NOTICE OF PROPOSED DEVELOPMENT

Notice is hereby given that an application has been made for planning approval for the following development:

SITE: 88 Tamarix Road, Primrose Sands

PROPOSED DEVELOPMENT:
DWELLING & OUTBUILDING

The relevant plans and documents can be inspected at the Council Offices at 47 Cole Street, Sorell during normal office hours, or the plans may be viewed on Council's website at www.sorell.tas.gov.au until **Monday 23rd December 2024.**

Any person may make representation in relation to the proposal by letter or electronic mail (sorell.council@sorell.tas.gov.au) addressed to the General Manager. Representations must be received no later than **Monday 23rd December 2024.**

APPLICANT: **J D Pullen**

APPLICATION NO: **DA 2024 / 251 - 1**
DATE: **05 December 2024**

Part B: Please note that Part B of this form is publicly exhibited.

Full description of Proposal:	*Use:* Residential *Development:* Single story 3 bedroom weatherboard residence with skillion Garage/shed in back corner *Large or complex proposals should be described in a letter or planning report.*
Design and construction cost of proposal:	$ $300,000 estimated

Is all, or some the work already constructed:	No: ☑ Yes: ☐

Location of proposed works:	Street address: 88 Tamarix Road Suburb: Primrose Sands Postcode: 7173 Certificate of Title(s) Volume: 59590 Folio: 8

Current Use of Site	Vacant

Current Owner/s:	Name(s) Jake Pullen

Is the Property on the Tasmanian Heritage Register?	No: ☑ Yes: ☐	*If yes, please provide written advice from Heritage Tasmania*
Is the proposal to be carried out in more than one stage?	No: ☑ Yes: ☐	*If yes, please clearly describe in plans*
Have any potentially contaminating uses been undertaken on the site?	No: ☑ Yes: ☐	*If yes, please complete the Additional Information for Non-Residential Use*
Is any vegetation proposed to be removed?	No: ☑ Yes: ☐	*If yes, please ensure plans clearly show area to be impacted*
Does the proposal involve land administered or owned by either the Crown or Council?	No: ☑ Yes: ☐	*If yes, please complete the Council or Crown land section on page 3*

If a new or upgraded vehicular crossing is required from Council to the front boundary please complete the Vehicular Crossing (and Associated Works) application form
https://www.sorell.tas.gov.au/services/engineering/

Part B continued: Please note that Part B of this form is publicly exhibited

Declarations and acknowledgements
• I/we confirm that the application does not contradict any easement, covenant or restriction specified in the Certificate of Title, Schedule of Easements or Part 5 Agreement for the land. • I/we consent to Council employees or consultants entering the site and have arranged permission and/or access for Council's representatives to enter the land at any time during normal business hours. • I/we authorise the provision of a copy of any documents relating to this application to any person for the purposes of assessment or public consultation and have permission of the copyright owner for such copies. • I/we declare that, in accordance with s52(1) of the *Land Use Planning and Approvals Act 1993*, that I have notified the owner(s) of the intention to make this application. • I/we declare that the information in this application is true and correct. *Details of how the Council manages personal information and how you can request access or corrections to it is outlined in Council's Privacy Policy available on the Council website.*
• I/we acknowledge that the documentation submitted in support of my application will become a public record held by Council and may be reproduced by Council in both electronic and hard copy format in order to facilitate the assessment process, for display purposes during public exhibition, and to fulfil its statutory obligations. I further acknowledge that following determination of my application, Council will store documentation relating to my application in electronic format only.
• Where the General Manager's consent is also required under s.14 of the *Urban Drainage Act 2013*, by making this application I/we also apply for that consent.

Applicant Signature:	Signature: J Pullen Date: 24/09/2024

Crown or General Manager Land Owner Consent
If the land that is the subject of this application is owned or administered by either the Crown or Sorell Council, the consent of the relevant Minister or the Council General Manager whichever is applicable, must be included here. This consent should be completed and signed by either the General Manager, the Minister, or a delegate (as specified in s52 (1D-1G) of the *Land Use Planning and Approvals Act 1993*). Please note: • If General Manager consent if required, please first complete the General Manager consent application form available on our website www.sorell.tas.gov.au • If the application involves Crown land you will also need a letter of consent. • Any consent is for the purposes of making this application only and is not consent to undertaken work or take any other action with respect to the proposed use or development.
I _____ being responsible for the administration of land at _____ declare that I have given permission for the making of this application for _____

Signature of General Manager, Minister or Delegate:	Signature: ..... Date: .....

GEOTECH 23-091

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

0417 960 769
peter@rocksolidgeotechnics.com.au

3/8/2023

Geotechnical Assessment / Classification for Proposed Residential Development

88 Tamarix Road, Primrose Sands.

CLIENT: Jake Pullen 0403454274 jakepullen1405@gmail.com

CONTENTS

SUMMARY

A residential development is proposed by Jake Pullen at 88 Tamarix Road, Primrose Sands (Figure 1). The site is underlain by deep sand.

The site is classified as Class 'P' in accordance with AS2870. The Class 'P' classification is due to the potential for the proposed house site to be inundated during flood events, plus the close proximity of the residence to the onsite wastewater Land Application Area. Foundations on sites with a Class 'P' classification should be designed by a structural engineer, experienced in the design of residential footings. The ground floor level of the residence will need to be above the potential 1 in 100-year flood level.

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

• Terrain Category Classification	TC2.5	Terrain with a few obstructions
• Shielding Classification	PS	Partial Shielding
• Topographic Classification	T1	
• Wind Load Classification	N2	

INVESTIGATION

The Tasmanian Geological Survey 1:50000 Geological Atlas 'Sorell' indicates that the site is underlain by Quaternary aged windblown sands. The Sorell Council's 1 in 100-year Inundation Mapping (Figure 2) shows the northern portion of the block may be subject to inundation of up to 0.75m depth.

A site investigation was completed on Wednesday 2 August, 2023. This included the augering of four test holes to assess the site for foundation conditions and onsite wastewater suitability (4WD mounted SAMPLA25 mechanical auger with 100mm diameter solid flight augers). The locations of the holes are marked on Figure 1.

The 561m^2 vacant block lies on the southern side of Tamarix Road (Plate 1). The site is covered in grass and is devoid of trees. The block slopes to the north at between 2 and 4 degrees. An open spoon drain, and culverted access are present to the immediate north of the block. The wetlands to the immediate north of Tamarix Road were full at the time of the assessment.

The profiles encountered in the Test Holes #s 1 & 2 consisted of:

0.00 – 0.20m	SAND: fine grained, grey, rootlets – TOPSOIL
0.20 – 2.10m	SAND: fine grained, dark grey, dry to 0.45m, then moist to 1m then wet
2.10m+	Holes terminated at required depths – 2.10m.

Groundwater was encountered in both test holes. The Standing Water Levels were measured to be 1.10m.

Plate 1 – Looking to the south at the proposed development site from Tamarix Road.

CONDITIONS OF INVESTIGATION

This report remains the property of Rock Solid Geotechnics Pty. Ltd. (RSG). It must not be reproduced in part or full, or used for any other purpose without written permission of this company. The investigations have been conducted, & the report prepared, for the sole use of the client or agent mentioned on the cover page. Where the report is to be used for any other purpose RSG accepts no responsibility for such other use. The Forms 55 and 35 are not transferable to another body without consultation (reissue) from RSG. The information in this report is current and suitable for use for a period of two years from the date of production of the report, after which time it cannot be used for Building or Development Application.

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

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

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

Due to the possibility of variation in subsurface conditions & materials, the characteristics of materials can vary between sample & observation sites. RSG takes no responsibility for changed or unexpected variations in ground conditions that may affect any aspect of the project. The classifications in this report are based on samples taken from specific sites. The information is not transferable to different sites, no matter how close (ie. if the development site is moved from the original assessment site an additional assessment will be required).

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

Investigations are conducted to standards outlined in Australian Standards:

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

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

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

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

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

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

PETER HOFTO

ROCK SOLID GEOTECHNICS PTY LTD

LOCALITY MAP
88 TAMARIX ROAD
PRIMROSE SANDS

GDA94 MGA55 : 553895E, 5251766N 1:425 **Disclaimer and Copyright Notice**

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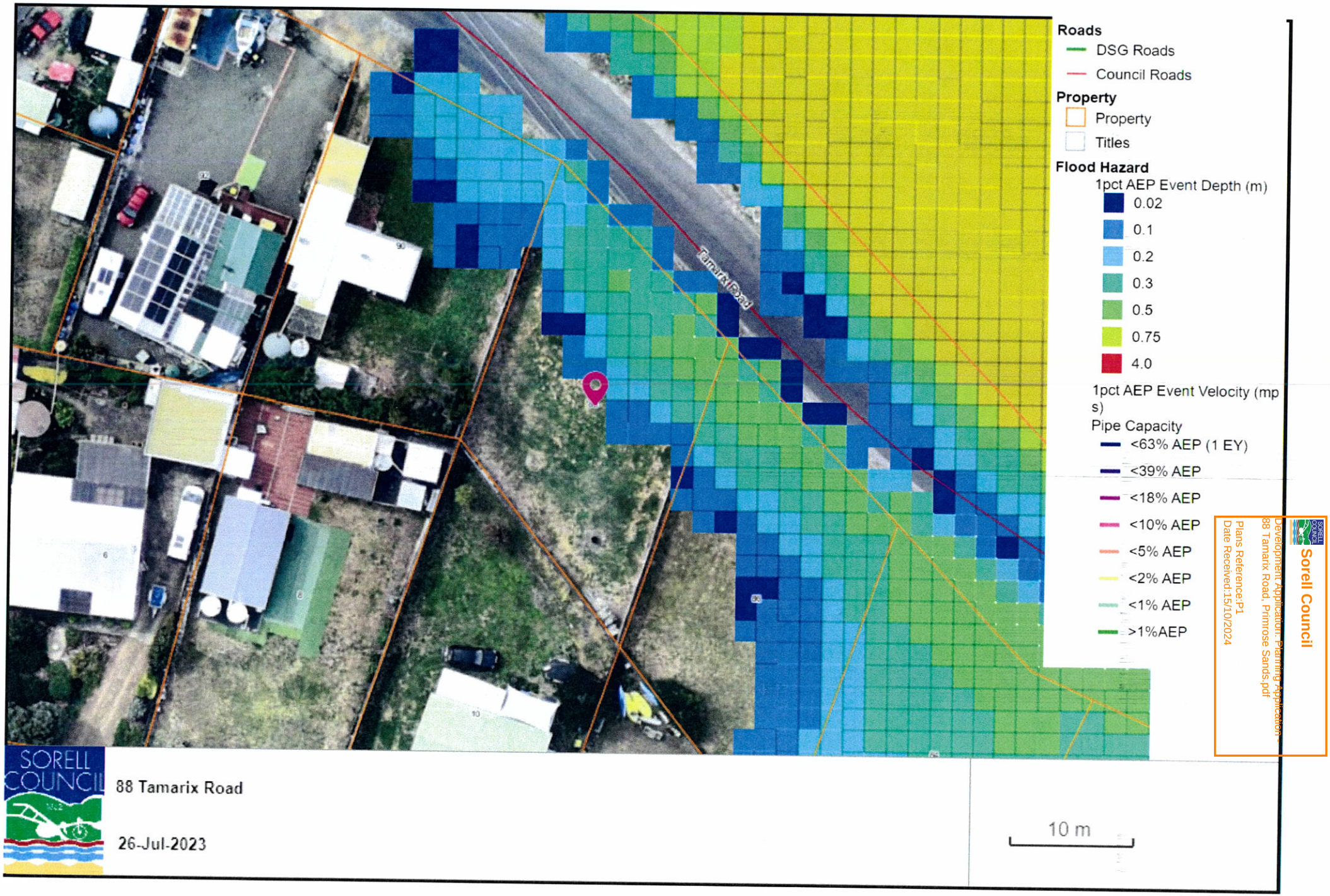

Roads
DSG Roads
Council Roads
Property
Property
Titles
Flood Hazard
1pct AEP Event Depth (m)
0.02
0.1
0.2
0.3
0.5
0.75
4.0
1pct AEP Event Velocity (mps)
Pipe Capacity
<63% AEP (1 EY)
<39% AEP
<18% AEP
<10% AEP
<5% AEP
<2% AEP
<1% AEP
>1%AEP
Tamarix Road
SORELL COUNCIL
88 Tamarix Road
26-Jul-2023
10 m
Sorell Council
Development Application: Planning Application - 88 Tamarix Road, Primrose Sands.pdf
Plans Reference:P1
Date Received:15/10/2024

APPENDIX 1

CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

Form **55**

To: Jake Pullen *Owner /Agent*

jakepullen1405@gmail.com *Address*

Qualified person details:

Qualified person: Peter Hofto – Rock Solid Geotechnics Pty Ltd

Address: 163 Orielton Road Phone No: 0417960769

Orielton 7172 Fax No:

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

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

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

Details of work:

Address: 88 Tamarix Road, Primrose Sands Lot No:

Certificate of title No:

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

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

Certificate details:

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

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

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

or

a building, temporary structure or plumbing installation:

In issuing this certificate the following matters are relevant –

Documents:

Relevant calculations:

References: AS2870

I certify the matters described in this certificate.

	Signed:	*Certificate No:*	*Date:*
Qualified person:		GEOTECH 23-091	3/8/2023

Foundation Maintenance and Footing Performance:
A Homeowner's Guide

CSIRO

BTF 18 replaces Information Sheet 10/91

Buildings can and often do move. This movement can be up, down, lateral or rotational. The fundamental cause of movement in buildings can usually be related to one or more problems in the foundation soil. It is important for the homeowner to identify the soil type in order to ascertain the measures that should be put in place in order to ensure that problems in the foundation soil can be prevented, thus protecting against building movement.

This Building Technology File is designed to identify causes of soil-related building movement, and to suggest methods of prevention of resultant cracking in buildings.

Soil Types

The types of soils usually present under the topsoil in land zoned for residential buildings can be split into two approximate groups – granular and clay. Quite often, foundation soil is a mixture of both types. The general problems associated with soils having granular content are usually caused by erosion. Clay soils are subject to saturation and swell/shrink problems.

Classifications for a given area can generally be obtained by application to the local authority, but these are sometimes unreliable and if there is doubt, a geotechnical report should be commissioned. As most buildings suffering movement problems are founded on clay soils, there is an emphasis on classification of soils according to the amount of swell and shrinkage they experience with variations of water content. The table below is Table 2.1 from AS 2870, the Residential Slab and Footing Code.

Causes of Movement

Settlement due to construction

There are two types of settlement that occur as a result of construction:

- Immediate settlement occurs when a building is first placed on its foundation soil, as a result of compaction of the soil under the weight of the structure. The cohesive quality of clay soil mitigates against this, but granular (particularly sandy) soil is susceptible.
- Consolidation settlement is a feature of clay soil and may take place because of the expulsion of moisture from the soil or because of the soil's lack of resistance to local compressive or shear stresses. This will usually take place during the first few months after construction, but has been known to take many years in exceptional cases.

These problems are the province of the builder and should be taken into consideration as part of the preparation of the site for construction. Building Technology File 19 (BTF 19) deals with these problems.

Erosion

All soils are prone to erosion, but sandy soil is particularly susceptible to being washed away. Even clay with a sand component of say 10% or more can suffer from erosion.

Saturation

This is particularly a problem in clay soils. Saturation creates a bog-like suspension of the soil that causes it to lose virtually all of its bearing capacity. To a lesser degree, sand is affected by saturation because saturated sand may undergo a reduction in volume – particularly imported sand fill for bedding and blinding layers. However, this usually occurs as immediate settlement and should normally be the province of the builder.

Seasonal swelling and shrinkage of soil

All clays react to the presence of water by slowly absorbing it, making the soil increase in volume (see table below). The degree of increase varies considerably between different clays, as does the degree of decrease during the subsequent drying out caused by fair weather periods. Because of the low absorption and expulsion rate, this phenomenon will not usually be noticeable unless there are prolonged rainy or dry periods, usually of weeks or months, depending on the land and soil characteristics.

The swelling of soil creates an upward force on the footings of the building, and shrinkage creates subsidence that takes away the support needed by the footing to retain equilibrium.

Shear failure

This phenomenon occurs when the foundation soil does not have sufficient strength to support the weight of the footing. There are two major post-construction causes:

- Significant load increase.
- Reduction of lateral support of the soil under the footing due to erosion or excavation.
- In clay soil, shear failure can be caused by saturation of the soil adjacent to or under the footing.

GENERAL DEFINITIONS OF SITE CLASSES

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

Tree root growth

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

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

Unevenness of Movement

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

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

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

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

Seasonal swelling and shrinkage of clay soil affects the perimeter of the building first, then gradually 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).

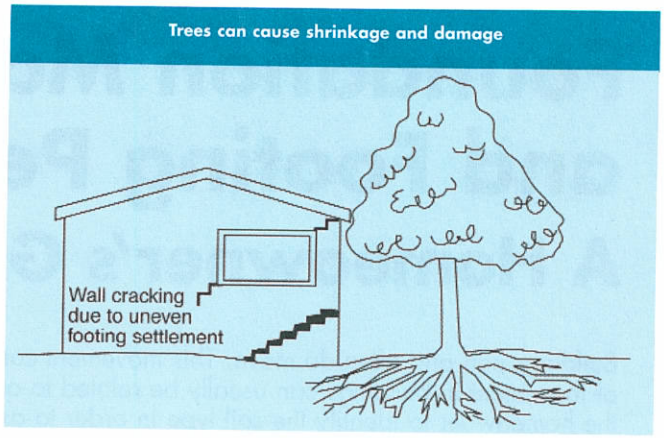
Isolated piers affected by erosion or saturation of foundations will eventually lose contact with the bearers they support and may tilt or fall over. The floors that have lost this support will become bouncy, sometimes rattling ornaments etc.

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.



As the weather pattern changes and the soil begins to dry out, the external footings will be first affected, beginning with the locations where the sun's effect is strongest. This has the effect of lowering the external footings. The doming is accentuated and cracking reduces or disappears where it occurred because of dishing, but other cracks open up. The roof lines may become convex.

Doming and dishing are also affected by weather in other ways. In areas where warm, wet summers and cooler dry winters prevail, water migration tends to be toward the interior and doming will be accentuated, whereas where summers are dry and winters are cold and wet, migration tends to be toward the exterior and the underlying propensity is toward dishing.

Movement caused by tree roots

In general, growing roots will exert an upward pressure on footings, whereas soil subject to drying because of tree or shrub roots will tend to remove support from under footings by inducing shrinkage.

Complications caused by the structure itself

Most forces that the soil causes to be exerted on structures are vertical – i.e. either up or down. However, because these forces are seldom spread evenly around the footings, and because the building resists uneven movement because of its rigidity, forces are exerted from one part of the building to another. The net result of all these forces is usually rotational. This resultant force often complicates the diagnosis because the visible symptoms do not simply reflect the original cause. A common symptom is binding of doors on the vertical member of the frame.

Effects on full masonry structures

Brickwork will resist cracking where it can. It will attempt to span areas that lose support because of subsided foundations or raised points. It is therefore usual to see cracking at weak points, such as openings for windows or doors.

In the event of construction settlement, cracking will usually remain unchanged after the process of settlement has ceased.

With local shear or erosion, cracking will usually continue to develop until the original cause has been remedied, or until the subsidence has completely neutralised the affected portion of footing and the structure has stabilised on other footings that remain effective.

In the case of swell/shrink effects, the brickwork will in some cases return to its original position after completion of a cycle, however it is more likely that the rotational effect will not be exactly reversed, and it is also usual that brickwork will settle in its new position and will resist the forces trying to return it to its original position. This means that in a case where swelling takes place after construction and cracking occurs, the cracking is likely to at least partly remain after the shrink segment of the cycle is complete. Thus, each time the cycle is repeated, the likelihood is that the cracking will become wider until the sections of brickwork become virtually independent.

With repeated cycles, once the cracking is established, if there is no other complication, it is normal for the incidence of cracking to stabilise, as the building has the articulation it needs to cope with the problem. This is by no means always the case, however, and monitoring of cracks in walls and floors should always be treated seriously.

Upheaval caused by growth of tree roots under footings is not a simple vertical shear stress. There is a tendency for the root to also exert lateral forces that attempt to separate sections of brickwork after initial cracking has occurred.

The normal structural arrangement is that the inner leaf of brickwork in the external walls and at least some of the internal walls (depending on the roof type) comprise the load-bearing structure on which any upper floors, ceilings and the roof are supported. In these cases, it is internally visible cracking that should be the main focus of attention, however there are a few examples of dwellings whose external leaf of masonry plays some supporting role, so this should be checked if there is any doubt. In any case, externally visible cracking is important as a guide to stresses on the structure generally, and it should also be remembered that the external walls must be capable of supporting themselves.

Effects on framed structures

Timber or steel framed buildings are less likely to exhibit cracking due to swell/shrink than masonry buildings because of their flexibility. Also, the doming/dishing effects tend to be lower because of the lighter weight of walls. The main risks to framed buildings are encountered because of the isolated pier footings used under walls. Where erosion or saturation cause a footing to fall away, this can double the span which a wall must bridge. This additional stress can create cracking in wall linings, particularly where there is a weak point in the structure caused by a door or window opening. It is, however, unlikely that framed structures will be so stressed as to suffer serious damage without first exhibiting some or all of the above symptoms for a considerable period. The same warning period should apply in the case of upheaval. It should be noted, however, that where framed buildings are supported by strip footings there is only one leaf of brickwork and therefore the externally visible walls are the supporting structure for the building. In this case, the subfloor masonry walls can be expected to behave as full brickwork walls.

Effects on brick veneer structures

Because the load-bearing structure of a brick veneer building is the frame that makes up the interior leaf of the external walls plus perhaps the internal walls, depending on the type of roof, the building can be expected to behave as a framed structure, except that the external masonry will behave in a similar way to the external leaf of a full masonry structure.

Water Service and Drainage

Where a water service pipe, a sewer or stormwater drainage pipe is in the vicinity of a building, a water leak can cause erosion, swelling or saturation of susceptible soil. Even a minuscule leak can be enough to saturate a clay foundation. A leaking tap near a building can have the same effect. In addition, trenches containing pipes can become watercourses even though backfilled, particularly where broken rubble is used as fill. Water that runs along these trenches can be responsible for serious erosion, interstrata seepage into subfloor areas and saturation.

Pipe leakage and trench water flows also encourage tree and shrub roots to the source of water, complicating and exacerbating the problem.
Poor roof plumbing can result in large volumes of rainwater being concentrated in a small area of soil:

- Incorrect falls in roof guttering may result in overflows, as may gutters blocked with leaves etc.
- Corroded guttering or downpipes can spill water to ground.
- Downpipes not positively connected to a proper stormwater collection system will direct a concentration of water to soil that is directly adjacent to footings, sometimes causing large-scale problems such as erosion, saturation and migration of water under the building.

Seriousness of Cracking

In general, most cracking found in masonry walls is a cosmetic nuisance only and can be kept in repair or even ignored. The table below is a reproduction of Table C1 of AS 2870.

AS 2870 also publishes figures relating to cracking in concrete floors, however because wall cracking will usually reach the critical point significantly earlier than cracking in slabs, this table is not reproduced here.

Prevention/Cure

Plumbing

Where building movement is caused by water service, roof plumbing, sewer or stormwater failure, the remedy is to repair the problem. It is prudent, however, to consider also rerouting pipes away from the building where possible, and relocating taps to positions where any leakage will not direct water to the building vicinity. Even where gully traps are present, there is sometimes sufficient spill to create erosion or saturation, particularly in modern installations using smaller diameter PVC fixtures. Indeed, some gully traps are not situated directly under the taps that are installed to charge them, with the result that water from the tap may enter the backfilled trench that houses the sewer piping. If the trench has been poorly backfilled, the water will either pond or flow along the bottom of the trench. As these trenches usually run alongside the footings and can be at a similar depth, it is not hard to see how any water that is thus directed into a trench can easily affect the foundation's ability to support footings or even gain entry to the subfloor area.

Ground drainage

In all soils there is the capacity for water to travel on the surface and below it. Surface water flows can be established by inspection during and after heavy or prolonged rain. If necessary, a grated drain system connected to the stormwater collection system is usually an easy solution.

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

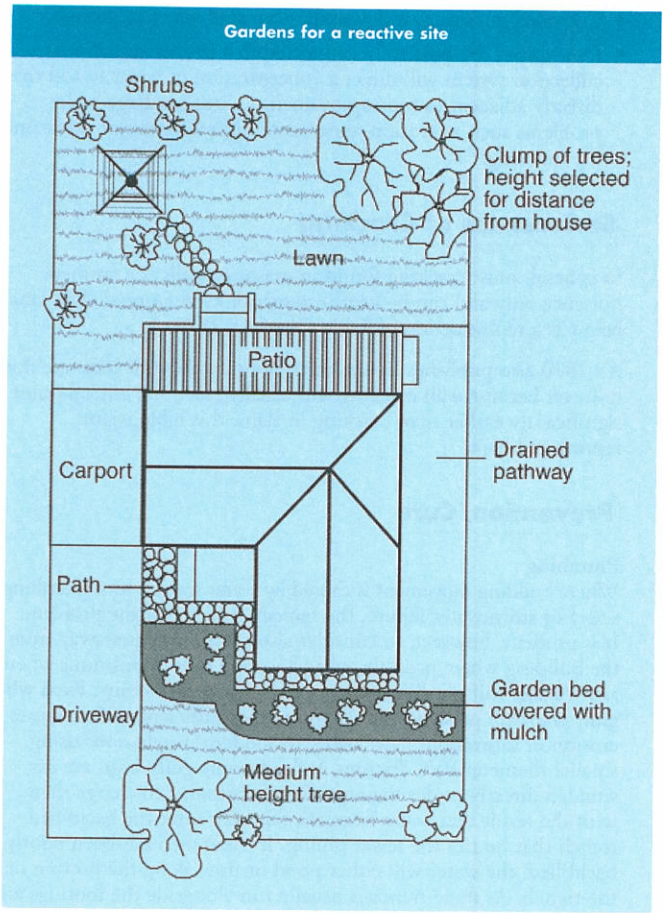
Protection of the building perimeter

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

For this reason, particularly where problems exist or are likely to occur, it is recommended that an apron of paving be installed around as much of the building perimeter as necessary. This paving

CLASSIFICATION OF DAMAGE WITH REFERENCE TO WALLS

Description of typical damage and required repair	Approximate crack width limit (see Note 3)	Damage category
Hairline cracks	<0.1 mm	0
Fine cracks which do not need repair	<1 mm	1
Cracks noticeable but easily filled. Doors and windows stick slightly	<5 mm	2
Cracks can be repaired and possibly a small amount of wall will need to be replaced. Doors and windows stick. Service pipes can fracture. Weathertightness often impaired	5–15 mm (or a number of cracks 3 mm or more in one group)	3
Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Window and door frames distort. Walls lean or bulge noticeably, some loss of bearing in beams. Service pipes disrupted	15–25 mm but also depend on number of cracks	4



should extend outwards a minimum of 900 mm (more in highly reactive soil) and should have a minimum fall away from the building of 1:60. The finished paving should be no less than 100 mm below brick vent bases.

It is prudent to relocate drainage pipes away from this paving, if possible, to avoid complications from future leakage. If this is not practical, earthenware pipes should be replaced by PVC and backfilling should be of the same soil type as the surrounding soil and compacted to the same density.

Except in areas where freezing of water is an issue, it is wise to remove taps in the building area and relocate them well away from the building – preferably not uphill from it (see BTF 19).

It may be desirable to install a grated drain at the outside edge of the paving on the uphill side of the building. If subsoil drainage is needed this can be installed under the surface drain.

Condensation

In buildings with a subfloor void such as where bearers and joists support flooring, insufficient ventilation creates ideal conditions for condensation, particularly where there is little clearance between the floor and the ground. Condensation adds to the moisture already present in the subfloor and significantly slows the process of drying out. Installation of an adequate subfloor ventilation system, either natural or mechanical, is desirable.

Warning: Although this Building Technology File deals with cracking in buildings, it should be said that subfloor moisture can result in the development of other problems, notably:

- Water that is transmitted into masonry, metal or timber building elements causes damage and/or decay to those elements.
- High subfloor humidity and moisture content create an ideal environment for various pests, including termites and spiders.
- Where high moisture levels are transmitted to the flooring and walls, an increase in the dust mite count can ensue within the living areas. Dust mites, as well as dampness in general, can be a health hazard to inhabitants, particularly those who are abnormally susceptible to respiratory ailments.

The garden

The ideal vegetation layout is to have lawn or plants that require only light watering immediately adjacent to the drainage or paving edge, then more demanding plants, shrubs and trees spread out in that order.

Overwatering due to misuse of automatic watering systems is a common cause of saturation and water migration under footings. If it is necessary to use these systems, it is important to remove garden beds to a completely safe distance from buildings.

Existing trees

Where a tree is causing a problem of soil drying or there is the existence or threat of upheaval of footings, if the offending roots are subsidiary and their removal will not significantly damage the tree, they should be severed and a concrete or metal barrier placed vertically in the soil to prevent future root growth in the direction of the building. If it is not possible to remove the relevant roots without damage to the tree, an application to remove the tree should be made to the local authority. A prudent plan is to transplant likely offenders before they become a problem.

Information on trees, plants and shrubs

State departments overseeing agriculture can give information regarding root patterns, volume of water needed and safe distance from buildings of most species. Botanic gardens are also sources of information. For information on plant roots and drains, see Building Technology File 17.

Excavation

Excavation around footings must be properly engineered. Soil supporting footings can only be safely excavated at an angle that allows the soil under the footing to remain stable. This angle is called the angle of repose (or friction) and varies significantly between soil types and conditions. Removal of soil within the angle of repose will cause subsidence.

Remediation

Where erosion has occurred that has washed away soil adjacent to footings, soil of the same classification should be introduced and compacted to the same density. Where footings have been undermined, augmentation or other specialist work may be required. Remediation of footings and foundations is generally the realm of a specialist consultant.

Where isolated footings rise and fall because of swell/shrink effect, the homeowner may be tempted to alleviate floor bounce by filling the gap that has appeared between the bearer and the pier with blocking. The danger here is that when the next swell segment of the cycle occurs, the extra blocking will push the floor up into an accentuated dome and may also cause local shear failure in the soil. If it is necessary to use blocking, it should be by a pair of fine wedges and monitoring should be carried out fortnightly.

This BTF was prepared by John Lewer FAIB, MIAMA, Partner, Construction Diagnosis.

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APPENDIX 3

ONSITE WASTEWATER ASSESSMENT / SYSTEM DESIGN – 88 Tamarix Road, Primrose Sands

Below find the assessment to determine of the type and size of wastewater treatment system, and the allocation of a Land Application Area (LAA) for a proposed 3-bedroom residence at 88 Tamarix Road, Primrose Sands. This assessment should be read in conjunction with Site & Soil Evaluation Report (GEOTECH 23-091) - enclosed.

The 561m^2 vacant block lies on the southern side of Tamarix Road (Plate 1). The site is covered in grass and is devoid of trees. The block slopes to the north at between 2 and 4 degrees. An open spoon drain, and culverted access are present to the immediate north of the block. The wetlands to the immediate north of Tamarix Road were full at the time of the assessment.

It is proposed to construct a residence and garage (9m x 6m) on the block. The Sorell Council's 1 in 100-year Inundation Mapping (Figure 2 of main report) shows the northern portion of the block may be subject to inundation of up to 0.75m depth. The location of the onsite wastewater system is critical to this development. The wastewater LAA cannot be in the potential inundation zone. The LAA must also be in an area that is not impacted by shallow groundwater table.

Test holes were completed adjacent to the southern property boundary (highest portion of the block) to assess the site for onsite wastewater disposal suitability. The locations of the test holes are marked on Figure 1.

The profile encountered in Test Hole #3 consisted of:

0.00 – 0.20m	SAND: fine grained, grey, rootlets – TOPSOIL
0.20 – 2.10m	SAND: fine grained, dark grey, dry to 0.50m, then moist
2.10m+	Holes terminated at required depths – 2.10m.

Groundwater was not encountered in Test Hole #3.

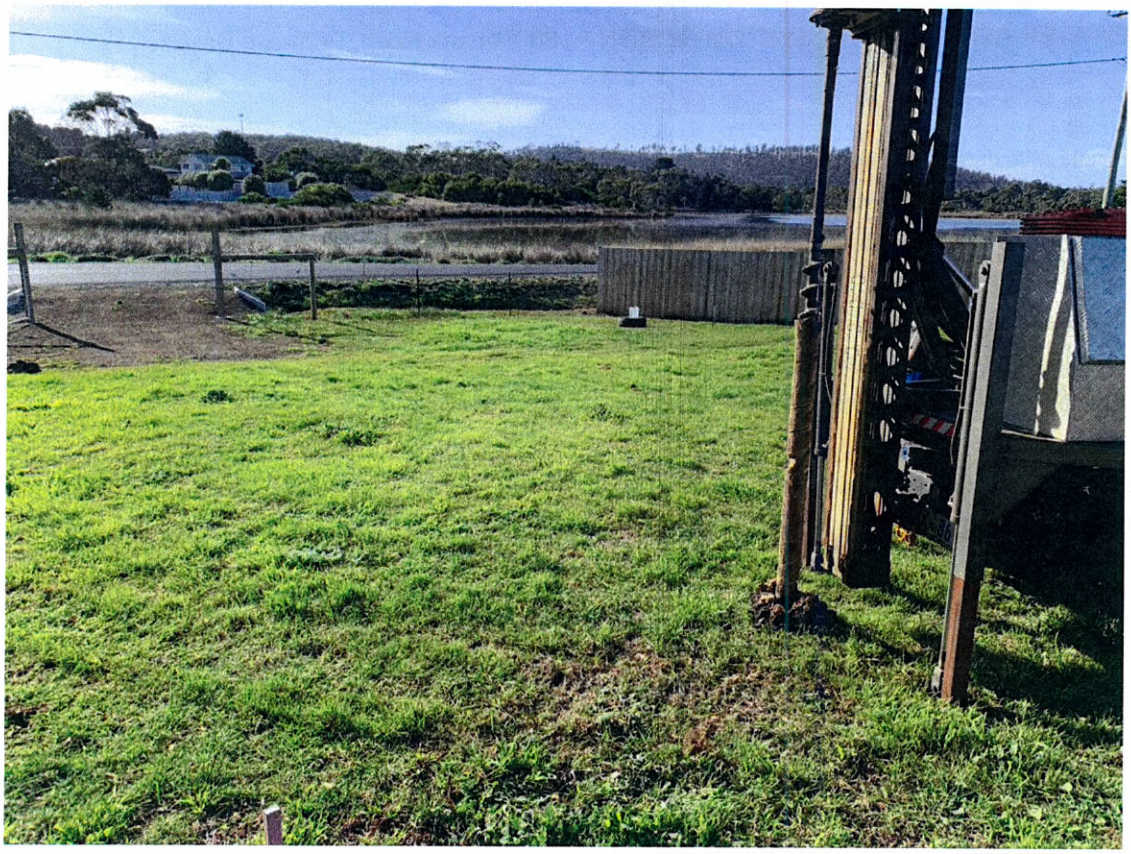
Groundwater was encountered in Test Hole #4. The Standing Water Levels were measured to be 1.45m.

The site (as located by Test Hole #3) is classified as a Class 1 (SAND) site with an Indicative Permeability of >3.0 m/day. A Design Loading Rate of 20mm/day is appropriate.

It is proposed to install a septic tank discharging to an in-ground Advanced Enviro-Septic (AES) bed.

There is very limited available land for a reserve LAA. If the AES bed requires remediation it is proposed to remove the bed and replace it in the same location (the proposed LAA is the best area on the block for wastewater disposal).

Plate 2 – Test Hole #3 – Looking to the northeast from the proposed LAA.



COMPLIANCE WITH THE 2016 DIRECTOR'S GUIDELINES FOR ONSITE WASTEWATER

Compliance Table Directors Guidelines for OSWM		
Acceptable Solutions	**Performance Criteria**	**Compliance achieved by**
5.1 To ensure sufficient land is available for sustainable onsite wastewater management for buildings.		
A1 A new dwelling must be provided with a LAA that complies with Table 3.	P1 A new dwelling must be provided with a LAA that meets all of the following: a) The LAA is sized in accordance with the requirements of AS/NZS 1547; and b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.	Cannot comply with A1 50m^2 of LAA required /bedroom, or 150m^2 for this development. See Risk Assessment.
7. Standards for Wastewater Land Application Areas		
A1 Horizontal separation distance from a building to a LAA must comply with one of the following: a) be no less than 6m; b) be no less than: (i) 3m from an upslope boundary or level	P1 The LAA is located so that the risk of wastewater reducing the bearing capacity of a building's foundations is acceptably low.	Cannot comply with A1 LAA < 6m from upslope residence. See Risk Assessment.

building; (ii) If primary treated effluent to be no less than 4m plus 1m for every degree of average gradient from a downslope building; (iii) If secondary treated effluent and subsurface application, no less than 2m plus 0.25m for every degree of average gradient from a downslope building.		
A2 Horizontal separation distance from downslope surface water to a LAA must comply with (a) or (b) (a) be no less than 100m; or (b) be no less than the following: (i) if primary treated effluent 15m plus 7m for every degree of average gradient to downslope surface water; or (ii) if secondary treated effluent and subsurface application, 15m plus 2m for every degree of average gradient to down slope surface water.	P2 Horizontal separation distance from downslope surface water to a LAA must comply with all of the following: a) Setbacks must be consistent with AS/NZS 1547 Appendix R; b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.	Complies with A2 LAA approximately 35m from downslope surface water. Secondary treated effluent. 4° slope to wetlands. Setback required; 15m + (2m x4°) = 23m.
A3 Horizontal separation distance from a property boundary to a LAA must comply with either of the following: (a) be no less than 40m from a property boundary; or (b) be no less than: (i) 1.5m from an upslope or level property boundary; & (ii) If primary treated effluent 2m for every degree of average gradient from a downslope property boundary; or (iii) If secondary treated effluent and subsurface application, 1.5m plus 1m for every degree of average gradient from a downslope property boundary.	P3 Horizontal separation distance from a property boundary to a LAA must comply with all of the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment in accordance with Appendix A of AS/NZS 1547 has been completed that demonstrates that the risk is acceptable.	Complies with A3 LAA > 1.5m from upslope and side-slope property boundaries. 4° slope to lower slope boundary. Setback required from lower slope property boundary 1.5m + (1m x 4°) = 5.5m
A4 Horizontal separation distance from a downslope bore, well or similar water supply to a LAA must be no less than 50m and not be within the zone of influence of the bore whether up or down gradient.	P4 Horizontal separation distance from a downslope bore, well or similar water supply to a LAA must comply with all of the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment completed in accordance with Appendix A of AS/NZS 1547 demonstrates that the risk is acceptable.	Complies with A4 No known potable bores in the immediate vicinity.
A5 Vertical separation distance between groundwater & a LAA must be no less than: (a) 1.5m if primary treated effluent; or (b) 0.6m if secondary treated effluent	P5 Vertical separation distance between groundwater and a LAA must comply with the following: (a) Setback must be consistent with AS/NZS 1547 Appendix R; and (b) A risk assessment completed in accordance with Appendix A of AS/NZS 1547 that demonstrates that the risk is acceptable.	Complies with A5 Groundwater encountered – see above.
A6 Vertical separation distance between a limiting layer & a LAA must be no less than: (a) 1.5m if primary treated effluent; or (b) 0.5m if secondary treated effluent.	P6 Vertical setback must be consistent with AS/NZS1547 Appendix R.	Complies with A6 Limiting layer not encountered.

RISK ASSESSMENT

Each identified environmental aspect is subject to a qualitative risk analysis based on likelihood and consequences of environmental impact. The risk analysis matrix is as follows:

LIKELIHOOD	***CONSEQUENCES***				
	Catastrophic 1	Major 2	Moderate 3	Minor 4	Insignificant 5
A (almost certain)	Extreme	Extreme	High	High	Medium
B (likely)	Extreme	Extreme	High	High	Medium
C (possible)	Extreme	Extreme	High	Medium	Low
D (unlikely)	Extreme	High	Medium	Low	Low
E (rare)	High	Medium	Low	Low	Low

Criteria for the five categories of likelihood:

Almost certain: An environmental health impact is expected to occur in most circumstances.

Likely: An environmental health impact will probably occur in most circumstances

Possible: An environmental health impact could occur.

Unlikely: An environmental health impact could occur but is not expected.

Rare: An environmental health impact would occur only in exceptional circumstances.

Criteria for determining consequence to environmental health from an on-site wastewater management issue:

Catastrophic: Widespread, irreparable environmental damage; loss of human life or long-term human health effects; serious litigation; over $1 million to manage consequences.

Major: Widespread, medium to long term impact; moderate human health impacts requiring medical treatment; major breach of legal requirements (prosecution); $50,000 to $1 million to manage consequences.

Moderate: Localised medium to long term impact; minor and reversible human health impacts treatable with first aid; moderate breach of legal requirements with fine (EIN/prosecution); $5,000 to $50,000 to manage consequences.

Minor: Localised short to medium term impact; no injury to people; minor breach of legal requirements (eg. legal notice, EIN); $1000 to $5,000 to manage consequences.

Insignificant: Limited impact to a local area but no long-term effects; concern or complaints from neighbours; no injury to people; minor technical nonconformity but no legal nonconformity; less than $1000 cost to manage consequences.

Conducting a risk analysis results in the allocating of a risk level of *extreme*, *high*, *moderate* or *low* for each environmental aspect. Environmental health aspects with an *extreme* or *high* risk are *significant*, that is, they have or can have a significant environmental impact.

Defined risks are:

- Minimum area required for LAA.
- Horizontal separation distance from a building to the LAA.

The defined site constraint items of specific concern (as defined in Table R1 of AS/NZS 1547:2021) FOR THE ABOVE DEFINED RISKS are:

- A, D, J

A Microbial quality of effluent.

- Effluent to be secondary treated via an AES bed – low risk level.

D Slope.

- LAA with slope to be 0 - 6% and subsurface application plus pure sand subsoils – LOW risk level of off-site export of effluent.

J Application method.

- Secondary treated effluent via AES bed and subsurface applicati9n – lowest possible risk level for this site.

The risk assessment identifies several, linked risks for wastewater application on this site.

These risks will be mitigated / reduced to an acceptable level by secondary treating the wastewater effluent (AES Bed).

The Foundation Classification (AS2870) for the residence is Class 'P'. The foundations will be designed by a structural engineer, experienced in the design of residential footings. The engineer will need to consider the potential inundation of the northern portion of the block, plus the close proximity of the LAA to the residence.

ONSITE WASTEWATER SYSTEM DESIGN

A new, 3000 litre (minimum) septic tank will be installed. The septic tank should not be fitted with an outlet filter. The effluent leaving the septic tank is to be gravity fed to an in-ground Advanced Enviro-Septic (AES) bed.

The following calculations determine the size of the AES Bed designed to service the 3-bedroom residence.

3-bedroom residence	5 persons
Tank water	120 litres / person / day
Wastewater Flow Rate	5 x 120 = 600 litres / day
Design Loading Rate (DLR)	20mm/day
DLR	20 litres / m^2 / day
Basal Area of Land Application Area	600 / 20 = $30m^2$

The Advanced Enviro Septic (AES) system utilizes a modular distribution layout consisting of pipework laid in "system sand" of minimum width 1350mm.

This module consists of 3 runs of 2 x 300mm diameter AES pipes, 150mm apart, with 300mm side-wall clearance on each side - total width 1800mm.

Distribution unit length	=	AES pipe length + (0.3m x 2)
		6m + 0.6m = 6.6m
Width of 4-pipe wide AES unit	=	1.80m
A System Extension is required for this site.		6.6m long x 2.75m wide = $18.1m^2$
Area of AES	=	6.6m x 4.55m = $30m^2$

The AES system should be installed by a plumber who has been accredited by Chankar Environmental Proprietary Limited to install Advanced Enviro Septic systems, and who has appropriate experience.

Site Preparation

- Rope off the site to prevent damage to the area during other construction activity on the lot.
- Vehicular traffic over the area must be prohibited to avoid compaction.
- Excavate the existing soil surface, parallel with the contour (cross slope) to a depth of 750mm over the selected wastewater land application area.
- Rake/scarify the exposed soil surface.
- Install and connect the septic tank and AES bed in accordance with the AES site instructions (see below) and the design plans attached.
- The AES pipe must be laid in a bed of approved "system sand". This is a coarse sand meeting the specifications as listed below.

AES System Sand Specifications

- Percentage Restrictions - 35% or less of the total sand may be gravel. 40%-90% of the total sand is to be coarse and very coarse sand.
- Gravel Quality Restrictions - No gravel is to exceed 9mm in diameter. No gravel is smaller than 2mm in diameter.
- Coarse Sand Quality Restrictions - No coarse sand is smaller than 0.5mm in diameter.
- Fines Quality Restrictions - No more than 2% of the total sand may pass through a 75µ m sieve.

Venting – AES system and septic tank

- Ensure that roof vent comprises a minimum of single 80mm diameter pipe or 2 x 40mm diameter vent pipes.
- Roof vent to be a minimum of 3m above ground vent.
- Venting of the septic tank is to be consistent with NCC Pt 3 Tas F101.2.

Low vent as per AES pipe layout plan (Low vent at end of pipework).

ADVANCED ENVIRO-SEPTIC™ "Always The First Option"

Advanced Enviro-septic Design Calculator V9.0 ©

AES The World Leader in Passive Solutions ©

Site Address	88 Tamarix Road, Primrose Sands		State TAS	Post Code	7173
Client Name	Jake Pullen			Date of Site Visit	2/8/23
Designers Name	Peter Hofto, Rock Solid Geotechnics Pty Ltd	Designers Ph Number	0417 960 769	Designer Lic (e.gQBCC)	CC6159I
Lic Plumber	To be announced	Plumber Ph Number		Plumb / Drainer Lic Number	TBA
Council Area	Sorell	Designers AES Cert Number	1463	Date	3/8/23

This Calculator is a guide only, receiving soil classification, surface water, water tables and all other site constraints addressed by the qualified designer.

System Designers site and soil calculation data entry		IMPORTANT NOTES
Enter AES L/m loading rate, "30" for ADV Secondary or "38" Secondary	38	*>> This design is for a SECONDARY system.*
Is this a new installation Y or N	Y	**>> Minimun single vent size is 80mm or 2 x 50mm house vents**
Number of Bedrooms	3	**>> This is not used in ANY Calculation. If not known use N/A or 0.**
Number of persons	5	**>> A septic tank outlet filter is NOT RECOMMENDED**
Daily Design Flow Allowance Litre/Person/Day	120	
Number of rows required to suit site constraints	3	**>>Longer AES runs are better than multiplule short runs.**
Infiltration Soil Category from site/soil evaluation. CATEGORY	1	
Design Loading Rate based on site & soil evaluation DLR (mm/day)	20	
Bore log depth below system Basal area	1.5m	**>> Min depth 1.5m. Check water table/restrictive layer**
Is this design a GRAVITY system with no outlet filter? Y or N	y	**>> GRAVITY. A House Vent & LOW VENT required on this system**

PLEASE CHECK YOU HAVE FALL FROM TANK TO AES SYSTEM PIPES

COMMENTS :- *" The outcome must be important to everyone. "*

- Designers need to be familar with special requirements of Local Authorities. ie - Minimum falls from Septic tank outlets to Land application areas etc

- Plumbers are reminded to practice good construction techniques as per AS 1547 & as provided on AES installation instructions supplied with components.

AES System Calculator Outcomes		
Total System load - litres / day (Q).	**600**	l/d
Min Length of AES pipe rows to treat loading	**5.26**	lm
Number of FULL AES Pipe lengths per row	**2**	lths
Total Capacity of AES System pipe in Litres	**1272**	ltr.

AES dimensions	AES System	System Extension
Length:(L)	6.60m	6.60m
Width:(W)	1.80m	2.75m
Sand Depth :	0.75m	0.15m
Area m2	11.9 m^2	18.1 m^2

USE CUT LENGTHS OF PIPE IN THIS DESIGN? (ENTER Y)	n	
IF YOU WISH TO USE A TRENCH EXTENSION DESIGN OPTION ENTER "Y"	n	Enter Custom Width in metre

AES INFILTRATION FOOT PRINT AREA - L = Q / (DLR x W)	**Length**		**Width**		**Minimum AES foot print required**	
for this Basic Serial design is	**6.600m**	x	**4.55m**	=	**30.0**	m2 total

AES pipes are best centered in the trench parallel to the site slope

Code	AES System Bill of Materials.			Chankar Environmental Use Only
AES-PIPE	AES 3 metre Lengths required	**6**	lths	
AESC	AES Couplings required	**3**	ea	
AESO	AES Offset adaptors	**6**	ea	
AESODV	AES Oxygen demand vent	**1**	ea	
AES-IPB	AES 100mm Inspection point base	**2**	ea	
TD Kit 4	4 Hole Distribution Box Kit		ea	
TD Kit 7	7 Hole Distribution Box Kit		ea	
VS43-4	Sweet Air Filter VS43-4		ea	
AES DESO	Double Offset Adaptors		ea	
	TOTAL SYSTEM SAND REQUIRED (Estimate Only)	**14**	m3	

Please email your AES Calculator (EXCEL FORMAT), Site Layout & AES Design to
designreview@enviro-septic.com.au

designreview@enviro-septic.com.au

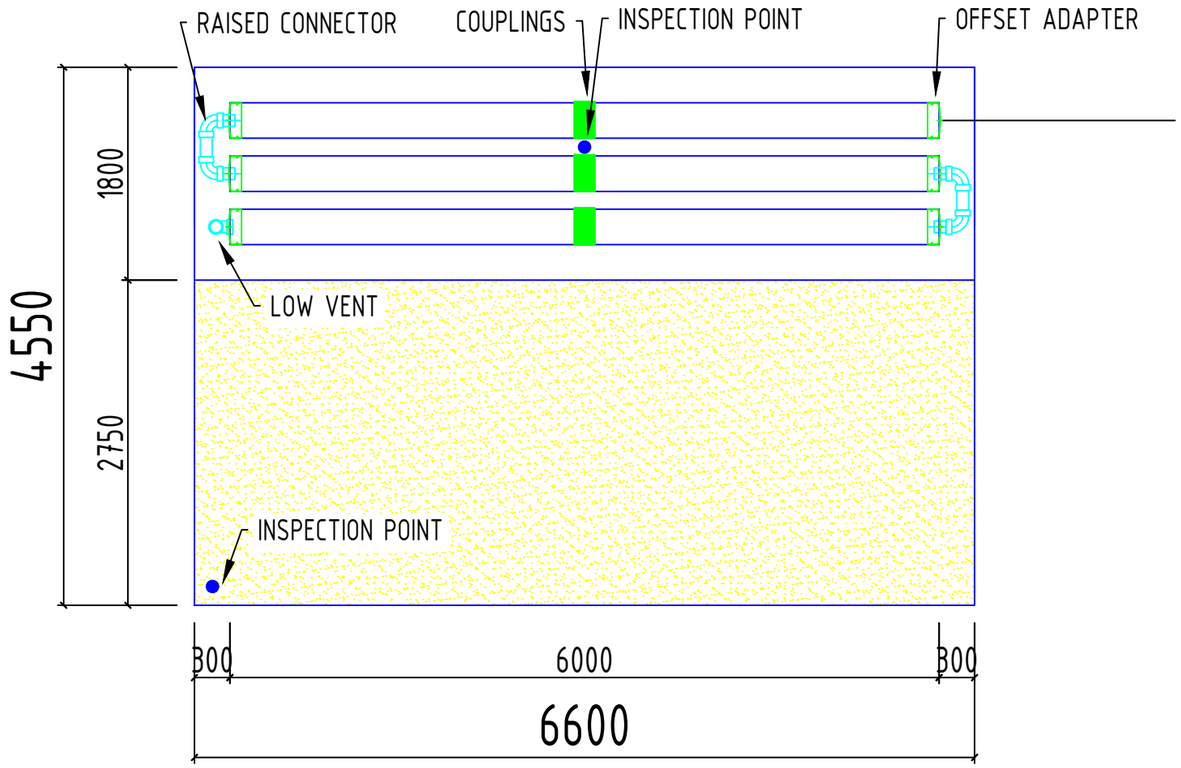
> The AES Calculator is a design aid to allow checking of the AES components, configuration and is a guide only. Site and soil conditions referencing AS1547 are calculated and designed by a Qualified Wastewater Designer.

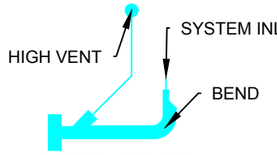
> Chankar Environmental accepts no responsibility for the soil evaluation, loading calculations or DLR entered by the designer for this calculator.

> AES pipes can be cut to length on site. They are supplied in 3 meter lengths only.

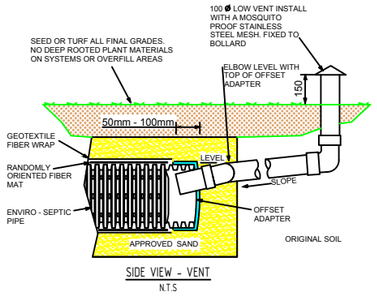
> AES ONLY supply AES components as detailed in the Bill of Materials.

> SEPTIC Tank & other components including SAND will need to be sourced from other suppliers. Refer to our WEBSITE www.enviro-septic.com.au OR 07 5474 4055

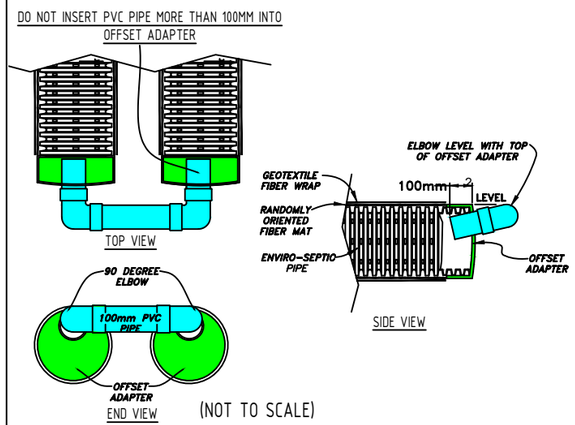




1m MINIMUM LENGTH PIPE
MAXIMUM PUMP FLOW 76 L/M
PUMPED SYSTEM REQUIREMENTS
TYPICAL VELOCITY REDUCER DETAIL
PLAN NTS



SIDE VIEW - VENT
N.T.S



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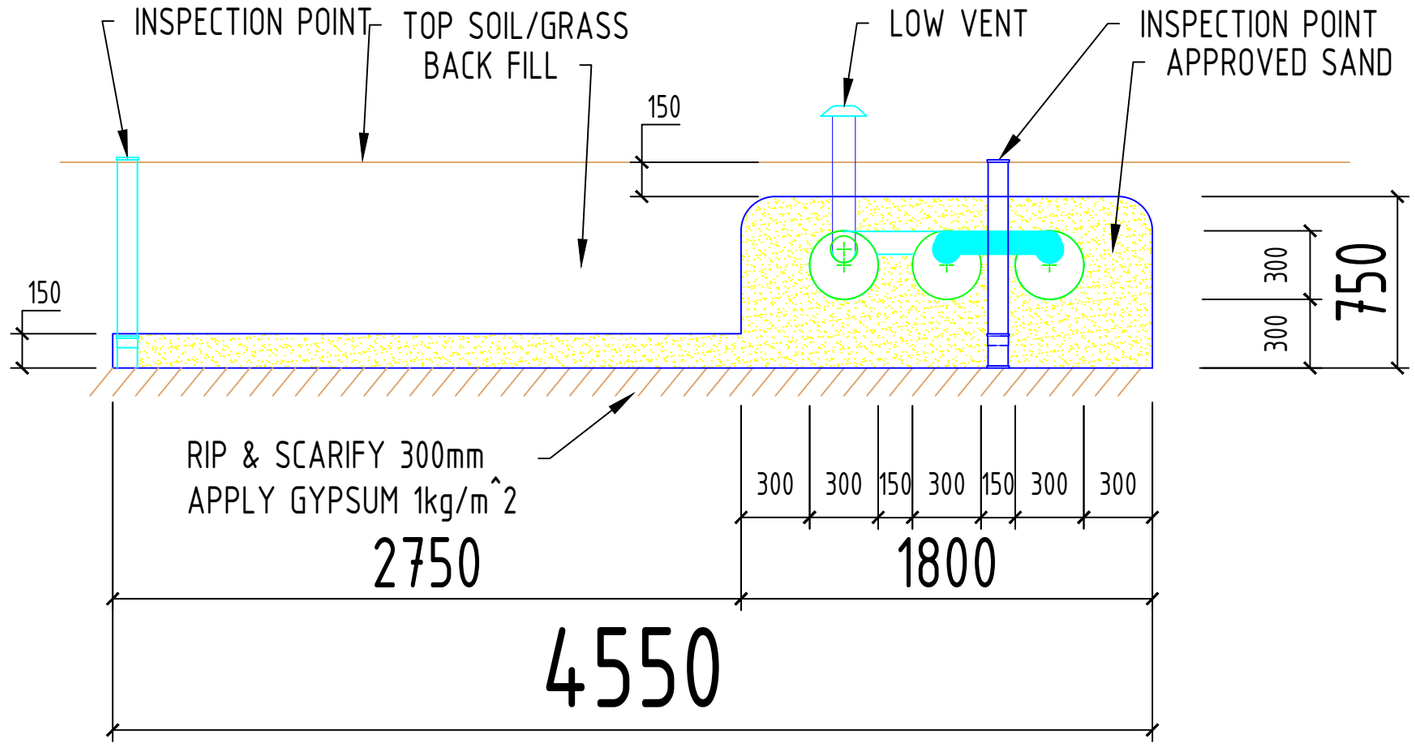
RAISED CONNECTION DETAIL



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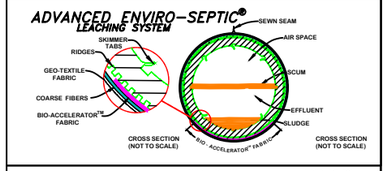
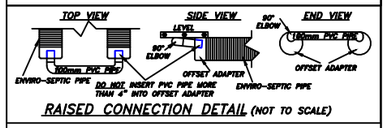
REVISIONS

REV #	DATE	SUBJECT	AUTHORISED





RAISED CONNECTION DETAIL (NOT TO SCALE)

CHANKAR ENVIRONMENTAL PTY LTD
T/A
ADVANCED ENVIRO-SEPTIC™
"Always The First Option"
QBCC LICENCE NUMBER
150 238 31
ABN NUMBER 29154897097

Phone: +61 7 5474 4055
Fax: +61 7 5335 1691
Email: designreview@enviro-septic.com.au
Web: www.enviro-septic.com.au

WASTE WATER TREATMENT & EFFLUENT DISPOSAL SYSTEM SITE PLAN

NAME OF CLIENT	
DESIGNER Peter Hofto	DATE 4/8/2023
DRAWN S. Dennis	DATE 4/8/2023
LOT & PLAN	
STREET ADDRESS 88 Tamarix Rd, Primrose Sands	
COUNCIL Sorrell	
DRAWING DETAILS AES Plan Elevation 6 Pipes 3 Rows	
SCALE	
CLIENT REFERENCE #	

JOB NUMBER	REVISION	DWG #
		SL3

SITE AND SOIL EVALUATION REPORT

Soil Category:

	Modified Emerson Test Required	No
1,...2,...3,...4,...5,...6	If Yes, Emerson Class No.	
Measured or Estimated Soil Permeability (m/d):	3.0m/d	
Design Loading Rate (DLR)	20 mm/day	
Geology:	Quaternary sediments	
Slope:	2 degrees	
Drainage lines / water courses:	Nil	
Vegetation:	Grass	
Site History: (land use)	Vacant block	
Aspect:	North	
Pre-dominant wind direction:	Northwest to southwest	
Site Stability: Will on-site wastewater disposal affect site stability?	No	
Is geological advice required?	No	
Drainage/Groundwater:	See report	
Depth to seasonal groundwater (m):	See report	
Are surface or sub-surface drains required upslope of the land application area?	No	
Date of Site Evaluation:	2/8/2023	
Weather Conditions:	Fine	

ADVANCED ENVIRO-SEPTIC™
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Advanced Enviro-Septic™ Installation Instructions

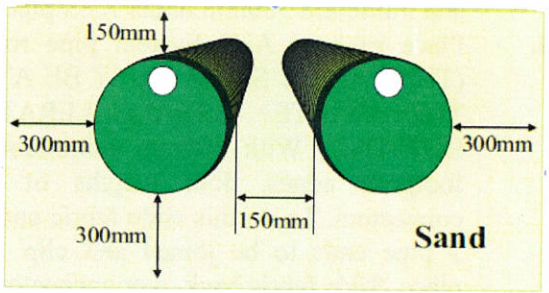
1. SET OUT

i. Set out should be in accordance with the design approved by Council.

ii. The length of each run of AES System pipe must be horizontal

iii. AES calculator footprint dimensions are based upon the DLR of the receiving soil and are the minimum foot print area.

iv. Any system extension must be to the down slope side unless the infiltration footprint is level.



AES Sand Coverage Minimums

2. EXCAVATION – (track machinery causes less compaction of the soil.)

i. Excavate as required leaving the base of excavation loose to aid infiltration. Strip and separate top soil for covering installation as per AS 1547:2012.
DO NOT damage infiltration area by driving equipment or walking on excavation prior to placement of sand layer. Refer to Appendix L Sec L7 of AS1547: 2012. Construction Techniques. Rip or scarify the infiltration area to a depth of 150 to 200mm minimum parallel to the AES pipe on all systems especially systems in Cat 4,5,6 soil with high clay content. (Refer to the design and report for this onsite installation)

"L7.1 Good construction technique AS 1547:2010
The following excavation techniques shall be observed so as to minimise the risk of damage to the soil:
(a) Plan to excavate only when the weather is fine;
(b) Avoid excavation when the soil has a moisture content above the plastic limit. This can be tested by seeing if the soil forms a 'wire' when rolled between the palms;
(c) During wet seasons or when construction cannot be delayed until the weather becomes fine, smeared soil surfaces may be raked to reinstate a more natural soil surface, taking care to use fine tines and only at the surface;
(d) When excavating by machine, fit the bucket with 'raker teeth' if possible, and excavate in small 'bites' to minimise compaction; and
(e) Avoid compaction by keeping people off the finished trench or bed floor.
In particular for trenches and beds:
(f) If rain is forecast then cover any open trenches, to protect them from rain damage;
(g) Excavate perpendicular to the line of fall or parallel to the contour of sloping ground; and
(h) Ensure that the inverts are horizontal.

CL7.1
Damage can be done by:
(a) Smearing, where the soil surface is smoothed, filling cracks and pores;
(b) Compacting, where the soil porosity is reduced; and
(c) Puddling, where washed clay settles on the base of the trench to form a relatively impermeable layer.
In particular, cohesive soils, or soils containing a significant quantity of clay, are susceptible to damage by excavation equipment during construction.

ii. If using a raised bed configuration ensure you have sufficient soil to cover entire mound or bring in enough sand to fill out batters prior to covering with topsoil etc. as per AS 1547:2012.

3. SYSTEM SAND – Course washed sand with less than 2mm silt (ASTM C-33)

i. Place minimum150mm system sand to extension area and minimum 300mm under AES pipe footprint area.

ii. Place runs of AES System pipe roughly in position (THE FABRIC SEAM MUST BE AT THE TOP AND THE WHITE BIO-ACCELERATOR AT THE BOTTOM.) With 300mm minimum clearance to all footprint edges. Join lengths of AES with AES connectors. To do this slide fabric and fibre back on the 2 pipe ends to be joined and clip AES connector in place. Slide fabric back over connector.

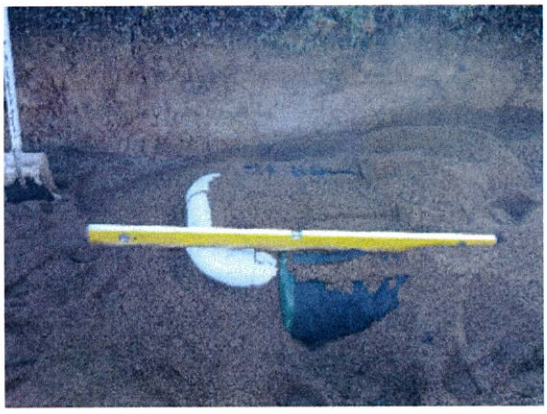
iii. Place offset adaptors on each run with the 100mm hole at the top.

iv. Ensure minimum 150mm between AES system pipes. This can be done with pegs, short pieces of 150mm pvc or reusable AES Spacer Plates. One side provides the 300m spacing required for minimum system sand. The opposite side must have a minimum of 300mm of system sand beyond the edge of the AES System pipe.

v. Place system sand around AES pipes ensuring they stay level and in position. Remove and progressively position spacer plates or PVC pipe until all system pipes are surrounded by system sand to the top. **Walk sand between rows to aid compaction.**

vi. EXTENSION SAND depth is a minimum of 150mm.

4. CONNECTING ROWS



i. Connect rows with 100mm pipe as required with a maximum 100mm extending into the AES system pipe. (Raised connection – After placing raised connection pipes the top of the PVC pipe must be level with the top of the AES pipe. Lift and pack with sand.) This ensures airflow is not restricted and buffer capacity is maximised.

5. VENTING

i. Ensure the system has a High Vent and a low vent. As per design. Low vent is a minimum 150mm above ground. Vents can be located any distance from the system provide they have no water traps that can block oxygen flow through the system. The High Vent must be 3 meters higher than the low vent.

ii. Pressurised or steep gravity systems will require a **Velosity Diffuser**

6. BACK FILLING

i. Ensure a minimum of150mm System sand covers the AES pipes and PVC pipe work.

ii. Refer to the Onsite design and Council approval and ensure that all diversions drains or site specific requirements are correctly installed.

iii. Back fill with natural soil and compact. System extensions may require compaction in a couple of layers depending on the depth.

iv. On mounds and down slopes strip vegetation and place fill evenly and level to all sides to avoid breakout from low points during high seasonal loadings.

v. Cover excavation area with topsoil creating a finished surface level 50 to 100mm higher than the natural surface level ensuring that water sheds off the land application area and does not pond, compact lightly and seed or grass when completed.

For Installation support phone 0754744055

Section 94
Section 106
Section 129
Section 155

CERTIFICATE OF THE RESPONSIBLE DESIGNER

Form 35

To: Jake Pullen *Owner name*

jakepullen1405@gmail.com *Address*

Designer details:

Name: PETER HOFTO

Category: Hydraulic - Restricted

Business name: ROCK SOLID GEOTECHNICS PTY LTD

Phone No: 0417960769

Business address: 163 Orielton Road

Orielton 7172

Fax No:

Licence No: CC 6159I

Email address: peter@rockolidgeotechnics.com.au

Details of the proposed work:

Owner/Applicant: Jake Pullen

Designer's project reference No.: GEOTECH 23-091

Address: 88 Tamarix Road, Primrose Sands

Lot No:

Type of work: Building work ☐ Plumbing work X

ONSITE WASTEWATER MANAGEMENT SYSTEM

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

Certificate Type:	Certificate	Responsible Practitioner
	X Plumbing design	Plumber-Certifier; Architect, Building Designer or Engineer
	☐ Other (specify)	
Deemed-to-Satisfy:		Performance Solution: x (*X the appropriate box*)

Design documents provided:	

Drawing numbers:	Prepared by: ROCK SOLID GEOTECHNICS P/L	Date: 3/8/2023
Schedules:	Prepared by:	Date:
Specifications:	Prepared by: ROCK SOLID GEOTECHNICS P/L	Date: 3/8/2023
Computations:	Prepared by: ROCK SOLID GEOTECHNICS P/L	Date: 3/8/2023
Performance solution proposals:	Prepared by:	Date:
Test reports:	Prepared by: ROCK SOLID GEOTECHNICS P/L	Date: 3/8/2023

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

Attribution as designer:

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

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

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

	Name: (print)	*Signed*	*Date*
Designer:	PETER HOFTO		3/8/2023
Licence No:	CC 6159I		

CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

Form **55**

To: Jake Pullen *Owner /Agent*

jakepullen1405@gmail.com *Address*

Qualified person details:

Qualified person: Peter Hofto – Rock Solid Geotechnics Pty Ltd

Address: 163 Orielton Road, Orielton 7172 Phone No: 0417960769

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

Qualifications and Insurance details:

BSc (Hons) – Geology / Geophysics
PI Insurance – Lloyds Underwriting
PL Insurance – CGU Insurance Ltd

(description from Column 3 of the Director of Building Control's Determination)

Speciality area of expertise:

Site & Soil Evaluation and Land Application System Design

(description from Column 4 of the Director of Building Control's Determination)

Details of work:

Address: 88 Tamarix Road, Primrose Sands Lot No:

The assessable item related to this certificate:

Onsite wastewater management – site & soil evaluation for onsite wastewater management capability.
Characterisation of wastewater and predicted hydraulic loadings.
Selection of land application area.
Selection of design loading rate.

(description of the assessable item being certified)
Assessable item includes –

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

Certificate details:

Certificate type: Site & Soil Evaluation and Land Application System Design *(description from Column 1 of Schedule 1 of the Director of Building Control's Determination)*

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

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

or

a building, temporary structure or plumbing installation:

In issuing this certificate the following matters are relevant –

Documents: AS 1547:2021 On-site domestic wastewater management

References: AS 1547:2021 On-site domestic wastewater management
Director's Guidelines for Onsite Wastewater Management
2015 Interim Planning Scheme

Substance of Certificate: (what it is that is being certified)

Site & soil evaluation and design report - Proposed on-site wastewater management system at 88 Tamarix Road, Primrose Sands by Rock Solid Geotechnics P/L, dated 3/8/2023

Scope and/or Limitations

Exclusions: Design of AES Bed

I certify the matters described in this certificate.

Qualified person:	*Signed:*	*Certificate No:*	*Date:*
		GEOTECH 23-091	3/8/2023

CERTIFICATE OF THE RESPONSIBLE DESIGNER

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Form **35**

To: Jake Pullen *Owner name*

jakepullen1405@gmail.com *Address*

Designer details:

Name: Stephen John Dennis

Category: Civil Engineer

Business name: Advanced Enviro Septic

Phone No: 0455 826 203

Business address: PO Box 1556

Noosaville 4566

Fax No:

Licence No: 373083211

Email address: stevedennis913@gmail.com

Details of the proposed work:

Owner/Applicant: Jake Pullen

Designer's project reference No.: GEOTECH 23-091

Address: 88 Tamarix Road, Primrose Sands

Lot No:

Type of work: Building work ☐ Plumbing work X

ONSITE WASTEWATER MANAGEMENT SYSTEM

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

Certificate Type:	Certificate	Responsible Practitioner
	X Hydraulic design	Engineer
	☐ Other (specify) Advanced Enviro Septic Bed	

Deemed-to-Satisfy:	Performance Solution: X (*X the appropriate box*)	
Drawing numbers:	Prepared by: ROCK SOLID GEOTECHNICS P/L	Date: 3/8/2023
Schedules:	Prepared by:	Date:
Specifications:	Prepared by: ROCK SOLID GEOTECHNICS P/L	Date: 3/8/2023
Computations:	Prepared by: ROCK SOLID GEOTECHNICS P/L	Date: 3/8/2023
Performance solution proposals: AES Tasmania NCC Performance	Prepared by: Stephen Dennis	Date: 3/8/2023

Standards, codes or guidelines relied on in design process:
AS1547-2012 Director's Guidelines for Onsite Wastewater Management

Attribution as designer:

I Stephen Dennis am responsible for the design of that part of the work as described in this certificate;

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

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

	Name: (print)	*Signed*	*Date*
Designer:	Stephen Dennis		3/8/2023
Licence No:	373083211		

CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

Form 55

To: Jake Pullen *Owner /Agent*

jakepullen1405@gmail.com *Address*

Suburb/postcode

Qualified person details:

Qualified person: Stephen John Dennis

Address: PO Box 1556

Noosaville 4566

Phone No: 0455 826 203

Fax No:

Licence No: 373083211

Email address: stevedennis913@gmail.com

Qualifications and Insurance details: BEng(Hons), GradDipMgt

(description from Column 3 of the Director's Determination - Certificates by Qualified Persons for Assessable Items

Speciality area of expertise: Professional Engineering
Wastewater Design
NER, NPER, CPEng, APEC, IntPE(Aust), RPEQ20663

(description from Column 4 of the Director's Determination - Certificates by Qualified Persons for Assessable Items)

Details of work:

Address: 88 Tamarix Road, Primrose Sands

Lot No:

Certificate of title No:

The assessable item related to this certificate: Design of an onsite wastewater management system.

(description of the assessable item being certified)
Assessable item includes –
- *a material;*
- *a design*
- *a form of construction*
- *a document*
- *testing of a component, building system or plumbing system*
- *an inspection, or assessment, performed*

Certificate details:

Certificate type: On-site wastewater management – System design

(description from Column 1 of Schedule 1 of the Director's Determination - Certificates by Qualified Persons for Assessable Items n)

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

- (•) building work, plumbing work or plumbing installation or demolition work

OR

- ( ) a building, temporary structure or plumbing installation

In issuing this certificate the following matters are relevant –

Documents:	*Geotech 23-091 Rock Solid Geotechnics P/L*
Relevant calculations:	AES Calculator – Chankar Environmental
References:	NCC Vol 3. Refer to AES Tasmania NCC Performance Solution V4. AS/NZS 1547.2012 - Onsite domestic wastewater management Director's Guidelines for Onsite Wastewater Management 2017 Advanced Enviro Septic Design & Installation Manual, Advanced Enviro-Septic Installation Instructions and, Home Owner's Manual; all by Chankar Environmental Pty Ltd, 62 Rene Street, Noosaville QLD 4566

Substance of Certificate: *(what it is that is being certified)*

Confirmation of the performance solution for design of Advanced Enviro-Septic System at (*insert site address*)

(Evidence of compliance with NCC Vol 3 TAS Section H is provided in the appended document headed "AES Tasmanian NCC Performance Solution")

Scope and/or Limitations

Exclusions – All works other than the above.

I certify the matters described in this certificate.

	Signed:	*Certificate No:*	*Date:*
Qualified person:			3/8/2023

Assessment of Certifiable Works: (TasWater)

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

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

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

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

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

Certification:

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

Note: The Guidelines for TasWater Certification of Certifiable Works Assessments are available at: www.taswater.com.au

	Name: (print)	*Signed*	*Date*
Designer:	PETER HOFTO		2/5/2023

ROCK SOLID GEOTECHNICS PTY LTD
Peter Hofto
163 Orielton Rd
Orielton
TAS 7172
0417960769
peter@rocksolidgeotechnics.com.au

Jake Pullen
jakepullen1405@gmail.com

3/8/2023

Loading Certificate for Onsite Wastewater System

88 Tamarix Road, Primrose Sands

1 System Capacity:

- (medium/long term) 3-bedroom residence - 5 persons, 600 litres/day

2 Design Criteria Summary:

- Primary Treated Effluent 3000 litre Dual-purpose septic tank.
- Soil Category Class 1 SAND
- Land Application System 6.6m long x 4.55m wide AES Bed

3 Reserve Area:

- Reserve LAA available if required.

4 Variation from design flows etc:

- The system should successfully assimilate additional peak loadings which may result from occasional social gatherings provided that this does not exceed use by more than 8 persons in a 24-hour period or more than 1 temporary resident visitor (ie. up to 6 persons total) for a period not exceeding 4 days. Visitors should be advised of the requirement to minimise time spent in showers, not running taps whilst cleaning teeth, and other common sense water conservation measures.

5 Consequences of overloading the system:

- Long term use by more than 5 residents or equivalent may result in overloading of the system, surfacing of effluent, public and environmental health nuisances, pollution of surface water etc.

6 Consequences of under-loading the system:

- Nil.

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

- The septic tank should be pumped at least every 3 years.

Peter Hofto
Rock Solid Geotechnics Pty Ltd

237 Scottsdale Dr
Robina QLD 4226
Phone: 0756578843
Fax: 07 5657 8899

SITE SPECIFIC DESIGN CRITERIA ANALYSIS

Issued:
22/08/2024

Prepared for:
jake pullen
88 Tamarix Rd
Primrose Sands TAS 7173

Supplier:
Sheds n Homes Hobart Tasmania

Assessment Ref:
STX24080285FS

Building Details:
Span: 7
Length: 6
Avg. Height: 2.868

Assesment basis:
NCC 2022
AS/NZS 1170.2:2021
AS/NZS 1170.3:2003
AS1170.4:2007
AS/NZS 3500.3:2021

Certified by:

J. Ronaldson
for and on behalf of
Apex Engineering Group PTY LTD
(ACN 632 588 562)
Member Institution of Engineers (Aust.), CPEng (NER Structural) Regn. No. 5276680
Registered Professional Engineer (Structural) - Queensland: Regn. No. 24223
Registered Professional Engineer (Structural) - Victoria: Regn. No. PE0003848
Registered Building Designer & Professional Engineer (Structural) - Tasmania: Regn. No. 185770492

Site Location:
Geographic coordinates of
-42.88527,147.65968
The address provided for reference purpose only is:
88 Tamarix Rd Primrose Sands TAS 7173

Executive Summary - Site Specific Analysis

The design analysis of the building has not been considered for each of the 4 orthogonal directions. Hence the maximum wind speed in any of the 8 cardinal directions has been used as the design wind speed. This is a conservative approach.

Each cardinal direction has been considered and the results are summarised below

Factor	N	NE	E	SE	S	SW	W	NW
Wind Region	A4							
Importance level (IL)	2							
Distance from Smoothed Coastline	N/A							
Regional Wind Speed (Vr)	45.0							
Climate Change Factor (Mc)	1							
Terrain Category (TC)	2.64	2.35	1.95	2.37	1.31	1.31	2.8	2.68
Terrain Category Multiplier (Mz)	0.86	0.88	0.91	0.88	0.97	0.97	0.85	0.86
Shielding Multiplier (Ms)	1	1	1	0.84	0.84	0.98	0.81	0.81
Topographic Multiplier (Mt)	1	1	1	1	1	1	1	1
Wind Direction Multiplier 1 (Md1)	0.85	0.75	0.75	0.8	0.8	0.9	1	1
Site specific design wind speed (Vsite1)	32.8	30	30.8	30	30	38.3	30.8	31.2

Wind Direction Multiplier 2 (Md2)	0.85	0.75	0.75	0.8	0.8	0.9	1	1
Site specific design wind speed (Vsite2)	32.8	30	30.8	30	30	38.3	30.8	31.2

Design Wind Speed (Vsite1)	38.3 m/s	for the resultant forces and overturning moments on the complete building and wind actions on major structural elements.
Design Wind Speed (Vsite2)	38.3 m/s	for cladding and immediate supporting structures (Purlins and Girts)
Snow Load	Nil	
Earthquake	0.08	Hazard Design Factor (Z)
Durability Alert	Yes	It is likely that the building is subject to a Marine Influence and Industrial Influence. You should satisfy yourself that any BlueScope or other warranties specific for your site are satisfactory for your purpose. Amongst other sources, you should contact BlueScope on 1800 800 789.
Rainfall Intensity	87mm/hr	5% AEP
Rainfall Intensity	119mm/hr	1% AEP

APEX ENGINEERING GROUP

Suite 100, 237 Scottsdale Drive
Robina, QLD 4226
Australia
Phone: +61 7 5657 4456
Fax: +61 7 5657 8899

22 August, 2024

To whom it may concern

This certification has been completed based on an Importance Level of 2.
Any approving authority should confirm that the Importance Level nominated is appropriate for the building's usage nominated in the application form used to apply for a Building Permit / Construction Certificate.

I certify that I am an independent technical expert and have reviewed Steelx's "Shed Management System" software that has produced the design and drawings detailed below.; I have reviewed the documents based on the site specific analysis that has been carried out using the "Shed Safe SiteCheck" software (Refer to the Site Specific Design Criteria Analysis included with these documents).

Job Number: SHBT240060
Customer: jake pullen
Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia (-42.8852 and 147.6597)

Building Class: 10a
Max Design Wind Speed of 38.3m/s

Drawing Number	Date	Number of Pages	Description
SHBT240060 - 2	22/08/2024	2	General Notes
SHBT240060 - 3	22/08/2024	1	Layout
SHBT240060 - 4	22/08/2024	2	Material Specification Sheet
SHBT240060 - 5	22/08/2024	1	Bracing
SHBT240060 - 6	22/08/2024	1	Concrete Piers
SHBT240060 - 7	22/08/2024	1	Slab Dimensions
SHBT240060 - 8	22/08/2024	6	Connection Details
SHBT240060 - 9	22/08/2024	2	Flashing Fixing Details
SHBT240060 - 10	22/08/2024	1	Component Position
SHBT240060 - 11	22/08/2024	4	Purlin And Girt

(Some drawings have multiple pages, eg: "1 of 3".)

As an independent technical expert, I verify this design complies with the following codes and standards:

NCC: 2022
AS/NZS 1170.2:2021
AS/NZS 1170.4:2007
AS 3600:2018
AS/NZS 4600:2018
AS/NZS 1170.1:2002
AS/NZS 1170.3:2003
AS 2870:2011
AS 4100:2020

Unless nominated, the building has not been designed for any additional loads including, but not limited to, earthquake, snow, solar panels or lining with any materials.

Signed

John Ronaldson
for and on behalf of
Apex Engineering Group PTY LTD
ACN 632 588 562

Member Institution of Engineers (Aust.), CPEng (NER Structural) Regn. No. 5276680
Registered Professional Engineer (Structural) - Queensland: Regn. No. 24223
Registered Building Designer & Professional Engineer (Structural) - Tasmania: Regn. No. 185770492
Registered Professional Engineer (Structural) - Victoria: Regn. No. PE0003848

CERTIFICATE OF THE RESPONSIBLE DESIGNER

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Section 106
Section 129
Section 155

Form **35**

To: jake pullen *Owner name*

88 Tamarix Rd *Address*

Primrose Sands 7173 *Suburb/postcode*

Designer details:

Name:	John Ronaldson	Category:	Building Designer /Engineer
Business name:	Apex Engineering Group PTY LTD	Phone No:	+61 7 5657 4456
Business address:	Suite 100, 237 Scottsdale Drive		
	Robina 4226	Fax No:	+61 7 5657 8899
Licence No:	185770492	Email address:	engineer@steelx.com.au

Details of the proposed work:

Owner/Applicant	jake pullen	Designer's project reference No:	SHBT240060
Address:	88 Tamarix Rd	Lot No:	
	Primrose Sands 7173		

Type of work: Building work: ☑ Plumbing work: ☐ *(X all applicable.)*

Description of work:

New Building

Sorell Council
Development Application: Planning Application - 88 Tamarix Road, Primrose Sands.pdf
Plans Reference:P1
Date Received:15/10/2024

(new building / alteration / addition / repair / removal / re-erection / water / sewerage / stormwater / on-site wastewater management system / backflow prevention / other)

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

Certificate Type:	Certificate	Responsible Practitioner
	☑ Building design	Architect or Building Design
	☑ Structural design	Engineer or Civil Design
	☐ Fire Safety design	Fire Engineer
	☐ Civil design	Civil Engineer or Civil Designer
	☐ Hydraulic design	Building Service Design
	☐ Fire Service design	Building Service Design
	☐ Electrical design	Building Service Design
	☐ Mechanical design	Building Service Design
	☐ Plumbing design	Plumber-Certifier: Architect,Building Designer or Engineer
	☐ Other (specify)	

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

Other details:

Design documents provided:

The following documents are provided with this Certificate -
Document description:

Drawing numbers: SHBT240060-2 to SHBT240060-11	Prepared by: Sheds N Homes	Date: 22/08/2024
Schedules:	Prepared by: TBA	Date: TBA
Specifications:	Prepared by: Sheds N Homes	Date: 22/08/2024
Computations:	Prepared by: Sheds N Homes	Date: 22/08/2024
Performance solution proposals:		
Test reports:		

Standards, codes or guidelines relied on in design process:

NCC: 2022, and the following Australian standards: AS/NZS4600:2018, AS/NZS 1170.0 2002, AS/NZS 1170.1:2002, AS/NZS 1170.2:2021, AS/NZS 1170.3:2002, AS/NZS 1170.4:2007, AS4100:1998, AS2870:2011 and AS3600:2018.

Any other relevant documentation:

Attribution as designer:

I John Ronaldson being a licensed building services provider am responsible for the design of that part of the building work as described in this certificate;

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

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

	Name: (print)	*Signed:*	*Date:*
Designer:	John Ronaldson		22/08/2024

Licence No: 185770492

Director of Building Control - date approved: 2 August 2017 — Building Act 2016 - Approved Form No 35

Assessment of Certifiable Works: (TasWork)

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

if you cannot check ALL of these boxes, LEAVE THIS SECTION BLANK:

TasWater must then be contacted to determine if the propesed works are Certificable Works.

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

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

Certification:

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

	Name: (print)	*Signed:*	*Date:*
Designer:			

APEX ENGINEERING GROUP

Suite 100, 237 Scottsdale Drive,
Robina, QLD. 4226
Phone: +61 7 5657 4456
Fax: +61 7 5657 8899

Thursday, 22 August 2024

Sheeting Design Documentation

To whom it may concern,

The sheeting used for this structure has been designed as a category R2 sheeting with an imposed load of 0.25kPa and concentrated load of 1.4kN applied in accordance with NCC: 2022 and AS1562.1.

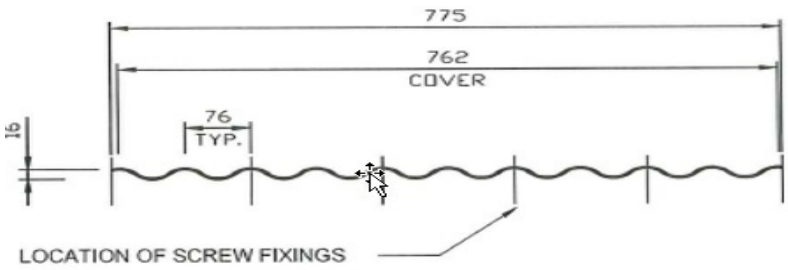
No allowance has been made for the fixing of rooftop-mounted equipment such as solar panels or air-conditioning equipment directly to the cladding.

Metroll purlins have been designed to withstand foot traffic during installation and service. The use of appropriate cradles or cherry pickers is recommended. **As a minimum, never walk on purlins without safety mesh in place.**

When walking on Corodek roof sheeting always wear flat rubber soled shoes and only walk over areas where purlins or batten supports are installed.

Profile and Dimensions of Cladding

Metroll Corodek Steel Sheeting is Manufactured from G550 colour coated steel or zinc-aluminium alloy coated (AZ 150) steel. In some locations galvanised (Z450) may also be available.



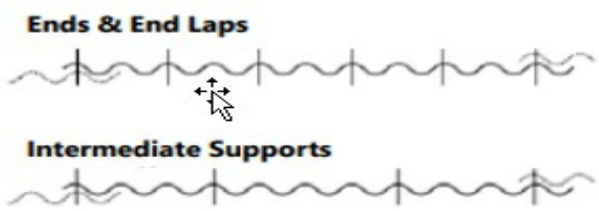
Specification of Materials									
Location	BMT (mm)	Steel Base (MPa)	Mass CB (kg/m²)	Mass Zinc (kg/m²)	Effective Cover	Min. Pitch	Max Spans (mm)		
							End	Internal	Overhang
Roof	0.42	G550	4.35	4.28	762	5 (1 in 12)	900	1200	150
Roof	0.48	G550	4.93	4.81	762	5 (1 in 12)	1200	1600	150
Wall	0.42	G550	4.35	4.28	762	N/A	1850	2350	150
Wall	0.48	G550	4.93	4.81	762	N/A	2050	2450	150

Design pressures to AS/NZS 1170.2		
Location	Zone	Design Pressure (kPa)
Roof	Corner	-2.38
	Edge	-1.58
	General	-0.79
Wall	Corner	-1.72
	Edge	-1.14
	General	-0.57

Max Roof Run (m) for Slopes & Rainfall Intensity			
Rainfall Intensity (mm/hr)	Corodek Roof Slope		
	1 in 12 (5°)	1 in 7.5 (7.5°)	1 in 6 (10°)
100	29	34	38
150	20	23	25
200	15	17	19

Max Roof Run (m) for Slopes & Rainfall Intensity			
Rainfall Intensity (mm/hr)	Corodek Roof Slope		
	1 in 12 (5°)	1 in 7.5 (7.5°)	1 in 6 (10°)
250	12	14	15
300	10	11	13
400	7	8	10

Fastener Specifications		
Connection Type	Non-Cyclonic	Cyclonic
Timber	M6 - 11 x 50 roof zips	M6.5 - 12 x 55 roof zips
0.75 to 1.0mm Steel	M6 - 11 x 50 roof zips	M6.5 - 12 x 55 roof zips
1.2 to 4mm Steel	M5.5 x 39 Auto Teks	14 - 10 x 53 Hex Head



Testing Criteria

This information is based on the **Low-High-Low testing competed by the Cyclone Testing Station (CTS)**, School of Engineering, James Cook University. The results of this testing are outlined in the test report TS716 produced by the CTS. Ultimate cyclic wind load strength tests were NATA accredited tests.
Load testing carried out by James Cook University, cyclone testing station, report No.TS716. Product tested to AS4040.1, AS4040.3 and low-high-low as per BCA B1.2. Tests carried out: cyclonic airbox wind test for strength. Static testing for serviceability. Buildex report No. ELTR 1532.

Signed

John Ronaldson
for and on behalf of
Apex Engineering Group PTY LTD
ACN 632 588 562

enviro •tech
CONSULTANTS
Geotechnical & Environmental Services

FLOOD PRONE AREAS HAZARD ASSESSMENT

Client:	**Jake Pullen**
Certificate of Title:	**59590/8**
Investigation Date:	**Wednesday, 27 November 2024**

Refer to this Report As

Enviro-Tech Consultants Pty. Ltd. 2024. Flood Hazard Assessment Report for a Proposed Dwelling, 88 Tamarix Road - Primrose Sands. Unpublished report for Jake Pullen by Enviro-Tech Consultants Pty. Ltd., 27/11/2024.

Report Distribution:

This report has been prepared by Enviro-Tech Consultants Pty. Ltd. for the use by parties involved in the proposed residential development of the property named above. It is to be used only to assist in managing any existing or potential inundation hazards relating to the Site and its development.

Limitations of this report

The data displayed within this document has been prepared using open-source scientific documents and data. Envirotech have used this local and regional data to estimate present and future hazards at the Site. The data is by its nature approximate and may contain errors introduced by the data provider(s).

The inundation modelling conducted in this assessment assumes specific Site conditions detailed within this assessment report as per design plans. Modifications to the landscape, not indicated in this report, including construction of retaining walls, soil cut or fill, and water flow obstructions including but not limited to vegetation, fencing, and non-fixed items may result in varied inundation levels and varied water flow movement across the property which are not modelled in this assessment are outside of the scope of this investigation.

Executive Summary

Enviro-Tech Consultants Pty. Ltd. (Envirotech) were contracted by Jake Pullen to prepare a flood prone areas hazard assessment for a proposed Dwelling located at 88 Tamarix Road, Primrose Sands. This report has been written to address planning scheme overlay codes in general accordance with the state-wide planning provisions for Sorell City Council.

The objective of the Site investigation is to:

- Use available geographic information system (GIS) data to make interpretations about present Site hydrology, and how the proposed development will be impacted by inundation and where relevant, assessing the development influence on floodwaters entering and existing the land.
- Conduct a risk assessment for the proposed development ensuring relevant performance criteria, building regulations are addressed.
- Assess if the proposed development can achieve and maintain a tolerable risk for the intended life of the use or development without requiring any flood protection measures.
- Determine if the building and works will cause or contribute to flood or inundation on the Site, on adjacent land or public infrastructure
- Provide recommendations for managing inundation risk.

The proposed development comprises:

- A garage (outside of the floodwater overlay)
- A three bedrooms single storey dwelling with all habitable rooms FFL at 3.1 m AHD (partially within the floodwater overlay)
- An access road partially within the overlay.

The following are concluded:

- The proposed dwelling and access road can achieve and maintain a tolerable risk from a 1% annual exceedance probability flood event for the intended life of the use with the recommended flood protection measures.
- With FFL of all proposed habitable rooms at 3.1m AHD, which is well above the modelled 1% AEP highest inundation level on the northeastern corner of the proposed dwelling at 2.15 m AHD and therefore complies with regulation 54(2) of the Building Regulations 2016.

It is required that the driveway is constructed in a way which will not block floodwater movement, with some management suggestion presented herein.

1 Introduction

1.1 *Background*

Enviro-Tech Consultants Pty. Ltd. (Envirotech) were contracted by Jake Pullen to prepare a flood prone areas hazard assessment for a proposed Dwelling located at 88 Tamarix Road, Primrose Sands. This report has been written to address planning scheme overlay codes in general accordance with the state-wide planning provisions for Sorell City Council.

This inundation modelling report has been prepared by an environmental and engineering geologist with hydrogeology and hydrology training and experience. Areas of competence include catchment and streamflow models for assessing waterway erosion and inundation.

The proposed development has triggered the following overlay codes which are addressed within this report:

- C 12.0 Flood Prone Areas Code

1.2 *Objectives*

The objective of the Site investigation is to:

- Use available geographic information system (GIS) data to make interpretations about present Site hydrology, and how the proposed development will be impacted by inundation and where relevant, assessing the development influence on floodwaters entering and exiting the land.
- Conduct a risk assessment for the proposed development ensuring relevant performance criteria, building regulations and directors determination are addressed.
- Assess if the proposed development can achieve and maintain a tolerable risk for the intended life of the use or development without requiring any flood protection measures.
- Determine if the building and works will cause or contribute to flood or inundation on the Site, on adjacent land or public infrastructure
- Provide recommendations for managing inundation risk.

1.3 *Cadastral Title*

The land studied in this report is defined by the title 59590/8

1.4 *Site Setting*

The Site watershed influence is presented in Map 1. Floodwater overlays are presented in Map 2. The Site location plans are presented in **Error! Reference source not found.**

2 Assessment

2.1 *Proposed Development*

Table 1 summarises the provided design documents from which this assessment is based (Attachment 2). The proposed development comprises:

- A garage (outside of the floodwater overlay)
- A three bedrooms single storey dwelling with all habitable rooms FFL at 3.1 m AHD (partially within the floodwater overlay)
- An access road partially within the overlay.

Table 1 Project Design Drawings

Drafted By	Project Number	Date Generated	Drawings
CHRISTOPHER.G.KEAN	220701	03/09/2023	A02

2.2 *Planning*

Planning code overlay mapping is presented in Attachment 1 and planning and building regulations are addressed in Attachment 3.

The Site is located within the Sorell Council mapped 1% Annual Exceedance Probability (AEP) inland flooding hazard area (Map 2). The mapping has triggered Flood Prone Areas Hazard Code, meaning that a more detailed investigation is required to further assess inundation risk associated with the proposed development. The defined floodwater level for the land is to be assessed based on proposed Site works.

2.3 *Building*

According to the Tasmanian Building Regulations 2016, the floor level of each habitable room[1] of the building, being erected, re-erected, or added as part of the work, is to be constructed at least 300 millimetres above the defined flood level for the land.

2.4 *Topography*

The Site ranges in elevation from approximately 2 m AHD to 3 m AHD and is sloping to the northeast (Map 2).

2.5 *Stormflow Analysis and Management*

Details of the stormflow analysis assessment are presented in Attachment 6. The following are observed:

- 1% AEP floodwaters are projected to displace over parts of the lower lying areas of the Site as a result of inundation within Primrose Lagoon (located to the northeast of the Site).
- Part of the proposed dwelling and driveway is projected to be impacted by floodwaters, while the proposed garage is outside the flood affected area.
- 1% AEP floodwaters are calculated to peak at an estimated 2.15 m AHD in proximity to the north-eastern corner of the house.
- The driveway falls within the H2 hazard classification and will require management to ensure the hazard class is reduced to H1 and is suitable for general vehicle use.
- The existing driveway crossover culvert will need to be extended to within the proposed driveway footprint.

[1] habitable room - means any room of a habitable building other than a room used, or intended to be used, for a bathroom, laundry, toilet, pantry, walk-in wardrobe, corridor, stair, hallway, lobby, clothes drying room, service or utility room, or other space of a specialised nature occupied neither frequently nor for extended periods.

3 Risk Assessment

Qualitative risk evaluation criteria have been created to determine fundamental risks that may occur due to development in areas that are vulnerable to inundation hazards.

This qualitative risk assessment technique is based on AS/NZS ISO 31000:2009 and relies on descriptive or comparative characterisation of consequence, likelihood, and the level of risk comparative (rather than using absolute numerical measures).

A risk consequence/likelihood matrix has been selected which is consistent with AS/NZS ISO 31000:2009 guidelines.

Consequence/likelihood criteria have assisted in determining if any risk management measures are required at the Site to mitigate any potential hazards. Adopted consequence/likelihood criteria are presented in Attachment 7. Performance criteria are presented in Attachment 8.

As habitable rooms are raised 300 mm above the defined flood level for the Site, **risks associated with the proposed works are considered low.**

4 Site Building and Works

The following are recommended:

- Floodwaters within the driveway may be mitigated by:
    - Elevating the access road with 100mm of road base/gravel/pavement will bring it into the H1 hazard class. Basic ag drains may be placed in the base of the swale beneath the road to assist with drainage.
    - The drive is not to be elevated without adequate drainage management.
- With FFL of all proposed habitable rooms at 3.1m AHD, which is well above the modelled 1% AEP highest inundation level on the northeastern corner of the proposed dwelling at 2.15 m AHD and therefore complies with regulation 54(2) of the Building Regulations 2016.

Marco Scalisi BSc Msc | Environmental & Engineering Geologist

Project manager

Enviro-Tech Consultants Pty. Ltd.

5 References

Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, (Editors) Australian Rainfall and Runoff: A Guide to Flood Estimation, © Commonwealth of Australia (Geoscience Australia), 2019.

CBOS 2021a. Director's Determination - Riverine Inundation Hazard Areas. Director of Building Control Consumer, Building and Occupational Services, Department of Justice. 8 April 2021

Chow, VT (1959) Open channel hydraulics, McGraw-Hill, New York

Coombes, P., and Roso, S. (Editors), 2019 Runoff in Urban Areas, Book 9 in Australian Rainfall and Runoff - A Guide to Flood Estimation, Commonwealth of Australia, © Commonwealth of Australia (Geoscience Australia), 2019.

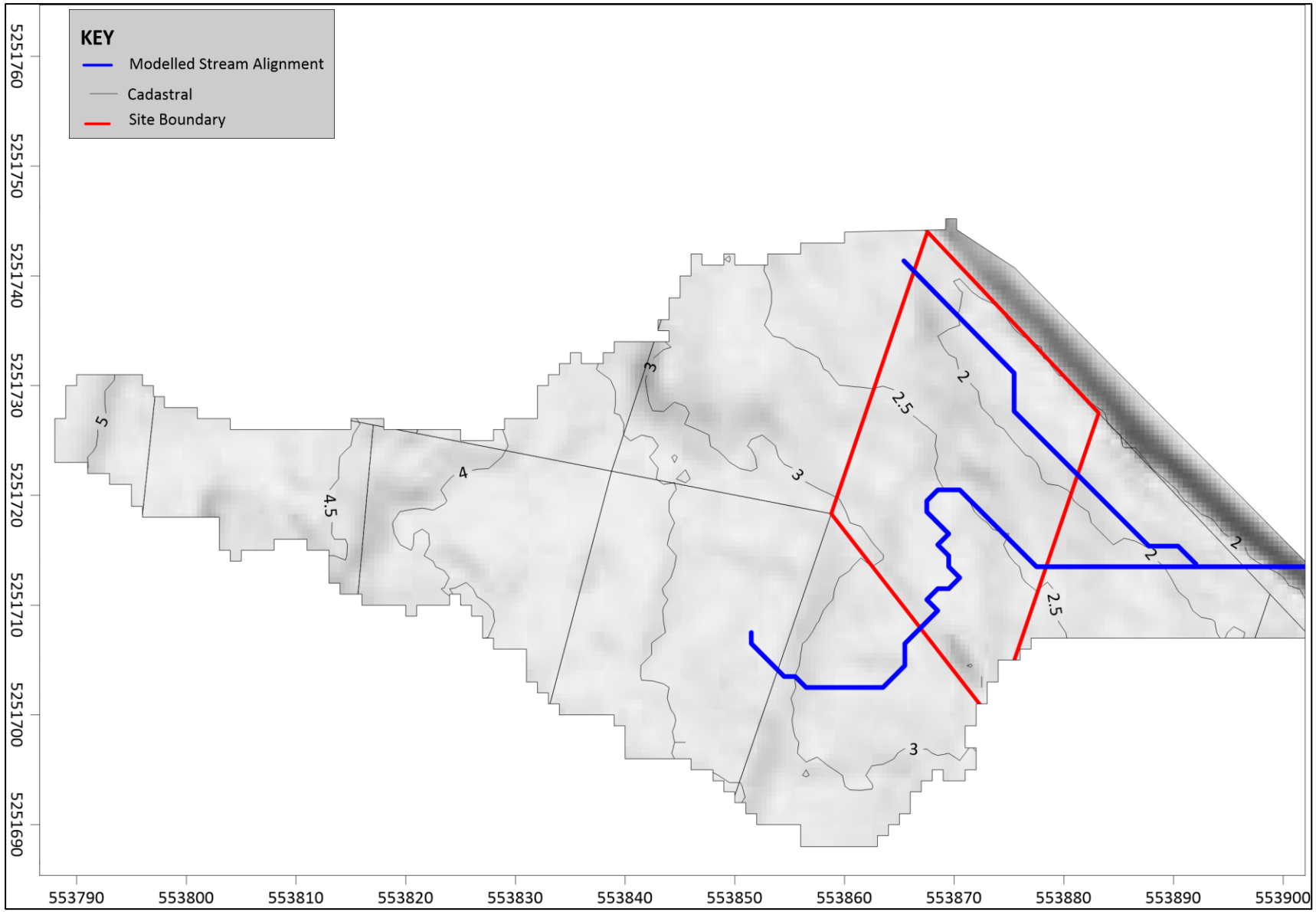
N. Maidment, D.R. 1993. Handbook of hydrology. McGraw-Hill. New York, NY.

Water and Rivers Commission 2000, Stream Channel Analysis Water and Rivers Commission River Restoration Report No. RR 9.

Smith, G.P., Davey, E. K., and Cox, R.J., (2014) Flood Hazard. Water Research Laboratory Technical Report 2014/07, 17 June 2014.

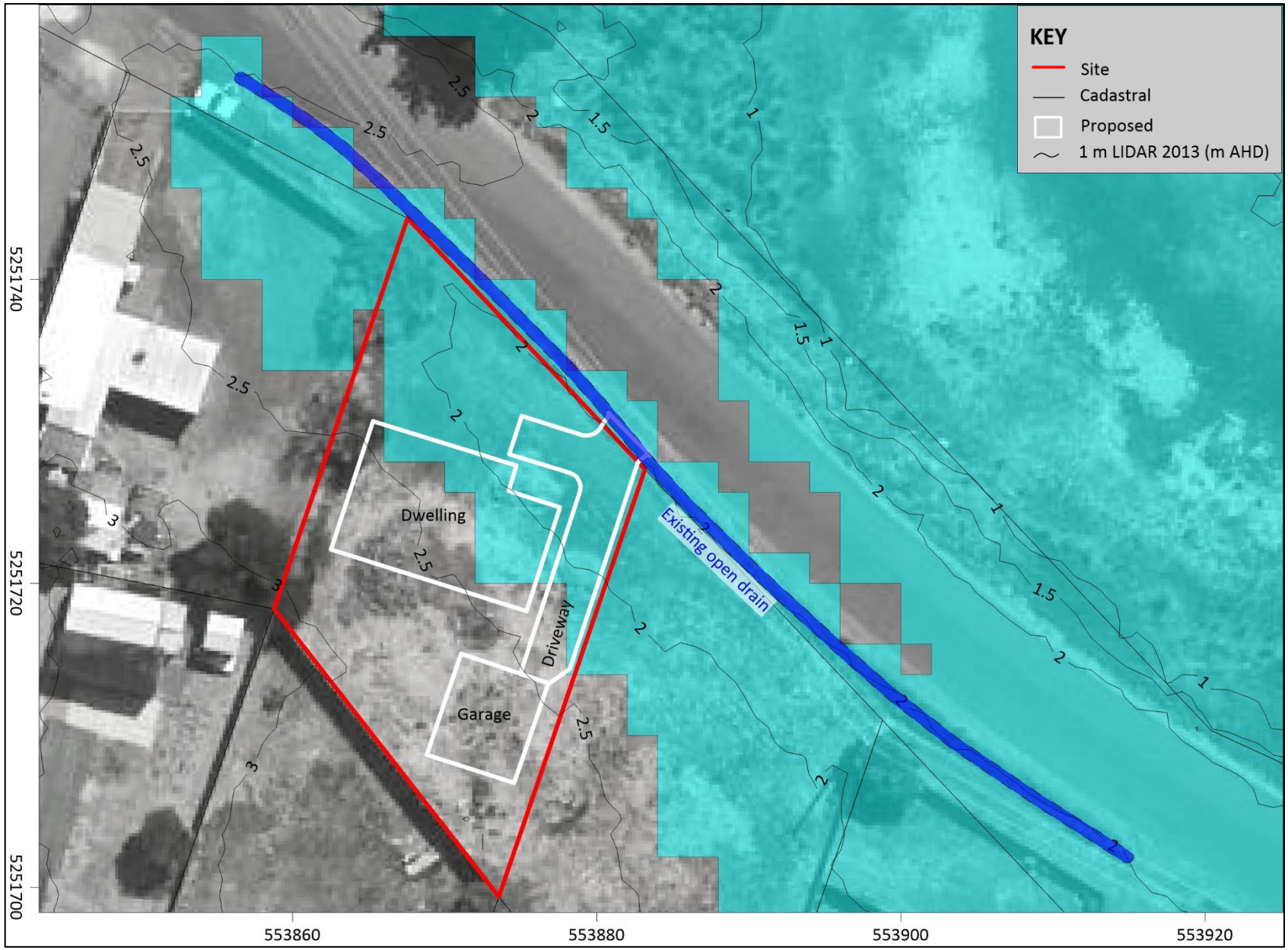
Attachment 1 Mapping

Map 1



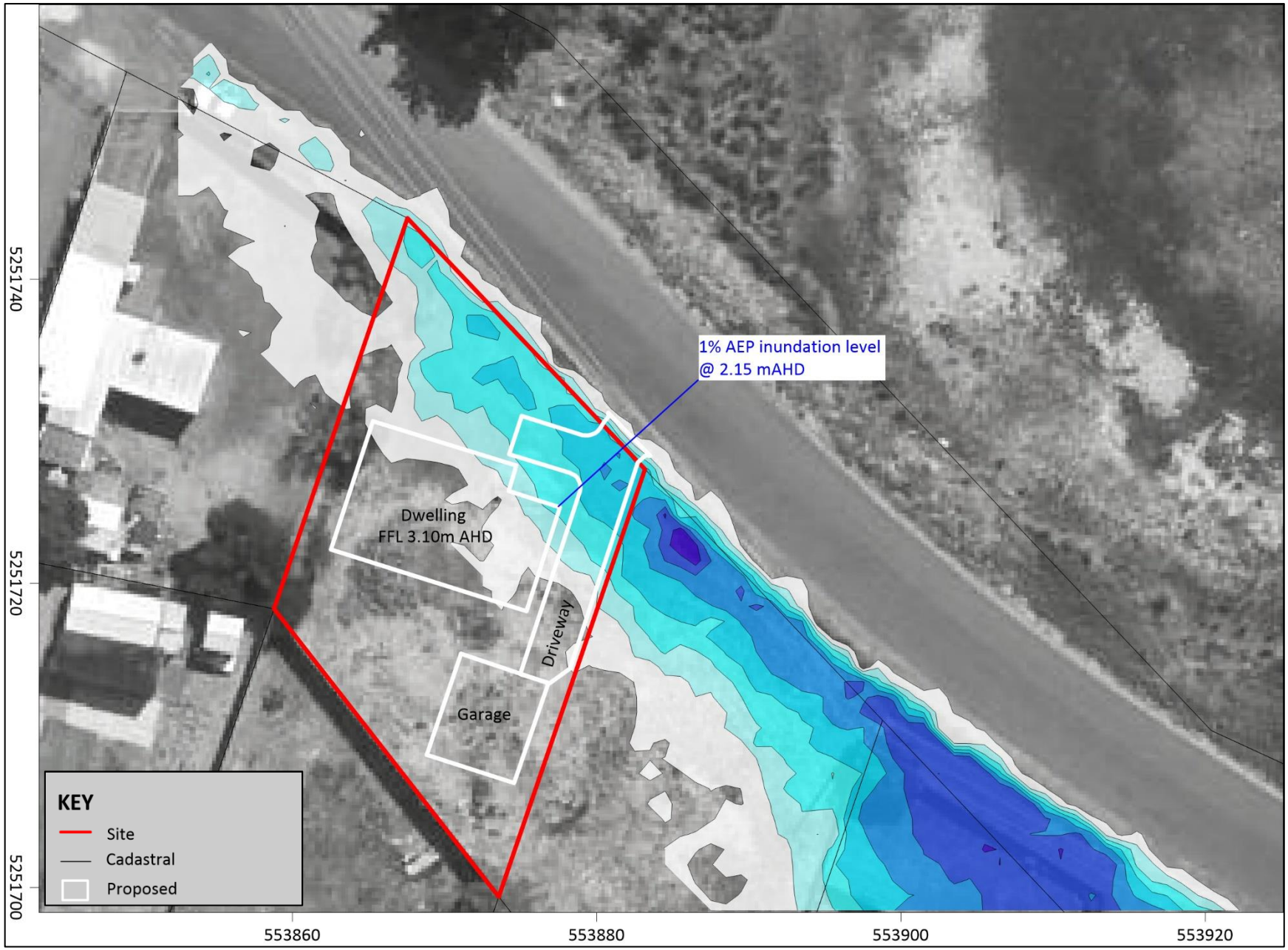
Map 1 Site local Hillshade setting with Local Surfer watershed model and stream alignment

Map 2



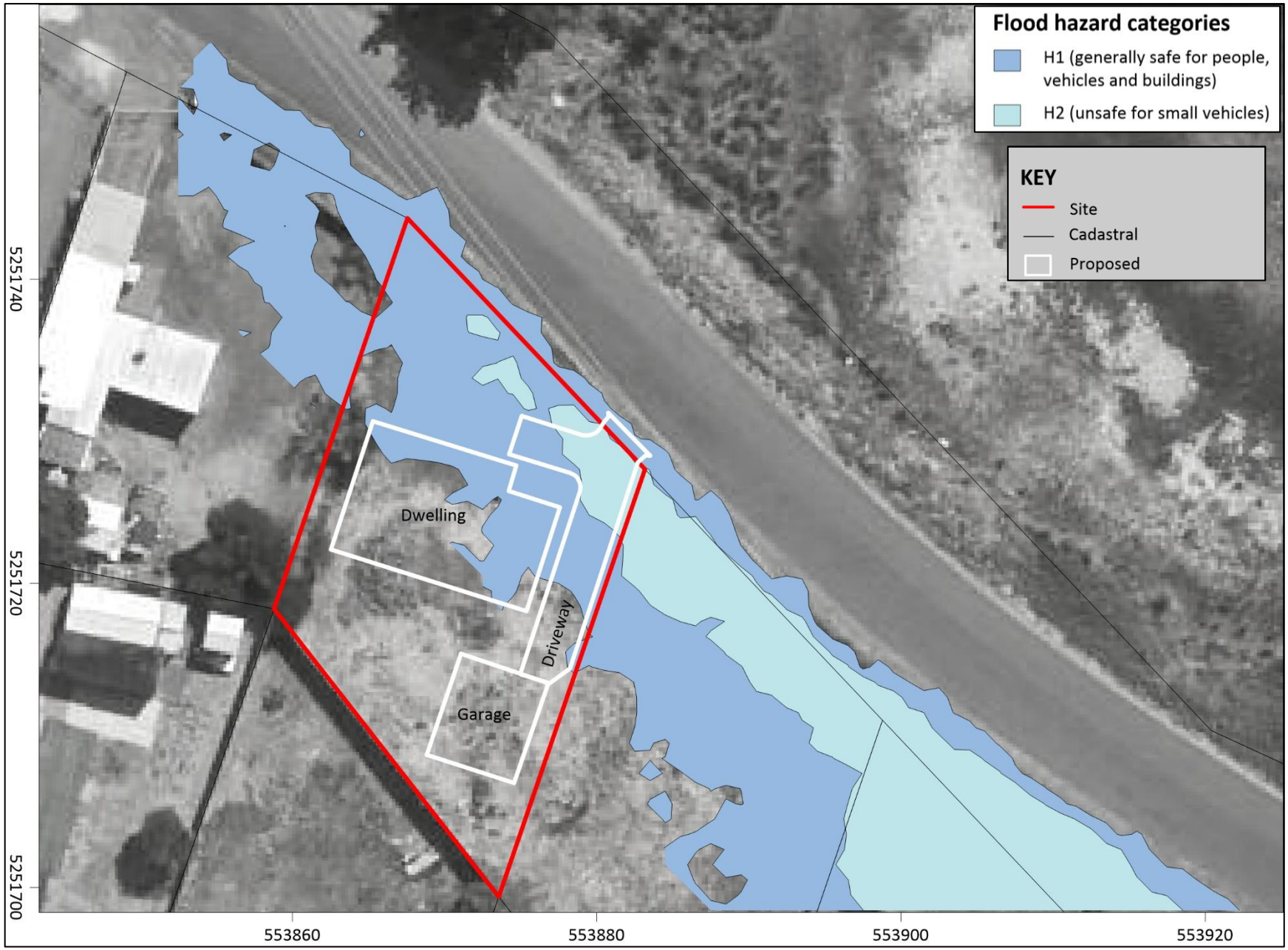
Map 2 1% AEP Floodwater modelling extent prepared by the local government authority with proposed development and existing open drain

Map 4



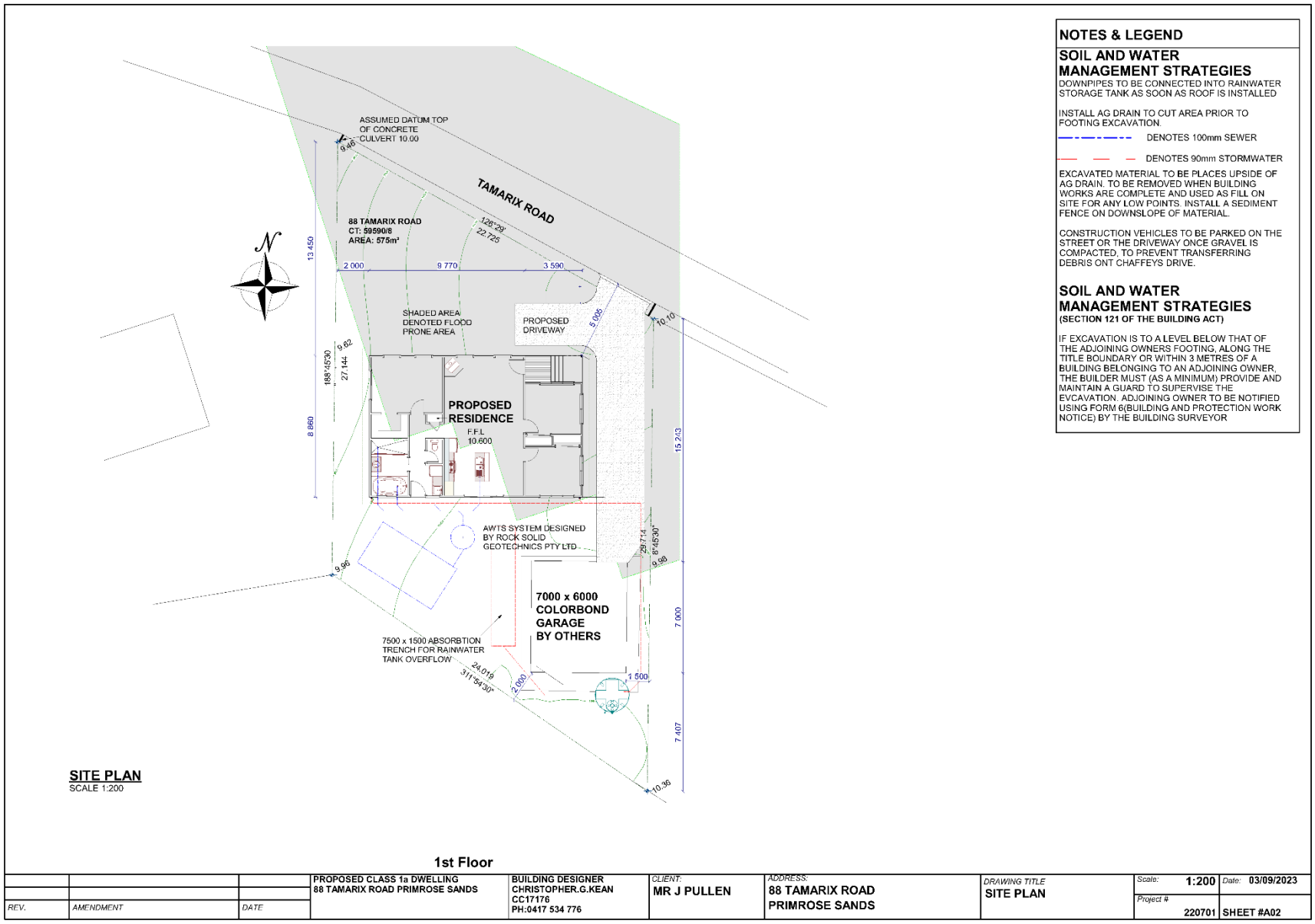
Map 3 Envirotech Site Modelled 1% AEP Floodwater depth

Map 4



Map 4 Flood hazard categories

Attachment 2 Preliminary Design Concept Plans



Attachment 3 Planning and Building Regulations

C12.0 Flood-Prone Area Hazard Code

Code Overlay – The LIST Mapping

The Site is located within the Sorell Council mapped 1% Annual Exceedance Probability (AEP) inland flooding hazard area (Map 2). The mapping has triggered Flood Prone Areas Hazard Code, meaning that a more detailed investigation is required to further assess risk associated with the proposed development.

C12.6 Development Standards for Buildings and Works

C12.6.1 Buildings and works within a flood-prone hazard area

C12.6.1 Objective

That:

(a) building and works within a flood-prone hazard area can achieve and maintain a tolerable risk from flood; and
(b) buildings and works do not increase the risk from flood to adjacent land and public infrastructure.

C12.6.1 A1 Acceptable Solutions

As there are no acceptable solutions to C12.6.1 (A1), the proposed development is to be assessed against performance criteria.

C12.6.1 P1 Performance Criteria

The proposed development needs to be assessed against the following performance criteria:

- C12.6.1 P1.1 and
- C12.6.1 P1.2.

Attachment 4 Building Regulations

Directors Determination - Riverine Inundation Hazard Areas

According to the director's determination, a flood prone areas inundation hazard report must be prepared for building.

Riverine inundation

For the purposes of the Tasmanian Building Act 2016, land that has previously been flooded, or land that has been assessed by the council of the relevant municipal area as having a reasonable probability of flooding, is land that is – (a) subject to riverine inundation (b) a hazardous area for the purposes of the definition of hazardous area in section 4(1) of the Act.

A person must not perform building work on a building on land that is subject to riverine inundation unless the floor level of each habitable room of the building being erected, re-erected or added as part of the work, is at least 300 millimetres above the defined flood level for the land.

Defined Riverine Flood Level

For the Sorell municipality, and for the purposes of regulation 54(2) of the Building Regulations 2016, the defined flood levels for floodplains of any other watercourses, have a 1% probability of being exceeded in any year according to a report adopted by the relevant council for the municipal area in which the land is located. Map 2 presents the map adopted by the local council, and the specific floodwater depths are refined in Map 3.

Finished Floor Levels

The director's determination is to be addressed for each of the building lots to ensure the proposed finished floor levels are suitably raised above 1% AEP floodwater levels.

Mapping presented herein provides information which can assist in determining finished floor levels for the Site.

Finished floor levels are to be determined on the basis that the floor level of each habitable room of the building, being erected, re-erected or added as part of the work, is at least 300 millimetres above the defined flood level for the land.

Attachment 5 Site Overland Flow Analysis

Flood Modelling

A floodwater model has been generated for the Site based on information deriving from the watershed affecting the Site and local LIDAR (Map 3).

Proposed Development

Part of the proposed dwelling and driveway is projected to be impacted by floodwaters, while the proposed garage is outside the flood affected area. 1% AEP floodwaters are projected to inundate lower lying areas of the Site from 'Primrose Lagoon' (located to the northeast of the Site). These types of lagoons generally fill up over several years of higher-than-average annual rainfall and low evaporation rates.

Site Inundation

The existing roadside table drain has very little influence on floodwater movement, with floodwaters passing through the natural swale drain near the property entrance. An H2 hazard band (in accordance with Ball et. al. 2019) as presented in Map 1 is estimated within this swale. Vehicles must pass through this H2 zone to access the buildings on the Site. In accordance with Ball et. al. 2019, two-wheel drive vehicles should not pass through H2 floodwaters. This may be mitigated by:

- Elevating any higher than 100mm will require a culvert to be engineered and constructed beneath the road.
- The drive is not to be elevated without adequate drainage management.

Defined Inundation Levels

The following findings are from the 1% AEP inundation modelling for the proposed dwelling as specified in Map 3:

- The highest inundation levels within the northeastern corner of the proposed dwelling is calculated at 2.15 m AHD (Map 2).

Finished Floor Levels

In accordance with the Tasmanian Building Regulations 2016, finished floor level of the proposed dwelling habitable rooms[2] need to be constructed 0.3 m above the modelled 1% AEP inundation for the Site. As the FFL of all proposed habitable rooms is at 3.1m AHD, this is well above the modelled 1% AEP highest inundation level on the northeastern corner of the proposed dwelling at 2.15 m AHD and therefore complies with regulation 54(2) of the Building Regulations 2016.

[2] habitable room - means any room of a habitable building other than a room used, or intended to be used, for a bathroom, laundry, toilet, pantry, walk-in wardrobe, corridor, stair, hallway, lobby, clothes drying room, service or utility room, or other space of a specialised nature occupied neither frequently nor for extended periods.

Attachment 6 Risk Assessment Qualitative Terminology

DESCRIPTOR	QUALITATIVE MEASURES OF LIKELIHOOD
ALMOST CERTAIN	The event is expected to occur over the design life
LIKELY	The event will probably occur under adverse conditions over the design life
POSSIBLE	The event could occur under adverse conditions over the design life
UNLIKELY	The event might occur under very adverse circumstances over the design life.
RARE	The event is conceivable but only under exceptional circumstances over the design life.
BARELY CREDIBLE	The event is inconceivable or fanciful over the design life.

DESCRIPTOR	QUALITATIVE MEASURES OF CONSEQUENCES TO PROPERTY
CATASTROPHIC	Structure(s) completely destroyed and/or large-scale damage requiring major engineering works for stabilisation. Could cause at least one adjacent property major consequence damage.
MAJOR	Extensive damage to most of structure, and/or extending beyond site boundaries requiring significant stabilisation works. Could cause at least one adjacent property medium consequence damage.
MEDIUM	Moderate damage to some of structure, and/or significant part of site requiring large stabilisation works. Could cause at least one adjacent property minor consequence damage.
MINOR	Limited damage to part of structure, and/or part of site requiring some reinstatement stabilisation works.
INSIGNIFICANT	Little damage. (Note for high probability event (Almost Certain), this category may be subdivided at a notional boundary of 0.1%. See Risk Matrix.)

LIKELIHOOD	CONSEQUENCES TO PROPERTY				
	CATASTROPHIC	MAJOR	MEDIUM	MINOR	INSIGNIFICANT
ALMOST CERTAIN	VH	VH	VH	H	**L**
LIKELY	VH	VH	H	M	**L**
POSSIBLE	VH	H	M	M	**VL**
UNLIKELY	H	M	**L**	**L**	**VL**
RARE	M	**L**	**L**	**VL**	**VL**
BARELY CREDIBLE	**L**	**VL**	**VL**	**VL**	**VL**

RISK LEVEL		EXAMPLE IMPLICATIONS
VH	VERY HIGH RISK	Unacceptable without treatment. Extensive detailed investigation and research, planning and implementation of treatment options essential to reduce risk to Low; may be too expensive and not practical. Work likely to cost more than value of the property.
H	HIGH RISK	Unacceptable without treatment. Detailed investigation, planning and implementation of treatment options required to reduce risk to Low.
M	MODERATE RISK	May be tolerated in certain circumstances (subject to regulator's approval) but requires investigation, planning and implementation of treatment options to reduce the risk to Low. Treatment options to reduce to Low risk should be implemented as soon as practicable.
L	LOW RISK	Usually acceptable to regulators. Where treatment has been required to reduce the risk to this level, ongoing management is required.
VL	VERY LOW RISK	Acceptable. Manage by management procedures.

Attachment 7 Qualitative Terminology

almost certain	Is expected to occur in most circumstances; and/or there is a high level of recorded incidents; and/or strong anecdotal evidence; and/or a strong likelihood the event will recur; and/ or great opportunity, reason, or means to occur; may occur once every year or more
Likely	Will probably occur in most circumstances; and/or regular recorded incidents and strong anecdotal evidence; and/or considerable opportunity, reason or means to occur; may occur once every five years
Possible	May occur at some time; and/or few, infrequent or randomly recorded incidents or little anecdotal evidence; and/or very few incidents in associated or comparable organisations, facilities or communities; and/or some opportunity, reason or means to occur; may occur once every 20 years
Unlikely	Is not expected to occur; and/or no recorded incidents or anecdotal evidence; and/or no recent incidents in associated organisations, facilities or communities; and/or little opportunity, reason or means to occur; may occur once every 100 years
Rare	May occur only in exceptional circumstances; may occur once every 500 or more years

Source: Commonwealth of Australia, 2004: Emergency Management Australia – Emergency Risk Management Applications Guide Manual 5

Consequence Rating	***Public Safety***	***Local growth and economy***	***Community and Lifestyle***	***Environment & sustainability***	***Public administration***
Catastrophic	Large numbers of serious injuries or loss of lives	Local decline leading to business failure, loss of employment, local hardship	Local area seen as very unattractive, significant decline, and unable to support community	Major widespread loss of environmental amenity and progressive irrecoverable environmental damage	Public Administration would fail and cease to be effective
Major	Isolated instances of serious injuries or loss of lives	Local stagnation such that businesses unable to thrive and imbalance between employment and local population growth	Severe and widespread decline in services and quality of life within community	Severe loss of environmental amenity and a danger of continuing environmental damage	Public administration would struggle to remain effective and would be perceived as being in danger of failing completely
Moderate	Small number of injuries	Significant general reduction in economic performance relative to current forecasts	General appreciable decline in services	Isolated significant instances of environmental damage that might be reversed with intensive efforts	Public administration would be under significant pressure on numerous fronts
Minor	Serious near misses or minor injuries	Individually significant but isolated areas of reduction in economic performance relative to current forecasts	Isolated but noticeable examples of decline in services	Minor instances of environmental damage that could be reversed	Isolated instances of Public administration being under significant pressure
Insignificant	Appearance of threat by no actual harm	Minor shortfall relative to current forecasts	There would be minor areas in which the region was unable to maintain is current services	No environmental damage	There would be some minor instances of public administration being under more than usual stress but it could be managed

Likelihood (L)	**Consequences (C)**				
	Insignificant	**Minor**	**Moderate**	**Major**	**Catastrophic**
Almost certain	MEDIUM	medium	high	extreme	extreme
Likely	low	medium	high	high	extreme
Possible	low	medium	medium	high	high
Unlikely	low	low	medium	medium	medium
Rare	low	low	low	low	medium

Adapted from DCC 2006, 40.

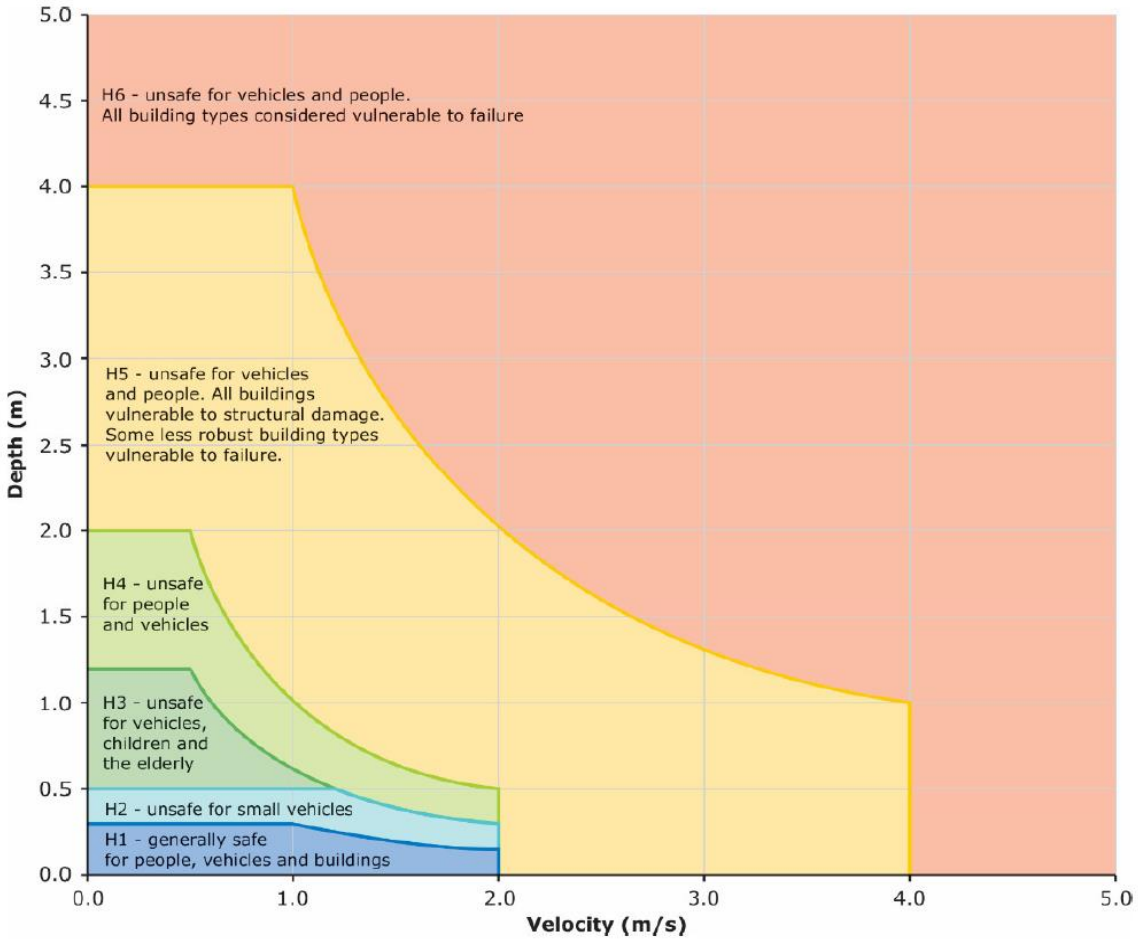


Figure 1 Flood Hazard Curve (Ball, et al., 2019)

Attachment 8 Tasmanian Planning Scheme – Flood Prone Hazard Areas

Building and Works

Objective:

That:

(a) building and works within a flood-prone hazard area can achieve and maintain a tolerable risk from flood; and

(b) buildings and works do not increase the risk from flood to adjacent land and public infrastructure.

C12.6.1 P1.1 Buildings and works within a flood-prone hazard area – risk assessment

Performance Criteria C12.6.1 P1.1 Buildings and works within a flood-prone hazard area must achieve and maintain a tolerable risk from a flood, having regard to:	Relevance	Management Options	Likelihood	Consequence	Risk	Further Assessment Required
(a) the type, form, scale and intended duration of the development;	Given the modelling, risks are considered tolerable for the proposed building and works. The proposed development is suitable constructed, located and scaled considering the hazards.	Not restricting water movement.	Unlikely	Minor	Low	No
(b) whether any increase in the level of risk from flood requires any specific hazard reduction or protection measures;	There is no increase in the level of risk beyond what is tolerable.		Unlikely	Minor	Low	No
(c) any advice from a State authority, regulated entity or a council; and						
(d) the advice contained in a flood hazard report.						

C12.6.1 P1.2 Buildings and works within a flood-prone hazard area - flood hazard reporting

Performance Criteria C12.6.1 P1.2 A flood hazard report also demonstrates that the building and works:	Relevance	Management Options	Likelihood	Consequence	Risk	Further Assessment Required
(a) do not cause or contribute to flood on the Site, on adjacent land or public infrastructure; and	Given the modelling, the building and works will result in minor and not adverse modifications to storm flow.	Not restricting water movement.	Unlikely	Minor	Low	No
(b) can achieve and maintain a tolerable risk from a 1% annual exceedance probability flood event for the intended life of the use without requiring any flood protection measures.	The proposed dwelling and access road can achieve and maintain a tolerable risk from a 1% annual exceedance probability flood event for the intended life of the use with the recommended flood protection measures.		Unlikely	Minor	Low	No

CERTIFICATE OF QUALIFIED PERSON – ASSESSABLE ITEM

Section 321

Form 55

To: Jake Pullen *Owner /Agent*

88 Tamarix road, Primrose Sands, TAS, 7173 *Address*

Primrose Sands 7173 *Suburb/postcode*

Qualified person details:

Qualified person: Kris Taylor

Address: 162 Macquarie Street

Hobart 7000

Phone No: 036224 9197

Fax No:

Licence No: NA

Email address: office@envirotechtas.com.au

Qualifications and Insurance details: Bachelor of Science with Honours in Geology with PI Insurance to $2,000,000 including hydrology and environmental coastal inundation hazard assessments

(description from Column 3 of the Director's Determination - Certificates by Qualified Persons for Assessable Items

Speciality area of expertise: Engineering Geology

(description from Column 4 of the Director's Determination - Certificates by Qualified Persons for Assessable Items)

Details of work: Riverine Inundation Assessment

Address: 88 Tamarix Road

Primrose Sands 7173

Lot No: 8

Certificate of title No: 59590/8

The assessable item related to this certificate: Riverine (flood prone areas) inundation hazard assessment

(description of the assessable item being certified)
Assessable item includes –
- *a material;*
- *a design*
- *a form of construction*
- *a document*
- *testing of a component, building system or plumbing system*
- *an inspection, or assessment, performed*

Certificate details:

Certificate type: Geological

(description from Column 1 of Schedule 1 of the Director's Determination - Certificates by Qualified Persons for Assessable Items n)

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

- (•) building work, plumbing work or plumbing installation or demolition work

OR

- ( ) a building, temporary structure or plumbing installation

In issuing this certificate the following matters are relevant –

Documents:	Enviro-Tech Consultants Pty. Ltd. 2024. Flood Hazard Assessment Report for a Proposed Dwelling, 88 Tamarix Road - Primrose Sands. Unpublished report for Jake Pullen by Enviro-Tech Consultants Pty. Ltd., 27/11/2024.
Relevant calculations:	
References:	- Director's Determination - Riverine Inundation Hazard Areas - Tasmanian Planning Scheme – State Planning Provisions - Flood-Prone Areas Hazard Code - Part 5 (Work in Hazardous Areas) of the Building Regulations 2016; Division 2 – Riverine Inundation

Substance of Certificate: (what it is that is being certified)

- An assessment of:
  - Defined Site floodwater levels or designated floodwater levels
  - 1% AEP floodwater hazards based on building design or 2100 scenarios

Scope and/or Limitations

Impact from changes to Site levels, structures or water flow obstructions on the Site (beyond what is detailed within Site proposal documents) or on neighboring properties are outside of the scope of this assessment.

I certify the matters described in this certificate.

	Signed:	*Certificate No:*	*Date:*
Qualified person:			27/11/2024

SITE INFORMATION

LAND TITLE REFERENCE	**CT 59590/8**	
TERRAIN CATEGORY	**TC2.5**	TERRAIN WITH A FEW OBSTACLES
WIND CLASSIFICATION	**N3**	SITE CLASSIFICATION TO AS4055-2006 REPORT BY PETER HOFTO ROCK SOLID GEOTECHNICS PTY LTD
SHIELDING CLASSIFICATION	**PS**	PARTIAL SHIELDING
SOIL CLASSIFICATION	**A**	SITE CLASSIFICATION TO AS2870-2011 REPORT BY PETER HOFTO ROCK SOLID GEOTECHNICS PTY LTD
CLIMATE ZONE	**7**	www.abcb.gov.au map
BAL LEVEL	**tba**	AS PER BUSHFIRE REPORT
CORROSION ENVIRONMENT	**MODERATE**	FOR STEEL SUBJECT TO THE INFLUENCE OF SALT WATER, BREAKING SURF OR HEAVY INDUSTRIAL AREAS, REFER TO BCA SECTION 3.4.2.2 & BCA TABLE 3.4.4.2. CLADDING AND FIXINGS TO MANUFACTURERS RECOMMENDATIONS.
OTHER HAZARDS	**N/A**	HIGH WIND, EARTHQUAKE, FLOODING, LANDSLIP , DISPERSIVE SOILS, SAND DUNES, MINE SUBSIDENCE, SNOW AND ICE OR OTHER RELEVANT FACTORS.

DRAWING INDEX

AREA SCHEDULE

SITE AREA	: 575m²
FLOOR AREA : RESIDENCE	: 112.74m²
FLOOR AREA : GARAGE	: 42m²
FLOOR AREA : PORCH	: 5.98m²

REV.	AMENDMENT	DATE

PROPOSED CLASS 1a DWELLING
88 TAMARIX ROAD PRIMROSE SANDS

BUILDING DESIGNER
CHRISTOPHER.G.KEAN
CC17176
PH:0417 534 776

CLIENT: **MR J PULLEN**

ADDRESS: **88 TAMARIX ROAD PRIMROSE SANDS**

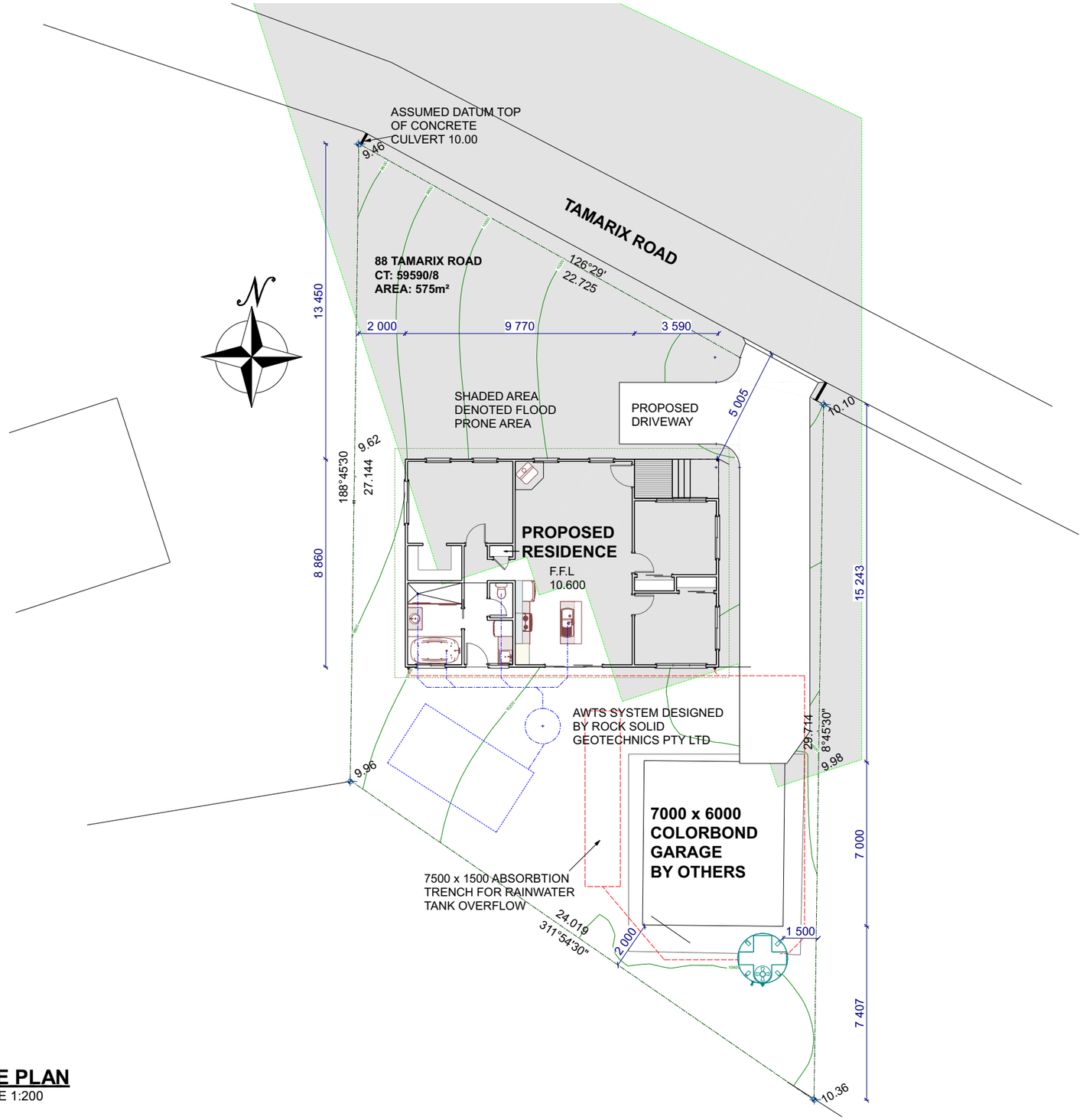
DRAWING TITLE **COVER SHEET**

Scale: **NTS**

Date: **03/09/2023**

Project # **220701**

SHEET #A01



SITE PLAN
SCALE 1:200

NOTES & LEGEND

SOIL AND WATER MANAGEMENT STRATEGIES

DOWNPIPES TO BE CONNECTED INTO RAINWATER STORAGE TANK AS SOON AS ROOF IS INSTALLED

INSTALL AG DRAIN TO CUT AREA PRIOR TO FOOTING EXCAVATION.

DENOTES 100mm SEWER

DENOTES 90mm STORMWATER

EXCAVATED MATERIAL TO BE PLACES UPSIDE OF AG DRAIN. TO BE REMOVED WHEN BUILDING WORKS ARE COMPLETE AND USED AS FILL ON SITE FOR ANY LOW POINTS. INSTALL A SEDIMENT FENCE ON DOWNSLOPE OF MATERIAL.

CONSTRUCTION VEHICLES TO BE PARKED ON THE STREET OR THE DRIVEWAY ONCE GRAVEL IS COMPACTED, TO PREVENT TRANSFERRING DEBRIS ONT CHAFFEYS DRIVE.

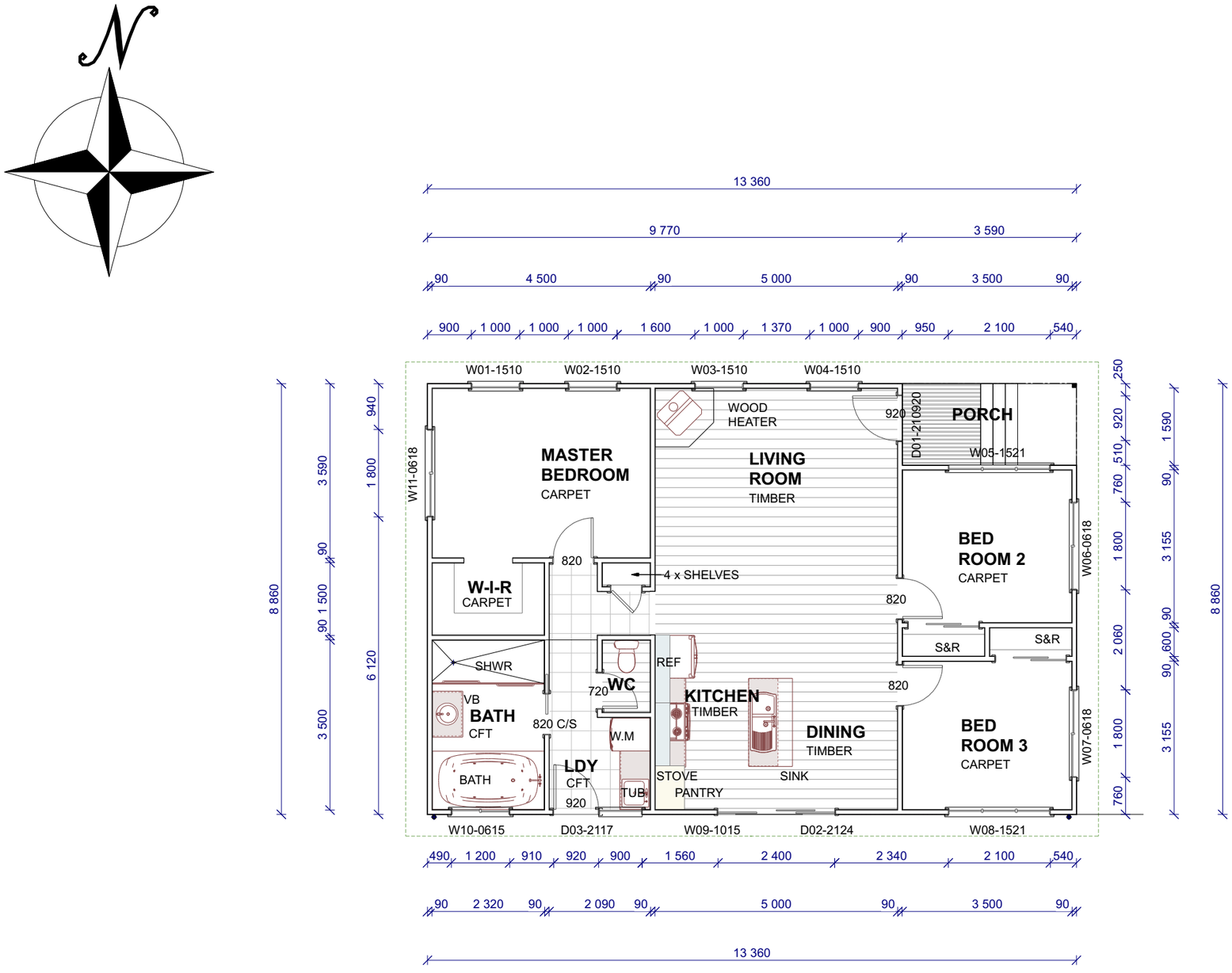
SOIL AND WATER MANAGEMENT STRATEGIES

(SECTION 121 OF THE BUILDING ACT)

IF EXCAVATION IS TO A LEVEL BELOW THAT OF THE ADJOINING OWNERS FOOTING, ALONG THE TITLE BOUNDARY OR WITHIN 3 METRES OF A BUILDING BELONGING TO AN ADJOINING OWNER, THE BUILDER MUST (AS A MINIMUM) PROVIDE AND MAINTAIN A GUARD TO SUPERVISE THE EVCAVATION. ADJOINING OWNER TO BE NOTIFIED USING FORM 6(BUILDING AND PROTECTION WORK NOTICE) BY THE BUILDING SURVEYOR

1st Floor

REV.	AMENDMENT	DATE	PROPOSED CLASS 1a DWELLING 88 TAMARIX ROAD PRIMROSE SANDS	BUILDING DESIGNER CHRISTOPHER.G.KEAN CC17176 PH:0417 534 776	CLIENT: MR J PULLEN	ADDRESS: 88 TAMARIX ROAD PRIMROSE SANDS	DRAWING TITLE SITE PLAN	Scale: 1:200	Date: 03/09/2023
								Project # 220701	SHEET #A02



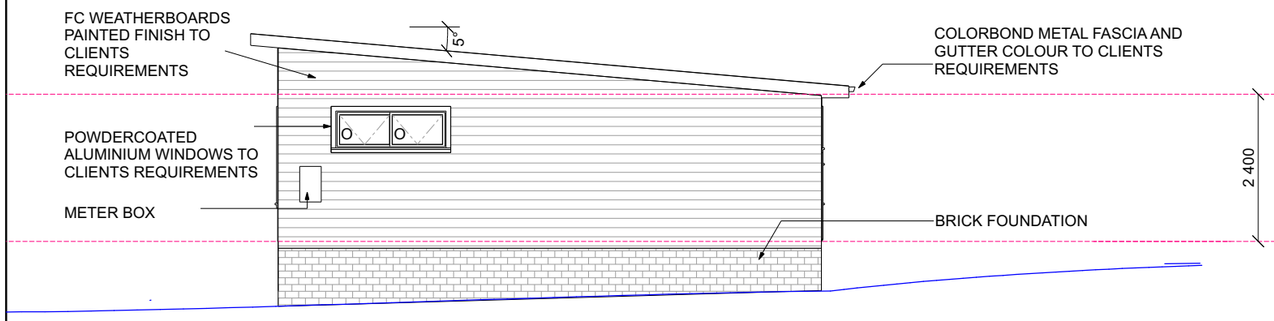
LEGEND AND NOTES

	BRICK VENEER 110mm BRICK 50mm CAVITY 90mm STUD WAL WITH R2.5HD BATTS, 10mm PLASTERBOARD LINING
	90mm STUD WALL WITH 10mm PLASTERBOARD LINING EACH SIDE U.N.O
	TIMBER HANDRAIL WITH STAINLESS STEEL WIRES NOT MORE THAN 125mm APART AS PER NCC REQUIREMENTS
	BESSER 20-01 BLOCK WALLS
HWC-	HOT WATER CYLINDER
CONC.-	CONCRETE FLOOR FINISH
CFT. -	CERAMIC FLOOR TILES
C. -	CARPET WITH AIRSTEP STEPMAX (OR EQUIVALENT) FOAM UNDERLAY
Tb.	VINYL TIMBER BOARDS COLOUR AND STYLE TO CLIENTS REQUIREMENTS
Td.	TIMBER DECKING BOARDS 136 x 25 SPOTTED GUM OR SIMILAR BUSHFIRE RATED TIMBER
DP.	100Ø DOWNPIPE
MB.	METER BOX
B.B	BOND BEAM

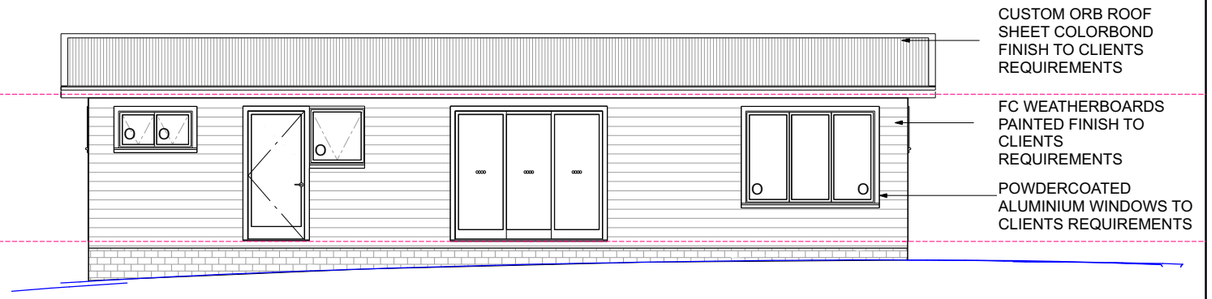
FLOOR PLAN

SCALE 1:100

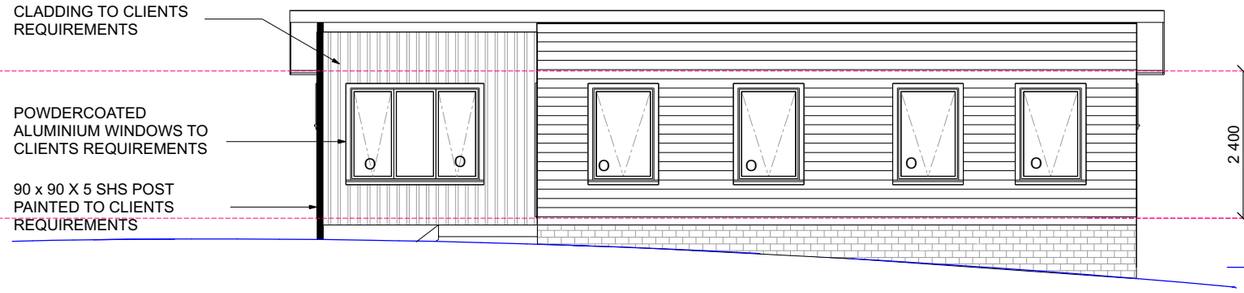
REV.	AMENDMENT	DATE	PROPOSED CLASS 1a DWELLING 88 TAMARIX ROAD PRIMROSE SANDS	BUILDING DESIGNER CHRISTOPHER.G.KEAN CC17176 PH:0417 534 776	CLIENT: MR J PULLEN	ADDRESS: 88 TAMARIX ROAD PRIMROSE SANDS	DRAWING TITLE FLOOR PLAN	Scale: 1:100	Date: 03/09/2023	Project # 220701	SHEET #A03



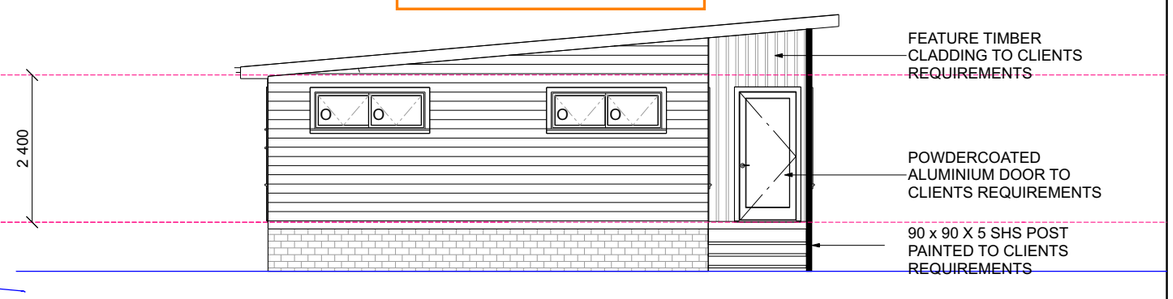
WEST ELEVATION
SCALE 1:100



SOUTH ELEVATION
SCALE 1:100



NORTH ELEVATION
SCALE 1:100



EAST ELEVATION
SCALE 1:100

REV.	AMENDMENT	DATE	PROPOSED CLASS 1a DWELLING 88 TAMARIX ROAD PRIMROSE SANDS	BUILDING DESIGNER CHRISTOPHER.G.KEAN CC17176 PH:0417 534 776	CLIENT: MR J PULLEN	ADDRESS: 88 TAMARIX ROAD PRIMROSE SANDS	DRAWING TITLE DWELLING ELEVATIONS	Scale: 1:100	Date: 03/09/2023
								Project # 220701	SHEET #A04

GENERAL NOTES

These documents show the general arrangement of the building and include some items not supplied (refer to the quotation for nomination of all items to be provided). All items not nominated therein shall be supplied and installed by others.

The plans provided here are the latest at the time of print. Earlier plans provided may have become outdated due to engineering changes and should not be used. The plans and drawings are extensive and give all the information needed for a competent person to erect the building. The building is not designed to stand up by itself when it is partially complete. Consequently, construction bracing is critical during erection.

The owner has been requested to check off the BOM after the building delivery. You should check that you are able to locate all materials nominated in the BOM. You should also confirm that the length and size (including thickness), nominated in the BOM is what has been provided. Any missing items are the responsibility of the client once correct delivery has been confirmed as per Terms and Conditions of Sale.

DESIGN CRITERIA

These building plans have been prepared to comply with the standards nominated in the engineer's letter. All plans are not to Scale.

ADDITIONAL DOCUMENTATION TO BE SUPPLIED BY PURCHASER/OWNER

The Purchaser/Owner is responsible for:
*Provision of Soils Report for the site and in the building area on which the building is to be erected
*Site Plan and Drainage Plans
*Any other plans not covered by these engineering plans requested by the local Council or the authority

RAINWATER AND DRAINAGE

All Rainwater and drainage designs are the responsibility of the purchaser/owner. Residential gutters and downpipes where supplied are based on average rainfall for the state and may not be sufficient for your building size or usage. Please speak to your building designer or contractor to ensure gutters are fit for purpose.

BUILDING CONSTRUCTION REQUIREMENTS

The Builder and Purchaser are to ensure that all construction is carried out in accordance with the Plans, the Construction Manual and the Bill of Materials (BOM).

It is the responsibility of the builder to ensure that they are familiar with the operational risks and their obligations in carrying out construction work.

The builder must ensure that they have an appropriate Health & Safety Plan (The Plan) compliant with and as required by their local, state and federal regulations. The Plan will need to take into account the site conditions, the size of the building and the experience of the construction personnel. The Plan will, most likely, differ for each project.

The builder must ensure that The Plan is adhered to. Particular attention should be paid to the requirements to ensure that any person working at heights are properly trained and following the requirements as set out by The Plan.

It is recommended that you check with the appropriate authority in your area as to your responsibilities.

TEMPORARY SUPPORT, LIFTING AND SHORING

The design of temporary propping shoring, lifting and support during construction has not been undertaken and is not included in our engagement. This work is the responsibility of the Contractor undertaking the construction of the building.

SLAB AND/OR PIER DETAILS - GENERAL

* The minimum size of Piers under the columns and End Wall Mullions are nominated on the Material Specifications Plan. When the slab and piers are poured as one pour, the depth of the pier is to the top of the slab.
* Pier Reinforcement: for any piers over 1100mm, deformed bar to within 100mm of base and minimum 75mm top cover. Minimum side cover 75mm, maximum 100mm. Rod to be caged horizontally at least twice and at a maximum of 300mm spacing.Tie with a minimum of 6mm diameter cage tie. Where pier diameter is less than 450mm diameter, use 4 N12. For diameters equal to and over 450mm, use 4 N16.* Where columns or end wall mullions have been removed, piers are not required.
* End wall mullion spacing may move due to location of openings or doors. Check layout and component position plan, and relocate piers as required.
* The Slab Plan indicates those parts of the slab which are 50mm below main slab/piers.
* Footings and slabs, including internal and edge beams, must be founded on natural soil with a minimum allowable bearing pressure of 100kPa. Design covers soil classifications of A, S, M, H1 or H2 for a class 10a building.
* The footing designs have been calculated with adhesion values of 0kPa, 25kPa and 50kPa for clay soils and dense sand soils only.
* A site specific geotechnical investigation has not been performed. The builder will need to verify the soil type and conditions.
* Site conditions different to those specified require a modified design.
* Sub grade shall be excavated and compacted to a minimum of 100% standard dry density ratio and within 2% of the OMC to comply with AS2159.
* Designs are in accordance with AS 3600:2018
* All concrete to be in accordance with AS 3600:2018. Minimum 25 Mpa, with 80mm slump.
* Concrete should be cured for 7 days before commencing construction of the building.

Concrete Slab

For Class A, S or M Sites

* Slab thickness to be a minimum of 100mm with SL 72 mesh and 40mm top cover.

* Concrete piers under Roller Doors Jambs to be a minimum size as below:
C15015 - 300mm dia x 375mm deep, centered to the C Section
Where heavy traffic is to go through the roller doors, it is recommended that the slab edge should be thickened to 200mm deep by 300mm wide for the length between the mullions. Place an additional section of SL 72 mesh, 50mm from the base in all thickenings.

For Class H1 or H2 Sites

* Slab thickness to be a minimum of 100mm with SL 82 mesh and 40mm top cover.

* Perimeter beams 550mm deep x 300mm wide with Y12 3 bar Trench Mesh to the perimeter of the building.
* Internal beams 550mm deep by 300mm wide with Y12 3 bar Trench Mesh at a max spacing of 4m.
* Concrete piers under Roller Doors Jambs to be a minimum size as below:
C15015 - 300mm dia x 500mm deep, centered to the C Section

Concrete Piers Only

For Class A, S or M Sites

* Concrete piers under Roller Door Jambs to be a minimum size as below:
C15015 - 300mm dia x 750mm deep, centered to the C Section

For Class H1 or H2 Sites

* Concrete piers under Roller Door Jambs to be a minimum size as below:
C15015 - 300mm dia x 1000mm deep, centered to the C Section

SHEETED PORTALS AND MULLIONS

All end wall mullions provide critical support to portal frames and cannot be repositioned or removed under any circumstances without engineering approval.

BRACING NOTES

* Refer to Connection Details.
* Knee bracing clearance from FFL is X = Main Building: 2.271m (Left Side), 2.030m (Right Side) .
* All Cross Bracing is achieved with 1.2mm Strap G450.
* Cross bracing is to be fixed taut and secured with 14.20 x 22 frame screws at each end, quantity as per connection details.
* Fly bracing to be fixed to the purlins/girts on all mid portal rafters, columns and end wall mullions. Fly bracing is to be fitted to every second purlin/girt, or, on every one, where the spacing between fly braces would exceed the maximum specified below for the relevant column/rafter size:
  - C150 - maximum 1800mm spacing
  - C200, C250 - maximum 2200mm spacing
  - C300 - maximum 2800mm spacing
  - C350 - maximum 2800mm spacing
  - C400 - maximum 2800mm spacing

Initial measurement is from the haunch of the column/rafter, and from the rafter for any end wall mullions.

Revision	Date	Initial

Purchaser Name: jake pullen

Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia

Drawing # SHBT240060 - 2

Print Date: 22/08/2024

General Notes
NOT FOR CONSTRUCTION

Seller: Sheds N Homes Hobart
Name: BLST Pty Ltd
Phone: (03) 6263 6545
Fax:
Email: hobart@shedsnhomes.com.au

Apex Engineering Group PTY LTD
ACN 632 588 562
MIE Aust. (Registered NER Structural) 5276680
QLD : RPEQ No. 24223; TAS : 185770492; VIC : PE0003848; N.T : 303557ES;
Practising Professional Structural & Civil Engineers

Signature:
John Ronaldson
Date: 22/08/24

* All bracing strap ends to be located as close as practical to structural member's (columns, rafters, mullions) centerline.

BOLTS

* Unless otherwise nominated, all bolts are grade 4.6
* All tensioned bolts shall be tensioned using the part turn method (refer to AS4100). For the erector, full details are in the construction manual.

ROLLER DOORS

All roller doors are NOT wind rated. All comments regarding roller doors are referenced from inside the building looking out.

OTHER MATERIALS NOTES

* All Sheeting, Flashing and framing screws are Climaseal 3.
* All purlin material has Z350 zinc coating with minimum strength of 450MPa.

Revision	Date	Initial

Purchaser Name: jake pullen

Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia

Drawing # SHBT240060 - 2

Print Date: 22/08/2024

General Notes
NOT FOR CONSTRUCTION

Seller: Sheds N Homes Hobart
Name: BLST Pty Ltd
Phone: (03) 6263 6545
Fax:
Email: hobart@shedsnhomes.com.au

Apex Engineering Group PTY LTD
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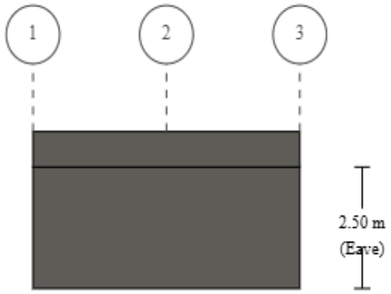
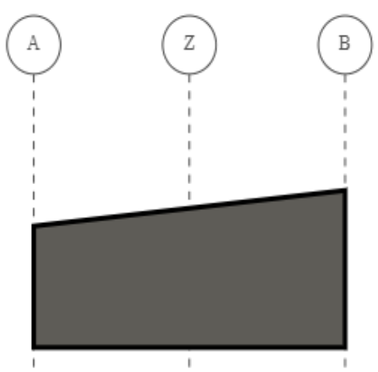
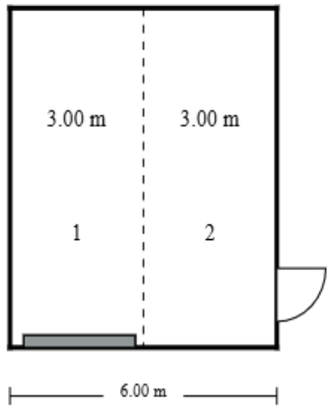
Signature:
John Ronaldson
Date: 22/08/24

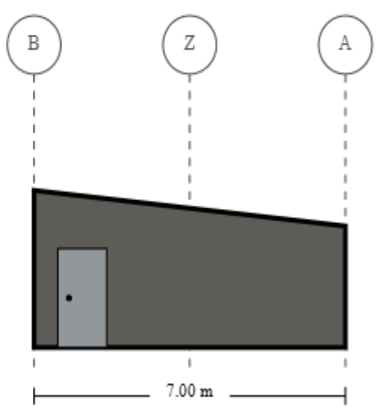


Left Side



Left End





Right End

Right Side

Sorell Council

Development Application: Planning Application - 88 Tamarix Road, Primrose Sands.pdf

Plans Reference:P1
Date Received:15/10/2024

Purchaser Name: jake pullen		**Layout** **NOT FOR CONSTRUCTION** Not to Scale © Copyright SteelX IP Pty Ltd	Seller: Sheds N Homes Hobart BLST Pty Ltd Phone: (03) 6263 6545 Fax: Email: hobart@shedsnhomes.com.au
Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia			
Drawing # SHBT240060 - 3	Print Date: 22/08/24		

Apex Engineering Group PTY LTD
ACN 632 588 562
MIE Aust. (Registered NER Structural) 5276680
QLD : RPEQ No. 24223; TAS : 185770492; VIC : PE0003848; N.T : 303557ES;
Practising Professional Structural & Civil Engineers

Signature:

John Ronaldson

Date: 22/08/24

MATERIAL SPECIFICATIONS

For further information regarding the tabulated values shown, refer to the General Notes

Building Dimensions

Categories	Span	Length	Pitch	Height	Grid(s)	Portal(s)
Main Building	7 m	6 m	6	2.5 m	A - B	1 - 3

Portal Frame Elements

Grid / Portal Number		1	2	3
Columns	A	C15012	C15015	C15012
	B	C15012	C15015	C15012
Rafters	A - B	C15012	C15012	C15012
End Wall Mullions	Z	C15012	-	C15012
Knee Braces	B - A		C15012 @ 1.4 m	

Bay Section Elements

Bay Number		1	2	Maximum
Bay Widths		3 m	3 m	
Roof Purlins (refer to Purlin And Girt Plan)		Z100	Z100	
Roof Purlin Spacing (End)	A - B	0.9 m	0.9 m	0.9 m
Roof Purlin Spacing (Internal Spans)	A - B	1.05 m	1.05 m	1.2 m
Eave Purlin	A	C10010	C10010	
Eave Girt	B	Z10010	Z10010	
Side Girts (refer to Purlin And Girt Plan)		Z100	Z100	
Side Girts Spacing (End)	A	1.14 m	1.14 m	1.7 m
	B	1.5 m	1.5 m	1.7 m
Side Girts Spacing (Internal)	A	1.14 m	1.14 m	1.7 m
	B	1.5 m	1.5 m	1.7 m
Roller Door Header	B	C10010	-	
Roller Door Jambs	B	C15015	-	

End Bay Section Elements

Grid / Portal Number		1	3	Maximum
End Girts (refer to Purlin And Girt Plan)		Z100	Z100	
End Girts Spacing (End)	A - Z	1.14 m	1.14 m	1.7 m
	Z - B	1.14 m	1.14 m	1.7 m
End Girts Spacing (Internal)	A - Z	1.14 m	1.14 m	1.7 m
	Z - B	1.14 m	1.14 m	1.7 m
PA Door Header	Z - B	-	C10010	
PA Door Jambs	Z - B	-	C10010	

Roller Door

Location - Side & Bay Number	RightSide 1
Roller Door Size	2.4x2.5
Roller Door Header	C10010
Roller Door Jambs	C15015
Roller Door Clip Config	0 clip
Roller Door Manufacturer	CENTURION

Revision	Date	Initial

Purchaser Name: jake pullen

Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia

Drawing # SHBT240060 - 4

Print Date: 22/08/2024

Material Specification Sheet
NOT FOR CONSTRUCTION

Seller: Sheds N Homes Hobart
Name: BLST Pty Ltd
Phone: (03) 6263 6545
Fax:
Email: hobart@shedsnhomes.com.au

Apex Engineering Group PTY LTD
ACN 632 588 562
MIE Aust. (Registered NER Structural) 5276680
QLD : RPEQ No. 24223; TAS : 185770492; VIC : PE0003848; N.T : 303557ES;
Practising Professional Structural & Civil Engineers

Signature:

John Ronaldson

Date: 22/08/24

MATERIAL SPECIFICATIONS

For further information regarding the tabulated values shown, refer to the General Notes

PA Door

Location - Side & Bay Number	RightEnd 2
PA Door Header	C10010
PA Door Jambs	C10010
PA Door	2.040 x 1.100 - Larnec Industrial Pre Hung Dual Skin Door (200.47). Knob/Lever
PA Door Manufacturer	LARNEC

Cladding Elements

Category	Colour	Product
Roof Sheeting	Monument	CORODEK® 0.42 BMT
Roof Flashings	COLORBOND® steel	BlueScope 0.55 BMT
Wall Sheeting	Basalt	CORODEK® 0.42 BMT
Wall Flashing	COLORBOND® steel	BlueScope 0.55 BMT

Pier Sizes

			Depth - when NO Slab		Depth - with Slab	
Adhesion	Soil Description	Diameter	BP1	BP2	BP1	BP2
0 kPa	Sandy Soil	0.3 m	0.8 m	1.2 m	0.45 m	0.45 m
		0.45 m	0.6 m	0.8 m	0.45 m	0.45 m
		0.6 m	0.6 m	0.6 m	0.45 m	0.45 m
25 kPa	Soft to Firm Clay	0.3 m	0.6 m	0.8 m	0.45 m	0.45 m
		0.45 m	0.6 m	0.8 m	0.45 m	0.45 m
		0.6 m	0.6 m	0.6 m	0.45 m	0.45 m
50 kPa	Stiff to Very Stiff Clay	0.3 m	0.6 m	0.7 m	0.45 m	0.45 m
		0.45 m	0.6 m	0.7 m	0.45 m	0.45 m
		0.6 m	0.6 m	0.6 m	0.45 m	0.45 m

Revision	Date	Initial

Purchaser Name: jake pullen

Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia

Drawing # SHBT240060 - 4

Print Date: 22/08/2024

Material Specification Sheet
NOT FOR CONSTRUCTION

Seller: Sheds N Homes Hobart
Name: BLST Pty Ltd
Phone: (03) 6263 6545
Fax:
Email: hobart@shedsnhomes.com.au

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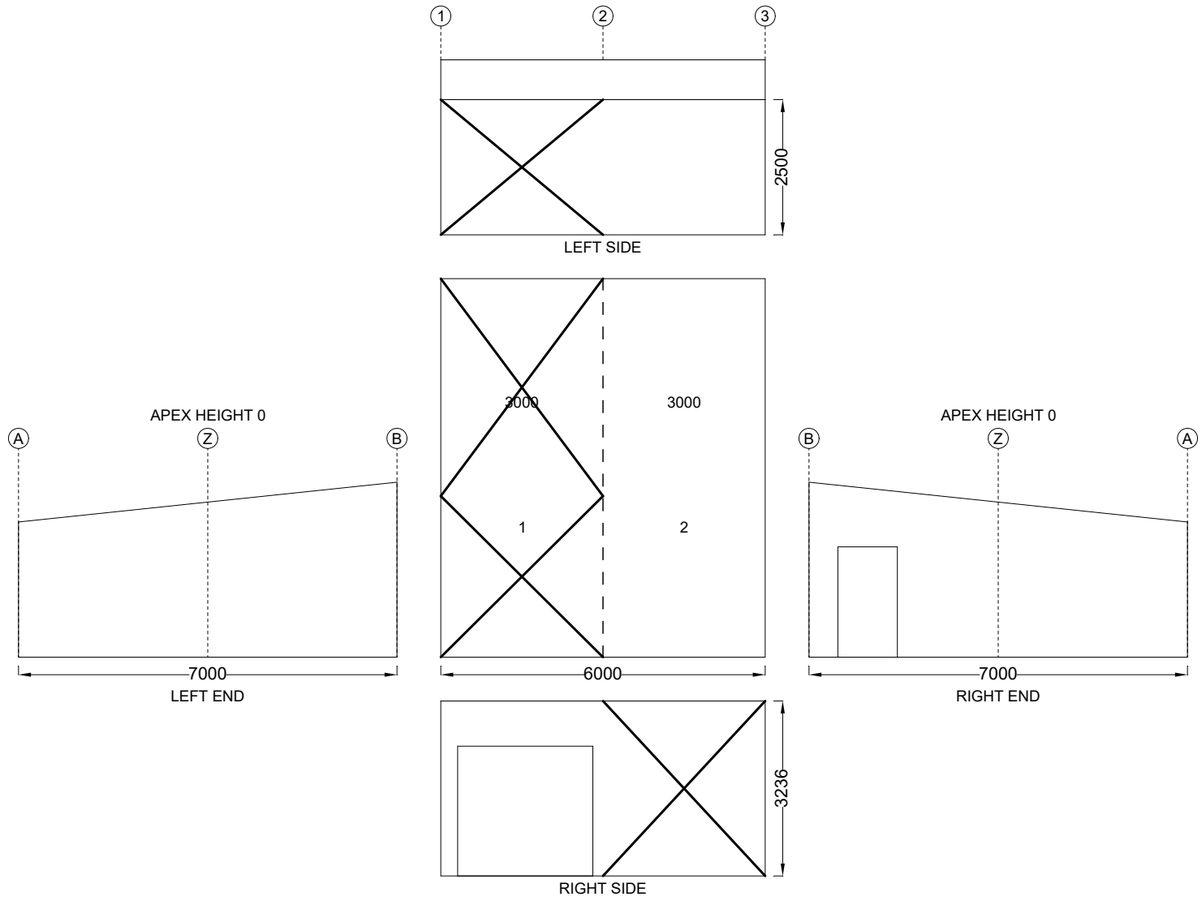
QLD : RPEQ No. 24223; TAS : 185770492; VIC : PE0003848; N.T : 303557ES;
Practising Professional Structural & Civil Engineers

Signature:
John Ronaldson
Date: 22/08/24

Cross Bracing is achieved with 1.2mm Strap. Refer to Connection Details.
Cross bracing in the roof is to the purlin nearest to the end wall mullions, where applicable.



Sorell Council
Development Application: Planning Application - 88 Tamarix Road, Primrose Sands.pdf

Plans Reference:P1
Date Received:15/10/2024

Revision	Date	Initial

Purchaser Name: jake pullen

Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia

Drawing # SHBT240060 - 5

Print Date: 22/08/2024

Bracing
NOT FOR CONSTRUCTION
NOT TO SCALE
Page 1 of 1

Seller: Sheds N Homes Hobart
Name: BLST Pty Ltd
Phone: (03) 6263 6545
Fax:
Email: hobart@shedsnhomes.com.au

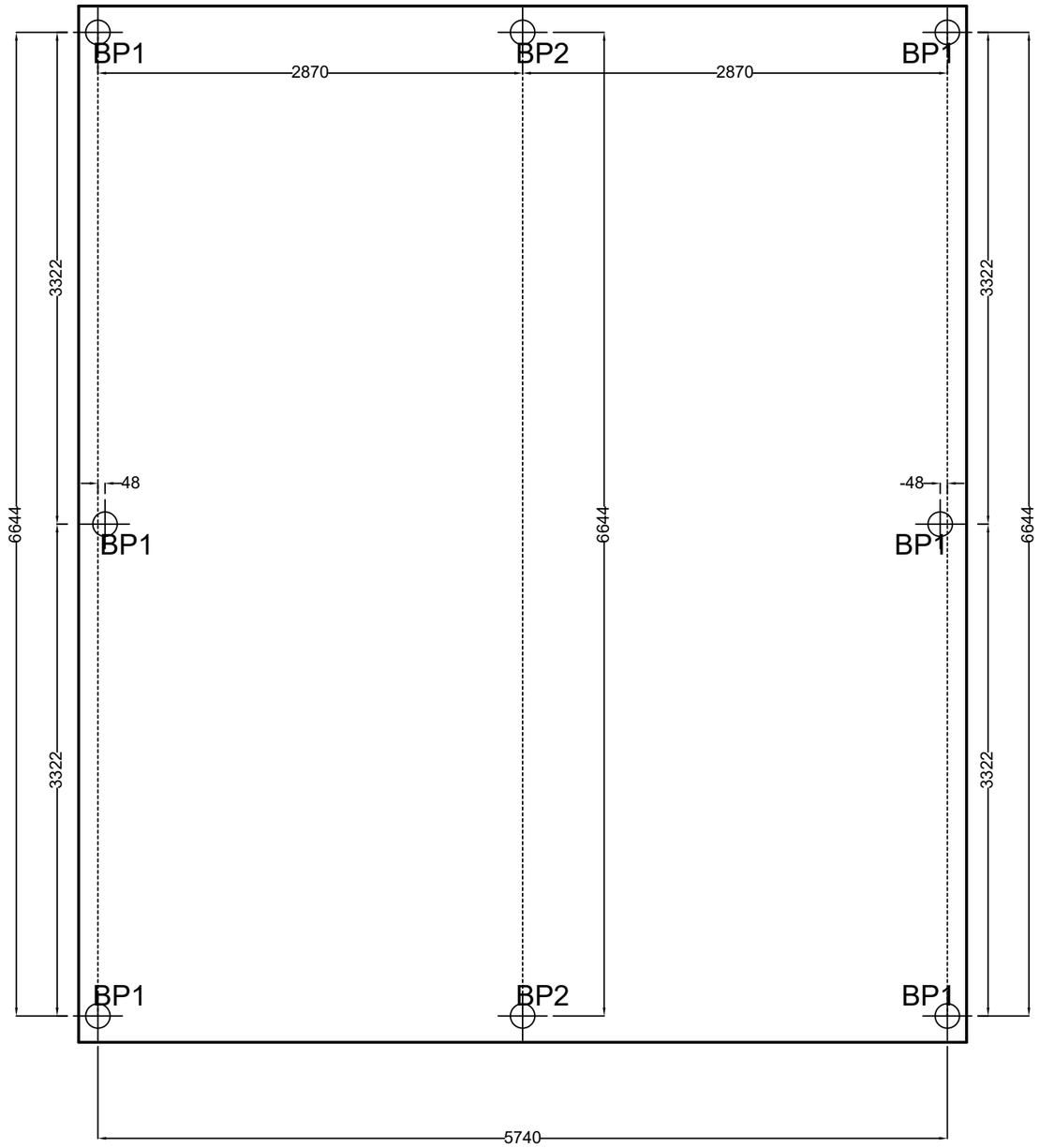
Apex Engineering Group PTY LTD
ACN 632 588 562
MIE Aust. (Registered NER Structural) 5276680
QLD : RPEQ No. 24223; TAS : 185770492; VIC : PE0003848; N.T : 303557ES;
Practising Professional Structural & Civil Engineers

Signature:

John Ronaldson

Date: 22/08/24

These dimensions are provided as a guide only. It is the responsibility of the concreter to confirm that all dimensions are correct.
Refer to Material Specification Sheet(s) for the Pier Sizes.



Revision	Date	Initial

Purchaser Name: jake pullen

Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia

Drawing # SHBT240060 - 6

Print Date: 22/08/2024

Concrete Piers

PIER MEASUREMENT ONLY. NOT FOR CONSTRUCTION

NOT TO SCALE

Seller: Sheds N Homes Hobart
Name: BLST Pty Ltd
Phone: (03) 6263 6545
Fax:
Email: hobart@shedsnhomes.com.au

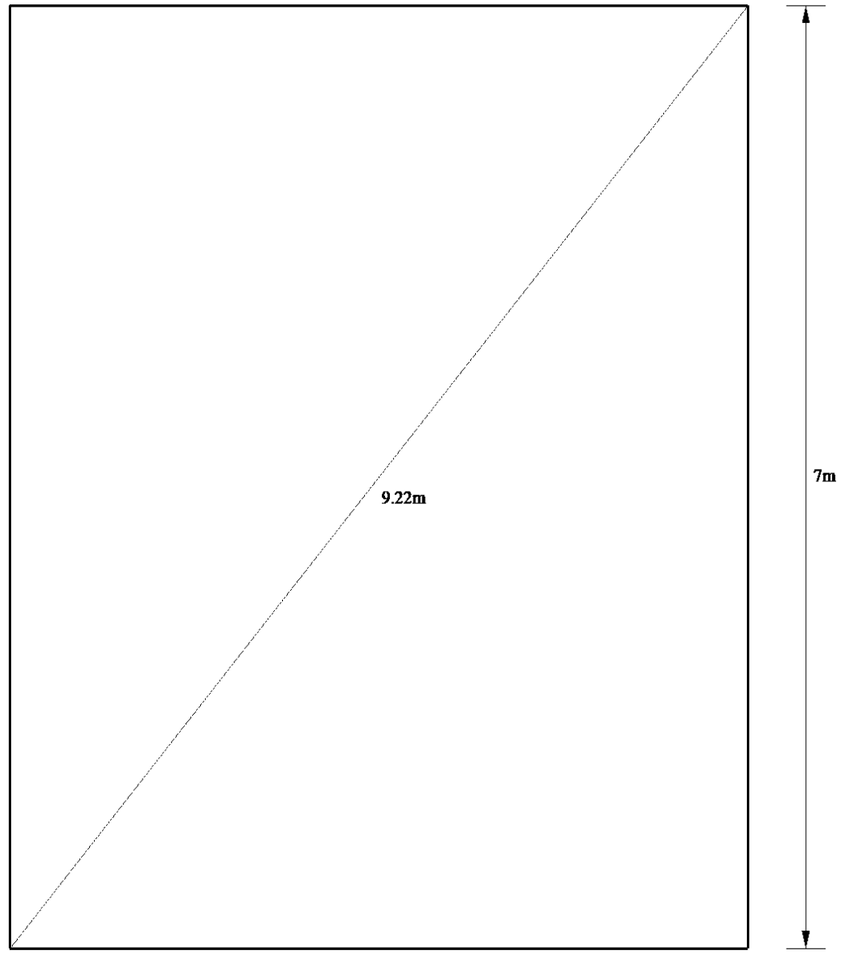
Apex Engineering Group PTY LTD
ACN 632 588 562
MIE Aust. (Registered NER Structural) 5276680
QLD : RPEQ No. 24223; TAS : 185770492; VIC : PE0003848; N.T : 303557ES;
Practising Professional Structural & Civil Engineers

Signature:

John Ronaldson

Date: 22/08/24

These dimensions are provided as a guide only. It is the responsibility of the concreter to confirm that all dimensions are correct.



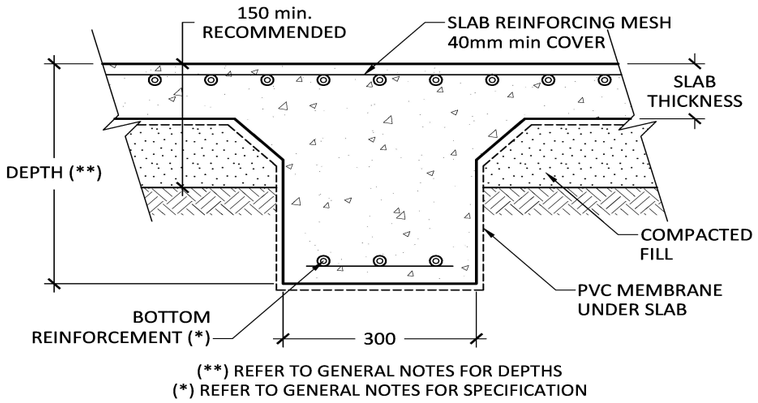
Purchaser Name: jake pullen		**Slab Dimensions** **Also refer to Concrete Piers Plan. NOT FOR CONSTRUCTION** Not to Scale © Copyright Steelx IP Pty Ltd	Seller: Sheds N Homes Hobart BLST Pty Ltd Phone: (03) 6263 6545 Fax: Email: hobart@shedsnhomes.com.au
Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia			
Drawing # SHBT240060 - 7	Print Date: 22/08/24		

Apex Engineering Group PTY LTD
ACN 632 588 562
MIE Aust. (Registered NER Structural) 5276680
QLD : RPEQ No. 24223; TAS : 185770492; VIC : PE0003848; N.T : 303557ES;
Practising Professional Structural & Civil Engineers

Signature:

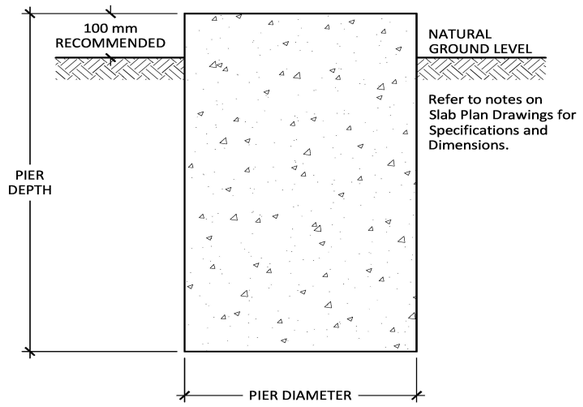
John Ronaldson

Date: 22/08/24

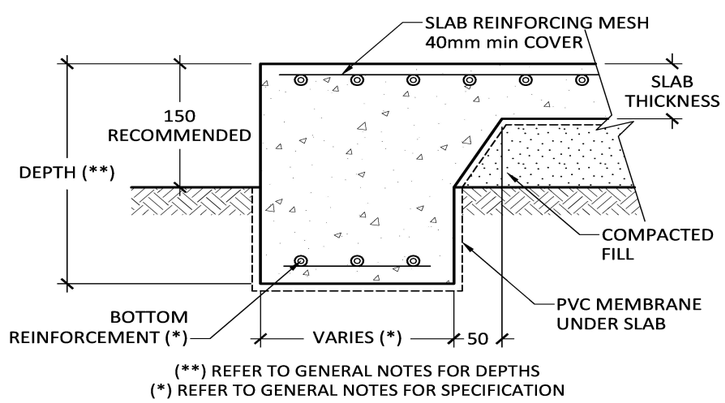


(**) REFER TO GENERAL NOTES FOR DEPTHS
(*) REFER TO GENERAL NOTES FOR SPECIFICATION

INTERNAL BEAM
(H1 & H2 SOIL TYPE, OPTIONAL A, S & M)

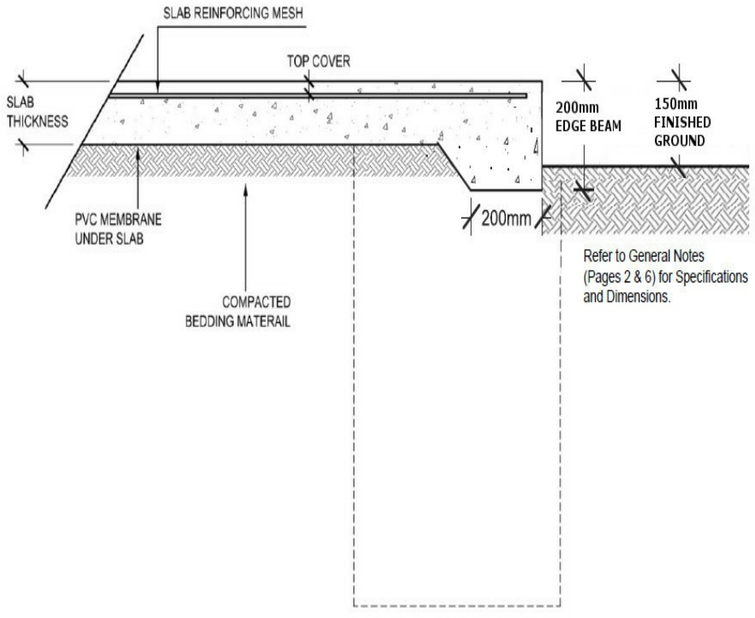


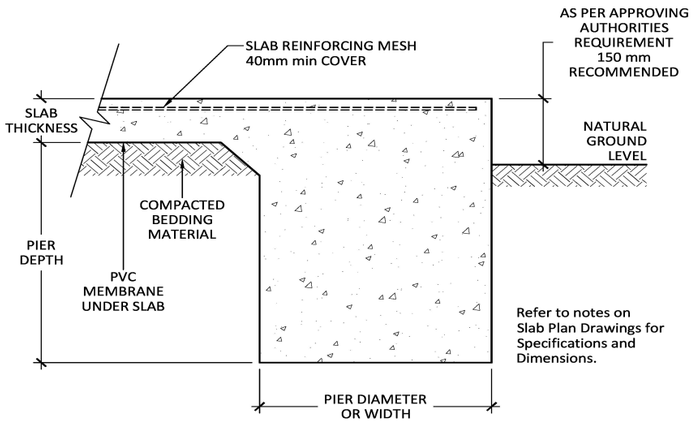
BORED PIER



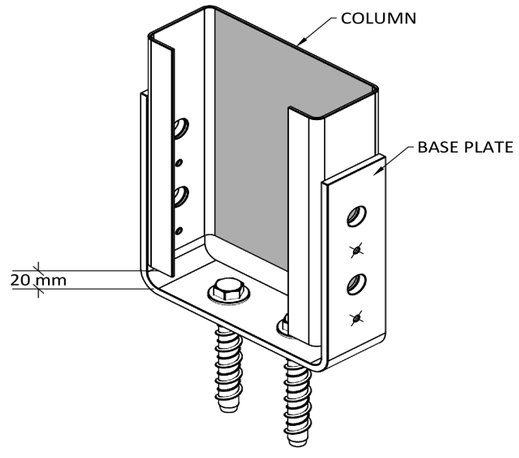
(**) REFER TO GENERAL NOTES FOR DEPTHS
(*) REFER TO GENERAL NOTES FOR SPECIFICATION

PERIMETER BEAM
(H1 & H2 SOIL TYPE, OPTIONAL A, S & M)





SLAB AND PIER DETAIL



FIXING BOLTS - 2 of M12 x 100 SCREWBOLT
○ FIXING BOLTS - 4 of M12 x 30 Galv.
× FIXING SCREWS - 4 of 12.24 x 38 Series 500

C150 COLUMN FIXING (BF)

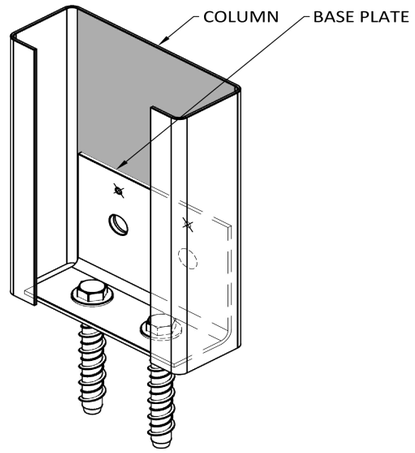
Purchaser Name: jake pullen			
Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia			
Drawing # SHBT240060 - 8	Print Date: 22/08/24	**Connection Details** **NOT FOR CONSTRUCTION** Not to Scale Page 1 of 6 	Seller: Sheds N Homes Hobart BLST Pty Ltd Phone: (03) 6263 6545 Fax: Email: hobart@shedsnhomes.com.au

Apex Engineering Group PTY LTD
ACN 632 588 562
MIE Aust. (Registered NER Structural) 5276680
QLD : RPEQ No. 24223; TAS : 185770492; VIC : PE0003848; N.T : 303557ES;
Practising Professional Structural & Civil Engineers

Signature:

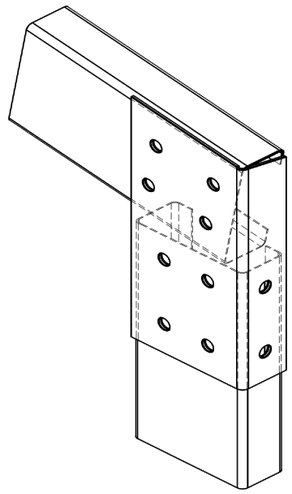
John Ronaldson

Date: 22/08/24



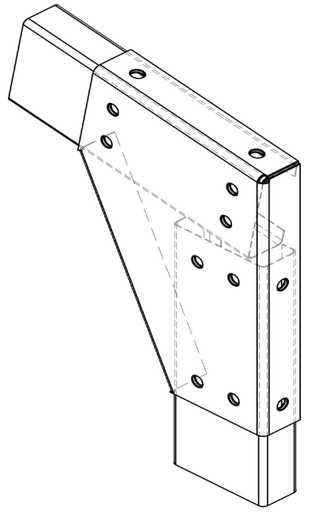
FIXING BOLTS - 2 of M12 x 100 SCREWBOLTS
○ FIXING BOLTS - 2 of M12 x 30 Galv.
× FIXING SCREWS - 2 of 14.20 x 22

C150 MULLION BASE PLATE (B)



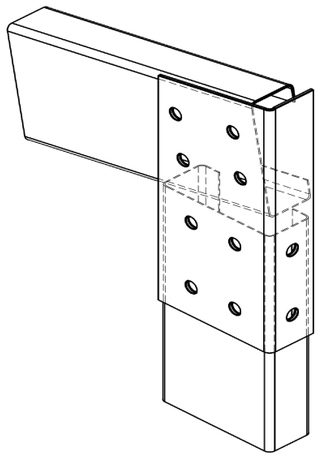
○ FIXING BOLTS - 10 of M12 x 30 (8.8)

FLAT PLATE HAUNCH BRACKET (X&Y) - C150, 6°



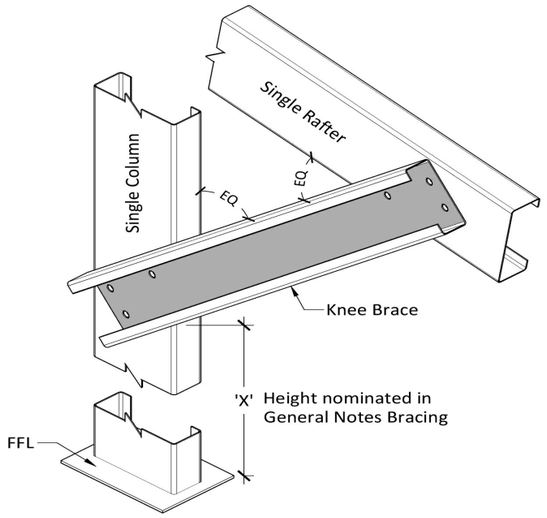
○ FIXING BOLTS - 12 of M12 x 30 (8.8)

KNEE HAUNCH BRACKET (HS&HT) - C150, 6°



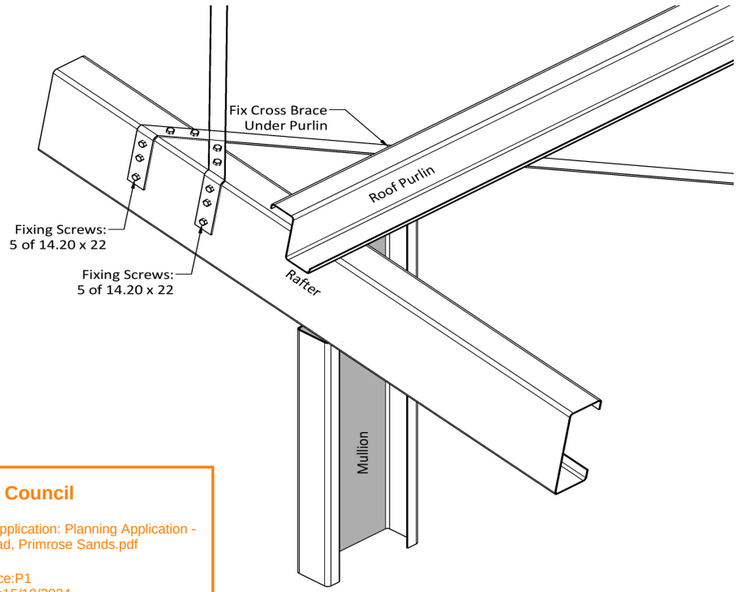
○ FIXING BOLTS - 10 of M12 x 30 (8.8)

FLAT PLATE HAUNCH SKILLION BRACKET (X&Y) - C150, 6°



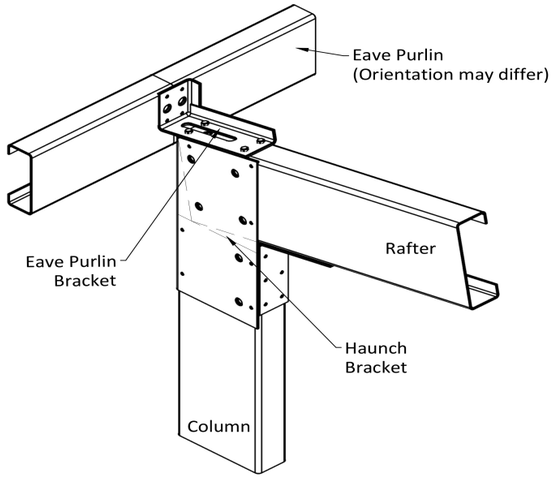
○ FIXING BOLTS - 6 of M12 x 30 (8.8)

KNEE BRACE FOR SINGLE COLUMN + SINGLE RAFTER



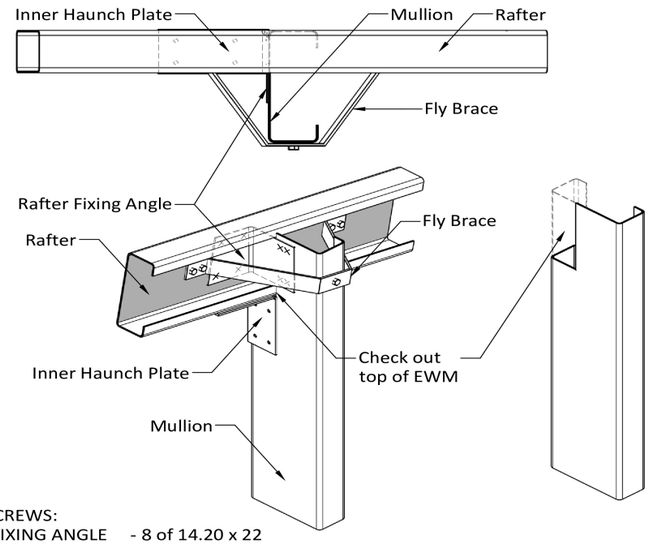
BRACING CONNECTION

Purchaser Name: jake pullen		**Connection Details** **NOT FOR CONSTRUCTION** Not to Scale Page 2 of 6 	Apex Engineering Group PTY LTD ACN 632 588 562 MIE Aust. (Registered NER Structural) 5276680 QLD : RPEQ No. 24223; TAS : 185770492; VIC : PE0003848; N.T : 303557ES; Practising Professional Structural & Civil Engineers
Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia			Signature: J Ronaldson John Ronaldson Date: 22/08/24
Drawing # SHBT240060 - 8	Print Date: 22/08/24	Seller: Sheds N Homes Hobart BLST Pty Ltd Phone: (03) 6263 6545 Fax: Email: hobart@shedsnhomes.com.au	



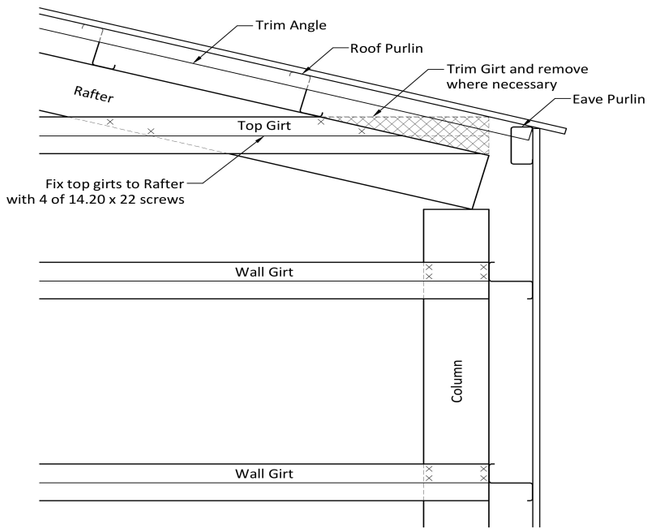
× FIXING SCREWS - 4 of 14.20 x 22

EAVE PURLIN BRACKET TO RAFTER

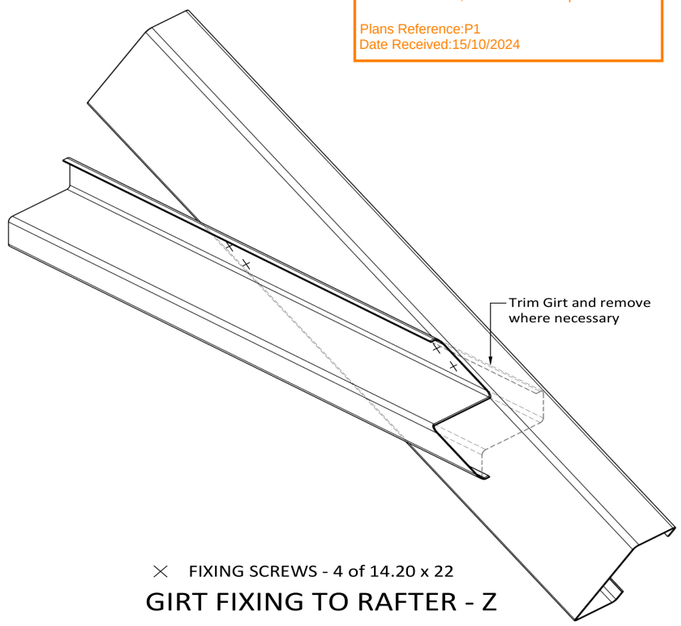


FIXING SCREWS:
RAFTER FIXING ANGLE - 8 of 14.20 x 22
INNER HAUNCH PLATE - 8 of 14.20 x 22
FLY BRACE - 5 of 14.20 x 22

END WALL MULLION TO RAFTER

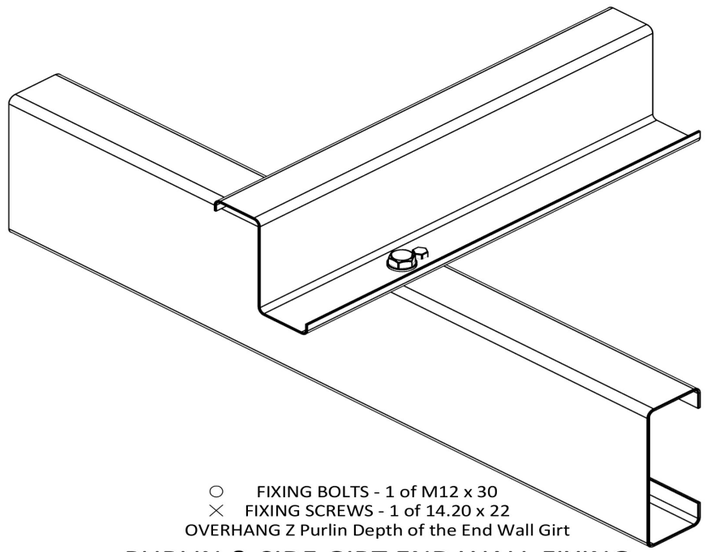


GABLE END TOP GIRT FIXING - Z



× FIXING SCREWS - 4 of 14.20 x 22

GIRT FIXING TO RAFTER - Z



○ FIXING BOLTS - 1 of M12 x 30
× FIXING SCREWS - 1 of 14.20 x 22
OVERHANG Z Purlin Depth of the End Wall Girt

PURLIN & SIDE GIRT END WALL FIXING
Z PURLIN - SINGLE COLUMN OR RAFTER

Purchaser Name: jake pullen		**Connection Details** **NOT FOR CONSTRUCTION** Not to Scale Page 3 of 6 	Seller: Sheds N Homes Hobart BLST Pty Ltd Phone: (03) 6263 6545 Fax: Email: hobart@shedsnhomes.com.au
Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia			
Drawing # SHBT240060 - 8	Print Date: 22/08/24		

Apex Engineering Group PTY LTD
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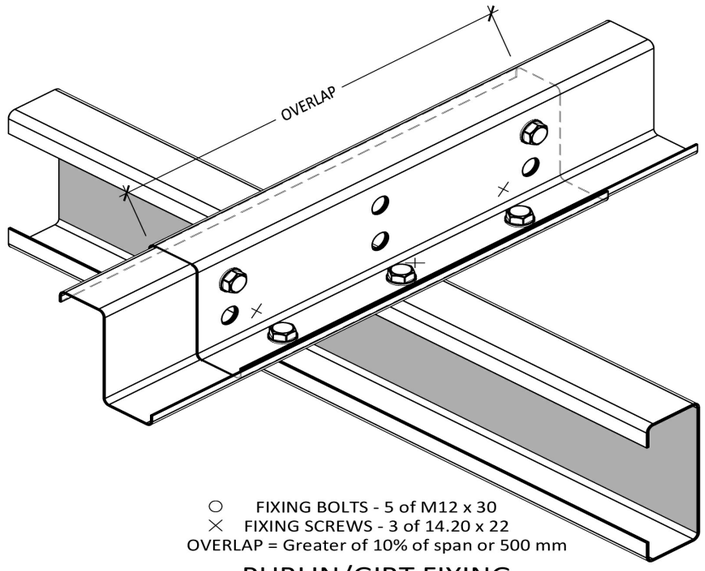
QLD : RPEQ No. 24223; TAS : 185770492; VIC : PE0003848; N.T : 303557ES;
Practising Professional Structural & Civil Engineers

Signature: J Ronaldson

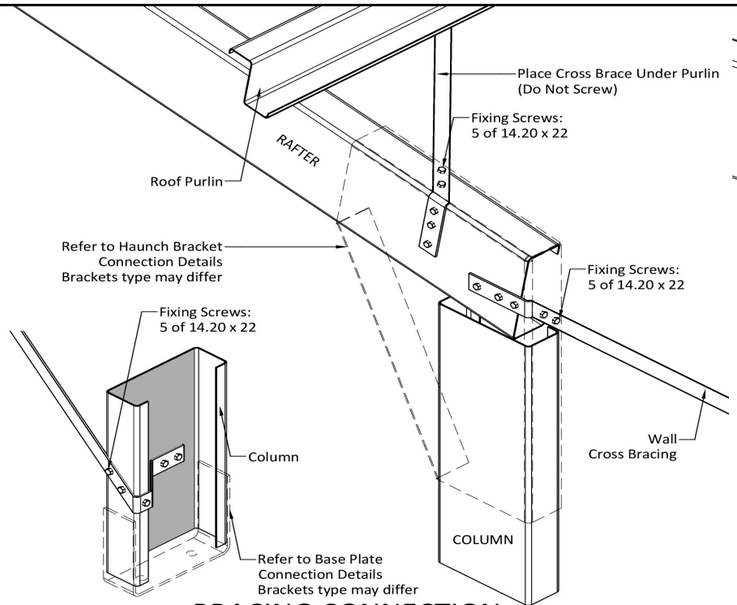
John Ronaldson

Date: 22/08/24

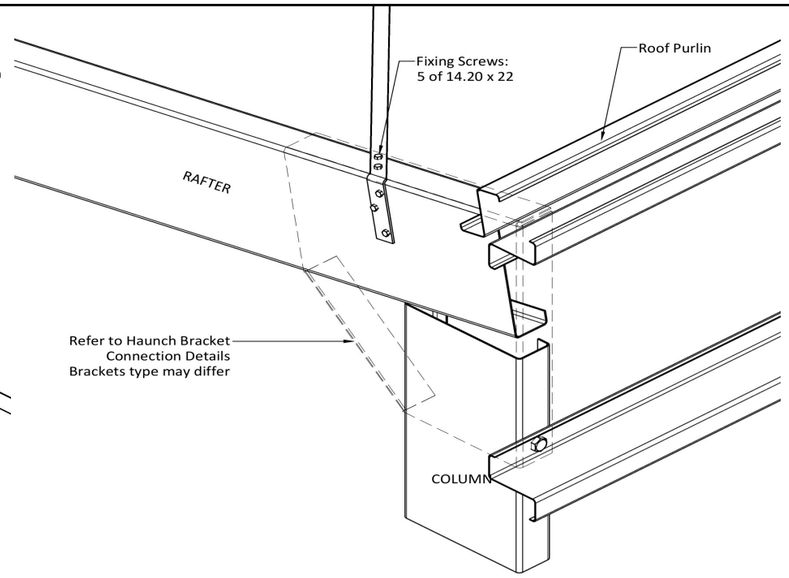


○ FIXING BOLTS - 5 of M12 x 30
× FIXING SCREWS - 3 of 14.20 x 22
OVERLAP = Greater of 10% of span or 500 mm

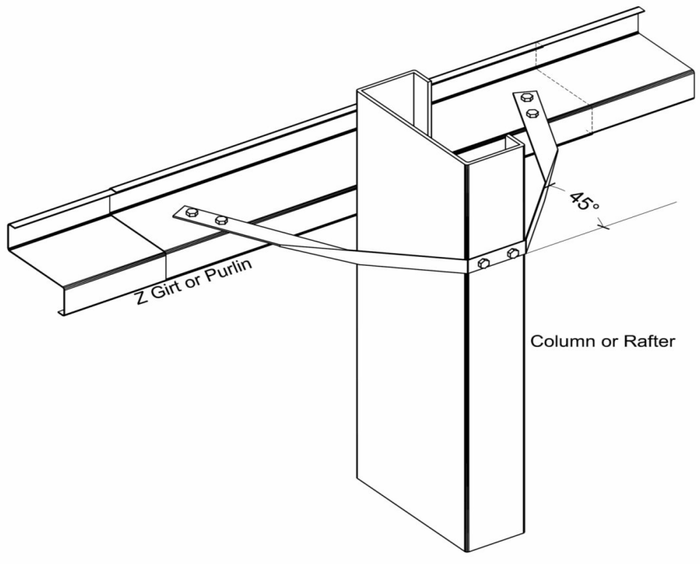
PURLIN/GIRT FIXING
SINGLE C SECTION COLUMNS OR RAFTERS



BRACING CONNECTION

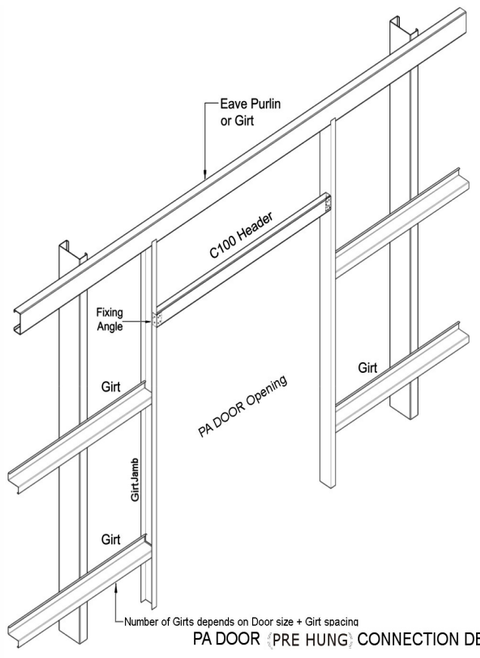


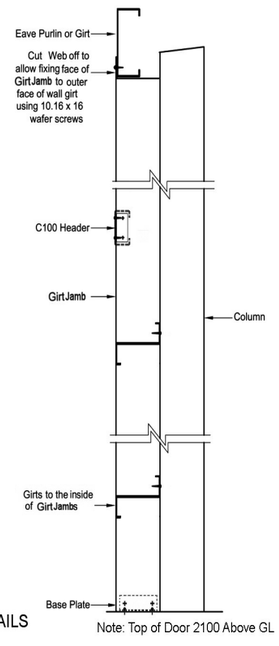
BRACING CONNECTION AT HIGH END (SKILLION)



FIXING SCREWS - 6 of 14.20 x 22

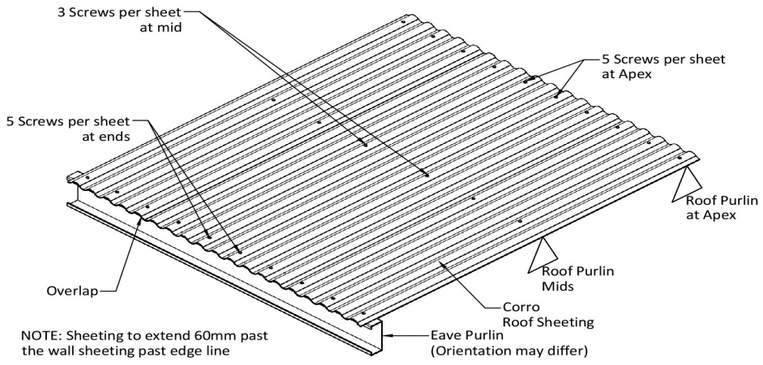
FLY BRACING

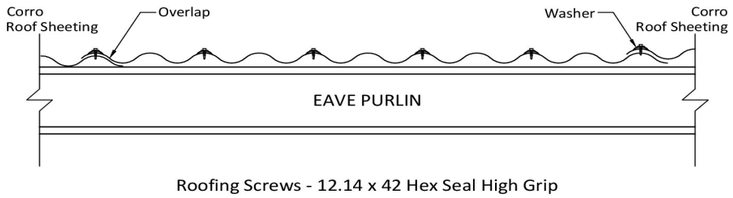




PA DOOR (PRE HUNG) CONNECTION DETAILS

Note: Top of Door 2100 Above GL





Roofing Screws - 12.14 x 42 Hex Seal High Grip

CORRO ROOF SHEET FIXING

Purchaser Name: jake pullen		**Connection Details** **NOT FOR CONSTRUCTION** Not to Scale Page 4 of 6 	Seller: Sheds N Homes Hobart BLST Pty Ltd Phone: (03) 6263 6545 Fax: Email: hobart@shedsnhomes.com.au
Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia			
Drawing # SHBT240060 - 8	Print Date: 22/08/24		

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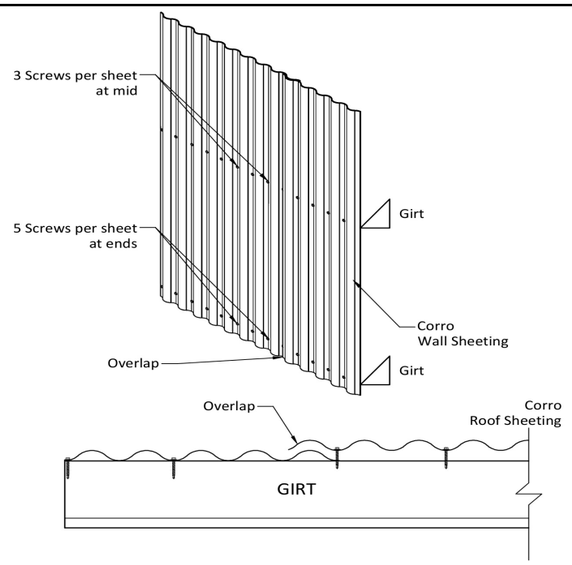
QLD : RPEQ No. 24223; TAS : 185770492; VIC : PE0003848; N.T : 303557ES;
Practising Professional Structural & Civil Engineers

Signature:

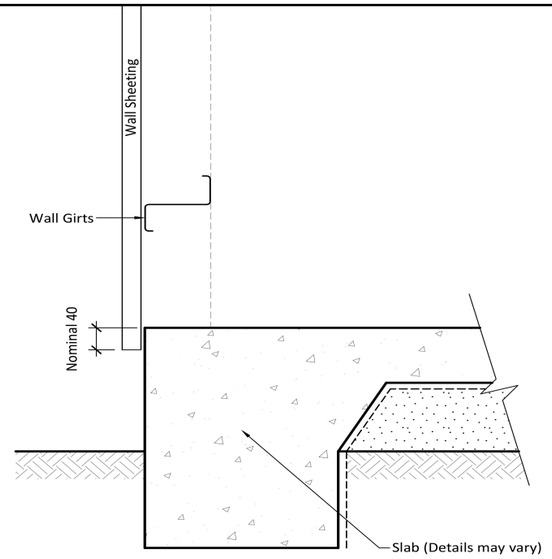
John Ronaldson

Date: 22/08/24



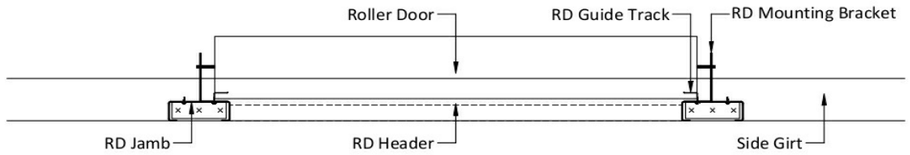
Wall Screws - 10.16 x 16 Hex

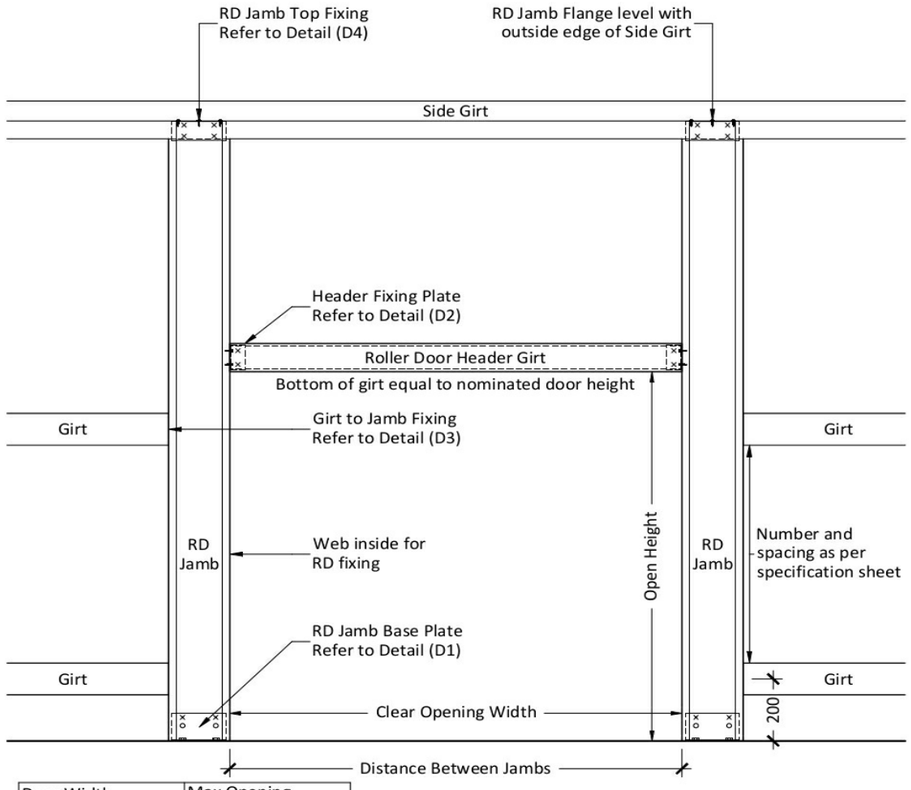
WALL SHEETING CONNECTION DETAILS



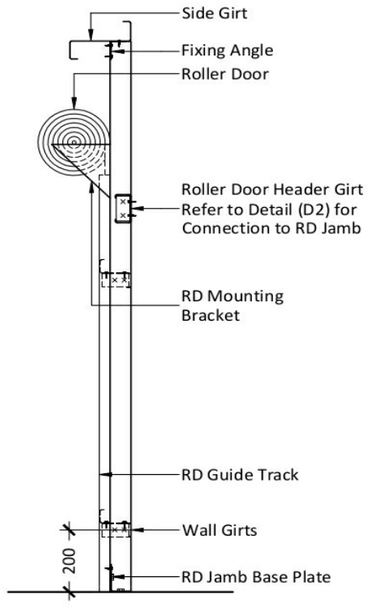
WALL SHEET OVERHANG DETAIL

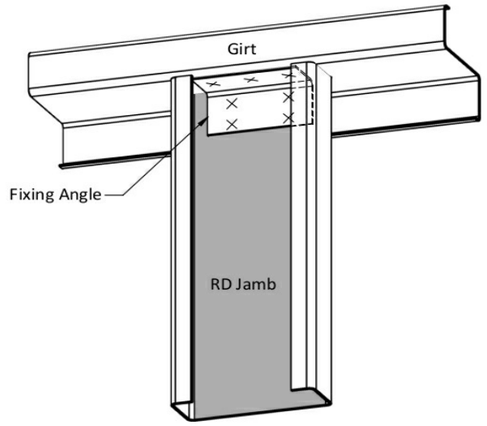
Purchaser Name: jake pullen	**Connection Details** **NOT FOR CONSTRUCTION** Not to Scale Page 5 of 6 	Seller: Sheds N Homes Hobart BLST Pty Ltd Phone: (03) 6263 6545 Fax: Email: hobart@shedsnhomes.com.au	Apex Engineering Group PTY LTD ACN 632 588 562 MIE Aust. (Registered NER Structural) 5276680 QLD : RPEQ No. 24223; TAS : 185770492; VIC : PE0003848; N.T : 303557ES; Practising Professional Structural & Civil Engineers Signature: John Ronaldson Date: 22/08/24
Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia			
Drawing # SHBT240060 - 8	Print Date: 22/08/24		





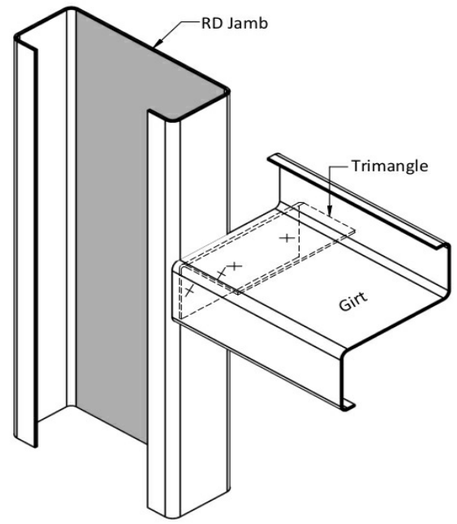
Door Width	Max Opening
≤3.1m	Door Width -50mm
>3.1m or ≤5.1m	Door Width -100mm





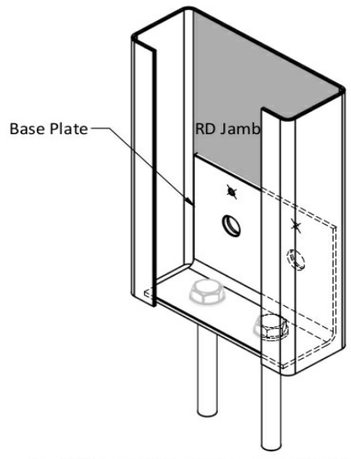
× FIXING SCREWS - 7 of 14.20 x 22

DETAIL (D4) - RD JAMB TOP FIXING



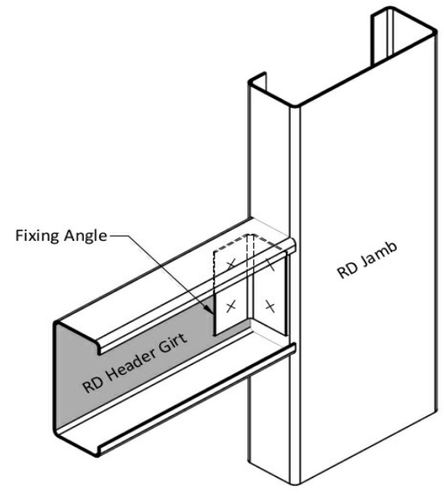
× FIXING SCREWS - 4 of 14.20 x 22

DETAIL (D3) - GIRT FIXING TO RD JAMB



2 of M12 x 75 DYNABOLTS - FOR C150 & C200 JAMBS
2 of M16 x 110 DYNABOLTS - FOR C250 & C300 JAMBS
◯ FIXING BOLTS - 2 of M12 x 30 - FOR C150 & C200 JAMBS
◯ FIXING BOLTS - 2 of M16 x 30 - FOR C250 & C300 JAMBS
× FIXING SCREWS - 2 of 14.20 x 22

DETAIL (D1) - RD JAMB BASE PLATE



× FIXING SCREWS - 4 of 14.20 x 22

DETAIL (D2) - RD HEADER GIRT FIXING

Purchaser Name: jake pullen

Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia

Drawing # SHBT240060 - 8

Print Date: 22/08/24

Connection Details

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Not to Scale

Page 6 of 6

Seller: Sheds N Homes Hobart
BLST Pty Ltd
Phone: (03) 6263 6545
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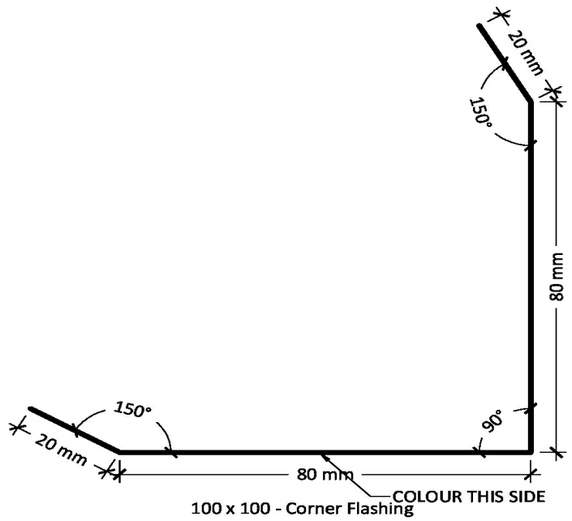
Practising Professional Structural & Civil Engineers

Signature:

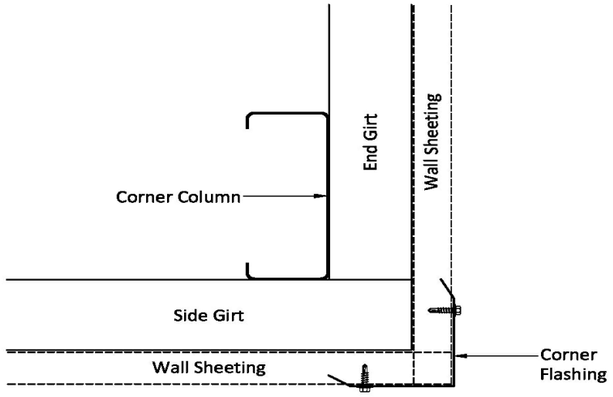
John Ronaldson

Date: 22/08/24

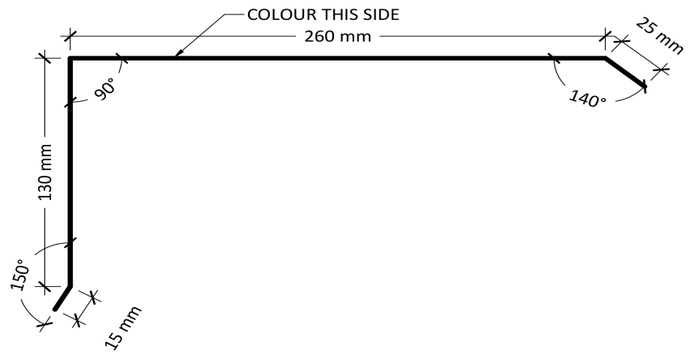


100 x 100 - Corner Flashing

FLASH-CNR-EXT-03

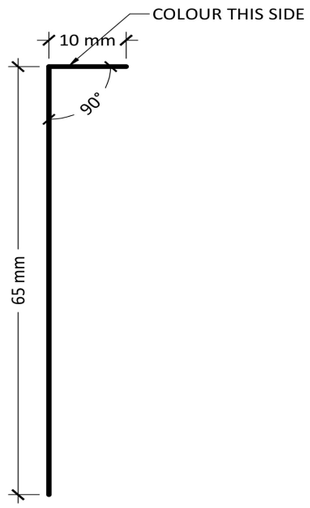


Corner Flashing FLASH-CNR-EXT-03 - Connection



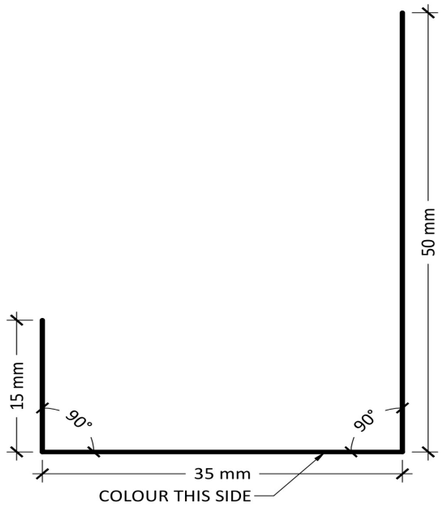
Barge Capping - Trimclad

XF11



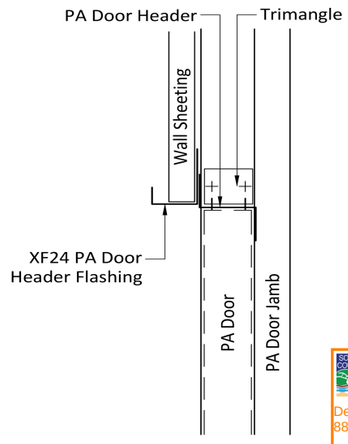
RD Side - Cover Flash

XF18



PA Door - RD Header Flashing

XF24



PA Door Header Flashing - XF24

Sorell Council
Development Application: Planning Application - 88 Tamarix Road, Primrose Sands.pdf
Plans Reference:P1
Date Received:15/10/2024

Purchaser Name: jake pullen

Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia

Drawing # SHBT240060 - 9

Print Date: 22/08/24

Flashing Fixing Details

NOT FOR CONSTRUCTION

Not to Scale

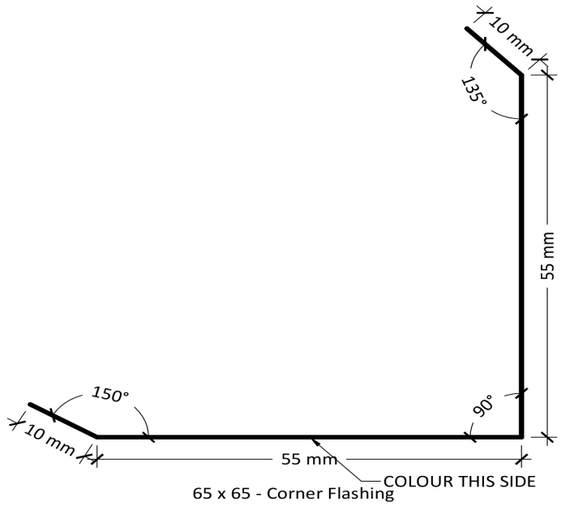
Seller: Sheds N Homes Hobart
BLST Pty Ltd
Phone: (03) 6263 6545
Fax:
Email: hobart@shedsnhomes.com.au

Apex Engineering Group PTY LTD
ACN 632 588 562
MIE Aust. (Registered NER Structural) 5276680
QLD : RPEQ No. 24223; TAS : 185770492; VIC : PE0003848; N.T : 303557ES;
Practising Professional Structural & Civil Engineers

Signature:

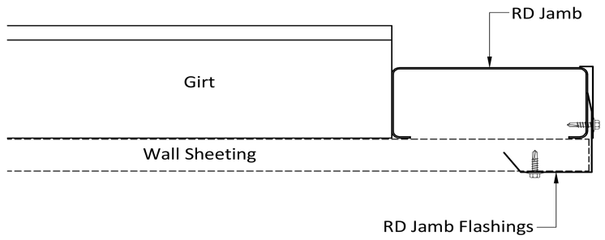
John Ronaldson

Date: 22/08/24

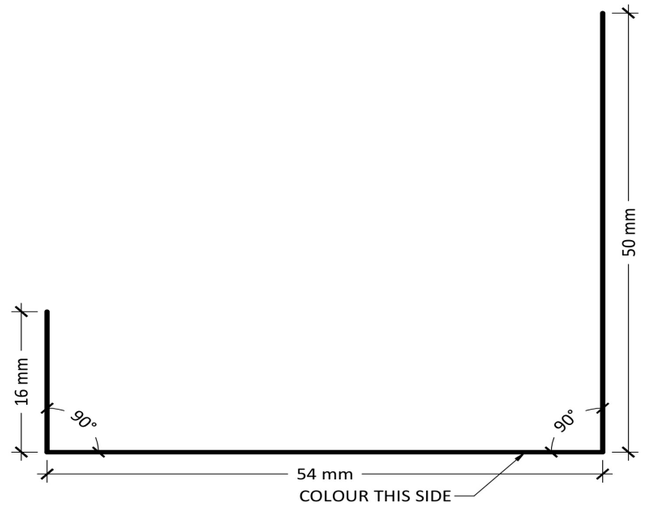


65 x 65 - Corner Flashing

XF28

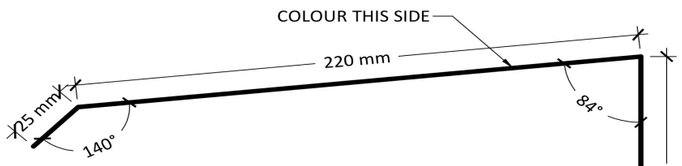


Wall RD Jamb Flashing XF28/18



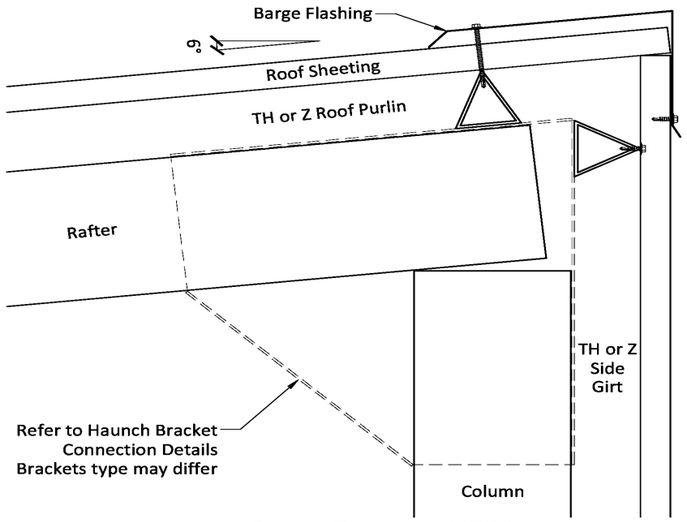
C100 RD Head Cover Flashing

XF55



Barge Capping - Trimclad

XF80



Barge Flashing XF80

Purchaser Name: jake pullen

Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia

Drawing # SHBT240060 - 9

Print Date: 22/08/24

Flashing Fixing Details

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Not to Scale

Seller: Sheds N Homes Hobart
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Practising Professional Structural & Civil Engineers

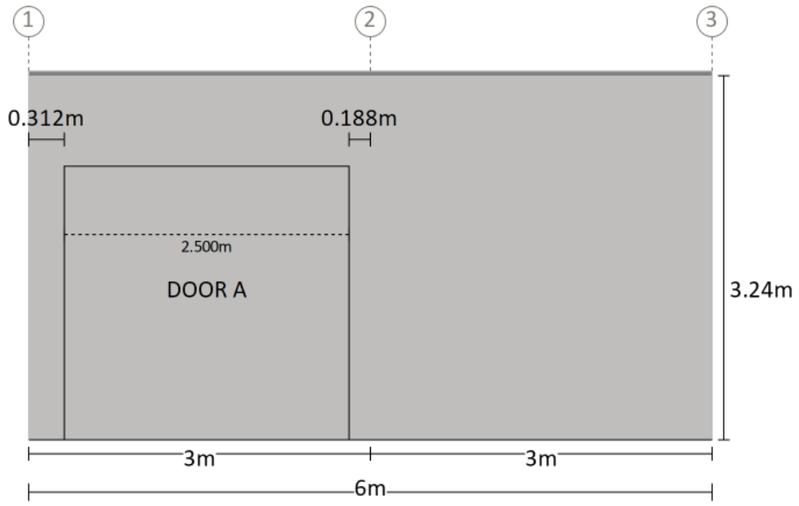
Signature:

John Ronaldson

Date: 22/08/24

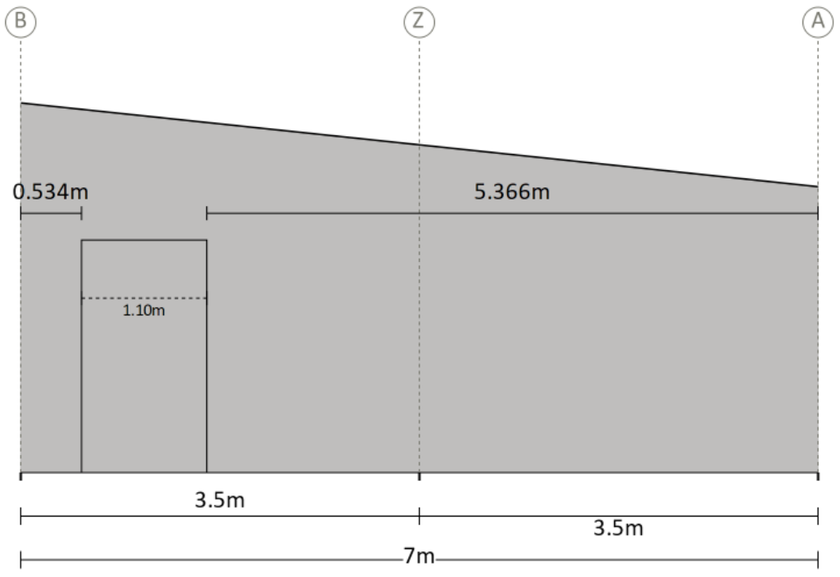
This setout is provided as a guide only. It is the responsibility of the concreter/erector to confirm that all dimensions are correct.

Right Side



Measurements are from the outside of end girts (end bays) and/or centre of columns (mid bays) to inside of component opening size.

Right End



Purchaser Name: jake pullen

Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia

Drawing # SHBT240060 - 10

Print Date: 22/08/24

Component Position
NOT FOR CONSTRUCTION
Not to Scale
Page 1 of 1

Seller: Sheds N Homes Hobart
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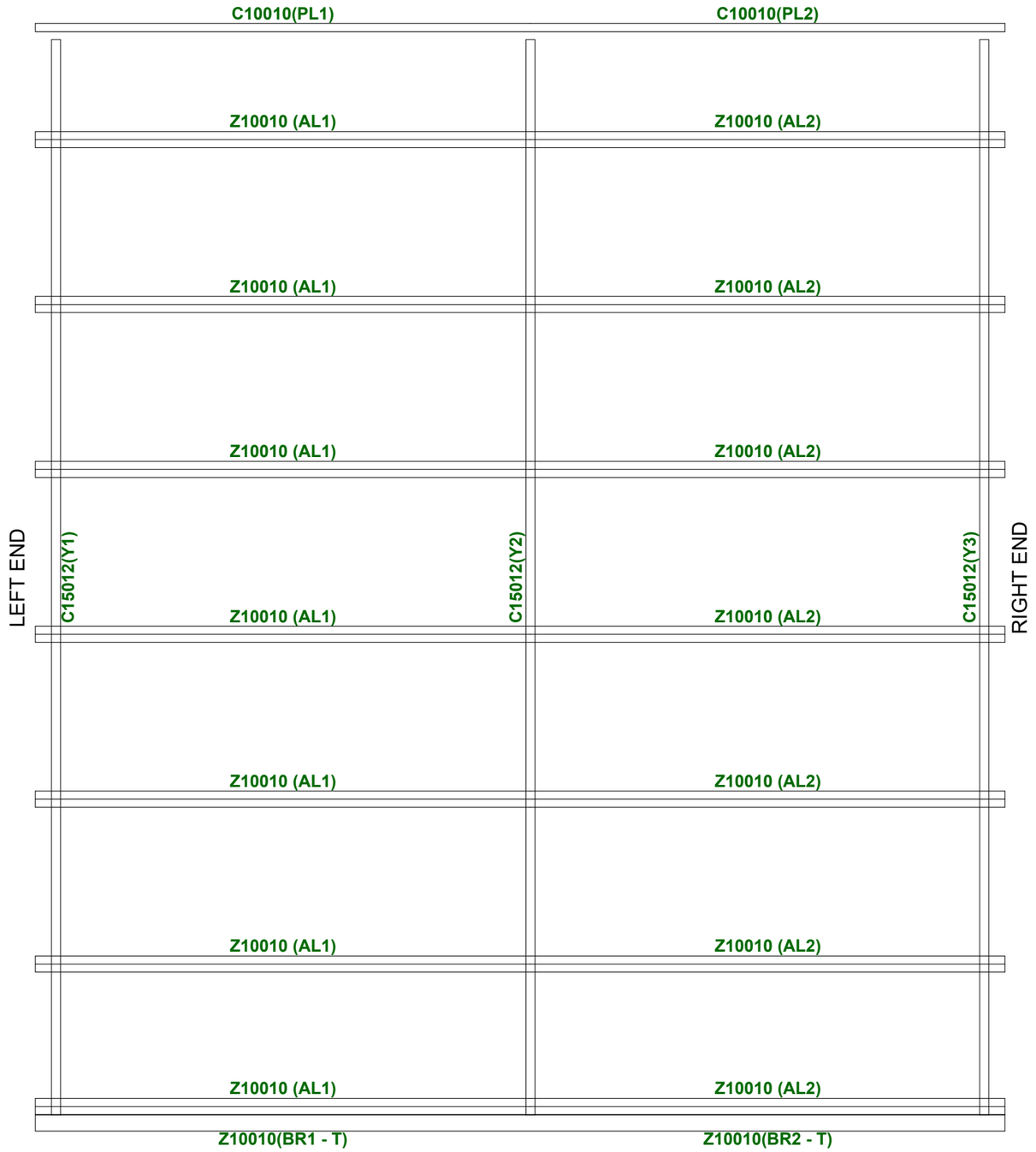
Signature:

John Ronaldson

Date: 22/08/24

ROOF (TOP VIEW)

LEFT SIDE



RIGHT SIDE

Notes:
Brackets are not shown. Refer to Specification Details for more information. Opening members not labeled.

Revision	Date	Initial

Purchaser Name: jake pullen

Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia

Drawing # SHBT240060 - 11

Print Date: 22/08/2024

Purlin and Girt Plan

NOT FOR CONSTRUCTION

NOT TO SCALE

Seller: Sheds N Homes Hobart
Name: BLST Pty Ltd
Phone: (03) 6263 6545
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Signature:

John Ronaldson

Date: 22/08/24

Notes:
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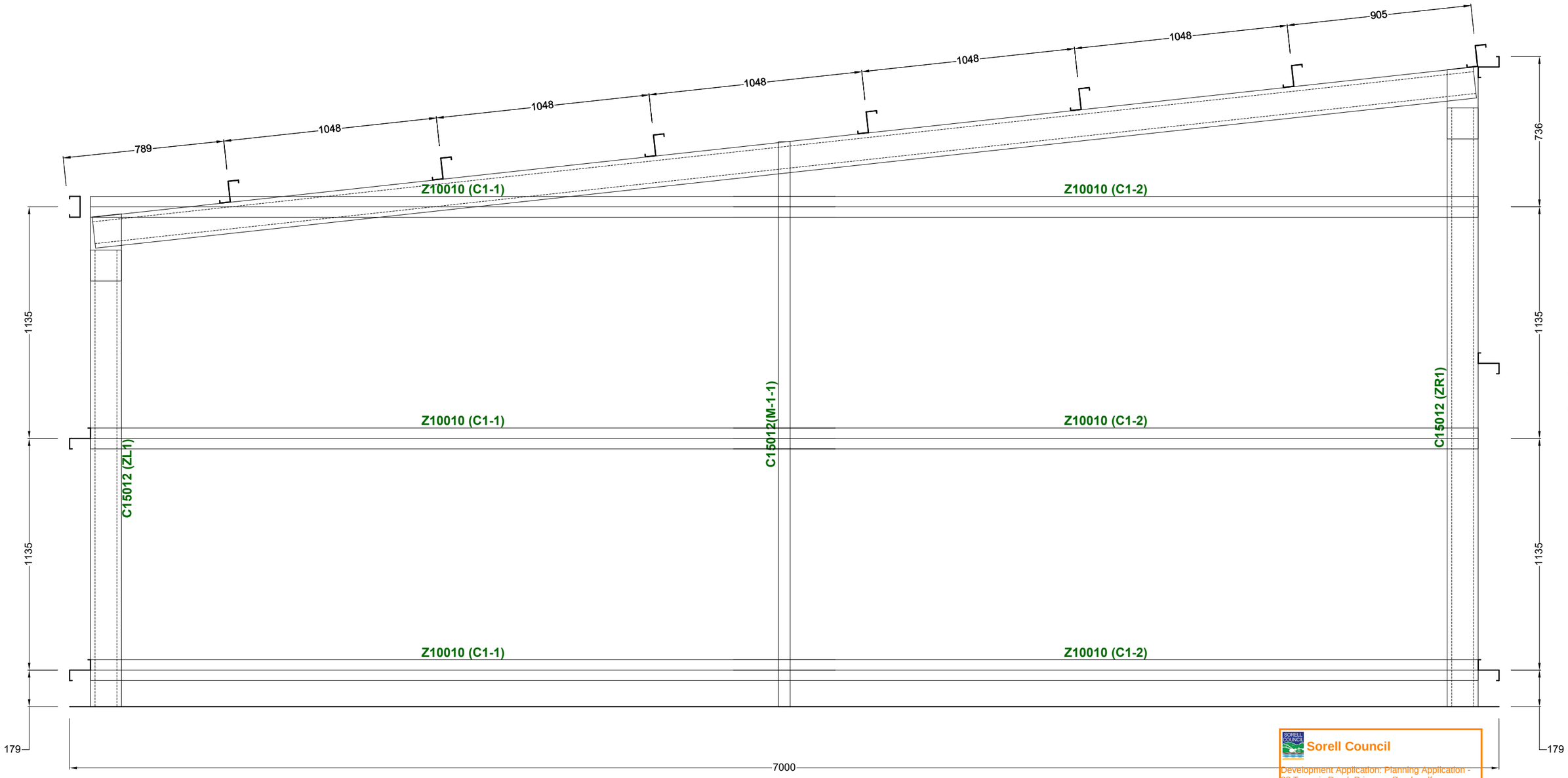
LEFT END ELEVATION



Revision	Date	Initial

Purchaser Name: jake pullen

Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia

Drawing # SHBT240060 - 11

Print Date: 22/08/2024

Purlin and Girt Plan
NOT FOR CONSTRUCTION
NOT TO SCALE

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Signature:

John Ronaldson

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Notes:
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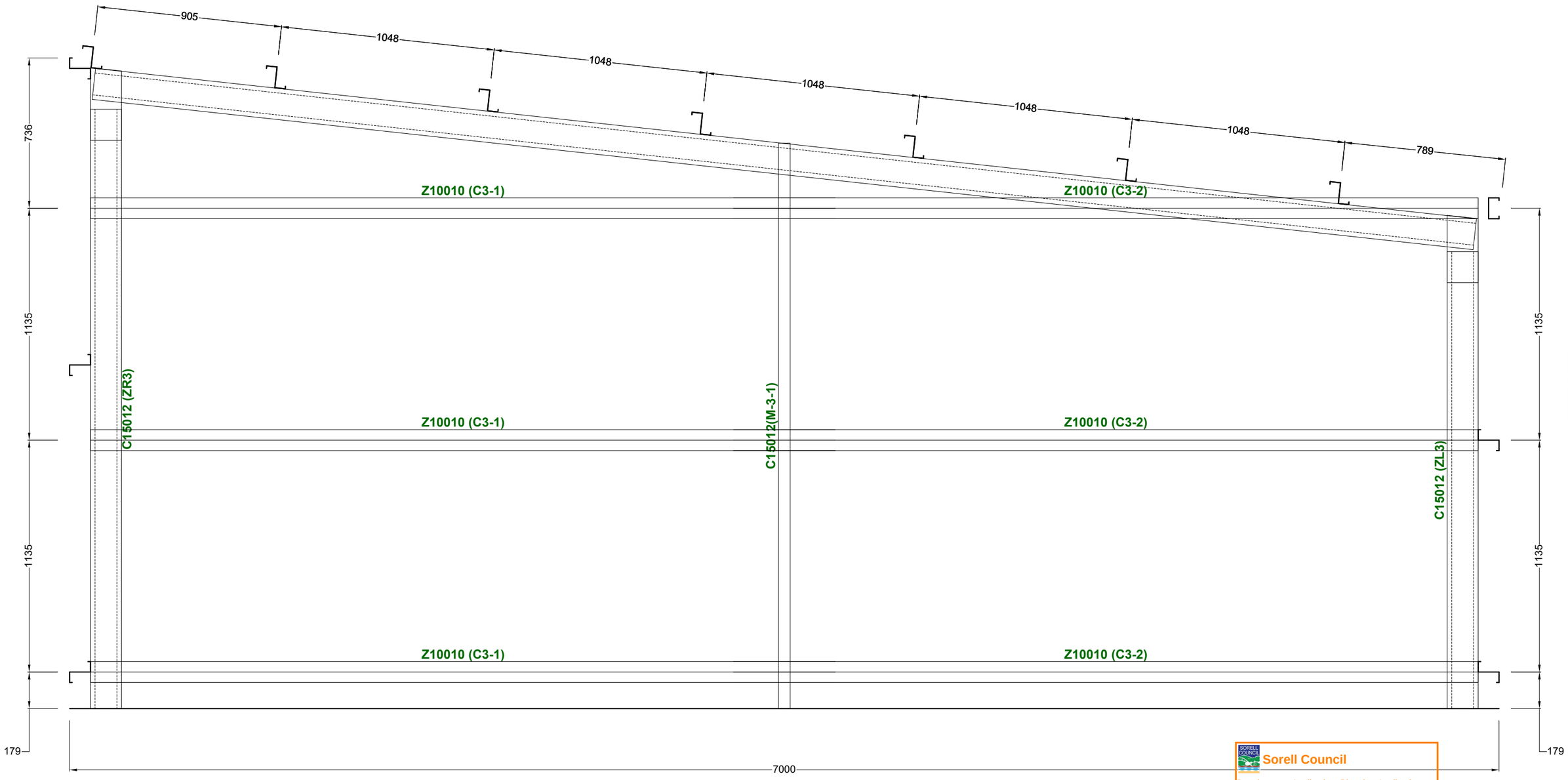
RIGHT END ELEVATION



Revision	Date	Initial

Purchaser Name: jake pullen

Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia

Drawing # SHBT240060 - 11

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Purlin and Girt Plan
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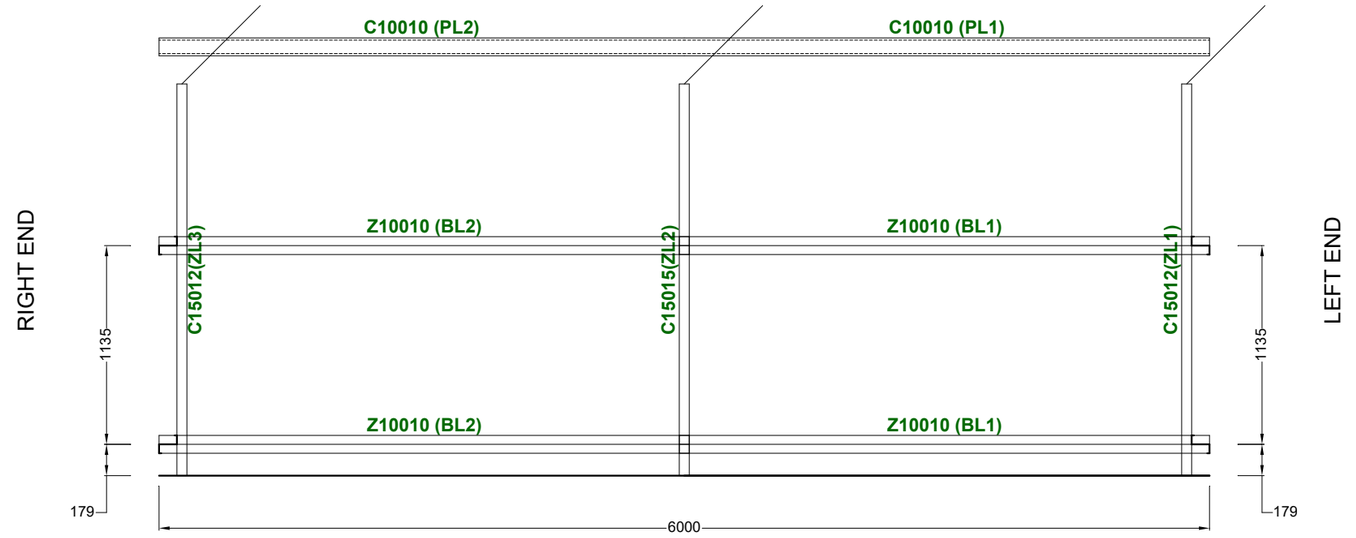
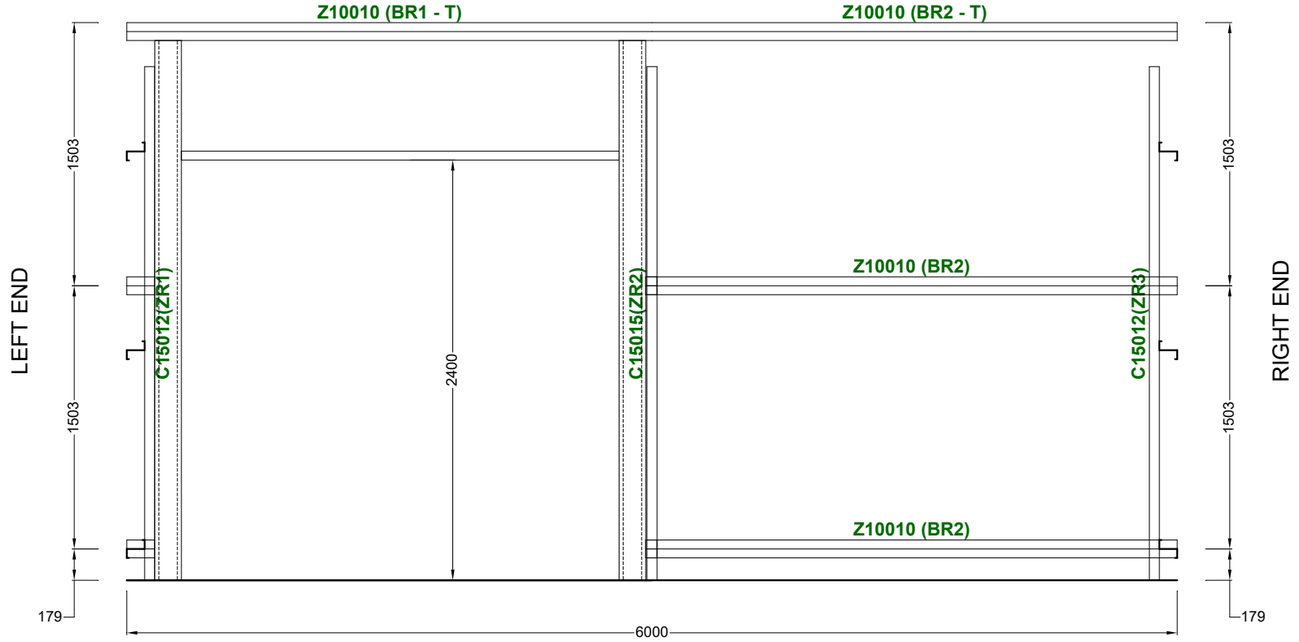
LEFT ELEVATION



RIGHT ELEVATION



Sorell Council
Development Application: Planning Application - 88 Tamarix Road, Primrose Sands.pdf
Plans Reference:P1
Date Received:15/10/2024

Revision	Date	Initial	Purchaser Name: jake pullen		Purlin and Girt Plan NOT FOR CONSTRUCTION NOT TO SCALE Page 4 of 4 ©Copyright Steelx IP Pty Ltd	Seller: Sheds N Homes Hobart Name: BLST Pty Ltd Phone: (03) 6263 6545 Fax: Email: hobart@shedsnhomes.com.au	Apex Engineering Group PTY LTD ACN 632 588 562 MIE Aust. (Registered NER Structural) 5276680 QLD : RPEQ No. 24223; TAS : 185770492; VIC : PE0003848; N.T : 303557ES; Practising Professional Structural & Civil Engineers Signature: John Ronaldson Date: 22/08/24
			Site Address: 88 Tamarix Rd Primrose Sands TAS 7173 Australia				
			Drawing # SHBT240060 - 11	Print Date: 22/08/2024			