PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL
Approval no: DEV2021/1235
Date: 5 December 2022
Queensland Government

Turning Knowledge Into Value

# Report

## Lot 8002 Baringa Drive, Aura Caloundra West Stormwater Quality Management Plan

Prepared for Stockland Development Pty Ltd

18 August 2022

Calibre Professional Services Pty Ltd
55 070 683 037

**DOCUMENT CONTROL**

| ISSUE | DATE | ISSUE DETAILS | AUTHOR | CHECKED | APPROVED |
|---|---|---|---|---|---|
| A | 14/12/2021 | Issue A | AG | SP | SP |
| B | 18/08/2022 | Updated Drawings in Attachment A | AG | EC | |

COMMERCIAL IN CONFIDENCE

This document including any intellectual property is confidential and proprietary to Calibre and may not be disclosed in whole or in part to any third party nor used in any manner whatsoever other than for the purposes expressly consented to by Calibre in writing. Calibre reserves all legal rights and remedies in relation to any infringement of its rights in respect of its confidential information | © Calibre Group Pty Ltd.

# Contents

**1. Introduction ..... 2**
1.1 Revisions to this Report 2
1.2 Scope of this Investigation 2

**2. Site Characteristics ..... 3**
2.1 Location 3
2.2 Topography and Drainage 3

**3. Stormwater Quality Management ..... 4**
3.1 Pollutants of Concern 4
3.2 Water Quality Objectives 4
3.3 Stormwater Quality Management Strategy 2
3.4 MUSIC Modelling Methodology 2
3.5 MUSIC Model Setup 3
3.6 MUSIC Modelling Results 3

**4. Conclusion ..... 4**

**5. Recommendations ..... 5**

**6. References ..... 5**

**7. Disclaimer ..... 5**

# Tables

Table 3-1 Post-Construction Water Quality Objectives ..... 4
Table 3-2 Catchment A Source Nodes ..... 2
Table 3-3 MUSIC Modelling Results ..... 4

# Figures

Figure 2-1 Site Locality (Nearmap) ..... 3
Figure 3-1 MUSIC Model Setup ..... 3

# Appendices

Appendix A Architectural Drawing - Site Layout
Appendix B Calibre Engineering Drawings
Appendix C O + M manuals

# 1. Introduction

Calibre Professional Services Pty Ltd have been commissioned by Stockland Development Pty. Ltd. to complete a Stormwater Management Plan to support the proposed development in Lot 8002 Baringa Drive, Aura, Caloundra West. The proposed development described as Lot 8002 SP312963 within the Sunshine Coast Regional Council (SCRC) Local Government Area.

The investigations undertaken in this report address the stormwater quality requirements for the proposed development in accordance with the relevant Local and State Government standards. A stormwater quality management strategy has been developed in accordance with relevant Sunshine Coast Council (SCC) guidelines and the State Planning Policy (SPP, 2017). The requirements were met through modelling the pollutant export generated by the proposed development and appropriately implementing stormwater quality improvement devices (SQID's)

The Architectural Drawings depicting the proposed development layout are provided in **Appendix A.**

## 1.1 Revisions to this Report

Revision B of this report has been prepared in response to MEDQ's RFI and Updates to Attachment A (Architectural Plans). The changes include:

- Changes to catchment areas.
- Revision to layout plans to reflect the current architectural layout.
- Addition of roofed car wash bay.
- Relocation of the stormwater treatment tank to provide improved maintenance access.

Revised Engineering drawings are provided in **Error! Reference source not found.**.

## 1.2 Scope of this Investigation

The scope of this report is to provide a stormwater quality management strategy for Lot 8002 by undertaking a stormwater quality analysis in MUSIC. This is completed to demonstrate the proposed SQID's adequacy in meeting the Water Quality Objectives (WQO's) required under *SPP,* 2017 (refer to **Section 3** of this report).

# 2. Site Characteristics

## 2.1 Location

Lot 8002 is located within the SCRC on Baringa Drive, Aura, Caloundra West, with a survey plan description of Lot 4000 on SP312963 at the time of this report. The greater development is bound by Evans Lane to the west, Baringa Drive to the East and Lukin Terrace to the South. This is illustrated in **Figure 2-1** below.

Figure 2-1 Site Locality (Nearmap)

## 2.2 Topography and Drainage

The site generally falls from West to East. There is approximately 1m of fall across the lot. Earthworks for the site were previously completed as part of the Aura Precinct 2 earthworks and as such the site is generally cleared of large vegetation with low growing grasses.

A single drainage connection point is provided for the site, located at the corner of Lukin Terrace and Baringa Drive. The design of the development maintains the general falls from west to east, grading towards the stormwater connection point. A series of pits and pipes will be employed to drain the site to the connection point.

# 3. Stormwater Quality Management

To improve the stormwater quality leaving the proposed development, a treatment train of suitable Stormwater Quality Improvement Devices (SQID's) have been proposed to intercept and capture the pollutants so that the potential impacts on waterways downstream are mitigated.

This section discusses:

- The identification of key stormwater pollutants associated with the proposed development.
- The Water Quality Objectives (WQO's) identified for the catchment.
- Proposed measures to mitigate the increase in pollutant export.
- Modelling of the proposed measures and comparison to the identified WQOs.

Concept management strategies have been modelled using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC), generally in accordance with the Water by Design MUSIC Modelling Guidelines for Southeast Queensland (2010).

## 3.1 Pollutants of Concern

Typical key pollutants expected to be generated during the operational (post-construction) phase of the planned development are listed as follows, with those presented in capitals being the key pollutants to be targeted for treatment:

- LITTER
- SEDIMENT
- Oxygen demanding substances (possibly present)
- NUTRIENTS (N & P)
- Pathogens / Faecal coliforms
- Hydrocarbons
- HEAVY METALS (associated with fine sediments)
- Surfactants
- Organochlorines & organophosphates
- Thermal pollution
- pH altering substances

Only the key pollutants will be further addressed in this report; however, the treatment train developed will adequately mitigate the other pollutant loads. As heavy metals will predominately be associated with fine sediment, controls proposed to reduce total suspended solids will also adequately reduce loads of heavy metals.

## 3.2 Water Quality Objectives

The proposed development triggers compliance with the *State Planning Policy* (*SPP*, 2017) with respect to stormwater quality. The appropriate load reduction WQO's presented in

**Table** 3-1 have been sourced from the *SPP* (2017).

Table 3-1 Post-Construction Water Quality Objectives

| Pollutant | Total Suspended Solids (TSS) | Total Phosphorus (TP) | Total Nitrogen (TN) | Gross Pollutants (GP) |
|---|---|---|---|---|
| **Load Reduction Target** | 80% | 60% | 45% | 90% |

## 3.3 Stormwater Quality Management Strategy

As the development has the potential to increase pollutant loads and concentrations in stormwater runoff entering downstream waterways, a treatment train of suitable Stormwater Quality Improvement Devices (SQIDs) are proposed to mitigate this increase.

The treatment train shall consist of a series of litter baskets (Stormsacks) located in the stormwater pits throughout the site, as well as an end of line cartridge system (Stormfilter) located adjacent the stormwater connection to the site. These systems are a proprietary product and are equivalent systems are available from alternate suppliers. The end of line system allows for an efficient stormwater network, directing all flows directly to the stormwater connection point.

Refer to *Calibre Drawing 21-000157-113 in* Appendix B for details of the proposed treatment system.

## 3.4 MUSIC Modelling Methodology

Stormwater quality modelling of the proposed development has been undertaken using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) Version 6.3.0, developed by the Cooperative Research Centre for Catchment Hydrology (CRCCH). MUSIC enables the user to conceptualise the transfer of pollutants through a stormwater drainage system and provides an aid in quantifying the effectiveness of the proposed stormwater quality management strategy. MUSIC only provides quantitative modelling for Total Suspended Solids (TSS), Total Phosphorous (TP), Total Nitrogen (TN) and Gross Pollutants (GP).

The MUSIC model was setup generally in accordance with Water by Design MUSIC Modelling Guidelines (2018). The subsequent sections discuss the model configurations adopted for the analysis.

### 3.4.1 Meteorological Data

Six-minute pluviographic data was sourced from the Bureau of Meteorology (BOM) for Caloundra WTP (Station No.40496). In accordance with

**Table** 3-1 of the MUSIC Modelling Guidelines (2018), the 10-year period from 1st January 1997 to 31st December 2006 was adopted for the rainfall duration. The mean annual rainfall for this period is 1,348mm.

### 3.4.2 Source Nodes

The source nodes represent the catchment areas of the proposed developable areas modelled in MUSIC. A split catchment approach was adopted in accordance with the MUSIC Modelling Guidelines (2018). The split catchment approach separates the catchment areas into surface areas representing roof, road and ground, measured from the development layout. These surface types were modelled for each sub-catchment when applicable. **Table 3-2**, below summarise the source node configuration and fraction impervious percentages adopted.

Table 3-2 Catchment A Source Nodes

| Catchment Name | Surface Type | Area (ha) | Fraction Impervious |
|---|---|---|---|
| **A – Roof** | Roof | 0.419 | 100 |
| **A – Landscaped Ground** | Ground | 0.224 | 50 |
| **A – Road** | Road | 0.145 | 100 |

Refer to *Calibre Drawing* ***21-000157-SK001*** in **Appendix B** for catchment plan information.

Rainfall runoff parameters for all nodes were assigned as commercial land-use, in accordance with

**Table** 3-1 of the MUSIC Modelling Guidelines (2018). Pollutant export properties for source nodes have been configured according to the residential land use category in accordance with

**Table** 3-1 of the MUSIC Modelling Guidelines (2018). Stochastic generation estimation and serial autocorrelation set to zero has also been adopted.

### 3.4.3 Drainage Links

No routing was adopted for drainage links within the MUSIC model in accordance with Section 4.17 of the MUSIC Modelling Guidelines (2018). This assumes flows and associated pollutants from all parts of the catchment arrive at the treatment nodes at the same time. This is conservative as it means that MUSIC may overestimate the overflow volumes.

### 3.4.4 Treatment Nodes

#### 3.4.4.1 Stormsacks

Six (6) Stormsacks have been proposed within the site to provide initial stormwater quality treatment. The proposed Stormsacks will be installed along Driveway 2 and 3 at each inlet pit. These SQID's will be targeting pollutants such as sediment, litter, and gross pollutants.

#### 3.4.4.2 Filter Cartidges

Thirteen (13) full height filters have been proposed as the secondary and main stormwater quality treatment for the site. These filters are to be installed within a precast concrete tank and a proposed location on site is along the edge of Lukin Terrace near the corner of Baringa Drive and Lukin Terrace.

Refer to *Calibre Drawing* ***21-000157-113*** in **Appendix B** for details of the proposed treatment system.

## 3.5 MUSIC Model Setup

**Figure 3-1** identifies the treatment train of source and treatment nodes in the MUSIC model.

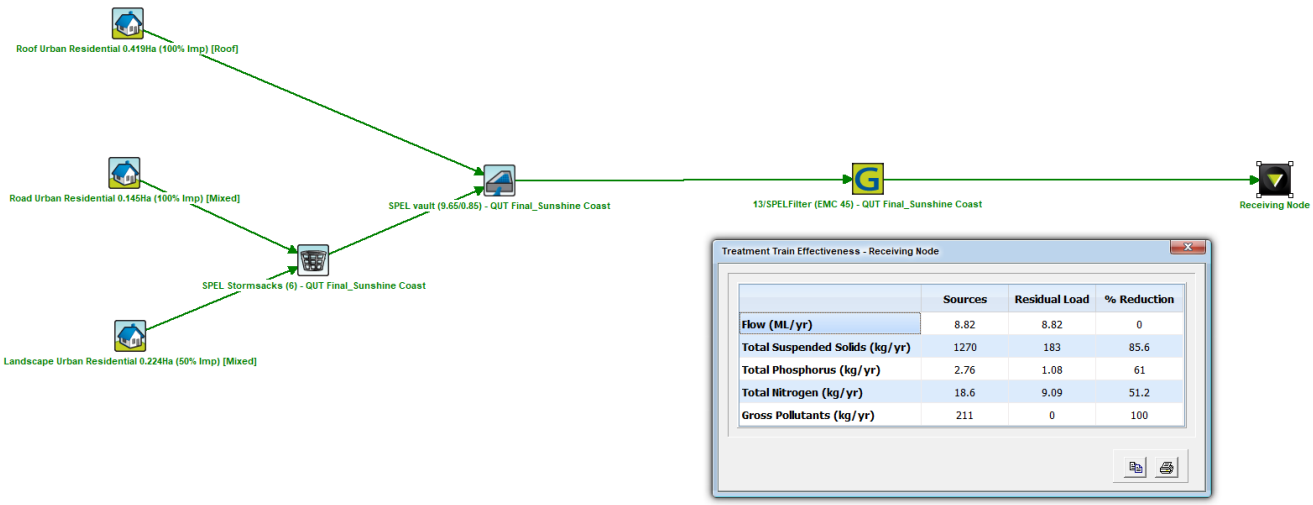



Figure 3-1 MUSIC Model Setup

## 3.6 MUSIC Modelling Results

Results for the proposed stormwater quality management strategy is presented in **Table 3-3** below.

Table 3-3 MUSIC Modelling Results

| Description | Target Pollutant | | | |
|---|---|---|---|---|
| | TSS | TP | TN | GP |
| **WQO** | 80% | 60% | 45% | 90% |
| **Load Reduction Achieved** | 85.6% | 61.0% | 51.2% | 100% |
| **WQO Achieved?** | Yes | Yes | Yes | Yes |

The above results indicate that the proposed strategy is effective in treating pollutant loads from the development to achieve the WQO's for TSS, TP, TN and GP as required under the SPP (2017). Therefore, it is recommended that the proposed concept stormwater quality management strategy be approved.

# 4. Conclusion

Calibre Professional Services has prepared this stormwater Management Plan on behalf Stockland Development Pty Ltd to address the stormwater requirements identified for the proposed development located on Lukin Terrace, Baringa. Stormwater flows are to be treated through the use of end of line Spel filters and Storm Sacks that are to be distributed throughout the site. As demonstrated in **Table 3-3**, the proposed treatment strategy which was modelled in accordance with the Water by Design MUSIC Modelling Guidelines (2018) achieves the WQO's for Total Suspended Solids, Total Phosphorus, Total Nitrogen and Gross Pollutants as required under the State Planning Policy (2017).

# 5. Recommendations

It is recommended that this Concept Stormwater Quality Management Plan be applied to future detailed design and construction.

# 6. References


- Department of State Development, Manufacturing, Infrastructure and Planning, 2017, *State Planning Policy (SPP).*
- Water by Design, 2018, *MUSIC Modelling Guidelines*, Version 3.0.


# 7. Disclaimer

This report has been prepared on behalf of and for the exclusive use of Stockland Development Pty Ltd and is subject to and issued in accordance with the agreement between Calibre Professional Services Pty Ltd.

Our investigation and analysis has been specifically catered for the particular requirements of Stockland Development Pty Ltd and may not be applicable beyond this scope. For this reason, any other third parties are not authorised to utilise this report without further input and advice from Calibre Professional Services Pty Ltd.

Calibre Professional Services Pty Ltd accepts no liability or responsibility whatsoever for the report in respect of any use of or reliance upon this report by any third party.

The investigation and analysis has relied on information provided by others. We accept no responsibility for accuracy of material supplied by others. The accuracy of the investigation, analysis and report is dependent upon the accuracy of this information.

# Appendix A Architectural Drawing - Site Layout

# PART 2

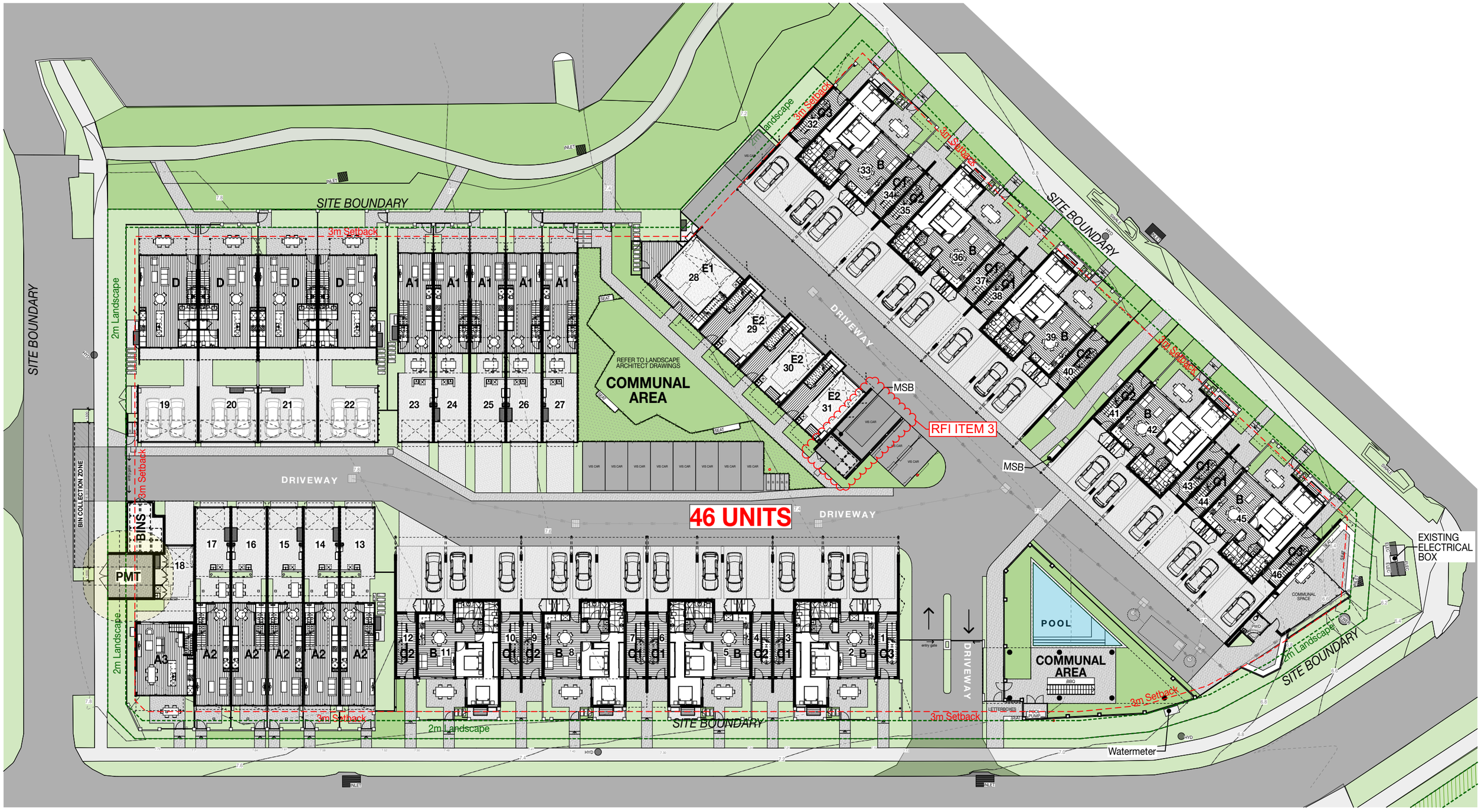
**GENERAL PLANS** **2.0**
General arrangement plans

GENERAL PLANS

OGE Group
Architects

ISSUE S | 6/8/2022

# LOT 8002 BARINGA DR - LOT 8002 - GROUND LEVEL




| ISSUE | DATE | AMENDMENT | BY |
|---|---|---|---|
| S | 01.08.22 | LANDSCAPE UPDATE | OGE |
| R | 22.06.22 | RFI ISSUE | OGE |
| O | 09.06.22 | PRELIM. REVISED DA | OGE |
| P | 17.05.22 | PRICING ISSUE | OGE |
| O | 03.05.22 | CONSULTANT ISSUE | OGE |
| N | 13.04.22 | LANDSCAPE CALCULATION | OGE |
| M | 12.04.22 | UPDATED PLANNING CALCS | OGE |

NOTE: Figured dimensions to be taken in preference to scaled. Verify all dimensions on site before commencing work or making shop drawings. When printing from electronic files it is the responsibility of the operator to ensure the required scale is achieved.

BIMcloud: newsearcmon.local - BIMcloud Basic for ARCHICAD 22/20058 LOTS 8001_8002/20058 LOT 8002 MASTER

COPYRIGHT BELONGS TO OGE GROUP ARCHITECTS.

RFI ISSUE

NOT FOR CONSTRUCTION

0 2 4 10 20

SCALE 1:400

N

PROJECT
LOT 8002 BARINGA DR
BARINGA BOULEVARD, AURA
CALOUNDRA WEST

CLIENT
OGE GROUP

DRAWING TITLE
LOT 8002 - GROUND LEVEL

DRAWN: OGE
DATE: 16/8/2022
SCALE @ A3: 1:400
PROJECT No.: 20058
DRAWING No.: **DA_2.2**
ISSUE No.: **S**

THIS DESIGN IS THE PROPERTY OF THE ARCHITECT. UNAUTHORISED USE OR REPRODUCTION WHOLLY OR IN PART MAY RESULT IN LEGAL ACTION.

O.G.E Group Pty. Ltd.
Reg. No. 4212
Level 1 "The Old Courthouse"
4 First Avenue, Maroochydore Q 4558
PO Box 1687
Buddina Q 4575
design@ogegroup.com.au
www.ogegroup.com.au
T 5444 8883
F 5444 8887

OGE Group Architects

# LOT 8002 BARINGA DR - LOT 8002 - LEVEL 1

| ISSUE | DATE | AMENDMENT | BY |
|---|---|---|---|
| S | 01.08.22 | LANDSCAPE UPDATE | OGE |
| R | 22.06.22 | RFI ISSUE | OGE |
| Q | 09.06.22 | PRELIM. REVISED DA | OGE |
| P | 17.05.22 | PRICING ISSUE | OGE |
| O | 03.05.22 | CONSULTANT ISSUE | OGE |
| N | 13.04.22 | LANDSCAPE CALCULATION | OGE |
| M | 12.04.22 | UPDATED PLANNING CALCS | OGE |

NOTE: Figured dimensions to be taken in preference to scaled. Verify all dimensions on site before commencing work or making shop drawings. When printing from electronic files it is the responsibility of the operator to ensure the required scale is achieved.

BIMcloud: newserver:com.local - BIMcloud Basic for ARCHICAD 22/20058 LOTS 8001_8002/20058 LOT 8002 MASTER

COPYRIGHT BELONGS TO OGE GROUP ARCHITECTS.

RFI ISSUE

NOT FOR CONSTRUCTION

0 2 4 10 20

SCALE 1:400

N

PROJECT
LOT 8002 BARINGA DR
BARINGA BOULEVARD, AURA
CALOUNDRA WEST

DRAWING TITLE
LOT 8002 - LEVEL 1

CLIENT
OGE GROUP

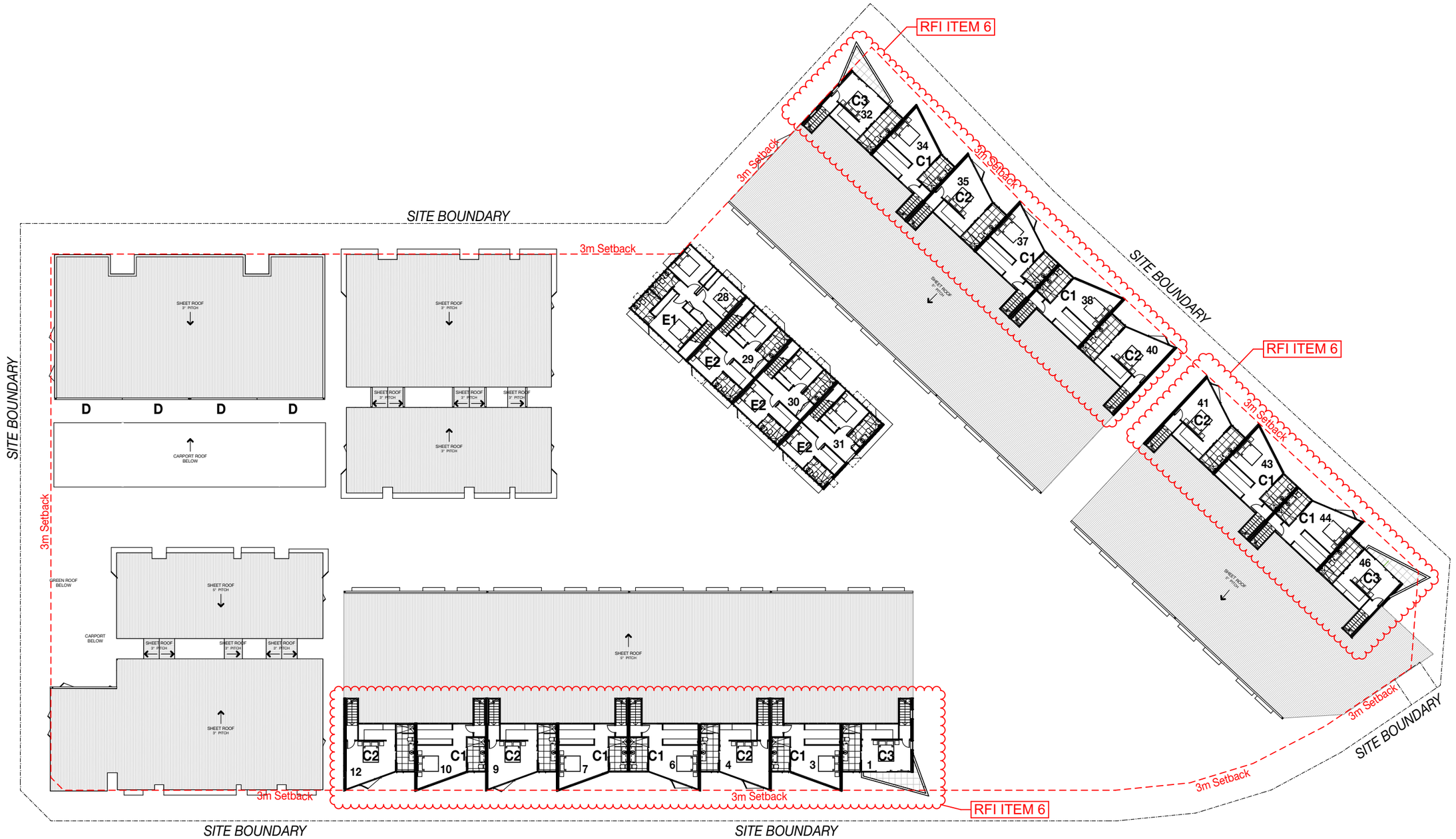
DRAWN: OGE
DATE: 16/8/2022
SCALE @ A3: 1:400
PROJECT No.: 20058
DRAWING No.: **DA_2.3**
ISSUE No.: **S**

THIS DESIGN IS THE PROPERTY OF THE ARCHITECT. UNAUTHORISED USE OR REPRODUCTION WHOLLY OR IN PART MAY RESULT IN LEGAL ACTION.

O.G.E Group Pty. Ltd.
Reg. No. 4212
Level 1 "The Old Courthouse"
4 First Avenue, Maroochydore Q 4558
PO Box 1687
Buddina Q 4575
design@ogegroup.com.au
www.ogegroup.com.au
T 5444 8883
F 5444 8887

OGE Group Architects

# LOT 8002 BARINGA DR - LOT 8002 - LEVEL 2




| | | | |
|---|---|---|---|
| S | 01.08.22 | LANDSCAPE UPDATE | OGE |
| R | 22.06.22 | RFI ISSUE | OGE |
| Q | 09.06.22 | PRELIM. REVISED DA | OGE |
| P | 17.05.22 | PRICING ISSUE | OGE |
| O | 03.05.22 | CONSULTANT ISSUE | OGE |
| N | 13.04.22 | LANDSCAPE CALCULATION | OGE |
| M | 12.04.22 | UPDATED PLANNING CALCS | OGE |
| ISSUE | DATE | AMENDMENT | BY |

NOTE: Figured dimensions to be taken in preference to scaled. Verify all dimensions on site before commencing work or making shop drawings. When printing from electronic files it is the responsibility of the operator to ensure the required scale is achieved.

BIMcloud: newsevercom.local - BIMcloud Basic for ARCHICAD 22/20058 LOTS 8001_8002/20058 LOT 8002 MASTER

COPYRIGHT BELONGS TO OGE GROUP ARCHITECTS.

RFI ISSUE

NOT FOR CONSTRUCTION

0 2 4 10 20

SCALE 1:400

N

PROJECT
LOT 8002 BARINGA DR
BARINGA BOULEVARD, AURA
CALOUNDRA WEST

DRAWING TITLE
LOT 8002 - LEVEL 2

CLIENT
OGE GROUP

| DRAWN | DATE | SCALE @ A3 |
|---|---|---|
| OGE | 16/8/2022 | 1:400 |
| PROJECT No. | DRAWING No. | ISSUE No. |
| 20058 | **DA_2.4** | **S** |

THIS DESIGN IS THE PROPERTY OF THE ARCHITECT. UNAUTHORISED USE OR REPRODUCTION WHOLLY OR IN PART MAY RESULT IN LEGAL ACTION.

O.G.E Group Pty. Ltd.
Reg. No. 4212

Level 1 "The Old Courthouse"
4 First Avenue, Maroochydore Q 4558

PO Box 1687
Buddina Q 4575

design@ogegroup.com.au
www.ogegroup.com.au

T 5444 8883
F 5444 8887

OGE Group Architects

# LOT 8002 BARINGA DR - LOT 8002 - ROOF PLAN

| ISSUE | DATE | AMENDMENT | BY |
|---|---|---|---|
| S | 01.08.22 | LANDSCAPE UPDATE | OGE |
| R | 22.06.22 | RFI ISSUE | OGE |
| Q | 09.06.22 | PRELIM. REVISED DA | OGE |
| P | 17.05.22 | PRICING ISSUE | OGE |
| O | 03.05.22 | CONSULTANT ISSUE | OGE |
| N | 13.04.22 | LANDSCAPE CALCULATION | OGE |
| M | 12.04.22 | UPDATED PLANNING CALCS | OGE |

NOTE: Figured dimensions to be taken in preference to scaled. Verify all dimensions on site before commencing work or making shop drawings. When printing from electronic files it is the responsibility of the operator to ensure the required scale is achieved.

BIMcloud: newsearncom:local - BIMcloud Basic for ARCHICAD 22/20058 LOTS 8001_8002/20058 LOT 8002 MASTER

COPYRIGHT BELONGS TO OGE GROUP ARCHITECTS.

RFI ISSUE

NOT FOR CONSTRUCTION

0 2 4 10 20

SCALE 1:400

N

PROJECT
LOT 8002 BARINGA DR
BARINGA BOULEVARD, AURA
CALOUNDRA WEST

DRAWING TITLE
LOT 8002 - ROOF PLAN

CLIENT
OGE GROUP

DRAWN: OGE
DATE: 16/8/2022
SCALE @ A3: 1:400
PROJECT No.: 20058
DRAWING No.: **DA_2.5**
ISSUE No.: **S**

THIS DESIGN IS THE PROPERTY OF THE ARCHITECT. UNAUTHORISED USE OR REPRODUCTION WHOLLY OR IN PART MAY RESULT IN LEGAL ACTION.

O.G.E Group Pty. Ltd.
Reg. No. 4212

Level 1 "The Old Courthouse"
4 First Avenue, Maroochydore Q 4558

PO Box 1687
Buddina Q 4575

design@ogegroup.com.au
www.ogegroup.com.au

T 5444 8883
F 5444 8887

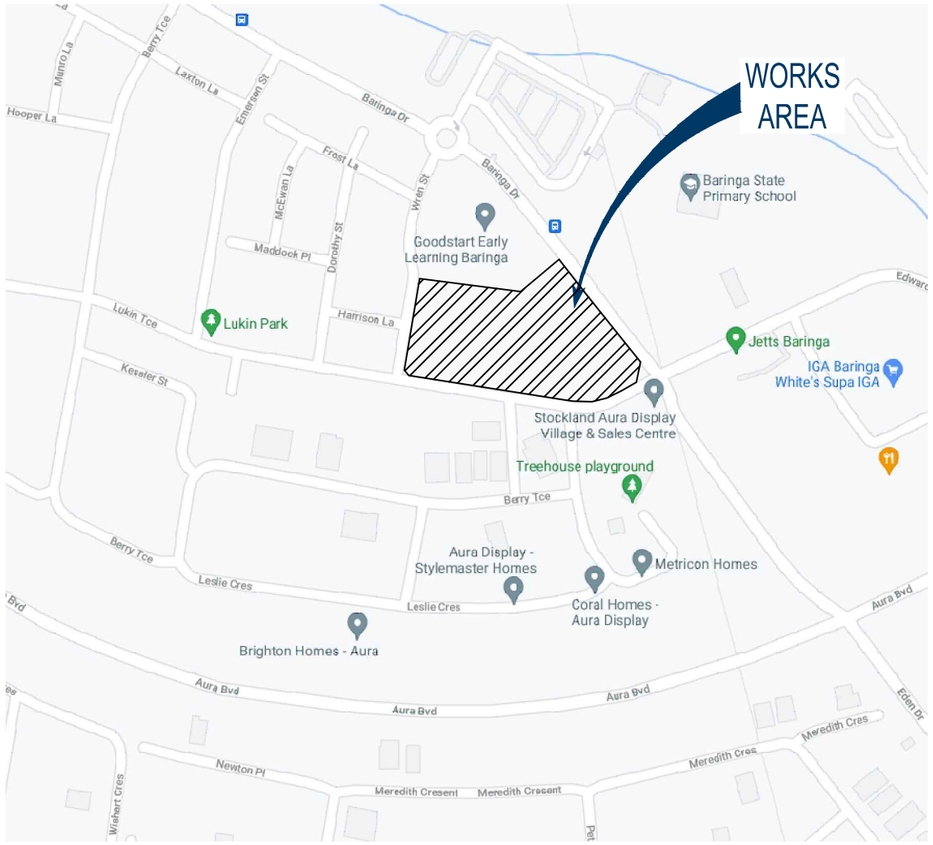
OGE Group Architects

# Appendix B Calibre Engineering Drawings

# BARINGA LOT 8002

calibre
calibregroup.com

## STOCKLAND DEVELOPMENTS PTY LTD




DRAWING INDEX

| DWG No | REVISION | DRAWING TITLE |
|---|---|---|
| 21-000157-100 | B | COVER SHEET |
| 21-000157-101 | F | PLAN OF EXISTING LEVELS AND SERVICES |
| 21-000157-102 | F | SURVEY SETOUT PLAN |
| 21-000157-103 | F | BULK EARTHWORKS LAYOUT PLAN |
| 21-000157-104 | F | ROADS AND DRAINAGE LAYOUT PLAN |
| 21-000157-105 | F | ROAD LONGITUDINAL SECTIONS SHEET 1 OF 2 |
| 21-000157-106 | F | ROAD LONGITUDINAL SECTIONS SHEET 2 OF 2 |
| 21-000157-107 | F | TYPICAL SECTIONS |
| 21-000157-108 | F | EROSION AND SEDIMENT CONTROL LAYOUT PLAN |
| 21-000157-109 | F | EROSION AND SEDIMENT CONTROL GENERAL NOTES |
| 21-000157-110 | F | EROSION AND SEDIMENT CONTROL TYPICAL DETAILS |
| 21-000157-111 | F | CONCRETE DETAILS |
| 21-000157-112 | F | CONCRETE JOINTING PLAN |
| 21-000157-113 | F | SPEL STORMWATER DEVICE DETAIL PLAN |
| 21-000157-114 | F | STORMWATER LONGITUDINAL SECTIONS |
| 21-000157-115 | F | STORMWATER Q10 CALCULATION TABLES |
| 21-000157-116 | C | STORMWATER Q100 CALCULATION TABLES |
| 21-000157-117 | F | DRIVEWAY LEVELS LAYOUT PLAN |
| 21-000157-118 | F | TURNS PATHS 12.5m SINGLE UNIT TRUCK |
| 21-000157-119 | F | TURN PATHS 8.8m SERVICE VEHICLE |
| 21-000157-120 | F | TURN PATHS 5.2m PASSENGER VEHICLE |
| 21-000157-121 | F | SIGNS AND LINEMARKING LAYOUT PLAN |
| 21-000157-122 | F | STORMWATER RELOCATION DETAIL PLAN |

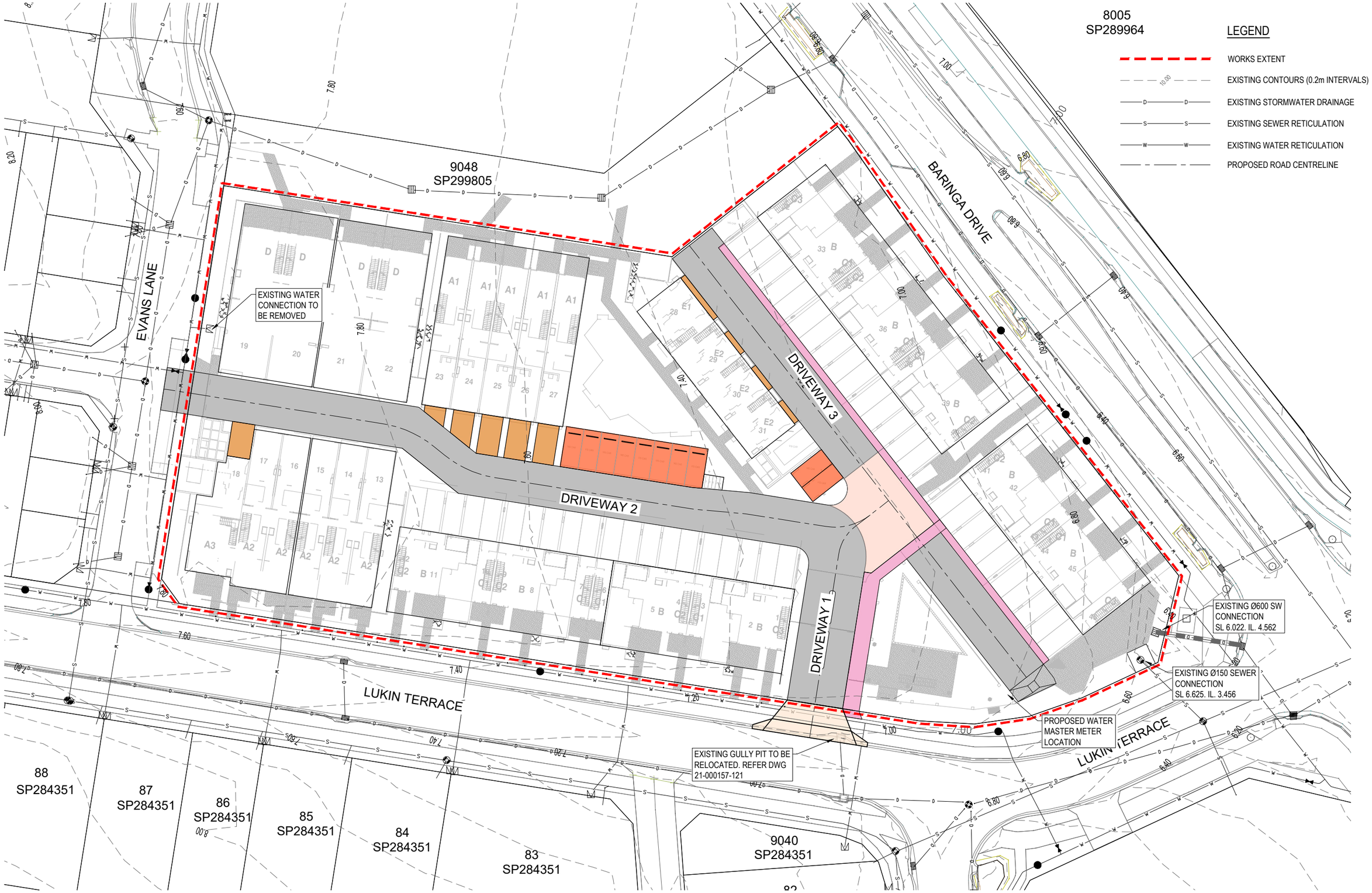
09 JULY 2022

Stockland

FILE: H:\21\000157 - BARINGA LOT 8002\6_MODEL\IJD\AUTOCAD\21-000157-100.DWG LAST SAVED BY:WESLEY.PIKE

BARINGA LOT 8002

| Project No.: | Milestone: | Revision Date.: | Drawing No.: | Revision: |
|---|---|---|---|---|
| 21-000157 | APPROVAL ISSUE | 09.08.22 | 21-000157-100 | B |




FILE: 21-000157-101.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: X-20-000315.1024-SIGNATURE, 21-000157-BASE, DA_2.2_DWG (S) LOT 8002 - GROUND LEVEL-03-08-2022, 15-002215.006-AS Con, 21-000157-Existing Contours-200, 21-000157-BASE-DC-TURNPATH

| AMENDMENTS | | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| FIRST ISSUE | | WP | WP | SP | SP | 27.07.21 | |
| | A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| | B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| | C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| | D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| | E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| | F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 2.5 5 7.5 10 12.5 15 17.5 20
SCALE 1:250 (A1) SCALE 1:500 (A3)

CLIENT
STOCKLAND DEVELOPMENTS PTY LTD
Stockland

calibre
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522
© calibregroup.com

PROJECT
BARINGA LOT 8002

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY. DO NOT SCALE.

DRAWING TITLE
PLAN OF EXISTING LEVELS AND SERVICES

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-101 | F |

## DRIVEWAY 1 CENTRELINE

| PT | CHAINAGE | EASTING | NORTHING | HEIGHT | BEARING | RAD/SPIRAL | A.LENGTH | DEFL.ANGLE |
|---|---|---|---|---|---|---|---|---|
| IP 1 | 0.000 | 508099.690 | 7034688.760 | | 8°59'59.57" | | | |
| | 10.000 | 508101.255 | 7034698.637 | 7.201 | 8°59'59.57" | | | |
| | 20.000 | 508102.819 | 7034708.514 | 7.208 | 8°59'59.57" | | | |
| TC | 25.917 | 508103.745 | 7034714.358 | 7.154 | 8°59'59.57" | | | |
| IP 2 | 28.186 | 508104.117 | 7034716.712 | 7.133 | | R = 6.000 | 4.538 | 43°19'59.18" |
| | 30.000 | 508105.655 | 7034717.878 | 7.117 | 47°59'22.77" | | | |
| CT | 30.455 | 508106.004 | 7034718.169 | 7.113 | 52°19'58.75" | | | |
| IP 3 | 33.135 | 508108.126 | 7034719.807 | 7.088 | 52°19'58.75" | | | |

## DRIVEWAY 2 CENTRELINE

| PT | CHAINAGE | EASTING | NORTHING | HEIGHT | BEARING | RAD/SPIRAL | A.LENGTH | DEFL.ANGLE |
|---|---|---|---|---|---|---|---|---|
| IP 1 | 0.000 | 508110.693 | 7034721.812 | 7.056 | 232°00'12.93" | | | |
| TC | 3.257 | 508108.126 | 7034719.807 | 7.088 | 232°00'12.93" | | | |
| IP 2 | 6.538 | 508105.385 | 7034717.666 | 7.120 | | R = 8.000 | 6.562 | 46°59'46.64" |
| CT | 9.819 | 508101.950 | 7034718.210 | 7.152 | 278°59'59.57" | | | |
| | 10.000 | 508101.771 | 7034718.238 | 7.154 | 278°59'59.57" | | | |
| | 20.000 | 508091.894 | 7034719.802 | 7.251 | 278°59'59.57" | | | |
| TC | 20.334 | 508091.564 | 7034719.855 | 7.254 | 278°59'59.57" | | | |
| IP 3 | 21.020 | 508090.886 | 7034719.962 | 7.261 | | R = -20.000 | 1.373 | 3°55'58.42" |
| CT | 21.707 | 508090.202 | 7034720.023 | 7.268 | 275°04'01.14" | | | |
| TC | 27.623 | 508084.309 | 7034720.545 | 7.326 | 275°04'01.14" | | | |
| IP 4 | 28.310 | 508083.625 | 7034720.606 | 7.332 | | R = 20.000 | 1.373 | 3°55'58.43" |
| CT | 28.996 | 508082.946 | 7034720.713 | 7.339 | 278°59'59.57" | | | |
| | 30.000 | 508081.955 | 7034720.870 | 7.349 | 278°59'59.57" | | | |
| | 40.000 | 508072.078 | 7034722.435 | 7.446 | 278°59'59.57" | | | |
| | 50.000 | 508062.201 | 7034723.999 | 7.544 | 278°59'59.57" | | | |
| TC | 56.435 | 508055.845 | 7034725.006 | 7.606 | 278°59'59.57" | | | |
| | 60.000 | 508052.423 | 7034725.975 | 7.641 | 292°37'04.24" | | | |
| IP 5 | 60.328 | 508051.911 | 7034725.629 | 7.644 | | R = 15.000 | 7.787 | 29°44'34.06" |
| CT | 64.221 | 508048.805 | 7034728.122 | 7.682 | 308°44'33.63" | | | |
| TC | 66.294 | 508047.188 | 7034729.418 | 7.702 | 308°44'33.63" | | | |
| | 70.000 | 508044.042 | 7034731.359 | 7.738 | 294°35'06.24" | | | |
| IP 6 | 70.187 | 508044.082 | 7034731.911 | 7.740 | | R = -15.000 | 7.786 | 29°44'28.64" |
| CT | 74.080 | 508040.148 | 7034732.534 | 7.778 | 279°00'04.98" | | | |
| | 80.000 | 508034.301 | 7034733.460 | 7.836 | 279°00'04.98" | | | |
| | 90.000 | 508024.424 | 7034735.025 | 7.926 | 279°00'04.98" | | | |
| | 100.000 | 508014.547 | 7034736.590 | 7.891 | 279°00'04.98" | | | |
| IP 7 | 105.008 | 508009.601 | 7034737.373 | 7.852 | 279°00'04.98" | | | |

## DRIVEWAY 3 CENTRELINE

| PT | CHAINAGE | EASTING | NORTHING | HEIGHT | BEARING | RAD/SPIRAL | A.LENGTH | DEFL.ANGLE |
|---|---|---|---|---|---|---|---|---|
| IP 1 | 0.000 | 508129.937 | 7034697.180 | 6.900 | 321°59'59.58" | | | |
| | 10.000 | 508123.781 | 7034705.060 | 6.950 | 321°59'59.58" | | | |
| | 20.000 | 508117.624 | 7034712.940 | 7.000 | 321°59'59.58" | | | |
| | 30.000 | 508111.467 | 7034720.820 | 7.050 | 321°59'59.58" | | | |
| | 40.000 | 508105.311 | 7034728.701 | 7.100 | 321°59'59.58" | | | |
| | 50.000 | 508099.154 | 7034736.581 | 7.150 | 321°59'59.58" | | | |
| | 60.000 | 508092.998 | 7034744.461 | 7.200 | 321°59'59.58" | | | |
| | 70.000 | 508086.841 | 7034752.341 | 7.250 | 321°59'59.58" | | | |
| IP 2 | 76.390 | 508082.907 | 7034757.376 | 7.282 | 321°59'59.58" | | | |

## LEGEND

- WORKS EXTENT
- EXISTING STORMWATER DRAINAGE
- EXISTING SEWER RETICULATION
- EXISTING WATER RETICULATION
- PROPOSED ROAD CENTRELINE
- PROPOSED STORMWATER DRAINAGE
- PERMEABLE PAVEMENT SUBSOIL
- SUBSOIL DRAINAGE I/O LOCATION
- ROAD PAVEMENT
- FOOTPATH
- THRESHOLD AWARENESS ZONE
- CARPARKING BY CIVIL
- DRIVEWAYS BY ARCHITECTURAL

EXISTING WATER CONNECTION TO BE REMOVED

BIN STORE

PMT

BARINGA DRIVE

DRIVEWAY 1

DRIVEWAY 2

DRIVEWAY 3

LUKIN TERRACE

SLIDING GATE LOCATION NO CROSSFALL ON DRIVEWAY

POOL

SPEL TANK SV.5023-1464

CONVERT EXISTING PIT TO 1200 MANHOLE

WATER METER LOCATION

88 SP284351

87 SP284351

86

FILE: 21-000157-102.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: 21-000157-BASE, DA_2.2_DWG (S) LOT 8002 - GROUND LEVEL-03-08-2022, 15-002215.006-AS Con, 21-000157-BASE-DC-TURNPATH

| AMENDMENTS | ISSUE | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| FIRST ISSUE | | WP | WP | SP | SP | 27.07.21 | |
| | A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| | B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| | C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| | D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| | E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| | F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 2.5 5 7.5 10 12.5 15 17.5 20
SCALE 1:250 (A1) SCALE 1:500 (A3)

CLIENT
STOCKLAND DEVELOPMENTS PTY LTD
Stockland

Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522
calibre
© calibregroup.com

PROJECT: BARINGA LOT 8002

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY. DO NOT SCALE.

DRAWING TITLE: SURVEY SETOUT PLAN

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-102 | F |

## EARTHWORKS NOTES

1. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING SERVICES WITH THE RELEVANT AUTHORITIES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
2. THE CONTRACTOR SHALL REMOVE ALL STRUCTURES, DEBRIS AND FENCES FROM THE SITE TO THE SATISFACTION OF THE SUPERINTENDENT.
3. EXISTING SURFACE IS TO BE CLEAR OF VEGETATION MATTER PRIOR TO THE START OF FILLING.
4. FILL IS TO BE OF GOOD QUALITY AND FREE OF UNSUITABLE MATERIAL.
5. NOTWITHSTANDING THE LIMITS OF CUTTING AND FILLING SHOWN ON THE DRAWINGS, THE ACTUAL LIMITS SHALL BE DETERMINED ON SITE BY THE SUPERINTENDENT DURING CONSTRUCTION. SIMILARLY, THE FINISHED SURFACE LEVELS MAY BE ADJUSTED BY THE WRITTEN DIRECTION OF THE SUPERINTENDENT DURING CONSTRUCTION AFTER AMENDED DRAWINGS HAVE BEEN APPROVED BY COUNCIL.
6. ALL EXCAVATION AND FILLING SHALL BE CONSTRUCTED TO THE REQUIREMENTS OF AS3798-2007 AND IN ACCORDANCE WITH THE CURRENT COUNCIL SPECIFICATIONS AND STANDARD DRAWINGS.
7. LEVEL 1 CERTIFICATION IS REQUIRED ON ALL LOTS IN ACCORDANCE WITH AS3798-2007.
8. ALL DRAINAGE STRUCTURES ARE BE PRESERVED FROM THE EFFECTS OF STRUCTURAL LOADING GENERATED BY THE EARTHWORKS.
9. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

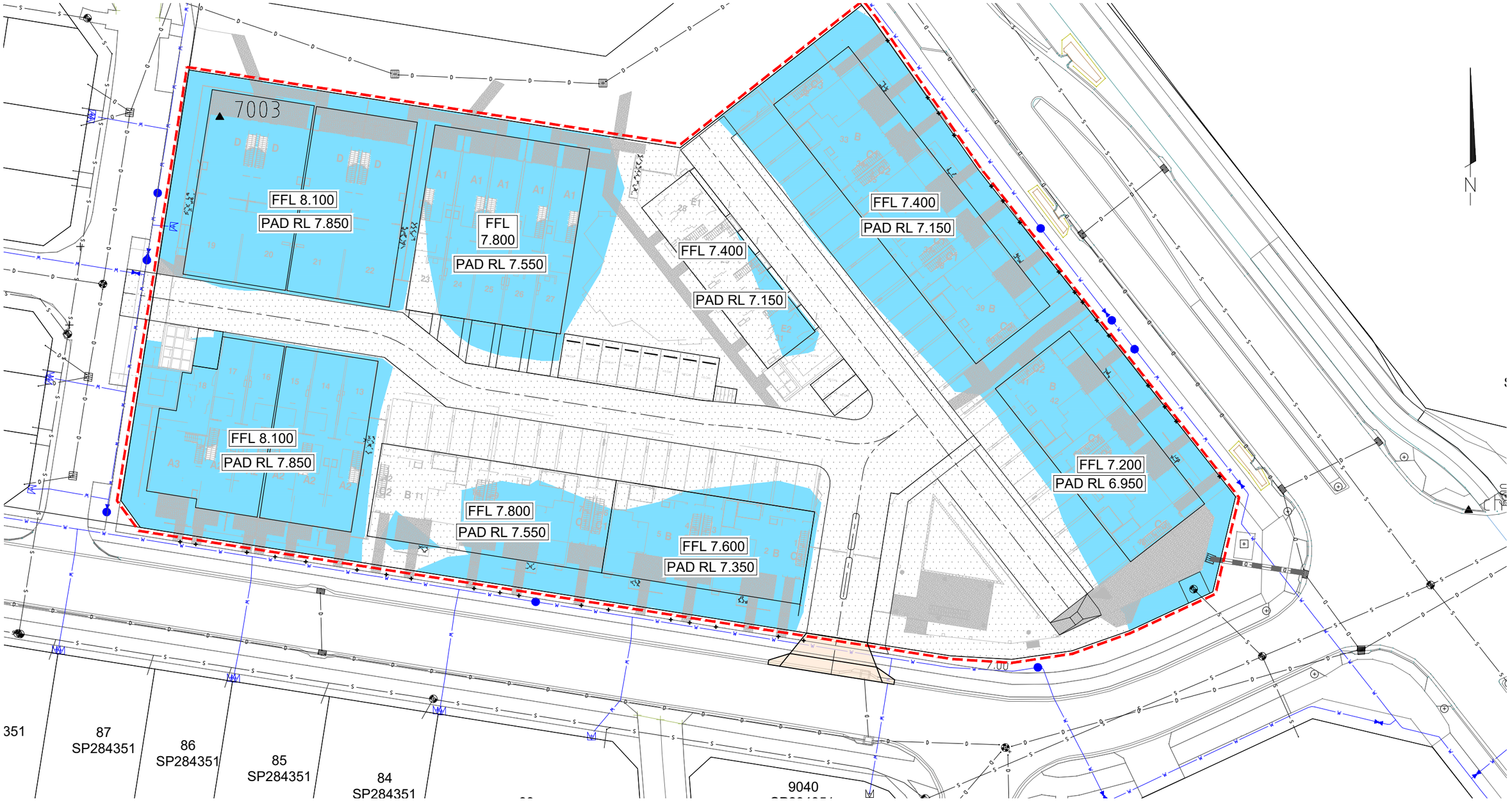
## EARTHWORKS VOLUMES

| | |
|---|---|
| STRIP TOPSOIL (100mm) | 797m³ |
| CUT TO FILL | 450m³ (UNCOMPACTED) |
| REMOVE FROM SITE | 370m³ |

ASSUMES 100mm TOPSOIL STRIPPING
275mm ROAD BOX
250mm AT BUILDING SLABS
200m³ POOL EXCAVATION
50m³ TRENCH SPOIL

## LEGEND

- PROPOSED WORKS BOUNDARY
- EXISTING SEWER
- EXISTING STORMWATER
- EXISTING WATER MAIN
- AREA OF CUT
- AREA OF FILL




FILE: 21-000157-103.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: X-20-000315.1024-SIGNATURE, 21-000157-BASE, DA_2.2_DWG (S) LOT 8002 - GROUND LEVEL-03-08-2022, 21-000157-EWKS, 21-000157-BASE-DC-TURNPATH, 15-002215.006-AS Con

| AMENDMENTS | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|
| FIRST ISSUE | WP | WP | SP | SP | 27.07.21 | |
| A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 2.5 5 7.5 10 12.5 15 17.5 20
SCALE 1:250 (A1) SCALE 1:500 (A3)

CLIENT: STOCKLAND DEVELOPMENTS PTY LTD

Stockland


calibre
© calibregroup.com
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522


PROJECT: BARINGA LOT 8002

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.

DRAWING TITLE: BULK EARTHWORKS LAYOUT PLAN

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-103 | F |

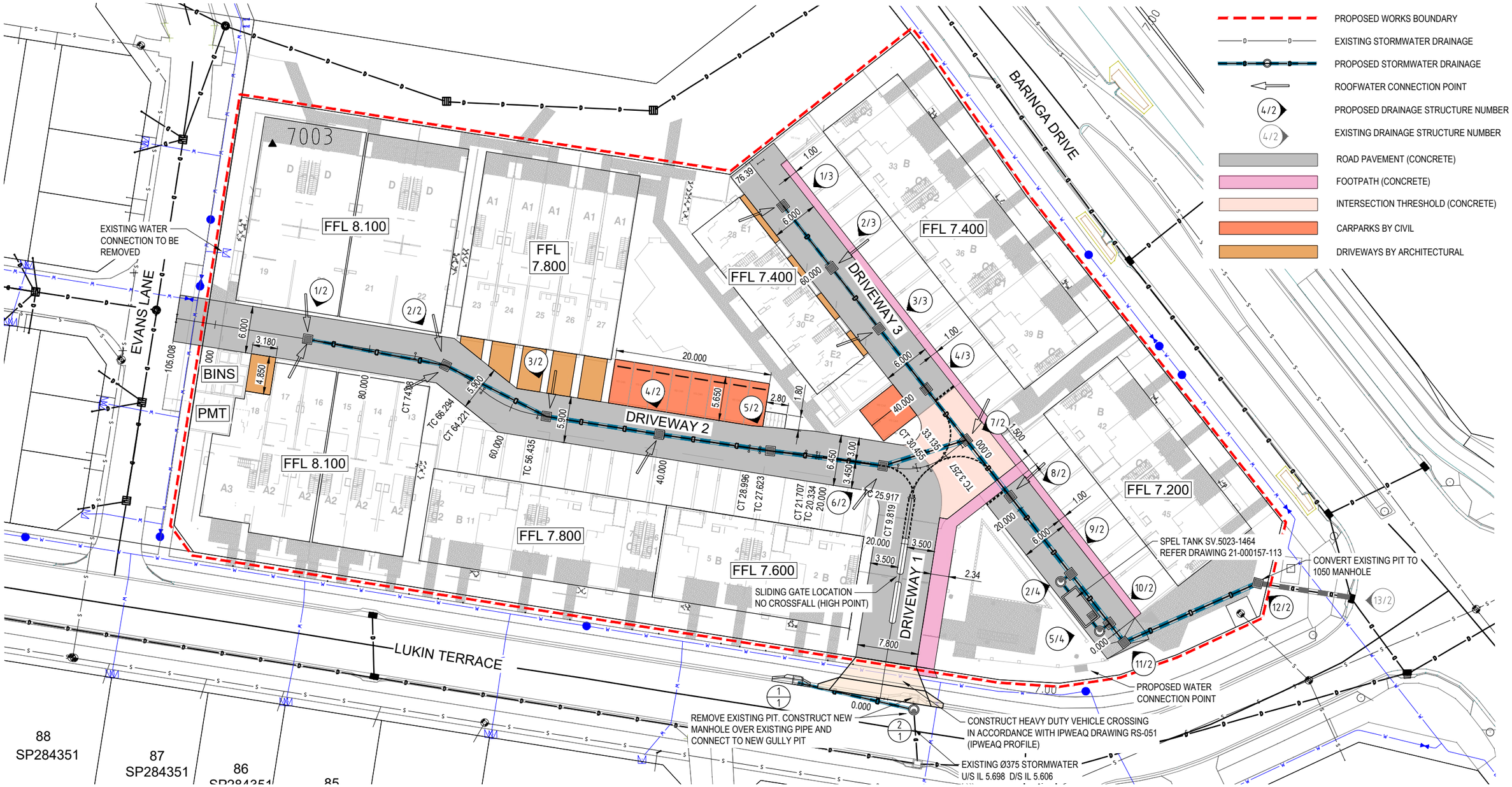
## ROADWORKS & DRAINAGE NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN.
2. CONTRACTOR TO LIAISE WITH ALL THE RELEVANT SERVICE AUTHORITIES TO ASCERTAIN SERVICES PRESENT ON-SITE. ANY ALTERATION WORKS TO SERVICES WILL BE CARRIED OUT BY THAT SERVICE AUTHORITY ONLY.
3. THE CONTRACTOR SHALL NOTIFY THE SUPERINTENDENT PRIOR TO COMMENCEMENT OF DEMOLISHING ANY EXISTING STRUCTURES WITHIN THE SITE AREAS.
4. NOT WITHSTANDING THE LIMITS OF CUTTING AND FILLING SHOWN ON THE CROSS SECTIONS, THE ACTUAL LIMITS SHALL BE DETERMINED ON-SITE BY THE SUPERINTENDENT DURING CONSTRUCTION AND SIMILARLY THE FINISHED SURFACE CONTOURS MAY BE ADJUSTED BY WRITTEN DIRECTION OF THE SUPERINTENDENT DURING CONSTRUCTION AFTER AMENDED DRAWINGS HAVE BEEN APPROVED BY COUNCIL.
5. ALL ALLOTMENT FILL IS TO BE COMPACTED TO THE REQUIREMENTS OF AS3798-2007 AND IN ACCORDANCE WITH CURRENT SCC. SPECIFICATIONS.
6. VERGE AND BATTERS TO HAVE A MINIMUM OF 75mm TOPSOIL AND FULL WIDTH TURF IF ORDERED.
7. MATCH TO EXISTING AC PAVEMENT EXTENSION OR WIDENING TO BE IN ACCORDANCE WITH IPWEA STD DRG RS-170.
8. SUBGRADE TEST RESULTS TO BE FORWARDED TO SUPERINTENDENT FOR DETERMINATION OF BOX DEPTHS PRIOR TO EXCAVATION TESTS SHALL INCLUDE SOAKED CBR AND/OR OTHER TESTS AS REQUESTED BY THE SUPERINTENDENT.THE CONTRACTOR SHALL ALLOW ADEQUATE TIME FOR COUNCIL APPROVAL OF PAVEMENT DESIGN.
9. LEVELS FOR KERB AND CHANNELLING/EDGE OF PAVEMENT CONSTRUCTION ARE AT EQUAL INTERVALS AT LIP OF CHANNEL UNLESS SHOWN OTHERWISE.
10. SIDE DRAINS TO BE CONSTRUCTED UNDER ALL KERBS AND ALL KERB AND CHANNEL AS PER SCC STANDARDS. REFER TO SCC STD DRG RS-140 FOR DETAILS.
11. ALL STORMWATER PIPES UNDER ROADWAYS AND FOOTPATHS SHALL BE CLASS '2' R.C.P R.R.J. UNLESS NOTED OTHERWISE.
12. THE STORMWATER PIPE CLASSES HAVE BEEN DESIGNED FOR SERVICE LOADS ONLY, AND THE CONTRACTOR SHALL ASSESS ANTICIPATED CONSTRUCTION LOADS AND UPGRADE THE PIPE CLASSES, IF NECESSARY, IN ACCORDANCE WITH A.S 3725-1989. AT THE CONTRACTORS COST.
13. ALL LOTS NOT DRAINING TO A PROPERTY PIT TO HAVE 2 KERB ADAPTORS . KERB ADAPTORS SHOWN ARE INDICATIVE ONLY AND ARE TO BE INSTALLED IN ACCORDANCE WITH SCC STD DRG RS-081.
14. CONCRETE FOOTPATHS TO BE INSTALLED BY THE CIVIL CONTRACTOR UNLESS OTHERWISE NOTED. REFER TO SCC STD DRG RS-065 FOR CONSTRUCTION DETAILS.

N

## LEGEND

- PROPOSED WORKS BOUNDARY
- EXISTING STORMWATER DRAINAGE
- PROPOSED STORMWATER DRAINAGE
- ROOFWATER CONNECTION POINT
- PROPOSED DRAINAGE STRUCTURE NUMBER
- EXISTING DRAINAGE STRUCTURE NUMBER
- ROAD PAVEMENT (CONCRETE)
- FOOTPATH (CONCRETE)
- INTERSECTION THRESHOLD (CONCRETE)
- CARPARKS BY CIVIL
- DRIVEWAYS BY ARCHITECTURAL




FILE: 21-000157-104.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: 21-000157-BASE, DA_2.2_DWG (S) LOT 8002 - GROUND LEVEL-03-08-2022, 21-000157-BASE-DC-TURNPATH, 15-002215.006-AS Con

| AMENDMENTS | FIRST ISSUE | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| | | WP | WP | SP | SP | 27.07.21 | |
| | A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| | B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| | C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| | D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| | E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| | F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 2.5 5 7.5 10 12.5 15 17.5 20
SCALE 1:250 (A1) SCALE 1:500 (A3)

CLIENT: STOCKLAND DEVELOPMENTS PTY LTD

Stockland

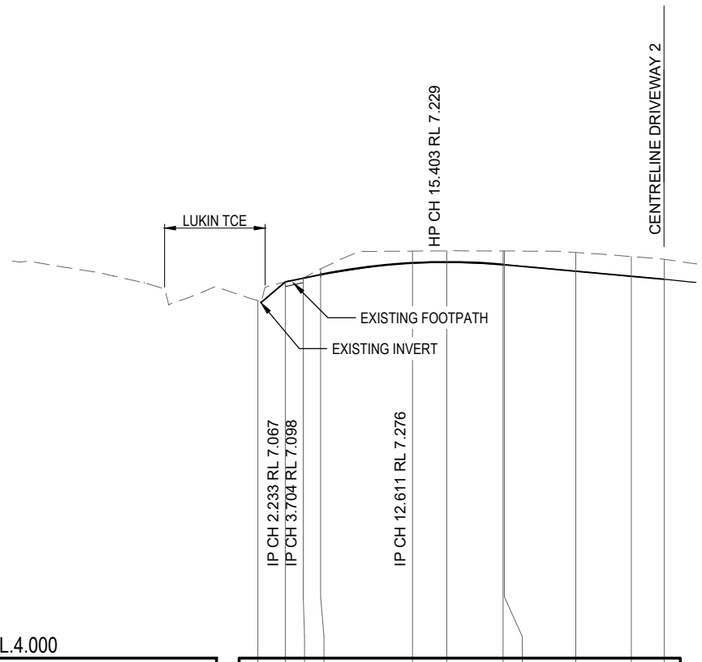

calibre
© calibregroup.com
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522

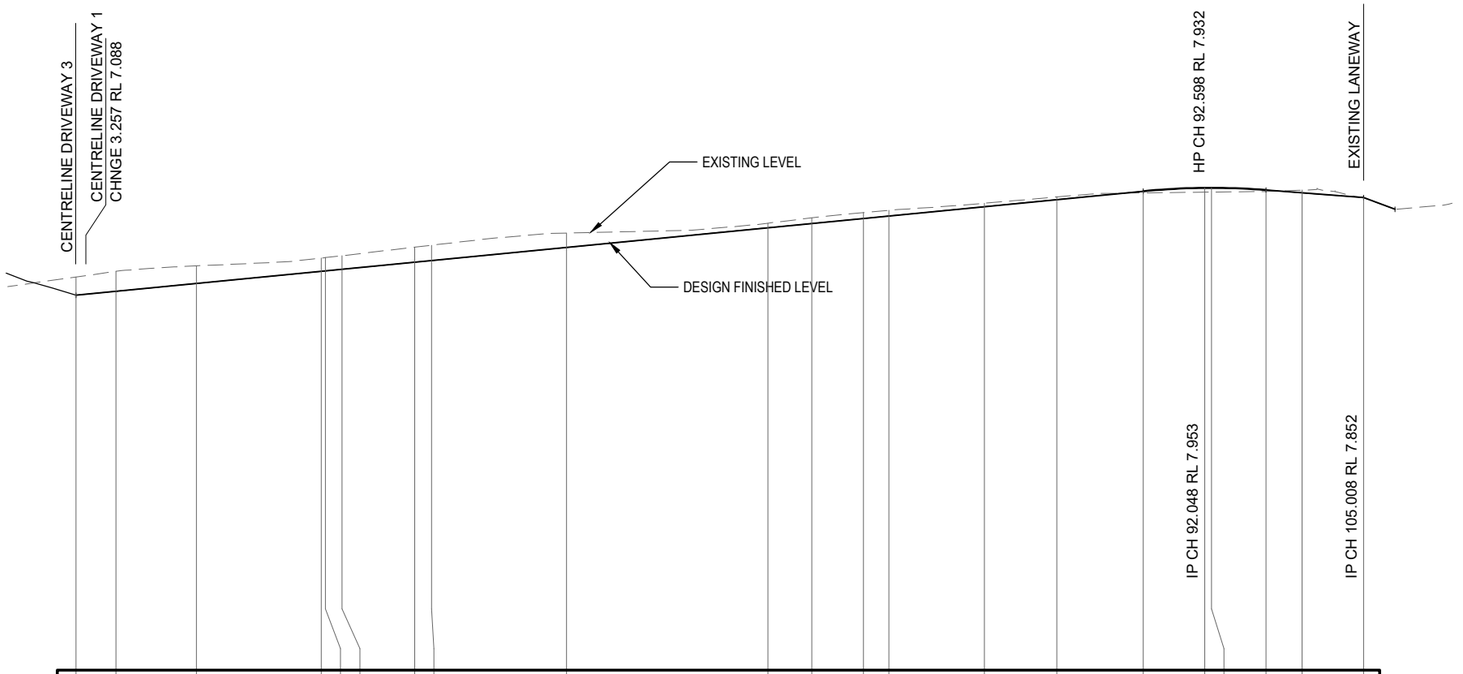

PROJECT: BARINGA LOT 8002

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.

DRAWING TITLE: ROADS AND DRAINAGE LAYOUT PLAN

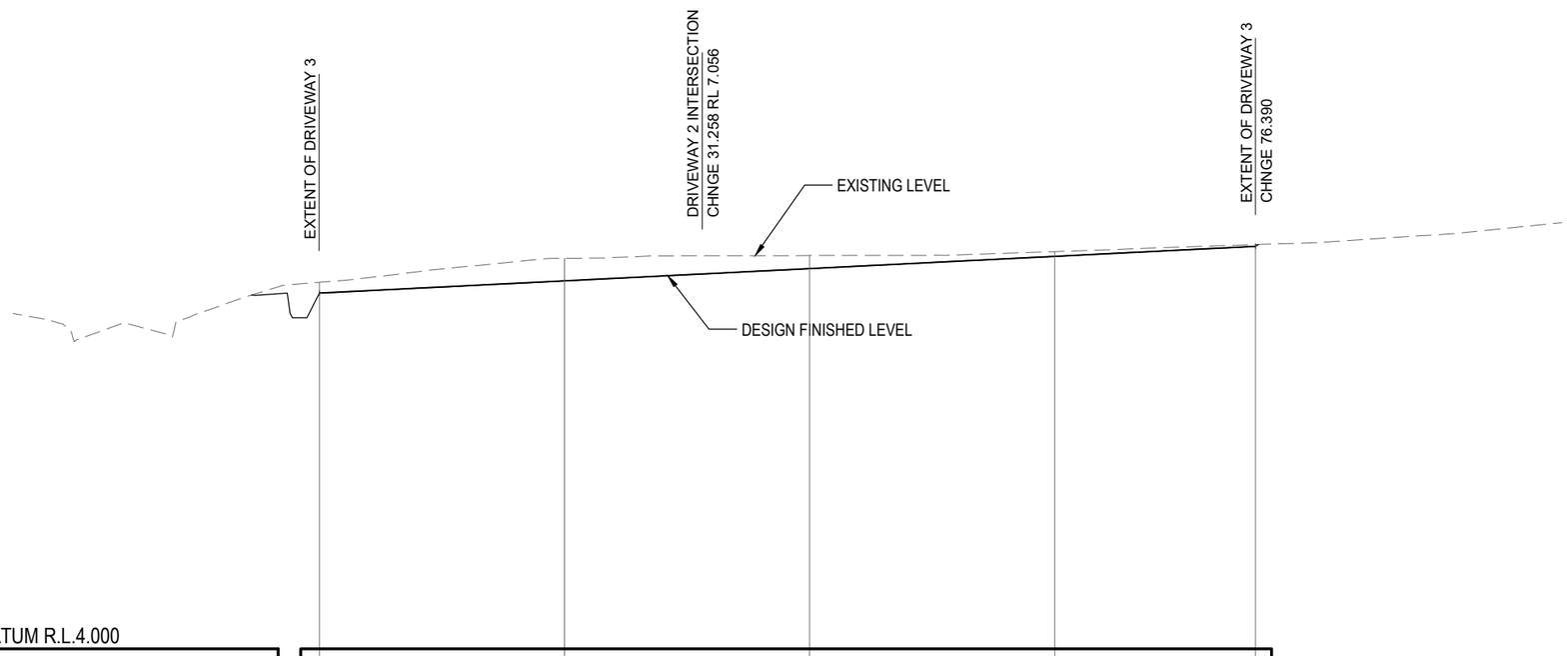
| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-104 | F |




DATUM R.L.4.000

| | | |




DATUM R.L.4.000

| | | | | | |
|---|---|---|---|---|---|
| ROAD GRADING | | 0.50% | | | |
| CUT (-) \ FILL (+) | -0.088 | -0.184 | -0.107 | -0.039 | -0.014 |
| LHS LIP LEVEL | 6.990 | 7.090 | 7.190 | 7.290 | 7.784 |
| RHS LIP LEVEL | 6.904 | 7.090 | 7.190 | 7.290 | 7.784 |
| DESIGN | 6.900 | 7.000 | 7.100 | 7.200 | 7.282 |
| EXISTING SURFACE | 6.988 | 7.184 | 7.207 | 7.239 | 7.296 |
| CHAINAGES | 0.000 | 20.000 | 40.000 | 60.000 | 76.390 |
| HORIZONTAL ALIGNMENT | | | | | |

## DRIVEWAY 3 LONGITUDINAL SECTION

HORIZ SCALE: 250
VERTICAL SCALE: 25

FILE: 21-000157-106.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: X-20-000315.1024-SIGNATURE

| | | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| FIRST ISSUE | | WP | WP | SP | SP | 27.07.21 | |
| AMENDMENTS | A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| | B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| | C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| | D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| | E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| | F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 2.5 5 7.5 10 12.5 15 17.5 20
SCALE 1:250 (A1) SCALE 1:500 (A3)
0 0.25 0.5 0.75 1 1.25 1.5 1.75 2
SCALE 1:25 (A1) SCALE 1:50 (A3)

CLIENT
STOCKLAND DEVELOPMENTS PTY LTD
Stockland

calibre
© calibregroup.com
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522

PROJECT
BARINGA LOT 8002

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY. DO NOT SCALE.

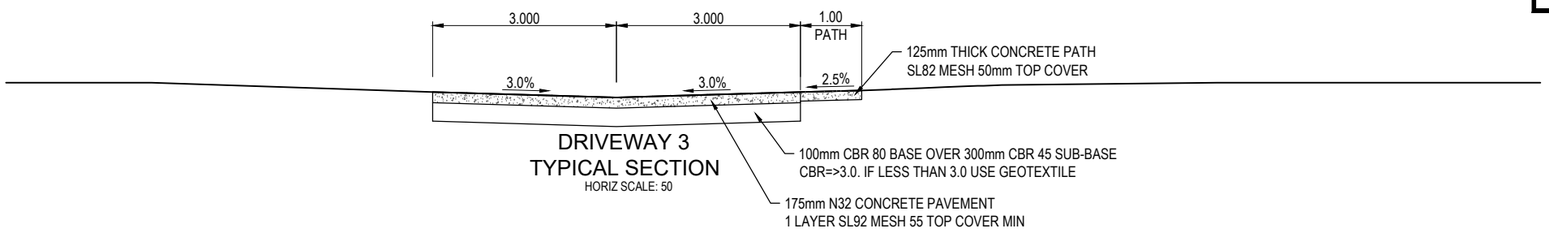
DRAWING TITLE
ROAD LONGITUDINAL SECTIONS
SHEET 2 OF 2

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-106 | F |

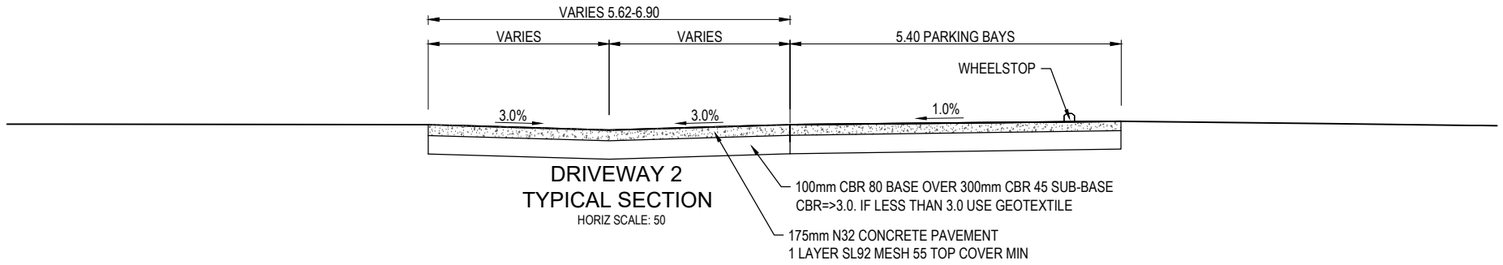
## MINIMUM PAVEMENT DESIGN

| ROAD | TRAFFIC ESA's | SURFACING (mm) | BASE (mm) (CBR 80) (TYPE 2.1) | SUB BASE (mm) (CBR 45) (TYPE 2.5) | SUBGRADE REPLACEMENT (mm) (CBR 15) | TOTAL BOX (mm) | STREET CLASSIFICATION |
|---|---|---|---|---|---|---|---|
| DRIVEWAY | $5.0 \times 10^4$ | #175 CONC | 100 | 300 | | 575 | LANEWAY/DRIVEWAY |

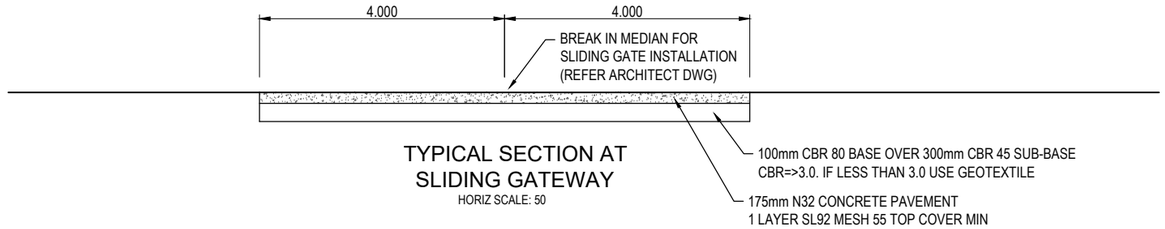
NOTE
175 CONCRETE SL92 MESH 55mm TOP COVER MIN



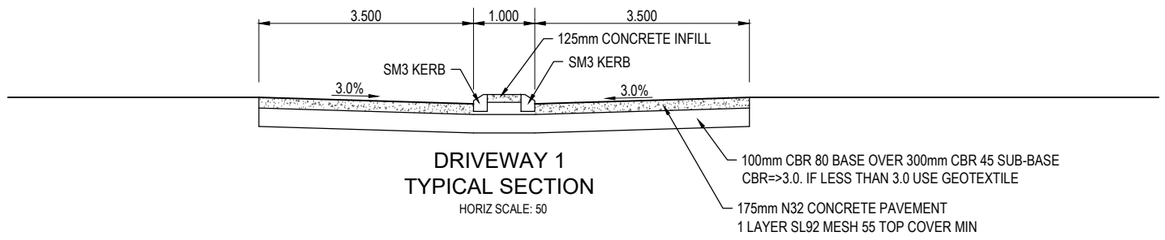

DRIVEWAY 3
TYPICAL SECTION
HORIZ SCALE: 50




DRIVEWAY 2
TYPICAL SECTION
HORIZ SCALE: 50




TYPICAL SECTION AT
SLIDING GATEWAY
HORIZ SCALE: 50




DRIVEWAY 1
TYPICAL SECTION
HORIZ SCALE: 50

FILE: 21-000157-107.dwg DATE: 17-09-2021 USER: WESLEY.PIKE
XREFS: 21-000157-BASE, Lot 8002 OVERALL SITE PLAN, 15-002215.006-AS Con

| | FIRST ISSUE | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| AMENDMENTS | | WP | WP | SP | SP | 27.07.21 | |
| | A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| | B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| | C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| | D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| | E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| | F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0
SCALE 1:50 (A1) SCALE 1:100 (A3)

CLIENT
STOCKLAND DEVELOPMENTS PTY LTD
Stockland

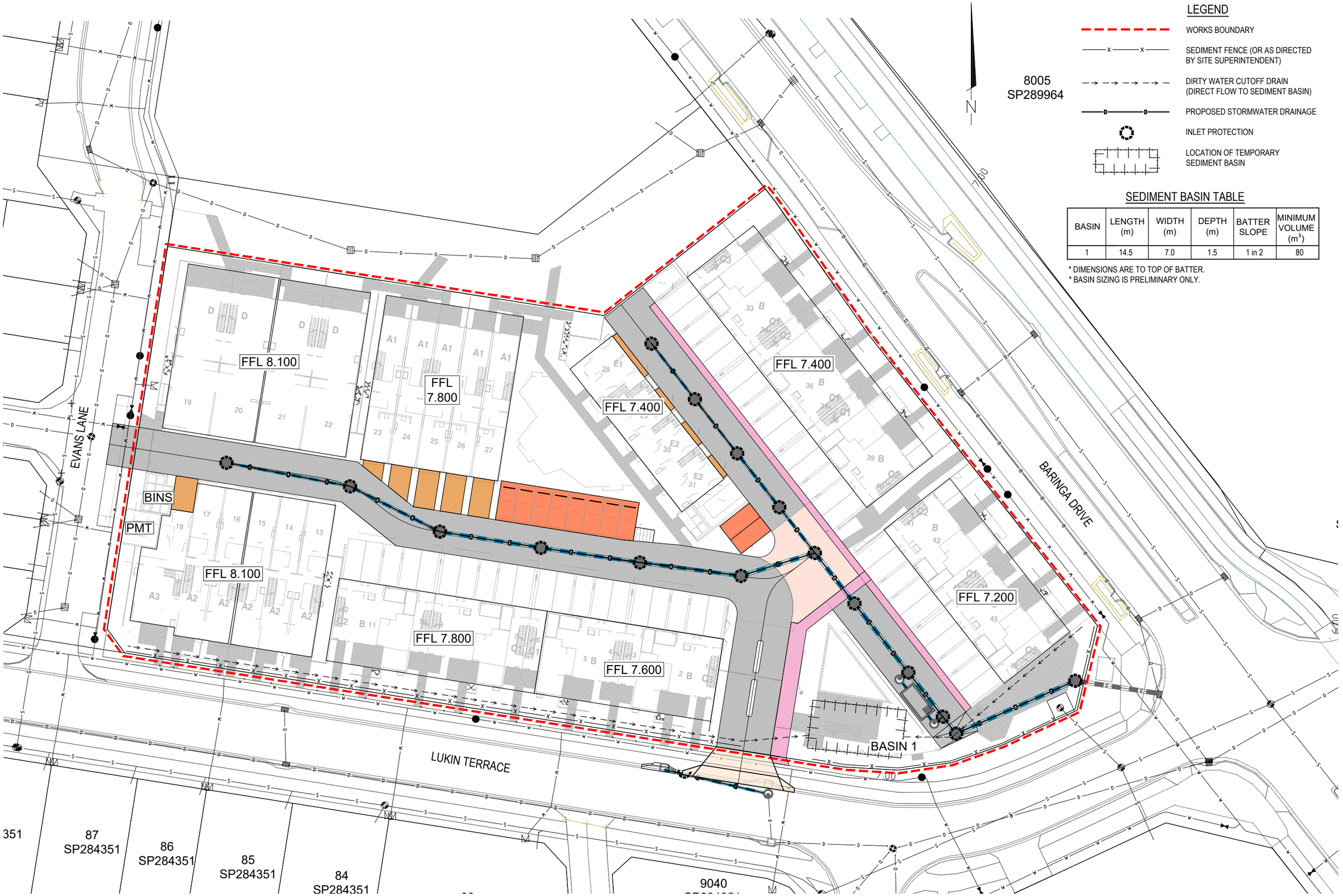

calibre
© calibregroup.com
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522


PROJECT


DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.


DRAWING TITLE: TYPICAL SECTIONS

PROJECT No. 21-000157
DRAWING No. 21-000157-107
REVISION F




## SEDIMENT BASIN TABLE

| BASIN | LENGTH (m) | WIDTH (m) | DEPTH (m) | BATTER SLOPE | MINIMUM VOLUME ($m^3$) |
|---|---|---|---|---|---|
| 1 | 14.5 | 7.0 | 1.5 | 1 in 2 | 80 |

* DIMENSIONS ARE TO TOP OF BATTER.
* BASIN SIZING IS PRELIMINARY ONLY.

FILE: 21-000157-108.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: X-20-000315.1024-SIGNATURE, 21-000157-BASE, DA_2.2_DWG (S) LOT 8002 - GROUND LEVEL-03-08-2022, 15-002215.006-AS Con, 21-000157-BASE-DC-TURNPATH

| AMENDMENTS | | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| FIRST ISSUE | | WP | WP | SP | SP | 27.07.21 | |
| | A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| | B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| | C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| | D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| | E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| | F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 2.5 5 7.5 10 12.5 15 17.5 20
SCALE 1:250 (A1) SCALE 1:500 (A3)

CLIENT
STOCKLAND DEVELOPMENTS PTY LTD
Stockland

calibre
© calibregroup.com
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522

PROJECT: BARINGA LOT 8002

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.

DRAWING TITLE: EROSION AND SEDIMENT CONTROL LAYOUT PLAN

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-108 | F |

## GENERAL NOTES

1. THIS DESIGN FOR EROSION AND SEDIMENT CONTROL IS CONCEPTUAL ONLY. THE CONTRACTOR SHALL MODIFY OR INSTALL ADDITIONAL/ ALTERNATIVE MEASURES DURING THE CONSTRUCTION AND MAINTENANCE PERIOD IN ORDER TO COMPLY WITH BEST PRACTICE STANDARDS IN ACCORDANCE WITH BUT NOT LIMITED TO CALIBRE CONSULTING'S SPECIFICATION 17 , THE MANUAL FOR EROSION AND SEDIMENT CONTROL (V1.2) AND ALL STATUTORY REQUIREMENTS.

2. PRESCRIBED WATER CONTAMINANTS (AS DEFINED IN THE ENVIRONMENTAL PROTECTION ACT 1994) MUST NOT BE RELEASED FROM THE SITE, OR BE LIKELY TO BE RELEASED SHOULD RAINFALL OCCUR, UNLESS ALL REASONABLE AND PRACTICABLE MEASURES ARE TAKEN TO PREVENT OR MINIMISE THE RELEASE AND CONCENTRATION OF CONTAMINATION. THESE MEASURES MUST INCLUDE AS A MINIMUM, BUT ARE NOT LIMITED TO, THE FOLLOWING:
   - A. ENSURE NON ESSENTIAL EXPOSURE OF SOIL IS PREVENTED BY: RESTRICTING THE EXTENT OF CLEARING TO THAT NECESSARY FOR ACCESS TO, AND SAFE CONSTRUCTION OF, THE APPROVED WORKS; PROTECTING VEGETATION IN ALL OTHER AREAS OF THE SITE; AND BY MINIMISING THE DURATION OF SOIL EXPOSURE BY:
     - STAGING THE WORKS TO MINIMISE THE AREA OF SOIL EXPOSED AT ANY ONE TIME;
     - EFFECTIVELY STABILISING CLEARED AREAS PRIOR TO RAINFALL IF WORKS ARE DELAYED OR WORKS ARE NOT INTENDED TO OCCUR IMMEDIATELY. SEE E&SC ADVICE NOTE 1;
     - EFFECTIVELY STABILISING AREAS AT FINISHED LEVEL WITHOUT DELAY AND PRIOR TO RAINFALL; AND
     - EFFECTIVELY STABILISING STEEP AREAS, SUCH AS STOCKPILES, BATTERS AND EMBANKMENTS, WHICH ARE NOT BEING ACTIVELY WORKED AND PRIOR TO RAINFALL.
   - B. WHERE IT IS NOT FEASIBLE TO EFFECTIVELY STABILISE CLEARED AREAS OF EXPOSED SOIL, SUCH AS AREAS BEING ACTIVELY WORKED, IMPLEMENT A FULL SUITE OF EROSION AND SEDIMENT CONTROLS TO MAXIMISE SEDIMENT CAPTURE IN THOSE AREAS AND TO MINIMISE EROSION SUCH THAT EROSION BY ALL FORMS OTHER THAN SPLASH (RAINDROP IMPACT) EROSION AND SHEET EROSION DOES NOT OCCUR; AND
   - C. IN AREAS OF EXPOSED SOIL WHERE IT IS NOT FEASIBLE TO EITHER EFFECTIVELY STABILISE THE SURFACE OR IMPLEMENT A FULL SUITE OF EROSION AND SEDIMENT CONTROLS, FOR EXAMPLE IN THE AREAS BEING ACTIVELY WORKED AND WHERE THE IMPLEMENTATION OF SOME EROSION AND SEDIMENT CONTROLS WOULD IMPEDE CONSTRUCTION ACTIVITIES, ENSURE CONTINGENCY MEASURES ARE AVAILABLE ON SITE AND ARE IMPLEMENTED, PRIOR TO RAIN, TO MAXIMISE SEDIMENT CAPTURE AND TO MINIMISE EROSION SUCH THAT EROSION BY ALL FORMS OTHER THAN SPLASH (RAINDROP IMPACT) EROSION AND SHEET EROSION DOES NOT OCCUR
   - D. EFFECTIVELY STABILISE ALL STOCKPILES, BATTERS AND EMBANKMENTS WITHOUT DELAY. WHERE IT IS NOT FEASIBLE TO EFFECTIVELY STABILISE A STOCKPILE, BATTER OR EMBANKMENT, SUCH AS AREAS BEING ACTIVELY WORKED, ENSURE THAT SEDIMENT CONTROLS ARE INSTALLED AND SURFACE STORMWATER FLOWS ARE MANAGED SUCH THAT EROSION OF STOCKPILES, BATTERS OR EMBANKMENTS IS NOT CAUSED BY CONCENTRATED STORMWATER FLOWS.
   - E. ENSURE CLEAN STORMWATER IS DIVERTED OR MANAGED AROUND OR THROUGH THE SITE WITHOUT INCREASING THE CONCENTRATION OF TOTAL SUSPENDED SOLIDS OR OTHER CONTAMINANTS IN THE FLOW AND WITHOUT CAUSING EROSION (ON SITE OR OFF SITE). IF IT IS NOT FEASIBLE TO DIVERT ALL AREAS DISCHARGING CLEAN STORMWATER AROUND OR THROUGH THE SITE, MANAGE THE CLEAN STORMWATER RUNOFF AS FOR CONTAMINATED STORMWATER RUNOFF, AND ENSURE THAT SEDIMENT BASINS ARE SIZED TO ACCOMMODATE THE ADDITIONAL VOLUME OF RUNOFF (SEE E&SC ADVICE NOTE 2).
   - F. ENSURE SHEET FLOWS OF STORMWATER ARE MANAGED SUCH THAT SHEET AND RILL EROSION IS PREVENTED OR MINIMISED.
   - G. ENSURE THAT ALL CONCENTRATED STORMWATER FLOWS INCLUDING DRAINAGE LINES, DIVERSION DRAINS, CHANNELS AND BATTER CHUTES ARE MANAGED ONTO, THROUGH, AND AT RELEASE POINTS FROM THE SITE IN ALL RAIN EVENTS UP TO AND INCLUDING THE AVERAGE RECURRENCE INTERVAL (ARI) EVENT OF 1 IN 2 YEAR ARI WITHOUT CAUSING WATER CONTAMINATION, SHEET, RILL OR GULLY EROSION, SEDIMENTATION, OR DAMAGE TO STRUCTURES OR PROPERTY
   - H. ENSURE MEASURES HAVE BEEN IMPLEMENTED SUCH THAT THE RUNOFF FROM ALL DISTURBED AREAS FLOWS TO A SEDIMENT BASIN OR BASINS. WHERE IT IS NOT FEASIBLE TO DIVERT RUNOFF FROM DISTURBED AREAS OF THE SITE TO A SEDIMENT BASIN, IMPLEMENT COMPENSATORY EROSION AND DRAINAGE CONTROLS PRIOR TO RAINFALL TO ENSURE THAT EROSION OF THOSE AREAS DOES NOT OCCUR, INCLUDING EROSION CAUSED BY EITHER SPLASH (RAINDROP IMPACT), SHEET, RILL OR GULLY EROSION PROCESSES (SEE E&SC ADVICE NOTE 3).
   - I. ENSURE EACH SEDIMENT BASIN HAS THE CAPACITY TO TREAT FLOWS TO CURRENT BEST PRACTICE STANDARDS (SEE E&SC ADVICE NOTE 4) AND AS A MINIMUM TO CONTAIN ALL THE STORMWATER RUNOFF FROM THE 80TH PERCENTILE 5 DAY RAINFALL DEPTH AND STORE 2 MONTHS SEDIMENT FROM THE RECEIVING CATCHMENT, AS DETERMINED USING THE REVISED UNIVERSAL SOIL LOSS EQUATION.
   - J. ENSURE SEDIMENT BASINS ARE MAINTAINED WITH SUFFICIENT STORAGE CAPACITY TO CAPTURE AND TREAT THE RUNOFF FOR THE DESIGN RAINFALL DEPTH OR EVENT. WHERE SEDIMENT BASINS ARE PROPOSED TO BE OVERSIZED FOR STORAGE OF CAPTURED WATER FOR RE-USE, INSTALL SURVEY MARKERS IN EACH SUCH BASIN TO INDICATE THE LEVEL THAT WATER WITHIN THE BASIN MUST BE LOWERED TO, IN ORDER TO MEET THE STORAGE CAPACITY SPECIFIED IN THE ABOVE REQUIREMENT.
   - K. ENSURE SEDIMENT BASINS ARE DEWATERED AS SOON AS PRACTICABLE AFTER EACH RAINFALL EVENT.
   - L. ENSURE THAT DURING DEWATERING, THE CONCENTRATION OF TOTAL SUSPENDED SOLIDS (TSS) DISCHARGED DOES NOT EXCEED 50MG/L AND THAT PH IS WITHIN THE RANGE OF 6.5-8.5. THE CONCENTRATION OF TSS RELEASED BY DEWATERING MAY ONLY EXCEED 50MG/L WHERE IT CAN BE DEMONSTRATED AND SUPPORTED THROUGH DOCUMENTATION THAT:
     - FURTHER SIGNIFICANT RAINFALL IS FORECAST TO OCCUR BEFORE THE TSS CONCENTRATION IS LIKELY TO BE REDUCED TO 50MG/L ; AND
     - RELEASING A HIGHER CONCENTRATION OF TOTAL SUSPENDED SOLID WILL RESULT IN A BETTER ENVIRONMENTAL OUTCOME BY PROVIDING STORAGE FOR THE CAPTURE AND TREATMENT OF RUNOFF FROM THE IMMINENT RAINFALL AND RUNOFF; AND
     - FLOCCULENT HAS BEEN APPLIED AND THE CONCENTRATION OF TSS IN THE CAPTURED WATER HAS ALREADY SIGNIFICANTLY DECREASED.
   - M. ENSURE SEDIMENT BASINS AND ASSOCIATED STRUCTURES SUCH AS INLETS, OUTLETS AND SPILLWAYS ARE STRUCTURALLY SOUND FOR 10 YEAR ARI RAINFALL EVENT.
   - N. ENSURE ACCUMULATED SEDIMENT FROM BASINS AND OTHER CONTROLS IS REMOVED AND DISPOSED OF APPROPRIATELY WITHOUT CAUSING WATER CONTAMINATION.
   - O. ENSURE SEDIMENT DOES NOT LEAVE THE SITE ON THE TYRES OF VEHICLES.

3. THE ENVIRONMENTAL PROTECTION ACT 1994 STATES THAT A PERSON MUST NOT CARRY OUT ANY ACTIVITY THAT CAUSES, OR IS LIKELY TO CAUSE, ENVIRONMENTAL HARM UNLESS THAT PERSON TAKES ALL REASONABLE AND PRACTICAL MEASURES TO PREVENT OR MINIMISE THE HARM. ENVIRONMENTAL HARM INCLUDES ENVIRONMENTAL NUISANCE. IN REGARD PERSONS AND ENTITIES, INVOLVED IN THE CIVIL, EARTHWORKS AND CONSTRUCTION PHASES OF THIS DEVELOPMENT, ARE TO ADHERE TO THEIR 'GENERAL ENVIRONMENTAL DUTY' TO MINIMISE THE RISK OF CAUSING ENVIRONMENTAL HARM.

   ENVIRONMENTAL; HARM IS DEFINED BY THE ACT AS ANY ADVERSE AFFECT, OR POTENTIAL ADVERSE AFFECT WHETHER TEMPORARY OR PERMANENT AND OF WHATEVER MAGNITUDE, DURATION OR FREQUENCY ON AN ENVIRONMENTAL VALUE AND INCLUDES ENVIRONMENTAL NUISANCE. THEREFORE, NO PERSON SHOULD CAUSE ANY INTERFERENCE WITH THE ENVIRONMENT OR AMENITY OF THE AREA BY REASON OF THE EMISSION OF NOISE, VIBRATION, SMELL, FUMES, SMOKE, VAPOR, STEAM, SOOT, ASH, DUST, WASTE WATER, WASTE PRODUCTS, GRIT, SEDIMENT, OIL OR OTHERWISE, OR CAUSE HAZARDS LIKELY IN THE OPINION OF THE ADMINISTERING AUTHORITY TO CAUSE UNDUE DISTURBANCE OR ANNOYANCE TO PERSONS OR AFFECT PROPERTY NOT CONNECTED WITH THE USE.

4. THE CONTRACTOR IS TO TAKE ALL NECESSARY PRECAUTIONS TO CONTROL EROSION AND DOWNSTREAM SEDIMENTATION DURING ALL STAGES OF CONSTRUCTION INCLUDING THE MAINTENANCE PERIOD.

5. WHERE IT IS REQUIRED TO SLASH EXISTING VEGETATION EITHER PRIOR TO THE COMMENCEMENT OF WORKS, DURING THE CONSTRUCTION WORKS AND / OR DURING THE MAINTENANCE PERIOD, SAID VEGETATION SHALL BE SLASHED TO A MINIMUM HEIGHT OF 75mm TO ASSIST WITH THE RETENTION OF SOILS ON SITE ( I.E. ASSIST IN THE PREVENTION OF EROSION ).

6. WHERE THE EXISTING VEGETATION WITHIN THE PROPOSED LOTS AND / OR PARKLAND IS DISTURBED AS A RESULT OF THE CONSTRUCTION WORKS, SAID EARTHWORKS ARE TO BE TOPSOILED AND EFFECTIVELY STABILISED WITHIN FIVE (5) DAYS, ( EARLIER IF RAIN EXPECTED ) OF FINAL ALLOTMENT EARTHWORKS. AN EFFECTIVELY STABILISED SURFACE IS DEFINED AS ONE THAT DOES NOT HAVE
   - VISIBLE EVIDENCE OF SOIL LOSS CAUSED BY SHEET, RILL OR GULLY EROSION
     OR
   - LEAD TO SEDIMENTATION, OR
   - LEAD TO WATER CONTAMINATION.

7. ALL CONSTRUCTION VEHICLES ARE TO ACCESS THE SITE VIA A SINGLE POINT OF ACCESS; THE POINT OF ACCESS, TOGETHER WITH THE MEASURES TO BE IMPLEMENTED, ARE TO BE AGREED WITH COUNCIL'S DESIGNATED REPRESENTATIVE ON SITE. THE PRINCIPLE AIM OF THE MEASURE(S) TO BE IMPLEMENTED IS / ARE TO LIMIT THE TRACKING OF DELETERIOUS MATERIALS ONTO THE SURROUNDING ROAD NETWORK.

8. THE CONTRACTOR SHALL PROVIDE GULLY INLET PROTECTION TO ALL GULLY INLET STRUCTURES LOCATED, DIRECTLY DOWNSTREAM OF THE PROPOSED DEVELOPMENT WORKS.

9. APPROPRIATE PROVISIONS ARE TO BE PROVIDED TO THE INTERFACE BETWEEN THE EXISTING ROADWAY PAVEMENTS AND THE NEW ROADWORK'S CONSTRUCTION. THE PROVISIONS SHALL ADDRESS WORKPLACE HEALTH AND SAFETY CONCERNS ( I.E. RESTRICTING ACCESS BY THE GENERAL PUBLIC TO THE SITE ).

10. THE LOCATION OF THE CONSTRUCTION VEHICLE COMPOUND, SITE OFFICE AND THE VEHICLE SERVICING AREA SHALL BE AGREED WITH COUNCIL'S DESIGNATED REPRESENTATIVE ON SITE, PRIOR TO THE COMMENCEMENT OF WORKS.

11. CLEARED VEGETATION IS TO NOT BE BURNED ON SITE, ALL VEGETATIVE WASTE(S) SHALL BE MULCHED AND THEREAFTER RETAINED ON SITE FOR USE AS PART OF THE EROSION AND SEDIMENTATION CONTROL STRATEGY OR THE LANDSCAPING / REVEGETATION WORKS. ALL STUMPS AND / OR OTHER ORGANIC MATTER NOT SUITABLE FOR MULCHING SHALL BE DISPOSED OF AT AN APPROVED WASTE DISPOSAL FACILITY.

12. SEDIMENT FENCE AND TURFING RUNNING DOWNSLOPES SHALL HAVE REGULAR FLOW DISSIPATERS AT 45° TO SLOPE AS DIRECTED CONSISTING OF SAND BAGS OR SIMILAR AS REQUIRED.

13. DURING THE CONSTRUCTION PROCESS INCLUDING THAT PERIOD DURING WHICH THE WORKS ARE "ON MAINTENANCE' SHOULD COUNCIL'S DESIGNATED REPRESENTATIVE REQUEST ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES BE IMPLEMENTED, SAID MEASURES SHALL BE IMPLEMENTED AT THE EARLIEST TIME POSSIBLE. NOTWITHSTANDING THE ABOVE REQUIREMENT ANY MEASURES REQUESTED TO BE IMPLEMENTED BY COUNCIL'S DESIGNATED REPRESENTATIVE SHALL BE IMPLEMENTED WITHIN 24 HOURS OF THE TIME OF THE REQUEST.

14. ALL ROOFWATER / SEWER RETICULATION TRENCHES EITHER ADJACENT TO EXISTING DEVELOPMENT OR PERPENDICULAR TO THE CROSSFALL OF THE LAND ARE TO BE TOPSOILED (75mm MINIMUM) AND TURFED. FOR A MINIMUM 900mm WIDTH.

15. THE CONTRACTOR SHALL CONSTRUCT LINED CUTOFF DRAINS IN WORK AREAS SO AS TO LIMIT SLOPE LENGTHS TO A MAXIMUM OF 80M.

16. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT NO RELEASE OR FLOW IS PERMITTED FROM THE SITE, THROUGHOUT THE EARTHWORKS AND CONSTRUCTION PERIOD TO ANY WATER WAYS OR STORMWATER DRAINLINES LEADING TO A WATERWAY OR AREA OF NATIVE VEGETATION UNLESS THE LEVELS OF TOTAL SUSPENDED SOLIDS DOES NOT EXCEED A CONCENTRATION OF 50 MGL.

17. ALL SEDIMENT CONTROL DEVICES SHALL BE MONITORED, CLEANED AND/OR REPAIRED WHENEVER THE ACCUMULATED SEDIMENT REDUCES THE CAPACITY BY 50%.

18. ALL PERIMETER BANK/SWALE SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET.

19. AT ALL TIMES THE CONTRACTOR SHALL MONITOR THE PREVAILING WEATHER CONDITIONS AND PROTECT OR STABILISE ANY DOWNSTREAM CONSTRUCTION AND GULLY INLETS.

20. CLEARING OF SITE AND STOCK PILE AREAS TO BE AS DIRECTED BY THE SUPERINTENDENT.

21. WHERE PRACTICAL THE CONTRACTOR SHALL DIVERT CLEAN WATER ENTERING THE SITE FROM EXTERNAL CATCHMENT(S) AND DIRECTED TO THE STORMWATER SYSTEM. THIS DISCHARGE POINT SHOULD BE ROCK LINED. REGULAR ROCK CHECK DAMS SHOULD BE POSITIONED ALONG THE VEGETATED DRAINAGE LINE LEADING TO THIS DISCHARGE POINT.

22. REGULAR INSPECTIONS AND MAINTENANCE OF VEHICLE WASHDOWN AREA, SITE AND STORAGE COMPOUND TO BE CARRIED OUT BY CONTRACTOR.

23. AREAS USED FOR STORAGE OF CHEMICALS USED FOR CONSTRUCTION PURPOSES SHALL HAVE STORMWATER CONTROL DEVICES ERECTED ADJACENT TO THEM (I.E. EARTH BUND AND SEDIMENT FENCES). UPON COMPLETION OF ROADWORKS WASTE PRODUCTS ARE TO BE DISPOSED OF AS PER LOCAL AUTHORITY GUIDELINES AND TEMPORARY DEVICES ARE TO BE REMOVED AND AREA REHABILITATED.

FILE: 21-000157-109.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: X-20-000315.1024-SIGNATURE

| AMENDMENTS | | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| | FIRST ISSUE | WP | WP | SP | SP | 27.07.21 | |
| | A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| | B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| | C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| | D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| | E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| | F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 2.5 5 7.5 10 12.5 15 17.5 20
SCALE 1:250 (A1) SCALE 1:500 (A3)

CLIENT
STOCKLAND DEVELOPMENTS PTY LTD
Stockland

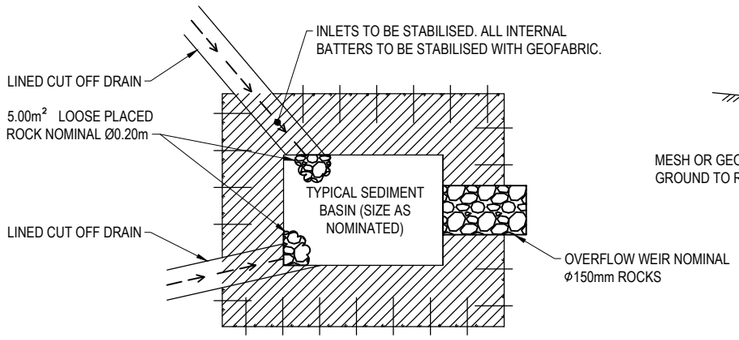
calibre
© calibregroup.com
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522

PROJECT: BARINGA LOT 8002

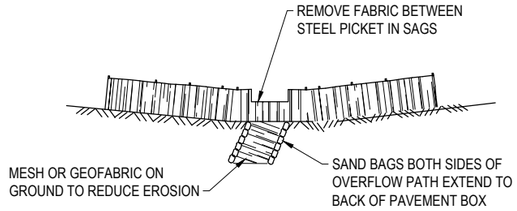
DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.

DRAWING TITLE: EROSION AND SEDIMENT CONTROL GENERAL NOTES

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-109 | F |

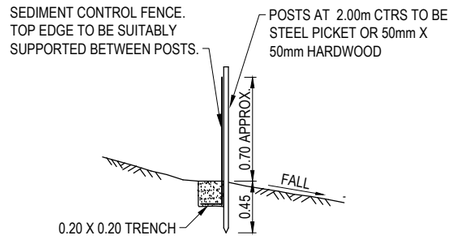



TYPICAL SEDIMENT BASIN

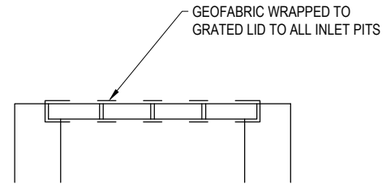



SPILL THROUGH WEIR DETAIL

INSTALL AT ALL SAG POINTS IN SILT FENCES

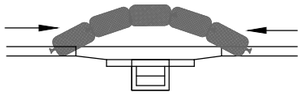



SEDIMENT FENCE DETAIL



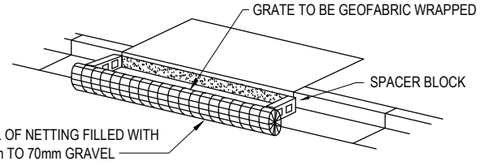

INLET GULLY DETAILS

N.T.S.

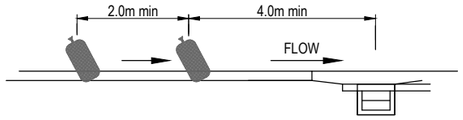


SANDBAGS AT SAG GULLIES

TO BE PROVIDED AT ALL SAG GULLIES

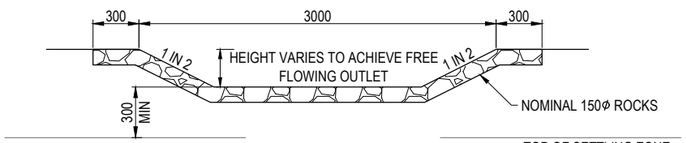



KERB INLET PROTECTOR

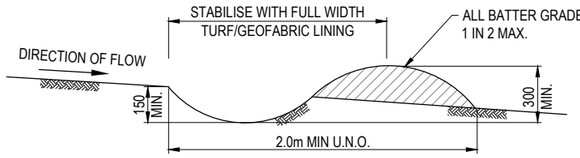



SANDBAGS AT GULLIES ON GRADE

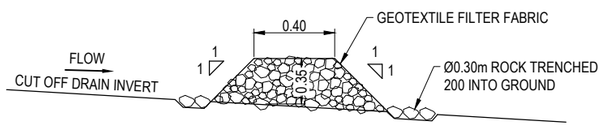
TO BE PROVIDED AT ALL ON-GRADE GULLIES



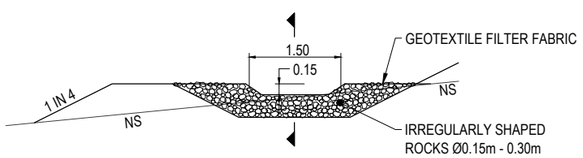

OVERFLOW WEIR DETAIL




CLEAN WATER CUTOFF DRAIN DETAIL

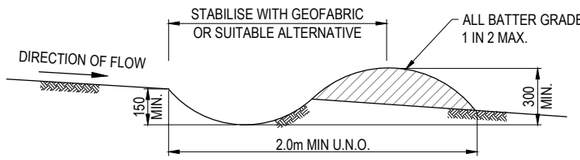



TYPICAL ROCK CHECK DAM SECTION




TYPICAL ROCK CHECK DAM DETAIL

ROCK CHECK DAMS TO BE EVERY 50.00m

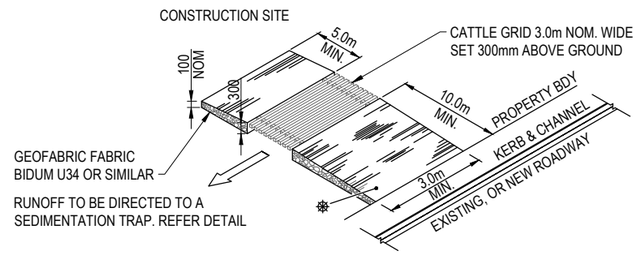



DIRTY WATER CUTOFF DRAIN DETAIL

CUTOFF DRAINS - MAINTENANCE PROGRAM

1. INSPECTIONS TO BE CARRIED OUT AFTER EACH RUNOFF EVENT.
2. SEDIMENT BUILD UP TO BE REMOVED DURING CONSTRUCTION AS REQUIRED BY THE SUPERINTENDENT.

NOTE: DRAIN TO BE CIRCULAR PARABOLIC OR TRAPEZOIDAL, V SHAPED IS NOT ACCEPTABLE. GRADIANT BETWEEN 1.0% TO 5.0%




NOTE:-
THE TOP ELEVATION OF THE AGGREGATE AND THE MESH FILTER SHALL BE AT LEAST 150mm BELOW THE SURROUNDING GROUND LEVEL INCLUDING ANY NECESSARY PERIMETER BERMS.

UNBOUND PAVEMENT MATERIAL (GRAVEL) TO GRADING 'B', TABLE 9 OF QT SPECIFICATION MRS11.05, EXCLUDE MATERIAL FINER THAN A.S. SIEVE 2.36mm

TEMPORARY CONSTRUCTION ENTRY/EXIT SEDIMENT TRAP

N.T.S.

FILE: 21-000157-110.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: X-20-000315.1024-SIGNATURE

| AMENDMENTS | FIRST ISSUE | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| | | WP | WP | SP | SP | 27.07.21 | |
| | A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| | B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| | C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| | D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| | E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| | F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED BY: SHAUN PILCHER 14593 SIGN: Shaun Pilcher DATE: 31.05.22

SCALE

CLIENT: STOCKLAND DEVELOPMENTS PTY LTD

Stockland

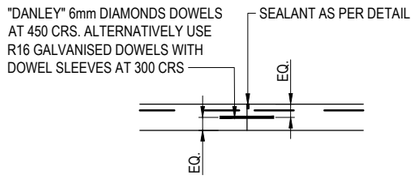
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522
calibre
© calibregroup.com

PROJECT: BARINGA LOT 8002

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY. DO NOT SCALE.

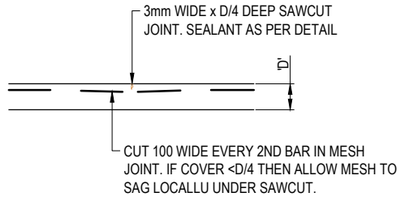
DRAWING TITLE: EROSION AND SEDIMENT CONTROL TYPICAL DETAILS

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-110 | F |



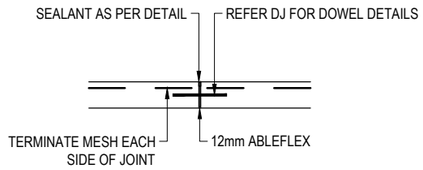

DOWELLED JOINT (DJ) OPTION

N.T.S.



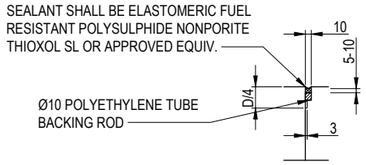

SAWN JOINT (SJ) OPTION

N.T.S.



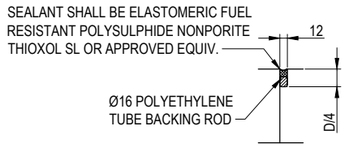

EXPANSION JOINT DETAIL (EJ)

N.T.S.




SJ SEALANT DETAIL

N.T.S.



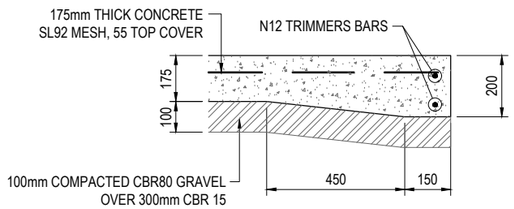

EJ & DJ SEALANT DETAIL

N.T.S.

## LEGEND

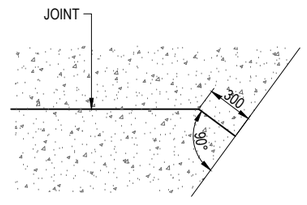
E.J. EXPANSION JOINT

C.J. CONTRACTION JOINT (EITHER SJ OR DJ)



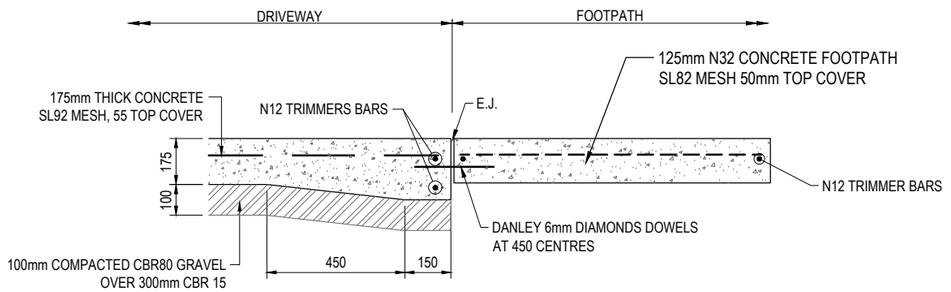

EDGE TREATMENT

SCALE 1:10 (A1)




TYP. JOINT TERMINATION AT OBLIQUE SLAB EDGE

N.T.S.




SECTION A-A

SCALE 1:10 (A1)

## CONCRETE NOTES

C1 ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS.3600 S.A.A. CONCRETE STRUCTURES.

C2 NO HOLES, CHASES OR EMBEDMENT OF PIPES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT PRIOR APPROVAL OF THE ENGINEER.

C3 THE FACE OF ALL CONCRETE AGAINST WHICH NEW CONCRETE IS TO BE CAST IS TO BE THOROUGHLY MECHANICALLY SCABBLED, FULLY EXPOSING THE AGGREGATE MATRIX, UNLESS OTHERWISE NOTED.

C4 CONSTRUCTION JOINTS SHALL BE PROPERLY FORMED AND USED ONLY WHERE SHOWN OR SPECIFICALLY APPROVED BY THE ENGINEER. THE INTERFACE OF THE HARDENED CONCRETE SHALL BE THOROUGHLY SCABBLED TO REMOVE LAITANCE AT ALL CONSTRUCTION JOINTS.

C5 FORMWORK SHALL BE DESIGNED AND CONSTRUCTED BY THE BUILDER IN ACCORDANCE WITH AS.3610 S.A.A. FORMWORK CODE.

C6 CONCRETE TESTING SHALL BE 'PROJECT ASSESSMENT' IN ACCORDANCE WITH SECTION 20.7 OF AS.3600.

C7 CONCRETE SIZES AS DRAWN DO NOT INCLUDE APPLIED FINISHES AND MUST NOT BE REDUCED OR HOLED IN ANY WAY WITHOUT APPROVAL OF THE ENGINEER.

C8 SAW CUTTING OF JOINTS IN SLABS ON GROUND SHALL COMMENCE AS EARLY AS POSSIBLE WITHOUT CAUSING UNACCEPTABLE RAVELLING OF JOINT EDGES. ( NORMALLY WITHIN 24 HOURS OF CASTING SLAB ) SAW CUTTING SHALL BE COMPLETED WITHIN 36 HOURS OF SLAB CASTING.

C9 CONCRETE SLUMP SHALL BE 80 mm UNLESS STATED OTHERWISE.

C10 THE APPROVED METHOD OF CURING SHALL BE IN PLACE FOR A MINIMUM PERIOD OF 7 DAYS.

C11 CONCRETE CHARACTERISTIC STRENGTH ( f'c ) SHALL BE AS FOLLOWS UNLESS STATED OTHERWISE:

| ELEMENT | EXPOSURE CLASSIFICATION | COVER ( mm ) | GRADE ( MPa ) |
|---|---|---|---|
| SLAB ON GROUND | B1 | 40 | 32 |

C12 MAXIMUM CONCRETE AGGREGATE SIZE TO BE 20mm UNO.

## REINFORCING STEEL

S1 ABBREVIATIONS FOR STEEL GRADE AND TYPE: -
"R" - STRUCTURAL GRADE 230 PLAIN ROUND BAR TO AS1302
"Y" - GRADE 410 Y HOT ROLLED DEFORMED BAR TO AS1302
"N" - GRADE D500N TO AS/NZS4671
"F" - HARD DRAWN STEEL WIRE REINFORCING FABRIC TO AS1304
"W" - STEEL WIRE TO AS1303

S2 REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY SHOWN IN TRUE PROJECTION.

S3 WELDING SHALL NOT BE PERMITTED WITHOUT APPROVAL OF THE ENGINEER.

S4 ENSURE THE CORRECT SPACING OF BARS IS MAINTAINED AND ALL REINFORCEMENT IS SUPPORTED IN ITS CORRECT POSITION BY APPROVED BAR CHAIRS, SPACERS OR SUPPORT BARS @ 1000 MAX CRS.

S5 ALL INTERSECTIONS OF BARS SHALL BE TIED WITH 1.25mm Ø MIN ANNEALED WIRE.

S6 LAPS TO FABRIC REINFORCEMENT SHALL BE AT LEAST 225mm OR 2 CROSS WIRES ON EACH SHEET. LAPS TO TRENCH MESH SHALL BE 500mm MINIMUM AT SPLICES AND FULL WIDTH AT INTERSECTIONS.

S7 IF BARS OF DIFFERENT DIAMETERS ARE LAPPED, THE LAP LENGTH SHALL BE CALCULATED USING THE LESSER DIAMETER.

FILE: 21-000157-111.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: X-20-000315.1024-SIGNATURE, 21-000157-BASE, Lot 8002 OVERALL SITE PLAN, 15-002215.006-AS Con

| AMENDMENTS | | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| FIRST ISSUE | | WP | WP | SP | SP | 27.07.21 | |
| | A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| | B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| | C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| | D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| | E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| | F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED BY: SHAUN PILCHER 14593 SIGN: Shaun Pilcher DATE: 31.05.22

SCALE

CLIENT: STOCKLAND DEVELOPMENTS PTY LTD

Stockland

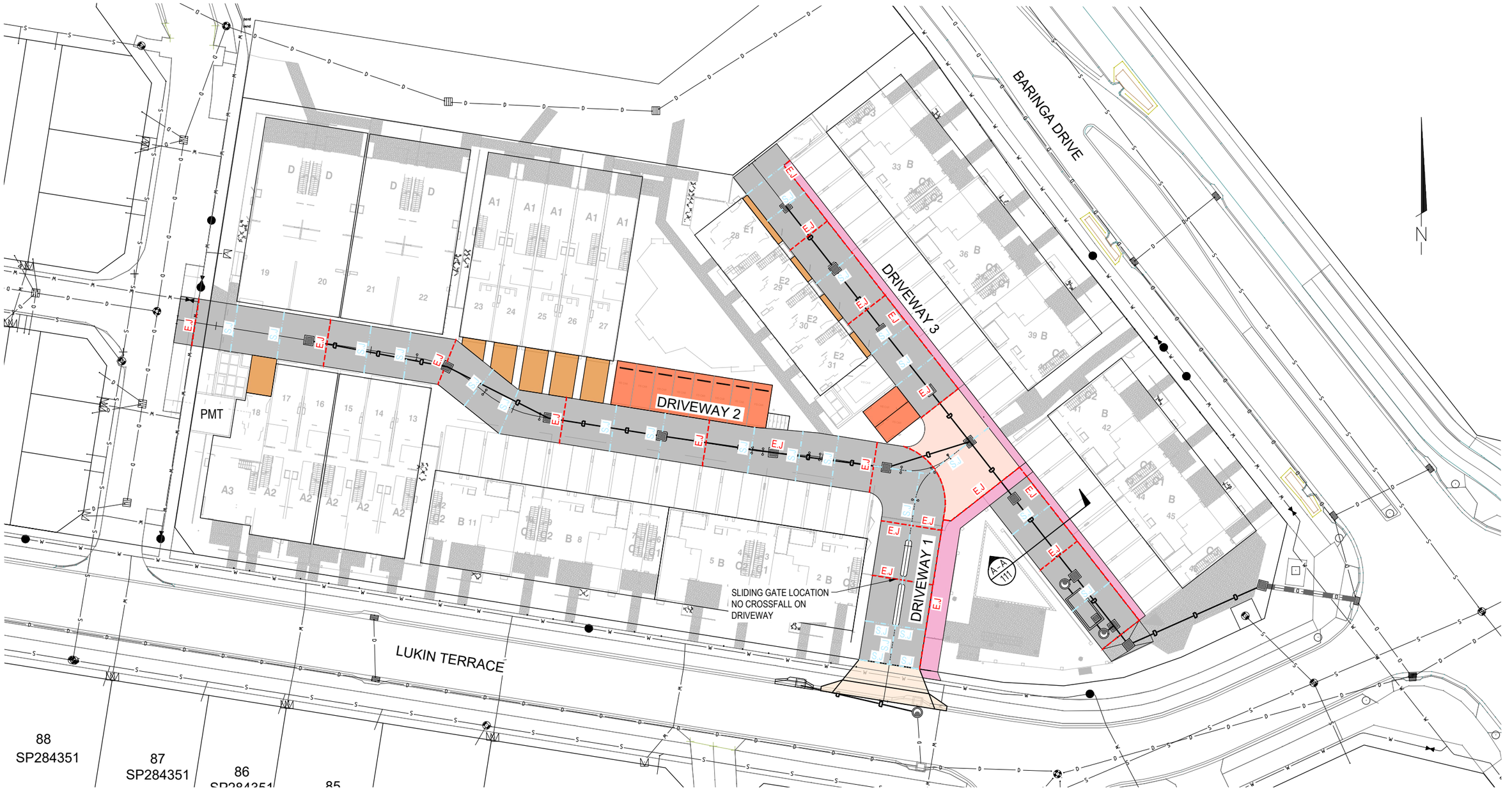
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522
calibre
© calibregroup.com

PROJECT: BARINGA LOT 8002

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.

DRAWING TITLE: CONCRETE DETAILS

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-111 | F |




FILE: 21-000157-112.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: 21-000157-BASE, DA_2.2_DWG (S) LOT 8002 - GROUND LEVEL-03-08-2022, 15-002215.006-AS Con, 21-000157-BASE-DC-TURNPATH

| | | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| FIRST ISSUE | | WP | WP | SP | SP | 27.07.21 | |
| AMENDMENTS | A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| | B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| | C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| | D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| | E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| | F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS
APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 2.5 5 7.5 10 12.5 15 17.5 20
SCALE 1:250 (A1) SCALE 1:500 (A3)

CLIENT
STOCKLAND DEVELOPMENTS PTY LTD
Stockland

Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522
calibre
© calibregroup.com

PROJECT
BARINGA LOT 8002

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY. DO NOT SCALE.

DRAWING TITLE
CONCRETE JOINTING PLAN

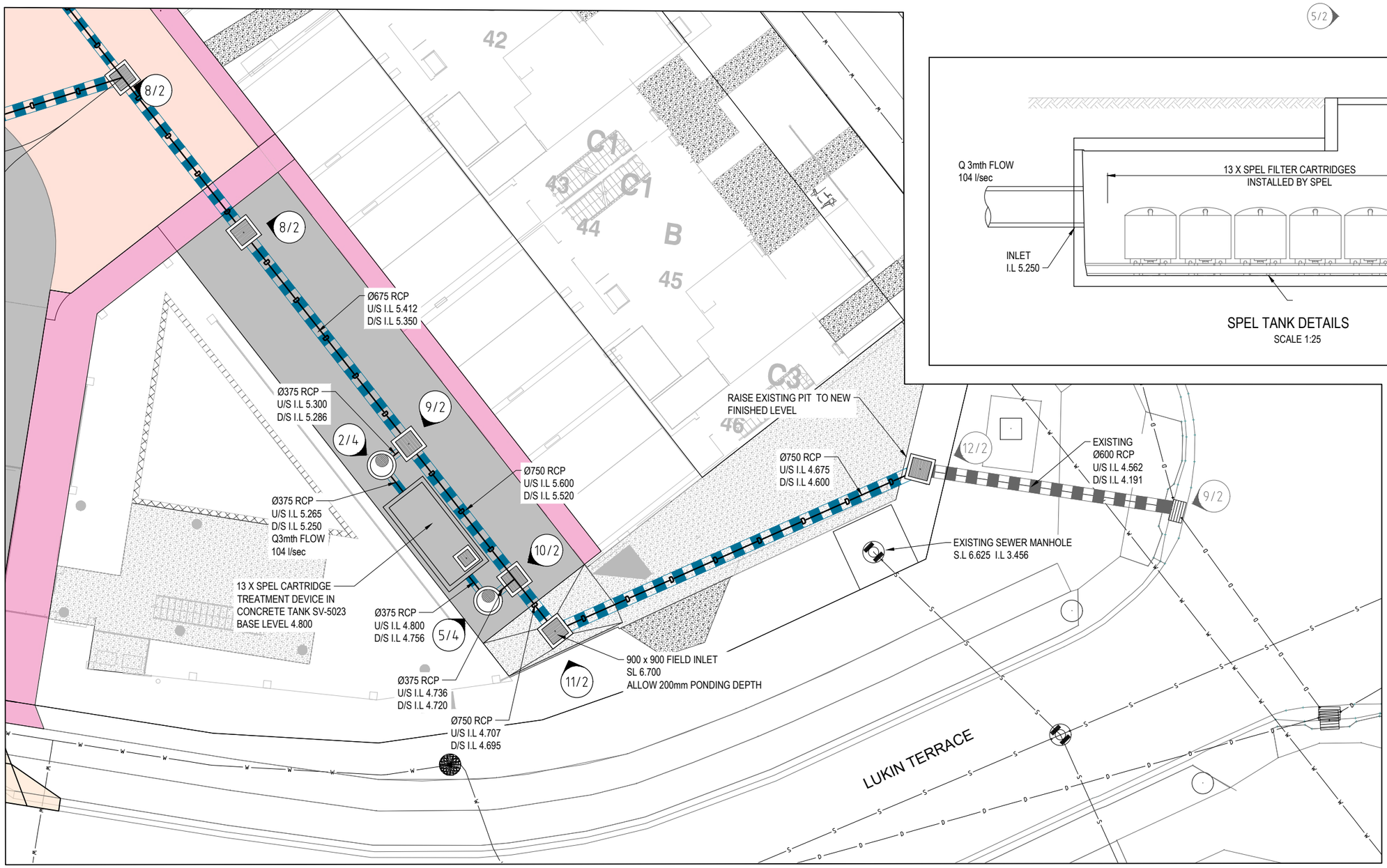
| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-112 | F |

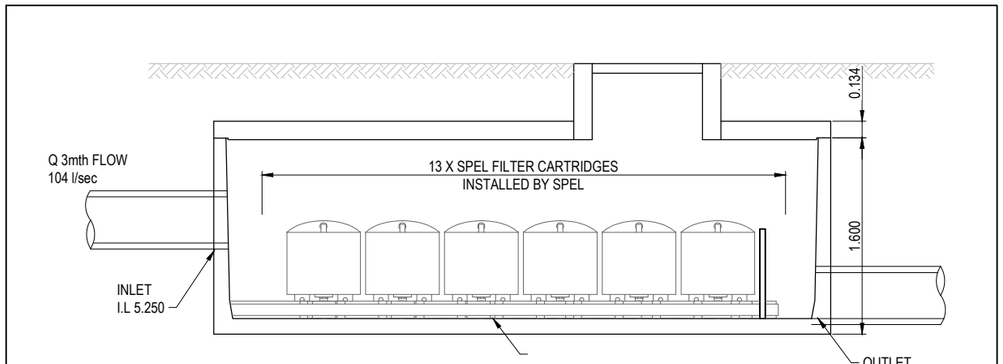
**NOTE**
ALL INLET PITS ARE TO BE FITTED WITH A SPEL STORMSACK TO SUIT PIT SIZE

## LEGEND

- WORKS EXTENT
- EXISTING STORMWATER DRAINAGE
- PROPOSED STORMWATER DRAINAGE
- 5/2 PROPOSED DRAINAGE STRUCTURE NUMBER
- 5/2 EXISTING DRAINAGE STRUCTURE NUMBER

N




SPEL TANK DETAILS
SCALE 1:25

**NOTE**
REFER TO MANUFACTURERS SPECIFICATIONS FOR SPEL TANK DETAILS

FILE: 21-000157-113.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: 21-000157-BASE, DA_2.2_DWG (S) LOT 8002 - GROUND LEVEL-03-08-2022, 15-002215.006-AS Con, 21-000157-BASE-DC-TURNPATH

| AMENDMENTS | | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| FIRST ISSUE | | WP | WP | SP | SP | 27.07.21 | |
| | A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| | B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| | C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| | D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| | E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| | F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 1 2 3 4 5 6 7 8
SCALE 1:100 (A1) SCALE 1:200 (A3)

CLIENT: STOCKLAND DEVELOPMENTS PTY LTD

Stockland

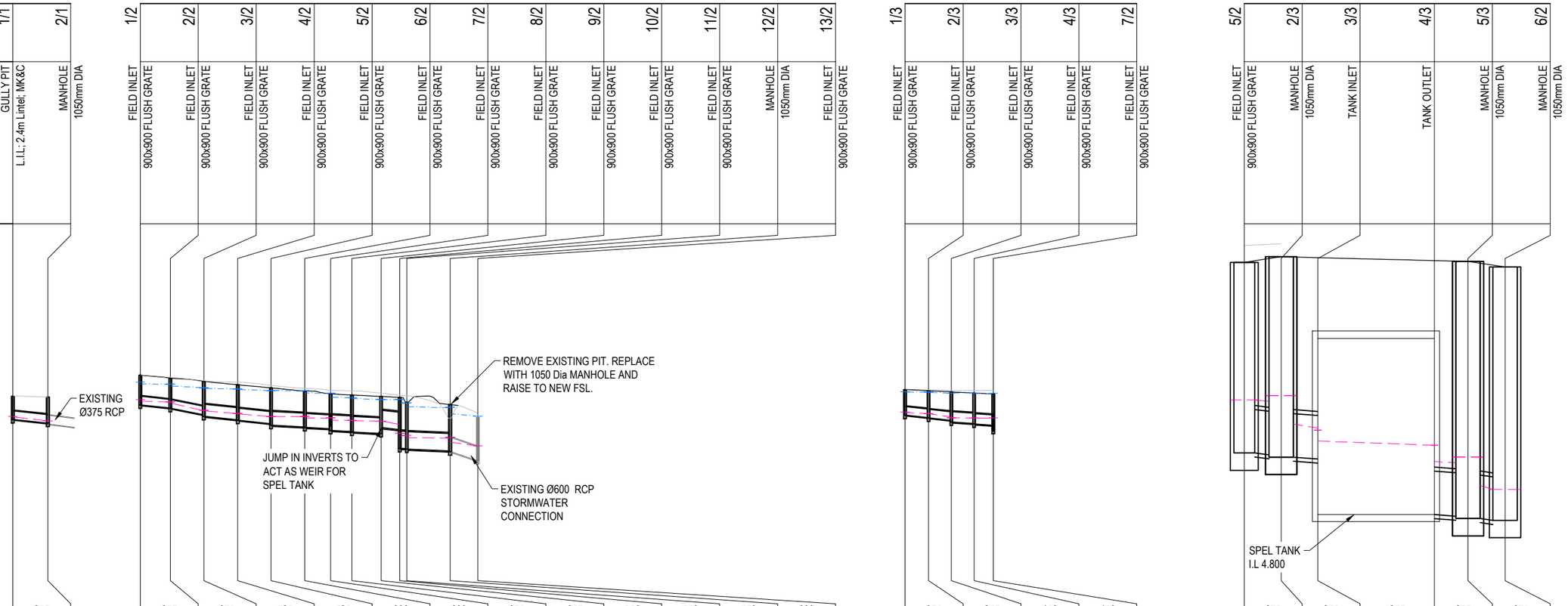

calibre
© calibregroup.com
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522


PROJECT: BARINGA LOT 8002


DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.


DRAWING TITLE: SPEL STORMWATER DEVICE DETAIL PLAN

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-113 | F |




| STRUCTURE NAME | 1/1 | 2/1 | 1/2 | 2/2 | 3/2 | 4/2 | 5/2 | 6/2 | 7/2 | 8/2 | 9/2 | 10/2 | 11/2 | 12/2 | 13/2 | 1/3 | 2/3 | 3/3 | 4/3 | 7/2 | 5/2 | 2/3 | 3/3 | 4/3 | 5/3 | 6/2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STRUCTURE DESCRIPTION | GULLY PIT | MANHOLE | FIELD INLET | FIELD INLET | FIELD INLET | FIELD INLET | FIELD INLET | FIELD INLET | FIELD INLET | FIELD INLET | FIELD INLET | FIELD INLET | FIELD INLET | MANHOLE | FIELD INLET | FIELD INLET | FIELD INLET | FIELD INLET | FIELD INLET | FIELD INLET | FIELD INLET | MANHOLE | TANK INLET | TANK OUTLET | MANHOLE | MANHOLE |
| | L.I.L; 2.4m Lintel; MK&C | 1050mm DIA | 900x900 FLUSH GRATE | 900x900 FLUSH GRATE | 900x900 FLUSH GRATE | 900x900 FLUSH GRATE | 900x900 FLUSH GRATE | 900x900 FLUSH GRATE | 900x900 FLUSH GRATE | 900x900 FLUSH GRATE | 900x900 FLUSH GRATE | 900x900 FLUSH GRATE | 900x900 FLUSH GRATE | 1050mm DIA | 900x900 FLUSH GRATE | 900x900 FLUSH GRATE | 900x900 FLUSH GRATE | 900x900 FLUSH GRATE | 900x900 FLUSH GRATE | 900x900 FLUSH GRATE | 900x900 FLUSH GRATE | 1050mm DIA | | | 1050mm DIA | 1050mm DIA |
| PIPE SIZE (mm) | | 375 | 375 | 375 | 525 | 525 | 600 | 600 | 675 | 675 | 750 | 750 | 750 | 600 | | 375 | 375 | 450 | 450 | | 375 | 375 | 375 | 375 | 375 | 375 |
| PIPE CLASS | | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 | RCP 3 |
| PIPE GRADE (%) | | 1.00% | 1.00% | 1.86% | 1.00% | 1.00% | 0.50% | 0.50% | 0.50% | 0.50% | 1.00% | 0.40% | 0.40% | 3.11% | | 1.00% | 1.00% | 0.66% | 0.66% | | 1.00% | 1.00% | 0.00% | 1.00% | 1.00% |
| PIPE SLOPE (1 in X) | | 100.00 | 99.55 | 53.82 | 100.00 | 100.00 | 199.99 | 200.00 | 200.00 | 200.00 | 100.00 | 250.00 | 250.00 | 32.16 | | 100.00 | 100.00 | 151.51 | 151.52 | | 100.00 | 100.01 | 1000000.00 | 100.00 | 100.00 |
| FULL PIPE VELOCITY (m/s) | | 0.23 | 0.46 | 0.83 | 0.60 | 0.79 | 0.63 | 0.77 | 0.91 | 1.03 | 0.51 | 0.86 | 0.88 | 1.37 | | 0.23 | 0.55 | 0.46 | 0.48 | | 1.36 | 1.36 | 1.36 | 1.36 | 1.36 |
| PART FULL VELOCITY (m/s) | | 1.13 | 1.37 | 2.02 | 1.74 | 1.88 | 1.46 | 1.53 | 1.70 | 1.75 | 1.97 | 1.62 | 1.63 | 3.51 | | 1.13 | 1.44 | 1.29 | 1.30 | | 1.78 | 1.78 | 1.36 | 1.78 | 1.78 |
| DATUM RL | -7.0 | | -7.0 | | | | | | | | | | | | | -7.0 | | | | | 4.0 | 3.0 | | | |
| H.G.L IN PIPE & W.S.E IN STRUCTURE | 6.083 | 6.064<br>5.896 | 6.818 | 6.744<br>6.701 | 6.654<br>6.344 | 6.328<br>6.212 | 6.199<br>6.078 | 6.078<br>6.073 | 6.020<br>6.014 | 5.922<br>5.916 | 5.899<br>5.887 | 5.887<br>5.748 | 5.259<br>5.257 | 5.165<br>5.150 | 4.969<br>4.820 | 6.270 | 6.251<br>6.205 | 6.196<br>6.070 | 6.029<br>6.018 | 6.013<br>6.014 | 5.922 | 5.759 | 5.759<br>5.747 | 5.551<br>5.517 | 5.405<br>5.368 | 5.227<br>5.217 | 5.021<br>4.987 |
| | | 5.896 | | 6.711 | 6.348 | 6.213 | 6.078 | 6.085 | 6.028 | 5.916 | 5.887 | 5.359 | 5.272 | 5.183 | 4.820 | | 6.205 | 6.029 | 6.018 | 6.028 | | | 5.796 | 5.499 | 5.368 | 5.266 | 4.987 |
| PIPE FLOW (Cumecs) | | 0.025 | | 0.050 | 0.092 | 0.130 | 0.172 | 0.178 | 0.216 | 0.325 | 0.369 | 0.225 | 0.380 | 0.387 | 0.386 | | 0.025 | 0.061 | 0.073 | 0.076 | | | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| PIPE CAPACITY AT GRADE (Cumecs) | | 0.175 | | 0.176 | 0.239 | 0.430 | 0.430 | 0.434 | 0.434 | 0.595 | 0.595 | 1.114 | 0.704 | 0.704 | 1.083 | | 0.175 | 0.175 | 0.232 | 0.232 | | | 0.175 | 0.175 | 0.000 | 0.175 | 0.175 |
| DEPTH TO INVERT | 1.006 | 1.119 | 1.284 | 1.287 | 1.307<br>1.433 | 1.508<br>1.512 | 1.532<br>1.535 | 1.610<br>1.541 | 1.561<br>1.503 | 1.578<br>1.578 | 1.598<br>1.598 | 1.348<br>1.388 | 2.200<br>2.005 | 2.025<br>1.712 | 1.750<br>1.857 | 1.109 | 1.159<br>1.179 | 1.229<br>1.304 | 1.319<br>1.339 | 1.353<br>1.578 | | 1.646 | 1.710<br>1.730 | 1.737<br>2.187 | 2.162<br>2.192 | 2.199<br>2.219 | 2.187<br>2.187 |
| | | 1.119 | | | | | | | | | | | | | 1.857 | | | | | | | | | | | | |
| INVERT LEVEL OF DRAIN | 5.952 | 5.800 | 6.581 | 6.451 | 6.431<br>6.162 | 6.087<br>5.941 | 5.921<br>5.777 | 5.702<br>5.629 | 5.609<br>5.554 | 5.479<br>5.433 | 5.413<br>5.350 | 5.600<br>5.520 | 4.707<br>4.695 | 4.675<br>4.600 | 4.562<br>4.191 | 6.138 | 6.037<br>6.017 | 5.918<br>5.843 | 5.779<br>5.759 | 5.704<br>5.479 | | 5.302 | 5.286<br>5.266 | 5.250<br>4.800 | 4.800<br>4.800 | 4.756<br>4.736 | 4.720<br>4.720 |
| | | 5.800 | | | | | | | | | | | | | 4.191 | | | | | | | | | | | | |
| DESIGN SURFACE LEVEL | 6.958 | 6.919 | 7.865 | 7.738 | 7.595 | 7.453 | 7.313 | 7.171 | 7.056 | 7.010 | 6.948 | 6.907 | 6.700 | 6.312 | 6.048 | 7.247 | 7.196 | 7.147 | 7.098 | 7.056 | 6.948 | 6.995 | 6.987 | 6.962 | 6.955 | 6.907 |
| SETOUT COORDINATES | E 508089.177<br>N 7034690.714 | E 508103.895<br>N 7034687.115 | E 508031.338<br>N 7034733.930 | E 508044.042<br>N 7034731.359 | E 508066.939<br>N 7034724.832 | E 508071.397<br>N 7034722.542 | E 508085.626<br>N 7034720.428 | E 508100.060<br>N 7034718.509 | E 508110.693<br>N 7034721.812 | E 508116.357<br>N 7034714.561 | E 508124.084<br>N 7034704.672 | E 508129.032<br>N 7034698.338 | E 508130.933<br>N 7034695.905 | E 508148.012<br>N 7034703.491 | E 508159.806<br>N 7034701.690 | E 508087.266<br>N 7034751.797 | E 508093.491<br>N 7034743.830 | E 508099.549<br>N 7034736.075 | E 508105.582<br>N 7034728.354 | E 508110.693<br>N 7034721.812 | | E 508124.084<br>N 7034704.672 | E 508122.834<br>N 7034703.679 | E 508123.807<br>N 7034702.434 | E 508126.904<br>N 7034698.471 | E 508127.798<br>N 7034697.326 | E 508129.032<br>N 7034698.338 |
| RUNNING CHAINAGE | 0.000 | 15.151<br>15.151 | -8.253 | 12.962<br>4.709 | 14.455<br>19.164 | 14.637<br>33.801 | 14.386<br>48.187 | 14.561<br>62.748 | 11.134<br>73.882 | 9.200<br>83.082 | 12.550<br>95.632 | 8.038<br>103.670 | 3.087<br>106.758 | 18.687<br>125.445 | 11.937<br>137.376 | 0.000 | 10.111<br>10.111 | 9.841<br>19.951 | 9.799<br>29.750 | 8.302<br>38.052 | | 0.000 | 1.596<br>1.596 | 1.580<br>3.176 | 5.030<br>8.206 | 1.453<br>9.659 | 1.597<br>11.255 |
| LINE | | 1 | | | | | | 2 | | | | | | | | | | | | 3 | | | | SPEL TANK TREATMENT | | |

SCALE 1:100 HOR
1:20 VERT

FILE: 21-000157-114.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS:

| AMENDMENTS | FIRST ISSUE | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| | | WP | WP | SP | SP | 27.07.21 | |
| | A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| | B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| | C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| | D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| | E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| | F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 10 20 30 40 50 60 70 80
SCALE 1:1000 (A1) SCALE 1:2000 (A3)
0 1 2 3 4 5 6 7 8
SCALE 1:100 (A1) SCALE 1:200 (A3)

CLIENT: STOCKLAND DEVELOPMENTS PTY LTD

Stockland

calibre
© calibregroup.com
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522

PROJECT: BARINGA LOT 8002

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.

DRAWING TITLE: STORMWATER LONGITUDINAL SECTIONS

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-114 | F |

| LOCATION | | CATCHMENT PROPERTIES | | | FULL AREA RUNOFF | | | | | PART AREA RUNOFF | | | | | INLET DESIGN | | | | | | | | | | DRAIN DESIGN | | | | | | | | HEADLOSSES | | | | | | | | | PART FULL | | DESIGN LEVELS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | fi | Ci | Cp | tc | I | A | CA | Q | tc | I | A | CA | Q | Qa | | | | | | | Qg | Qb | | tc | I | CA | Qp | L | S | | Vf | S/Do | Qg/Qo | Du/Do | | Vf2/2g | Ku | hu | Kw | hw | Sf | hf | dn | Vn | | | | | | | | | |
| STRUCTURE No. | DRAIN SECTION | FRACTION IMPERVIOUS | COEFFICIENT OF RUNOFF IMPERVIOUS AREA | COEFFICIENT OF RUNOFF PERVIOUS AREA | TIME OF CONCENTRATION | RAINFALL INTENSITY | SUB-CATCHMENT AREA | EQUIVALENT IMPERVIOUS AREA | SUB-CATCHMENT DISCHARGE | TIME OF CONCENTRATION | RAINFALL INTENSITY | PARTIAL CATCHMENT AREA | EQUIVALENT IMPERVIOUS AREA | SUB-CATCHMENT DISCHARGE | FLOW IN K&C(INC. BYPASS) | FLOW WIDTH | FLOW DEPTH | FLOW DxV | ROAD GRADE AT INLET | ROAD XFALL AT INLET | INLET TYPE | FLOW INTO INLET | BYPASS FLOW | BYPASS STRUCTURE No. | CRITICAL TIME OF CONC. | RAINFALL INTENSITY | TOTAL (C x A) | PIPE FLOW | REACH LENGTH | PIPE GRADE | PIPE SIZE | FULL PIPE VELOCITY | SUBMERGENCE RATIO | GRATE FLOW RATIO | DIAMETER RATIO | CHART(S) USED | VELOCITY HEAD | U/S HEAD LOSS COEFFICIENT | U/S HEAD LOSS | W.S.E COEFFICIENT | CHANGE IN W.S.E | PIPE FRICTION SLOPE | PIPE FRICTION HEAD LOSS | NORMAL DEPTH | NORMAL DEPTH VEL. | PIPE U/S I.L | PIPE D/S I.L | PIPE U/S H.G.L | PIPE D/S H.G.L | W.S.E | GRATE LEVEL | FREEBOARD | STRUCTURE No. |
| | | | | | min | mm/h | ha | ha | L/s | min | mm/h | ha | ha | L/s | L/s | m | m | | % | % | | L/s | L/s | | min | mm/hr | ha | L/s | m | % | mm | m/s | | | | | m | | | | m | | | m | m/s | m | m | m | m | m | m | m | |
| 1/1 | 1/1 to 2/1 | 90 | 0.9 | 0.75 | 10 | 171 | 0.048 | 0.043 | 20 | 5 | 221 | 0.046 | 0.041 | 25 | 25 | | | | 1 | 3 | GULLY MK-S | 25 | 0 | LOST | 5 | 221 | 0.041 | 25 | 15.151 | 1 | 375 | 0.23 | 1.05 | 1 | | G1 | 0.003 | 7 | 0.018 | | 0.018 | 1.11 | 0.145 | 0.096 | 1.13 | 5.952 | 5.8 | 6.064 | 5.896 | 6.083 | 6.958 | 0.875 | 1/1 |
| 2/1 | | | | | | | | | | | | | | | | | | | | | MH1050 | | | | | | | | | | | | | | | | | | | | | | | | | | 5.896 | 6.919 | | 2/1 |
| 1/2 | 1/2 to 2/2 | 90 | 0.9 | 0.75 | 10 | 171 | 0.005 | 0.005 | 2 | 5 | 221 | 0.005 | 0.005 | 3 | 3 | 1.165 | 0.017 | 0 | 0.97 | 3 | FSIP-9x9 | 1 | 1 | 2/2 | 5 | 221 | 0.005 | 50 | 12.962 | 1 | 375 | 0.46 | 1.2 | 1 | | G1 | 0.011 | 7 | 0.074 | | 0.074 | 0.33 | 0.083 | 0.138 | 1.37 | 6.581 | 6.451 | 6.744 | 6.701 | 6.818 | 7.865 | 1.047 | 1/2 |
| 2/2 | 2/2 to 3/2 | 90 | 0.9 | 0.75 | 10 | 171 | 0.008 | 0.007 | 3 | 5 | 221 | 0.007 | 0.007 | 4 | 5 | 1.494 | 0.022 | 0.01 | 0.97 | 3 | FSIP-9x9 | 3 | 3 | 3/2 | 5.11 | 219 | 0.011 | 92 | 14.455 | 1.86 | 375 | 0.83 | 1.15 | 0.05 | 1 | T1/T3 | 0.035 | 1.34 | 0.048 | 1.62 | 0.057 | 2.15 | 0.248 | 0.162 | 2.02 | 6.431 | 6.162 | 6.654 | 6.344 | 6.711 | 7.738 | 1.027 | 2/2 |
| 3/2 | 3/2 to 4/2 | 90 | 0.9 | 0.75 | 10 | 171 | 0.009 | 0.008 | 4 | 5 | 221 | 0.008 | 0.007 | 5 | 7 | 1.664 | 0.025 | 0.01 | 0.98 | 3 | FSIP-9x9 | 4 | 4 | 4/2 | 5.12 | 219 | 0.019 | 130 | 14.637 | 1 | 525 | 0.6 | 1.04 | 0.04 | 0.71 | T1/T3 | 0.018 | 0.88 | 0.016 | 1.1 | 0.02 | 0.79 | 0.14 | 0.198 | 1.74 | 6.087 | 5.941 | 6.328 | 6.212 | 6.348 | 7.595 | 1.248 | 3/2 |
| 4/2 | 4/2 to 5/2 | 90 | 0.9 | 0.75 | 10 | 171 | 0.01 | 0.009 | 4 | 5 | 221 | 0.01 | 0.009 | 5 | 9 | 1.801 | 0.027 | 0.01 | 0.97 | 3 | FSIP-9x9 | 5 | 5 | 5/2 | 5.24 | 218 | 0.027 | 172 | 14.386 | 1 | 525 | 0.79 | 1.02 | 0.03 | 1 | T1 | 0.032 | 0.4 | 0.013 | 0.41 | 0.013 | 0.84 | 0.141 | 0.231 | 1.88 | 5.921 | 5.777 | 6.199 | 6.078 | 6.213 | 7.453 | 1.24 | 4/2 |
| 5/2 | 5/2 to 6/2 | 90 | 0.9 | 0.75 | 10 | 171 | 0.018 | 0.016 | 8 | 5 | 221 | 0.017 | 0.015 | 9 | 14 | 2.113 | 0.032 | 0.01 | 0.97 | 3 | FSIP-9x9 | 7 | 7 | 6/2 | 5.24 | 218 | 0.042 | 178 | 14.561 | 0.5 | 600 | 0.63 | 1 | 0.04 | 0.88 | T1 | 0.02 | 0 | 0 | | 0 | 0.03 | 0.019 | 0.268 | 1.46 | 5.702 | 5.629 | 6.078 | 6.073 | 6.078 | 7.313 | 1.235 | 5/2 |
| 6/2 | 6/2 to 7/2 | 90 | 0.9 | 0.75 | 10 | 171 | 0.017 | 0.015 | 7 | 5 | 221 | 0.016 | 0.015 | 9 | 16 | 2.451 | 0.034 | 0.01 | 0.97 | 3 | FSIP-9x9 | 8 | 9 | 7/2 | 5.36 | 216 | 0.057 | 216 | 11.134 | 0.5 | 600 | 0.77 | 1.11 | 0.04 | 1 | T3/T6 | 0.03 | 1.79 | 0.053 | 2.17 | 0.065 | 0.05 | 0.018 | 0.3 | 1.53 | 5.609 | 5.554 | 6.02 | 6.014 | 6.085 | 7.271 | 1.186 | 6/2 |
| 7/2 | 7/2 to 8/2 | 90 | 0.9 | 0.75 | 10 | 171 | 0.029 | 0.025 | 12 | 5 | 221 | 0.027 | 0.024 | 15 | 27 | 4.796 | 0.035 | 0.01 | 0.5 | 3 | FSIP-9x9 | 12 | 15 | 8/2 | 5.32 | 217 | 0.102 | 325 | 9.2 | 0.5 | 675 | 0.91 | 1.16 | 0.04 | 1 | T6/T9 | 0.042 | 2.18 | 0.092 | 2.52 | 0.106 | 0.06 | 0.021 | 0.356 | 1.7 | 5.479 | 5.433 | 5.922 | 5.916 | 6.028 | 7.156 | 1.128 | 7/2 |
| 8/2 | 8/2 to 9/2 | 90 | 0.9 | 0.75 | 10 | 171 | 0.007 | 0.006 | 3 | 5 | 221 | 0.007 | 0.006 | 4 | 19 | 2.685 | 0.04 | 0.01 | 0.5 | 3 | FSIP-9x9 | 9 | 10 | 9/2 | 5.39 | 215 | 0.108 | 369 | 12.55 | 0.5 | 675 | 1.03 | 1.03 | 0.03 | 1 | T1 | 0.054 | 0.32 | 0.018 | | 0.018 | 0.09 | 0.028 | 0.385 | 1.75 | 5.413 | 5.35 | 5.899 | 5.887 | 5.916 | 7.11 | 1.194 | 8/2 |
| 9/2 | 9/2 to 10/2 | 90 | 0.9 | 0.75 | 10 | 171 | 0.009 | 0.008 | 4 | 5 | 221 | 0.008 | 0.007 | 5 | 15 | 2.453 | 0.037 | 0.01 | 0.5 | 3 | FSIP-9x9 | 7 | 8 | 10/2 | 5.41 | 215 | 0.115 | 225 | 8.038 | 1 | 750 | 0.51 | 1 | 0.02 | 0.9 | T1 | 0.013 | 0 | 0 | | 0 | 1.73 | 0.047 | 0.229 | 1.97 | 5.6 | 5.52 | 5.887 | 5.748 | 5.887 | 7.048 | 1.16 | 9/2 |
| 10/2 | 10/2 to 11/2 | 90 | 0.9 | 0.75 | 10 | 171 | 0.006 | 0.005 | 2 | 5 | 221 | 0.005 | 0.005 | 3 | 11 | 2.182 | 0.033 | 0.01 | 0.5 | 3 | FSIP-9x9 | 5 | 6 | 11/2 | 5.57 | 213 | 0.121 | 380 | 3.087 | 0.4 | 750 | 0.86 | 1.13 | 0.02 | 1 | T6/T9 | 0.038 | 2.36 | 0.089 | 2.66 | 0.1 | 0.07 | 0.004 | 0.392 | 1.62 | 4.707 | 4.695 | 5.259 | 5.257 | 5.359 | 7.007 | 1.648 | 10/2 |
| 11/2 | 11/2 to 12/2 | 90 | 0.9 | 0.75 | 10 | 171 | 0.003 | 0.003 | 1 | 5 | 221 | 0.003 | 0.002 | 2 | 7 | | 0.027 | | 0.5 | 0.5 | FSIP-9x9 | 7 | 0 | LOST | 5.59 | 213 | 0.123 | 387 | 18.687 | 0.4 | 750 | 0.88 | 1.14 | 0.02 | 1 | T9/T10 | 0.039 | 2.35 | 0.092 | 2.74 | 0.107 | 0.08 | 0.033 | 0.397 | 1.63 | 4.675 | 4.6 | 5.165 | 5.15 | 5.272 | 6.9 | 1.628 | 11/2 |
| 12/2 | 12/2 to 13/2 | 0 | | | | | | | | | | | | | | | | | | | MH1050 | | | | 5.75 | 211 | 0.123 | 386 | 11.931 | 3.11 | 600 | 1.37 | 1.36 | 0 | 1 | T3/T6 | 0.095 | 1.9 | 0.181 | 2.25 | 0.214 | 1.25 | 0.236 | 0.248 | 3.51 | 4.562 | 4.191 | 4.969 | 4.82 | 5.183 | 6.6 | 1.417 | 12/2 |
| 13/2 | | | | | | | | | | | | | | | | | | | | | FSIP-9x9 | | | | | | | | | | | | | | | | | | | | | | | | | | 4.82 | 6.048 | | 13/2 |
| 1/3 | 1/3 to 2/3 | 90 | 0.9 | 0.75 | 10 | 171 | 0.005 | 0.004 | 2 | 5 | 221 | 0.005 | 0.004 | 3 | 3 | 1.269 | 0.019 | 0 | 0.5 | 3 | FSIP-9x9 | 1 | 1 | 2/3 | 5 | 221 | 0.004 | 25 | 10.111 | 1 | 375 | 0.23 | 1.05 | 1 | | G1 | 0.003 | 7 | 0.019 | | 0.019 | 0.46 | 0.073 | 0.096 | 1.13 | 6.138 | 6.037 | 6.251 | 6.205 | 6.27 | 7.247 | 0.977 | 1/3 |
| 2/3 | 2/3 to 3/3 | 90 | 0.9 | 0.75 | 10 | 171 | 0.007 | 0.006 | 3 | 5 | 221 | 0.007 | 0.006 | 4 | 5 | 1.624 | 0.024 | 0.01 | 0.5 | 3 | FSIP-9x9 | 2 | 2 | 3/3 | 5.08 | 220 | 0.01 | 61 | 9.841 | 1 | 375 | 0.55 | 1.03 | 0.09 | 1 | T1 | 0.015 | 0.62 | 0.01 | | 0.01 | 1.27 | 0.088 | 0.152 | 1.44 | 6.017 | 5.918 | 6.196 | 6.07 | 6.205 | 7.196 | 0.991 | 2/3 |
| 3/3 | 3/3 to 4/3 | 90 | 0.9 | 0.75 | 10 | 171 | 0.007 | 0.006 | 3 | 5 | 221 | 0.007 | 0.006 | 4 | 6 | 1.757 | 0.026 | 0.01 | 0.5 | 3 | FSIP-9x9 | 3 | 3 | 4/3 | 5.08 | 220 | 0.016 | 73 | 9.799 | 0.66 | 450 | 0.46 | 1 | 0.05 | 0.83 | T1 | 0.011 | 0 | 0 | | 0 | 0.12 | 0.045 | 0.173 | 1.29 | 5.843 | 5.779 | 6.029 | 6.018 | 6.029 | 7.147 | 1.118 | 3/3 |
| 4/3 | 4/3 to 8/2 | 90 | 0.9 | 0.75 | 10 | 171 | 0.006 | 0.006 | 3 | 5 | 221 | 0.006 | 0.005 | 3 | 6 | 1.781 | 0.027 | 0.01 | 0.5 | 3 | FSIP-9x9 | 3 | 3 | 7/2 | 5.16 | 219 | 0.021 | 76 | 8.302 | 0.66 | 450 | 0.48 | 1.01 | 0.04 | 1 | T1 | 0.012 | 0.4 | 0.005 | | 0.005 | -0.01 | 0.012 | 0.177 | 1.3 | 5.759 | 5.704 | 6.013 | 6.014 | 6.018 | 7.098 | 1.08 | 4/3 |

Q10 CALCULATION TABLES

FILE: 21-000157-115.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS:

| | | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| FIRST ISSUE | | WP | WP | SP | SP | 27.07.21 | |
| AMENDMENTS | A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| | B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| | C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| | D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| | E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| | F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 10 20 30 40 50 60 70 80
SCALE 1:1000 (A1) SCALE 1:2000 (A3)

CLIENT: STOCKLAND DEVELOPMENTS PTY LTD

Stockland

calibre
© calibregroup.com
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522

PROJECT: BARINGA LOT 8002

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY. DO NOT SCALE.

DRAWING TITLE: STORMWATER Q10 CALCULATION TABLES

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-115 | F |

| LOCATION | | CATCHMENT PROPERTIES | | | FULL AREA RUNOFF | | | | | PART AREA RUNOFF | | | | | INLET DESIGN | | | | | | | | | | DRAIN DESIGN | | | | | | | | HEADLOSSES | | | | | | | | | PART FULL | | DESIGN LEVELS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | fi | Ci | Cp | tc | I | A | CA | Q | tc | I | A | CA | Q | Qa | | | | | | | Qg | Qb | | tc | I | CA | Qp | L | S | | Vf | S/Do | Qg/Qo | Du/Do | | Vf2/2g | Ku | hu | Kw | hw | Sf | hf | dn | Vn | | | | | | | | |
| STRUCTURE No. | DRAIN SECTION | FRACTION IMPERVIOUS | COEFFICIENT OF RUNOFF IMPERVIOUS AREA | COEFFICIENT OF RUNOFF PERVIOUS AREA | TIME OF CONCENTRATION | RAINFALL INTENSITY | SUB-CATCHMENT AREA | EQUIVALENT IMPERVIOUS AREA | SUB-CATCHMENT DISCHARGE | TIME OF CONCENTRATION | RAINFALL INTENSITY | PARTIAL CATCHMENT AREA | EQUIVALENT IMPERVIOUS AREA | SUB-CATCHMENT DISCHARGE | FLOW IN K&C(INC. BYPASS) | FLOW WIDTH | FLOW DEPTH | FLOW DxV | ROAD GRADE AT INLET | ROAD XFALL AT INLET | INLET TYPE | FLOW INTO INLET | BYPASS FLOW | BYPASS STRUCTURE No. | CRITICAL TIME OF CONC. | RAINFALL INTENSITY | TOTAL (C x A) | PIPE FLOW | REACH LENGTH | PIPE GRADE | PIPE SIZE | FULL PIPE VELOCITY | SUBMERGENCE RATIO | GRATE FLOW RATIO | DIAMETER RATIO | CHART(S) USED | VELOCITY HEAD | U/S HEAD LOSS COEFFICIENT | U/S HEAD LOSS | W.S.E COEFFICIENT | CHANGE IN W.S.E | PIPE FRICTION SLOPE | PIPE FRICTION HEAD LOSS | NORMAL DEPTH | NORMAL DEPTH VEL. | PIPE U/S I.L | PIPE D/S I.L | PIPE U/S H.G.L | PIPE D/S H.G.L | W.S.E | GRATE LEVEL | FREEBOARD | STRUCTURE No. |
| | | | | | min | mm/h | ha | ha | L/s | min | mm/h | ha | ha | L/s | L/s | m | m | | % | % | | L/s | L/s | | min | mm/hr | ha | L/s | m | % | mm | m/s | | | | | m | | m | | m | | | m | m/s | m | m | m | m | m | m | m | |
| 1/1 | 1/1 to 2/1 | 90 | 0.9 | 0.75 | 10 | 249 | 0.048 | 0.043 | 29 | 5 | 319 | 0.046 | 0.041 | 36 | 36 | | | | 1 | 3 | GULLY MK-S | 29 | 7 | LOST | 5 | 319 | 0.041 | 29 | 15.151 | 1 | 375 | 0.26 | 1.07 | 1 | | G1 | 0.003 | 7 | 0.024 | | 0.024 | 1.12 | 0.144 | 0.103 | 1.17 | 5.952 | 5.8 | 6.073 | 5.903 | 6.098 | 6.958 | 0.86 | 1/1 |
| 2/1 | | | | | | | | | | | | | | | | | | | | | MH1050 | | | | | | | | | | | | | | | | | | | | | | | | | | 5.903 | 6.919 | | 2/1 |
| 1/2 | 1/2 to 2/2 | 90 | 0.9 | 0.75 | 10 | 249 | 0.005 | 0.005 | 3 | 5 | 319 | 0.005 | 0.005 | 4 | 4 | 1.337 | 0.02 | 0.01 | 0.97 | 3 | FSIP-9x9 | 2 | 2 | 2/2 | 5 | 319 | 0.005 | 72 | 12.962 | 1 | 375 | 0.65 | 2.63 | 1 | | G1 | 0.021 | 3.59 | 0.077 | | 0.077 | 0.17 | 0.022 | 0.167 | 1.51 | 6.581 | 6.451 | 7.49 | 7.469 | 7.567 | 7.865 | 0.298 | 1/2 |
| 2/2 | 2/2 to 3/2 | 90 | 0.9 | 0.75 | 10 | 249 | 0.008 | 0.007 | 5 | 5 | 319 | 0.007 | 0.007 | 6 | 8 | 1.747 | 0.026 | 0.01 | 0.97 | 3 | FSIP-9x9 | 3 | 5 | 3/2 | 5.11 | 317 | 0.011 | 131 | 14.455 | 1.86 | 375 | 1.19 | 2.8 | 0.04 | 1 | T1/T3 | 0.072 | 0.96 | 0.069 | 1.11 | 0.079 | 0.56 | 0.081 | 0.198 | 2.21 | 6.431 | 6.162 | 7.4 | 7.32 | 7.479 | 7.738 | 0.259 | 2/2 |
| 3/2 | 3/2 to 4/2 | 90 | 0.9 | 0.75 | 10 | 249 | 0.009 | 0.008 | 5 | 5 | 319 | 0.008 | 0.007 | 7 | 12 | 1.978 | 0.03 | 0.01 | 0.98 | 3 | FSIP-9x9 | 5 | 7 | 4/2 | 5.12 | 317 | 0.019 | 185 | 14.637 | 1 | 525 | 0.86 | 2.35 | 0.03 | 0.71 | T1/T3 | 0.037 | 0.65 | 0.024 | 0.74 | 0.028 | 0.19 | 0.027 | 0.241 | 1.91 | 6.087 | 5.941 | 7.295 | 7.268 | 7.323 | 7.595 | 0.272 | 3/2 |
| 4/2 | 4/2 to 5/2 | 90 | 0.9 | 0.75 | 10 | 249 | 0.01 | 0.009 | 6 | 5 | 319 | 0.01 | 0.009 | 8 | 15 | 2.17 | 0.033 | 0.01 | 0.97 | 3 | FSIP-9x9 | 6 | 9 | 5/2 | 5.24 | 314 | 0.027 | 247 | 14.386 | 1 | 525 | 1.14 | 2.57 | 0.03 | 1 | T1 | 0.066 | 0.32 | 0.021 | | 0.022 | 0.33 | 0.047 | 0.285 | 2.05 | 5.921 | 5.777 | 7.247 | 7.2 | 7.268 | 7.453 | 0.184 | 4/2 |
| 5/2 | 5/2 to 6/2 | 90 | 0.9 | 0.75 | 10 | 249 | 0.018 | 0.016 | 11 | 5 | 319 | 0.017 | 0.015 | 14 | 23 | 2.547 | 0.038 | 0.02 | 0.97 | 3 | FSIP-9x9 | 8 | 15 | 6/2 | 5.24 | 314 | 0.042 | 254 | 14.561 | 0.5 | 600 | 0.9 | 2.5 | 0.03 | 0.88 | T1 | 0.041 | -0.16 | -0.006 | | -0.006 | 0.17 | 0.025 | 0.33 | 1.6 | 5.702 | 5.629 | 7.206 | 7.181 | 7.2 | 7.313 | 0.113 | 5/2 |
| 6/2 | 6/2 to 7/2 | 90 | 0.9 | 0.75 | 10 | 249 | 0.017 | 0.015 | 11 | 5 | 319 | 0.016 | 0.015 | 13 | 28 | 3.147 | 0.041 | 0.02 | 0.97 | 3 | FSIP-9x9 | 10 | 18 | 7/2 | 5.36 | 312 | 0.057 | 308 | 11.134 | 0.5 | 600 | 1.09 | 2.64 | 0.04 | 1 | T3/T6 | 0.061 | 1.33 | 0.081 | 1.53 | 0.093 | 0.25 | 0.028 | 0.374 | 1.67 | 5.609 | 5.554 | 7.1 | 7.072 | 7.193 | 7.271 | 0.078 | 6/2 |
| 7/2 | 7/2 to 8/2 | 90 | 0.9 | 0.75 | 10 | 249 | 0.029 | 0.025 | 17 | 5 | 319 | 0.027 | 0.024 | 21 | 46 | 5.915 | 0.043 | 0.02 | 0.5 | 3 | FSIP-9x9 | 15 | 31 | 8/2 | 5.32 | 313 | 0.102 | 463 | 9.2 | 0.5 | 675 | 1.29 | 2.38 | 0.03 | 1 | T6/T9 | 0.085 | 1.79 | 0.152 | 1.95 | 0.167 | 0.3 | 0.028 | 0.448 | 1.84 | 5.479 | 5.433 | 6.92 | 6.892 | 7.087 | 7.156 | 0.07 | 7/2 |
| 8/2 | 8/2 to 9/2 | 90 | 0.9 | 0.75 | 10 | 249 | 0.007 | 0.006 | 4 | 5 | 319 | 0.007 | 0.006 | 5 | 37 | 3.444 | 0.052 | 0.02 | 0.5 | 3 | FSIP-9x9 | 12 | 25 | 9/2 | 5.39 | 311 | 0.108 | 524 | 12.55 | 0.5 | 675 | 1.46 | 2.19 | 0.03 | 1 | T1 | 0.109 | 0.29 | 0.032 | | 0.032 | 0.39 | 0.049 | 0.492 | 1.87 | 5.413 | 5.35 | 6.86 | 6.811 | 6.892 | 7.11 | 0.218 | 8/2 |
| 9/2 | 9/2 to 10/2 | 90 | 0.9 | 0.75 | 10 | 249 | 0.009 | 0.008 | 5 | 5 | 319 | 0.008 | 0.007 | 7 | 31 | 3.241 | 0.049 | 0.02 | 0.5 | 3 | FSIP-9x9 | 11 | 20 | 10/2 | 5.41 | 311 | 0.115 | 384 | 8.038 | 1 | 750 | 0.87 | 1.61 | 0.02 | 0.9 | T1 | 0.039 | -0.08 | -0.003 | | -0.003 | 0.12 | 0.01 | 0.304 | 2.29 | 5.6 | 5.52 | 6.814 | 6.805 | 6.811 | 7.048 | 0.236 | 9/2 |
| 10/2 | 10/2 to 11/2 | 90 | 0.9 | 0.75 | 10 | 249 | 0.006 | 0.005 | 3 | 5 | 319 | 0.005 | 0.005 | 4 | 25 | 2.973 | 0.045 | 0.02 | 0.5 | 3 | FSIP-9x9 | 9 | 16 | 11/2 | 5.48 | 309 | 0.12 | 542 | 3.087 | 0.4 | 750 | 1.23 | 2.82 | 0.02 | 1 | T6/T9 | 0.077 | 1.81 | 0.139 | 2 | 0.154 | 0.24 | 0.007 | 0.494 | 1.76 | 4.707 | 4.695 | 6.665 | 6.658 | 6.819 | 7.007 | 0.188 | 10/2 |
| 11/2 | 11/2 to 12/2 | 90 | 0.9 | 0.75 | 10 | 249 | 0.003 | 0.003 | 2 | 5 | 319 | 0.003 | 0.002 | 2 | 18 | | 0.097 | | 0.5 | 0.5 | FSIP-9x9 | 18 | 0 | LOST | 5.51 | 309 | 0.122 | 560 | 18.687 | 0.4 | 750 | 1.27 | 2.67 | 0.03 | 1 | T9/T10 | 0.082 | 1.87 | 0.153 | 2.07 | 0.17 | 0.25 | 0.047 | 0.505 | 1.77 | 4.675 | 4.6 | 6.505 | 6.458 | 6.675 | 6.9 | 0.225 | 11/2 |
| 12/2 | 12/2 to 13/2 | 0 | | | | | | | | | | | | | | | | | | | MH1050 | | | | 5.66 | 306 | 0.122 | 559 | 11.931 | 3.11 | 600 | 1.98 | 3.21 | 0 | 1 | T3/T6 | 0.2 | 1.31 | 0.261 | 1.45 | 0.29 | 0.83 | 0.099 | 0.306 | 3.86 | 4.562 | 4.191 | 6.197 | 6.098 | 6.487 | 6.6 | 0.113 | 12/2 |
| 13/2 | | | | | | | | | | | | | | | | | | | | | FSIP-9x9 | | | | | | | | | | | | | | | | | | | | | | | | | | 6.098 | 6.048 | | 13/2 |
| 1/3 | 1/3 to 2/3 | 90 | 0.9 | 0.75 | 10 | 249 | 0.005 | 0.004 | 3 | 5 | 319 | 0.005 | 0.004 | 4 | 4 | 1.456 | 0.022 | 0.01 | 0.5 | 3 | FSIP-9x9 | 1 | 2 | 2/3 | 5 | 319 | 0.004 | 36 | 10.111 | 1 | 375 | 0.33 | 2.72 | 1 | | G1 | 0.006 | 3.49 | 0.019 | | 0.019 | 0.04 | 0.004 | 0.116 | 1.25 | 6.138 | 6.037 | 7.137 | 7.133 | 7.157 | 7.247 | 0.09 | 1/3 |
| 2/3 | 2/3 to 3/3 | 90 | 0.9 | 0.75 | 10 | 249 | 0.007 | 0.006 | 4 | 5 | 319 | 0.007 | 0.006 | 5 | 7 | 1.9 | 0.028 | 0.01 | 0.5 | 3 | FSIP-9x9 | 3 | 4 | 3/3 | 5.08 | 317 | 0.01 | 87 | 9.841 | 1 | 375 | 0.79 | 2.98 | 0.08 | 1 | T1 | 0.032 | 0.42 | 0.014 | | 0.014 | 0.25 | 0.024 | 0.187 | 1.59 | 6.017 | 5.918 | 7.119 | 7.095 | 7.133 | 7.196 | 0.063 | 2/3 |
| 3/3 | 3/3 to 4/3 | 90 | 0.9 | 0.75 | 10 | 249 | 0.007 | 0.006 | 4 | 5 | 319 | 0.007 | 0.006 | 5 | 10 | 2.094 | 0.031 | 0.01 | 0.5 | 3 | FSIP-9x9 | 4 | 6 | 4/3 | 5.08 | 317 | 0.016 | 104 | 9.799 | 0.66 | 450 | 0.66 | 2.78 | 0.04 | 0.83 | T1 | 0.022 | -0.44 | -0.01 | | -0.01 | 0.13 | 0.013 | 0.212 | 1.42 | 5.843 | 5.779 | 7.105 | 7.092 | 7.095 | 7.147 | 0.052 | 3/3 |
| 4/3 | 4/3 to 8/2 | 90 | 0.9 | 0.75 | 10 | 249 | 0.006 | 0.006 | 4 | 5 | 319 | 0.006 | 0.005 | 5 | 11 | 2.16 | 0.032 | 0.01 | 0.5 | 3 | FSIP-9x9 | 4 | 6 | 7/2 | 5.16 | 316 | 0.021 | 108 | 8.302 | 0.66 | 450 | 0.68 | 2.96 | 0.04 | 1 | T1 | 0.024 | 0.32 | 0.007 | | 0.007 | 0.14 | 0.012 | 0.216 | 1.43 | 5.759 | 5.704 | 7.084 | 7.072 | 7.092 | 7.098 | 0.006 | 4/3 |

## Q100 CALCULATION TABLES

FILE: 21-000157-116.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS:

| AMENDMENTS | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|
| FIRST ISSUE | WP | WP | SP | SP | 27.07.21 | |
| A | WP | WP | SP | SP | 05.05.22 | SHEET ADDED |
| B | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| C | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 10 20 30 40 50 60 70 80
SCALE 1:1000 (A1) SCALE 1:2000 (A3)

CLIENT: STOCKLAND DEVELOPMENTS PTY LTD

Stockland

calibre
© calibregroup.com
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522

PROJECT: BARINGA LOT 8002

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY. DO NOT SCALE.

DRAWING TITLE: STORMWATER Q100 CALCULATION TABLES

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-116 | C |

## SETOUT COORDS EDGE OF DRIVEWAY

| | | | |
|---|---|---|---|
| 1 | 508104.284 | 7034692.832 | 7.092 |
| 2 | 508096.580 | 7034694.052 | 7.145 |
| 3 | 508105.110 | 7034698.047 | 7.187 |
| 4 | 508101.653 | 7034698.595 | 7.200 |
| 5 | 508100.863 | 7034698.720 | 7.202 |
| 6 | 508097.406 | 7034699.267 | 7.214 |
| 7 | 508105.853 | 7034702.738 | 7.226 |
| 8 | 508102.396 | 7034703.285 | 7.229 |
| 9 | 508101.606 | 7034703.410 | 7.230 |
| 10 | 508098.149 | 7034703.958 | 7.231 |
| 11 | 508106.103 | 7034704.318 | 7.236 |
| 12 | 508102.646 | 7034704.865 | 7.230 |
| 13 | 508101.856 | 7034704.991 | 7.230 |
| 14 | 508098.399 | 7034705.538 | 7.236 |
| 15 | 508106.737 | 7034708.319 | 7.260 |
| 16 | 508103.280 | 7034708.867 | 7.212 |
| 17 | 508102.490 | 7034708.992 | 7.212 |
| 18 | 508099.033 | 7034709.539 | 7.260 |
| 19 | 508107.166 | 7034711.027 | 7.266 |
| 20 | 508103.314 | 7034711.637 | 7.179 |
| 21 | 508099.548 | 7034712.794 | 7.268 |
| 22 | 508110.693 | 7034721.812 | 7.056 |
| 23 | 508108.126 | 7034719.807 | 7.088 |

## SETOUT COORDS EDGE OF DRIVEWAY

| | | | |
|---|---|---|---|
| 24 | 508104.754 | 7034718.263 | 7.125 |
| 25 | 508101.950 | 7034718.210 | 7.152 |
| 26 | 508102.319 | 7034721.189 | 7.243 |
| 27 | 508097.657 | 7034715.397 | 7.293 |
| 28 | 508094.317 | 7034715.926 | 7.325 |
| 29 | 508094.857 | 7034719.333 | 7.222 |
| 30 | 508095.326 | 7034722.296 | 7.312 |
| 31 | 508090.463 | 7034716.536 | 7.364 |
| 32 | 508090.885 | 7034719.950 | 7.261 |
| 33 | 508091.254 | 7034722.941 | 7.352 |
| 34 | 508086.640 | 7034717.142 | 7.395 |
| 35 | 508086.922 | 7034720.314 | 7.300 |
| 36 | 508087.449 | 7034723.279 | 7.387 |
| 37 | 508087.731 | 7034725.056 | 7.405 |
| 38 | 508084.966 | 7034725.494 | 7.435 |
| 39 | 508084.654 | 7034723.527 | 7.415 |
| 40 | 508085.523 | 7034729.013 | 7.470 |
| 41 | 508065.769 | 7034732.141 | 7.667 |
| 42 | 508064.885 | 7034726.561 | 7.610 |
| 43 | 508082.343 | 7034717.822 | 7.429 |
| 44 | 508082.805 | 7034720.736 | 7.340 |
| 45 | 508083.266 | 7034723.650 | 7.429 |
| 46 | 508071.616 | 7034719.521 | 7.535 |

## SETOUT COORDS EDGE OF DRIVEWAY

| | | | |
|---|---|---|---|
| 47 | 508072.078 | 7034722.435 | 7.446 |
| 48 | 508072.539 | 7034725.348 | 7.535 |
| 49 | 508063.715 | 7034720.773 | 7.613 |
| 50 | 508064.176 | 7034723.686 | 7.524 |
| 51 | 508056.801 | 7034721.868 | 7.681 |
| 52 | 508057.263 | 7034724.781 | 7.592 |
| 53 | 508057.724 | 7034727.695 | 7.681 |
| 54 | 508050.676 | 7034722.838 | 7.751 |
| 55 | 508052.122 | 7034726.104 | 7.644 |
| 56 | 508053.146 | 7034728.420 | 7.720 |
| 57 | 508045.571 | 7034726.934 | 7.788 |
| 58 | 508047.417 | 7034729.235 | 7.699 |
| 59 | 508049.263 | 7034731.536 | 7.788 |
| 60 | 508042.847 | 7034729.120 | 7.816 |
| 61 | 508043.871 | 7034731.436 | 7.740 |
| 62 | 508045.160 | 7034734.828 | 7.851 |
| 63 | 508039.686 | 7034729.620 | 7.867 |
| 64 | 508040.148 | 7034732.534 | 7.778 |
| 65 | 508040.625 | 7034735.546 | 7.870 |
| 66 | 508033.839 | 7034730.547 | 7.924 |
| 67 | 508034.301 | 7034733.460 | 7.836 |
| 68 | 508034.778 | 7034736.473 | 7.927 |
| 69 | 508026.877 | 7034731.650 | 7.993 |

## SETOUT COORDS EDGE OF DRIVEWAY

| | | | |
|---|---|---|---|
| 70 | 508027.339 | 7034734.563 | 7.905 |
| 71 | 508027.816 | 7034737.575 | 7.996 |
| 72 | 508021.396 | 7034732.518 | 8.020 |
| 73 | 508021.858 | 7034735.431 | 7.932 |
| 74 | 508022.335 | 7034738.443 | 8.023 |
| 75 | 508017.001 | 7034733.214 | 8.003 |
| 76 | 508017.462 | 7034736.128 | 7.914 |
| 77 | 508017.939 | 7034739.140 | 8.006 |
| 78 | 508012.927 | 7034733.859 | 7.970 |
| 79 | 508013.389 | 7034736.773 | 7.882 |
| 80 | 508013.866 | 7034739.785 | 7.973 |
| 81 | 508009.147 | 7034734.458 | 7.850 |
| 82 | 508009.608 | 7034737.372 | 7.852 |
| 83 | 508010.083 | 7034740.368 | 7.855 |

## SETOUT COORDS EDGE OF DRIVEWAY

| | | | |
|---|---|---|---|
| 84 | 508080.543 | 7034755.529 | 7.372 |
| 85 | 508082.907 | 7034757.376 | 7.282 |
| 86 | 508086.059 | 7034759.839 | 7.402 |
| 87 | 508082.237 | 7034753.361 | 7.358 |
| 88 | 508084.601 | 7034755.208 | 7.268 |
| 89 | 508087.753 | 7034757.671 | 7.383 |
| 90 | 508084.477 | 7034750.494 | 7.340 |
| 91 | 508086.841 | 7034752.341 | 7.250 |
| 92 | 508089.993 | 7034754.804 | 7.365 |
| 93 | 508090.634 | 7034742.614 | 7.290 |
| 94 | 508092.998 | 7034744.461 | 7.200 |
| 95 | 508096.150 | 7034746.923 | 7.315 |
| 96 | 508096.790 | 7034734.734 | 7.240 |
| 97 | 508099.154 | 7034736.581 | 7.150 |

## SETOUT COORDS EDGE OF DRIVEWAY

| | | | |
|---|---|---|---|
| 98 | 508102.306 | 7034739.043 | 7.265 |
| 99 | 508097.060 | 7034725.617 | 7.298 |
| 100 | 508101.315 | 7034728.942 | 7.203 |
| 101 | 508103.679 | 7034730.789 | 7.113 |
| 102 | 508106.831 | 7034733.251 | 7.228 |
| 103 | 508100.138 | 7034721.677 | 7.273 |
| 104 | 508104.394 | 7034725.002 | 7.178 |
| 105 | 508106.758 | 7034726.849 | 7.088 |
| 106 | 508109.910 | 7034729.311 | 7.203 |
| 107 | 508113.388 | 7034724.859 | 7.175 |
| 108 | 508113.235 | 7034713.686 | 7.106 |
| 109 | 508115.599 | 7034715.533 | 7.016 |
| 110 | 508118.751 | 7034717.996 | 7.131 |
| 111 | 508118.954 | 7034706.365 | 7.060 |

## SETOUT COORDS EDGE OF DRIVEWAY

| | | | |
|---|---|---|---|
| 112 | 508121.318 | 7034708.212 | 6.970 |
| 113 | 508124.470 | 7034710.675 | 7.085 |
| 114 | 508123.535 | 7034700.502 | 7.023 |
| 115 | 508125.899 | 7034702.349 | 6.933 |
| 116 | 508129.051 | 7034704.812 | 7.048 |
| 117 | 508127.573 | 7034695.334 | 6.990 |
| 118 | 508129.937 | 7034697.180 | 6.900 |
| 119 | 508133.089 | 7034699.643 | 7.001 |
| 120 | 508132.301 | 7034699.028 | 6.990 |
| 121 | 508133.760 | 7034697.095 | 6.935 |
| 122 | 508134.090 | 7034696.314 | 6.900 |
| 123 | 508128.771 | 7034693.800 | 6.900 |

LEGEND

- EXTENT OF WORKS
- ROAD PAVEMENT
- FOOTPATH
- THRESHOLD AWARENESS ZONE
- CARPARKS BY CIVIL
- DRIVEWAYS BY ARCHTECTURAL

N

DRIVEWAY 1

DRIVEWAY 2

DRIVEWAY 3

EVANS LANE

LUKIN TERRACE

BARINGA DRIVE

FILE: 21-000157-117.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: 21-000157-BASE, DA_2.2_DWG (S) LOT 8002 - GROUND LEVEL-03-08-2022, 21-000157-BASE-DC-TURNPATH, 15-002215.006-AS Con

| AMENDMENTS | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|
| FIRST ISSUE | WP | WP | SP | SP | 27.07.21 | |
| A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 2.0 4.0 6.0 8.0 10.0 12.0 14.0 16.0
SCALE 1:200 (A1) SCALE 1:400 (A3)

CLIENT: STOCKLAND DEVELOPMENTS PTY LTD

Stockland

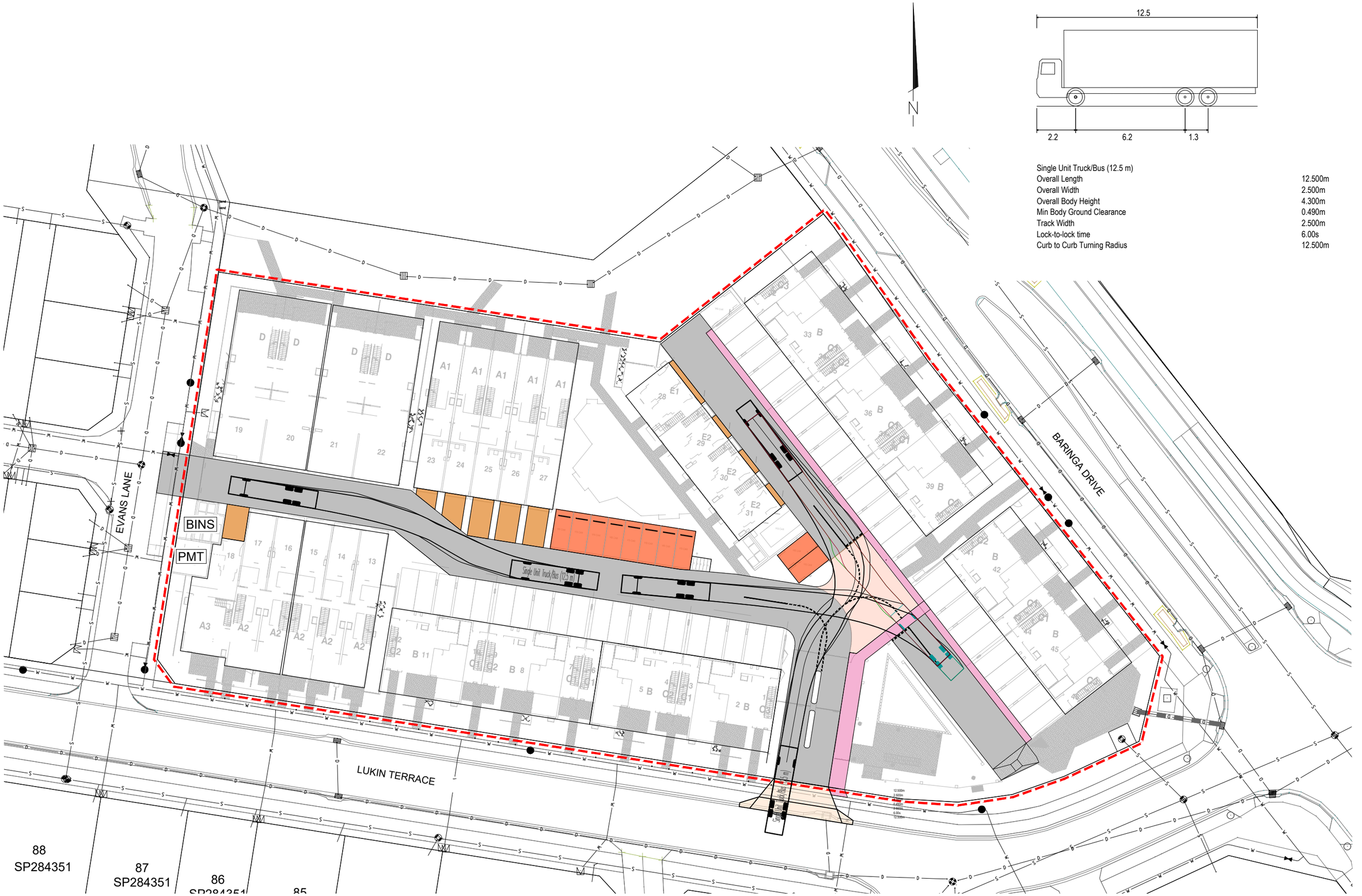
calibre
© calibregroup.com
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522

PROJECT: BARINGA LOT 8002

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.

DRAWING TITLE: DRIVEWAY LEVELS LAYOUT PLAN

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-117 | F |




FILE: 21-000157-118.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: 21-000157-BASE, DA_2.2_DWG (S) LOT 8002 - GROUND LEVEL-03-08-2022, 15-002215.006-AS Con, 21-000157-BASE-DC-TURNPATH

| AMENDMENTS | ISSUE | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| FIRST ISSUE | | WP | WP | SP | SP | 27.07.21 | |
| | A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| | B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| | C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| | D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| | E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| | F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 2.5 5 7.5 10 12.5 15 17.5 20
SCALE 1:250 (A1) SCALE 1:500 (A3)

CLIENT
STOCKLAND DEVELOPMENTS PTY LTD
Stockland

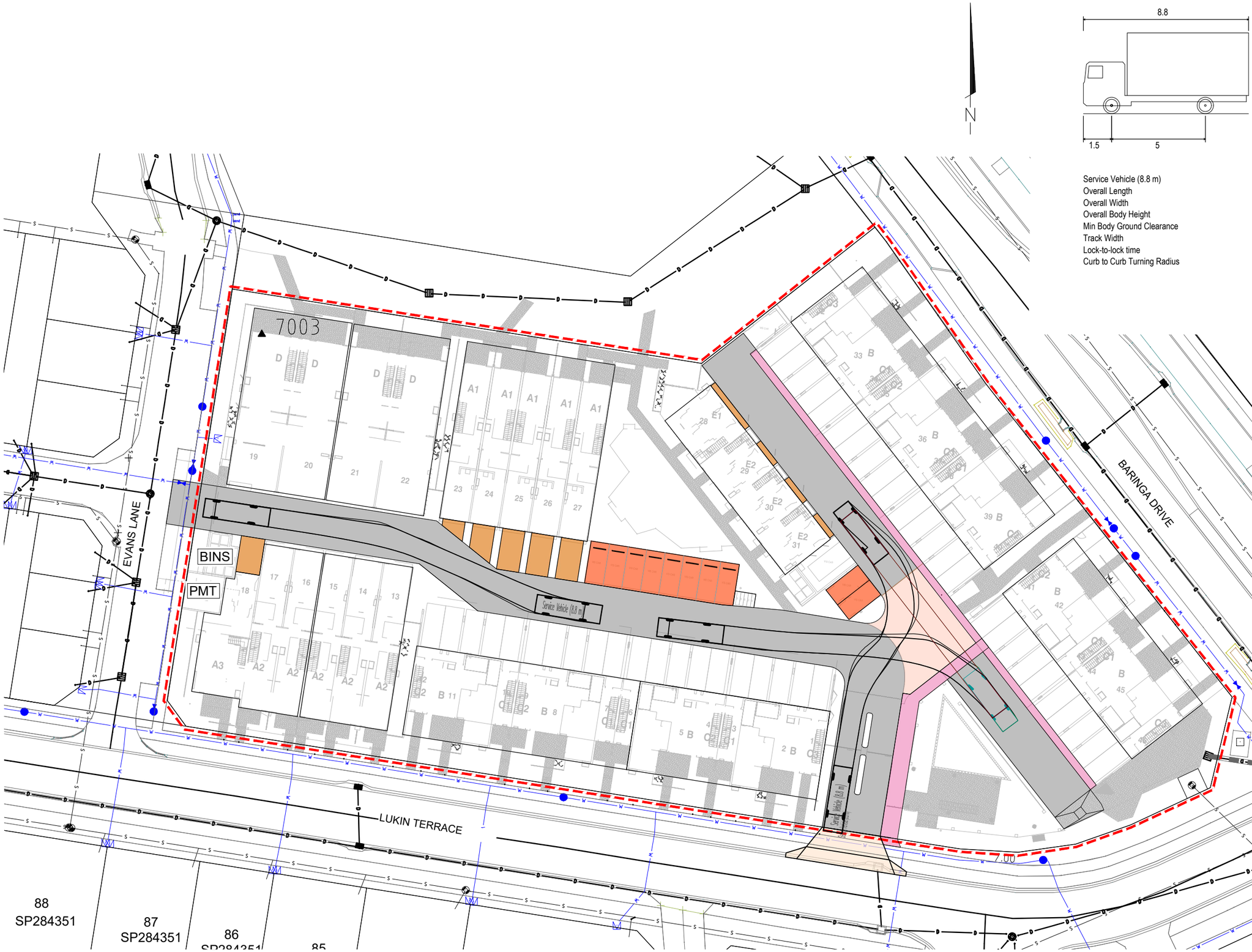
calibre
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522
© calibregroup.com

PROJECT
BARINGA LOT 8002

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY. DO NOT SCALE.

DRAWING TITLE
TURNS PATHS
12.5m SINGLE UNIT TRUCK

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-118 | F |







Service Vehicle (8.8 m)

| | |
|---|---|
| Overall Length | 8.800m |
| Overall Width | 2.500m |
| Overall Body Height | 4.300m |
| Min Body Ground Clearance | 0.427m |
| Track Width | 2.500m |
| Lock-to-lock time | 4.00s |
| Curb to Curb Turning Radius | 12.500m |

FILE: 21-000157-119.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: 21-000157-BASE, DA_2.2_DWG (S) LOT 8002 - GROUND LEVEL-03-08-2022, 21-000157-BASE-DC-TURNPATH, 15-002215.006-AS Con

| | | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| FIRST ISSUE | | WP | WP | SP | SP | 27.07.21 | |
| AMENDMENTS | A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| | B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| | C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| | D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| | E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| | F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS
APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 2.5 5 7.5 10 12.5 15 17.5 20
SCALE 1:250 (A1) SCALE 1:500 (A3)

CLIENT
STOCKLAND DEVELOPMENTS PTY LTD
Stockland

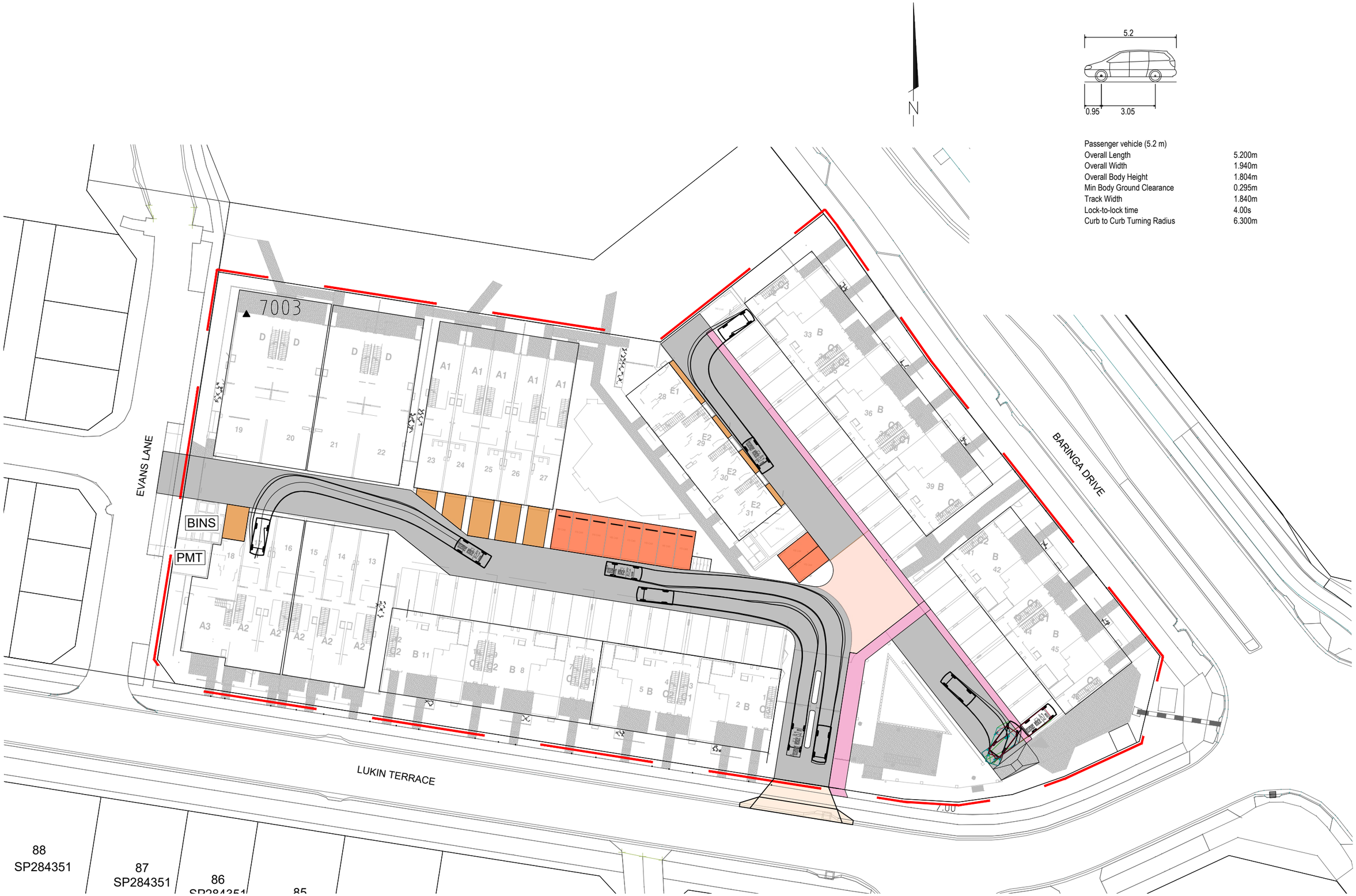

calibre
© calibregroup.com
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522


PROJECT
BARINGA LOT 8002


DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY. DO NOT SCALE.


DRAWING TITLE
TURN PATHS
8.8m SERVICE VEHICLE

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-119 | F |







N

| Passenger vehicle (5.2 m) | |
|---|---|
| Overall Length | 5.200m |
| Overall Width | 1.940m |
| Overall Body Height | 1.804m |
| Min Body Ground Clearance | 0.295m |
| Track Width | 1.840m |
| Lock-to-lock time | 4.00s |
| Curb to Curb Turning Radius | 6.300m |

FILE: 21-000157-120.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: 21-000157-BASE, DA_2.2_DWG (S) LOT 8002 - GROUND LEVEL-03-08-2022, 21-000157-BASE-DC-TURNPATH, 15-002215.006-AS Con

| AMENDMENTS | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|
| FIRST ISSUE | WP | WP | SP | SP | 27.07.21 | |
| A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 2.5 5 7.5 10 12.5 15 17.5 20
SCALE 1:250 (A1) SCALE 1:500 (A3)

CLIENT
STOCKLAND DEVELOPMENTS PTY LTD
Stockland

calibre
© calibregroup.com
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522

PROJECT
BARINGA LOT 8002

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.

DRAWING TITLE
TURN PATHS
5.2m PASSENGER VEHICLE

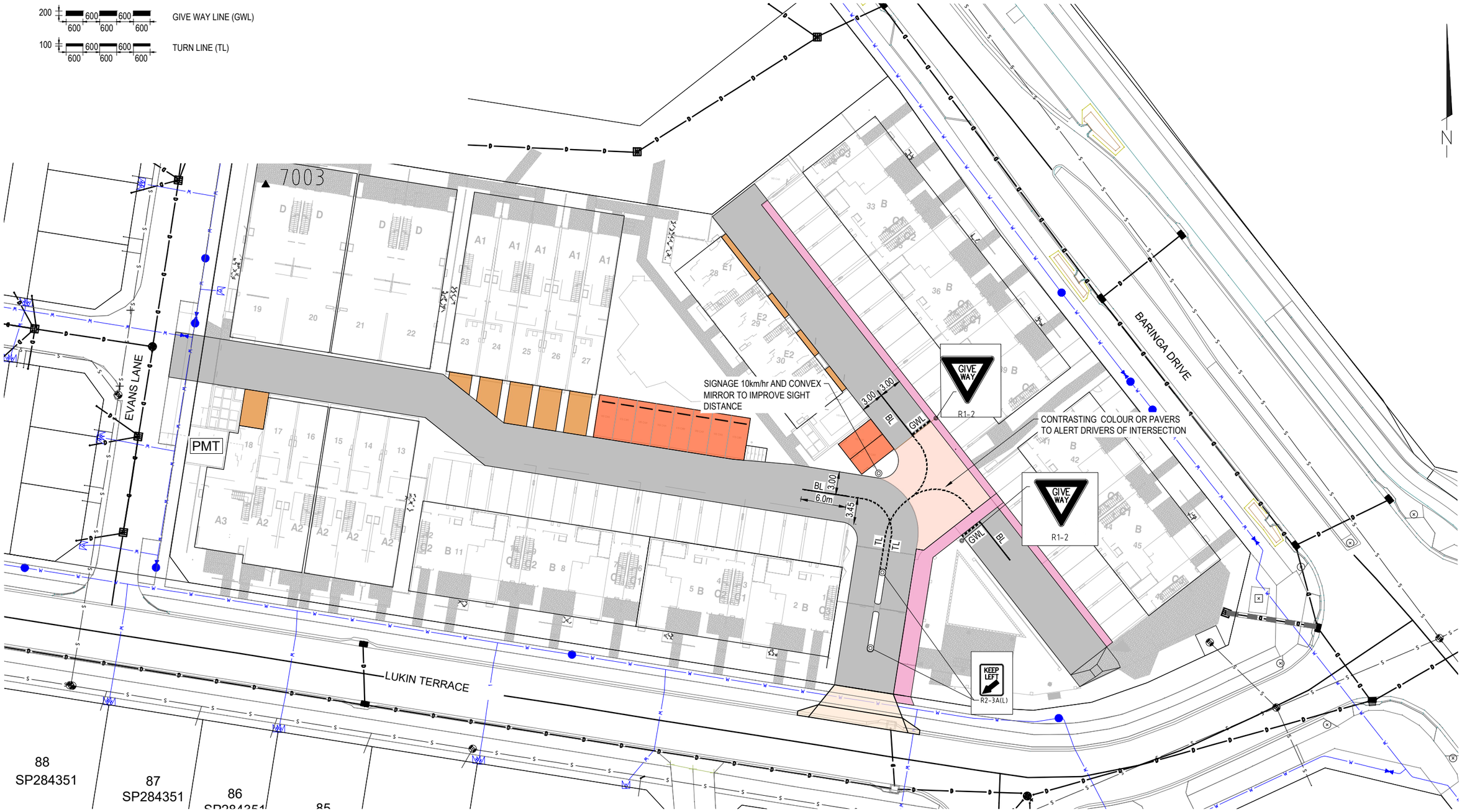
| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-120 | F |

## LINEMARKING DETAILS

DIMENSIONS IN MILIMETERS

200 — 600 600 600 / 600 600 600 — GIVE WAY LINE (GWL)

100 — 600 600 600 / 600 600 600 — TURN LINE (TL)




FILE: 21-000157-121.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: 21-000157-BASE, DA_2.2_DWG (S) LOT 8002 - GROUND LEVEL-03-08-2022, R1-2, 21-000157-BASE-DC-TURNPATH, 15-002215.006-AS Con

| AMENDMENTS | FIRST ISSUE | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| | | WP | WP | SP | SP | 27.07.21 | |
| | A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| | B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| | C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| | D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| | E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| | F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 2.5 5 7.5 10 12.5 15 17.5 20
SCALE 1:250 (A1) SCALE 1:500 (A3)

CLIENT
STOCKLAND DEVELOPMENTS PTY LTD
Stockland


calibre
© calibregroup.com
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522


PROJECT
BARINGA LOT 8002


DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY. DO NOT SCALE.

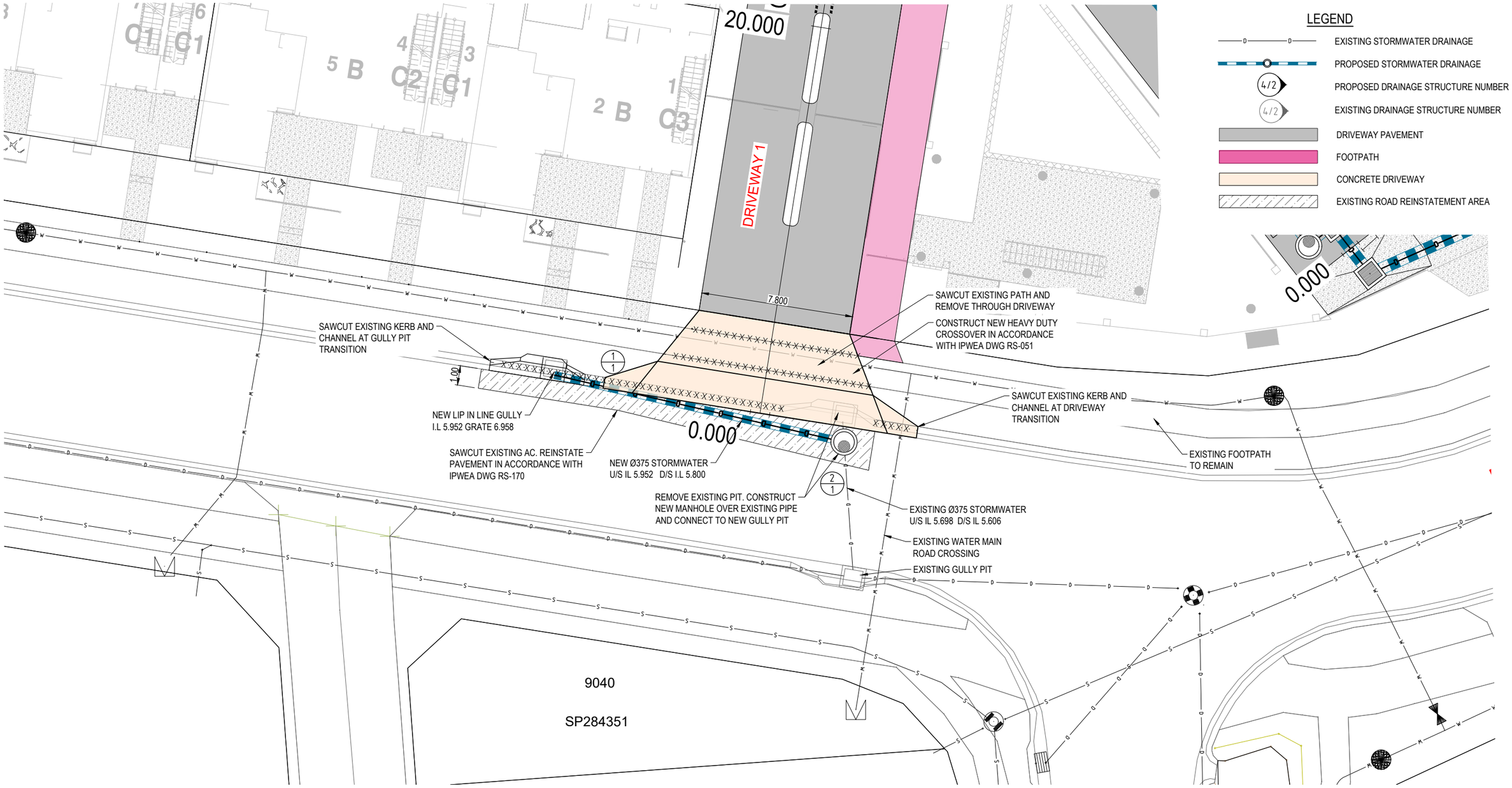

DRAWING TITLE
SIGNS AND LINEMARKING LAYOUT PLAN

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-121 | F |

## ROADWORKS & DRAINAGE NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN.
2. CONTRACTOR TO LIAISE WITH ALL THE RELEVANT SERVICE AUTHORITIES TO ASCERTAIN SERVICES PRESENT ON-SITE. ANY ALTERATION WORKS TO SERVICES WILL BE CARRIED OUT BY THAT SERVICE AUTHORITY ONLY.
3. THE CONTRACTOR SHALL NOTIFY THE SUPERINTENDENT PRIOR TO COMMENCEMENT OF DEMOLISHING ANY EXISTING STRUCTURES WITHIN THE SITE AREAS.
4. NOT WITHSTANDING THE LIMITS OF CUTTING AND FILLING SHOWN ON THE CROSS SECTIONS, THE ACTUAL LIMITS SHALL BE DETERMINED ON-SITE BY THE SUPERINTENDENT DURING CONSTRUCTION AND SIMILARLY THE FINISHED SURFACE CONTOURS MAY BE ADJUSTED BY WRITTEN DIRECTION OF THE SUPERINTENDENT DURING CONSTRUCTION AFTER AMENDED DRAWINGS HAVE BEEN APPROVED BY COUNCIL.
5. ALL ALLOTMENT FILL IS TO BE COMPACTED TO THE REQUIREMENTS OF AS3798-2007 AND IN ACCORDANCE WITH CURRENT SCC. SPECIFICATIONS.
6. VERGE AND BATTERS TO HAVE A MINIMUM OF 75mm TOPSOIL AND FULL WIDTH TURF IF ORDERED.
7. MATCH TO EXISTING AC PAVEMENT EXTENSION OR WIDENING TO BE IN ACCORDANCE WITH IPWEA STD DRG RS-170.
8. SUBGRADE TEST RESULTS TO BE FORWARDED TO SUPERINTENDENT FOR DETERMINATION OF BOX DEPTHS PRIOR TO EXCAVATION TESTS SHALL INCLUDE SOAKED CBR AND/OR OTHER TESTS AS REQUESTED BY THE SUPERINTENDENT.THE CONTRACTOR SHALL ALLOW ADEQUATE TIME FOR COUNCIL APPROVAL OF PAVEMENT DESIGN.
9. LEVELS FOR KERB AND CHANNELLING/EDGE OF PAVEMENT CONSTRUCTION ARE AT EQUAL INTERVALS AT LIP OF CHANNEL UNLESS SHOWN OTHERWISE.
10. SIDE DRAINS TO BE CONSTRUCTED UNDER ALL KERBS AND ALL KERB AND CHANNEL AS PER SCC STANDARDS. REFER TO SCC STD DRG RS-140 FOR DETAILS.
11. ALL STORMWATER PIPES UNDER ROADWAYS AND FOOTPATHS SHALL BE CLASS '2' R.C.P R.R.J. UNLESS NOTED OTHERWISE.
12. THE STORMWATER PIPE CLASSES HAVE BEEN DESIGNED FOR SERVICE LOADS ONLY, AND THE CONTRACTOR SHALL ASSESS ANTICIPATED CONSTRUCTION LOADS AND UPGRADE THE PIPE CLASSES, IF NECESSARY, IN ACCORDANCE WITH A.S 3725-1989. AT THE CONTRACTORS COST.
13. ALL LOTS NOT DRAINING TO A PROPERTY PIT TO HAVE 2 KERB ADAPTORS . KERB ADAPTORS SHOWN ARE INDICATIVE ONLY AND ARE TO BE INSTALLED IN ACCORDANCE WITH SCC STD DRG RS-081.
14. CONCRETE FOOTPATHS TO BE INSTALLED BY THE CIVIL CONTRACTOR UNLESS OTHERWISE NOTED. REFER TO SCC STD DRG RS-065 FOR CONSTRUCTION DETAILS.

N




### LEGEND

- EXISTING STORMWATER DRAINAGE
- PROPOSED STORMWATER DRAINAGE
- 4/2 PROPOSED DRAINAGE STRUCTURE NUMBER
- 4/2 EXISTING DRAINAGE STRUCTURE NUMBER
- DRIVEWAY PAVEMENT
- FOOTPATH
- CONCRETE DRIVEWAY
- EXISTING ROAD REINSTATEMENT AREA

FILE: 21-000157-122.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: 21-000157-BASE, DA_2.2_DWG (S) LOT 8002 - GROUND LEVEL-03-08-2022, 15-002215.006-AS Con, 21-000157-BASE-DC-TURNPATH

| AMENDMENTS | | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| FIRST ISSUE | | WP | WP | SP | SP | 27.07.21 | |
| | A | WP | WP | SP | SP | 29.09.21 | REVISED APPROVAL ISSUE |
| | B | WP | WP | SP | SP | 21.10.21 | TENDER ISSUE |
| | C | WP | WP | SP | SP | 13.12.21 | REISSUE FOR APPROVAL |
| | D | WP | WP | SP | SP | 05.05.22 | AMENDED LAYOUT |
| | E | WP | WP | SP | SP | 12.05.22 | LAYOUT UPDATED |
| | F | WP | WP | SP | SP | 09.08.22 | AMENDED LAYOUT |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: Shaun Pilcher DATE: 31.05.22

SCALE
0 1 2 3 4 5 6 7 8
SCALE 1:100 (A1) SCALE 1:200 (A3)

CLIENT: STOCKLAND DEVELOPMENTS PTY LTD

Stockland


calibre
© calibregroup.com
Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522


PROJECT: BARINGA LOT 8002

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY. DO NOT SCALE.

DRAWING TITLE: STORMWATER RELOCATION DETAIL PLAN

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | 21-000157-122 | F |

| SITE AREAS | |
|---|---|
| ROOF AREA | 4197m² |
| DRIVEWAY/CONCRETE AREA | 1448m² |
| LANDSCAPE AREA | 2240m² |
| TOTAL SITE AREA | 7885m² |

8005
SP289964

LEGEND

- ROOF AREA
- DRIVEWAY / CONCRETE AREA
- LANDSCAPE AREA INCLUDING PAVED AREAS / FOOTPATHS ETC

BARINGA DRIVE

DRIVEWAY 3

DRIVEWAY 2

DRIVEWAY 1

LUKIN TERRACE

88 SP284351

87 SP284351

86 SP284351

85 SP284351

84 SP284351

83 SP284351

9040 SP284351

FILE: SK001.dwg DATE: 18-03-2019 USER: WESLEY.PIKE
XREFS: X-20-000315.1024-SIGNATURE, 21-000157-BASE, DA_2.2_DWG (S) LOT 8002 - GROUND LEVEL-03-08-2022, 21-000157-Existing Contours-200, DA_DA_2.3_DWG ( ) LOT 8002 - LEVEL 1, 21-000157-BASE-DC-TURNPATH, 15-002215.006-AS Con

| AMENDMENTS | FIRST ISSUE | DESIGN | DRAWN | CHECK | APPROVED | DATE | AMENDMENT DETAILS |
|---|---|---|---|---|---|---|---|
| | | WP | WP | SP | SP | 27.07.21 | |
| | A | WP | WP | SP | SP | 28.07.21 | AREAS UPDATED FOR NEW LAYOUT |
| | B | WP | WP | SP | SP | 16.08.22 | LAYOUT UPDATED |

STATUS: APPROVAL ISSUE

APPROVED
BY: SHAUN PILCHER 14593
SIGN: DATE: 16.08.22

SCALE
0 2.5 5 7.5 10 12.5 15 17.5 20
SCALE 1:250 (A1) SCALE 1:500 (A3)

CLIENT: STOCKLAND DEVELOPMENTS PTY LTD

Stockland

Calibre Professional Services Pty Ltd
Level 4, Unit 401, 8 Market Lane,
Maroochydore, QLD 4558
Telephone 07 5314 2520
Facsimile 07 5314 2522

© calibregroup.com

PROJECT: BARINGA LOT 8002

DRAWING TITLE: SURFACE AREA PLAN

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 21-000157 | SK001 | B |

# Appendix C O + M manuals

spelstormwater
joy in water

# SPEL Stormsack®

At Source Gross Pollutant Trap (GPT)

## OVERVIEW

The SPEL StormSack® is specifically designed for the capture of gross pollutants: sediment, litter, and oil and grease. Ideally suited for municipal storm drain retrofits, the SPEL StormSack's unique design allows maintenance to be performed using conventional vacuum suction equipment.

## BENEFITS

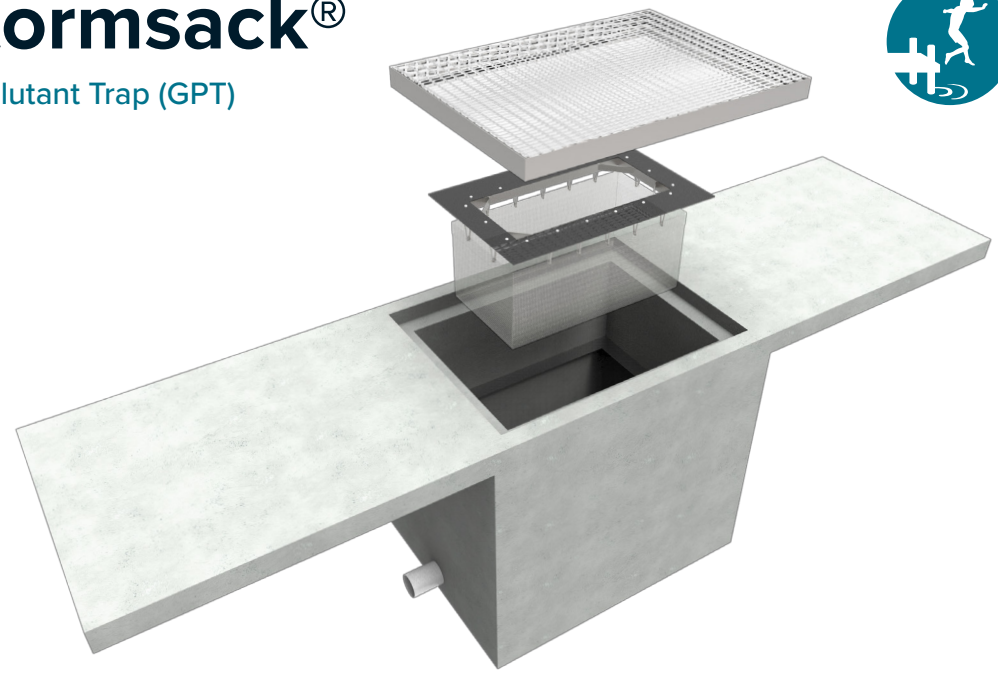
- Quick and easy installation.
- Cost efficient gross pollutant capture.
- Adjusts to custom pit sizes.
- Can be modelled in MUSIC in conjunction with bio-retention.
- Adjusts to custom pit sizes.

## APPLICATIONS

| |
|---|
| Council Storm Drain Retrofits |
| Commercial/Retail/Residential |
| Litter Prone Urban Areas |
| Scrap Metal/Solid Waste/Oil Storage/Etc |
| Part of Treatment Train |
| Construction Sediment |
| <200 micron capture |

# SPEL Stormsack®

## At Source Gross Pollutant Trap (GPT)



### Sizes

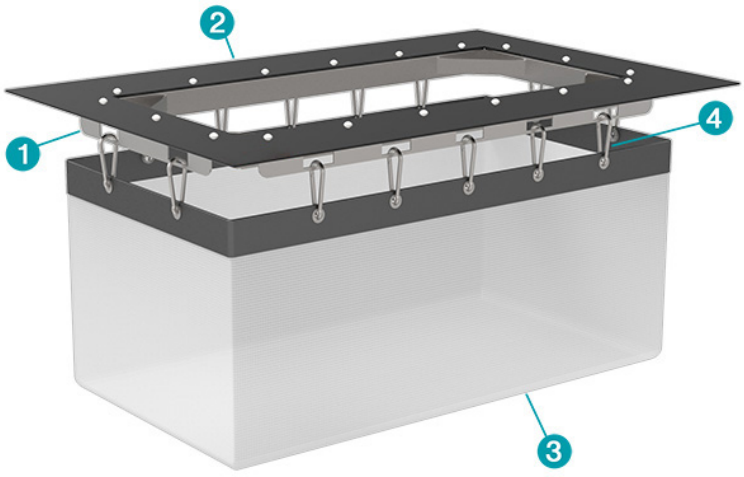
| Dimensions (mm)* |
|---|
| 450x450 |
| 600x600 |
| 600x900 |
| 900x900 |

Custom sizes (i.e. 1200x900mm) can be manufactured on short lead times.

| Application | Regulatory Issue | Target Pollutants |
|---|---|---|
| Council Storm Drain Retrofits | At-source litter capture | Sediment, Litter, O&G |
| Commercial/Retail/Residential | Stormwater Compliance | Sediment, Litter, O&G |
| Litter Prone Urban Areas | Cost effective litter control | Litter ≥ 5 mm |
| Scrap Metal/Solid Waste/ Oil Storage/Etc | Industrial Multi-Sector General Permit | Gross Pollutants, O&G |
| Part of Treatment Train | Council Stormwater Quality Improvement Targets | Sediment, Litter, O&G |
| Construction Sediment/Erosion | Sediment Control Plan | Sediment/Erosion Control |

### Features

1. Ultra-Durable Aluminium Frame
   - Custom pit arrangements upon request
2. Black Poly Surround riveted to Frame
   - Can be cut to suit on site
3. Reinforced Stormsack Bag
   - Bag has sewed eyelets
   - Square bottom design for even distribution
4. Karabiners attach Bag to Frame for easy service & replacement




SPEL Stormwater accepts no responsibility for any loss or damage resulting from any person acting on this information. The details and dimensions contained in this document may change, please check with SPEL Stormwater for confirmation of current specifications.

spelstormwater

# Operation & Maintenance Manual

# Spel Filter®

## Cartridge Filter For Tertiary Stormwater Treatment

spel.com.au

# Contents


Introduction..... 3

Features..... 4

Sizes ..... 6

System Configuration.....7

Health and Safety..... 8

Maintenance frequency.....10

Maintenance Procedure.....11

General Cleaning .....12

Cartridge Recycling and Replacement .....13

Standard Drawings .....14

Site Exit & Clean Up .....16

# Introduction

Understanding how to correctly and safely maintain the SPELFilter is essential for the preservation of the filter's condition and its operational effectiveness. The SPELFilter is a highly engineered stormwater filtration device designed to remove sediments, heavy metals, nitrogen and phosphorus from stormwater runoff.

The filters can be housed in either a concrete or fibreglass structure that evenly distributes the flow between cartridges.

Flow through the filter cartridges is gravity driven and self-regulating, which makes the SPELFilter system a low maintenance, high performance stormwater treatment device.

This Guide will provide the necessary steps that are to be taken to correctly and efficiently ensure the life of the SPELFilter product

*Figure 1 - SPELFilters in a concrete chamber / vault*

# Features

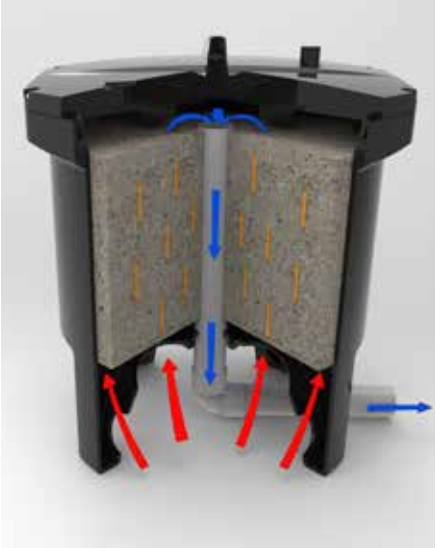


*Figure 2 - Diagram of water flow through SPELFilter*

The SPELFilter has a patented design that facilitates influent flow over the entire surface area of the media, providing consistent pollutant removal within a small footprint.

The SPELFilter provides highly effective media filtration using gravity flow conditions, without the need for moving parts or floating valves. This eliminates the risk of mechanical failure, such as stuck valves and seizing components during its service life. This provides highly robust treatment performance.

Hydraulic head provided by a suitably sized weir in the filter vault forces stormwater through the filter media via the inlet ports underneath the filter cartridge. Refer to the table below for minimum head required for the SPELFilter cartridges to assist in sizing the weir.

The water to be treated enters the SPELFilter cartridge via an upwards direction as the water level builds up around the SPELFilter. This 'up flow' reduces the amount of sediment that could enter the media cartridge, as the sediment is allowed to drop to the vault floor under gravity. Any remaining sediment in the water is introduced through the filter media under hydraulic pressure and is filtered.

Water is filtered through the media, where dissolved and particulate Total Nitrogen and Total Phosphorus are removed via reaction with the media, in addition to the removal of Total Suspended Solids / sediment.

## SPELFilter Media Self-Backwash feature

A one-way air release valve located at the top of the filter cartridge allows air to escape as the cartridge fills up with water. This creates a siphonic flow condition as the air is completely evacuated from inside the SPELFilter cartridge. Siphonic flow conditions are maintained until such time the water level outside of the cartridge falls beneath the inlet ports underneath the filter. At this moment, the water level inside the SPELFilter cartridge is higher than the surrounding water level. The water inside the SPELFilter cartridge is then expelled upon the break of the siphon, and the water flows down and out of the inlet ports under gravity, onto the vault floor.

This is a highly effective backwash of the media and allows the expulsion of a high proportion of sediment out from the SPELFilter media. The expelled sediment can be removed either manually or with a vacuum from the vault floor.

This backwash effect allows the media to remain highly conductive and is the key to the industry leading longevity of the SPELFilter cartridge system, which does not need replacement for at least 5 years, and typically will achieve up to 6-8years of service, subject to the SPELFilter being regularly maintained in accordance with this guideline and in accordance with the specific needs of the catchment.

*Figure 3 - Typical Outlet Weir Wall*

# Features

## Self Supporting Feet

Each SPELFilter cartridge stands on 4 feet, which negates the need for the construction of a false floor in the vault. The feet are bolted to the vault floor with the supplied stainless steel angles and M10 bolts. The feet allow a clear height from the vault floor up to the inlet ports of 240mm. The absence of a false floor allows plenty of room for backwashed sediment to evacuate from underneath the cartridges and thereby avoid blocking the inlet ports to the SPELFilter from sediment buildup. It is for this reason that SPEL recommended the sediment buildup not exceed 150mm above the vault floor, so as to avoid blocking the inlet ports of the SPELFilter. Blockage of the inlet ports due to sediment accumulation in the vault floor will cause the SPELFilter to go into bypass and be ineffective. Hence it is important to keep up to date with monitoring and maintaining the SPELFilter vault.

*Figure 4 - Bolting the feet*

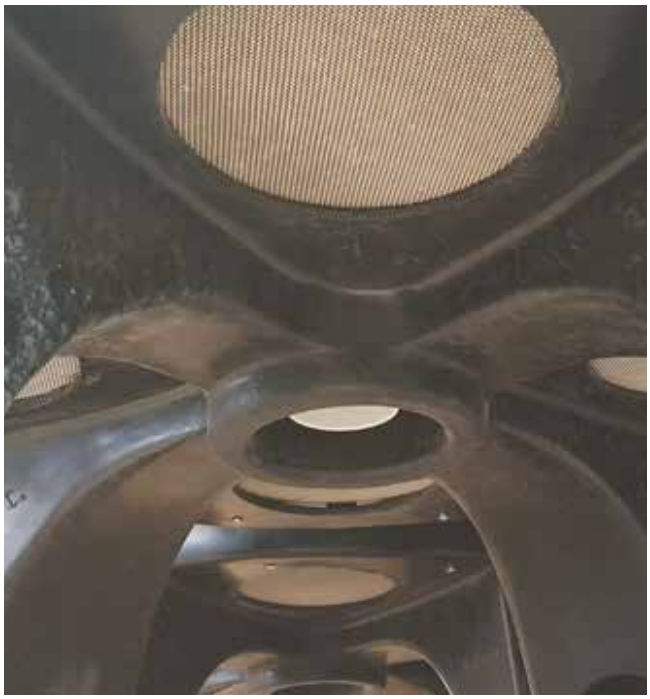


*Figure 5 - Underside of the SPELFilter showing the screened inlet ports and the connection for the outlet pipe in the middle*

*Figure 6 - the top of the SPELFilter showing the location of the one way air valve*

# Sizes

SPEL Stormwater manufactures two height cartridges for varying site constraints as shown below. Each cartridge is designed to treat stormwater at a flow rate of 1.47 Litres per second and 2.83 Litres per second for the half-height cartridge (model No. SF.15-EMC-M) and full-height cartridge (model No. SF.30-EMC-M) respectively.

| | Full Height SF.30-EMC -M | Half height SF.15–EMC-M |
|---|---|---|
| SPELFilter total height | 874mm | 560mm |
| SPELFilter Diameter | 726mm | 726mm |
| Minimum Head required | 850mm | 550mm |
| Treatment flow rate | 2.83 L/s | 1.47 L/s |
| Height of inlet ports above vault floor | 250mm | 250mm |
| Filtered water collection pipe diameter | 50mm | 50mm |

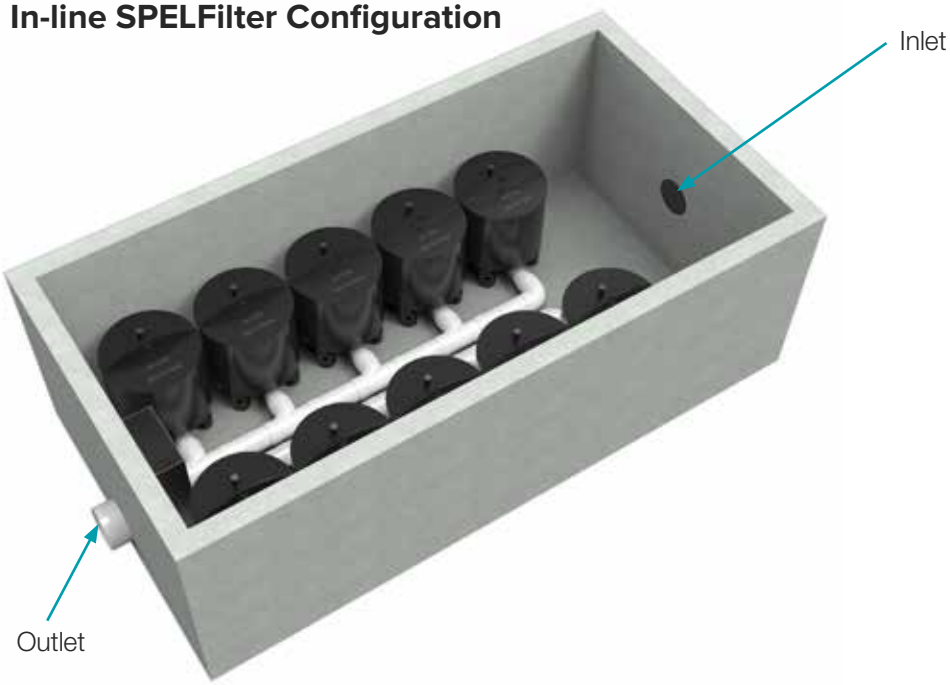
### SPELFilter Full Height- SF.30-EMC-M

### SPELFilter Half Height - SF.15-EMC-M

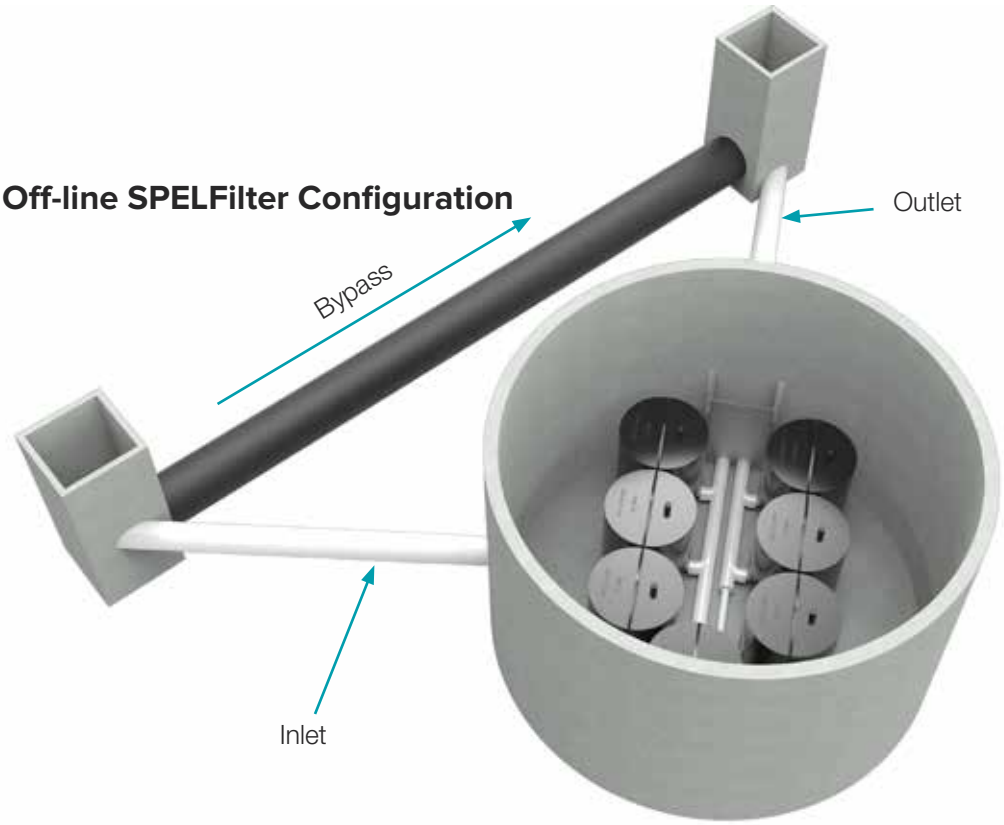
# System Configuration

SPELFilter cartridges are installed in concrete or fibreglass tanks commonly referred to as ‘vaults’. The vault selection and configuration are based on site characteristics and/or constraints; computational stormwater quality modelling; and selected SPELFilter models. Typical SPELFilter system configurations are shown below.

### In-line SPELFilter Configuration




### Off-line SPELFilter Configuration



# Health and Safety

## A. Personal Health & Safety

When carrying out the necessary installation operations of the SPEL Filter all contractors and staff personnel must comply with all current workplace health and safety legislation.

The below measures should be adhered to as practically as possible.

- Comply with all applicable laws, regulations and standards
- All those involved are informed and understand their obligations in respect of the workplace health and safety legislation.
- Ensure responsibility is accepted by all employees to practice and promote a safe and healthy work environment.

## B. Personal Protective Equipment / Safety equipment

When carrying out the necessary installation operations of the SPEL Filter, wearing the appropriate personal protective equipment and utilising the adequate safety equipment is vital to reducing potential hazards.

Personal protective equipment / safety equipment in this application includes:

- Eye protection
- Safety apron
- Fluorescent safety vest
- Form of skin protection
- Puncture resistant gloves
- Steel capped safety boots
- Ear muffs
- Hard hat/s
- Sunscreen

## C. Confined space

In the event access is required into the vault, confined space permits will be required which is not covered in this Guide. Typical equipment required for confined space entry include:

- Harness
- Gas detector
- Tripod
- Spotter

## D. Traffic Control

It is not uncommon for SPEL Filter cartridges to be installed underneath trafficable areas. Minimum traffic control measures will need to be put in place in accordance with traffic control plans set out by respective local and state road authorities.

Vaults are to be treated as confined space. Entry by permit only.

Monitor weather conditions prior to operation maintenance. Do not enter a vault during an episode of heavy rain as this can create a risk of drowning.

# Maintenance Frequency

The SPELFilter's design allows for a greater life span when frequently maintenance. Maintenance is broken up into three categories which include: standard inspection; general cleaning; and cartridge replacement.

## Standard inspection

Standard inspections are conducted at regular four-month intervals. At this time, an approved trained maintenance officer or SPEL representative shall undertake all measures outlined in Maintenance Procedure, Standard Inspection.

## General Cleaning

At the end of each standard inspection, trigger measures will identify if general cleaning is required. General cleaning will need to be executed immediate during standard inspections if the follow triggers are satisfied:

- Build-up of debris/pollutants within the vault greater than 150mm;
- Accumulation of debris/pollutants on the outlet chamber of the SPELFilter vault;
- After large storm events, tidal or flooding impacts at the request of the owner;

## Cartridge Replacement

Stormwater treatment is dependent on the effectiveness of the SPELFilter cartridge system. As the SPELFilter ages, pollutants will inundate the cartridge and ultimately reduce the treatment flow rate. At this point, a SPELFilter flow test apparatus will be utilities to determine if replacement cartridges are required.

Based on the [site] concept modelling (MUSIC) and previous industry experience, we estimate the life of the SPELFilter to be between 6 - 8 years. As a minimum requirement, each SPELFilter cartridge should be replaced within 10 years.

The life cycle of the SPELFilter can be impacted if standard inspections and general maintenance is not undertaken in accordance with this operation and maintenance Guide. Other factors that will affect the above life cycle of the SPELFilter include:

- Installation of cartridge system during construction phase and impacted by construction sediment loads;
- Neglecting to install pre-treatment using an industry approved GPT or a surface inlet pit trash bag such as the SPEL StormSack.
- Unforeseen environmental hazards affecting the SPELFilter functionality.

# Maintenance Procedures

Stormwater pollutants captured and retained by the SPELFilter system need to be periodically removed to ensure environmental values are upheld. All associated maintenance works is heavily dependent on the site's operational activities and generated stormwater pollutants. To ensure the longevity of the installed SPELFilter treatment system, it is imperative that the procedures detailed in this Guide are followed and all appropriate measures are actioned immediately.

## Standard inspection

The standard inspection requires personal experience of SPEL products to visual inspection the vault and filter conditions.

Confined space requirements may not be required if a full inspection and assessment of each SPELFilter can be achieved at surface level without being deemed a confined space entry.

The standard inspection requires personal experience of SPEL products to visual inspection the vault and filter conditions.

Confined space requirements may not be required if a full inspection and assessment of each SPELFilter can be achieved at surface level without being deemed a confined space entry.

## Site Inspection Procedures

**1. Implement Pre-start safety measures.**

Ensure that the area in which operational works are to be carried out is cordoned off, to prevent unauthorised access. Adequate safety barriers must be erected. Area in which work is to be carried out must be clean, safe and hazard free. (Refer to figure 4.)

**2. Set-up Gantry Tri-pod above Manhole.**

Assemble and position the gantry above the manhole safely and as practically as possible. Attach the winch or chain block to the gantry for lifting the SPEL Filters. Perform safety procedures ie. Attach harnesses etc. (if confined space).

**3. Open manhole lid.**

Once you have sent up the Gantry and ensured that the area is safe to operate in, you can proceed to open the manhole lid, using lid lifters.

**4. Conduct Gas tests.**

(If tank is classed confined space)

Once the lids have been removed to a safe distance to prevent tripping, you must then proceed to conduct gas tests. Perform necessary gas tests according to the confined space regulations.

**5. Once confined space has been deemed safe to operate in, enter tank safely.**

Once you have carried out the required gas test and the work area is deemed safe, you may then enter the pit via a ladder or winch system to assess the work area you will be operating in. Ensure all confined space

**6. SPELFilter system assessment.**

Perform a review of the SPELFilter system using the SPELFilter assessment report/checklist. Sign off and forward a copy of the report to property manager and SPEL representative.

**7. Reinstate SPELFilter system and disposal.**

At the completion of the site inspection, ensure the site is reinstated back to its initial state and all pollutants are removed from the site in line with pollutant disposal procedures.

**8. Sign off and forward a copy of the report to property manager and SPEL representative.**

# General Cleaning

Vacuum out of Filter tank, removal, and disposal of pollutants at the completion of a standard inspection, general cleaning may be deemed necessary immediately or scheduled for a future date. Steps undertaken for general cleaning should be in general accordance with the procedure outlined below but not limited.

### 1. Implement Pre-start safety measures.

Ensure that the area in which operational works are to be carried out is cordoned off, to prevent unauthorised access. Adequate safety barriers must be erected. Area in which work is to be carried out must be clean, safe and hazard free. (Refer to figure 4.)

### 2. Set-up Gantry Tri-pod above Manhole.

Assemble and position the gantry above the manhole safely and as practically as possible. Attach the winch or chain block to the gantry for lifting the SPEL Filters. Perform safety procedures ie. Attach harnesses etc. (if confined space).

### 3. Open manhole lid.

Once you have sent up the Gantry and ensured that the area is safe to operate in, you can proceed to open the manhole lid, using lid lifters.

### 4. Conduct Gas tests.

(If tank is classed confined space)

Once the lids have been removed to a safe distance to prevent tripping, you must then proceed to conduct

gas tests. Perform necessary gas tests according to the confined space regulations.

### 5. Once confined space has been deemed safe to operate in, enter tank safely.

Once you have carried out the required gas test and the work area is deemed safe, you may then enter the pit via a ladder or winch system to assess the work area you will be operating in. Ensure all confined space

### 6. SPELFilter system assessment.

Perform a review of the SPELFilter system using the SPELFilter assessment report/checklist.

### 7. Pollutant removal from tank.

Perform clean-up using a licenced vacuum truck contractor or wet/dry vacuum, depending on level of sediment built up and/or tank size.

### 8. Reinstate SPELFilter system and disposal.

At the completion of the site inspection, ensure the site is reinstated back to its initial state and all pollutants are removed from the site in line with pollutant disposal procedures.

### 9. Sign off and forward a copy of the report to property manager and SPEL representative.

# Cartridge Recycling and Replacement

SPELFilter cartridges can be swapped out for new cartridges. The spent SPELFilter cartridges can be collected from site and sent to SPEL Stormwater's facilities – where the spent media will be removed from the cartridge in factory conditions and disposed of in accordance with environmental regulations.

The SPELFilter cartridge will be recharged with new media – thereby recycling and repurposing the cartridge.

SPEL Filter replacement procedures may vary depending on the configuration of the SPEL Filters, the type of vault and engineers' specs. Replacement instructions for manhole SPEL Filter systems and precast vault SPEL Filter systems are contained in this section.

At the completion of a standard inspection, SPEL Filter replacement may be deemed necessary immediately or scheduled for a future date. Steps undertaken for cartridge replacement should be in general accordance with the procedure outlined below but not limited.

### 1. Implement Pre-start safety measures.

Ensure that the area in which operational works are to be carried out is cordoned off, to prevent unauthorised access. Adequate safety barriers must be erected. Area in which work is to be carried out must be clean, safe and hazard free.

### 2. Set-up Gantry Tri-pod above Manhole.

Assemble and position the gantry above the manhole safely and as practically as possible. Attach the winch or chain block to the gantry for lifting the SPEL Filters. Perform safety procedures ie. Attach harnesses etc. (if confined space).

### 3. Open manhole lid.

Once you have sent up the Gantry and ensured that the area is safe to operate in, you can proceed to open the manhole lid, using lid lifters.

### 4. Conduct Gas tests. (If tank is classed confined space)

Once the lids have been removed to a safe distance to prevent tripping, you must then proceed to conduct gas tests. Perform necessary gas tests according to the confined space regulations.

### 5. Once confined space has been deemed safe to operate in, enter tank safely.

Once you have carried out the required gas test and the work area is deemed safe, you may then enter the pit via a ladder or winch system to assess the work area you will be operating in. Ensure all confined space procedures are followed.

### 6. Remove exhausted cartridges.

Disconnect all internal pipe work from inside the vault. Un-bolt anti-floatation measures and remove cartridges from the vault using Gantry Tri-pod method.

### 7. Pollutant removal.

Using a wet/dry vacuum or sucker truck, suck out all the residual pollutant from the vault.

### 8. Install pipework and SPEL Filters.

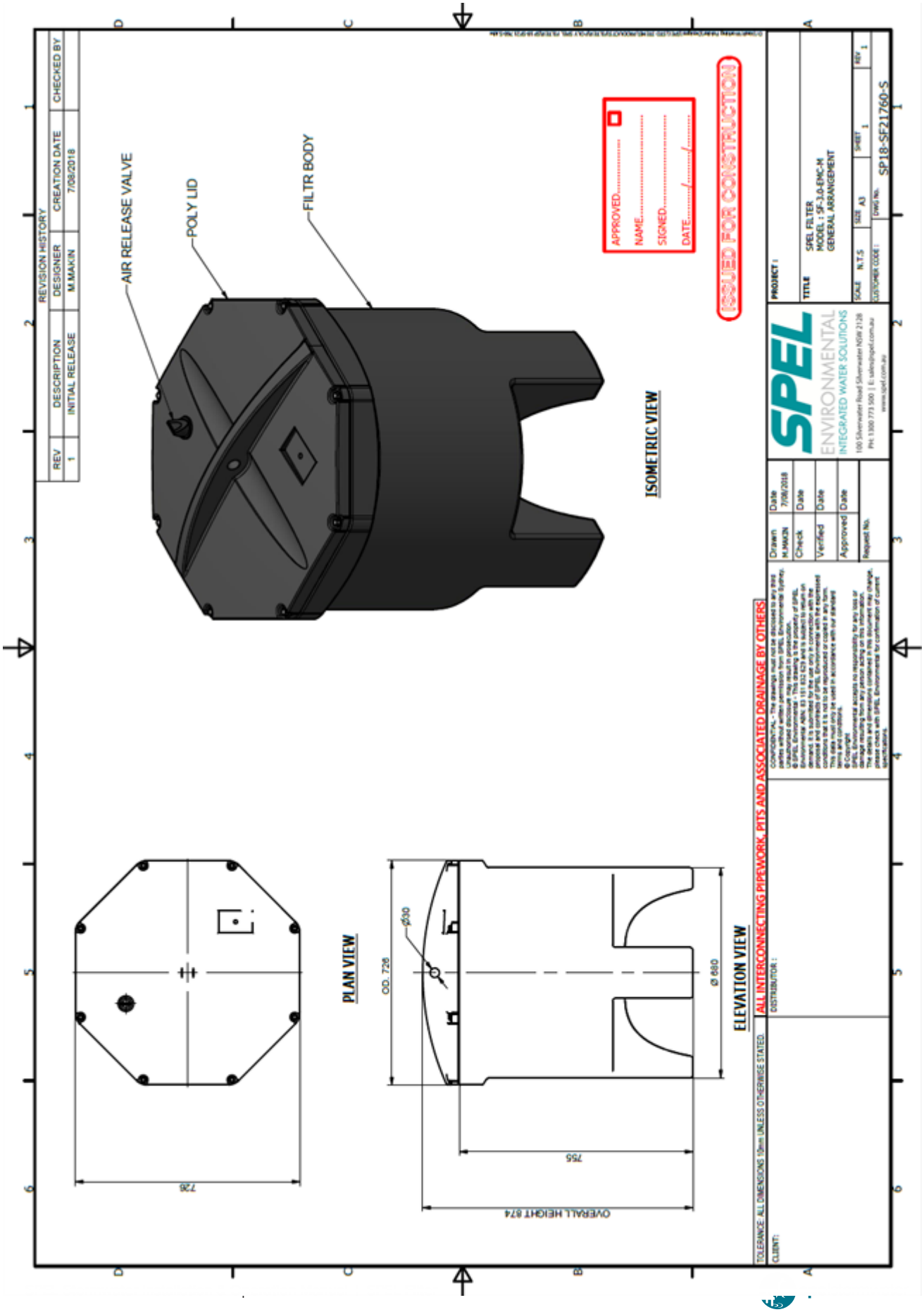
Please refer to the below standard install diagrams for the SPEL Filters. Then refer to your site specific drawings, as site requirements may require something different to the standard layout. Lower filters into tank, position into place, connect filter outlet pipework with the supplied fittings.

### 9. Install anti–floatation system.

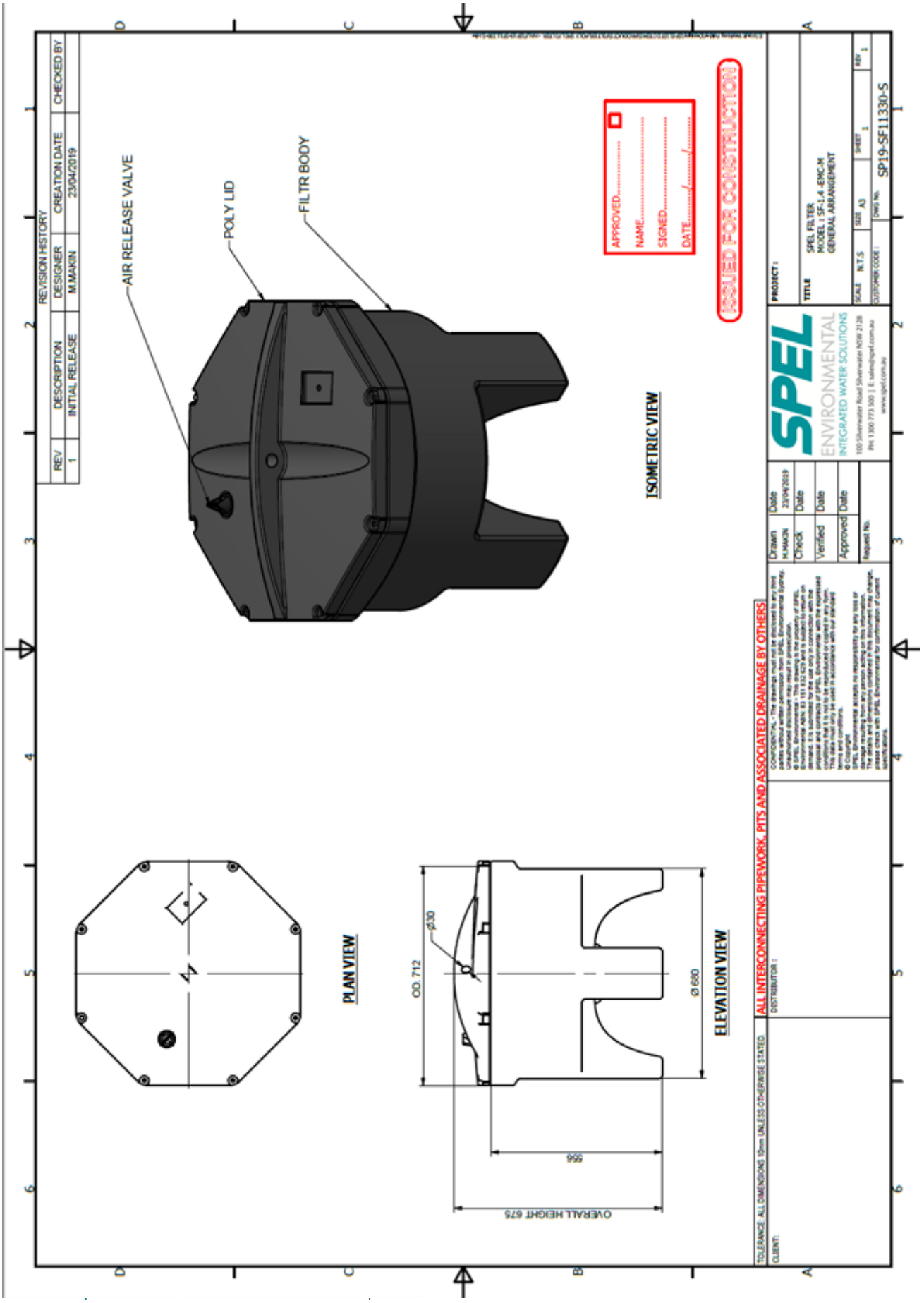
Please refer to the detailed drawings showing how the Anti – Floatation (Anchor) bars are to be installed.

### 10. Sign off and forward a copy of the report to property manager and SPEL representative.

# Standard Drawings - Full Height



# Standard Drawings - Half Height



# Site Exit & Clean Up

At the end of the scheduled maintenance, approved contractors or SPEL maintenance crew are required to reinstate the site to pre-existing conditions. Steps included but limited to are:

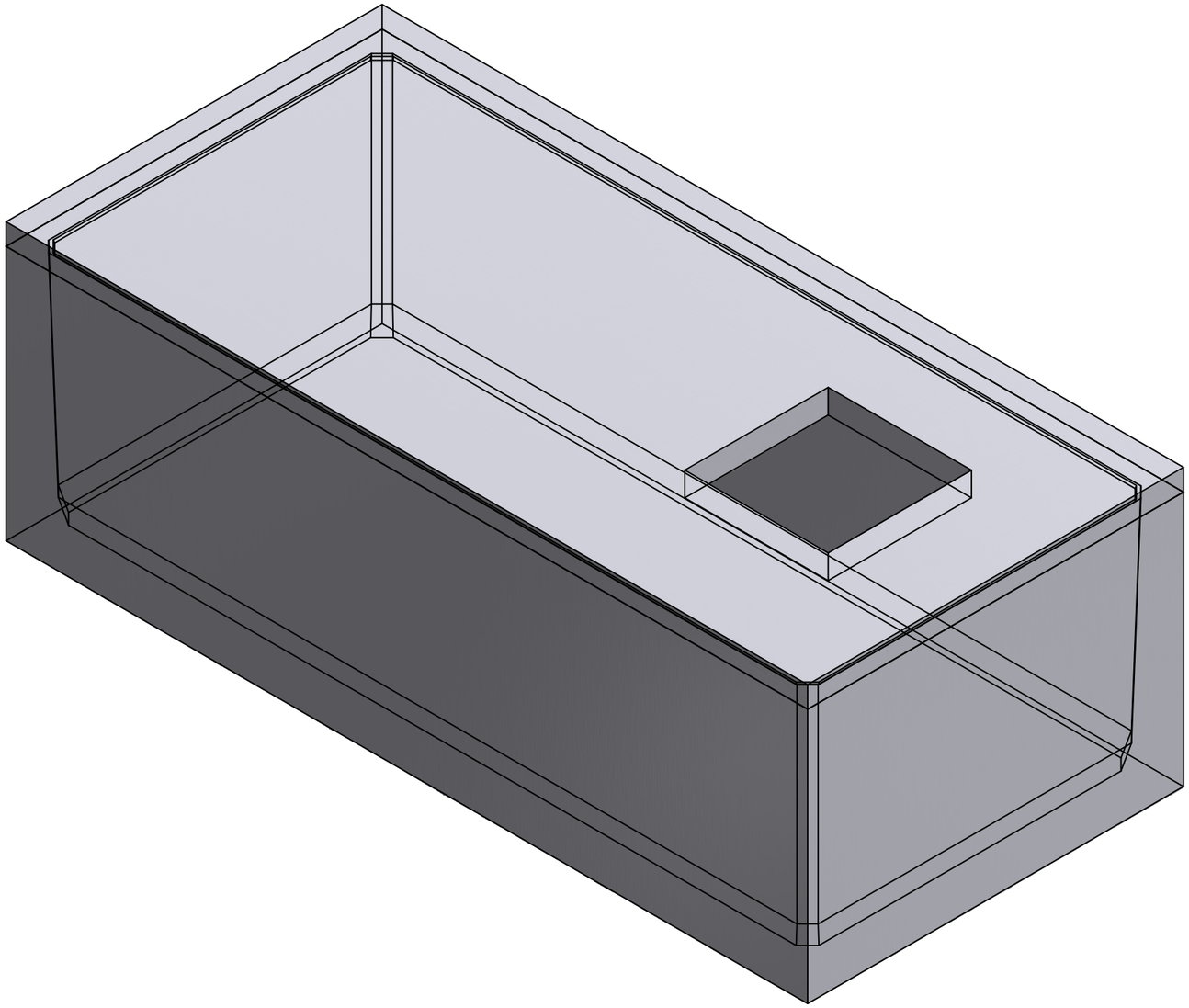
- Ensure all access covers are securely inserted back into their frames;
- Remove and dispose collected pollutants from the site in accordance with local regulator authorities;
- Retrieve all traffic control measures and maintenance tools; and
- Return all exhausted and/or damaged SPEL products to SPEL Stormwater to begin recycling program.

100 Silverwater Rd, Silverwater NSW 2128 Australia
**Phone:** (02) 8705 0255
**Fax:** (02) 8014 8699
**Email:** sales@spel.com.au

**spel.com.au**

SPEL Stormwater accepts no responsibility for any loss or damage resulting from any person acting on this information. The details and dimensions contained in this document may change, please check with SPEL Stormwater for confirmation of current specifications.

spelstormwater
joy in water



SV.5030-1464 - 3D VIEW

| DRAWING INDEX | |
|---|---|
| DRAWING No. | DRAWING TITLE |
| SP21-CT19370-C | COVER SHEET AND DRAWING INDEX |
| SP21-CT19380-C | GENERAL NOTES |
| SP21-CT19390-C | GENERAL ARRANGEMENT |
| SP21-CT19400-C | PERMISSIBLE PENETRATIONS |
| SP21-CT24070-C | TANK LID PENETRATION OPTIONS |

**TOLERANCE:** All Dimensions to Closest 10 mm & +/- 30 mm

**ALL INTERCONNECTING PIPEWORK, PITS AND ASSOCIATED DRAINAGE BY OTHERS**

| REV | DATE | BY | DESCRIPTION | CHK |
|---|---|---|---|---|
| 1 | 08/04/21 | G.T | INITIAL RELEASE | |

CLIENT:

CONFIDENTIAL - The drawings must not be disclosed to any third parties without written permission from SPEL STORMWATER . Unauthorised disclosure may result in prosecution.
© SPEL STORMWATER - This drawing is the property of SPEL STORMWATER ABN: 83 151 832 629 and is subject to return on demand. It is submitted for the use only in connection with the proposal and contracts of SPEL STORMWATER with the expressed conditions that it is not to be reproduced or copied in any form. This data must only be used in accordance with our standard terms and conditions.
© Copyright
SPEL STORMWATER accepts no responsibility for any loss or damage resulting from any person acting on this information.
The details and dimensions contained in this document may change: please check with SPEL STORMWATER for confirmation of current specifications.

| | | |
|---|---|---|
| Drawn | G.T | Date 9/04/2021 |
| Check | | Date |
| Verified | | Date |
| Approved | | Date |
| Request No. | | |

spelstormwater
joy in water
spel.com.au

**PROJECT :**

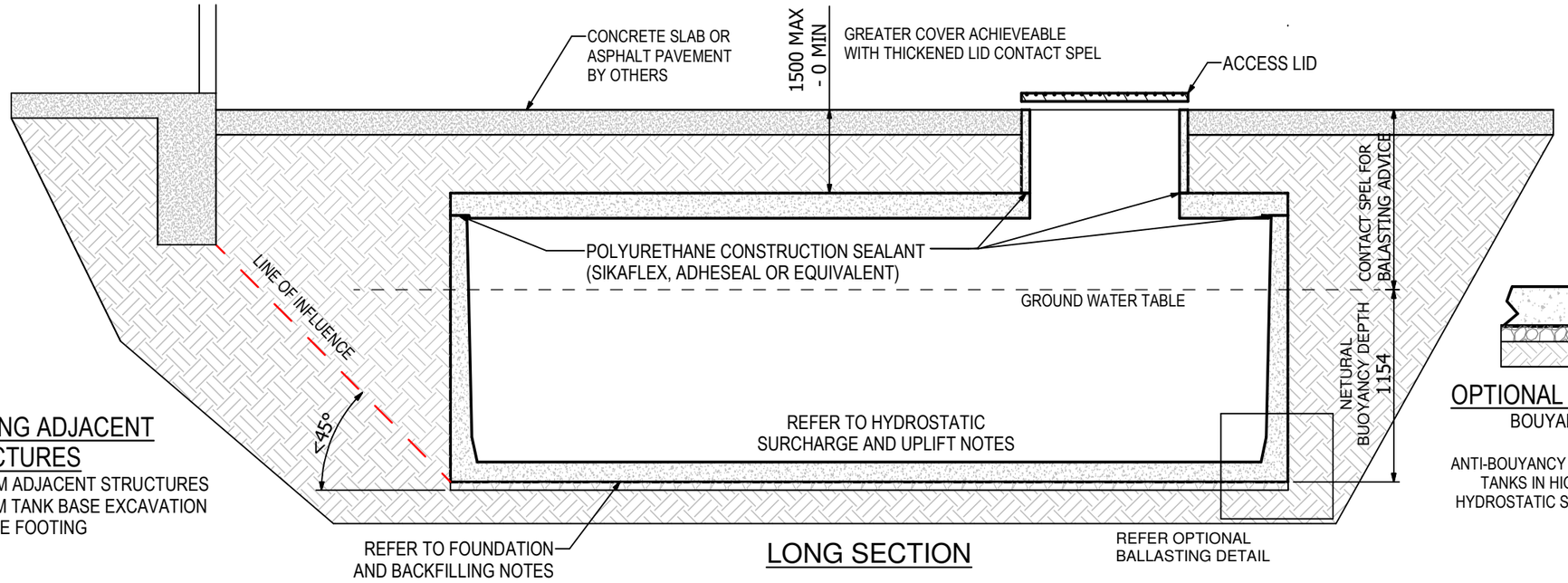
**TITLE**
COVER SHEET AND DRAWING INDEX
14.88 kL SPEL PRECAST CONCRETE TANK
SV.5023-1464

| SCALE | SIZE | SHEET | REV |
|---|---|---|---|
| N.T.S | A3 | 1 | 1 |

CUSTOMER CODE :

DWG No. SP21-CT19370-C

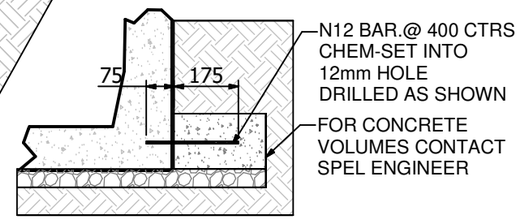
C:\Users\GlenTregenza\OneDrive - All Pumps Group\Documents\Vault\Designs\Model\SV.5023-1464\SV.5023-1464 COVER PAGE.dwg




LONG SECTION

## TANK POSITIONING ADJACENT TO STRUCTURES

THE LINE OF INFLUENCE FROM ADJACENT STRUCTURES IS TO BE LESS THAN 45° FROM TANK BASE EXCAVATION TO STRUCTURE FOOTING




## OPTIONAL BALLASTING DETAIL

BOUYANCY CONTROL JOINT

ANTI-BOUYANCY CONTROL ONLY REQUIRED FOR TANKS IN HIGH WATER TABLE REFER TO HYDROSTATIC SURCHARGE AND UPLIFT NOTES

## DESIGN CRITERIA

DESIGN IN ACCORDANCE WITH:
AS/NZS 1170.0 - DESIGN LOAD GENERAL REQUIREMENTS
AS/NZS 1170.1 - PERMANENT AND SUPERIMPOSED LOADS
EXPOSURE CLASSIFICATION IN ACCORDANCE WITH AS/NZS 3600 - 'B2'
HEAVY VEHICLES ARE ASSUMED TO BE WITHIN THE GROSS VEHICLE MASS (GVM) AND AXLE LIMITS PRESCRIBED BY THE QUEENSLAND DEPARTMENT OF TRANSPORT AND MAIN ROADS. THE HEAVY VEHICLES THAT THE TANK AND LID ARE DESIGNED FOR INCLUDES:

- SINGLE RIGID TRUCK
- RIGID TRUCK WITH TRAILER
- SEMI TRAILER
- B-DOUBLE
- TWIN STEER TRUCKS

WHICH REPRESENTS AXLE GROUPS OF:

- SINGLE AXLE = 9.0 TONNES
- TANDEM AXLE = 16.0 TONNES
- TRI-AXLE = 20.0 TONNES

WHEEL LOADS ARE BASED ON TANKS INSTALLED IN CONTROLLED TRAFFIC AREA (CARPARK) WITH VEHICLES OPERATING AT REDUCED SPEED.
NOTE: TANKS ARE NOT DESIGNED TO BE INSTALLED UNDER OPEN ROADS. IF W80 AND SM1600 RATING IS REQUIRED, CONSULT SPEL ENGINEERS

## FOUNDATION REQUIREMENTS AND BACKFILLING

1. THE TANK MUST BE FOUNDED ON MATERIAL WITH AN ALLOWABLE BEARING CAPACITY OF 100kPa.MINIMUN UNIFORM BASE.
2. THE TANK MUST BE FOUNDED ON COMPACTED 50mm MINIMUM LEVELLING SUB-BASE COMPRISED OF SAND OR ROAD BASE THAT ACHIEVES CBR40 WHEN THE TANK IS SUBJECTED TO VEHICLE LOADING. CBR15 OR OTHERWISE. 5-10mm DRAINAGE GRAVEL IS AN ACCEPTABLE SUB-BASE MATERIAL WHEN TANK IS SUBJECTED TO VEHICLE LOADING, 10mm MAXIMUM TO STRICTLY ADHERED TO.
3. BACKFILL AROUND THE TANK WITH A WELL DRAINING GRANULAR MATERIAL IN LAYERS NO THICKER THAN 500mm.
4. COMPACT PAVEMENT SUBGRADES ABOVE THE TANK LID WITH LIGHT DUTY HAND OPERATED COMPACTION EQUIPMENT. DO NOT USE HEAVY MECHANICAL COMPACTION TECHNIQUES (SUCH AS VIBRATORY OR STATIC ROLLERS) ABOVE OR ADJACENT TO THE TANK WALLS WITHIN 1500mm OF TANKS WITHOUT ENGINEER'S APPROVAL.

## LIFTING NOTES:

1. TOTAL APPROVED 15.0 t (SWL) LIMIT AS SPECIFIED ON DRAWING. CONSULT AN RPEQ ENGINEER FOR LIFTING DESIGN OF SPECIFICALLY DESIGNED TANKS WITH ADDITIONAL FIXTURES INSTALLED AND TOTAL WEIGHT EXCEEDING APPROVED 15.0 t
2. THE ERECTOR SHALL COORDINATE WITH THE SITE PROJECT ENGINEER FOR SITE ACCESS, GROUND CONDITIONS AND PLANNED LIFTING EQUIPMENT PRIOR TO TANK DELIVERY ON SITE.
3. RIGGING ARRANGEMENT SHALL ENSURE THE LOAD IS EVENLY DISTURBED BETWEEN ALL LIFTING ANCHORS
4. ONLY USE LIFTING PINS PROVIDED WHEN LIFTING, DAMAGED LIFTING PINS SHALL NOT BE USED UNLESS CAPACITY IS VERIFIED AND APPROVED BY A RPEQ ENGINEER.

## HYDROSTATIC SURCHARGE AND UPLIFT

### IMPORTANT NOTE:

NEUTRAL BUOYANCY DEPTH PROVIDED IS A GUIDE ONLY. IT IS CONSERVATIVELY CALCULATED WITH ZERO SOIL COVER AND ZERO SLAB COVER. SEEK SPEL ADVISE FOR SITE SPECIFIC BALLASTING CALCULATIONS, THAT CAN TAKE INTO CONSIDERATION SOIL / SLAB COVER OVER TANK, ANY ADDITIONAL CLEAR OPENINGS IN THE TANK LID,AND ANY PENETRATIONS IN THE TANK WALLS OR BASE.

1. TANK WITH WATER LEVEL UP TO 1154 FROM THE TANK BASE HAS NIL HYDROSTATIC UPLIFT (NEUTRAL BUOYANCY MARK). FOR WATER LEVELS GREATER THAN THIS CONTACT SPEL ENGINEERS FOR SITE SEPTIC BALLASTING ADVICE.
2. REFER TO SPEL ENGINEERS FOR ADVICE ON WATER TABLES EXCEEDING 1.734 m ABOVE THE BASE EXCAVATION LEVEL.

**TOLERANCE:** All Dimensions to Closest 10 mm & +/- 30 mm

**ALL INTERCONNECTING PIPEWORK, PITS AND ASSOCIATED DRAINAGE BY OTHERS**

| REV | DATE | BY | DESCRIPTION | CHK |
|---|---|---|---|---|
| 1 | 07/04/2021 | G.T. | INITIAL RELEASE | |

CLIENT:

CONFIDENTIAL - The drawings must not be disclosed to any third parties without written permission from SPEL STORMWATER . Unauthorised disclosure may result in prosecution.
© SPEL STORMWATER - This drawing is the property of SPEL STORMWATER ABN: 83 151 832 629 and is subject to return on demand. It is submitted for the use only in connection with the proposal and contracts of SPEL STORMWATER with the expressed conditions that it is not to be reproduced or copied in any form. This data must only be used in accordance with our standard terms and conditions.
© Copyright
SPEL STORMWATER accepts no responsibility for any loss or damage resulting from any person acting on this information.
The details and dimensions contained in this document may change; please check with SPEL STORMWATER for confirmation of current specifications.

| | |
|---|---|
| Drawn GT | Date 7/04/2021 |
| Check | Date |
| Verified | Date |
| Approved | Date |

Request No.
KEYWORDS

spelstormwater
joy in water
spel.com.au

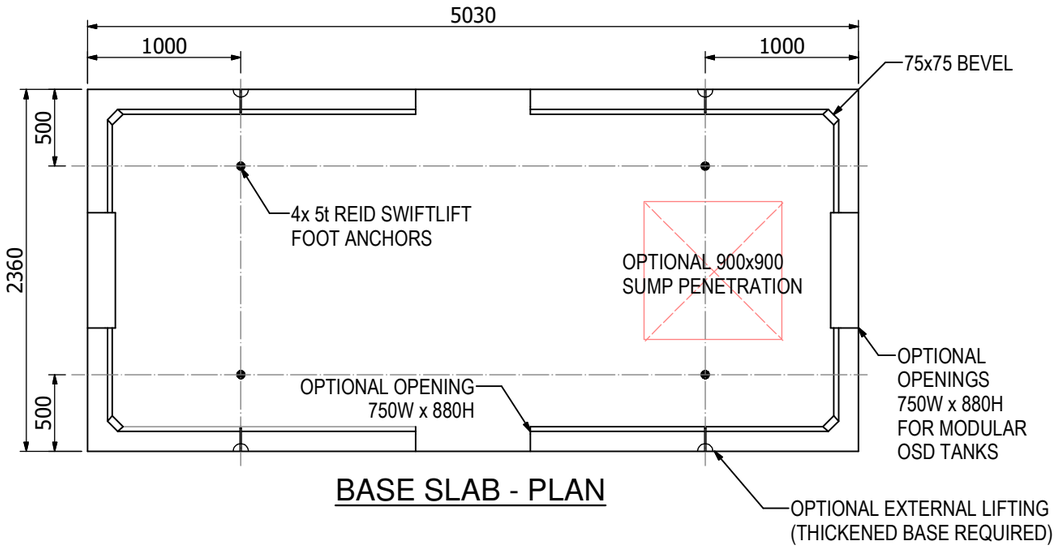
**PROJECT :**

**TITLE** GENERAL NOTES
14.88 kL SPEL PRECAST CONCRETE TANK
SV.5023-1464

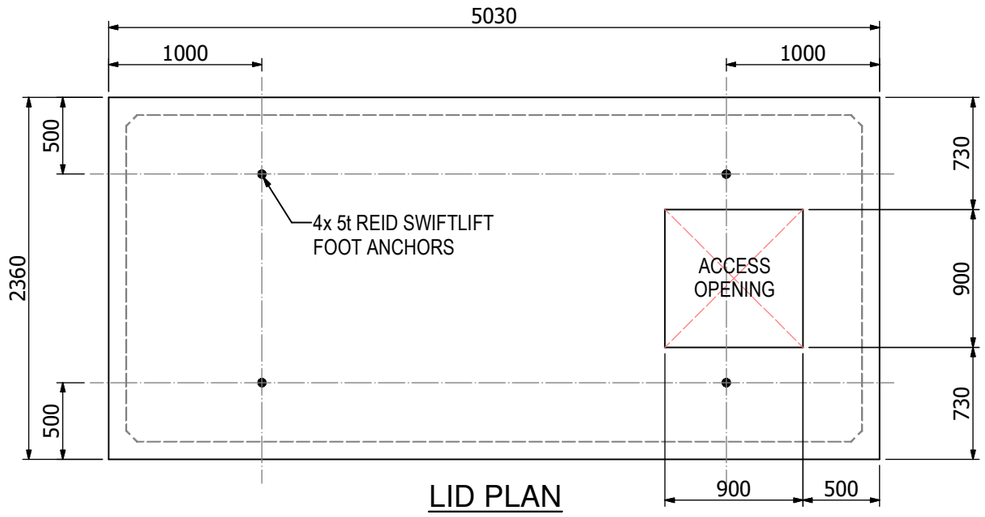
| SCALE | SIZE | SHEET | REV |
|---|---|---|---|
| N.T.S | A3 | 1 | 1 |

CUSTOMER CODE :
DWG No. SP21-CT19380-C

C:\Users\GlenTregenza\OneDrive - All Pumps Group\Documents\Vault\Designs\Model\SV.5023-1464\SV.5023-1464 NOTES PAGE.dwg



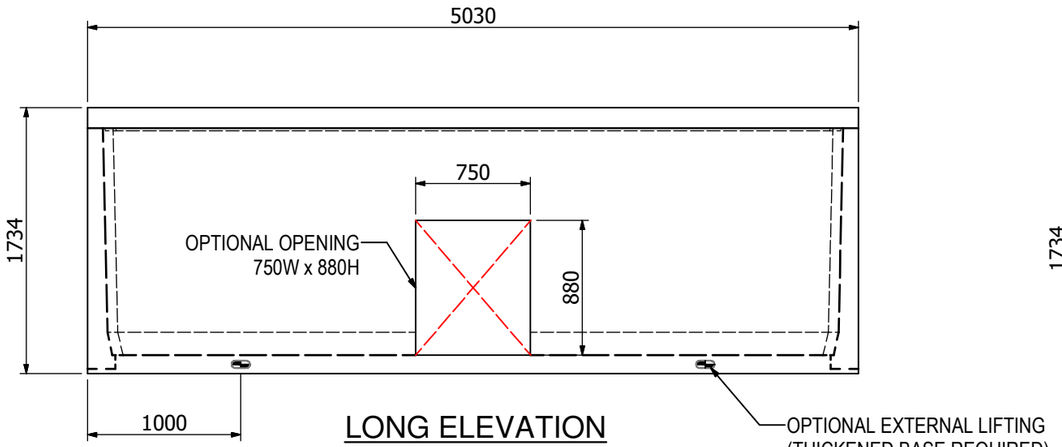

BASE SLAB - PLAN



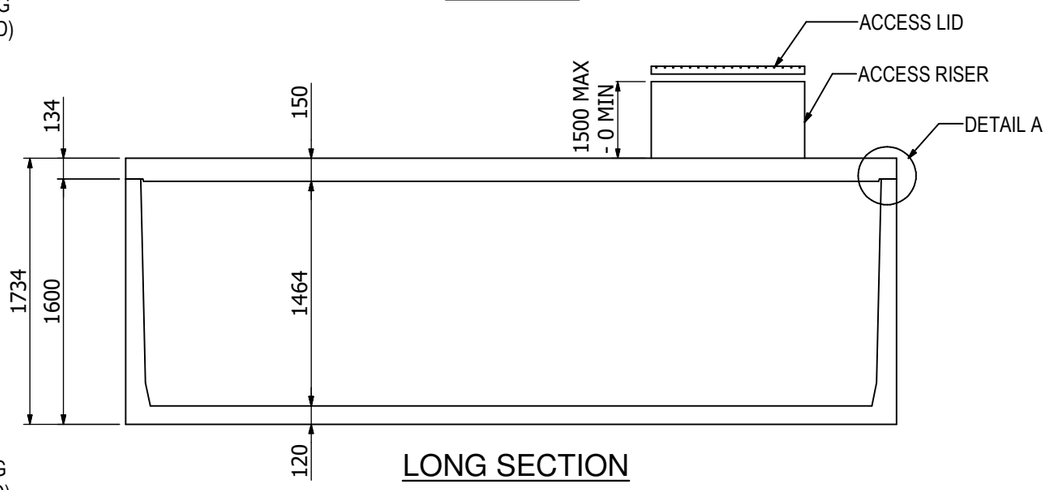

LID PLAN

**NOTE:**

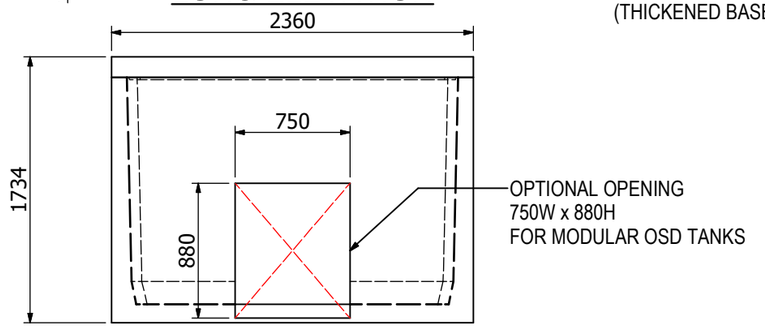
OTHER ACCESS OPENING SIZES AND POSITIONING OPTIONS AVAILABLE SEE "TANK LID PENETRATION OPTION" DRAWING No. SP21-CT204070-C



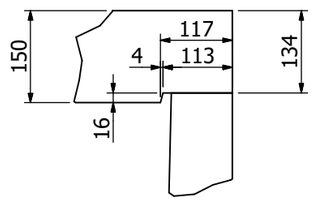

LONG ELEVATION




LONG SECTION




SHORT WALL ELEVATION




DETAIL A

**TANK WEIGHT = 9.8t**
**LID WEIGHT = 4.4t**
(WEIGHTS CALCULATED WITH NO PENETRATIONS IN TANK OR LID)

**TOLERANCE:** All Dimensions to Closest 10 mm & +/- 30 mm

**ALL INTERCONNECTING PIPEWORK, PITS AND ASSOCIATED DRAINAGE BY OTHERS**

| REV | DATE | BY | DESCRIPTION | CHK |
|---|---|---|---|---|
| 1 | 05/05/21 | G.T | INITIAL RELEASE | |

CLIENT:

CONFIDENTIAL - The drawings must not be disclosed to any third parties without written permission from SPEL STORMWATER . Unauthorised disclosure may result in prosecution.
© SPEL STORMWATER - This drawing is the property of SPEL STORMWATER ABN: 83 151 832 629 and is subject to return on demand. It is submitted for the use only in connection with the proposal and contracts of SPEL STORMWATER with the expressed conditions that it is not to be reproduced or copied in any form. This data must only be used in accordance with our standard terms and conditions.
© Copyright
SPEL STORMWATER accepts no responsibility for any loss or damage resulting from any person acting on this information.
The details and dimensions contained in this document may change; please check with SPEL STORMWATER for confirmation of current specifications.

| | | |
|---|---|---|
| Drawn | GT | Date 8/04/2021 |
| Check | | Date |
| Verified | | Date |
| Approved | | Date |
| Request No. | | |

spelstormwater
joy in water
spel.com.au

**PROJECT :** PROJECT DESCRIPTION

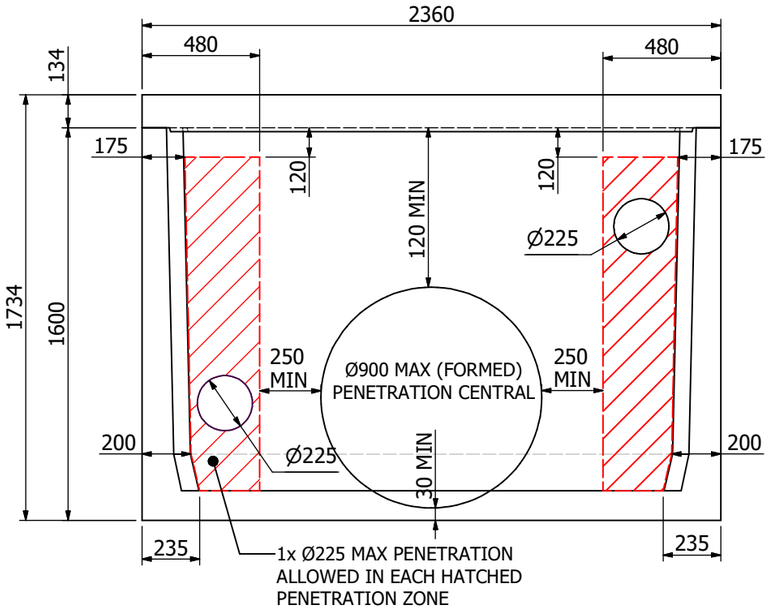
**TITLE** GENERAL ARRANGEMENT
14.88 kL SPEL PRECAST CONCRETE TANK
SV.5023-1464

| SCALE | SIZE | SHEET | REV |
|---|---|---|---|
| N.T.S | A3 | 1 | 1 |

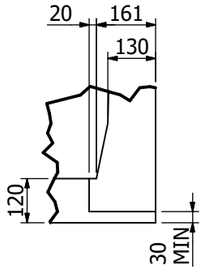
CUSTOMER CODE :

DWG No. SP21-CT19390-C

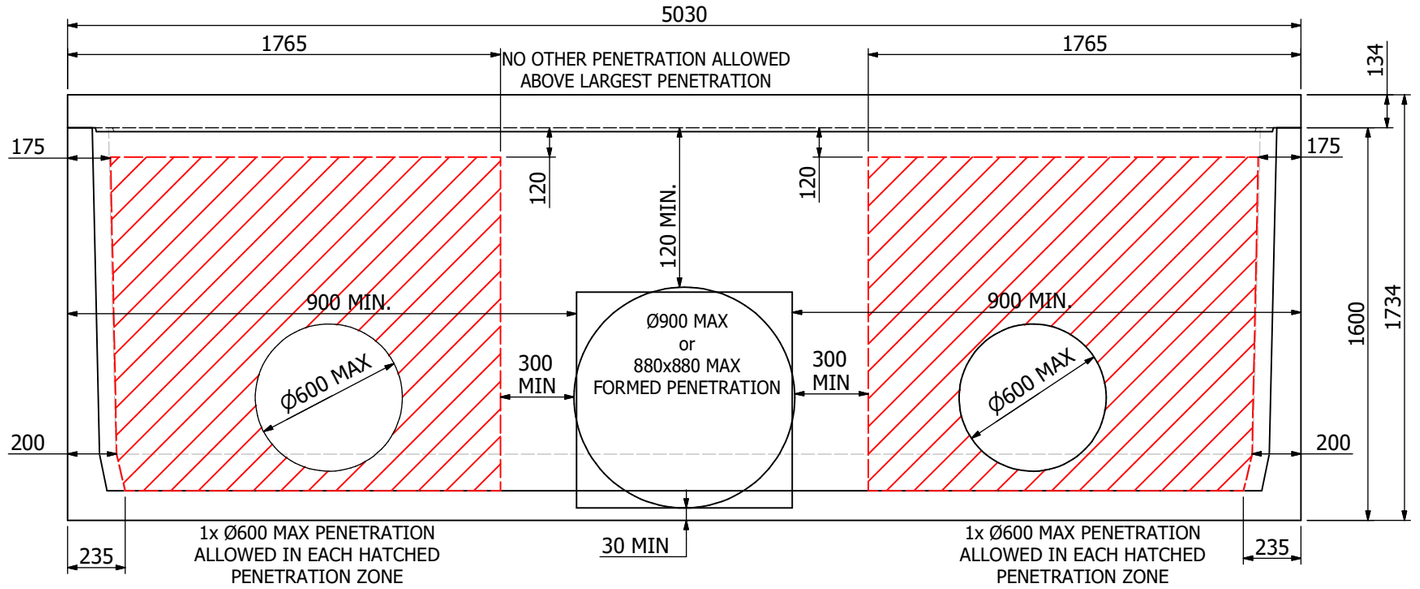
C:\Users\GlenTregenza\OneDrive - All Pumps Group\Documents\Vault\Designs\Model\SV.5023-1464\SV.5023-1464 GENERAL ARRANGEMENT.dwg



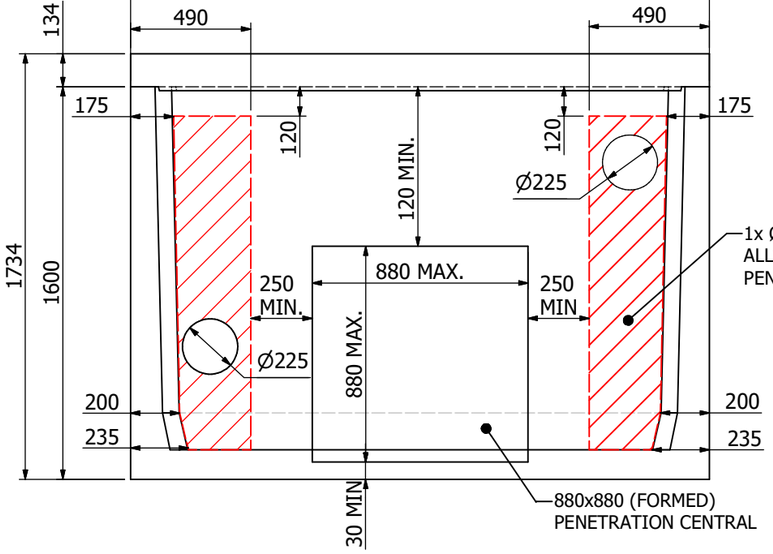

## SHORT WALL - Ø 900 MAX PENETRATION



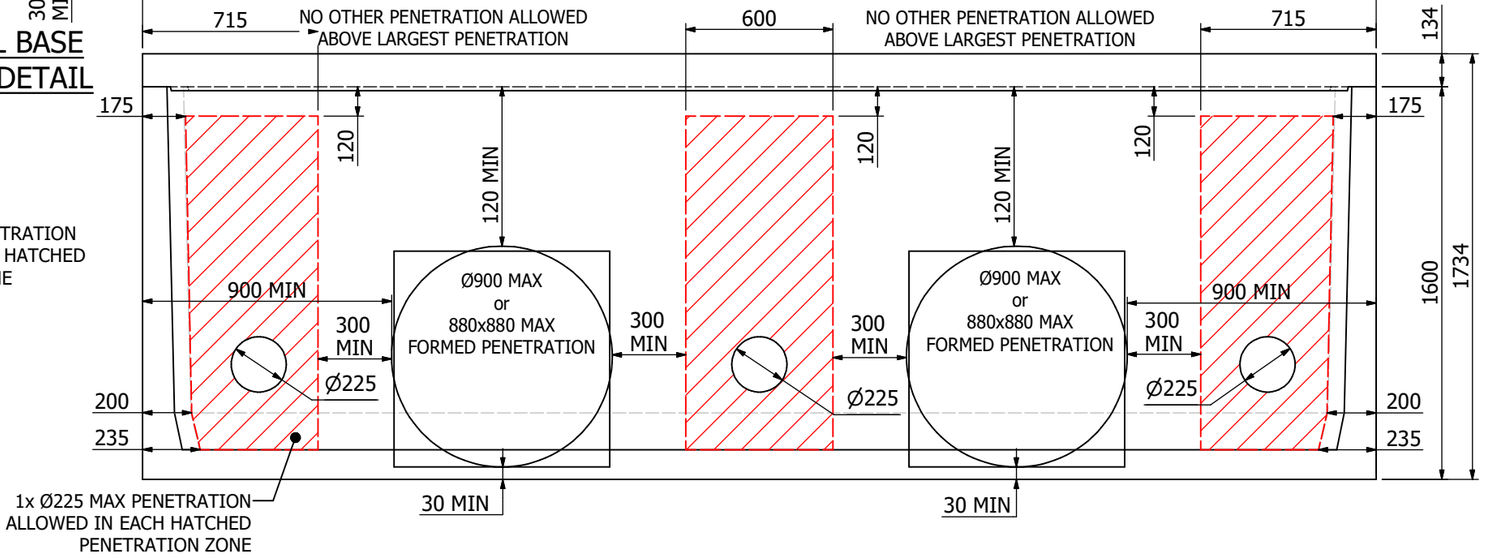

## TYPICAL BASE RECESS DETAIL




## LONG WALL - SINGLE LARGEST PERMISSIBLE PENETRATION




## SHORT WALL - 880x880 MAX. PENETRATION




## LONG WALL - 2x LARGEST PERMISSIBLE PENETRATION

**TOLERANCE:** All Dimensions to Closest 10 mm & +/- 30 mm

**ALL INTERCONNECTING PIPEWORK, PITS AND ASSOCIATED DRAINAGE BY OTHERS**

| REV | DATE | BY | DESCRIPTION | CHK |
|---|---|---|---|---|
| 1 | 10/11/2020 | G.T | INITIAL RELEASE | |

CLIENT:

CONFIDENTIAL - The drawings must not be disclosed to any third parties without written permission from SPEL STORMWATER . Unauthorised disclosure may result in prosecution.
© SPEL STORMWATER - This drawing is the property of SPEL STORMWATER ABN: 83 151 832 629 and is subject to return on demand. It is submitted for the use only in connection with the proposal and contracts of SPEL STORMWATER with the expressed conditions that it is not to be reproduced or copied in any form. This data must only be used in accordance with our standard terms and conditions.
© Copyright
SPEL STORMWATER accepts no responsibility for any loss or damage resulting from any person acting on this information.
The details and dimensions contained in this document may change; please check with SPEL STORMWATER for confirmation of current specifications.

| | | | |
|---|---|---|---|
| Drawn | GT | Date | 7/04/2021 |
| Check | | Date | |
| Verified | | Date | |
| Approved | | Date | |
| Request No. | | | |

spelstormwater
joy in water
spel.com.au

**PROJECT :**

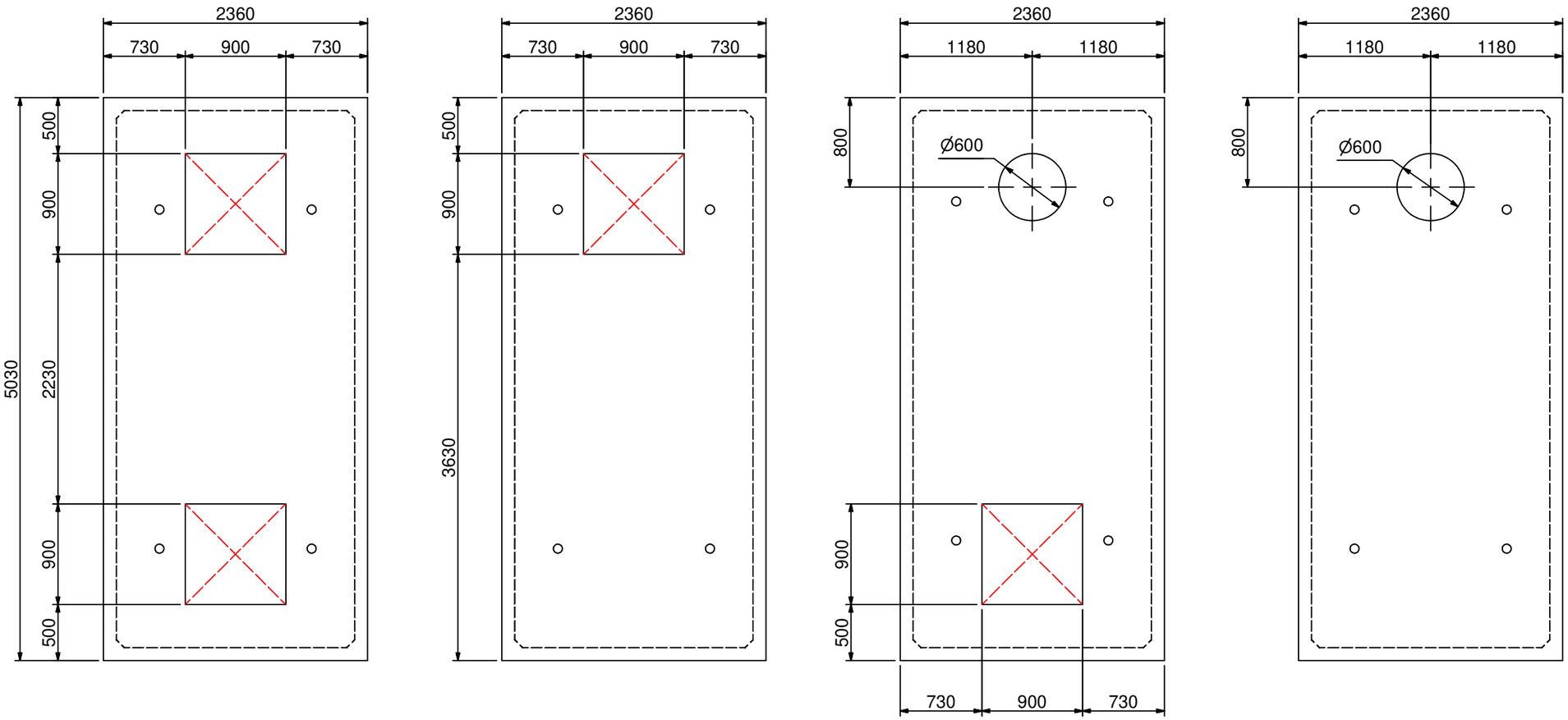
**TITLE**
PERMISSIBLE PENETRATIONS
14.88 kL SPEL PRECAST CONCRETE TANK
SV.5023-1464

| SCALE | SIZE | SHEET | REV |
|---|---|---|---|
| N.T.S | A3 | 1 | 1 |

CUSTOMER CODE :

DWG No. SP21-CT19400-C

C:\Users\GlenTregenza\OneDrive - All Pumps Group\Documents\Vault\Designs\Model\SV.5023-1464\SV.5023-1464 PENETRATIONS.dwg




## STANDARD LID FORMATIONS

FOR ADDITIONAL ACCESS OPENING AND POSITIONING OPTIONS
CONTACT SPEL

**TOLERANCE:** All Dimensions to Closest 10 mm & +/- 30 mm

**ALL INTERCONNECTING PIPEWORK, PITS AND ASSOCIATED DRAINAGE BY OTHERS**

| REV | DATE | BY | DESCRIPTION | CHK |
|---|---|---|---|---|
| 1 | 08/04/21 | G.T | INITIAL RELEASE | |

CLIENT:

CONFIDENTIAL - The drawings must not be disclosed to any third parties without written permission from SPEL STORMWATER . Unauthorised disclosure may result in prosecution.
© SPEL STORMWATER - This drawing is the property of SPEL STORMWATER ABN: 83 151 832 629 and is subject to return on demand. It is submitted for the use only in connection with the proposal and contracts of SPEL STORMWATER with the expressed conditions that it is not to be reproduced or copied in any form. This data must only be used in accordance with our standard terms and conditions.
© Copyright
SPEL STORMWATER accepts no responsibility for any loss or damage resulting from any person acting on this information.
The details and dimensions contained in this document may change; please check with SPEL STORMWATER for confirmation of current specifications.

| | | |
|---|---|---|
| Drawn | G.T | Date 9/04/2021 |
| Check | | Date |
| Verified | | Date |
| Approved | | Date |

Request No. RN211655

spelstormwater
joy in water
spel.com.au

**PROJECT :**

**TITLE** TANK LID PENETRATION OPTIONS
SPEL PRECAST CONCRETE TANK
SV.5023

| SCALE | SIZE | SHEET | REV |
|---|---|---|---|
| N.T.S | A3 | 1 | 1 |

CUSTOMER CODE :

DWG No. SP21-CT24600-C

C:\Users\GlenTregenza\OneDrive - All Pumps Group\Documents\Vault\Designs\Model\SV.5023-1350\SV.5023-STD LID TYPES.dwg

# Contact Us

**Calibre Professional Services Pty Ltd**
**55 070 683 037**

Foundation Place,
Level 4, 8 Market Lane
MAROOCHYDORE QLD 4558
PO Box 997, BUDDINA QLD 4575

calibregroup.com