular attention to the maintenance of drains, water pipes, gutters and downpipes, etc.

7.2 RETAINING STRUCTURES

7.2.1 General

For any proposed retaining structures on site, we recommend as follows.

Retaining structures exceeding 1.5 m and/or supporting any surcharge loads will need to be designed by a Chartered Professional Engineer and constructed in a safe manner.

Factors of safety and surcharge loadings appropriate to the conditions should be in accordance with the Ministry for Business Innovation and Employment (MBIE) and New Zealand Geotechnical Society (NZGS) guidelines titled 'Earthquake Geotechnical Engineering Practice: Module 6 – Earthquake Resistant Retaining Wall Design'.

Due consideration to surcharges, retained heights and levels, etc. must be undertaken for each retaining structure throughout the design process. In addition, retaining design will need to be in accordance with Council surcharge requirements by boundaries.

All retaining walls / structures should be constructed with appropriate toe drainage and should be backfilled to within 0.3m of their full height with lightly tamped, free draining granular backfill material. Toe drainage: Proprietary perforated pipe drain / strip drain should be installed at a basal location behind all retaining walls to provide appropriate drainage and avoid the risk of a build-up of hydrostatic pressures / water levels.

All drainage should be connected into an approved stormwater disposal system, or as otherwise appropriate. If required, all waterproofing details should be specified by the building Designer.

Subsequent to construction of retaining structure(s), a programme of regular monitoring must be initiated to assess the continuance of both effective retention and drainage functions. Thereafter, if necessary, any maintenance required can be undertaken to ensure fully effective drainage, function, etc.

7.2.2 Soil and Retaining Design Parameters

Soil and design parameters for wall types are provided in the Table below, all being subject to confirmation by Engineering inspection during construction. The provided figures make no allowances for any surcharges e.g. ground slopes and / or applied loads, hence all retaining design should also accommodate all anticipated upslope surcharges as well as toe support reduced by existing or proposed excavations and/or slopes.

Retaining Wall Type	Natural Soil Parameters		Design Parameters and Notes
Timber Pole	Soil cohesion c' =	5 kPa	Passive resistance in front of the retaining wall poles can be determined using Broms Method generally assuming an undrained shear strength Cu = 100 kPa. Where any ground is sloping >18° in front of the wall, pile embedment is to be designed for up to 1.0m of soil creep.
	Internal soil friction angle Φ =	32°	
	Soil unit weight γ =	18 kN/m^3	
Cantilevered: Free Standing or Propped	As Above		For design, soil pressures may be determined for active pressure conditions using a Ka value of no less than 0.3.
Rigid Retaining	As Above		For the design of retaining walls integrated into the building structure which are relatively rigid and unyielding, soil pressures should be determined for at-rest pressure conditions using an earth pressure coefficient K_0 of no less than 0.5.

Table 7: Soil parameters for retaining wall design

7.3 SAFETY IN DESIGN, SUSTAINABILITY, AND CONSTRUCTION RISK MANAGEMENT

7.3.1 Safety in Design

In addition to the prevailing Health and Safety legislation, the CES recommendations provided in this report have also been made with regards to Safety in Design, which should be considered during the design phase.

'Health and Safety by Design' is the process of managing health and safety risks throughout the lifecycle of structures, plant, substance or other products. Designers are in a strong position to make work healthy and safe from the start of the design process. Health and Safety by Design is not a separate concept from good design – they are the same thing.

Aside from statutory Healthy and Safety requirements, CES recommend that all design should be undertaken in full accordance with the following good practice guidelines (and any successor publications), in particular:

Health and Safety by Design, An Introduction: August 2018.

Refer for download the above Worksafe documentation as below:

https://www.worksafe.govt.nz/topic-and-industry/health-and-safety-by-design/health-and-safety-by-design-gpg/

7.3.2 Sustainability

Please consider sustainability when assessing the options available for your project. Where appropriate; we recommend prioritising the use of sustainable building materials (i.e. timber as against concrete or steel), locally sourced materials readily available to Contractors as against imported materials, and environmentally friendly installation to minimise carbon emissions and contamination.

7.3.3 Construction Risk Management

Any and all works including (but not limited to); design, construction, operations and maintenance must be undertaken in accordance with the Health and Safety at Work Act 2015.

The Development Designer will need to confirm the locations of all on-site / adjacent services including for site access prior to the commencement of design / any construction works, etc.

Any open excavations should be fenced off or covered, and/or access restricted as appropriate.

With all excavation and construction work there is a risk of collapse. Whenever ground conditions are suspect, bad weather conditions are forecast or when there is a risk of damage to adjacent property, excavations should all be carried out in a "hit and miss" pattern and / or temporary ground support, cover protection used.

The Contractor is responsible for determining the width of each excavation to suit his plant and construction programme.

Cut faces should not be left unsupported. Similarly, cut faces should not be left uncovered for any length of time, especially during periods of rain.

The Contractor is responsible at all times for ensuring that all necessary precautions are taken to protect all aspects of the works, adjacent structures and services, etc.

7.4 CONSTRUCTION INSPECTIONS

7.4.1 General

It is usual for the Building Consent Authorities' (BCA) to require a Producer Statement; PS4, this is an important document. The purpose of the PS4 is to confirm the Engineers' professional opinion to the BCA that aspects of a building's design comply with the Building Code, or that elements of construction have been completed satisfactorily in accordance with the approved Building Consent (BC).

If you require CES to issue a PS4 we will need to carry out inspection of the work at the key construction stages as per the BC, any SED, and Council requirements. CES must have a PDF copy of the BC and the relevant associated documentation provided to us prior to attending any site construction inspection.

Specific designs / SED will likely require an Engineer to inspect that aspect of the work and confirm satisfactory completion.

During construction, site inspections also allow the timely provision of solutions and recommendations should any engineering problems arise.

Prior to works commencement, the Engineer should be contacted to confirm the construction methodologies, inspection, and testing frequency.

Upon satisfactory completion of all the inspected work aspects, CES would then be in a position to issue the PS4 as required by Council.

We require at least 48 hours' notice for construction inspections and fees will apply. An additional call out fee will apply if a requested inspection is undertaken at short notice.

To request a PS4 from CES: ensure all works have been satisfactorily completed and checked, and all documentation complete. Send an email and a PDF copy of the Building Consent to: jobs@coreeng.nz ensuring the subject line has: "PS4 request", followed by the "property address". A minimum fee of $200 + gst for PS4 processing, review and issue will apply.

7.4.2 Site Specific Inspection Requirements

Based on our ground investigation and site assessment, together with the information provided to CES at the time of report writing, we recommend the following Engineer inspections during construction as a minimum (where applicable):

- Site cut check;
- Compaction – Fill;
- Bored pile holes and drilling tailings;
- Footings;
- Reinforced Concrete Slab (pre-pour).

It should be noted that additional construction inspections will likely be required by the; Structural Engineer, BCA, etc. as part of the Building Consent compliance and other Quality Assurance processes.

7.5 EARTHWORKS

7.5.1 General

All earthworks should be undertaken in accordance with both the District and Regional rules.

In addition, we recommend that all earthworks activities be carried out in full accordance with the following technical publications, in particular:

i. Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region June 2016 Guideline Document 2016/005.

ii. Auckland Council; Building on small sites - Doing it right. BC5850.

iii. New Zealand Standard Code of Practice for Earthfill for Residential Development, NZS 4431:2022.

iv. Code of Practice for Urban Land Subdivision – NZS 4404:2010.

v. Any other relevant publications, including any of the above as superseded.

Some general recommendations are provided below, however where possible site-specific advice should be sought from an appropriately experienced Engineer.

We strongly recommend that earthworks are not undertaken during wet or extreme dry conditions, etc.

7.5.2 Site Specific Earthworks Requirements

We strongly recommend to the Designer of any site works that involve cutting or filling, that the proposal be discussed with a Chartered Professional Geotechnical Engineer or their Agent at an early design stage.

Preceding any site development works, the above Engineer or their Agent should be contacted to discuss the earthworks methodology, inspection requirements and testing frequency.

Subject to prior Engineer approval and advice, some of the excavated sub-soils *may* be suitable for utilisation as engineered fill. Alternatively, imported NZS 3604 compliant earthfill and / or hardfill should be utilised for all proposed fills.

On this site; All earthworks and foundation excavations should be inspected by a Chartered Professional Geotechnical Engineer or their Agent, who is familiar with this site and the contents of this suitability report to confirm ground conditions encountered are as anticipated or advise otherwise.

Where any filling on slopes is proposed, a Chartered Professional Geotechnical Engineer should be contacted prior for advice and approval in the first instance.

We recommend where filling is to be undertaken on slopes in excess of 15 degrees it should be limited to no greater than 0.5 m in depth unless an Engineer approved proprietary light weight fill such as Polyrock or equivalent is used.

Engineer approved horizontal benching should be undertaken across all sloping ground prior to the placement of any fill material.

Cuts and fills within 3 m of buildings / structures and in excess of 0.5 m should be suitably retained or battered at safe angles not exceeding 1V:3H unless approved otherwise by an Engineer.

Appropriate drainage should be installed as required, above and at the toe of all unretained cuts.

Any fill placement within 3.0 m of the building envelope will be subject to controlled filling operations, with fill placement inspection, testing and approval by an Engineer.

Measures must be taken to protect the exposed moist soils from drying out. Maintaining the natural moisture content of the subgrade soils may be achieved by fine spraying with water. An impermeable membrane or similar should be placed immediately above the subgrade after the excavation of the topsoil, etc.

Thereafter; All exposed soils should be re-grassed, planted, covered, or paved as soon as practicable to reduce the risk of erosion, scour, etc.

7.5.3 Site Clearance and Preparation

All deleterious material including any uncontrolled fill, vegetation, topsoil, etc. should be removed from all proposed foundation / construction areas.

Wherever any deposits of soft, or other unsuitable material is encountered at the surface cut / foundation level at the building site, it should in general, be undercut and replaced with Engineer approved compacted fill, or as otherwise recommended by the Engineer.

If cut and / or imported materials are stockpiled on site, stockpiles must be located well clear of the works and formed in an appropriate manner so that land stability and / or existing structures, etc. are not compromised.

7.5.4 Temporary and Permanent Earthworks

Particular care should be taken during the construction phase with respect to excavations to form the benches for building platforms, access driveways, retaining walls, etc.

The building site should be shaped to assist in stormwater run-off. Any excavation left open should be protected and or left in a state as to not pond water. Saturating site soils may result in a reduction of bearing capacities.

Depending on the ground conditions and groundwater levels, etc. at the time of construction, temporary support may be required to stabilise any cuts that are excavated. In addition, all cuts / exposed soils should be adequately protected to prevent inclement moisture changes to the exposed soils.

7.6 STORMWATER AND DRAINAGE

7.6.1 Stormwater and Surface Water Control

Stormwater run-off from the development should be appropriately controlled and managed on-site both in accordance with the New Zealand Building Code and as per Council requirements.

Stormwater flows must not be allowed to run onto or over site slopes, or to saturate the ground to adversely affect slope stability or foundation conditions, etc.

As a minimum, runoff from any higher ground should be intercepted by means of shallow surface drains or small bunds to ensure protection of the building platform from both saturation and erosion.

Water collected in interceptor drains should be diverted away from the building site to a disposal point as appropriate.

Concentrated stormwater flows from driveways, tanks, roofed and paved areas, etc. must be collected and carried in sealed pipes or drains and discharged in a controlled manner to a disposal point as appropriate.

After drainage construction, a programme of regular monitoring must be initiated to ensure the continued effectiveness of drainage function and if necessary, the instigation of maintenance required to ensure fully effective drainage, etc.

The Development Designer will need to confirm the drainage proposals compliance with all of the above requirements.

8 LIMITATIONS

This report has been prepared solely for the use of our Client (Peter Maloney) with respect to both; the particular brief and specific purpose provided to Core Engineering Solutions Ltd. (CES), and with regard to the specific project described herein only. No liability or any duty of care is acknowledged or accepted for the use of any part of this report in any other context or for any other purpose, or by any other person, other party or entity.

 This report does not address matters relating to the National Environmental Standard for Contaminated Sites.

The opinions, recommendations and comments given in this report are the result from the application of accepted industry methods of site investigation and are limited to technical engineering requirements. No guarantees are either expressed or implied.

Recommendations and opinions in this report are based on factual evidence that has been obtained solely from boreholes, shear vanes and Scala Penetrometer tests which by their nature only provide information about a relatively small volume of subsoils at that exact location. Consequently, there may be special conditions pertaining to this site which have not been disclosed by the investigation and which have not been taken into account in our report.

Inferences are made about the nature and continuity of subsoils away from and beyond the testing locations but cannot be guaranteed. Therefore, it must be appreciated that actual conditions could vary considerably from those assumed in the report model.

The soil descriptions detailed on the exploratory bore logs provided are based on the field descriptions of the soils encountered.

During the processes of site development and construction, an Engineer competent to judge whether the ground conditions encountered are compatible with the assumptions made in this report, should inspect the site. In all circumstances, if any variations in the ground conditions occur which differ from those described or are assumed to exist, then it is essential that the matter be referred to CES immediately to advise accordingly as any variation may affect the design parameters, etc. recommended in the report.

The soil performance behaviour outlined by this report is dependent on the construction activity and actions of the builder/contractor. Inappropriate actions before or during the construction phase may cause behaviour outside the limits provided in this report.

All future owners of this property should seek professional geotechnical advice to satisfy themselves as to its ongoing suitability for their intended use.

9 APPENDICES

Table of Contents

Plans and Mapping:
Site Plan FNDC Liquefaction Hazard Map
Field Investigation Data:
Borehole Logs & Scala Penetrometer Data
Client Supplied Information:
Client Site Plan
Notes, other Details and Guidance:
Expansive Soils 'Foundation Maintenance & Footing Performance' sheet BTF18: A Homeowner's Guide, published by CSIRO

INDICATIVE SITE PLAN

Approximate locations of soil tests.

Client :
Peter Maloney

Property:

Lot 3 DP 595923

319 Aucks Road, Russell

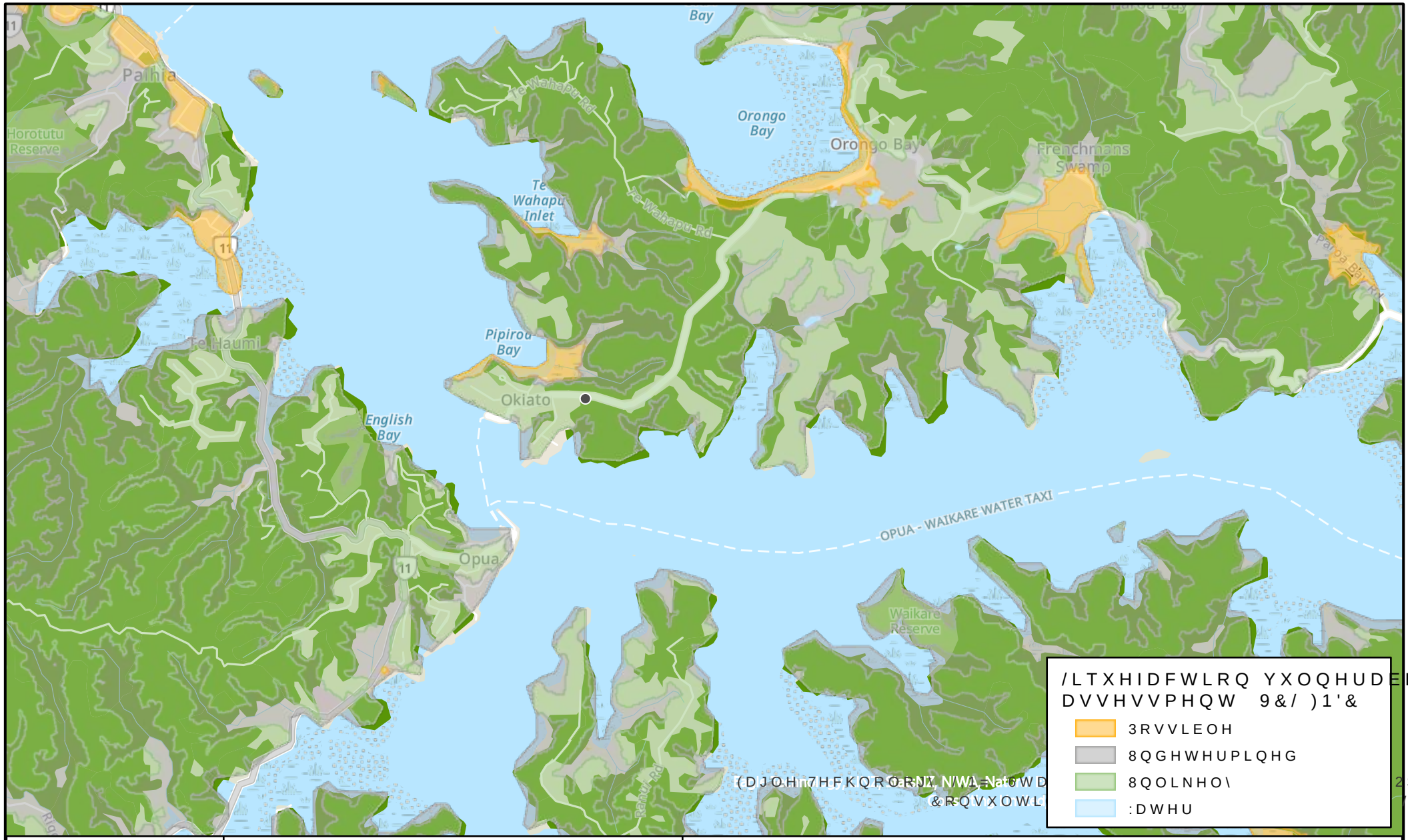
Core Engineering Solutions
7 Maunu Road
CBD
Whangarei
Ph: 09 553 3660
Email: jobs@coreeng.nz

Project No :
24-0222
Revision No :

Drawn :
JBS
Checked :
GJC / CA

Scale :
As shown @ A4
Date :
21/05/2024

Sheet :
1


Bay
Paihia
Horotutu Reserve
Te Wahapu Rd
Orongo Bay
Orongo Bay
Frenchmans Swamp
Te Wahapu Inlet
Te Wahapu Rd
Pipiroa Bay
Te Haumi
Okiato
English Bay
OPUA - WAIKARE WATER TAXI
Opua
Waikare Reserve
Randell Rd
/LTXHIDFWLRQ YXOQHUDELOL
DVVHVVPHQW 9&/)1'&
3RVVLEOH
8QGHWHUPLQHG
8QOLNHO\
:DWHU
&RQVXOWL
2SHQ
7DQG
)1'& /LTXHIDFWLRQ +D]DUG 0DS
NP
3URMHFWLRQ 1=70 'DWXP 1=*' 6FDOH
&UHDWHG

CORE ENGINEERING SOLUTIONS

INVESTIGATION LOG

HOLE NO.: BH01

CLIENT: Peter Maloney

PROJECT: New Shed - Lot 3 319 Aucks Road, Russell

JOB NO.: 240222

SITE LOCATION: Lot 3 - 319 Aucks Road, Russell

CO-ORDINATES:

START DATE: 10/05/2024

END DATE: 10/05/2024

LOGGED BY: JS

MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	GEOLOGY	DEPTH (m)	LEGEND	SCALA PENETROMETER (Blows / 100mm)	VANE SHEAR STRENGTH (kPa) Vane: SN2903	WATER
FILL (CLAY minor organic material), dark brown and dark grey, moist to wet, low plasticity, very stiff		0.0 – 0.6		3, 2, 1, 2, 3, 4, 6	UTP; 173 / 61	Groundwater Not Encountered
Silty CLAY, light brown, moist, low plasticity, very stiff	Waipapa Group Sandstone and siltstone (Waipapa terrane)	0.6 – 1.0		7, 9, 14, 18, 20	213+	
Clayey SILT, light brown mottled light grey, moist, low plasticity to friable, very stiff		1.0 – 3.0			213+	
1.4m: orangey brown mottled light grey, friable					213+	
2.0m: whitish grey mottled light brown					190 / 46	
2.8m: orangey brown mottled light grey					213+	
					213+	
Target Depth EOH: 3.00m		3.0 – 3.8		2, 4, 5, 6, 6, 6, 11, 10, 8	193 / 64	

PHOTO(S)

REMARKS

WATER

- Standing Water Level
- Out flow
- In flow

INVESTIGATION TYPE

- [x] Hand Auger
- [ ] Test Pit

CORE ENGINEERING SOLUTIONS

INVESTIGATION LOG

HOLE NO.: BH02

CLIENT: Peter Maloney

PROJECT: New Shed - Lot 3 319 Aucks Road, Russell

JOB NO.: 240222

SITE LOCATION: Lot 3 - 319 Aucks Road, Russell

CO-ORDINATES:

START DATE: 10/05/2024

END DATE: 10/05/2024

LOGGED BY: JS

MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	GEOLOGY	DEPTH (m)	LEGEND	SCALA PENETROMETER (Blows / 100mm)	VANE SHEAR STRENGTH (kPa) Vane: SN2903	WATER
FILL (Silty CLAY), dark brown, moist to dry, low plasticity, very stiff		0.0 – 0.6		1, 2, 4, 6, 6, 6	213+ -	
Silty CLAY, light brown, moist, low plasticity to friable, very stiff	Waipapa Group Sandstone and siltstone (Waipapa terrane)	0.6 – 1.8		4, 5, 5, 4, 5, 4, 6, 8, 10	213+ - ; 182 58 ; 213+ - ; 213+ -	Groundwater Not Encountered
Clayey SILT, light brown mottled grey, moist, friable, very stiff						
Too stiff to drill EOH: 1.80m		1.8 – 3.8		5, 3, 4, 4, 5, 8, 8, 7, 6, 7, 7	UTP -	

PHOTO(S)

REMARKS

WATER

- Standing Water Level
- Out flow
- In flow

INVESTIGATION TYPE

- [x] Hand Auger
- [ ] Test Pit

CORE ENGINEERING SOLUTIONS

INVESTIGATION LOG

HOLE NO.: SP03

CLIENT: Peter Maloney

PROJECT: New Shed - Lot 3 319 Aucks Road, Russell

JOB NO.: 240222

SITE LOCATION: Lot 3 - 319 Aucks Road, Russell

CO-ORDINATES:

START DATE: 10/05/2024

END DATE: 10/05/2024

LOGGED BY: JS

MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	GEOLOGY	DEPTH (m)	LEGEND	SCALA PENETROMETER (Blows / 100mm)	VANE SHEAR STRENGTH (kPa) Vane: Values	WATER
		0.0		6		Groundwater Not Encountered
		0.2		3		
				3		
		0.4		4		
				4		
		0.6		5		
				5		
		0.8		5		
				5		
		1.0		5		
				8		
		1.2		8		
				8		
		1.4		8		
				9		
		1.6				
		1.8				

Scala Penetrometer scale: 2 4 6 8 10 12 14 16 18

Vane Shear Strength scale: 50 100 150 200

PHOTO(S)

REMARKS

WATER

- Standing Water Level
- Out flow
- In flow

INVESTIGATION TYPE

- [x] Hand Auger
- [ ] Test Pit

CORE ENGINEERING SOLUTIONS

INVESTIGATION LOG

HOLE NO.: SP04

CLIENT: Peter Maloney

PROJECT: New Shed - Lot 3 319 Aucks Road, Russell

JOB NO.: 240222

SITE LOCATION: Lot 3 - 319 Aucks Road, Russell

CO-ORDINATES:

START DATE: 10/05/2024

END DATE: 10/05/2024

LOGGED BY: JS

MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	GEOLOGY	DEPTH (m)	LEGEND	SCALA PENETROMETER (Blows / 100mm)	VANE SHEAR STRENGTH (kPa) Vane: Values	WATER
		0.0		2		Groundwater Not Encountered
		0.2		3		
				3		
		0.4		4		
				4		
		0.6		4		
				5		
		0.8		5		
				4		
		1.0		5		
				6		
		1.2		5		
				5		
		1.4		10		
				12		
		1.6				
		1.8				

Scala Penetrometer scale: 2 4 6 8 10 12 14 16 18

Vane shear strength scale: 50 100 150 200

PHOTO(S)

REMARKS

WATER

- Standing Water Level
- Out flow
- In flow

INVESTIGATION TYPE

- [x] Hand Auger
- [ ] Test Pit


Aucks Rd
Aucks Rd
Aucks Rd
Aucks Rd
Proposed House site
40ft containers
Proposed Guest House
Retaining wall nominally 3m high at north end of cut level with top of hill area
Proposed shed 10m x 12.3m
Existing cut will be trimmed as car park area
Lidar contours do not replect cut and pad area under greenhouses
2 x Greenhouses now removed elsewhere on site

NOTES:

Expansive Soils

Expansive soils are soils which experience volume changes upon wetting and drying. Expansion and swelling appears to be the dominant factor under certain conditions with fine grained soil containing considerable amounts of clay. Expansion and swelling may cause distress which is often experienced in light buildings.

In many parts of New Zealand there is a significant hazard to foundations for light buildings including homes with concrete slab floors. The volumetric expansion and contraction can cause houses and other structures to heave or settle resulting in damage that is sometimes severe. Soil movement can occur in both directions (vertical and horizontal) at different rates which results in distress and subsequent damage to the structure.

The extent of the damage varies from relatively minor brick veneer cracking and internal cracking on wall corners with attendant door and windows jamming, through to extensive and severe cracking including cracking of driveways, sidewalks, etc.

Expansive soils such as clay, claystone, mudstone, argillaceous rocks and shale all contain clay minerals. These minerals are very sensitive to changes in humidity. When expansive clayey soils get wet, these minerals absorb water molecules and consequently expand. When dry they shrink, leaving large voids in the soil which result in a reduction in bearing capacity of the soil.

Apart from seasonal moisture changes (wet winters/ dry summer), other factors can influence soil moisture such as:

- Irrigation of garden close to the dwelling foundation.
- Site drainage close to the structure.
- Plantation of large trees close to building foundations on expansive soils. A wide range of tree and shrub species have high groundwater demands during summer months. The effects of such demands on expansive soils can be substantial and can lead to differential building settlements. Accordingly, it is good housekeeping measure to ensure that high water demand species (such as gum, willow, cypress, etc.) are not planted close to buildings.
- Plumbing leaks.
- Prevalent or initial moisture conditions at construction time.

It should be also noted that the shear strength of expansive soil also changes with variations in humidity, and a stability problem may arise.

Expansive soils cause major damage to light foundations and associated structures. Heavy foundations and structures can resist the swelling uplift pressure.

Damage is dependent on the amount of movement experienced by the foundation, the non-uniformity in movement, which are all related to percentage of clay in the expansive soil, variation in moisture content, type of foundation, building construction and materials, etc.

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
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites with only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which can experience moderate ground movement from moisture changes
H	Highly reactive clay sites, which can experience high ground movement from moisture changes
E	Extremely reactive sites, which can experience extreme ground movement from moisture changes
A to P	Filled sites
P	Sites which include soft soils, such as soft clay or silt or loose sands; landslip; mine subsidence; collapsing soils; soils subject to erosion; reactive sites subject to abnormal moisture conditions or sites which cannot be classified otherwise

Tree root growth

Trees and shrubs that are allowed to grow in the vicinity of footings can cause foundation soil movement in two ways:

- Roots that grow under footings may increase in cross-sectional size, exerting upward pressure on footings.
- Roots in the vicinity of footings will absorb much of the moisture in the foundation soil, causing shrinkage or subsidence.

Unevenness of Movement

The types of ground movement described above usually occur unevenly throughout the building's foundation soil. Settlement due to construction tends to be uneven because of:

- Differing compaction of foundation soil prior to construction.
- Differing moisture content of foundation soil prior to construction.

Movement due to non-construction causes is usually more uneven still. Erosion can undermine a footing that traverses the flow or can create the conditions for shear failure by eroding soil adjacent to a footing that runs in the same direction as the flow.

Saturation of clay foundation soil may occur where subfloor walls create a dam that makes water pond. It can also occur wherever there is a source of water near footings in clay soil. This leads to a severe reduction in the strength of the soil which may create local shear failure.

Seasonal swelling and shrinkage of clay soil affects the perimeter of the building first, then gradually spreads to the interior. The swelling process will usually begin at the uphill extreme of the building, or on the weather side where the land is flat. Swelling gradually reaches the interior soil as absorption continues. Shrinkage usually begins where the sun's heat is greatest.

Effects of Uneven Soil Movement on Structures

Erosion and saturation

Erosion removes the support from under footings, tending to create subsidence of the part of the structure under which it occurs. Brickwork walls will resist the stress created by this removal of support by bridging the gap or cantilevering until the bricks or the mortar bedding fail. Older masonry has little resistance. Evidence of failure varies according to circumstances and symptoms may include:

- Step cracking in the mortar beds in the body of the wall or above/below openings such as doors or windows.
- Vertical cracking in the bricks (usually but not necessarily in line with the vertical beds or 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.

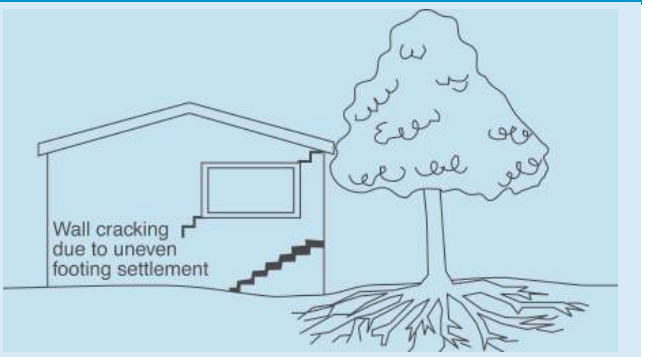
Seasonal swelling/shrinkage in clay

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.

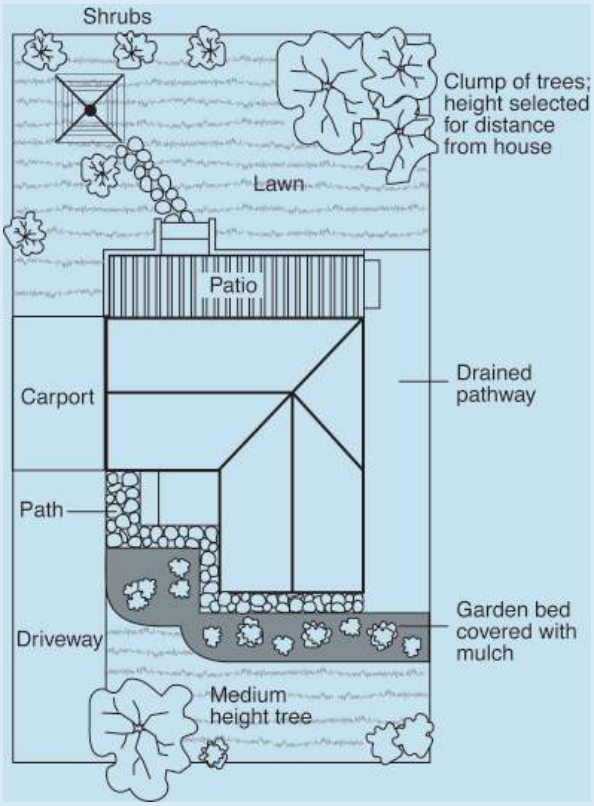
Protection of the building perimeter
It is essential to remember that the soil that affects footings extends well beyond the actual building line. Watering of garden plants, shrubs and trees causes some of the most serious water problems.

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

Gardens for a reactive site



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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Peter Maloney,
Lot 3 Ocean Vista Way,
Russell, 0272

29 October 2024 CES Ref: 24-0222

Dear Peter,

PLAN REVIEW OF PROPOSED FOUNDATIONS FOR NEW SHED,
AT:
LOT 3 DP 595923, OCEAN VISTA WAY, RUSSELL

1. INTRODUCTION

Core Engineering Solutions Ltd (CES) have previously undertaken a Geotechnical investigation and report (GR) for the above proposed development.

A key recommendation of the GR was for CES to be engaged to undertake a plan review of both the GR and finalised plans (when available), to confirm appropriateness and alignment with the recommendations provided therein, or otherwise.

Hence, the main purpose of this correspondence is to report on the CES plan review undertaken, this being to ensure that the GR recommendations have been correctly interpreted in the proposed foundation design.

CES have been instructed by the Client to undertake the above review, and comment thereon.

Accordingly, we have reviewed the plan documentation provided against the requirements of the GR as follows:

1.1 RELEVANT DOCUMENTATION

In preparing this letter report, we have also reviewed the following documentation:

Document Type	Reference
Geotechnical Report	Core Engineering Solutions Ltd. (23/05/2024). *Geotechnical Investigation and Assessment Report for a Proposed New Shed Build, at: Lot 3 DP 595923, 319 Aucks Road, Russell.* Job Reference: 24-0222.
Structural Design Drawings	Smart Steel Buildings. (01/07/2024). *Site: 319 Aucks Road, Okiato. Customer: Peter Maloney.* Project No. P926Q3.
Structural Calculations	HFC Group. (07/2024). *Project: Peter Maloney, 319 Aucks Road.* Project No. 23457.

This letter must be read in conjunction with the above documentation.

2. SITE CONSIDERATIONS

The property has general fall to the east of between approximately 0-40°. There is an approximately 20-25° southern facing slope to the south of the proposed shed site, and an approximate 20-40° eastern facing slope to the east of the site. The CES GR provided foundation recommendations, accordingly, including as follows.

3. SUMMARY: CES FOUNDATION REQUIREMENTS

3.1 GENERAL FOUNDATIONS / STRUCTURES

- The results of our investigation indicate that the soils onsite do not meet the NZS3604:2011 definition of 'Good Ground'. All foundations will require Specific Engineering Design (SED), and to account for Moderately Expansive soils (CLASS M) in accordance with AS2870:2011.

- Any proposed foundations / structures located on or within 5m of a slope at or exceeding 18° should be designed to resist up to 1.0m of lateral soil creep.

- Provided foundations are embedded in Engineer approved competent natural soils, an Uncorrected Ultimate Bearing Capacity of 300 kPa may then be assumed.

3.2 HFC: PROPOSED FOUNDATIONS

The proposed design of these engineering elements is summarised and tabulated as below:

Engineering	Comments
Shed foundations	100mm reinforced concrete on compacted hardfill. Non-load bearing reinforced concrete perimeter footing embedded 450mm below ground level. Isolated pad footings supporting load-bearing portals. Reinforced concrete piles embedded 2m bgl along eastern edge of building to resist potential soil creep in this area due to nearby slope.

Table: Summary – HFC Structures Ltd: Engineering Elements

Further to the above, correspondence between CES and HFC confirmed that all foundation elements were designed for Class M expansivity as per AS2870.

4. CONCLUSION

CES have been engaged to undertake a plan review of the proposed foundations for the new shed at Lot 3 Ocean Vista Way, Russell, as provided, and in conclusion, confirm alignment with the recommendations of the CES Geotechnical Report.

5. RECOMMENDATIONS

In addition to the requirements of the HFC Structures Ltd. design, etc. documentation, all the recommendations provided in the CES GR should be followed and correctly implemented.

In addition to the above, CES have been engaged by the Client to undertake the following Engineer inspections during construction as a minimum:

- Site cut check;
- Compaction - Fill
- Footing Excavations / bored pile holes and tailings;
- Reinforced concrete slab pre-pour

It should be noted that additional construction inspections will likely be required by the; Structural Engineer, BCA, etc. as part of the Building Consent compliance and other Quality Assurance processes.

If you have any questions concerning the above, please contact our Whangarei office directly.

Prepared by:

Cole Anderson
Chartered Professional Engineer (Geotechnical and Structural)
CPEng, CMEngNZ, BE (Hons)

WATGUNLOW Architects Ltd.

Architects Design Statement

This statement is prepared solely for The Far North District Council in the assessment of a resource consent application for the following:

Proposal: **A new shed, water tanks and retaining wall**
Address: **Lot 3 Ocean Vista Way, Okaito**
Owners: **Peter and Leanne Maloney**
Author: **Hamish Gunns of WATGUNLOW Architects Ltd** NZRAB 3160

We have been engaged by the owners to review the proposal and comment on the interpretation and adherence to the approved design guidelines: Landscape and Visual Effects Assessment (by Hawthorn Landscape Architects) dated 22nd April 2022

The documents presented for our review:

1. The general arrangement drawing set ; Maloney - Shed - Lot 3 DP595923 - Dwgs 1 thru 21 - Neighbours signed 18.11.2024.pdf (21 pages)
2. The shed construction drawing set ; 23457 - Peter Maloney Shed - Stamped Drawings - 2024-07-12.pdf (22 pages)
3. Appendix 1 - Location Plan
4. Appendix 3 - On site Viewpoint photos Lot 3
5. Appendix 4 - Off site Viewpoint photos Lot 3
6. Appendix 5 - Landscape Plan
7. Appendix 6 - Landscape plan Chalets

Our assessment is limited to that of section 8.1; Building Design Guidelines as it pertains to an architectural assessment of the built proposal only. Our comments (in black) follow the guidelines (in blue).

8.1 Proposed Shed Building Design

A set of building design guidelines are referenced for future built development upon the lots to assist with enabling future development to be set into the landscape with the least amount of visual intrusion therefore minimising potential visual amenity effects.

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The building design guidelines controls aspects such as building height, colours, reflectivity, design style, form and scale.

Vegetation Clearance

The existing area of vegetation clearance on Lot 3 is as shown on the Landscape Plan contained in Appendix 5.

Not considered in this assessment.

Building Form

Building style, colour and form play a significant role in determining how well a building fits into the landscape. Buildings of a similar size, scale and mass to each other and painted recessively appear to belong and are less visually obtrusive.

Similarly, buildings that reflect regional architectural styles appear to belong more readily than 'imported styles'.

Various building styles are possible; however, the following general guidelines will assist in diminishing the visual impact of structures in the landscape:

1. Building form shall flow with and follow the topography of the site, The shed is to be sited in a modest cut in the adjacent hillside to reduce the visible height and contrast of the form. The slope of the gabled roof and the lean-to porch to the south are both angled to reflect the slope and angle of the surrounding topography. 2 above ground water tanks have been positioned to the south of the shed to continue the collective form and to minimise the visual impact. A retaining wall to the north is largely concealed behind the shed and a new retaining wall to the parking area is mostly below 1m in height and will be well concealed by the proposed planting.

2. The form of larger buildings shall be broken up or indented to provide visual interest and shadows. The proposed shed is a simple rectangular floor plan topped with a symmetrical gable roof. A lean-to porch has been added to the south at mid height of the outer wall to break up the height and shade the base of the shed. Additionally projecting shrouds have been added to windows to the west and south. These aluminium shrouds are to be colour matched to the cladding and help provide the desired visual interest, break up the elevations and provide shading across the window openings of the most visible portions of the proposal.

3. Stepping a building down a slope rather than constructing one single tall downhill façade shall be required. From the the limited locations along Ocean Vista Way where the shed will be visible the form of the shed will be broken up by being cut into the slope to the north and the porch to the south side. The porch extends from roughly midpoint of the exterior walls to create a stepped profiled rather than a tall vertical face.

4. The maximum building height on Lots 3 – 10 shall be 8m above existing ground level. With a ridge height of 5.7m above the reduced ground level the shed complies. The maximum height above the existing ground level is closer to 4m.

Building Materials and Finishes

The visual effects of the building sites will be lessened if recessive colours from the A and B Group of the BS 5252 colour chart are used.

The light reflectance values for the exterior roof colours shall not exceed 30% and the exterior walls shall not exceed 40%.

The proposed shed roof, cladding and spouting are to be finished in Colorsteel Ironsand. These colours are distinct from the BS5252 paint finishes but very similar to Resene Baltic Sea (A Group LRV 10). Ironsand has a light reflectance value (LRV) of 8%.

It is recommended to use natural and textural materials, and make use of architectural features such as verandas, pergolas and large eves to create shadow. These will all cast shadows on windows and ranch sliders thus limiting the reflectivity of the facades of the house.

The proposed shed is to be clad in a dark grey trapezoidal profiled steel. The recessive colour will help the form blend into the shadow tones of the surrounding bush while the deep profile of the cladding brings further shading and texture to the facade and reduces reflection. As above the most visible windows have been surrounded with projecting shrouds to further increase shading and a verandah has been added to the southern facade to shade the lower windows.

Ancillary Structures

All ancillary structures which are separate from the primary residence (such as guest quarters, garages, storage sheds) shall be designed to complement and integrate with the primary residence, especially in colour.

As the primary residence is yet to be proposed these works have been assessed on their own merits according to these rules. The primary residence will be assessed in a similar manner in due course.

Earthworks

Earthworks shall be graded gradually into adjacent contours. Earthworks that create sharp and large batters that are difficult to revegetate should be avoided.

Earthworks surrounding the proposal have been retained rather than battered or contoured to allow for a maximum area of planting to remain and avoid steep areas that are difficult to plant and may become unstable over time.

The plans note that several areas around the proposal including to the downhill edge of the carpark retaining wall are to be replanted with natives and hedging for screening purposes. This screening will help the proposal blend into the landscape over time.

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Water tanks

Water tanks, if not placed underground, shall be designed to integrate with the overall design of the main structures. Tanks that are placed above ground shall be screened by the landscape amenity plantings.

As noted on drawing 4 the two above ground 30kl tanks are to be screened to the south and west with native planting. The tanks themselves are specified as dark green 'karaka' colour to help blend in with this planting. A planting schedule would be useful t to ensure that appropriate plants are installed and maintained in the limited area to the boundary.

Driveways and Parking Areas

Parking areas shall be integrated with the overall design of the residence and landscaping.

If site contours would otherwise require extensive excavation to form parking spaces, vehicle and or boat storage should be separated from the house. Driveways should follow the natural contours of the land and avoid sharp angles or long straight sections.

Driveways shall be designed to suit rural character and formed with dark grey concrete oxide, or use chip seal or loose road metal. The use of swales to provide drainage should be encouraged.

The proposed parking area is at a higher level than Ocean Vista Way and once the leading edge is planted will be well screened from view.

The 35m long driveway from the main access road follows the contour of the land to help further disguise the proposal and the parking area beyond.

The main parking area is to be established on a flat contour with little earthworks required.

Both driveway and parking area are to be finished in a loose gravel with a swale controlling the stormwater to the downslope edge.

Conclusion

It is our conclusion that the proposed ancillary shed structure has been sensitively designed in close adherence to the building design guidelines of the approved Landscape and Visual Effects Assessment. In accommodating the above controls the proposal will effectively mitigate any effect of the development and the maintain the existing amenity and natural character of the site.

Hamish Gunns
B.Arch (Hons) Registered Architect
WATGUNLOW ARCHITECTS LTD