

RP DATA	
Lot Number :	138
RP/SP Number :	RP601437
Parish :	CALLIUNGAL
County :	RAGLAN
Area :	1477 m ²
Site Cover:	x%

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

These plans are approved subject to the current conditions of approval associated with

Development Permit No.: D/139-2024

Dated: 7 November 2024

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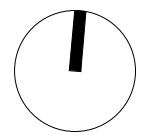
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A	PRELIMINARY	12/09/24	MJS
B	AMENDED	19/09/24	DEL



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PROPOSED
 NEW SHOUSE FOR KYLE THOMAS

ADDRESS
 2 SCHOOL STREET, MT MORGAN

DRAWING
 SITE PLAN

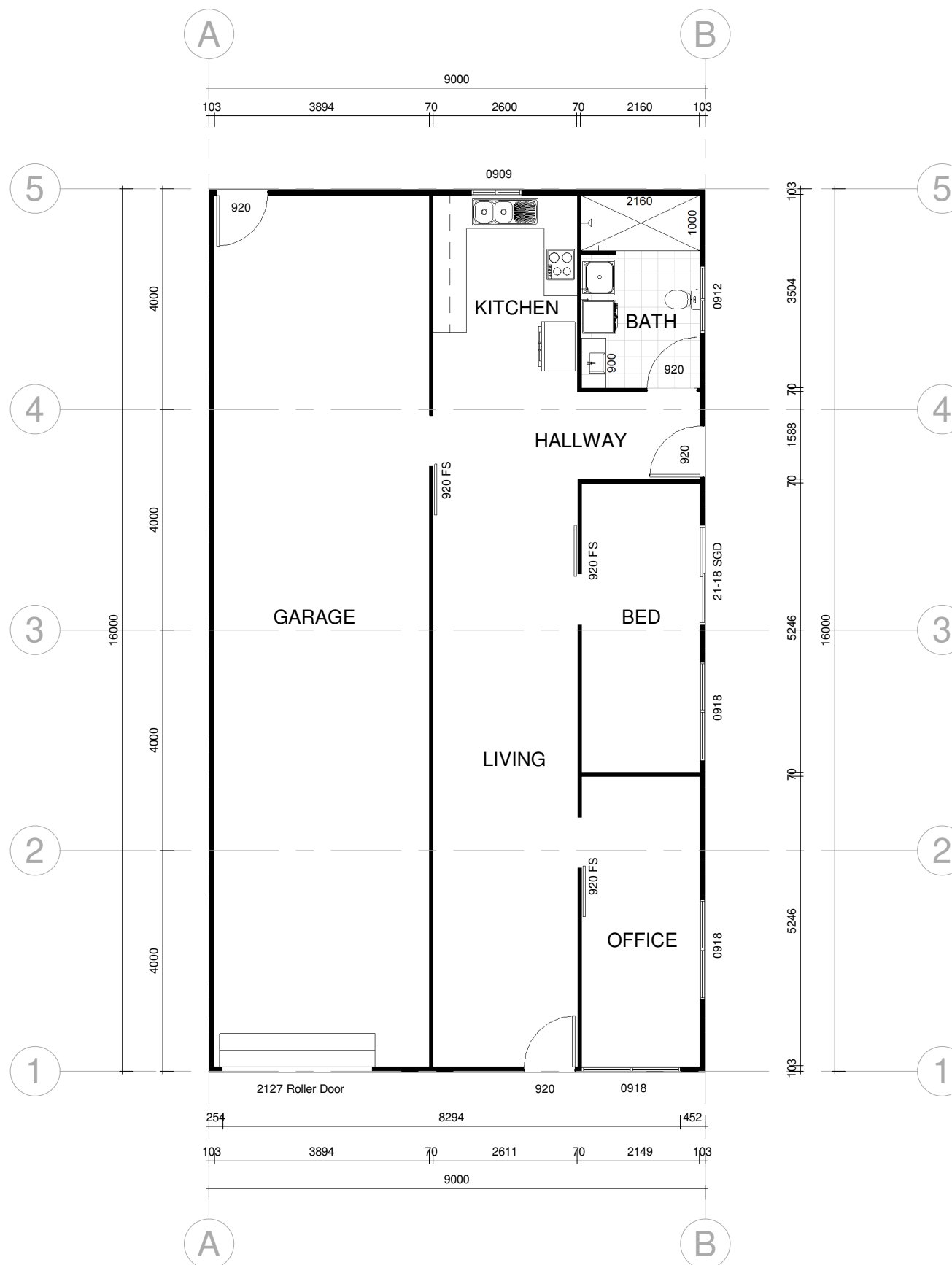
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MJS	DEL	16/09/24

SCALE:	PROJECT STATUS:
As indicated	PRELIMINARY

DRAWING No.	SHEET No.	REVISION
D24-068-R	004	B

AREA SCHEDULE

NAME	AREA
FLOOR AREA	144.00 m ²
TOTAL	144.00 m ²



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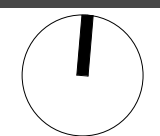
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3 FLOOR LEVEL
 SCALE: 1 : 100

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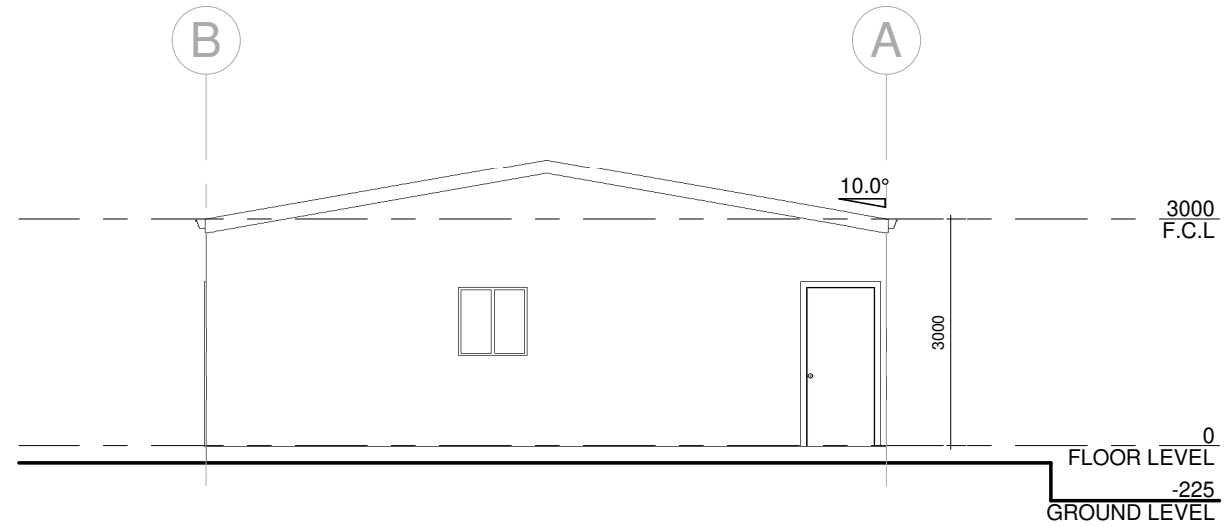


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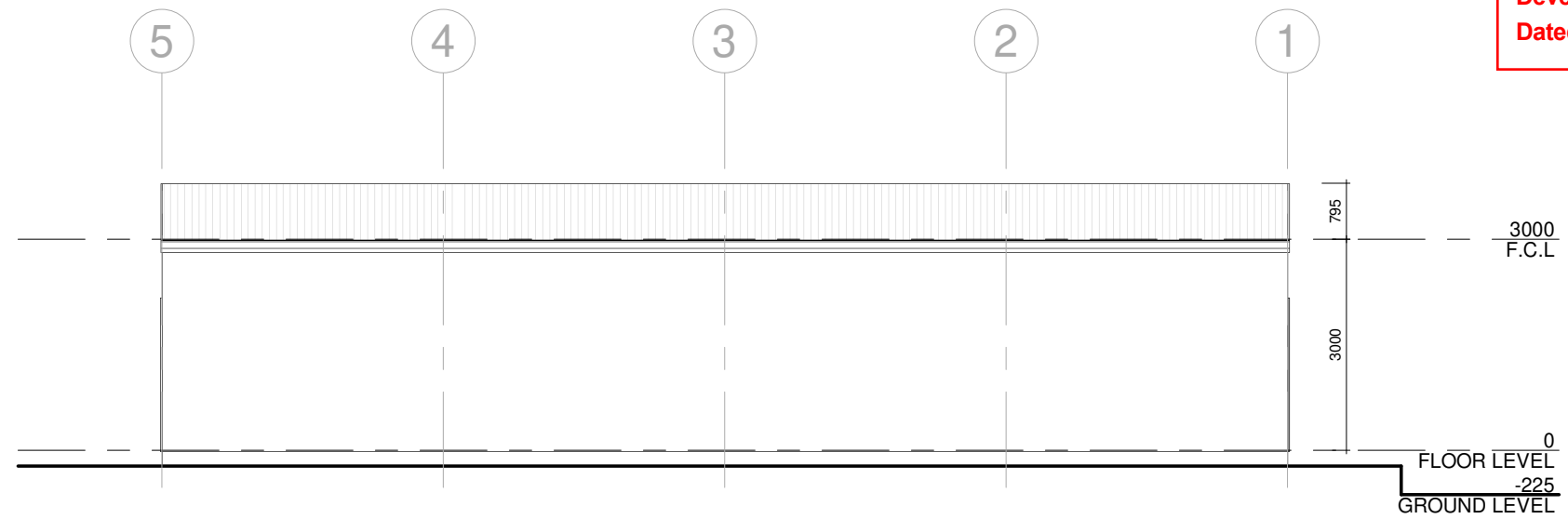
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A	PRELIMINARY	12/09/24	MJS	NEW SHOUSE FOR KYLE THOMAS	MJS	DEL	12/09/24
B	AMENDED	19/09/24	DEL				

ADDRESS	SCALE:	PROJECT STATUS:
2 SCHOOL STREET, MT MORGAN	1 : 100 AT A3	PRELIMINARY
DRAWING	DRAWING No.	SHEET No. REVISION
FLOOR PLAN	D24-068-R	100 B



1 ELEVATION 1
SCALE: 1 : 100

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2 ELEVATION 2
SCALE: 1 : 100

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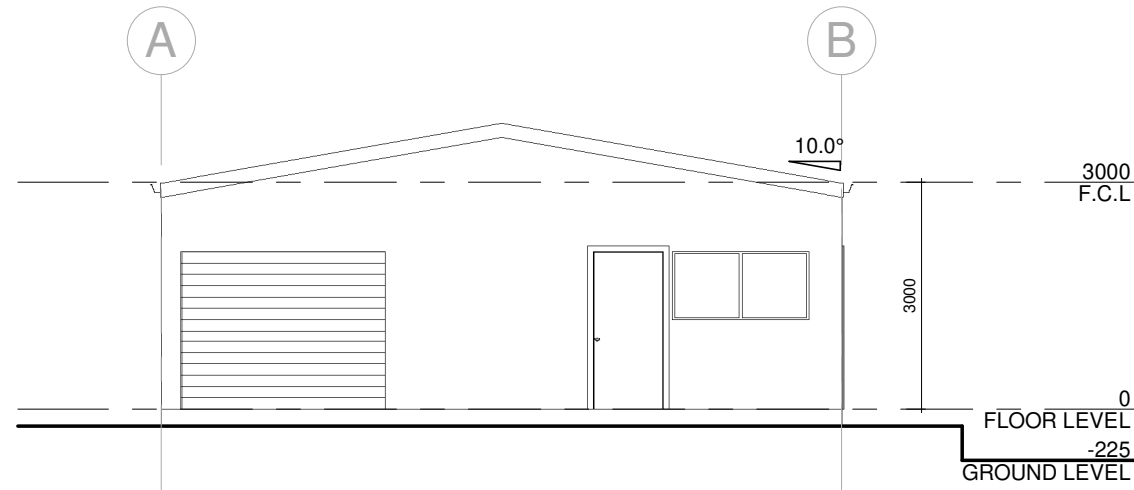
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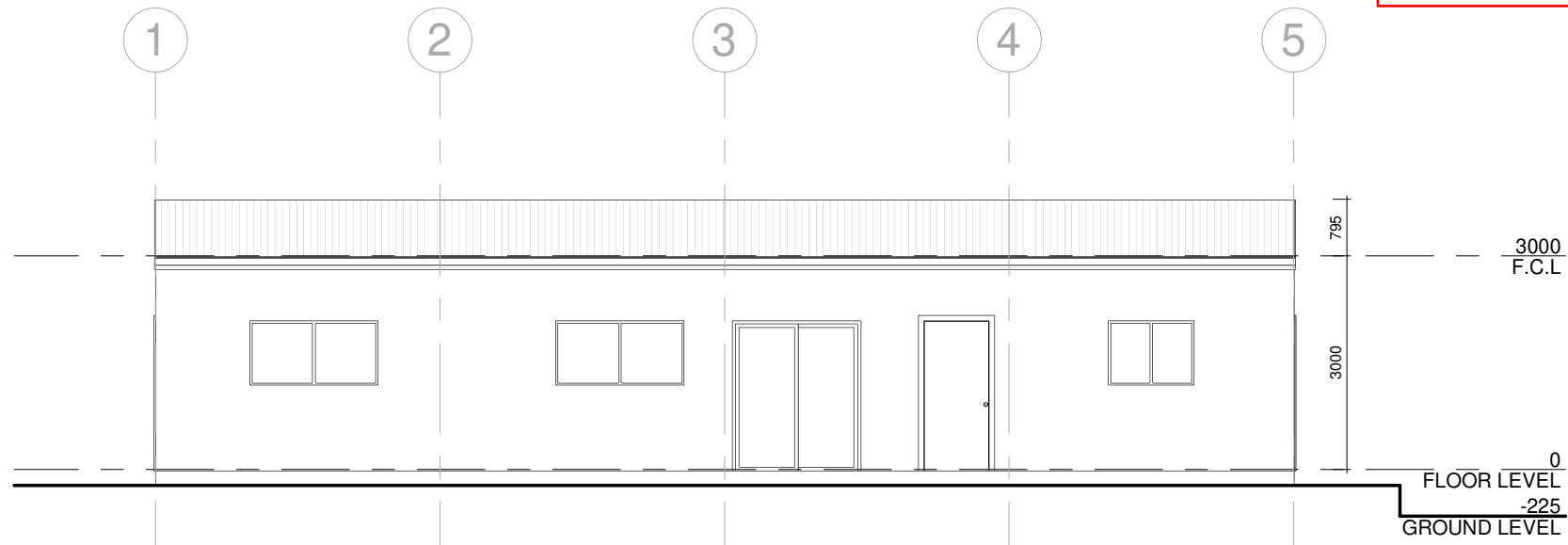
SUFFIX	REVISIONS	DATE	INITIALS	PROPOSED	DRAWN BY:	CHECKED BY:	DATE:
A	PRELIMINARY	12/09/24	MJS	NEW SHOUSE FOR KYLE THOMAS	MJS	DEL	12/09/24
ADDRESS					SCALE:		
2 SCHOOL STREET, MT MORGAN					PROJECT STATUS:		
DRAWING					1 : 100 AT A3		
ELEVATIONS					PRELIMINARY		
					DRAWING No.		SHEET No.
					D24-068-R		200
							REVISION
							A



3 ELEVATION 3
SCALE: 1 : 100

ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS

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Development Permit No.: D/139-2024
Dated: 7 November 2024



4 ELEVATION 4
SCALE: 1 : 100

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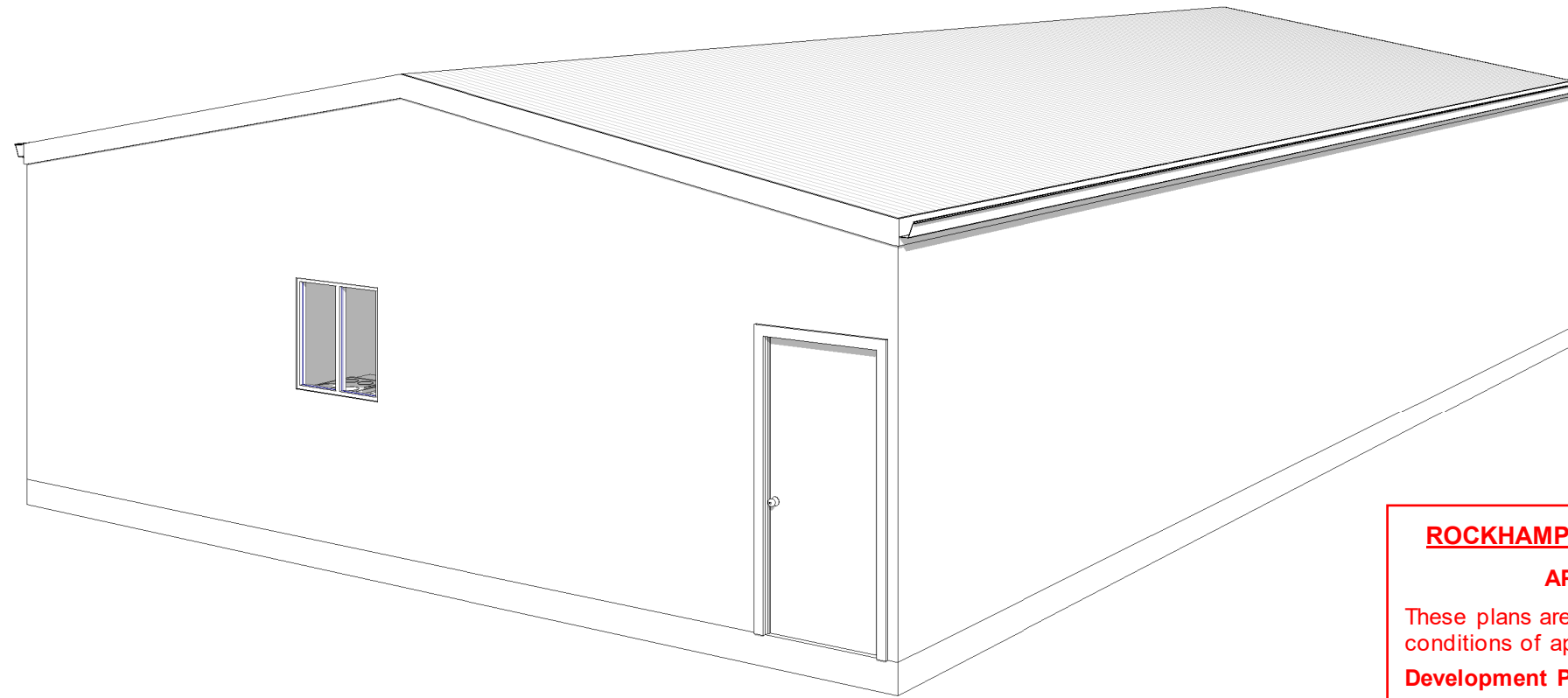
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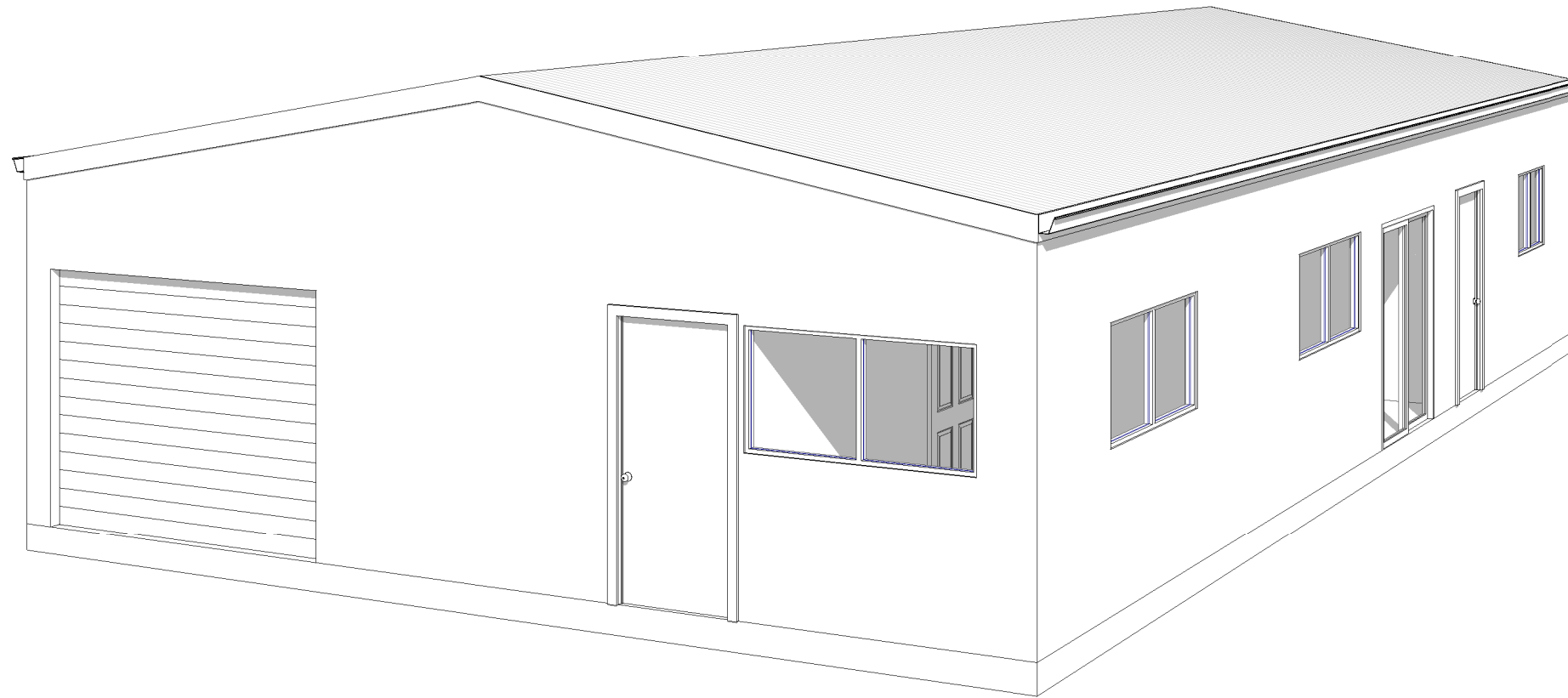
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SUFFIX	REVISIONS	DATE	INITIALS	PROPOSED	DRAWN BY:	CHECKED BY:	DATE:
A	PRELIMINARY	12/09/24	MJS	NEW SHOUSE FOR KYLE THOMAS	MJS	DEL	12/09/24
ADDRESS					SCALE:		
2 SCHOOL STREET, MT MORGAN					1 : 100 AT A3		
DRAWING					PROJECT STATUS:		
ELEVATIONS					PRELIMINARY		
					DRAWING No.		SHEET No.
					D24-068-R		201
					REVISION		A



1 3D View 1
SCALE:

ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D/139-2024
Dated: 7 November 2024



2 3D View 2
SCALE:

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SUFFIX	REVISIONS	DATE	INITIALS	PROPOSED	DRAWN BY:	CHECKED BY:	DATE:
A	PRELIMINARY	12/09/24	MJS	NEW SHOUSE FOR KYLE THOMAS	MJS	DEL	16.09.24
ADDRESS					SCALE:		
2 SCHOOL STREET, MT MORGAN					PROJECT STATUS:		
DRAWING					PRELIMINARY		
3D VIEWS					DRAWING No. AT A3	SHEET No.	REVISION
					D24-068-R	400	A

CQ SOIL TESTING



ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

These plans are approved subject to the current conditions of approval associated with

Development Permit No.: D/139-2024

Dated: 7 November 2024

AS2870 Site Classification

SITE ADDRESS: Lot 138 (RP601437)
2 School Street, Walterhall

Prepared for: K Thomas

Job Number: CQ25524

Issue Date: 22/07/2024



Client & Document Information

Client: K Thomas
Project: Lot 138 (RP601437)
2 School Street, Walterhall

Investigation Type: **Site Classification**
Job Number: CQ25524
Date of Issue: 22/07/2024

Contact Information

CQ SOIL TESTING
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Document Control

Version	Date	Author	Design Drawings	Reviewer	Reviewer Initials
A	22/07/2024	T Warne	P Munro	Scott Walton	SWW

QBCC Subsidence Policy

In accordance with the QBCC “Queensland Building and Construction Commission” the contractor must supply the site classifier with the information in Table 1. The contractor, or the contractor representative (CR), may require the site classifier (SC) gather all or part of this information and the SC must satisfy themselves that all of the “relevant” information has been considered.

If all of the information listed below is not supplied by the contractor or the contractor does not wish the SC to recover said information (at cost) the contractor may be in breach of the no fault provisions of the QBCC’s Policy for Rectification of Building Work and may be held responsible for subsidence or settlement of a building.

Table 1

Element	Supplied/ Considered	Remarks
Property description and site address	✓	Supplied by CR
Plan and/or survey	✓	Supplied by CR
Contour of the site	✓	Considered by SC
Location of trees, vegetation etc identified	✓	Considered by SC
Location and identification of potential overland flow	✓	Considered by SC
The footprint of proposed building and platform levels	✓	Supplied by CR
Location of proposed or existing cut and fill	✗	Nil Supplied
Appropriate land searches	✗	Nil Supplied

The following (Table 2) is a summary of the information required under the QBCC relating specifically to the SC. Information supplied in this summary is to be read in conjunction with the entire report attached. All relevant data used to ascertain the classification is documented in the report.

Table 2

Element	Remarks
Total number of excavations	1
Minimum of two excavations in building footprint	✓
Soil samples recovered	Undisturbed
Laboratory test performed	Shrink/Swell
Predicted Surface Movement	21 - 30 mm
Expected movement potential for “P” sites in the absence of uncontrolled fill and soft soil	NA

1.0 Introduction

The purpose of this report is to classify the subject allotment in accordance with Australian Standard 2870 Residential Slabs and Footings". From this classification a footing system can be recommended by an experienced/qualified engineer (designer) to suit the proposed structure. This design shall provide adequate performance of the footings under the soil conditions determined at the site.

This site investigation has been carried out by an experienced/qualified soils technician and in accordance with AS 2870. CQ Soil Testing is licensed with Building Services Australia to "Classify Sites".

This report relates exclusively to the proposed new dwelling at the address stated on page one of this report and has been prepared for the express purpose stated above. This document does not cover any other elements related to construction on the site.

2.0 Site Description

The subject site is a residential allotment which fronts a sealed road.

The proposed construction site is grassed and there is no evidence of any large trees having been removed from within the proposed dwelling footprint (see attached photographs). The proposed construction site falls to the northeast and is considered to have fair drainage. Surface water will drain toward the northeast. Surface water from the adjoining allotments may traverse the site. A site sketch is attached to this report.

There is no evidence of fill having been placed onto the proposed construction site.

3.0 Soil Profile

Boreholes carried out at the site (refer attached site sketch for approximate localities) indicate a soil profile of clay which is underlain by clayey sand (see detailed logs). Tungsten carbide drill bit refusal was not encountered. Laboratory testing was carried out on typical soil sample/s to assess the potential of the underlying soils to exhibit shrink/swell characteristics and any underlying moisture conditions. Details of the laboratory test results are contained in Section 4.

- Groundwater was not encountered during the site investigation.
- Weathered rock was not encountered during the site investigation.

It is possible that the soil profile may vary across the site from those shown in the bore logs which were used for this site classification. CQ Soil Testing are required to be notified if different conditions are encountered during construction. No allowance has been made for any substantial earthworks on the site or importing building platform material. ***The classification provided is based on the borehole, which has the highest characteristic surface movement.***

4.0 SITE CLASSIFICATION AND TARGET STRATA

Based on the findings of the site investigation and subsequent laboratory testing, the predicted surface movement for this site is between 21 - 30 mm:

CLASS "M" (Moderately Reactive)

in accordance with Australian Standard 2870, Residential Slabs and Footings. The above classification has not allowed for the possibility of differential surface movement as a result of differing soil types throughout the site or as a result of construction activities. It is the responsibility of the engineer to allow for this possibility in the footing design.

An indicative bearing capacity of greater than 100 kPa was encountered beyond 0.2 m at borehole 1 and 0.3 m at borehole . Any fill placed over the existing ground shall be pierced through into the existing suitable material. Further note that the placement of reactive material as fill, or cutting of the site may change the site's classification.

Where trees exist/ed CQ Soil Testing recommends an experienced arborist be commissioned to quantify the existing size, location, predicted maximum height and type of all relevant trees to aid in the design process. It is the responsibility of the designing engineer to apply the principals of AS2870-2011 Appendix H "Guide to Design of Footings for Trees". The classification herein excludes the effect of trees on the site.

It is noteworthy that soil samples recovered from this site may be tested further to aid in the preparation of a database of Central Queensland soils currently being compiled by CQ Soil Testing. The aim of this database is to further understand the types of soils in the region and their mechanical properties.

If you should have any queries regarding this report, please do not hesitate to contact the undersigned at your convenience.

Yours faithfully



SCOTT WALTON
Laboratory Manager

Site/Soil Characteristics and Classification

A. Classification by characteristic surface movement as per AS2870-2011

Site Classification Symbols	Y's Range Value	Generalised Description (Guide Only)
'S'	0 – 20 mm	Slightly reactive clay sites which may experience only slight ground movement due to moisture changes
'M'	21 – 40 mm	Moderately reactive clay or silt sites which may experience moderate ground movement due to moisture changes
'H1'	41 – 60 mm	Highly reactive clay sites which may experience high ground movement due to moisture changes
'H2'	61 – 75 mm	Highly reactive clay sites which may experience very high ground movement due to moisture changes
'E'	>75 mm	Extremely reactive clay sites which may experience extreme ground movement due to moisture changes
'P'	N/A	Problem sites which generally have soils associated with uncontrolled fill, abnormal moisture conditions (trees), soft or collapsing soils, landslip etc...

B. Laboratory Test Results

Borehole Location	1	Borehole Location		Borehole Location	
Depth Range of Sample (m)	0.1-0.5	Depth Range of Sample (m)		Depth Range of Sample (m)	
Natural MC %	17	Natural MC %		Natural MC %	
% Passing 75 um Sieve	ND	% Passing 75 um Sieve		% Passing 75 um Sieve	
Liquid Limit %	ND	Liquid Limit %		Liquid Limit %	
Plastic Index %	ND	Plastic Index %		Plastic Index %	
Linear Shrinkage %	ND	Linear Shrinkage %		Linear Shrinkage %	
Shrink Swell Index	2.5	Shrink Swell Index		Shrink Swell Index	
Pocket Penetrometer kPa	ND	Pocket Penetrometer kPa		Pocket Penetrometer kPa	

C. Permeability Test Results AS1547-2012

Test Hole Number	Depth Of Test Hole	Range Tested	Permeability M/Day
NA	500 mm	250 – 500 mm	NA

Soil Logs



BOREHOLE 1			
Depth (m)	Visual Class'n Symbol	Visual Description of Material	
0.0	CH	CLAY, high plasticity, trace fine to coarse grained sand, dark brown, M, S-ST with depth.	
0.5			
0.5	SC	Clayey SAND, fine to coarse grained, with fine to coarse grained gravel, low plasticity fines, light brown, D, D.	
1.8			
Borehole terminated at 1.8 m			
MOISTURE CONDITION	CONSISTENCY	RELATIVE DENSITY	Allowable Bearing Pressure calculated using the guidelines in "Determination of Allowable Bearing Pressure under Small Structures" by MI Stockwell (NZ Engineering June 1997) DCP test results are to be used as a guide only to relative density and consistency of soils. Changes in moisture contents or the presence of coarse grained material can greatly influence the outcome of this test.
D – Dry	VS – Very Soft	VL – Very Loose	
M – Moist	S – Soft	L – Loose	
W – Wet	F – Firm	MD – Med Dense	
	ST – Stiff	D – Dense	
	V/ST – Very Stiff	VD – Very Dense	
	H – Hard		

DCP TEST RESULTS		
Depth (mm)	Blows per 100 mm	Indicative kPa
100	2	70
200	2	70
300	3	100
400	7	200
500	12	300
600		
700		
800		
900		
1000		
1100		
1200		
1300		
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3200		
3300		
3400		
3500		
3600		
3700		
3800		
3900		
4000		

Soil Logs



BOREHOLE 2			
Depth (m)	Visual Class'n Symbol	Visual Description of Material	
0.0	CH	CLAY, high plasticity, trace fine to coarse grained sand, dark brown, M, S-ST with depth.	
0.5			
0.5	SC	Clayey SAND, fine to coarse grained, with fine to coarse grained gravel, low plasticity fines, light brown, D, D.	
1.8			
Borehole terminated at 2.0 m			
MOISTURE CONDITION	CONSISTENCY	RELATIVE DENSITY	Allowable Bearing Pressure calculated using the guidelines in "Determination of Allowable Bearing Pressure under Small Structures" by MI Stockwell (NZ Engineering June 1997) DCP test results are to be used as a guide only to relative density and consistency of soils. Changes in moisture contents or the presence of coarse grained material can greatly influence the outcome of this test.
D – Dry	VS – Very Soft	VL – Very Loose	
M – Moist	S – Soft	L – Loose	
W – Wet	F – Firm	MD – Med Dense	
	ST – Stiff	D – Dense	
	V/ST – Very Stiff	VD – Very Dense	
	H – Hard		

DCP TEST RESULTS		
Depth (mm)	Blows per 100 mm	Indicative kPa
100	2	70
200	2	70
300	2	70
400	3	100
500	5	160
600	10	250
700		
800		
900		
1000		
1100		
1200		
1300		
1400		
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3200		
3300		
3400		
3500		
3600		
3700		
3800		
3900		
4000		

Photographs



Image 1 – Proposed construction site



Image 2 – Proposed construction site

LIMITATIONS

1. Recommendations given in this report are based on the information supplied by the client regarding the proposed building construction in conjunction with the findings of the investigation. Any change in construction type, building location or omission in the client supplied information, may require additional testing and/or make the recommendations invalid.
2. The recommendations herein may identify a target soil stratum into which the footings should be founded. The target stratum has been located by the depth in mm of the target stratum's upper horizon boundary below the existing ground surface level at the time of the site investigation. Any cutting or filling works and any surface erosion or deposits subsequent to the site investigation, will alter the measured location of the stratum relative to the surface. Where required, the author should be notified in such cases to confirm the location of the target stratum.
3. The description of the soil given in Section 3.0 of this report is intended as a brief overview of the soil's primary constituents. For a detailed classification of the soil, the reader should refer to the Soil Profile Reports and/or Borehole Reports.
4. Every reasonable effort has been made to locate the test sites so that the borehole profiles are representative of the soil conditions within the area investigated. The client should be made aware, however, that exploration is limited by time available and economic restraints. In some cases, soil conditions can change dramatically over short distances, therefore, even careful exploration programs may not locate all the variations.
5. If soil conditions different from those shown in this report are encountered or are inferred from other sources, then the author must be notified immediately.
6. This report may not be reproduced except in full, and only then with the permission of the entity trading as CQ Soil Testing. The information and site sketch shall only be used and will only be applicable for the development shown on the client-supplied information provided for this site.
7. All information contained within this report is the intellectual property of the entity trading as CQ Soil Testing. All information contained within can only be used for the express purposes of the commissioned scope of works.
8. Any dimensions, contours, slope directions and magnitudes shown on the site sketch plan shall not be used for any building construction or costing calculations. The purpose of the plan is to show the approximate location of field tests only.
9. Any changes made to these recommendations by persons unauthorized by the author will legally be interpreted by that person assuming the responsibility for the long-term performance of the footing system.
10. The recommendations contained in this report have not taken into consideration the long-term effects of any previous, current, or potential subsurface work by mining companies or potential slope instability problems. At the time of writing this report neither our client (nor his agent) nor the local authority had made the author aware that these problems may be affecting this allotment. If a mining subsidence or slope stability assessment is required for this allotment, the recommendations of a suitably qualified geotechnical engineer should be sought.
11. Removal of trees from a site before an investigation can cause significant swelling of the soil over large areas. The removal of large trees from a construction site during development is rarely picked up during the investigation phase and is generally outside the scope of AS2870. Sites affected by large trees are often classified "P". If, during the footing excavation, it is noticed that there are soils with varying moisture contents or evidence of large trees having been removed CQ Soil Testing should be notified immediately.
12. The following documents are available from the CSIRO and QBCC and shall be read and adhered to in relation to this site:
 - Builder's Guide to Preventing Damage to Dwellings- Part 1 Site Investigation and Preparation
<http://www.publish.csiro.au/nid/22/pid/3621.html>
 - Builder's Guide to Preventing Damage to Dwellings- Part 2 Sound Construction Methods
<http://www.publish.csiro.au/nid/22/pid/3661.html>
 - QBCC Subsidence Fact Sheet
<https://www.qbcc.qld.gov.au/sites/default/files/Homeowner%27s%20Guide%20to%20Subsidence.pdf>



Contours derived by others.
 Contour plans and any associated drawings supplied by CQ Soil Testing are solely for the purpose of satisfying the QBCC's subsidence policy. Use or distribution of these drawings for any other purpose is not recommended and entirely at the users risk. CQ Soil Testing are not licensed surveyors and these drawings are not survey plans. Services shown are indicative only and are to be confirmed onsite prior to construction.

NOT FOR CONSTRUCTION

SERVICES LEGEND:

- | | | |
|-----------------|----------------|------------------------|
| Electricity Pit | Telecom Turret | U/G Telecom Line |
| Storm water pit | Telecom Pit | U/G Water Line |
| Fire Hydrant | Gully Pit | U/G Stormwater Line |
| Kerb Adapter | Sewer Manhole | Overhead Power |
| Water Meter | Sewerage Line | Sewer House Connection |
| Street Light | U/G Power Line | Stormwater Gully Pit |

SITE LEGEND & NOTES:

- RL 10.000 is assumed as datum level (ie Not AHD)
 - Existing Contour
 - Denotes Surveyed RL
- Field Technician: T.W. Date: 08.07.2024

CQ SOIL TESTING
 Servicing all of Central Queensland

QBCC - 15 305 465 ABN - 87 656 845 448

Phone: (07) 4936 1163
 Email: info@csoiltesting.com.au
 Website: www.csoiltesting.com.au

Project:
**LOT 138 SCHOOL STREET
 WALTERHALL, QLD**

For:
K THOMAS

Title: CONTOUR & SITE PLAN	
Scale: 1:250 (A3)	Date: JULY '24
Sheet: 1 of 1	Drawn: P.M.
Job No: CQ25798	Rev: A



ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

These plans are approved subject to the current conditions of approval associated with

Development Permit No.: D/139-2024

Dated: 7 November 2024

AS1547 Wastewater Design

SITE ADDRESS: Lot 138 (RP601437)
2 School Street, Walterhall

Prepared for: K Thomas

Job Number: CQ25524

Issue Date: 17/07/2024



SUMMARY OF RECOMMENDATIONS

Treatment

All-Waste Septic Tank 3000 litre minimum and Advanced Enviro-Septic System

Disposal Mechanism

One (1) Advanced Enviro-Septic System and Sand Extension Area – 2.34 m x 9.6 m - Area 22.5 sqm

© CQ Soil Testing

Client & Document Information

Client: K Thomas
Project: Lot 138 (RP601437)
2 School Street, Walterhall

Investigation Type: **Wastewater Investigation**
Job Number: CQ25524
Date of Issue: 17/07/2024

Contact Information

CQ SOIL TESTING
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Document Control

Version	Concept By	Design Drawings	Design Review	Issue Approved By	Date
A	P Munro	P Munro	Scott Walton	Scott Walton	17/07/2024

1. INTRODUCTION

The purpose of this report is to evaluate and define a suitable on-site sewerage treatment and disposal system for household effluents in accordance with Australian Standard 1547 “On-site domestic-wastewater management”. The Queensland Plumbing and Wastewater Code has been used for reference purposes during the compiling of this report.

The field investigation was carried out on the 8th July 2024. This report relates exclusively to the proposed dwelling at the site identified on Page 1 of this report. This document has been prepared for the express purpose stated above. This document does not cover any other elements related to construction on the site.

2. SITE DESCRIPTION AND SUPPLIED INFORMATION

2.1 Allotment and Effluent Disposal Site

- *The landholder was interviewed. All information included in this report relating to the dwelling size, water source, fixtures etc have been provided by the landholder or the landholders representative.*
- *The landholder shall read and understand all aspects of this design. CQ Soil Testing may carry out amendments to this design if requested, additional fees shall apply.*
- *The landholder is to liaise with neighbouring properties regarding the presence of discrete/unregistered bores that may exist/be proposed on adjacent allotments prior to system installation.*
- The site is a residential type allotment located at 2 School Street, Walterhall (a sealed road).
- The slope configuration in relation to surface drainage is linear planar.
- The proposed effluent disposal area is essentially level and is considered to have fair drainage.
- The soil surface condition was dry at the time of testing.
- There was no evidence of cracking of the surface during the investigation.
- There were no visible boulders on the surface of the allotment.
- There were no rock outcrops evident.
- There was no watercourse, bore, well, or dam evident within 10 m of the proposed disposal area at the time of this investigation.
- The proposed effluent disposal area is exposed to sun and wind.
- The proposed disposal site is an existing sparsely grassed area.
- Surface water will drain toward the northeast.
- Surface water drainage from adjoining allotments may traverse this site.
- The weather conditions prior to testing were periods of moist conditions.
- The site is not a known flood area.

2.1 Dwelling and Fixtures

- The dwelling type is single storey - 1 bedroom/s.
(3 equivalent persons – AS 1547:2012 Appendix J)
- The water source is reticulated supply.
(150 litre/person/day – AS 1547:2012 Appendix H)
- Standard water reducing fixtures **are to be** used throughout the dwelling.
- A spa type bath **is not** proposed to be installed.
- A food waste disposal unit **is not** proposed to be installed.

3. SOIL PROFILE

The borelogs carried out at the site (refer attached Site Plan for localities) indicate that the soil profile typically consists of clay soil which is underlain by clayey sand then weathered rock. Soil logs are detailed in this report.

Groundwater was not encountered during the field investigation.
Weathered rock was encountered during the field investigation.

Table 1 - Determination of Soil Category

Soil Category BH3	Soil Texture	Structure	Indicative Permeability	Indicative Drainage Class
6 (00-500 mm)	Heavy Clay	Moderately Structured	<0.06 m/day	Very Poorly Drained
4 (400-1500 mm)	Clay Loam	Weakly Structured	0.12 – 0.5 m/day	Imperfectly Drained

Table 2 – Permeability test results and conclusions

Test No.	Soil Permeability	Test hole depth	Recommended Design Loading Rate
PT 1	0.16	500 mm	
Average	0.16		30 (mm/day)

Permeability testing aids in the design of an “On-site domestic–wastewater management system”. CQ Soil Testing carries out a permeability testing in accordance with Appendix 4.1F of the Australian Standard 1547.

Whilst every effort has been made to ensure that the borelogs carried out at the subject allotment are indicative of the soil profile over the site any discrepancy between the profile detailed in the borelogs and that observed during construction shall be referred to CQ Soil Testing for immediate attention.

4. INVESTIGATION DETAILS

The investigation carried out at the site included machine augured boreholes up to 1500 mm depth and a series of permeability test pits. These test pits are located in the proposed effluent disposal area as shown on the attached design drawings.

The Queensland Plumbing and Wastewater Code and AS 1547 suggests that the use of a primary-treated effluent disposal system will be satisfactory provided:

- Sufficient permeable surface soil overlying rock is present over the disposal area, not less than 1.2 metres depth.
- A suitable soil category material (as per AS 1547) and minimum required depth is encountered.
- A minimum set-back distance of 50m is obtained.
- Acceptable permeability rates are obtained.

Not all the above requirements have been met, therefore it is concluded that the use of a primary-treated effluent septic system is not acceptable.

5. FINDINGS AND RECOMMENDATIONS

- All work must be carried out by a licensed plumber or drainer.
- All pipework shall be installed in accordance with AS3500.2.2, National Plumbing and Drainage, Part 2.2, Sanitary Plumbing and Drainage.
- The Design Loading Rate of 20 mm/day has been adopted.
- A 100% reserve effluent disposal area can be obtained on this allotment and shall be kept clear of development for possible future expansion.

5.1. Treatment

- Septic Tank – 3000 Litre minimum to be installed.
- The local authority may require the installation of a grease trap.
- The septic tank shall be de-sludged and pumped out at a maximum interval of 5 years.

5.2. Disposal

- All wastewater shall be disposed of by Advanced Enviro-Septic System.
- The land application facility shall be by an Advanced Enviro-Septic system with a total minimum area of **22.5 sqm**.
- A diversion mound shall be constructed above/around the disposal area to divert overland water flows.
- The AES System and sand extension area shall be 2.34 m in width and 9.60 m in length.
- The system shall be installed level and across the natural contour of the land.
- The finished surface shall shed water.
- Detailed drawings are attached to this report.
- The disposal area has been calculated on a daily all-waste flow rate of 450 litres/day, (3 people each using 150 litres per day) and a design load rate of 20 mm/day. This flow rate will accommodate all-waste flows from the existing three bedroom dwelling using **Standard Water-Reducing Devices**, which include using a dual flush 6/3 litre water closet (maximum), shower flow restrictors, aerated faucets and a water conserving washing machine.
- All set-back distances as required by the local authority shall be met.
- Stormwater run-off including roofwater from buildings shall be diverted around and away from the disposal area. Imported fill may be required should there be insufficient soil available for the design of the disposal system.
- The disposal area should be located in the vicinity of BH1, BH2 & BH3 and as per attached site plan.
- All set-back distances as required by the local authority shall be met.
- Stormwater run-off including roofwater from buildings shall be diverted around and away from the disposal area. Imported fill may be required should there be insufficient soil available for the design of the disposal system.

For Category 5 and 6 type soils the base of the proposed system shall be scarified and conditioned by adding gypsum at a rate of not less than 1kg/1sqm.

5.3. Setback Distances

Table 3 - Setback distances for subsurface land application area for greywater treatment plant or an on-site sewage treatment plant (QLD Plumbing & Wastewater Code Version 1:2019)

Feature	Horizontal separation distance ①		
	Up slope	Down slope	Level
Property boundaries, pedestrian paths, walkways, recreation areas, retaining wall, and footings for buildings and other structures.	2	4	2
Inground swimming pools	6	6	6
Inground potable water <i>tank</i> not exposed to primary effluent	6	6	6
Inground potable water <i>tank</i> exposed to primary effluent	15	15	15

① Distances are given in metres and are measured from the edge of trench/bed excavation or subsurface irrigation distribution pipework to the nearest point of the feature

Table 4- Setback distances for on-site sewage facilities and greywater use facilities – Protection of surface water and groundwater (QLD Plumbing & Wastewater Code Version 1:2019)

Feature	Separation distance ①		
	Advanced Secondary	Secondary	Primary
For onsite – see Table 2.1 in AS 1546.3			
For <i>greywater</i> – see Table 2.1 in AS 1546.4	Level 1 and Level 2	Level 3	Untreated
Top of bank of permanent water course	10	30	50
Top of bank of intermittent water course			
Top of bank of a lake, bay, or estuary			
Open stormwater drainage channel or drain			
Bore or a dam			
Unsaturated soil depth to a permanent water table (vertically)	0.3	0.6	1.2

① Distances are given in metres and are measured from the edge of the irrigated wetted area to any point of the feature

② Note: Primary effluent typically has a (BOD⁵) (Biochemical Oxygen Demand) of between 120 – 240 mg/L and Total Suspended Solids of between 65 – 180 mg/L.

5.4. Vegetation and signage

- Water tolerant vegetation shall be planted to maximize evapotranspiration and shall be carefully chosen. See vegetation specified in AS 1547:2012 "Disposal Systems for Effluent from Domestic Premises (Appendix C)". CQ Soil Testing recommends consultation with local nurseries for selection/density of plantings.
- At least two signs stating "Recycled water – Do Not Drink" are to be erected on boundaries.
- The presence of buried pipes shall:
 - (a) Be indicated e.g. using underground marking tape to AS/NZS 2648.1; OR
 - (b) Be indicated by signage. Signs shall be prominently displayed with the words:

"Sewage effluent pipework installed below. DO NOT DIG."

5.5. Greywater

Surface irrigation of greywater directly (without treatment) from the dwelling's washing machine is permissible. CQ Soil Testing recommends the surface irrigation of greywater. The washing machine shall be connected to a flexible hose with the hose distributing greywater to the landholder's garden/lawn. Provide an air admittance valve and suspend drainage (per AS/NZS 3500) to a rigid, fixed position external to building and reduce to a flexible hose fitting (minimum diam. 32 mm).

Greywater should be used with care and used responsibly - Avoid:

- *Ponding of water.*
- *Run-off to neighbouring properties.*
- *Causing an odour.*

When using greywater:

- Choose laundry detergents with low phosphorus, sodium and nitrogen content
- Take care not to keep watering the same spot - it can affect soil and can cause plants to die
- Be careful when using on native plants and don't use on edible parts of vegetables or fruits
- Make sure it doesn't enter swimming pools or flow into neighbouring properties
- Avoid ponding, bad smells or damage to plants by restricting use or moving the outlet
- Keep away from children's play areas and the footings of buildings.
-

6. CERTIFICATION

The landholder shall read and understand all aspects of this design. CQ Soil Testing may carry out amendments to this design if requested (**additional fees apply**).

The local authority may request that an inspection and certification is to be undertaken on the installation of the system when nearing completion. CQ Testing is qualified to undertake this task, and issue the appropriate Form 8 (**additional fees apply**). If certification is required the installer must:

- Contact CQ Soil Testing prior to “burying” the system to arrange an inspection
- Must photograph the entire installation process and supply to CQ Soil Testing
- Supply to CQ Soil Testing a Form 8 signed by the licensed installer

Yours faithfully

A handwritten signature in blue ink, appearing to read "S. Walton", with a long horizontal flourish extending to the right.

SCOTT WALTON
Laboratory Manager

Soil Logs

BOREHOLE 1			
Depth (m)	Visual Class'n Symbol	Visual Description of Material	
0.0	CH	CLAY, high plasticity, trace fine to coarse grained sand, dark brown, M, S-ST with depth.	
0.1		CAT 6 Heavy Clay – moderately structured	
0.1	SC	Clayey SAND, fine to coarse grained, with fine to coarse grained gravel, low plasticity fines, light brown, D, D. Weathered Rock	
0.4		CAT 4 Light Clay – weakly structured	
Tungsten Carbide Drill Bit refusal at 0.4 m.			
MOISTURE CONDITION	CONSISTENCY	RELATIVE DENSITY	Allowable Bearing Pressure calculated using the guidelines in "Determination of Allowable Bearing Pressure under Small Structures" by MI Stockwell (NZ Engineering June 1997) DCP test results are to be used as a guide only to relative density and consistency of soils. Changes in moisture contents or the presence of coarse grained material can greatly influence the outcome of this test.
D – Dry	VS – Very Soft	VL – Very Loose	
M – Moist	S – Soft	L – Loose	
W – Wet	F – Firm	MD – Med Dense	
	ST – Stiff	D – Dense	
	V/ST – Very Stiff	VD – Very Dense	
	H – Hard		

Soil Logs

BOREHOLE 2			
Depth (m)	Visual Class'n Symbol	Visual Description of Material	
0.0	CH	<u>CLAY</u> , high plasticity, trace fine to coarse grained sand, dark brown, M, S-ST with depth.	
0.1		CAT 6 Heavy Clay – moderately structured	
0.1	SC	<u>Clayey SAND</u> , fine to coarse grained, with fine to coarse grained gravel, low plasticity fines, light brown, D, D. Weathered Rock	
0.8		CAT 4 Light Clay – weakly structured	
Tungsten Carbide Drill Bit refusal at 0.8 m.			
MOISTURE CONDITION	CONSISTENCY	RELATIVE DENSITY	Allowable Bearing Pressure calculated using the guidelines in "Determination of Allowable Bearing Pressure under Small Structures" by MI Stockwell (NZ Engineering June 1997) DCP test results are to be used as a guide only to relative density and consistency of soils. Changes in moisture contents or the presence of coarse grained material can greatly influence the outcome of this test.
D – Dry	VS – Very Soft	VL – Very Loose	
M – Moist	S – Soft	L – Loose	
W – Wet	F – Firm	MD – Med Dense	
	ST – Stiff	D – Dense	
	V/ST – Very Stiff	VD – Very Dense	
	H – Hard		

Soil Logs

BOREHOLE 3			
Depth (m)	Visual Class'n Symbol	Visual Description of Material	
0.0	CH	CLAY, high plasticity, trace fine to coarse grained sand, dark brown, M, S-ST with depth.	
0.5		CAT 6 Heavy Clay – moderately structured	
0.5	SC	Clayey SAND, fine to coarse grained, with fine to coarse grained gravel, medium plasticity fines, light brown, D, D. Weathered Rock	
1.5		CAT 4 Light Clay – weakly structured	
Borehole terminated at 1.5 m			
MOISTURE CONDITION	CONSISTENCY	RELATIVE DENSITY	Allowable Bearing Pressure calculated using the guidelines in "Determination of Allowable Bearing Pressure under Small Structures" by MI Stockwell (NZ Engineering June 1997) DCP test results are to be used as a guide only to relative density and consistency of soils. Changes in moisture contents or the presence of coarse grained material can greatly influence the outcome of this test.
D – Dry	VS – Very Soft	VL – Very Loose	
M – Moist	S – Soft	L – Loose	
W – Wet	F – Firm	MD – Med Dense	
	ST – Stiff	D – Dense	
	V/ST – Very Stiff	VD – Very Dense	
	H – Hard		

Photographs



Image 1 Proposed disposal area

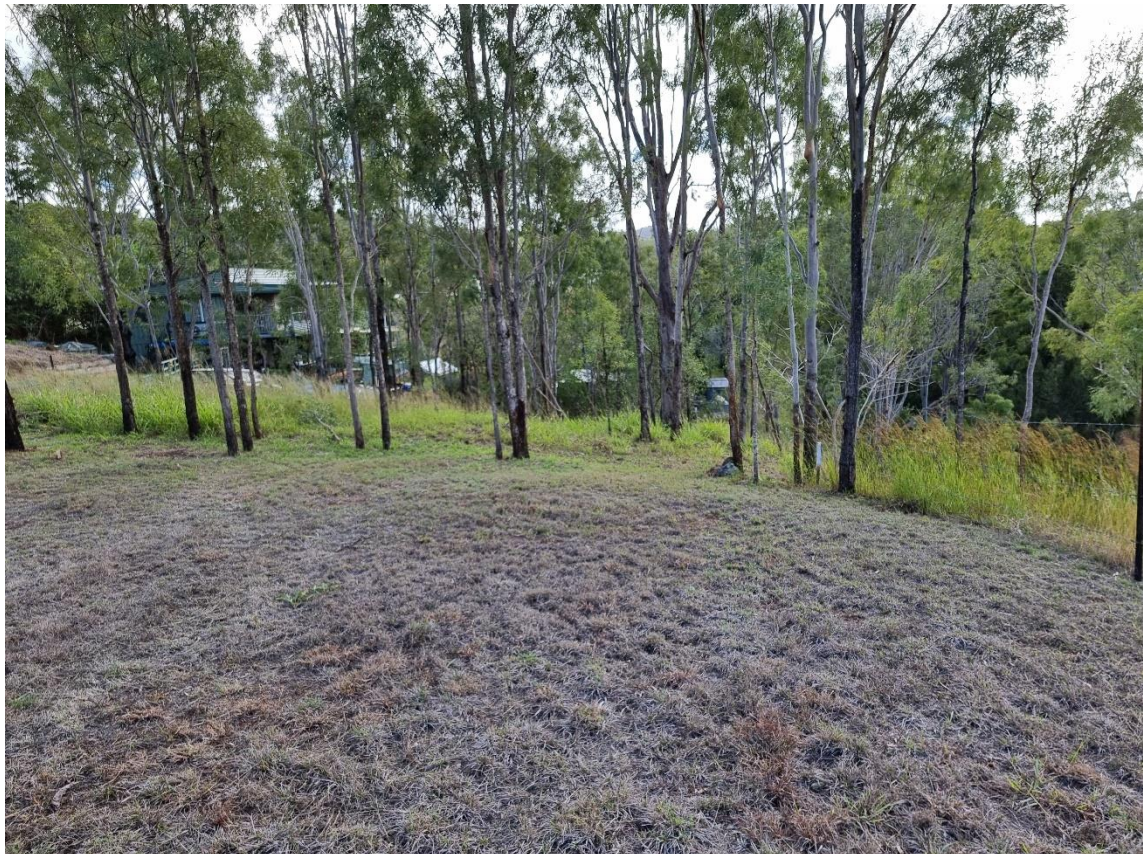


Image 2 Proposed disposal area

APPENDIX 1 - NOTES

1. Recommendations given in this report are based on the information supplied by the client regarding the proposed building construction in conjunction with the findings of the investigation. Any change in construction type, building location or omission in the client supplied information, may require additional testing and/or make the recommendations invalid.
2. Every reasonable effort has been made to locate the test sites so that the borehole profiles are representative of the soil conditions within the area investigated. The client should be made aware however, that exploration is limited by time available and economic restraints. In some cases, soil conditions can change dramatically over short distances, therefore, even careful exploration programs may not locate all the variations.
3. If soil conditions different from those shown in this report are encountered or are inferred from other sources, then the author must be notified immediately.
4. This report may not be reproduced except in full, and only then with the permission of the entity trading as CQ Soil Testing. The information and site sketch shall only be used and will only be applicable for the development shown on the client-supplied information provided for this site.
5. All information contained within this report is the intellectual property of the entity trading as CQ Soil testing. All information contained with can only be used for the express purposes of the commissioned scope of works.
6. Any dimensions, contours, slope directions and magnitudes shown on the site sketch plan shall not be used for any building construction or costing calculations. The purpose of the plan is to show approximate location of field tests only.
7. Any changes made to these recommendations by persons unauthorized by the author will legally be interpreted at that person assuming the responsibility for the long-term performance of the system.
8. The following documents are available from various sources and shall be read and adhered to in relation to this site:

AS/NZS 1547:2012 - On-site domestic wastewater management

<https://www.standards.org.au/standards-catalogue/sa-snz/waterandwasteservices/ws-013>

AS/NZS 1546.1 - On-site domestic wastewater treatment units - Septic tanks

<http://www.standards.com.au/>

AS/NZS 1546.2 - On-site domestic wastewater treatment units - Waterless composting toilets

<http://www.standards.com.au/>

AS/NZS 1546.3 - On-site domestic wastewater treatment units - Aerated wastewater treatment systems

<http://www.standards.com.au/>

Queensland Plumbing and Wastewater Code

https://www.hpw.qld.gov.au/_data/assets/pdf_file/0019/3943/queenslandplumbingandwastewatercode_26march2019.pdf

Standard Sewerage Law

<http://www.legislation.qld.gov.au/LEGISLTN/SLS/1998/98SL099.pdf>

Periodically during the course of your trench, ETA bed or irrigation areas life span it will most likely require maintenance such as deep scarification to promote the uptake, and transmission of effluent. This can also be achieved via deeper drilling, rotary hoe or excavator tines.

The Land Application Area designed by CQ Soil Testing is in accordance with the relevant Australian Standards to provide the most economical solution. Generally, this initial installation will be sufficient to successfully handle the load from the dwelling and/or building. Occasionally, however, all of the effluent is not absorbed or transpired due to reasons such as:

- diversion drains are not effective and stormwater enters the Land Application area.
- plants used for the aid of transpiration have not reached maturity resulting in less than optimum transpiration.
- water conservation is not being practiced within the household or building.
- soils can vary significantly over short distances resulting in significant variations in absorption characteristics.

APPENDIX 2 MAINTAINING YOUR SEPTIC SYSTEM

The following tips will help you to save money, reduce pollution and conserve resources:

Remove accumulated sludge from the tank:

- Generally, septic tanks require periodic cleaning or pumping out of accumulated solids every 4 years. If solids are allowed to build up in the tank to a point where they pass to the effluent treatment stage they can cause problems.
- Household pipes may become filled with sewage and the subsoil soil trench system could soon become clogged with solids. This may cause the effluent to come to the surface, pool and cause unpleasant smells. This can constitute a risk to public health, particularly to children playing in the vicinity.

Minimise or manage the volume of water entering the system to improve the lifespan and operation of the absorption trench:

- Regularly check plumbing fixtures for leaking taps or toilets cisterns. Have them repaired. Ensure water from roof downpipes does not enter the system and roof water is diverted away from the effluent disposal area.
- Install water saving devices such as shower heads that minimise water use and dual flush toilet cisterns.
- If the terrain slopes down to your absorption trench ensure that surface water is diverted around the soakage area by installing a stormwater diversion trench.
- Spread large washing loads over several days to minimise the impact on your septic tank system. Plan your water usage so that large flows to the system in a short time are avoided, for example, operate the dishwasher and washing machine at separate times.

Ensure the system can be readily accessed for maintenance:

If you own a house built prior to March 1995 and your tank is difficult to access for maintenance, you may consider installing an approved access shaft to minimise future maintenance difficulties.

Do not construct driveways, buildings or paved areas over the septic and soakage system as this may result in damage to the system and access problems when the tank requires pumping out at a later date.

Use household detergents and bleaches sensibly:

The normal use of household detergents and bleaches is considered satisfactory. If in doubt about any household product suitability, consult the product manufacturer.

Don't use the system for the disposal of chemicals:

Don't dispose of medicines or strong chemicals such as pesticides and paints into the septic system. This can cause the septic tank to malfunction and may pollute groundwater.

Protect the septic tank and disposal area from damage:

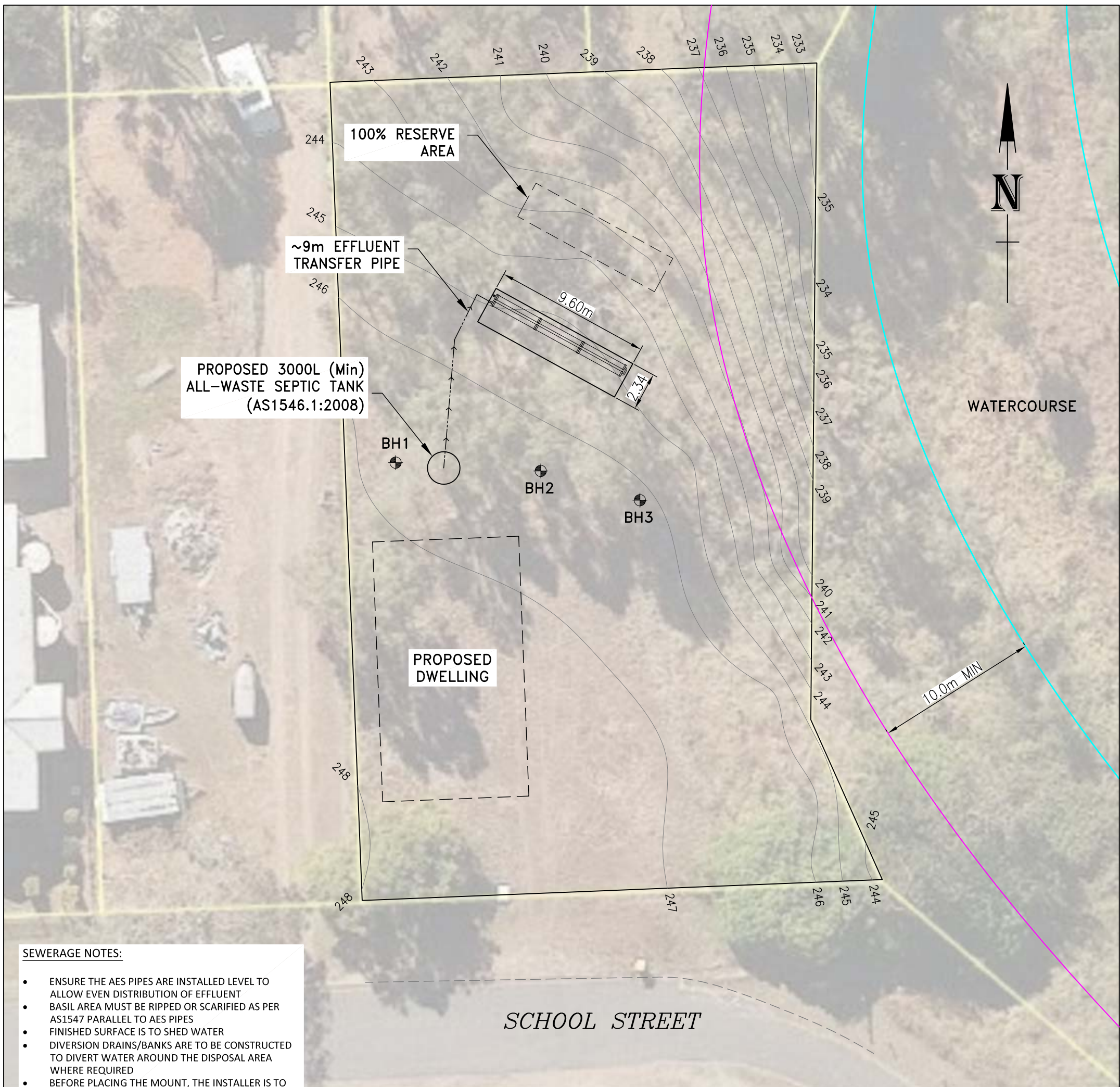
If the tank and disposal area are exposed to vehicle traffic use a barrier or other means to prevent vehicles driving over the tank and soakage as this could cause damage and result in costly repairs.

Prevent mosquito breeding:

Ensure that all vents associated with the system are fitted with mosquito proof mesh and access openings are correctly sealed.

After a number of years of use, some soakage systems may fail and require replacement. The first signs of this can be soggy patches on the surface in the area where the soakage trenches are located. This can be accompanied by strong odours and blocked pipes. This can constitute a health risk and advice should be sought from a registered plumber to confirm the cause. If the trench requires replacement or the system needs to be altered in any way, the local council Environmental Health Officer should be consulted. A malfunctioning effluent disposal system can constitute a risk to public health and in some cases result in action being taken by the relevant authority.

Note: Odours may occur on initial use of the system. If this becomes a problem consult your local council or the Department of Health.



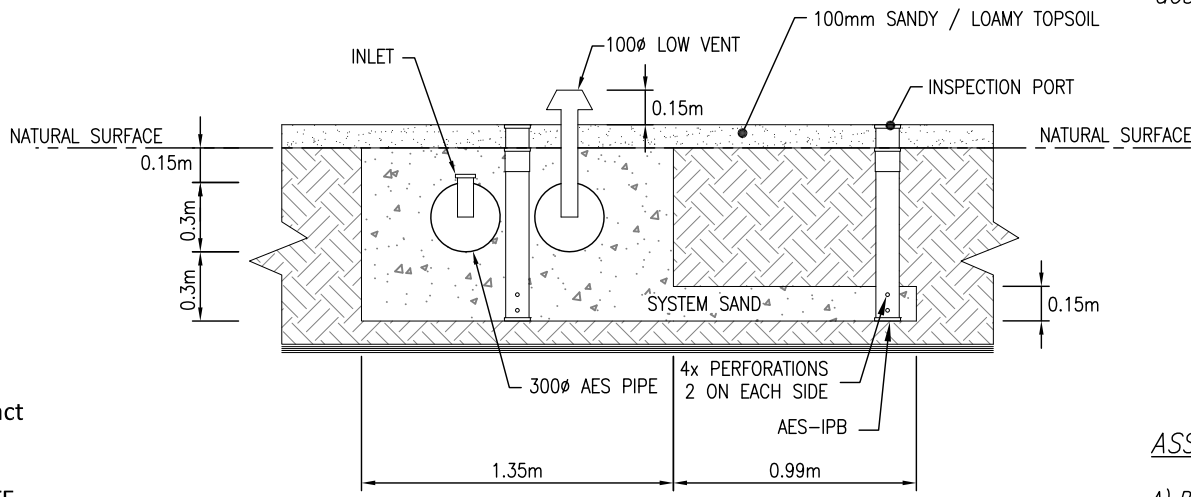
SEWERAGE NOTES:

- ENSURE THE AES PIPES ARE INSTALLED LEVEL TO ALLOW EVEN DISTRIBUTION OF EFFLUENT
- BASIN AREA MUST BE RIPPED OR SCARIFIED AS PER AS1547 PARALLEL TO AES PIPES
- FINISHED SURFACE IS TO SHED WATER
- DIVERSION DRAINS/BANKS ARE TO BE CONSTRUCTED TO DIVERT WATER AROUND THE DISPOSAL AREA WHERE REQUIRED
- BEFORE PLACING THE MOUNT, THE INSTALLER IS TO REMOVE ANY VEGETATION.
- CLAY BASED SOILS ARE NOT TO BE USED AS TOPSOIL
- AN INSPECTION PORT SHALL BE INSTALLED IN ACCORDANCE WITH AS1547_4.5
- ALL WORK TO BE IN ACCORDANCE WITH THE CONSTRUCTION TECHNIQUES STATED IN AS1547
- DISPOSAL AREA TO BE FENCED OFF FROM LIVESTOCK

NOTE:

- AES PIPES ARE 3m IN LENGTH
- 2 x 3m LENGTHS PER ROW
- 2 x ROWS ARE REQUIRED
- Ø80mm or 2x50mm high vent is to be installed 3.0m minimum above low vent.
- Inspection ports are to be installed at the furthest point from inlet and also the middle of the first and second run of aes pipes as per cea # 15/2019
- Plumber to confirm suitability of all infrastructure with landholder prior to installation.
- Any suggestions to change the design contact CQ Soil Testing.
- REFER TO SECTION 5. DISPOSAL-ALL-WASTE FOR MORE INFORMATION

- Plumber to confirm suitability of all infrastructure with landholder prior to installation.
- Any suggestions to change the design contact CQ Soil Testing.



TYPICAL SECTION OF 22.5m² AES BED

ASSUMED LEVELS:

- A) PROPOSED SEPTIC TANK INVERT ≈ 246.5
- B) PROPOSED INVERT AT HEADER LINE ≈ 244.8

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Servicing all of Central Queensland

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Project:

LOT 138 SCHOOL STREET
 WALTERHALL, QLD

For:

K THOMAS

Title:

EFFLUENT DISPOSAL DESIGN

Scale:

1:250 (A3)

Date:

JULY '24

Sheet:

1 of 1

Drawn:

P.M.

Job No:

CQ25798

Rev:

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