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Belinda Weston  
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JOB : NEW SHED

AT : 71 TONGATABU ROAD  
DROMEDARY 7030

FOR : LUKE FENTON

DRAWING TITLE :

**SITE PLAN**

DRAWN:	DATE:	DWG NO. :
MJD	16.6.2021	<b>01</b>
SCALE:A3	ISSUE:	
1:500	DA	



LOT 6. ROAD

TONGATABU ROAD

LOT 1  
6689m<sup>2</sup>  
(not inc roads)

30.70m

Existing batter

77m<sup>2</sup>

FL:100.00

WT

WT

10m

WT

127m<sup>2</sup>

Existing Residence

Existing compacted roadbase Drive

2 x existing parking spaces

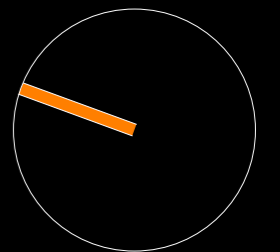
36m<sup>2</sup>  
BBQ area

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DRAWING TITLE :

**SITE PLAN**

DRAWN:	DATE:	DWG NO. :
MJD	6.7.2021	01a
SCALE:A3	ISSUE:	
1:200	DA	



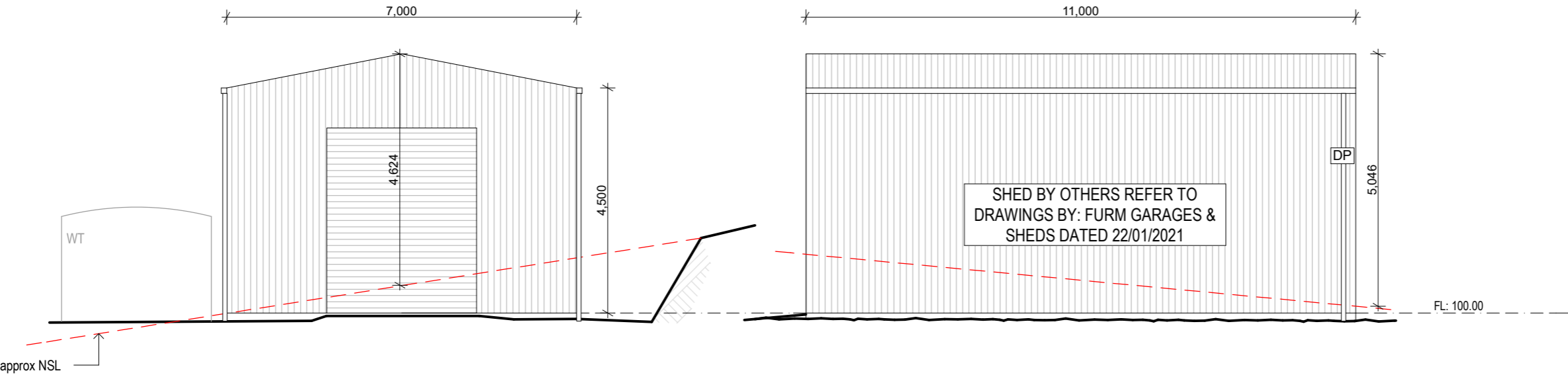
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BUILDER MUST VERIFY ALL DIMENSIONS AND LEVELS  
PRIOR TO COMMENCING CONSTRUCTION

USE WRITTEN DIMENSIONS-DO NOT SCALE

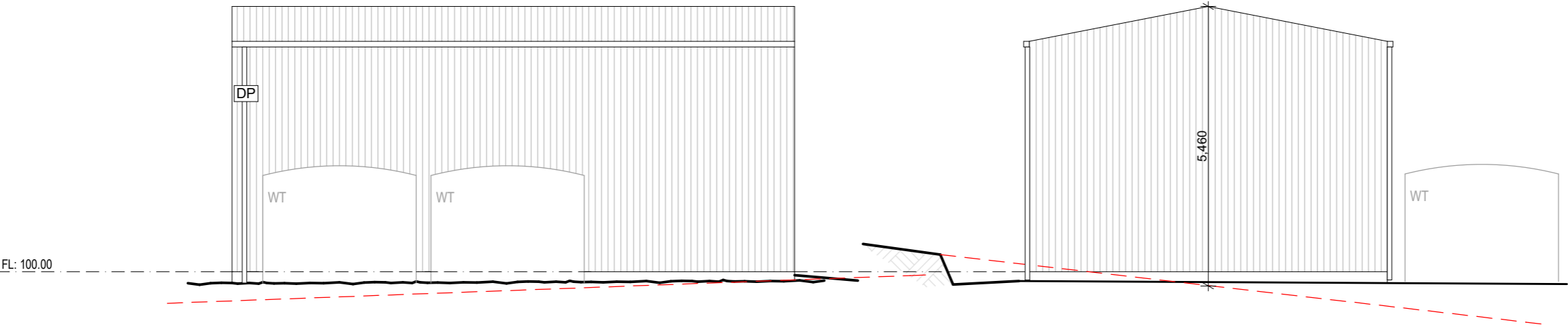
ALL CONSTRUCTION WORK SHALL BE CARRIED OUT IN  
ACCORDANCE WITH THE STATE BUILDING REGULATIONS  
LOCAL COUNCIL BY-LAWS AND CURRENT NCC

NOTIFY DESIGNER AND OR ENGINEER OF ANY CHANGES  
BEFORE CONSTRUCTION. NO RESPONSABILITY TAKEN FOR  
CHANGES MADE WITHOUT DESIGNERS AND OR ENGINEERS  
CONSENT AND APPROVAL



SOUTH ELEVATION

EAST ELEVATION



WEST ELEVATION

NORTH ELEVATION

PROPOSED 11 x 7 x 4.5H SHED BY OTHERS (77m2)

FLOOR LEVEL IS RELATIVE ONLY AND NOT THE RESULT  
OF A SITE CONTOUR SURVEY

NO EXISTING VEGETATION TO BE REMOVED

ALL PLUMBING AND DRAINAGE TO BE IN ACCORDANCE  
WITH LOCAL BUILDING AND HEALTH AUTHORITY

WATER TANK. OVERFLOW DIRECTED DOWNSLOPE AWAY FROM BUILDINGS AND  
AS CLOSE AS POSSIBLE ACCROSS THE CONTOURS.  
ALTERNATIVELY CONNECT TO EXISTING WATER TANK

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JOB : 6.7.2021

JOB : NEW SHED

AT : 71 TONGATABU ROAD  
DROMEDARY 7030

FOR : LUKE FENTON

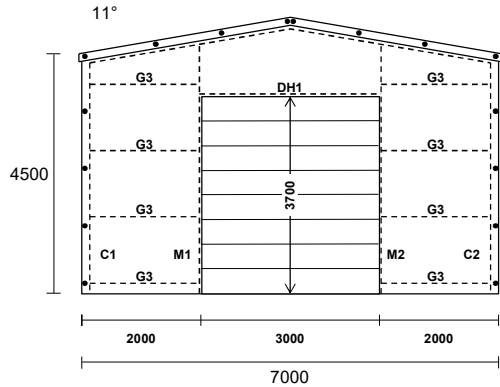
DRAWING TITLE :

**SHED ELEVATIONS**

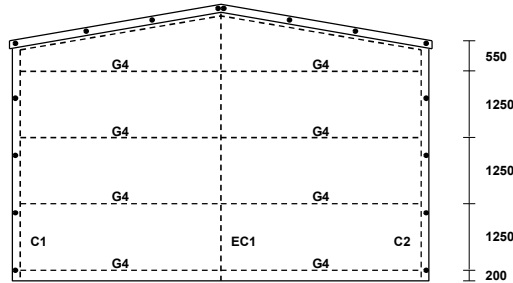
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MJD	16.6.2021	02
SCALE:A3	ISSUE:	
1:100	DA	



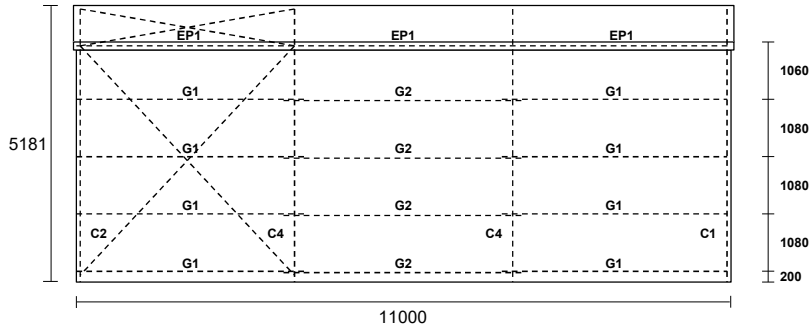
58



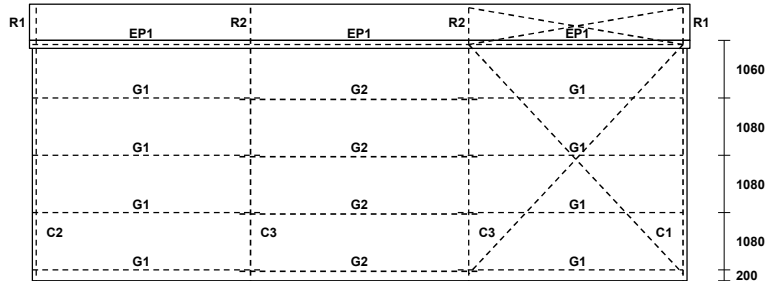
**FRONT ELEVATION**



**REAR ELEVATION**



**RIGHT ELEVATION**



**LEFT ELEVATION**

### GENERAL NOTES

ALL DIMENSIONS ARE IN MILLIMETRES UNO.

THIS BUILDING DESIGN IS SUITABLE FOR A DESIGN CLASS OF 10a.  
THIS BUILDING IS NOT DESIGNED FOR, AND CANNOT BE USED FOR,  
HUMAN HABITATION (CLASS 1).

THIS SITE SPECIFIC DETAIL REFERS TO THE STRUCTURAL SUITABILITY OF THE STRUCTURAL DESIGN ONLY. THE ENGINEER AND THE SUPPLIER TAKE NO RESPONSIBILITY FOR ANY COMPLIANCE WITH ANY LOCAL GOVERNMENT BY-LAWS, TOWN PLANNING REQUIREMENTS OR INDIVIDUAL SITE CIRCUMSTANCES THAT MAY EFFECT THE SUITABILITY OF THE INSTALLATION OF THE STRUCTURE AT THE ACTUAL SITE.

THESE DESIGNS WHEN CONSTRUCTED IN ACCORDANCE WITH THIS ENGINEERING COMPLIES WITH THE FOLLOWING STANDARDS AND REGULATIONS:-

AS1170.0 TO AS1170.4-2006, AS3600-2009,  
AS4055-2011, AS4100-1998 & AS4600-2005  
NCC 2018

THE FRAMING MEMBERS, ROOF PURLIN MEMBERS AND CLADDING WITHIN THESE DESIGNS ARE BASED ON THE SECTIONAL DESIGN PROPERTIES OF THE ROLLFORMED PRODUCTS MANUFACTURED BY LYSAGHT BUILDING PRODUCTS.

ALL SCREW FIX FASTENERS TO COMPLY WITH AS3566. ALL CONNECTION BOLTS TO COMPLY WITH AS1252 IN ACCORDANCE AS4100. ALL SCREW FASTENERS TO BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTALLATION INSTRUCTIONS. FRAMING BOLTS TO BE TIGHTENED TO A SHANK TENSION OF 90kN.

REFER TO PAGE 2 FOR FLOOR PLAN & MEMBER TABLE & WALL CLADDING DETAILS, PAGE 3 FOR FOOTING AND FOUNDATION DETAILS, PAGE 4 FOR ROOF PLAN AND ROOF CLADDING DETAILS AND PAGES 5&6 FOR FRAME AND MEMBER CONNECTION DETAILS.

THIS BUILDING IS TO BE CONSTRUCTED IN ACCORDANCE WITH GOOD PRACTICE. DURING CONSTRUCTION THE STRUCTURE MUST BE MAINTAINED IN A STABLE MANNER AND SUFFICIENTLY BRACED TO PREVENT OVERSTRESSING OF FRAME. THE ENGINEER AND THE SUPPLIER ACCEPT NO RESPONSIBILITY FOR ANY MISTAKES, FROM WHATEVER SOURCE, THROUGH PLEA OF IGNORANCE OF THE OWNER/BUILDER/ERECTOR.

## INCLUSIONS

STANDARD STRAMIT 3700H 3000W DOOR TO CTR FRT GBL

EMMANUEL DELLAS P/L  
E. DELLAS BE  
CC164C (TAS)  
EC22717 (Vic)

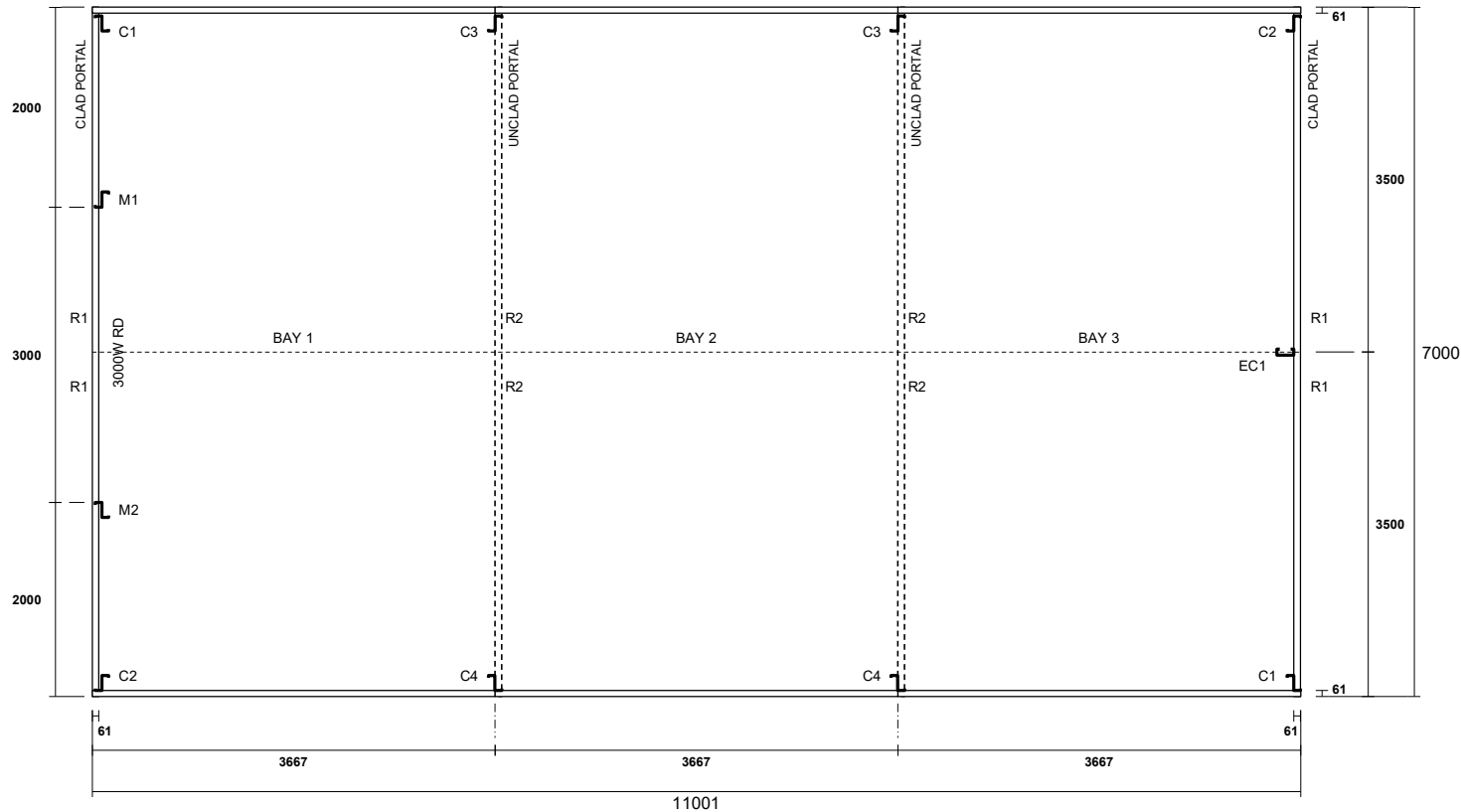
**Furm**  
**Garages & Sheds**  
23 DALMATIAN CRT LEGANA TAS 7277  
PH / FAX 1800 790 569

PAGE 1 OF 5

STRUCTURAL DRAWING NO. LEG1009-4 - DATE 22/01/2021

**PROPERTY DETAILS: OWNER: LUKE FENTON - SITE ADDRESS: 71 TONGATABU ROAD DROMEDARY 7030**

**MUNICIPAL DISTRICT: BRIGHTON COUNCIL**

**FLOOR PLAN**

(SCHEMATIC DRAWING - FRAME DETAILS NOT TO SCALE)

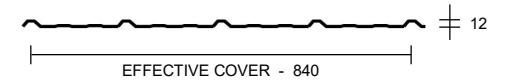
**PROPERTY DETAILS: OWNER: LUKE FENTON - SITE ADDRESS: 71 TONGATABU ROAD DROMEDARY 7030**  
**MUNICIPAL DISTRICT: BRIGHTON COUNCIL**

**MEMBER TABLE**

DESCRIPTION	MEMBER
CLAD COLUMNS (C1/C2)	Z15015
CLAD RAFTERS (R1)	C15015
UNCLAD COLUMNS (C3/C4)	Z20015
UNCLAD RAFTERS (R2)	C20015
KNEE BRACES (KB)	C10015
KNEE BRACE TO UNCLAD PORTAL FRAMES	
CLAD END WALL COLUMNS (EC1)	C15019
ROLLER DOOR MULLIONS (M1/M2)	Z15019
ROLLER DOOR HEAD (DH1)	TOPSPAN 6110
EAVE PURLINS (EP1)	C10012
ROOF PURLINS (P1/P2)	TOPSPAN 6110
WALL GIRTS (G1-G4)	TOPSPAN 6110
STRAP BRACING	32 x 1.2
ROOF CLADDING	0.42 TRIMDEK
WALL CLADDING	0.35 MULTICLAD

**WALL CLADDING AND FASTENING DETAILS**

WALL CLADDING - 0.35 MULTICLAD



FASTEN TO EACH WALL GIRT/EAVE PURLIN WITH  
 1 OF 10/16x16 CL3 TEK IN PAN ADJACENT TO EACH EAVE

**BRACING STRAP NOTE**

BRACING STRAP TO FRAME AS DETAILED. BRACING STRAP TO BE  
 FIXED UNDER TENSION PRIOR TO CLADDING BUILDING TO  
 PREVENT MOVEMENT OF FRAME. FIX TO FRAME WITH 2 OFF  
 14/10x20 CL3 TEKs TO EACH END

EMMANUEL DELLAS P/L  
 E. DELLAS BE  
 CC164C (TAS)  
 EC22717 (Vic)

**Furm**  
**Garages & Sheds**  
 23 DALMATIAN CRT LEGANA TAS 7277  
 PH / FAX 1800 790 569

PAGE 2 OF 5

STRUCTURAL DRAWING NO. LEG1009-4 - DATE 22/01/2021

## DELE REPORT – RURAL LIVING ZONE

APPLICATION DETAILS		
DA#:	DA 2021 / 00013	
Applicant:	Luke S Fenton (owner/occupier/applicant)	
Description for Advertising (Update in RegApps)	Address:	71 Tongatabu Road, Dromedary
	Proposal:	Outbuilding

## ENGINEERING CODE ASSESSMENT

Mark discretionary clauses red

Parking & Access Code	Clause:	Proposed	Complies with AS			PC Assessment/Comments
Number of Spaces	E6.6.1 – E6.6.4 A1	2+	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>	
Number of Accesses	E6.7.1 A1	1	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>	Is compliant with the standards, present access does not detract from neighbour's amenity and does not dominate the streetscape.
Design of Accesses	E6.7.2 A1		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>	Is compliant, sight lines of 95m to the north and 47m to the south. North is compliant and being uphill having the greater need and south whilst not compliant has the same sight lines as that of the entry opposite to 62 Tongatabu. The present access is considered acceptable as it addresses conflict avoidance, ease of access requirements and is suitable for commercial vehicles.
Passing	E6.7.3 A1		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>	
Turning	E6.7.4 A1		Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Whilst not required the design and location allows for the turning of larger vehicles on site. Adequate space exists in front and to the side of the proposed shed to accommodate truck turning.

Layout	E6.7.5 A1		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>	Adequate space exists in front and to the side of the proposed shed to accommodate a truck turning and any loading/unloading requirements expected, such as one delivering firewood or household water. Existing parking in front of the BBQ area services family and visitor passenger vehicle requirements and additional areas provide by the development are not used by visitors.
Surfacing	E6.7.6 A1		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>	Whilst compliant, parking and turning areas meet the performance requirements of suitability, use and nuisance mitigation. All surfaces are bearing on the excavated rock shelf and well drained.
Lighting	E6.7.7 A1		Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	
Landscaping	E6.7.8 A1		Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Whilst not a requirement applicant has verbally outlined plans to landscape to support banks and minimise erosion.
Motorcycles	E6.7.9 A1		Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	
Bicycles	E6.7.10 A1 & A2		Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	
Bicycle End of trip	E6.7.11 A1		Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	
Siting of parking	E6.7.12 A1		Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Whilst not a requirement parking as proposed will not be visible from the roadway above.
Commercial vehicles	E6.7.13 A1		Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	Whilst not a requirement applicant has designed all aspects to accommodate larger vehicles including loading, unloading, and manoeuvring.
Road access	E6.7.14 A1		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>	Whilst not a requirement access to the public road is not compromised with the development and meets all the requirements of the authority.
Stormwater Code	Clause:	Proposed	Complies with AS			PC Assessment/Comments
Gravity Connection	E7.7.1 A1	On-site management required (tanks proposed)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>	Proposed is to use the additional roof space for rainwater collection and storage. Given the environment is categorised a "dry sclerophyll forest" with a neighbouring steep gully, uncaptured overflow stormwater will be directed to the present overland flow path in a much-reduced

						capacity. It is envisaged a nett reduction in frequency and volume from the development.
WSUD	E7.7.1 A2		Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	
Minor SW			Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	
Major SW			Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	

Standard Engineering conditions (delete ones that will not go into permit).

#### Standard Conditions

#### Services

- (1) The developer must pay the cost of any alterations and/or reinstatement to existing services, Council infrastructure or private property incurred as a result of the development. Any work required is to be specified or undertaken by the authority concerned.

#### Parking and Access

- (2) At least two (2) additional car parking spaces must be provided on the land at all times for the use of the development, in accordance with Standards Australia (2004) Australian Standard AS 2890.1 - 2004 – Parking Facilities Part 1: Off Street Car Parking; Standards Australia, Sydney.
- (3) The internal driveway and areas set-aside for parking and associated access and turning must be provided in accordance with Standards Australia (2004): Australian Standard AS 2890.1 - 2004 – Parking Facilities Part 1: Off Street Car Parking; Standards Australia, Sydney and to the satisfaction of Council's Municipal Engineer, and must include all of the following;
  - (a) Constructed with a durable all weather gravel pavement.
  - (b) Minimum carriageway width of 4 metres
  - (c) Drained to the present overland flow path via swale drains as required located above and below batters.
- (4) The internal driveway and areas set-aside for parking and associated access and turning must be designed, constructed, and maintained to avoid dust or mud generation, erosion and sediment transfer off site or destabilisation of the soil on site or on adjacent properties to the standard required by Council's Municipal Engineer

#### Access to Road

- (5) Unless approved otherwise by Council's General Manager the existing vehicular access, from the road carriageway to the property boundary, must be maintained to comply with Standard Drawings TSD-R03-v1 *Rural Roads Typical Property Access*, TSD-R04-v1 *Rural Roads Typical Driveway Profile* and TSD-RF01-v1 *Guide To Intersection And Domestic Access Sight Distance* and to the satisfaction of Council's General Manager.

### **Stormwater**

- (6) Stormwater from the proposed development must be retained on site and excess drained to the neighbouring gully via dispersion to the satisfaction of Council's General Manager and in accordance with a Certificate of Likely Compliance or Plumbing permit issued by the Permit Authority in accordance with the *Building Act 2016*.

### **Soil and Water Management**

- (7) Before any work commences install temporary run-off, erosion and sediment controls and maintain these at full operational capacity until the land is effectively rehabilitated and stabilised after completion of the development in accordance with the guidelines Soil and Water Management on Building and Construction Sites, by the Derwent Estuary Programme and NRM South and to the satisfaction of Council's General Manager.

## **DISCUSSION**

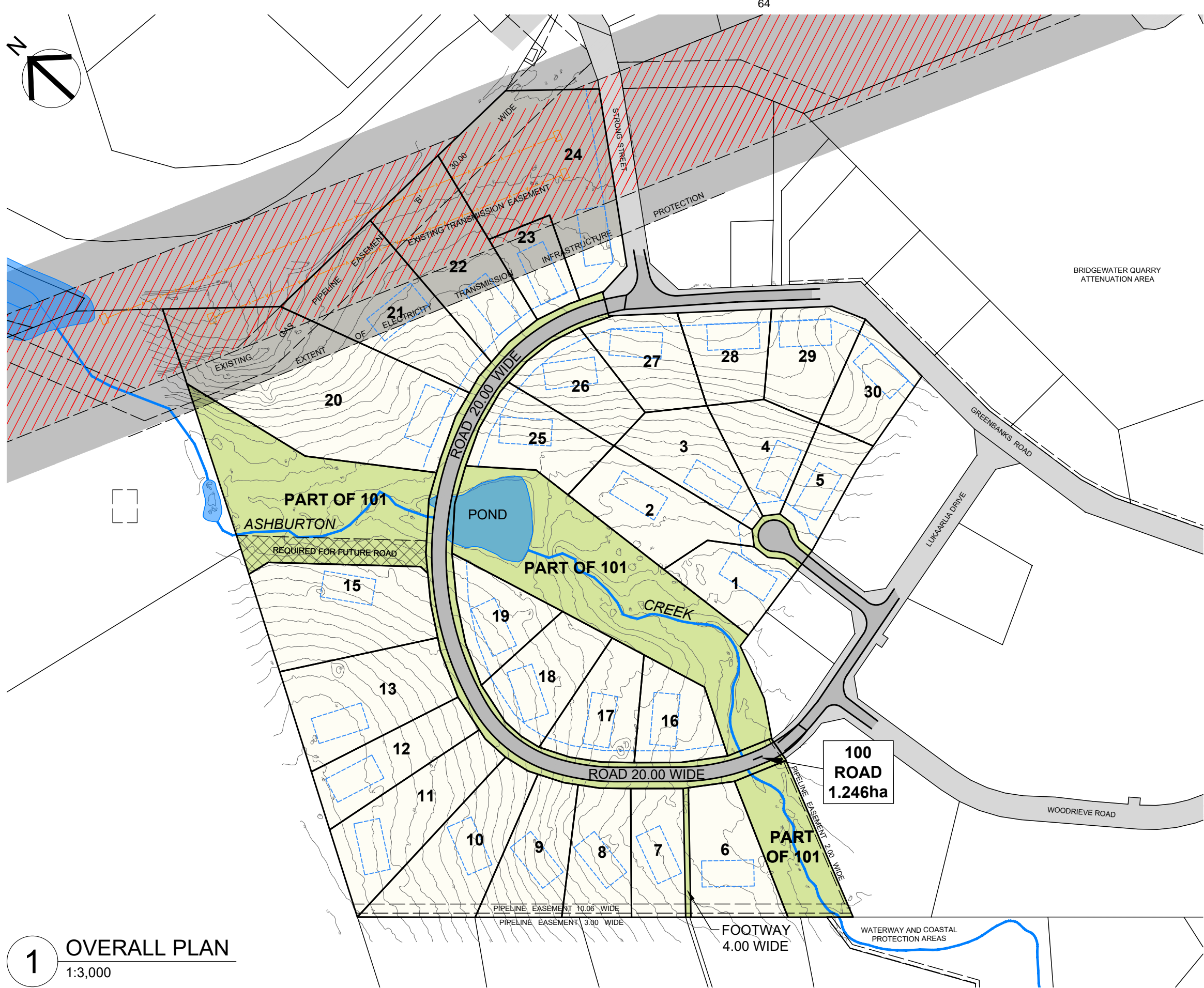
### Discussion (non-standard conditions, correspondence, referrals, anything else)

All work undertaken supports the development, is to a good standard and is considered normal domestic improvements.

Stormwater erosion and impact claims made by the sole representation do not match what is shown on site or the contours would suggest. The gullies to the south and west of the applicants property effectively offer protection from surrounding overland flow. Any stormwater experienced downstream would be from minor road and easterly collection and entirely naturally occurring. It is doubtful that the development at 71 Tongatabu will negatively influence any neighbour below.

Claims made by the representation that removal of trees or shrubs has/will influence soil coverage, impact on erosion, overland flow paths and thus impact on their amenity is not substantiated. The area is classified as dry sclerophyll forest that is characterised by little topsoil coverage, sparse vegetation, and dry creeks. On inspection tree density was as expected given the need for occupation requirements (parking and open space) and bushfire risk mitigation practices.

Tying together any past activities on 71 Tongatabu as having a negative impact on the amenity of neighbouring properties is not substantiated for parking, access, and stormwater.



## CONTENTS

Drawing Title	Dwg. No.
1 - OVERALL PLAN	2E
2 - SITE PLAN A	3E
3 - SITE PLAN B	4E
4 - SITE PLAN C	5E

## PROPERTY DETAILS

**Owners**  
Denise Sutcliffe PTY LTD & Sutcliffe Earthmoving PTY LTD

**Title References**  
FR 176402/1

**Address**  
Lot 1 Greenbanks Road, Bridgewater

**Council**  
Brighton Council

**Planning scheme**  
Brighton Interim Planning Scheme 2015  
**Zone**  
25.0 General Industrial

**Zone Overlay**  
117. Attenuation Area; Industrial precinct & Bridgewater quarry,  
117. Waterway and Coastal Protection Area  
117. Electricity Transmission Infrastructure Protection

**Map reference**  
'New Norfolk 15' 5026-15

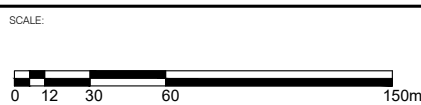
**PID**  
9633391,  
**Point of interest GDA94 MGA55**  
518650E, 5269840N

**Schedule of Easements**  
Existing Easements to be carried forward.  
Pipeline and Service Easements and Drainage easements as required and Nil.

## NOTES

- This plan has been prepared only for the purpose of obtaining preliminary subdivision approval from the Council and the information shown hereon should be used for no other purpose. All measurements and areas are subject to final survey.
- The Relevant Planning Scheme Overlays are not shown on these plans for plan clarity.

REV	AMENDMENTS	DRAWN	DATE	APPR.
E	LOT 14 REMOVED AND LOTS 13 & 15 BOUNDARIES ADJUSTED ACCORDINGLY	RD	17-06-2021	CT
D	FUTURE ROAD RESERVE INCORPORATED LOT 15 & PART OF 101 AREA REVISED	RD	21-04-2021	CT



SURVEYOR	GEOCIVIL
DRAWN	CHECKED
BM/MK	CT
DATE	10 FEBRUARY 2021

PROPOSED SUBDIVISION  
LOT 1 GREENBANKS ROAD, BRIDGEWATER  
for PAUL SUTCLIFFE



**PDA Surveyors**  
Surveying, Engineering & Planning  
ABN 71 217 806 325

Incorporating  
**WALTER SURVEYS**

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SCALE	PAPER
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JOB NUMBER	DRAWING
45549CT	-2E





**3 SITE PLAN B**  
1:1,500

E	LOT 14 REMOVED AND LOTS 13 & 15 BOUNDARIES ADJUSTED ACCORDINGLY	RD	17-06-2021	CT
D	FUTURE ROAD RESERVE INCORPORATED LOT 15 & PART OF 101 AREA REVISED	RD	21-04-2021	CT
REV	AMENDMENTS	DRAWN	DATE	APPR.

SCALE:

SURVEYOR  
-  
GEOCIVIL

DRAWN  
BM/MK  
DATE  
10 FEBRUARY 2021

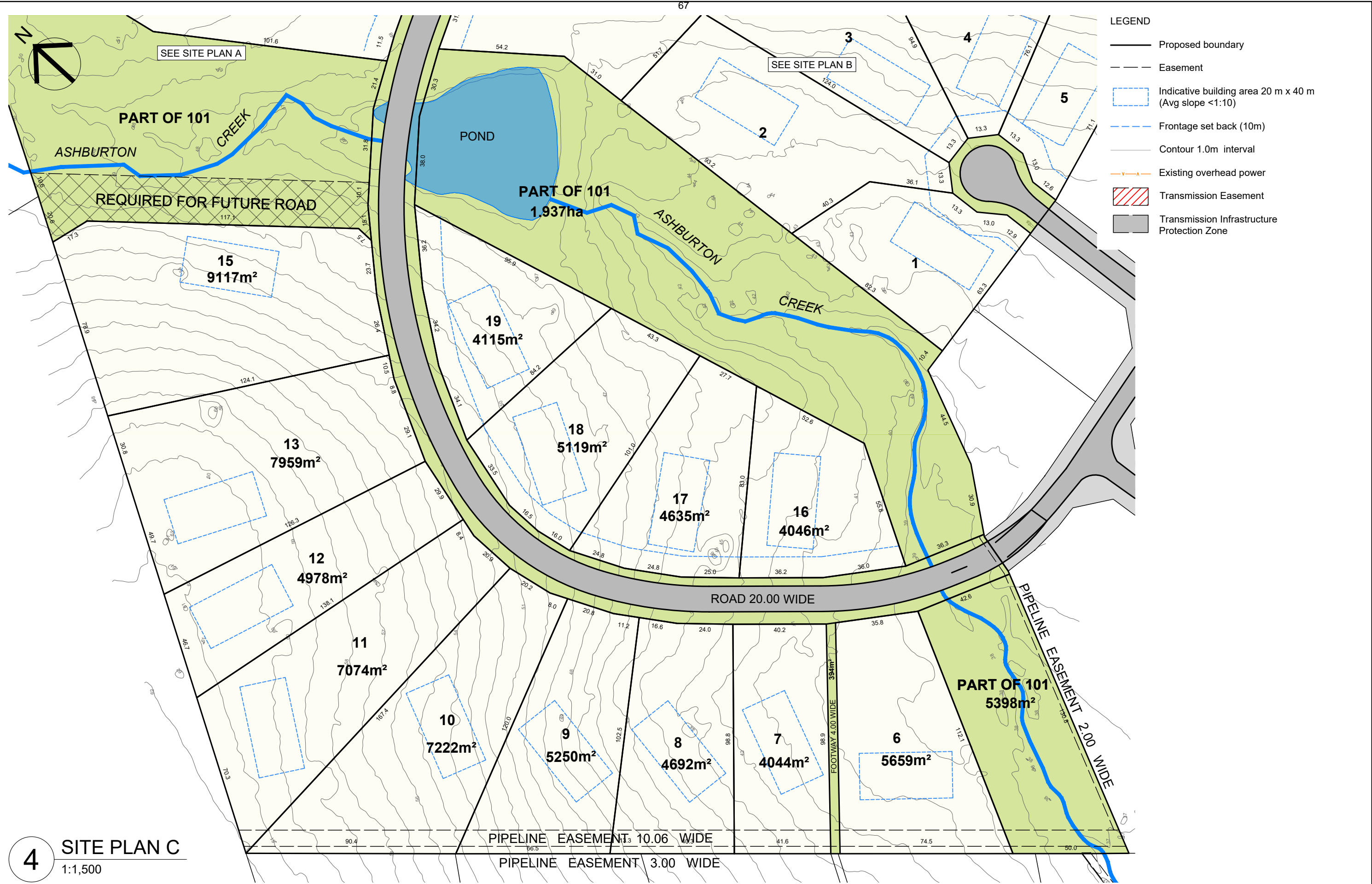
CHECKED  
CT

PROPOSED SUBDIVISION  
LOT 1 GREENBANKS ROAD, BRIDGEWATER  
for PAUL SUTCLIFFE



**PDA Surveyors**  
Surveying, Engineering & Planning  
ABN 71 217 806 325

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SCALE	PAPER
1:1500	(A3)
JOB NUMBER	DRAWING
45549CT - 4E	



4 SITE PLAN C  
1:1,500

				SCALE:		SURVEYOR		GEOCIVIL		<div><div><b>PDA Surveyors</b><div><div>Incorporating <b>WALTER SURVEYS</b></div></div></div><div>Surveying, Engineering &amp; Planning</div><div>ABN 71 217 806 325</div></div> <div>127 Bathurst Street Hobart, Tasmania, 7000 www.pda.com.au Also at: Kingston, Launceston &amp; Burnie</div> <div>PHONE: +61 03 6234 3217 FAX: +61 03 6234 5085 EMAIL: pda.hbt@pda.com.au</div> <table><tr><td>SCALE</td><td>PAPER</td></tr><tr><td>1:1500</td><td>(A3)</td></tr><tr><td>JOB NUMBER</td><td>DRAWING</td></tr><tr><td colspan="2">45549CT - 5E</td></tr></table>	SCALE	PAPER	1:1500	(A3)	JOB NUMBER	DRAWING	45549CT - 5E	
SCALE	PAPER																	
1:1500	(A3)																	
JOB NUMBER	DRAWING																	
45549CT - 5E																		
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						BM/MK		CT										
						DATE		10 FEBRUARY 2021										
E	LOT 14 REMOVED AND LOTS 13 & 15 BOUNDARIES ADJUSTED ACCORDINGLY			RD	17-06-2021	CT												
D	FUTURE ROAD RESERVE INCORPORATED LOT 15 & PART OF 101 AREA REVISED			RD	21-04-2021	CT												
REV	AMENDMENTS			DRAWN	DATE	APPR.												

45549CT -5E

APPLICATION FOR PLANNING PERMIT

SA 2020 / 00050, LOT 1 GREENBANKS ROAD, BRIDGEWATER

1. **The proposed stormwater system relies on future on-site detention on individual lots. This method is not supported by Council. Advice:**

Advice:

The minor system should be designed based on:

- a) Min. 80% impervious area
- b) No individual lot detention
- c) No increase in pre-development flows in the creek where it leaves the subject property. Detention within the public open space land would be acceptable. Detention within the creek itself may be considered subject to impact on any natural values.

An amended design is to be provided based on the above information.

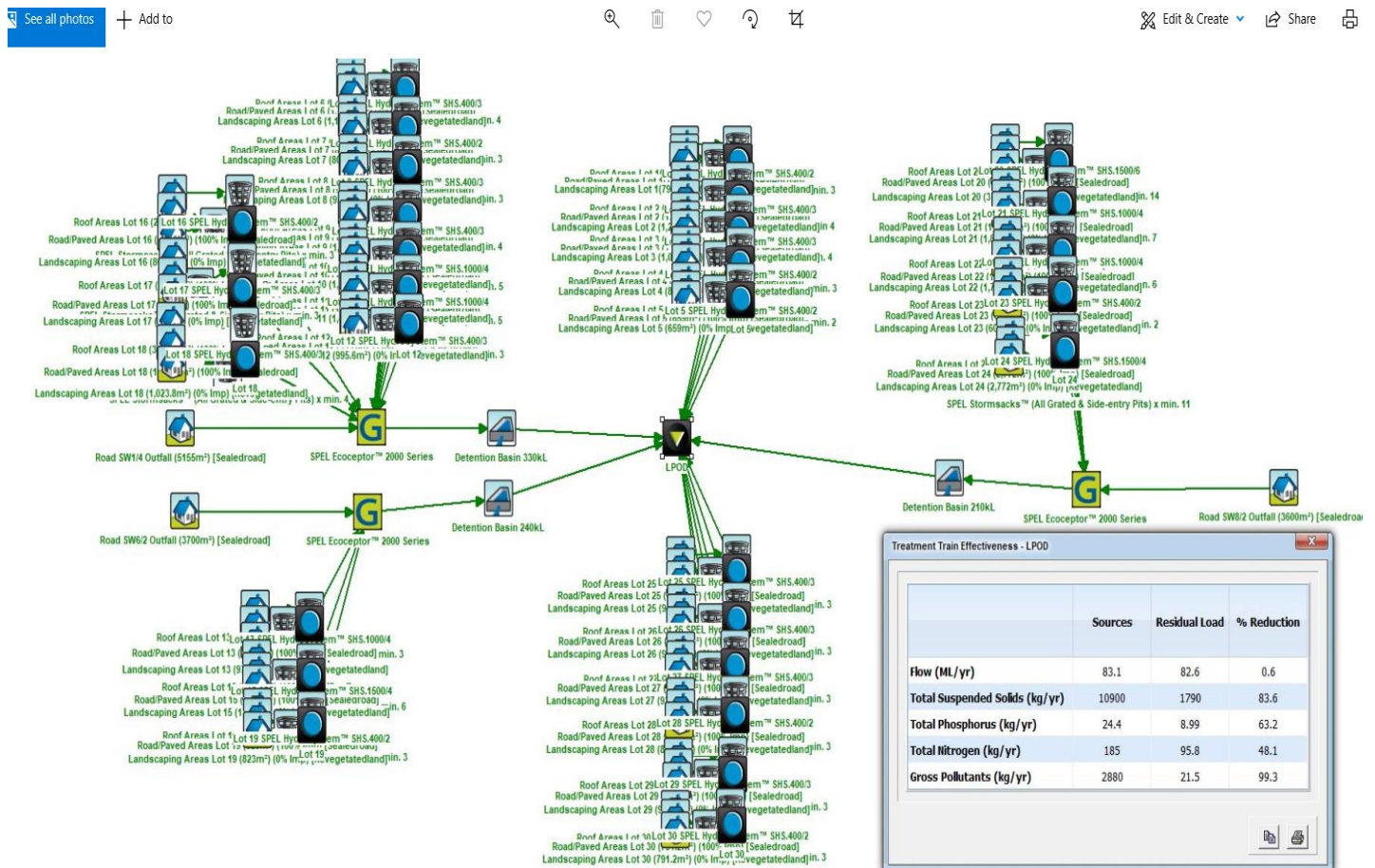
**Response: -**

- The attached Drains model and concept engineering plans have been amended to conform with the advice as detailed above with retention basins proposed at the discharge points
2. (a) Stormwater treatment needs to be provided for the subdivision. It is accepted that in an industrial zone individual lots will require stormwater treatment prior to discharging to the public system. A part 5 agreement in this instance is acceptable.
  - (b) The stormwater treatment provided as part of the subdivision will need to cater for all reserves (including roads), open space and undeveloped lots.
  - (C) An amended music model should be provided removing the onsite detention to be included in the advertising documentation.

**Response**

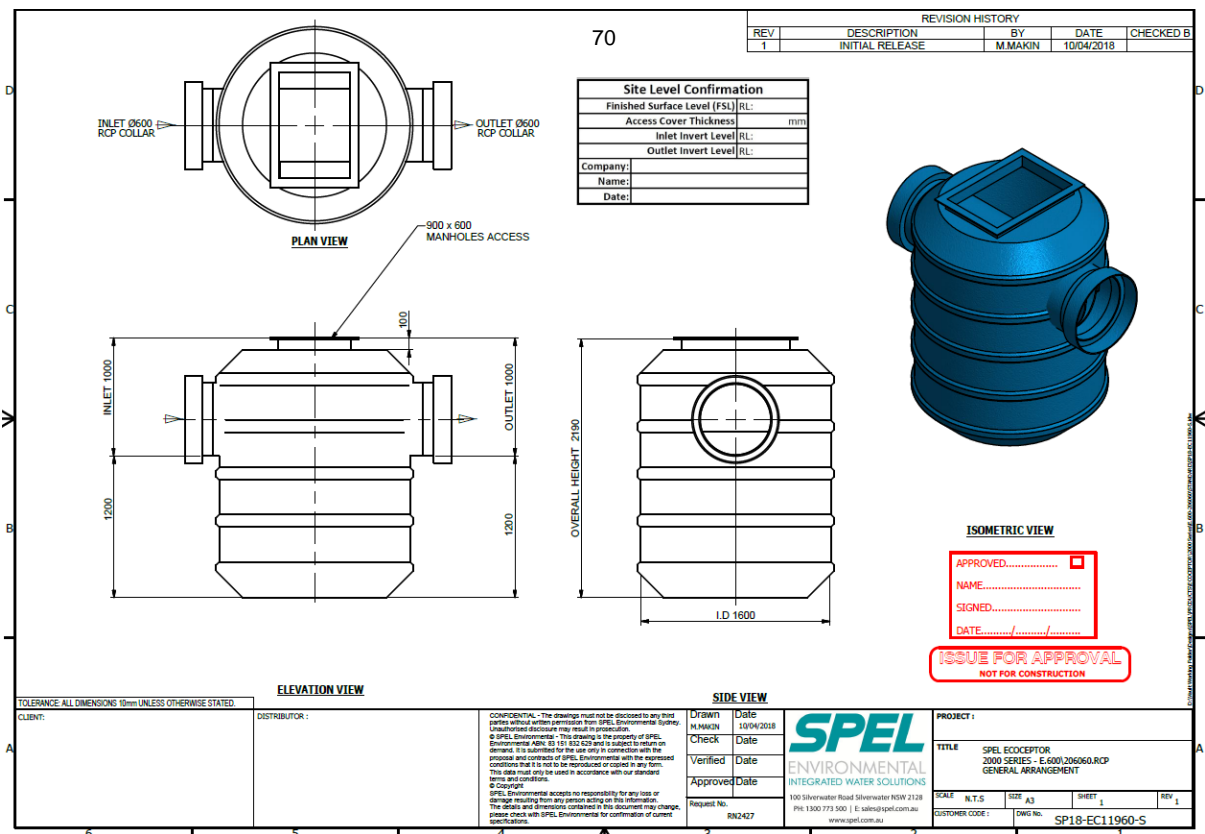
- The treatment of the stormwater was modelled with MUSIC software to meet the acceptable stormwater quality and quantity targets based on the advice as provided by Council in item 2 above.

## Screen dump of MUSIC Model



The conceptual MUSIC model details compliance with the acceptable stormwater quality and quantity targets based on the following

- On site treatment is to be installed on each lot
- Detention basins for the development are to be installed at the time of development of the site
- GPT's are to be installed on Municipal Infrastructure prior to discharge into the environment at the time of subdivision



Lot #	Primary Treatment		Detention		Tertiary Treatment (Hydrosystem)					
	Min# Stormsacks	Ecoceptor 2000	m3	HS.400/2	HS.400/3	HS.1000/4	HS.1500/4	HS.1500/5	HS.1500/6	
1	3		0	1						
2	4		0		1					
3	4		0		1					
4	3		0	1						
5	2		0	1						
6	4		0		1					
7	3		0	1						
8	3		0		1					
9	4		0		1					
10	5		0			1				
11	5		0			1				
12	3		0		1					
13	3		0			1				
15	6		0				1			
16	3		0	1						
17	3		0		1					
18	4		0		1					
19	3		0	1						
20	14		0							1
21	7		0			1				
22	6		0			1				
23	2		0	1						
24	11		0				1			
25	3		0		1					
26	3		0		1					
27	3		0		1					
28	3		0	1						
29	3		0		1					
30	3		0	1						
SW1/1		1	330							
SW6/1		1	240							
SW8/1		1	210							
TOTAL	123	3	780	9	12	5	2	0		1

LOT 1 GREENBANKS ROAD, BRIDGEWATER 45549CT

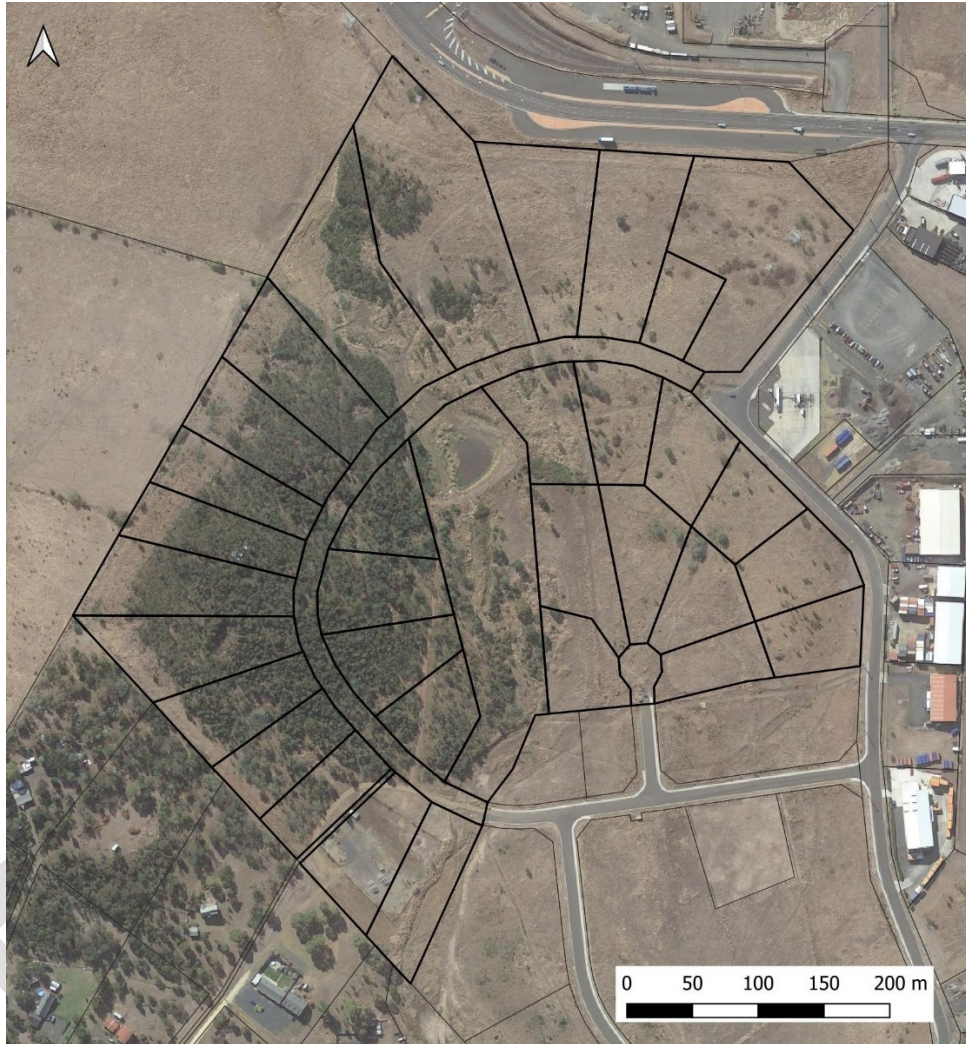
It be noted that all the stormwater parameters and proposed infrastructure will be reviewed, adjusted and confirmed during the detail design

In addition to the following written response, the following is also provided to support this response:

- Concept Stormwater Plans – DWG No 45549CT
- Drains Model

# Bushfire Hazard Report

For proposed 30 lot subdivision at Greenbanks Rd, Bridgewater



Landowner: Denise Sutcliffe Pty Ltd & Sutcliffe Earthmoving Pty Ltd

Author: Jim Mulcahy

Date of Assessment: 11<sup>th</sup> August 2020 & 3<sup>rd</sup> December 2020

Version: V1 – December 2020

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## Executive Summary

The following *Bushfire Hazard Report* has been prepared in support of a proposed 30 lot subdivision located in the 'Brighton Industrial Estate' at Greenbanks Rd Bridgewater (CT 176402/1).

The proposed subdivision occurs in a bushfire prone area pursuant to *E1.0 Bushfire Prone Areas Code* (the Code) of the *Brighton Interim Planning Scheme 2015* (the Scheme). Regardless of the industrial zoning and improbability of any future residential development on lots arising from the subdivision, the Scheme requires that the bushfire risk to the development and appropriate hazard management responses to those risks be considered during the planning process.

The proposed subdivision has been assessed against the requirements of the Code and AS 3959-2009 *Construction of Buildings in Bushfire Prone Areas* (AS 3959). A *Bushfire Hazard Management Plan* has been prepared, showing *Indicative Building Areas* and *Hazard Management Areas* which demonstrate the potential for any future dwellings on lots arising from the subdivision to achieve a *Bushfire Attack Level* (BAL) rating of BAL-19 under Table 2.4.4 of AS 3959.

The *Bushfire Hazard Management Plan* demonstrates compliance with the acceptable solutions for subdivision under the Code and has been submitted to the *Tasmania Fire Service* (TFS) for endorsement. A certified version of the plan will accompany the final version of this report and will be provided to Brighton Council as part of a development application for the proposed subdivision.

**Andy Welling – Enviro-dynamics Pty Ltd**

ACCREDITED BUSHFIRE ASSESSOR (BFP-135)

CERTIFICATE No: ED0275    DATE: 21/12/2020



Signed:

### Disclaimer

All reasonable steps have been taken to ensure that the information and advice contained in this report is an accurate reflection of the fire hazard affecting the proposed development at the time of the assessment and the hazard management measures necessary to meet the standards prescribed in *E1.0 Bushfire Prone Areas Code* of the *Brighton Interim Planning Scheme 2015* and *Australian Standard AS 3959-2009*.

The prescribed hazard management measures are designed to reduce bushfire risk to any dwelling(s) constructed on the site. The effectiveness of these measures relies on their implementation in full and their maintenance for the life of the development. No liability can be accepted for actions by landowners or third parties that undermine or compromise the integrity of prescriptions and recommendations contained in this report.

Due to the unpredictable nature of bushfires, particularly under extreme weather conditions, landowners should be aware that implementation and maintenance of the hazard management measures outlined in this report cannot guarantee that a building will survive a bushfire event.

### Australian Standards

*AS3959 – 2009 Construction of Buildings in Bushfire-Prone Areas* has recently been superseded by *AS3959:2018*.

*AS3959 2009* remains relevant for this report and will remain relevant until *E1.0 Bushfire Prone Areas Code* of the various Interim Planning Schemes has been updated to reference the new standard.

In respect of Bushfire Attack Level (BAL) determinations based on vegetation type and slope, the content of Table 2.4.4 in *AS3959-2009* is the same as Table 2.6 in *AS3959:2018*. The new standard does include some changes to the description of Low threat vegetation and the Classification of Vegetation, but these changes do not materially affect the analysis contained in this report. As a result, to the best of the author's knowledge and understanding, the conclusions and prescribed separation distances contained in this report and the attached *Bushfire Hazard Management Plan* are consistent with the provisions of both *AS3959-2009* and *AS3959:2018*.

## 1. Introduction

The following *Bushfire Hazard Report* has been undertaken to address the provisions of E1.0 *Bushfire-Prone Areas Code* (the Code) of the *Brighton Interim Planning Scheme 2015* (the Scheme). The report provides an assessment of the bushfire hazard affecting the development and outlines protective features and controls that must be incorporated into the design and layout of the subdivision to ensure compliance with the Code in respect of hazard management areas, access for fire-fighting and water supplies for fire-fighting.

The analysis in this report has been used to prepare a *Bushfire Hazard Management Plan* (BHMP) which demonstrates the capacity of all lots arising from the subdivision to support a building area which meets the requirements of BAL-19 under AS 3959-2009 *Construction of Buildings in Bushfire Prone Areas* (AS3959).

### 1.1 Site Details

Landowner: Denise Sutcliffe Pty Ltd & Sutcliffe Earthmoving Pty Ltd

Location: Greenbanks Rd Brighton

Title: CT 176402/1 (PID 9535328)

Municipality: Brighton Council

Zoning: General Industrial

Planning Overlays: *Bushfire Prone Areas* (whole site)

*Attenuation Area – Industrial Precinct* (whole site)

*Waterway & Coastal Protection Area* (along Ashburton Creek)

Type of Development: 30 lot subdivision

Date of Assessment: 11<sup>th</sup> August 2020 & 3<sup>rd</sup> December 2020

Reference Number: ED0275

### 1.2 Subdivision Proposal (see proposal plan at Figure 1)

The proposed subdivision will create 30 industrial lots ranging in size from 3041m<sup>2</sup> to 1.816ha, along with new public road (Lot 100) and a Public Open Space lot along Ashburton Creek (Lot 101).

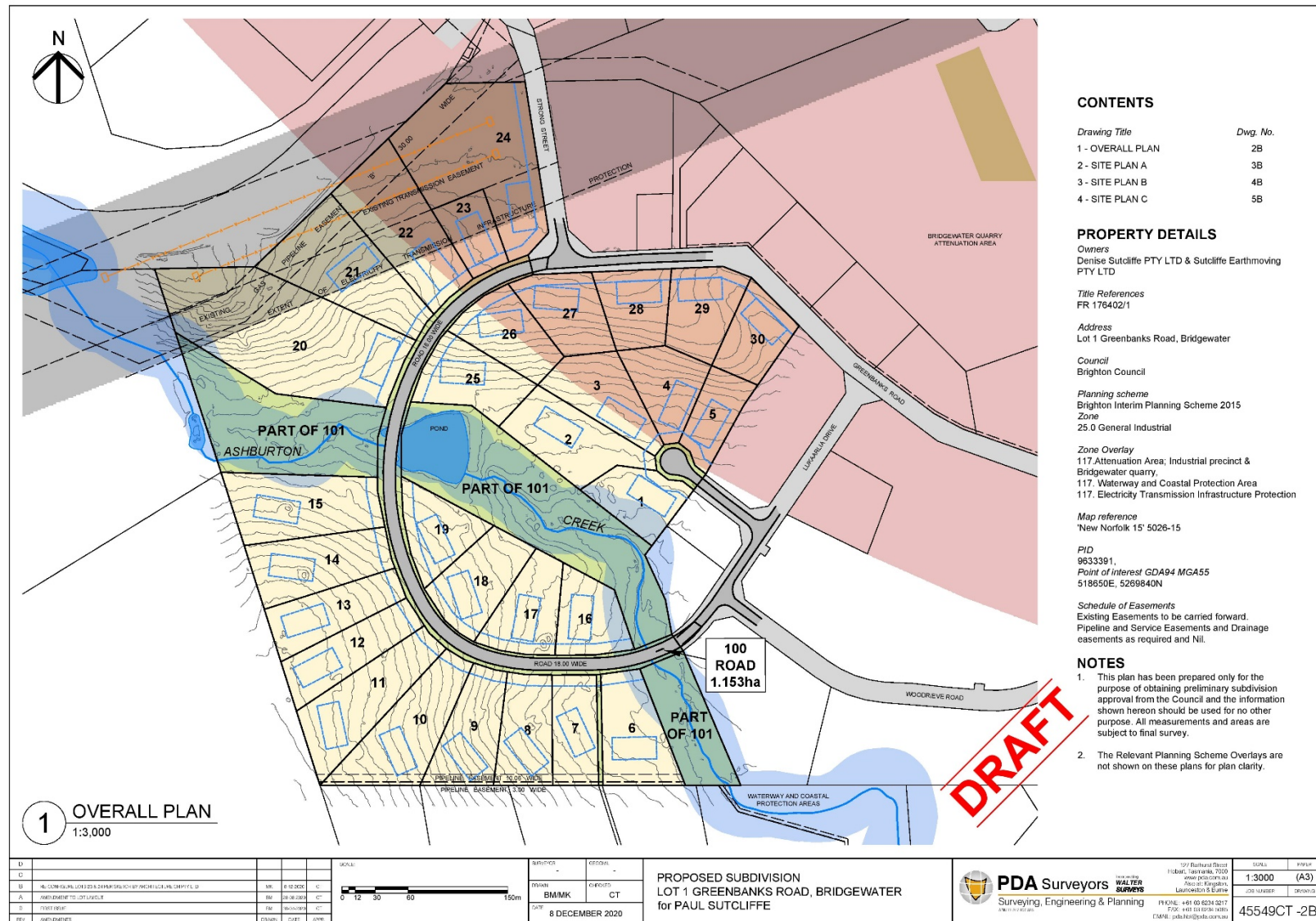


Figure 1 – Proposal Plan (PDA Surveyors, December 2020)

### 1.3 Site Description (see location and context maps at Figures 2 & 3)

The subject land is a single title occupying 22.99ha within the *Brighton Industrial Estate* at Greenbanks Road, Bridgewater. It does not currently contain any built infrastructure except towers associated with high voltage electricity transmission lines that cross the land from west to east near the northern boundary.

The land is bisected from north-west to south-east by Ashburton Creek, with a large in-stream dam lying roughly in the centre of the site. To the north and east of the creek, the land has a southerly aspect, descending from a maximum height of approximately 67m above sea level asl in the north-west corner to approximately 39m asl in the south-east corner. To the south and west of the creek, the land has an easterly aspect, descending from a maximum height of approximately 62m asl in the south-west corner to approximately 39m asl in the south-east corner. Slopes across the land are generally in the range of 5-10°, with small areas of less than 5° on areas of floodplain east of the creek and in the north-east corner.

Vegetation across the site is predominantly grassland and pasture containing only scattered small trees and tall shrubs. Until recently, land west of the creek was occupied by dense regrowth scrub, but this area was cleared in October 2020 and is now mostly bare ground (compare aerial photography in figures with photos at Appendix A). Along Ashburton Creek there are areas of scrub and woodland with potential to succeed to forest over time.

Properties to the west, north and east of the subject land are also zoned *General Industrial* and are predominantly occupied by grassland or pasture, with small patches of scrub and woodland. To the south are *Rural Living* properties containing existing dwellings. Vegetation on these blocks is comprised of a mix of managed land, grassland/pasture and scrub or woodland with the potential to succeed to forest if left unmanaged. The broader landscape around the subject land includes large areas of contiguous woodland and forest to the west.

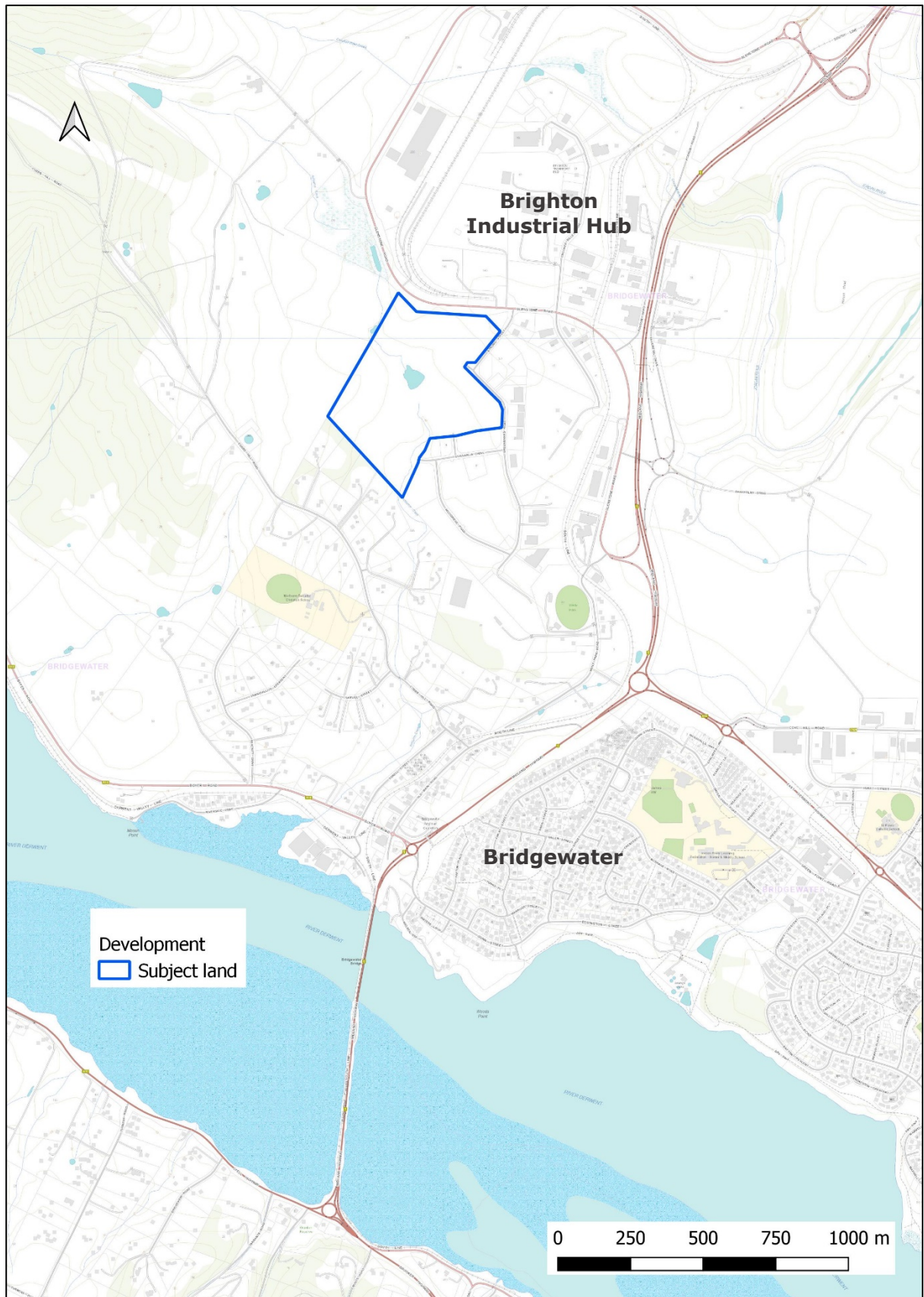


Figure 2 – Site Location (Source: theLIST, 2020)

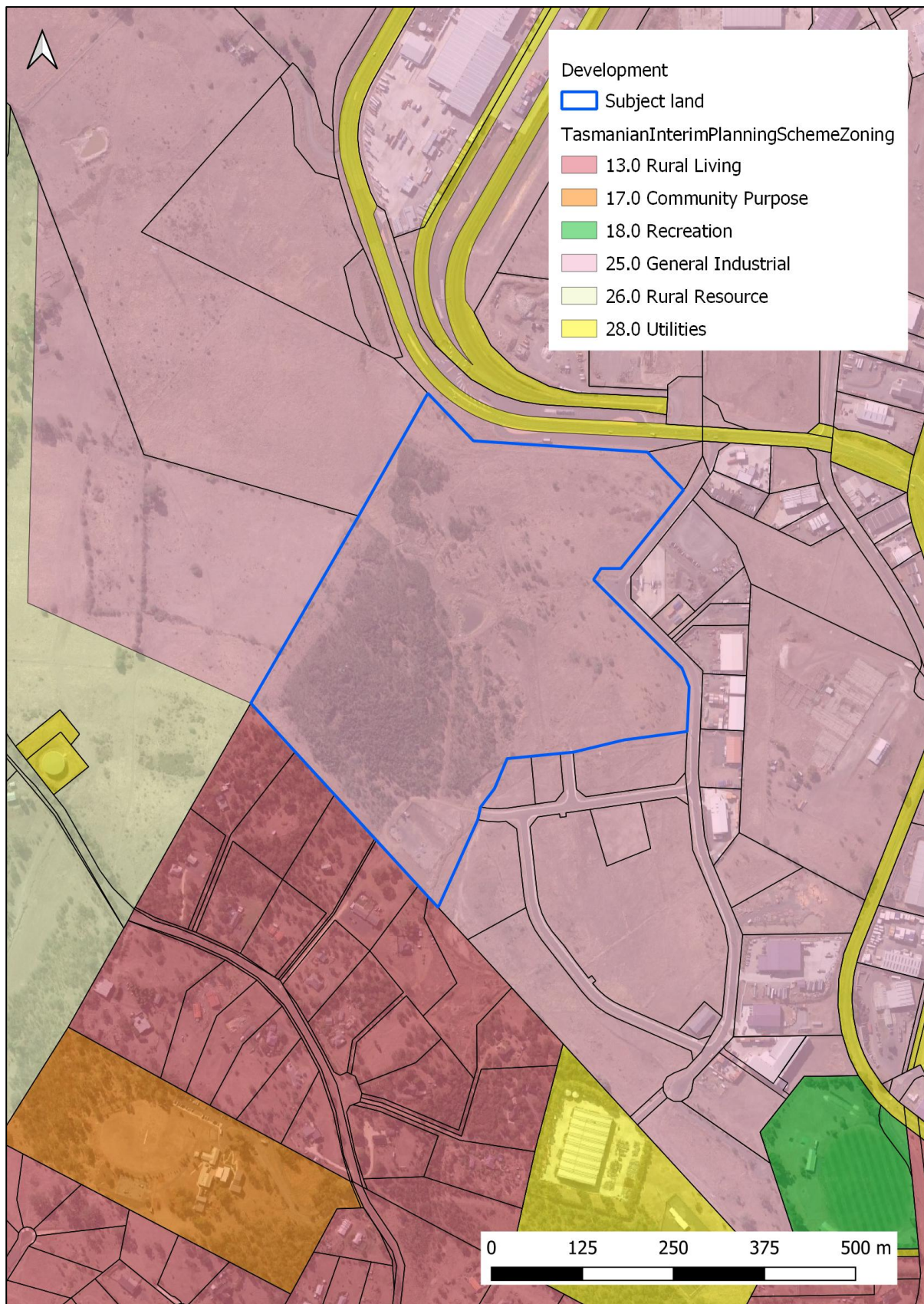


Figure 2 – Site Context and Zoning (Source: theLIST, 2020)

## 2. Bushfire Hazard Assessment

Bushfire Hazard: slope and classified vegetation.

Potential Bushfire Attack Mechanisms: radiant heat, ember attack, wind, flame and smoke.

### Bushfire Threat

In terms of the probability of extreme fire weather conditions, the main threat is from the north. In terms of vegetation, the main threat is from scrub and woodland on surrounding properties to the south and in the proposed Public Open Space lot along Ashburton Creek. Management of these areas in a fuel-reduced state in future cannot be presumed and the vegetation they contain has the potential to succeed over time (eg from wattle dominated scrub to eucalypt forest).

In terms of slope, the main threat is from the scrub within the proposed Public Open Space lot, which is downslope of surrounding lots. The threat is mitigated by the narrow width of the vegetation in this area, which would result in only a short fire-run upslope to the west or east.

Fire History: the fire history of the area indicates that the subject land and immediate surrounds have not been impacted by bushfire in the past, although the woodland and forest on Genappe Spur to the west of the site were impacted by bushfire in 2002/03.

Fire Danger Index: FDI 50 (this index applies across Tasmania).

Classified Vegetation: Vegetation was assessed within 500m of the site for context and in more detail within 100m in all directions from the edge of the proposed subdivision. For the purposes of this assessment, vegetation was classified as per Table 2.3 of AS 3959-2009:

- all pasture and grassland within and surrounding the subject land has been classified as *G(i) Grassland* (actual and potential);
- ‘grassland’ in the proposed Public Open Space lot along Ashburton Creek has been classified as *D. Scrub* (potential); and
- wattle dominated scrub on surrounding properties to the south and in the proposed Public Open Space lot has been classified as *A. Forest* (potential).

### Significant Natural Values (potentially limiting hazard management works)

The area of proposed Lots 28-30 is occupied by lowland native grassland dominated by kangaroo grass (GTL). This community is not listed as threatened in Tasmania but is considered endangered and is listed as such under Commonwealth legislation. Two threatened plant species have been recorded within the area of GTL – the grassland flaxlily (*Dianella amoena*) and the grass cushion (*Isoetopsis graminifolia*).

### Hazard Assessment

The subject land and surrounds were surveyed by the author on 11<sup>th</sup> August 2020 & 3<sup>rd</sup> December 2020 with reference to the draft subdivision layout. Information and images were collected which allowed assessment of *Bushfire Attack Level* (BAL) using *Method 1 (Simplified Procedure)* of AS3959 (see Table 1.).

Table 1 – Separation distance calculations for Indicative Building Areas on Lots 1 &amp; 2

Lot	Direction	Vegetation Classification <sup>#</sup>	Effective Slope under vegetation	Approx. distance from IBA (m)	Current BAL rating	Separation distance for BAL-19 (m)	Prescribed minimum hazard management area
1	North	G (i). Grassland	+/- flat to upslope	0-100	BAL-FZ	10-<14	10m
	East	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	South	G (i). Grassland, low threat* & non-veg*	+/- flat across slope	0-100	BAL-FZ	10-<14	10m
	West	G (i). Grassland	Downslope 0-5°	0-27	BAL-FZ	11-<16	27m
		A. Forest (potential)	Downslope 0-5°	27-85	BAL-19	27-<34	
		G (i). Grassland	Upslope	85-100	BAL Low		
2	North	G (i). Grassland	+/- flat to upslope	0-100	BAL-FZ	10-<14	10m
	East	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	South	G (i). Grassland	+/- flat across slope	0-100	BAL-FZ	10-<14	10m
	West	G (i). Grassland	Downslope 0-5°	0-27	BAL-FZ	11-<16	27m
		A. Forest (potential)	Downslope 0-5°	27-100	BAL-19	27-<34	
3	North	G (i). Grassland	+/- flat to upslope	0-100	BAL-FZ	10-<14	10m
	East	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	South	G (i). Grassland	+/- flat across slope	0-100	BAL-FZ	10-<14	10m
	West	G (i). Grassland	Downslope 0-5°	0-68	BAL-FZ	11-<16	11m
		A. Forest (potential)	Downslope 0-5°	68-100	BAL-12.5		

\* Exclusion under AS3959-2009 2.2.3.2

<sup>#</sup> Classification as per AS3959-2009 amendment 3, Table 2.3 and Figures 2.4(A)-2.4(G)

Table 1 continued

Lot	Direction	Vegetation Classification <sup>#</sup>	Effective Slope under vegetation	Approx. distance from IBA (m)	Current BAL rating	Separation distance for BAL-19 (m)	Prescribed minimum hazard management area
4	North	G (i). Grassland	+/- flat to upslope	0-100	BAL-FZ	10-<14	10m
	East	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	South	G (i). Grassland	+/- flat across slope	0-100	BAL-FZ	10-<14	10m
	West	G (i). Grassland	Downslope 0-5 <sup>0</sup>	0-100	BAL-FZ	11-<16	11m
5	North	G (i). Grassland	+/- flat to upslope	0-100	BAL-FZ	10-<14	10m
	East	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	South	G (i). Grassland, low threat* & non-veg*	+/- flat across slope	0-100	BAL-FZ	10-<14	10m
	West	G (i). Grassland	Downslope 0-5 <sup>0</sup>	0-100	BAL-FZ	11-<16	11m
6	North West	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	North East	G (i). Grassland	+/- flat to upslope	0-100	BAL-FZ	10-<14	10m
	South East	G (i). Grassland	Downslope 0-5 <sup>0</sup>	0-22	BAL-FZ	10-<14	22m
		D. Scrub (potential)	Downslope 0-5 <sup>0</sup>	22-70	BAL-19	22-<31	
		G (i). Grassland	Upslope	70-100	BAL Low		
	South West	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m

\* Exclusion under AS3959-2009 2.2.3.2

# Classification as per AS3959-2009 amendment 3, Table 2.3 and Figures 2.4(A)-2.4(G)

Table 1 continued

Lot	Direction	Vegetation Classification <sup>#</sup>	Effective Slope under vegetation	Approx. distance from IBA (m)	Current BAL rating	Separation distance for BAL-19 (m)	Prescribed minimum hazard management area
7	North West	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	North East	G (i). Grassland	+/- flat to upslope	0-100	BAL-FZ	10-<14	10m
	South East	G (i). Grassland	Downslope 0-5 <sup>0</sup>	0-100	BAL-FZ	11-<16	11m
	South West	G (i). Grassland	Downslope 0-5 <sup>0</sup>	0-23	BAL-FZ	11-<16	23m
		A. Forest (potential)	Upslope	23-50	BAL-19	23-<32	
		G (i). Grassland & low threat*	Upslope	50-100	BAL Low		
8	North West	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	North East	G (i). Grassland	+/- flat to upslope	0-100	BAL-FZ	10-<14	10m
	South East	G (i). Grassland	Downslope 0-5 <sup>0</sup>	0-100	BAL-FZ	11-<16	11m
	South West	G (i). Grassland	Upslope	0-23	BAL-FZ	11-<16	23m
		A. Forest (potential)	Upslope	23-100	BAL-19	23-<32	
9	North West	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	North East	G (i). Grassland	+/- flat to upslope	0-100	BAL-FZ	10<14	10m
	South East	G (i). Grassland	Downslope 5-7 <sup>0</sup>	0-100	BAL-FZ	13-<19	13m
	South West	G (i). Grassland	Upslope	0-32	BAL-FZ	11-<16	23m
		A. Forest (potential)	Upslope	32-100	BAL-19	23-<34	

\* Exclusion under AS3959-2009 2.2.3.2

# Classification as per AS3959-2009 amendment 3, Table 2.3 and Figures 2.4(A)-2.4(G)

Table 1 continued

Lot	Direction	Vegetation Classification <sup>#</sup>	Effective Slope under vegetation	Approx. distance from IBA (m)	Current BAL rating	Separation distance for BAL-19 (m)	Prescribed minimum hazard management area
10	North	G (i). Grassland	+/- flat to upslope	0-100	BAL-FZ	10-<14	10m
	East	G (i). Grassland	Downslope 5-7°	0-100	BAL-FZ	13-<19	13m
	South	G (i). Grassland	Downslope 0-5°	0-51	BAL-FZ	11-<16	11m
		A. Forest (potential)	Downslope 0-5°	51-100	BAL-12.5		
	South West	G (i). Grassland	+/- flat across slope	0-29	BAL-FZ	11-<16	23m
		A. Forest (potential)	+/- flat across slope	29-100	BAL-12.5	23-<32	
11	North	G (i). Grassland	Upslope to +/- flat	0-100	BAL-FZ	10-<14	10m
	East	G (i). Grassland	Downslope 0-5°	0-100	BAL-FZ	11-<16	11m
	South	G (i). Grassland	Downslope 0-5°	0-100	BAL-FZ	11-<16	11m
	West	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	South West	G (i). Grassland	+/- flat across slope	0-64	BAL-FZ	10-<14	10m
		A. Forest (potential)	+/- flat across slope	64-100	BAL-12.5		
12	North	G (i). Grassland	+/- flat across slope	0-100	BAL-FZ	10-<14	10m
	East	G (i). Grassland	+/- flat across slope	0-100	BAL-FZ	10-<14	10m
	South	G (i). Grassland	Downslope 0-5°	0-100	BAL-FZ	11-<16	11m
	West	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m

\* Exclusion under AS3959-2009 2.2.3.2

# Classification as per AS3959-2009 amendment 3, Table 2.3 and Figures 2.4(A)-2.4(G)

Table 1 continued

Lot	Direction	Vegetation Classification <sup>#</sup>	Effective Slope under vegetation	Approx. distance from IBA (m)	Current BAL rating	Separation distance for BAL-19 (m)	Prescribed minimum hazard management area
13	North	G (i). Grassland	+/- flat to downslope 0-5°	0-100	BAL-FZ	10-<14	10m
	East	G (i). Grassland	Downslope 0-5°	0-100	BAL-FZ	11-<16	11m
	South	G (i). Grassland	+/- flat across slope	0-100	BAL-FZ	10-<14	14m
	West	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
14	North West	G (i). Grassland	+/- flat to downslope 0-5°	0-100	BAL-FZ	10-<14	10m
	North East	G (i). Grassland	Downslope 5-7°	0-100	BAL-FZ	13-<19	13m
	South East	G (i). Grassland	Downslope 0-5°	0-100	BAL-FZ	11-<16	11m
	South West	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
15	North West	G (i). Grassland	+/- flat to downslope 0-5°	0-100	BAL-FZ	10-<14	10m
	North East	G (i). Grassland	Downslope 5-7°	0-27	BAL-FZ	13-<19	22m
		D. Scrub (potential)	Downslope 0-5°	27-100	BAL-12.5	22-<31	
	South East	G (i). Grassland	Downslope 0-5°	0-40	BAL-FZ	11-<16	11m
		D. Scrub (potential)	Downslope 0-5°	40-100	BAL-12.5		
	South West	G (i). Grassland	+/- flat across slope	0-100	BAL-FZ	10-<14	10m

\* Exclusion under AS3959-2009 2.2.3.2

# Classification as per AS3959-2009 amendment 3, Table 2.3 and Figures 2.4(A)-2.4(G)

Table 1 continued

Lot	Direction	Vegetation Classification <sup>#</sup>	Effective Slope under vegetation	Approx. distance from IBA (m)	Current BAL rating	Separation distance for BAL-19 (m)	Prescribed minimum hazard management area
16	North West	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	East	G (i). Grassland	Downslope 0-5°	0-27	BAL-FZ	11-<16	27m
		A. Forest (potential)	Downslope 0-5°	27-100	BAL-19	27-<38	
	South East	G (i). Grassland	Downslope 0-5°	0-32	BAL-FZ	11-<16	27m
		A. Forest (potential)	Downslope 0-5°	32-70	BAL-FZ	27-<38	
		G (i). Grassland	Upslope	70-100	BAL Low		
	South West	G (i). Grassland	+/- flat across slope	0-100	BAL-FZ	10-<14	10m
17	North West	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	North East	G (i). Grassland	+/- flat to downslope 0-5°	0-51	BAL-FZ	11-<16	11m
		A. Forest (potential)	Downslope 0-5°	51-100	BAL-12.5		
	South East	G (i). Grassland	Downslope 0-5°	0-100	BAL-FZ	11-<16	11m
	South West	G (i). Grassland	+/- flat across slope	0-100	BAL-FZ	10-<14	10m
18	North West	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	North East	G (i). Grassland	+/- flat to downslope 0-5°	0-70	BAL-FZ	10-<14	10m
		A. Forest (potential)	Downslope 0-5°	70-100	BAL-12.5		
	South East	G (i). Grassland	Downslope 0-5°	0-100	BAL-FZ	11-<16	11m
	South West	G (i). Grassland	+/- flat across slope +/- flat across slope	0-100	BAL-FZ	10-<14	10m

\* Exclusion under AS3959-2009 2.2.3.2

# Classification as per AS3959-2009 amendment 3, Table 2.3 and Figures 2.4(A)-2.4(G)

Table 1 continued

Lot	Direction	Vegetation Classification <sup>#</sup>	Effective Slope under vegetation	Approx. distance from IBA (m)	Current BAL rating	Separation distance for BAL-19 (m)	Prescribed minimum hazard management area
19	North	G (i). Grassland	+/- flat to downslope 0-5°	0-90	BAL-FZ	10-<14	10m
		D. Scrub (potential)	Downslope 0-5°	90-100	BAL-12.5		
	East	G (i). Grassland	Downslope 0-5°	0-27	BAL-FZ	11-<16	27m
		A. Forest (potential)	Downslope 0-5°	27-100	BAL-19	27-<38	
	South	G (i). Grassland	+/- flat to downslope 0-5°	0-100	BAL-FZ	10-<14	10m
	West	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
20	North	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	East	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	South	G (i). Grassland	Downslope 0-5°	0-31	BAL-FZ	11-<16	11m
		D. Scrub (potential) & non-veg. (dam)*	Downslope 0-5°	31-100	BAL-12.5		
	South West	G (i). Grassland	Downslope 0-5°	0-22	BAL-FZ	11<16	22m
		D. Scrub (potential)	Downslope 0-5°	22-84	BAL-19	22-<31	
		G (i). Grassland	Upslope	84-100	BAL Low		
21	North	G (i). Grassland & non-veg. (road)	Upslope	0-100	BAL-FZ	10-<14	10m
	East	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	South	G (i). Grassland	Downslope 5-7°	0-31	BAL-FZ	13<19	13m
	West	G (i). Grassland	+/- flat to downslope 0-5°	0-100	BAL-FZ	10<16	10m+

\* Exclusion under AS3959-2009 2.2.3.2

# Classification as per AS3959-2009 amendment 3, Table 2.3 and Figures 2.4(A)-2.4(G)

Table 1 continued

Lot	Direction	Vegetation Classification <sup>#</sup>	Effective Slope under vegetation	Approx. distance from IBA (m)	Current BAL rating	Separation distance for BAL-19 (m)	Prescribed minimum hazard management area
22	North	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	East	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	South	G (i). Grassland	+/- flat to downslope 7 <sup>0</sup>	0-100	BAL-FZ	10-<14	10m
	West	G (i). Grassland	Downslope 5-7 <sup>0</sup>	0-100	BAL-FZ	11-<16	11m
23	North	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	East	G (i). Grassland & low threat* & non-veg*	Upslope	0-100	BAL-FZ	10-<14	10m
	South	G (i). Grassland	+/- flat to downslope 5 <sup>0</sup>	0-100	BAL-FZ	10-<14	10m
	West	G (i). Grassland	Downslope 0-5 <sup>0</sup>	0-100	BAL-FZ	11<16	11m
24	North	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	East	G (i). Grassland & low threat* & non-veg*	Upslope	0-100	BAL-FZ	10-<14	10m
	South	G (i). Grassland & low threat* & non-veg*	+/- flat to downslope 5 <sup>0</sup>	0-100	BAL-FZ	10-<14	10m
	West	G (i). Grassland	Downslope 0-5 <sup>0</sup>	0-100	BAL-FZ	11<16	11m

\* Exclusion under AS3959-2009 2.2.3.2

<sup>#</sup> Classification as per AS3959-2009 amendment 3, Table 2.3 and Figures 2.4(A)-2.4(G)

Table 1 continued

Lot	Direction	Vegetation Classification <sup>#</sup>	Effective Slope under vegetation	Approx. distance from IBA (m)	Current BAL rating	Separation distance for BAL-19 (m)	Prescribed minimum hazard management area
25	North West	G (i). Grassland	+/- flat across slope	0-100	BAL-FZ	10-<14	10m
	North East	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m
	South East	G (i). Grassland	+/- flat across slope	0-100	BAL-FZ	10-<14	10m
	South West	G (i). Grassland	Downslope 0-5°	0-22	BAL-FZ	11-<16	22m
		D. Scrub (potential) & non-veg. (dam)*	Downslope 0-5°	22-100	BAL-19	22-<31	
26	North West	G (i). Grassland	+/- flat across slope	0-100	BAL-FZ	10-<14	10m
	North East	G (i). Grassland & low threat* & non-veg*	Upslope	0-100	BAL-FZ	10-<14	10m
	South East	G (i). Grassland	+/- flat across slope	0-100	BAL-FZ	10-<14	10m
	South West	G (i). Grassland	Downslope 5-7°	0-100	BAL-FZ	13<19	13m
27	North West	G (i). Grassland	+/- flat across slope	0-100	BAL-FZ	10-<14	10m
	North East	G (i). Grassland & low threat* & non-veg*	Upslope	0-100	BAL-FZ	10-<14	10m
	South East	G (i). Grassland	+/- flat across slope	0-100	BAL-FZ	10-<14	10m
	South West	G (i). Grassland	Downslope 5-7°	0-100	BAL-FZ	13<19	13m

\* Exclusion under AS3959-2009 2.2.3.2<sup>#</sup> Classification as per AS3959-2009 amendment 3, Table 2.3 and Figures 2.4(A)-2.4(G)

Table 1 continued

Lot	Direction	Vegetation Classification <sup>#</sup>	Effective Slope under vegetation	Approx. distance from IBA (m)	Current BAL rating	Separation distance for BAL-19 (m)	Prescribed minimum hazard management area
28	North West	G (i). Grassland & low threat* & non-veg*	+/-flat across slope	0-100	BAL-FZ	10-<14	10m
	North East	G (i). Grassland & low threat* & non-veg*	Upslope	0-100	BAL-FZ	10-<14	10m
	South East	G (i). Grassland	Downslope 0-5°	0-100	BAL-FZ	11-<16	11m
	South West	G (i). Grassland	Downslope 5-7°	0-100	BAL-FZ	13-<19	13m
29	North West	G (i). Grassland & low threat* & non-veg*	Upslope	0-100	BAL-FZ	10-<14	10m
	North East	G (i). Grassland & low threat* & non-veg*	+/-flat to upslope	0-100	BAL-FZ	10-<14	10m
	South East	G (i). Grassland	Downslope 0-5°	0-100	BAL-FZ	11-<16	11m
	South West	G (i). Grassland	Downslope 0-5°	0-100	BAL-FZ	11-<16	11m
30	North	G (i). Grassland & low threat* & non-veg*	Upslope	0-100	BAL-FZ	10-<14	10m
	East	G (i). Grassland & low threat* & non-veg*	Upslope	0-100	BAL-FZ	10-<14	10m
	South	G (i). Grassland	+/- flat across slope	0-100	BAL-FZ	10-<16	10m
	South West	G (i). Grassland	Downslope 0-5°	0-100	BAL-FZ	11<16	11m
	West	G (i). Grassland	Upslope	0-100	BAL-FZ	10-<14	10m

\* Exclusion under AS3959-2009 2.2.3.2<sup>#</sup> Classification as per AS3959-2009 amendment 3, Table 2.3 and Figures 2.4(A)-2.4(G)



Figure 4 – Bushfire Hazard Assessment Map (Source: TheList 2020)

### 3. Bushfire Management Measures

The site is within the *Bushfire-Prone Areas* overlay of the *Brighton Interim Planning Scheme 2015* (the Scheme). The subject land is occupied by and surrounded by bushfire-prone vegetation as defined under AS3959, predominantly in the form of infrequently managed pasture and native grassland (*G(i) Grassland*).

The subject land is zoned *General Industrial* and is unlikely to support habitable buildings in future. Nevertheless, the requirements for subdivision in a bushfire-prone area apply to all zones and are set out under clause E1.6.1 of *E1.0 Bushfire-Prone Areas Code* (the Code). They include:

- provision of *Hazard Management Areas* (E1.6.1);
- access for fire-fighting (E1.6.2); and
- provision of water supply for fire-fighting purposes (E1.6.3).

The proposed subdivision must comply with the following clauses of the Code (shaded clauses in Table 2).

Table 2 – Compliance with E1.0

CLAUSE	ISSUE
E1.2	Application of Code
E1.3	Definition of terms in this Code
E1.4	Use or development exempt from this Code
E1.5	Use Standards
E1.5.1	Vulnerable Uses
E1.5.2	Hazardous Uses
E1.6	Developments Standards
E1.6.1	Development Standard for Subdivision: Provision of hazard management areas (HMA) for habitable buildings
E1.6.2	Subdivision: Public and fire-fighting access
E1.6.3	Subdivision: Provision of water supply for fire-fighting purposes

### 3.2 Hazard Management Areas

The objectives of providing *Hazard Management Areas* (HMAs) are:

- to facilitate an integrated approach between subdivision and subsequent building on a lot; and
- to provide for sufficient separation of building areas from bushfire-prone vegetation to reduce radiant heat levels, direct flame attack and ember attack at the building area.

HMAs provide cleared space between buildings and bushfire hazards. Any vegetation in this area needs to be maintained in a low fuel state to protect buildings from direct flame contact, ember attack and intense radiant heat, thereby allowing them to be defended from lower intensity bushfires.

Further information on the maintenance of ‘defendable spaces’ (which are equivalent to HMAs) are provided in the Tasmania Fire Service document: *Guidelines for Development in Bushfire Prone Areas of Tasmania (2005)*.

#### Requirements

The acceptable solutions under E1.6.1 A1 of the Code require that:

- b) *The proposed plan of subdivision: ...*
- (ii) *shows the building area for each lot; (and)*
  - (iii) *shows hazard management areas between bushfire-prone vegetation and each building area that have dimensions equal to, or greater than, the separation distances required for BAL 19 in Table 2.4.4 of AS3959; ...*

#### Compliance

- The bushfire hazard assessment (see Table 1 and Figure 4) indicates that all lots require HMAs to provide separation distances that will allow any future habitable buildings to meet the requirements of BAL-19 under *Table 2.4.4 of AS3959*.
- All lots can support *Building Areas* with separation distances from the lot boundaries that are sufficient for HMAs meeting the requirements of BAL-19 to be accommodated entirely within the lot boundaries.
- The *Bushfire Hazard Management Plan* (BHMP) at Attachment A shows *Indicative Building Areas* for all lots. Most lots have *Indicative Building Areas* 30mX20m in size, but site constraints have resulted in smaller *Indicative Building Areas* on several lots. Nevertheless, all *Indicative Building Areas* are larger than would generally be required to accommodate a single residence.
- The BHMP defines HMAs with sufficient separation distances from bushfire prone vegetation to allow any future habitable buildings to meet the requirements of BAL-19.

#### Maintenance of Hazard Management Areas

HMAs (as defined on the attached BHMP) must be established if and when any habitable buildings are constructed on lots arising from the subdivision and must be maintained for the life of the development.

To minimise bushfire hazard to future dwellings, HMAs must be maintained as low threat vegetation and/or non-vegetated land (as defined by Clause 2.2.3.2 of AS3959-2009). The need to maintain effective HMAs into the future must be considered when planting gardens and making landscaping choices associated with any residential occupation and use of the lots. An annual inspection and maintenance of HMAs should be conducted prior to the bushfire season or any other identified period of high fire risk and any flammable material such as leaves, litter, wood piles should be removed.

### 3.3 Public and Fire-fighting Access

The objectives for roads, property access and fire trails within a subdivision are:

- to allow safe access and egress for residents, fire fighters and emergency services personnel;
- to provide access to the bushfire-prone vegetation that allows both property to be defended when under bushfire attack and for hazard management works to be undertaken;
- to provide access to water supplies for fire appliances;
- that design and construction allow for fire appliances to be manoeuvred; and
- that design allows connectivity, and where needed, offers multiple evacuation points.

#### Requirements

Property access is not required to access a fire-fighting water point. The requirements for roads within a subdivision are detailed in E1.6.2 and Table E1 of the Code:

- (b) *A proposed plan of subdivision showing the layout of roads ... is included in a bushfire hazard management plan that:*
- (i) *demonstrates proposed roads will comply with Table E1...; and*
  - (ii) *is certified by the TFS or accredited person.*

#### Current conditions

Existing roads required to service the subdivision (Glenstone Road, Strong St, Greenbanks Road and Lukaaarla Drive) are all at least 7m wide and are compliant with the Code.

#### Compliance

- The attached BHMP shows the location and alignment of proposed new roads which are capable of being constructed compliant with Table E1, including a compliant cul-de-sac turning area design to the north of Lukaaarla Drive.
- At the time of construction, the developer must ensure that new roads are constructed compliant with Table E1 as outlined below.
- Unless the development standards in the zone require a higher standard, proposed new roads within the sub-division must meet the following standards:
  - two-wheel drive, all-weather construction;

- load capacity of at least 20t, including for bridges and culverts;
- minimum carriageway width of 7m (through road)/5.5m (dead-end or cul-de-sac road);
- minimum vertical clearance of 4m;
- minimum horizontal clearance of 2m from the edge of the carriageway;
- cross falls of less than 3 degrees (1:20 or 5%);
- maximum gradient of 15 degrees (1:3.5 or 28%) for sealed roads/ 10 degrees (1:5.5 or 18%) for unsealed roads; and
- curves have a minimum inner radius of 10m;
- dead-end and cul-de-sac roads are not more than 200m in length unless the carriageway is 7 metres in width;
- dead-end and cul-de-sac roads have a turning circle with a minimum 12m outer radius; and
- carriageways less than 7m wide have 'No Parking' zones on one side, indicated by a road sign that complies with *Australian Standards AS1743-2001 Road Signs-Specifications*.

### 3.4 Fire-fighting Water Supply

The objective in provision of water supply for fire-fighting purposes is that:

- adequate, accessible and reliable water supply for the purposes of fire-fighting can be demonstrated at the subdivision stage and allow for the protection of life and property associated with the subsequent use and development of bush fire-prone areas.

#### Requirements

The development occurs in an area serviced with reticulated water supply and all lots can be serviced by existing or new water hydrants. The requirements for provision of reticulated water supplies for fire-fighting purposes are detailed in E1.6.3 A1 and Table E4 of the Code.

The acceptable solutions under E1.6.3 A1 of the Code require that:

- (b) *a proposed plan of subdivision showing the location of fire hydrants, and building areas, is included in a bushfire hazard management plan approved by the TFS or accredited person as being compliant with Table E4.*

#### Current conditions

There are existing compliant hydrants on the frontage to Strong St, Greenbanks Road and Lukaarlia Drive that can service some lots arising from the subdivision.

#### Compliance

- The attached BHMP shows *Existing hydrants* and *Indicative new hydrants* which are capable of servicing the subdivision, with no part of any *Indicative Building Area* more than 120m hose lay from a hydrant.

- At the time of installation, the developer must ensure that new reticulated water supply and hydrants comply with Table E4 as outlined below.
- Reticulated water supply servicing the subdivision must meet the following standards to comply with the Code.

A. *Distance between building area to be protected and water supply*

The following requirements apply:

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

B. *Design criteria for fire hydrants*

The following requirements apply:

- a) fire hydrant system must be designed and constructed in accordance with *TasWater Supplement to Water Supply Code of Australia WSA 03 – 2011-3.1 MRWA 2nd Edition*; and
- b) fire hydrants are not installed in parking areas.

C. *Hardstand*

A hardstand area for fire appliances must be:

- a) no more than 3m from the hydrant, measured as a hose lay;
- b) no closer than 6m from the building area to be protected;
- c) a minimum width of 3m constructed to the same standard as the carriageway; and
- d) connected to the property access by a carriageway equivalent to the standard of the property access.

### 3.5 Construction of Habitable Buildings

Given that the subject land is zoned *General Industrial*, it is unlikely that any habitable buildings will be constructed on the lots arising from the subdivision, but this report demonstrates the capacity for the lots to accommodate dwellings or other habitable structures.

The attached BHMP only certifies that a habitable building constructed within any of the *Indicative Building Areas* can achieve the separation distances from bushfire-prone vegetation required to allow construction to BAL-19. Habitable buildings constructed to BAL-19 may be located anywhere within the *Indicative Building Areas* and HMAs adjusted to match the actual building footprint, provided prescribed separation distances from bushfire-prone vegetation are maintained.

Pursuant to Section 11F (2) (a) of the *Tasmanian Building Act 2016 – Building Amendment (Bushfire-Prone Areas) Regulations 2016*, a BHMP undertaken for the purposes of a subdivision approval can be utilised to satisfy the bushfire planning requirements of a subsequent application to build on a lot arising from that subdivision, “*unless that bushfire hazard management plan is more than 6 years old.*”

## 4. Conclusion

The *Bushfire Hazard Management Plan* at Attachment A demonstrates the capacity of the subdivision to comply with the Code and AS3959 in respect of *(Indicative) Building Areas, Provision of hazard management areas, Public and fire-fighting access* and *Provision of water supply for fire-fighting purposes*. As a result, the *Bushfire Hazard Management Plan* has been certified.

## 5. Glossary and Abbreviations

**AS – Australian Standard**

**BAL – Bushfire Attack Level** – a means of measuring the severity of a building’s potential exposure to ember attack, radiant heat and direct flame contact, using increments of radiant heat expressed in kilowatts per metre squared, and the basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire (AS3959-2009).

**BFP – Bush Fire Practitioner** certified to undertake assessments of bushfire hazard and certify Bushfire Hazard Management Plans.

**BHMP – Bushfire Hazard Management Plan** – plan for individual house or subdivision identifying separation distances required between a dwelling(s) and bushfire prone vegetation based on the BAL for the site. The BHMP also indicates requirements for construction, property access and fire-fighting water.

**Class 1a building** – is a single dwelling being a detached house; or one of a group of attached dwellings being a town house, row house or the like (NCC 2016).

**FDI – fire danger index** – relates to the chance of a fire starting, its rate of spread, its intensity and the difficulty of its suppression, according to various combinations of air temperature, relative humidity, wind speed and both the long- and short-term drought effects (AS3959-2009).

**ha – hectares; m – meters**

**HMA – Hazard Management Area** – the area, between a habitable building or building area and the bushfire-prone vegetation, which provides access to a fire front for fire-fighting, which is maintained in a minimal fuel condition and in which there are no other hazards present which will significantly contribute to the spread of a bushfire.

## 6. References

AS3959-2009. *Australian Standard for Construction of buildings in bushfire-prone areas*. SAI Global Limited Sydney, NSW Australia.

*Brighton Interim Planning Scheme 2015*.

<http://www.iplan.tas.gov.au/pages/plan/book.aspx?exhibit=sorips>

*Building Act 2016*. The State of Tasmania Department of Premier and Cabinet.

<https://www.legislation.tas.gov.au/view/html/inforce/current/act-2016-025>

*Building Act 2016*. Director's Determination – Requirements for Building in a Bushfire-Prone Area DOC/17/62962. Director of Building Control

[https://www.cbos.tas.gov.au/\\_\\_data/assets/pdf\\_file/0011/405011/Directors-Determination-Requirements-building-bushfire-prone-areas.pdf](https://www.cbos.tas.gov.au/__data/assets/pdf_file/0011/405011/Directors-Determination-Requirements-building-bushfire-prone-areas.pdf)

*Building Regulations 2016*. The State of Tasmania Department of Premier and Cabinet.

<https://www.legislation.tas.gov.au/view/html/inforce/current/sr-2016-110>.

*Guidelines for Development in Bushfire prone Areas of Tasmania. Living with Fire in Tasmania*. Bushfire Planning Group of Tasmania Fire Service, Tasmania (2005).

*LISTMap 2020*. Land Information System Tasmania, Tasmania Government.

<https://maps.thelist.tas.gov.au/listmap/app/list/map>

*National Construction Code 2016 Vol Two, Building Code of Australia Class 1 and Class 10 Buildings*. Australian Building Codes Board, Australia (2016).

## APPENDIX 1 – Illustrative photos of vegetation



Photo 1: Pasture (G(i) Grassland) south of the subdivision (foreground); wattle dominated scrub (A. Forest potential) in the proposed public open space lot (mid-ground at right) and wattle dominated scrub (A. Forest potential) on adjoining property south of Lots 7-10 (background)



Photo 2: Pasture (G(i) Grassland) on Lots 1-5 (foreground); wattle dominated scrub (A. Forest potential) in the proposed public open space lot (mid-ground) and wattle dominated scrub (A. Forest potential) on adjoining properties south of Lots 7-10 (background at left)



Photo 3: Native grassland dominated by kangaroo grass with emergent native box on Lots 29-30 (G(i) Grassland)



Photo 4: Pasture and native grassland on on Lots 27-30 (G(i) Grassland)



Photo 5: Pasture (G(i) Grassland) on Lots 25-26 (foreground); wattle dominated scrub (A. Forest potential) in the proposed public open space lot (mid-ground at left) and recently cleared land (G(i) Grassland potential) on Lots 11-15 (background at right)



Photo 6: Pasture (G(i) Grassland) and high voltage transmission lines on Lots 22-24



Photo 7: Pasture (G(i) Grassland) on Lots 20-24



Photo 8: Looking south across pasture (G(i) Grassland) on eastern side of proposed subdivision, with creek on Ashburton Creek in proposed public open space lot at centre right



Photo 9: Looking south across pasture (G(i) Grassland) and recently cleared land (G(i) Grassland potential) on western side of proposed subdivision



Photo 10: Weedy grassland along Ashburton Creek in the proposed public open space lot north of the dam (D. Scrub potential)



Photo 11: Wattle dominated scrub (A. Forest potential) in proposed public open space lot east of Lots 16-18 (vegetation at right has now been cleared)



Photo 12: Recently cleared land on Lots 11-14 & 17-19 (G(i) Grassland potential) and wattle dominated scrub (A. Forest potential) in proposed public open space lot (mid-ground)



Photo 13: Looking north across recently cleared land (G/I) Grassland) from the south-west corner of the subject land



Photo 14: Looking east from the south-west corner of the subject land with recently cleared land (G/I) Grassland) at left and wattle dominated scrub (A. Forest potential) on adjoining properties at right



Photo 15: Looking north along Ashburton Creek in the proposed public open space lot with wattle dominated scrub (A. Forest potential) at left



**Hazard Management Areas (HMAs)**

- Numbers within HMAs indicate the minimum separation distances (in metres) for *Indicative Building Areas* to meet the requirements of BAL-19.
- HMAs must be established if and when any habitable buildings are constructed on a lot and must be maintained as ‘low threat vegetation’ or ‘non-vegetated land’ (as defined by Clause 2.2.3.2 of AS3959) for the life of the development.
- No trees should overhang dwellings and trees should ideally be sited 1.5 times their mature height away from dwellings.
- Trees and shrubs should be separated to create discontinuous ‘clumps’ and a minimum 20m separation should be maintained between clumps.
- A minimum 2m horizontal separation should be maintained between tree canopies and low branches should be removed to create a minimum 2m vertical separation between tree canopy and underlying shrubs or ground cover.
- Grassland, pasture and lawn must be kept short (less than 100mm).
- Fine fuels such as leaves, bark and twigs should be removed from the ground periodically, particularly leading into summer or any other identified period of high fire risk.
- Flammable vegetation should not be retained or planted under or directly adjacent to dwellings (particularly decks, flammable cladding and glazed elements) or in corridors which can act as a ‘wick’ to channel fire to dwellings.
- Flammable material such as firewood, building materials, organic mulch and fuel should not be stored under decks or dwellings nor directly adjacent to dwellings.

**Public and Fire-fighting Access**

- Existing roads are at least 7m wide and are compliant with E1.0 *Bushfire Prone Areas Code* (the Code).
- This plan shows proposed new roading to service the subdivision which is 7m wide and is capable of being constructed compliant with the Code. It features a new compliant cul-de-sac north of Lukaarlia Drive.
- At the time of construction, the developer must ensure that new roads comply with Table E1 of the Code.

**Reticulated Water Supply for Fire-fighting**

- The plan shows *Existing hydrants* and *Indicative new hydrants*, with no part of any *Indicative Building Area* more than 120m hose lay from a hydrant.
- At the time of installation, the developer must ensure that new hydrants comply with Table E4 of the Code.

**Construction Standards**

- This plan only certifies that any future habitable buildings constructed within *Indicative Building Areas* can achieve the separation distance required to allow construction to BAL-19.

For: Denise Sutcliffe P/L & Sutcliffe Earthmoving P/L  
Title: CT 176402/1  
December 2020      Assessment #: 0275



**Andy Welling – Enviro-dynamics Pty Ltd**  
ACCREDITED BUSHFIRE ASSESSOR (BFP-135)  
CERTIFICATE No: ED0275      DATE: 21/12/20

Signed: 

## BUSHFIRE-PRONE AREAS CODE

### CERTIFICATE<sup>1</sup> UNDER S51(2)(d) *LAND USE PLANNING AND APPROVALS ACT 1993*

#### 1. Land to which certificate applies

The subject site includes property that is proposed for use and development and includes all properties upon which works are proposed for bushfire protection purposes.

**Street address:**

Lot 1 Greenbanks Rd Bridgewater 7030

**Certificate of Title / PID:**

176402/1

#### 2. Proposed Use or Development

**Description of proposed Use and Development:**

30 lot subdivision

**Applicable Planning Scheme:**

*Brighton Interim Planning Scheme 2015*

#### 3. Documents relied upon

This certificate relates to the following documents:

Title	Author	Date	Version
<i>Bushfire Hazard Report</i> – for proposed 30 lot subdivision at Greenbanks Rd. Bridgewater	Enviro-dynamics	December 2020	1
<i>Bushfire Hazard Management Plan</i> – for proposed 30 lot subdivision at Greenbanks Rd. Bridgewater	Enviro-dynamics	December 2020	1

<sup>1</sup> This document is the approved form of certification for this purpose and must not be altered from its original form.

#### 4. Nature of Certificate

The following requirements are applicable to the proposed use and development:

<input type="checkbox"/>	<b>E1.4 / C13.4 – Use or development exempt from this Code</b>	
	<b>Compliance test</b>	<b>Compliance Requirement</b>
<input type="checkbox"/>	E1.4(a) / C13.4.1(a)	Insufficient increase in risk

<input type="checkbox"/>	<b>E1.5.1 / C13.5.1 – Vulnerable Uses</b>	
	<b>Acceptable Solution</b>	<b>Compliance Requirement</b>
<input type="checkbox"/>	E1.5.1 P1 / C13.5.1 P1	<i>Planning authority discretion required. A proposal cannot be certified as compliant with P1.</i>
<input type="checkbox"/>	E1.5.1 A2 / C13.5.1 A2	Emergency management strategy
<input type="checkbox"/>	E1.5.1 A3 / C13.5.1 A2	Bushfire hazard management plan

<input type="checkbox"/>	<b>E1.5.2 / C13.5.2 – Hazardous Uses</b>	
	<b>Acceptable Solution</b>	<b>Compliance Requirement</b>
<input type="checkbox"/>	E1.5.2 P1 / C13.5.2 P1	<i>Planning authority discretion required. A proposal cannot be certified as compliant with P1.</i>
<input type="checkbox"/>	E1.5.2 A2 / C13.5.2 A2	Emergency management strategy
<input type="checkbox"/>	E1.5.2 A3 / C13.5.2 A3	Bushfire hazard management plan

<input type="checkbox"/>	<b>E1.6.1 / C13.6.1 Subdivision: Provision of hazard management areas</b>	
	<b>Acceptable Solution</b>	<b>Compliance Requirement</b>
<input type="checkbox"/>	E1.6.1 P1 / C13.6.1 P1	<i>Planning authority discretion required. A proposal cannot be certified as compliant with P1.</i>
<input type="checkbox"/>	E1.6.1 A1 (a) / C13.6.1 A1(a)	Insufficient increase in risk
<input checked="" type="checkbox"/>	E1.6.1 A1 (b) / C13.6.1 A1(b)	Provides BAL-19 for all lots (including any lot designated as 'balance')
<input type="checkbox"/>	E1.6.1 A1(c) / C13.6.1 A1(c)	Consent for Part 5 Agreement

<input type="checkbox"/>	<b>E1.6.2 / C13.6.2 Subdivision: Public and fire fighting access</b>	
	<b>Acceptable Solution</b>	<b>Compliance Requirement</b>
<input type="checkbox"/>	E1.6.2 P1 / C13.6.2 P1	<i>Planning authority discretion required. A proposal cannot be certified as compliant with P1.</i>
<input type="checkbox"/>	E1.6.2 A1 (a) / C13.6.2 A1 (a)	Insufficient increase in risk
<input checked="" type="checkbox"/>	E1.6.2 A1 (b) / C13.6.2 A1 (b)	Access complies with relevant Tables

<input type="checkbox"/>	<b>E1.6.3 / C13.1.6.3 Subdivision: Provision of water supply for fire fighting purposes</b>	
	<b>Acceptable Solution</b>	<b>Compliance Requirement</b>
<input type="checkbox"/>	E1.6.3 A1 (a) / C13.6.3 A1 (a)	Insufficient increase in risk
<input checked="" type="checkbox"/>	E1.6.3 A1 (b) / C13.6.3 A1 (b)	Reticulated water supply complies with relevant Table
<input type="checkbox"/>	E1.6.3 A1 (c) / C13.6.3 A1 (c)	Water supply consistent with the objective
<input type="checkbox"/>	E1.6.3 A2 (a) / C13.6.3 A2 (a)	Insufficient increase in risk
<input type="checkbox"/>	E1.6.3 A2 (b) / C13.6.3 A2 (b)	Static water supply complies with relevant Table
<input type="checkbox"/>	E1.6.3 A2 (c) / C13.6.3 A2 (c)	Static water supply consistent with the objective

## 5. Bushfire Hazard Practitioner

Name: Andrew Welling

Phone No: 0400151205

Postal Address: 16 Collins Street  
Hobart

Email Address: andy.welling@enviro-dynamics.com.au

Accreditation No: BFP – 135

Scope: 1, 2, 3A, 3B, 3C


## 6. Certification

I certify that in accordance with the authority given under Part 4A of the *Fire Service Act 1979* that the proposed use and development:

☐ Is exempt from the requirement Bushfire-Prone Areas Code because, having regard to the objective of all applicable standards in the Code, there is considered to be an insufficient increase in risk to the use or development from bushfire to warrant any specific bushfire protection measures, or

☒ The Bushfire Hazard Management Plan/s identified in Section 3 of this certificate is/are in accordance with the Chief Officer's requirements and compliant with the relevant **Acceptable Solutions** identified in Section 4 of this Certificate.

Signed:  
certifier

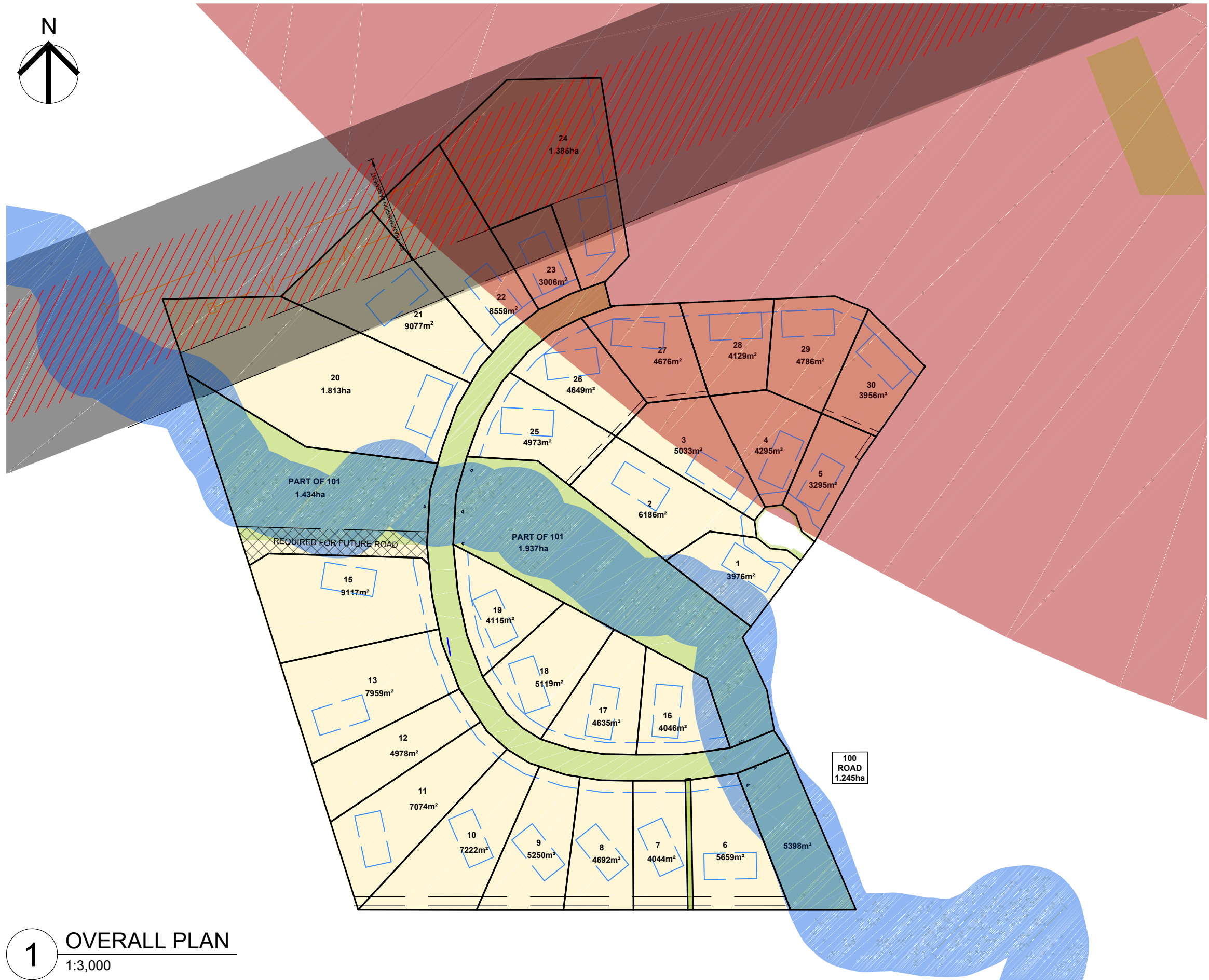


Name: Andrew Welling

Date: 21/12/2020

Certificate  
Number: BP0275

(for Practitioner Use only)



<i>Drawing Title</i>	<i>Dwg. No.</i>
1 - OVERALL PLAN	2
2 - CONCEPT STORMWATER PLAN	11A-11C
3 -CATCHMENT PLAN	17
4 - DRAINS MODEL	18-19

**Owners**  
Denise Sutcliffe PTY LTD & Sutcliffe Earthmoving  
PTY LTD

## FR 176402/1

Lot 1 Greenbanks Road, Bridgewater

Brighton Council

## Brighton Interim Planning Scheme 2015

## 25.0 General Industrial

117. Attenuation Area; Industrial precinct & Bridgewater quarry,  
117. Waterway and Coastal Protection Area  
117. Electricity Transmission Infrastructure Protection

'New Norfolk 15' 5026-15

9633391,  
Point of interest GDA94 MGA55  
518650E, 5269840N

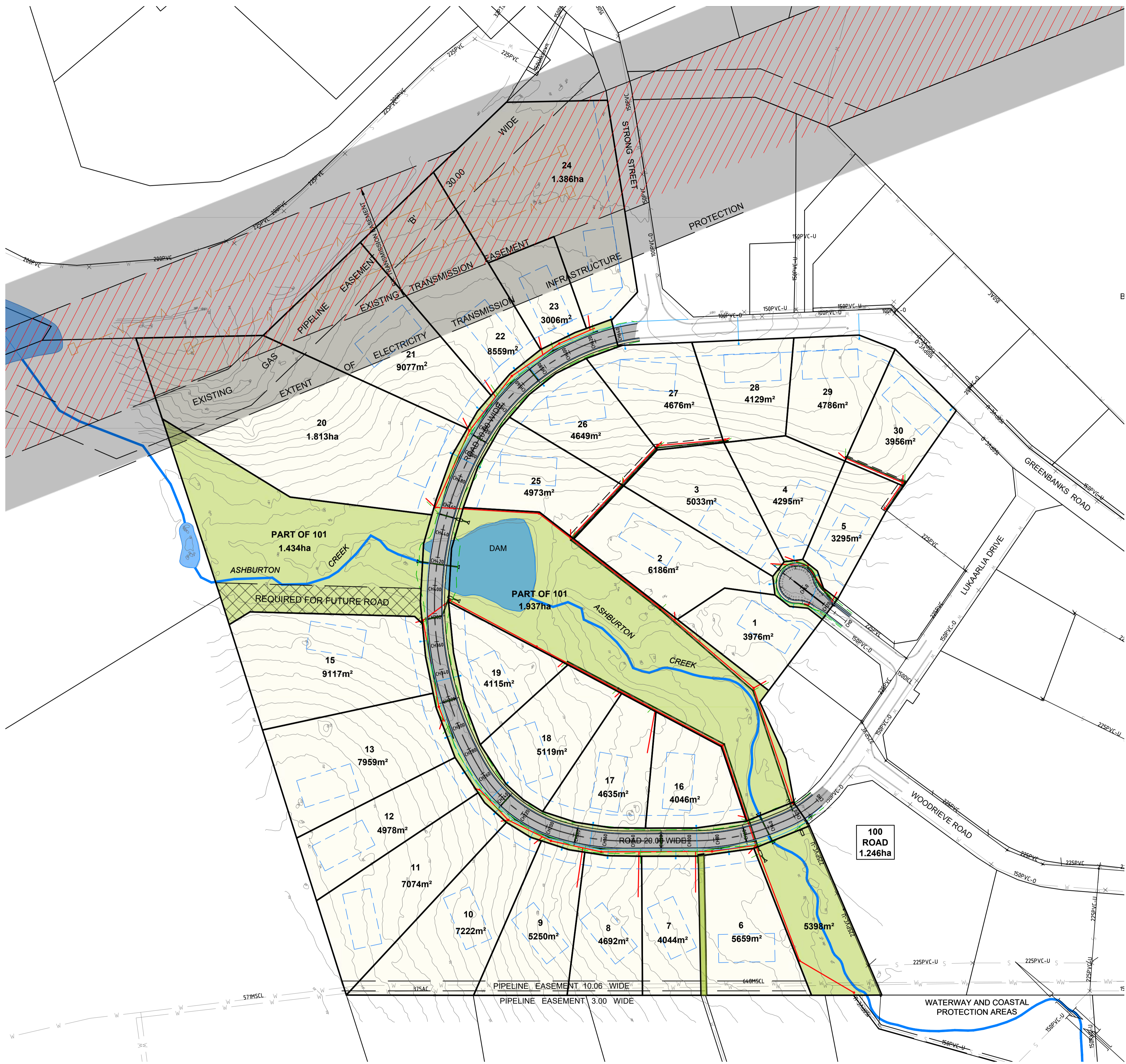
Existing Easements to be carried forward.  
Pipeline and Service Easements and Drainage easements as required and Nil.

1. This plan has been prepared only for the purpose of obtaining preliminary subdivision approval from the Council and the information shown hereon should be used for no other purpose. All measurements and areas are subject to final survey.
2. The Relevant Planning Scheme Overlays are not shown on these plans for plan clarity.

## OVERALL PLAN

1:3,000

E						SCALE:  0    12    30    60    150m	SURVEYOR -	GEOCIVIL -	<b>PROPOSED SUBDIVISION</b> <b>LOT 1 GREENBANKS ROAD, BRIDGEWATER</b> <b>for PAUL SUTCLIFFE</b>	<div style="text-align: center;">   <b>PDA Surveyors</b> Incorporating <b>WALTER SURVEYS</b>                      Surveying, Engineering &amp; Planning  <small>ABN 71 217 806 325</small>                      PHONE: +61 03 6234 3217 FAX: +61 03 6234 5085 EMAIL: pda.hbt@pda.com.au                 </div>	SCALE	PAPER
D							DRAWN BM/MK	CHECKED CT			<b>1:3000</b>	<b>(A3)</b>
C											JOB NUMBER	DRAWING
B											<b>45549CT - 2</b>	
A												
REV	AMENDMENTS		DRAWN	DATE	APPR.							
						DATE	21 JUNE 2021					



CONTENTS

Drawing Title	Dwg. No.
OVERALL CONCEPT PLAN	10
CONCEPT STORMWATER PLAN 1/2/3	11A/B/C
CONCEPT SEWER PLAN	12
CONCEPT WATER PLAN	13
CONCEPT ROAD 1 (LUKAARLIA DR) LONG SECTION 1/2	14
CONCEPT ROAD 1 (LUKAARLIA DR) LONG SECTION 2/2	15
CONCEPT ROAD 2 CUL-DE-SAC DETAIL	16

PROPERTY DETAILS

Owners  
Denise Sutcliffe PTY LTD & Sutcliffe Earthmoving PTY LTD

Title References  
FR 176402/1

Address  
Lot 1 Greenbanks Road, Bridgewater

Council  
Brighton Council

Planning scheme  
Brighton Interim Planning Scheme 2015  
Zone  
25.0 General Industrial

Zone Overlay  
117. Attenuation Area; Industrial precinct & Bridgewater quarry,  
117. Waterway and Coastal Protection Area  
117. Electricity Transmission Infrastructure Protection

Map reference  
'New Norfolk 15' 5026-15

PID  
9633391,  
Point of interest GDA94 MGA55  
518650E, 5269840N

Schedule of Easements  
Existing Easements to be carried forward.  
Pipeline and Service Easements and Drainage easements as required and Nil.

NOTES

- This plan has been prepared only for the purpose of obtaining preliminary subdivision approval from the Council and the information shown hereon should be used for no other purpose. All measurements and areas are subject to final survey.
- The Relevant Planning Scheme Overlays are not shown on these plans for plan clarity.

**WARNING**  
BEWARE OF  
UNDERGROUND SERVICES  
The location of underground services is approximate only and the exact position should be proven on site. No guarantee is given that all services are shown.

A	LOT 14 REMOVED AND LOTS 13 & 15 BOUNDARIES ADJUSTED ACCORDINGLY	R.D	17/06/2021	C.T
REV	AMENDMENTS	DRAWN	DATE	APPR.

NOTES:

SURVEYOR		SURVEYING JOB No.	
--		45549CT	
DRAWN	DESIGNED	CHECKED	
BL	BL	MW	
DATE			
18 FEB 2021			

PAUL SUTCLIFFE  
PROPOSED SUBDIVISION  
LOT 1 GREENBANKS ROAD, BRIDGEWATER  
OVERALL CONCEPT SERVICING PLAN



**PDA Surveyors**  
Surveying, Engineering & Planning  
ABN 71 217 806 325

Incorporating  
**WALTER SURVEYS**

127 Bathurst Street  
Hobart, Tasmania, 7000  
www.pda.com.au  
Also at: Kingston,  
Launceston & Burnie  
PHONE: +61 03 6234 3217  
FAX: +61 03 6234 5085  
EMAIL: pda.hbt@pda.com.au

SCALE		PAPER	
1 : 1500		(A1)	
JOB NUMBER	DRG	REV	
45549CT	10	A	



- LEGEND:**
- NEW STORMWATER
  - NEW SEWER
  - NEW WATER
  - EX. STORMWATER
  - EX. SEWER
  - EX. WATER
  - OVERHEAD ELECTRICAL
  - EX. FENCE
  - TOP/TOE BANK
  - EX. ELECTRICITY POLE
  - ROD EYE
  - SIDE ENTRY PIT
  - MANHOLE
  - PROPOSED EASEMENT
  - ASPHALT
  - CONCRETE

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REV	AMENDMENTS	DRAWN	DATE	APPR.

NOTES:

SURVEYOR --		SURVEYING JOB No. 45549CT	
DRAWN BL	DESIGNED BL	CHECKED MW	
DATE 18 FEB 2021			

PAUL SUTCLIFFE  
PROPOSED SUBDIVISION  
LOT 1 GREENBANKS ROAD, BRIDGEWATER  
CONCEPT STORMWATER PLAN 1/3



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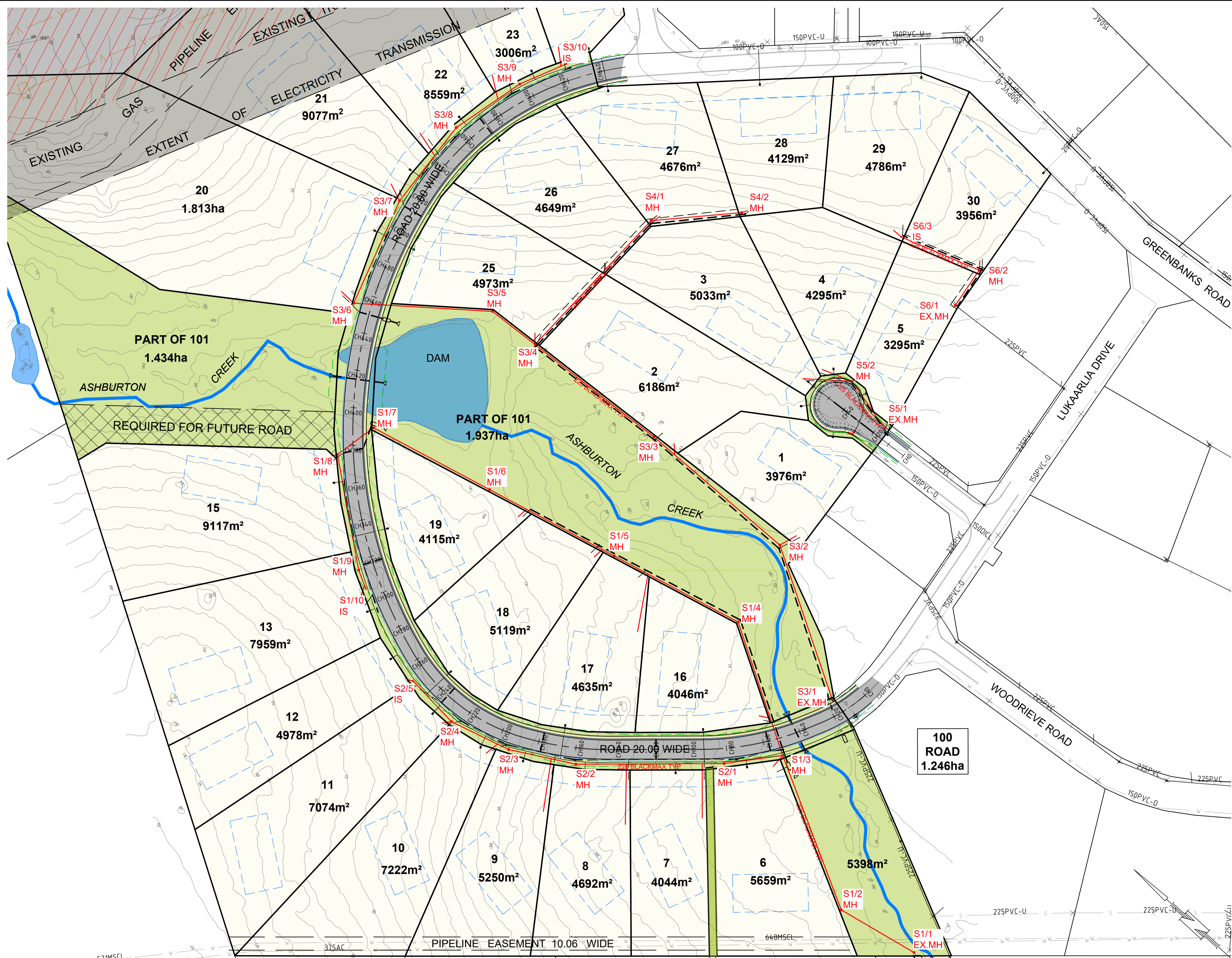
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JOB NUMBER	DRG	REV	
45549CT	11A	A	







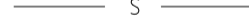











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				NOTES:				SURVEYOR -- 45549CT				SURVEYING JOB No. 45549CT				PAUL SUTCLIFFE PROPOSED SUBDIVISION LOT 1 GREENBANKS ROAD, BRIDGEWATER CONCEPT STORMWATER PLAN 2/3				<div><b>PDA Surveyors</b><small>Incorporating SURVEYS</small></div> <div>Surveying, Engineering &amp; Planning ABN 71 217 806 325</div> <div>127 Bathurst Street Hobart, Tasmania, 7000 www.pda.com.au Also at: Kingston, Launceston &amp; Burnie</div> <div>PHONE: +61 03 6234 3217 FAX: +61 03 6234 5085 EMAIL: pda.hbt@pda.com.au</div>				SCALE 1 : 500		PAPER (A1)	
								DRAWN BL		DESIGNED BL		CHECKED MW						JOB NUMBER		DRG		REV					
A LOT 14 REMOVED AND LOTS 13 & 15 BOUNDARIES ADJUSTED ACCORDINGLY				R.D. 17/06/2021 C.T.				DATE 18 FEB 2021								45549CT				11B		A					
REV AMENDMENTS				DRAWN DATE APPR.																							





LEGEND:

- |   |                      |
|---|----------------------|
|  | NEW STORMWATER       |
|  | NEW SEWER            |
|  | NEW WATER            |
|  | EX. STORMWATER       |
|  | EX. SEWER            |
|  | EX. WATER            |
|  | OVERHEAD ELECTRICAL  |
|  | EX. FENCE            |
|  | TOP/TOE BANK         |
|  | EX. ELECTRICITY POLE |
|  | ROD EYE              |
|  | SIDE ENTRY PIT       |
|  | MANHOLE              |
|  | PROPOSED EASEMENT    |
|  | ASPHALT              |
|  | CONCRETE             |

## WARNING

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A	LOT 14 REMOVED AND LOTS 13 & 15 BOUNDARIES ADJUSTED ACCORDINGLY	R.D	17/06/2021 C.T
REV	AMENDMENTS	DRAWN	DATE APPR

NOTES:

SURVEYOR --		SURVEYING JOB No 45549CT	
DRAWN BL	DESIGNED BL	CHECKED MW	
DATE 18 FEB 2021			

PAUL SUTCLIFFE  
PROPOSED SUBDIVISION  
LOT 1 GREENBANKS ROAD, BRIDGEWATER  
CONCEPT SEWER PLAN



**PDA Surveyors** Incorporating  
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SURVEYS**  
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EMAIL: [pda.hbt@pda.com.au](mailto:pda.hbt@pda.com.au)

SCALE		PAPER	
1 : 1000		(A1)	
JOB NUMBER		DRG	REV
45549CT		12	A




NOTES:  
WATER CONNECTIONS TO EACH LOT ARE INDICATIVE  
ONLY TO SHOW ALL CAN BE SERVICED  
NOT REQUIRED TO SHOW ON DESIGN PLANS FOR AN  
INDUSTRIAL SUBDIVISION

**LEGEND:**

	NEW STORMWATER
	NEW SEWER
	NEW WATER
	EX. STORMWATER
	EX. SEWER
	EX. WATER
	OVERHEAD ELECTRICAL
	EX. FENCE
	TOP/TOE BANK
	EX. ELECTRICITY POLE
	ROD EYE
	SIDE ENTRY PIT
	MANHOLE
	PROPOSED EASEMENT
	ASPHALT
	CONCRETE

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				NOTES:		SURVEYOR --		SURVEYING JOB No. 45549CT		PAUL SUTCLIFFE PROPOSED SUBDIVISION LOT 1 GREENBANKS ROAD, BRIDGEWATER CONCEPT WATER PLAN			<div><div><b>PDA Surveyors</b><small>Incorporating WALTER SURVEYS</small></div><div>Surveying, Engineering &amp; Planning <small>ABN 71 217 806 325</small></div></div> <div>127 Bathurst Street Hobart, Tasmania, 7000 www.pda.com.au Also at: Kingston, Launceston &amp; Burnie</div> <div>PHONE: +61 03 6234 3217 FAX: +61 03 6234 5085 EMAIL: pda.hbt@pda.com.au</div>			SCALE 1 : 1000		PAPER (A1)					
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A	LOT 14 REMOVED AND LOTS 13 & 15 BOUNDARIES ADJUSTED ACCORDINGLY			R.D	17/06/2021	C.T																	
REV	AMENDMENTS			DRAWN	DATE	APPR.																	




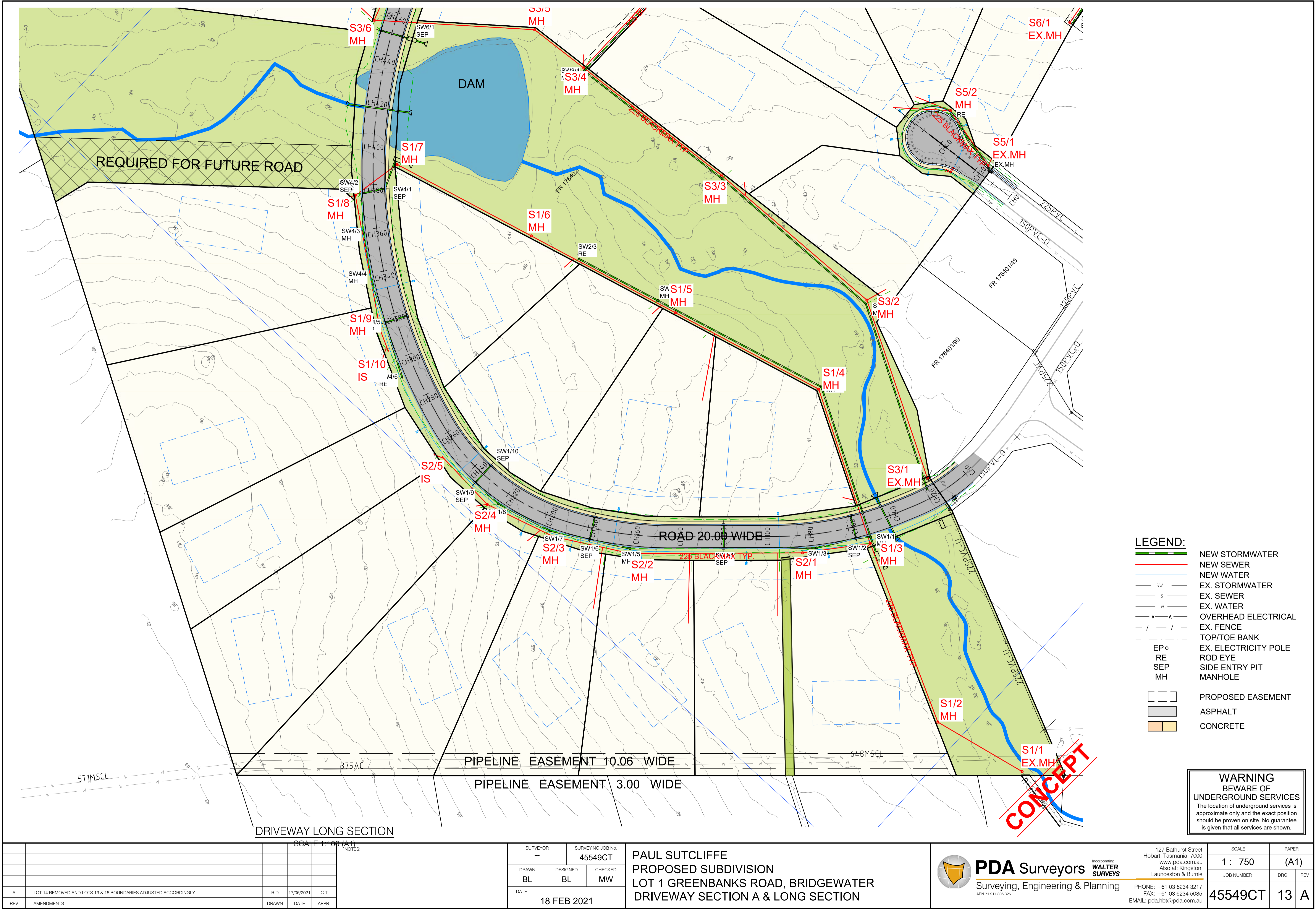


**LEGEND:**

- NEW STORMWATER
- NEW SEWER
- NEW WATER
- EX. STORMWATER
- EX. SEWER
- EX. WATER
- OVERHEAD ELECTRICAL
- EX. FENCE
- TOP/TOE BANK
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										SCALE 1:100 (A1)										NOTES:										SURVEYOR --										SURVEYING JOB No. 45549CT										<div><div></div><div><div><b>PDA Surveyors</b></div><div><small>Incorporating WALTER SURVEYS</small></div></div><div><div>127 Bathurst Street Hobart, Tasmania, 7000 www.pda.com.au Also at: Kingston, Launceston &amp; Burnie</div><div>PHONE: +61 03 6234 3217 FAX: +61 03 6234 5085 EMAIL: pda.hbt@pda.com.au</div></div></div> <div><div>PAUL SUTCLIFFE PROPOSED SUBDIVISION LOT 1 GREENBANKS ROAD, BRIDGEWATER DRIVEWAY SECTION A &amp; LONG SECTION</div></div>										SCALE 1 : 750										PAPER 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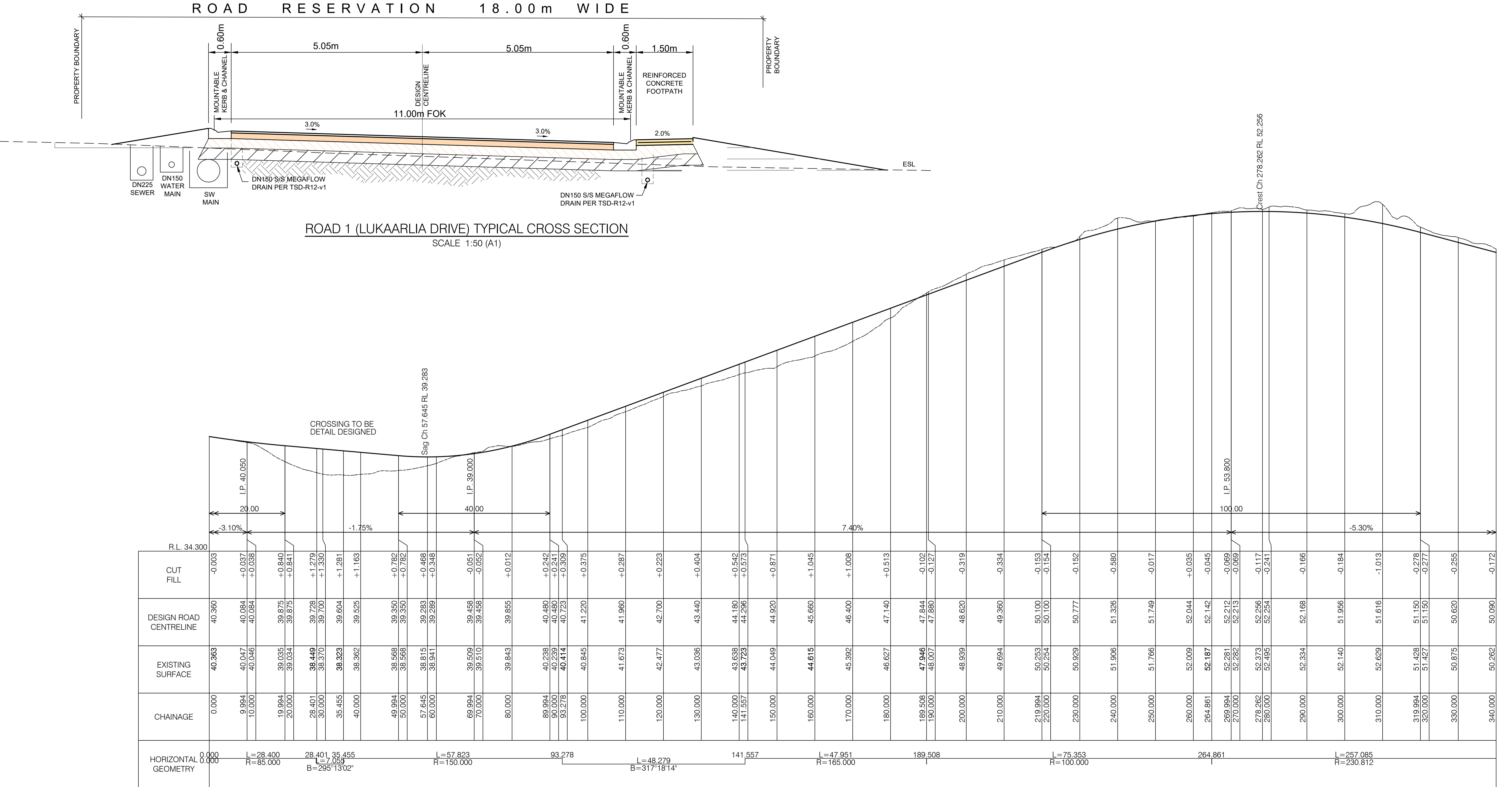
PAVEMENT DESIGN

50 ASPHALT  
150 X 20 FCR BASE  
250 X 40 FCR SUB-BASE  
300 CAPPING LAYER (SUBGRADE  
IMPROVEMENT) COMPACTED TO 95% MDD  
- MIN CBR = 6  
ON APPROVED SUBGRADE

( DESIGN CBR = 2.5  
ESA FOR INDUSTRIAL ROAD = 1 X 10^7  
20 YEAR DESIGN LIFE )  
SUBGRADE TO BE TESTED AT TIME OF  
FORMATION  
FOR CBR LESS THAN 2.5 - AMENDED PAVEMENT  
DESIGN TO BE SUBMITTED TO COUNCIL FOR  
APPROVAL

FOOTPATH  
150 CONCRETE (SL82 CENTRAL)  
100 X 20 FCR BASE  
APPROVED SUB-GRADE

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A	LOT 14 REMOVED AND LOTS 13 & 15 BOUNDARIES ADJUSTED ACCORDINGLY	R.D	17/06/2021	C.T
REV	AMENDMENTS	DRAWN	DATE	APPR.

NOTES:

SURVEYOR		SURVEYING JOB No.	
--		45549CT	
DRAWN	DESIGNED	CHECKED	
BL	BL	MW	
DATE			
18 FEB 2021			

PAUL SUTCLIFFE  
PROPOSED SUBDIVISION  
LOT 1 GREENBANKS ROAD, BRIDGEWATER  
CONCEPT ROAD 1 LONG SECTION 1/2



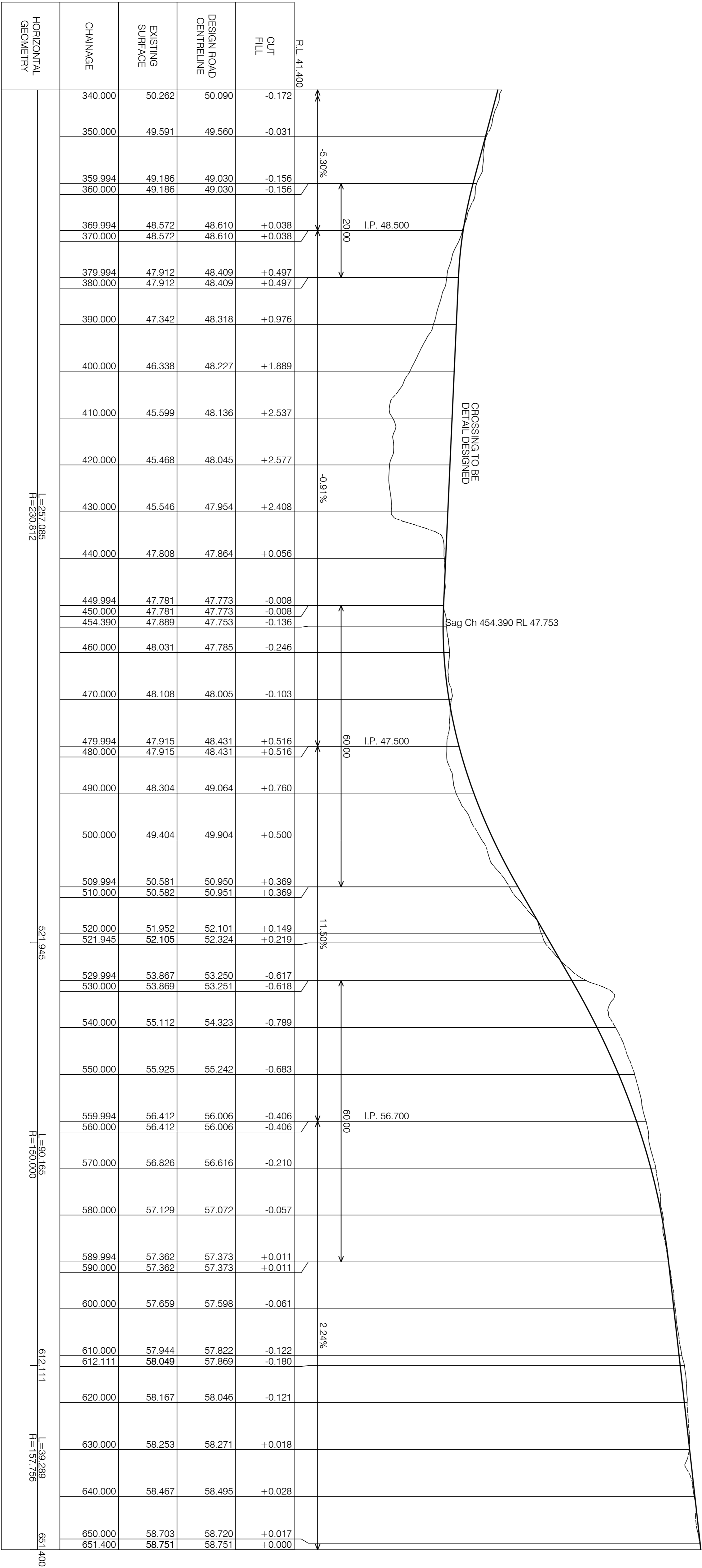
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JOB NUMBER	DRG	REV	
45549CT	14	A	

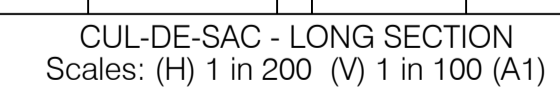
**WARNING**  
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ROAD 1 (LUKAARLIA DRIVE) LONG SECTION 2/2

SCALE HOR 1:500 VER 1:100 (A1)

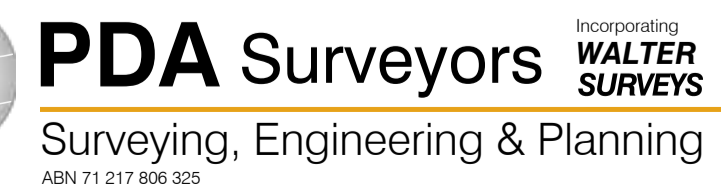
				NOTES:	
		SUPERVISOR		SURVEYING JOB NO.	
		---		45549CT	
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				PAUL SUTCLIFFE PROPOSED SUBDIVISION LOT 1 GREENBANKS ROAD, BRIDGEWATER CONCEPT ROAD 1 LONG SECTION 2/2	
					
				<b>PDA Surveyors</b> <small>INCORPORATED</small> <b>SURVEYORS</b>	
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REV		AMENDMENTS		DRAWN	
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A		LOT 14 REMOVED AND LOTS 13 & 15 BOUNDARIES ADJUSTED ACCORDINGLY		R.D	
				17/06/2021	
				C.T	



A	LOT 14 REMOVED AND LOTS 13 & 15 BOUNDARIES ADJUSTED ACCORDINGLY	R.D	17/06/2021 C.T
REV	AMENDMENTS	DRAWN	DATE APPR.

SURVEYOR --		SURVEYING JOB No 45549CT	
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DATE 18 FEB 2021			

PAUL SUTCLIFFE  
PROPOSED SUBDIVISION  
LOT 1 GREENBANKS ROAD, BRIDGEWATER  
CONCEPT ROAD 2 CUL-DE-SAC DETAIL

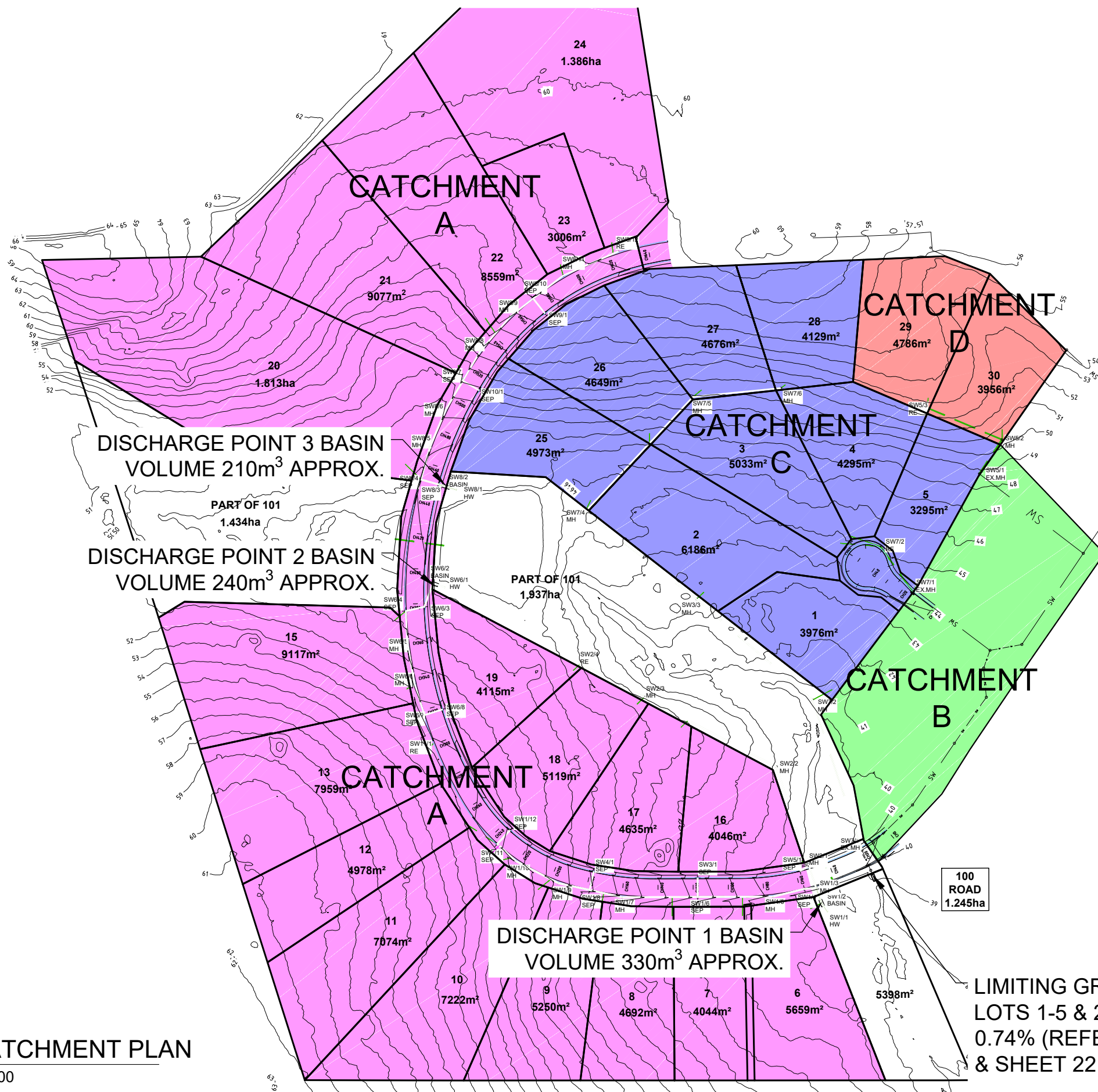


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LIMITING GRADE OF EXISTING DN750 SERVICING  
LOTS 1-5 & 25-30 IS  
0.74% (REFER TO H1017E SHEET 2 FOR PLAN VIEW  
& SHEET 22 FOR LONGSECTION - SW8/2-SW8/3)


17

## CATCHMENT PLAN

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PROPOSED SUBDIVISION  
LOT 1 GREENBANKS ROAD, BRIDGEWATER  
for PAUL SUTCLIFFE



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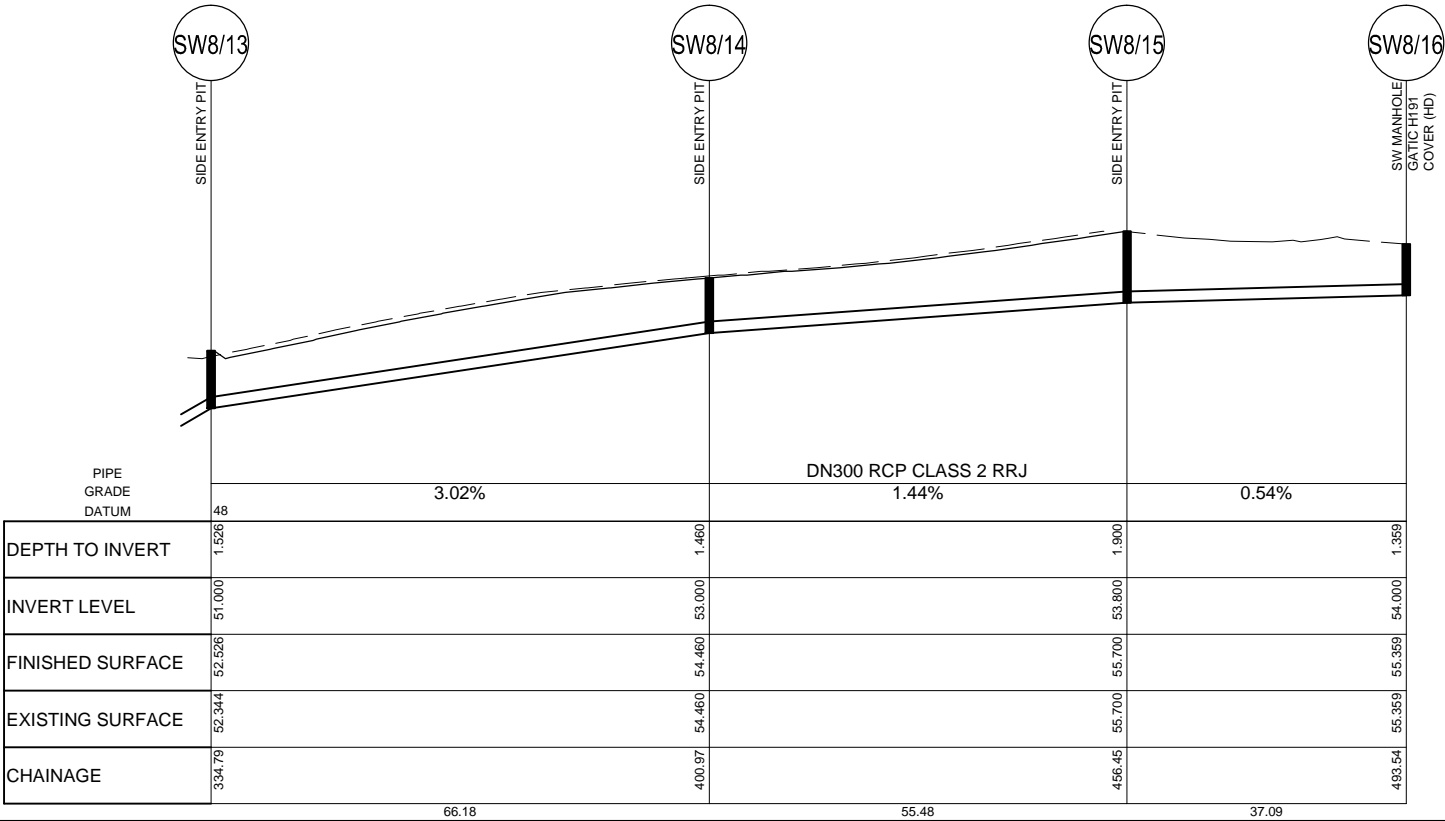
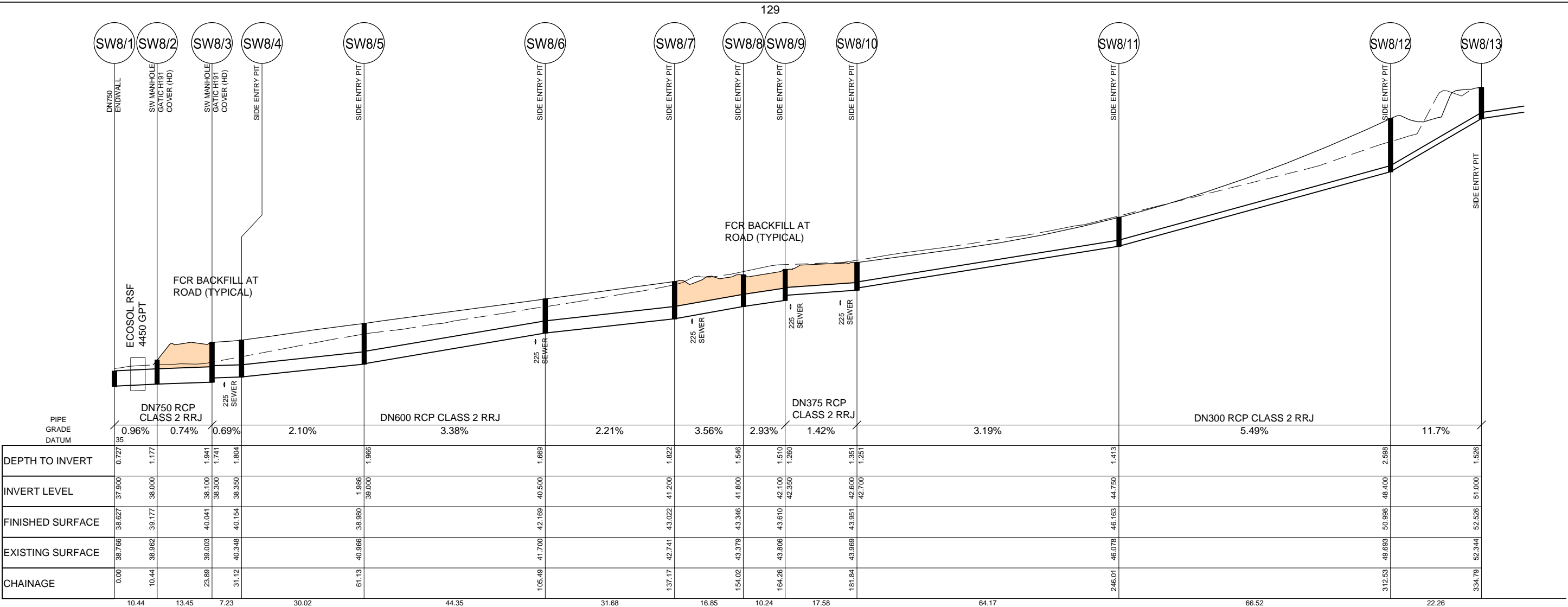
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STORM WATER LINE 8  
SCALE H 1:500 V 1:100 (A1)

STORM WATER LINE 8 (CONT)  
SCALE H 1:500 V 1:100 (A1)

**HALF SCALE PRINT**

Subdivision No .....07/024.....  
Refer Letter Dated .....

**APPROVED**  
Municipal Engineer

**Dean Pantou**  
MIEAust CPEng  
Chartered Professional Engineer  
Membership No. 163547  
The Institution of Engineers, Australia



**PDA Surveying Engineering and  
Planning**

**Greenbanks Road Industrial Estate  
Bridgewater  
Traffic Impact Assessment**

**December 2020**



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# 1. Introduction

## 1.1 Background

Midson Traffic were engaged by PDA Surveyors Engineers and Planners to prepare a traffic impact assessment for a proposed 30-lot industrial subdivision at Greenbanks Road, Bridgewater.

## 1.2 Traffic Impact Assessment (TIA)

A traffic impact assessment (TIA) is a process of compiling and analysing information on the impacts that a specific development proposal is likely to have on the operation of roads and transport networks. A TIA should not only include general impacts relating to traffic management, but should also consider specific impacts on all road users, including on-road public transport, pedestrians, cyclists and heavy vehicles.

This TIA has been prepared in accordance with the Department of State Growth (DSG) publication, *A Framework for Undertaking Traffic Impact Assessments*, September 2007. This TIA has also been prepared with reference to the Austroads publication, *Guide to Traffic Management*, Part 12: *Traffic Impacts of Developments*, 2019.

Land use developments generate traffic movements as people move to, from and within a development. Without a clear understanding of the type of traffic movements (including cars, pedestrians, trucks, etc), the scale of their movements, timing, duration and location, there is a risk that this traffic movement may contribute to safety issues, unforeseen congestion or other problems where the development connects to the road system or elsewhere on the road network. A TIA attempts to forecast these movements and their impact on the surrounding transport network.

A TIA is not a promotional exercise undertaken on behalf of a developer; a TIA must provide an impartial and objective description of the impacts and traffic effects of a proposed development. A full and detailed assessment of how vehicle and person movements to and from a development site might affect existing road and pedestrian networks is required. An objective consideration of the traffic impact of a proposal is vital to enable planning decisions to be based upon the principles of sustainable development.

This TIA also addresses the relevant clauses from E5.0, *Road and Railway Assets Code*, and E6.0, *Parking and Access Code*, of the Brighton Interim Planning Scheme 2015.

## 1.3 Statement of Qualification and Experience

This TIA has been prepared by an experienced and qualified traffic engineer in accordance with the requirements of Council's Planning Scheme and The Department of State Growth's, *A Framework for Undertaking Traffic Impact Assessments*, September 2007, as well as Council's requirements.

The TIA was prepared by Keith Midson. Keith's experience and qualifications are briefly outlined as follows:

- 25 years professional experience in traffic engineering and transport planning.
- Master of Transport, Monash University, 2006
- Master of Traffic, Monash University, 2004

- Bachelor of Civil Engineering, University of Tasmania, 1995
- Engineers Australia: Fellow (FIEAust); Chartered Professional Engineer (CPEng); Engineering Executive (EngExec); National Engineers Register (NER)

## **1.4 Project Scope**

The project scope of this TIA is outlined as follows:

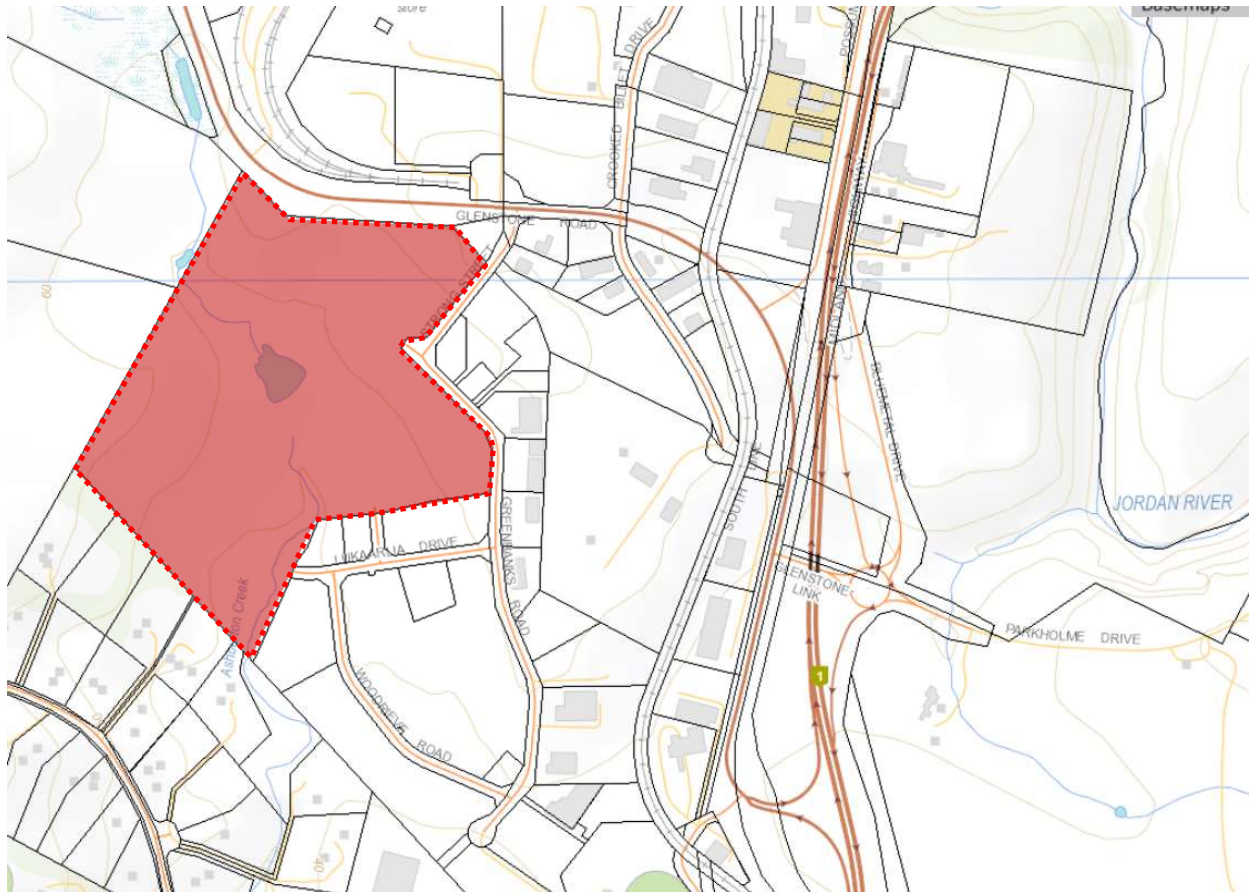
- Review of the existing road environment in the vicinity of the site and the traffic conditions on the road network.
- Provision of information on the proposed development with regards to traffic movements and activity.
- Identification of the traffic generation potential of the proposal with respect to the surrounding road network in terms of road network capacity.
- Review of the parking requirements of the proposed development. Assessment of this parking supply with Planning Scheme requirements.
- Traffic implications of the proposal with respect to the external road network in terms of traffic efficiency and road safety.

## **1.5 Subject Site**

The subject site is located at

The subject site and surrounding road network is shown in Figure 1.

**Figure 1 Subject Site & Surrounding Road Network**



*Image Source: LIST Map, DPIPWE*

## 1.6 Reference Resources

The following references were used in the preparation of this TIA:

- Brighton Interim Planning Scheme, 2015 (Planning Scheme)
- Austroads, *Guide to Traffic Management*, Part 12: *Traffic Impacts of Developments*, 2019
- Austroads, *Guide to Road Design*, Part 4A: Unsignalised and Signalised Intersections, 2017
- Department of State Growth, *A Framework for Undertaking Traffic Impact Assessments*, 2007
- Roads and Maritime Services NSW, *Guide to Traffic Generating Developments*, 2002 (RMS Guide)
- Roads and Maritime Services NSW, *Updated Traffic Surveys*, 2013 (Updated RMS Guide)
- Australian Standards, AS2890.1, *Off-Street Parking*, 2004 (AS2890.1:2004)

## 2. Existing Conditions

### 2.1 Transport Network

For the purposes of this report, the transport network consists of Glenstone Road, Greenbanks Road, Strong Street, Lukaarlia Drive and Woodrieve Road.

Glenstone Road is a major arterial road that services the Brighton industrial area from the Midland Highway. It connects between two grade separated interchanges at the Midland Highway and services the Intermodal transport hub and several industrial areas. Glenstone Road carries 3,505 vehicles per day<sup>1</sup> with a peak of 365 vehicles per hour (afternoon peak period). Glenstone Road carries 39.9% heavy vehicles (equating to 1,399 trucks per day). Glenstone Road connects to Strong Street at a T-junction with Glenstone Road having priority. The junction has a channelised right turn lane from Glenstone Road to Strong Street.

Strong Street is approximately 250 long and connects between Glenstone Road and Greenbanks Road. A number of industrial lots front onto Strong Street. Strong Street provides the solitary access to the subject site and surrounding industrial estate. Strong Street connects to Greenbanks Road at a wide T-junction. The existing configuration of the Strong Street/

Strong Street, viewed towards Greenbanks Road is shown in Figure 2

**Figure 2 Strong Street**



<sup>1</sup> Department of State Growth 2019 traffic data.

Greenbanks Road connects to Strong Street at its northern end and terminates at a cul-de-sac at its southern end. It provides access to Lukaarlia Drive and Woodrieve Road and numerous industrial properties along its length.

Greenbanks Road viewed towards the Strong Street intersection is shown in Figure 3.

**Figure 3 Greenbanks Road**



Lukaarlia Drive is a local access road that is approximately 290 metres long. It connects to Greenbanks Road at its eastern end and the subject site at its western end. Woodrieve Road connects to Lukaarlia Drive at a T-Junction with Lukaarlia Drive having priority.

Woodrieve Road is a local access road that is approximately 440 metres long. It connects between Lukaarlia Drive at its northern end and Greenbanks Road at its southern end. Woodrieve Road services a number of industrial sites along its length.

## **2.2 Road Safety Performance**

Crash data can provide valuable information on the road safety performance of a road network. Existing road safety deficiencies can be highlighted through the examination of crash data, which can assist in

determining whether traffic generation from the proposed development may exacerbate any identified issues.

Crash data was obtained from the Department of State Growth for a 5+ year period between 1<sup>st</sup> January 2015 and 31<sup>st</sup> October 2020 for Strong Street, Greenbanks Road, Woodrieve Road and Lukaarlia Drive. No crashes were reported in these roads during this time.

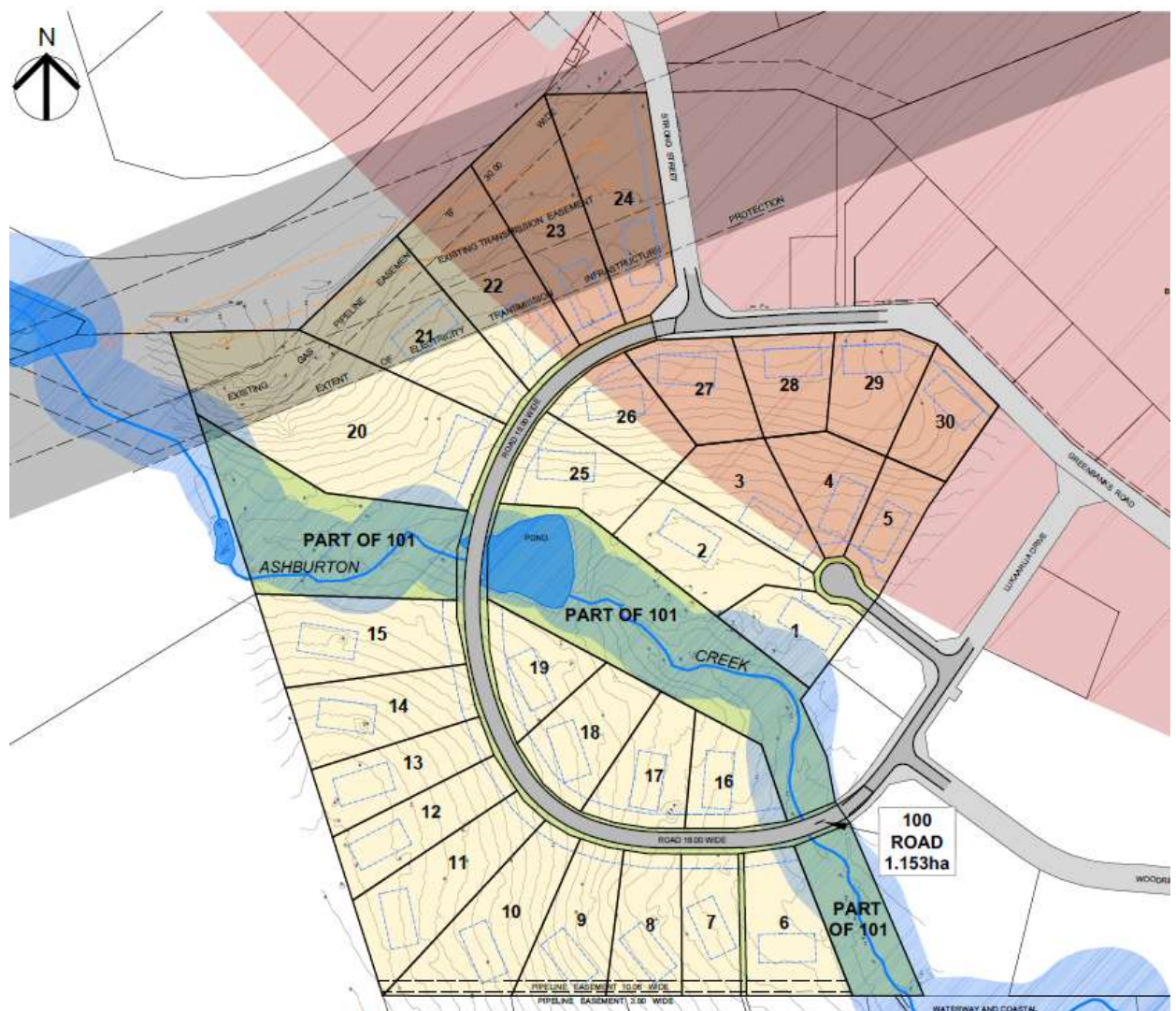
## 3. Proposed Development

### 3.1 Development Proposal

The proposed development is a 30-lot industrial subdivision accessed via Greenbanks Road and Lukaarlia Drive. A new road is proposed that will connect Greenbanks Road to Lukaarlia Drive.

The proposed subdivision layout is shown in Figure 4.

**Figure 4 Proposed Development Plans**



## 4. Traffic Impacts

### 4.1 Traffic Generation

Traffic generation rates were sourced from the Roads and Traffic Authority of NSW publication, *Guide to Traffic Generating Developments*, 2002 (RTA Guide). The RTA Guide provides the following equations for the peak hour traffic generation of Business Parks:

- Equation (a)

Peak hour vehicle trips (PVT) = 1.1 vehicles per hour two-way per 100m<sup>2</sup> of total gross leasable floor area.

- Equation (b)

Peak hour vehicle trips (PVT) = 1.2 vehicles per hour two-way per 100m<sup>2</sup> of gross leasable office/showroom area + 1.0 vehicle per hour two-way per 100m<sup>2</sup> of gross leasable factory/ warehouse area.

In this case the breakdown of future land use within the industrial subdivision is not known. Equation (a) is the most appropriate method to determine the traffic generation.

Given a total developable site area of 23 hectares, the total gross leasable floor area is expected to be in the order of 34,500m<sup>2</sup> (approximately 15% of total site area). This results in a traffic generation as follows:

- Peak hour vehicle trips (PVT) = 380 vehicles per hour

The peak hour traffic generation is assumed to be 8.5% of the average weekday daily traffic volume, consistent with peak flows on Glenstone Road. The proposed industrial subdivision is therefore likely to generate in the order of 4,500 vehicles per day based on the total site area and peak hour rates set out in the RMS Guide when fully developed.

## 4.2 Trip Distribution

All traffic will access the site from Glenstone Road/ Strong Street. The design of the new road connecting between Greenbanks Road and Lukaarlia Drive will result in traffic approaching Strong Street from the west.

The following general traffic distribution has been assumed for the industrial subdivision:

- Morning peak hour 60% entering/ 40% exiting
- Evening peak hour 30% entering/ 70% exiting
- Origin-Destination Greenbanks Rd (west) 73%
- Origin-Destination Greenbanks Rd (east) 27%

No opposing traffic is currently accessing the junction from the western approach of Greenbanks Road. The proposed development will extend Greenbanks Road to the west of the Strong Street junction. As noted in Section 4.2, the likely proportion of traffic generation utilising the western approach is 73%. This is based on the effective number of lots that will utilise this approach for traffic access.

This equates to the traffic generation distribution at the Strong Street/ Greenbanks Road junction as shown in Table 1. Note that it has been assumed that traffic generation of the subdivision will not travel along Greenbanks Road from west to east through the Strong Street intersection, and vice versa. It is possible that some vehicle traffic generation movements may travel in these directions (ie. intra-travel between lots of the subdivision), but for simplicity all traffic is assumed to originate or terminate at Strong Street.

**Table 1 Strong St/ Greenbanks Rd Traffic Generation Turning Movements**

Peak	Approach	Left Turn	Right Turn
AM Peak	Greenbanks Rd West	111 vph	-
	Greenbanks Rd East	-	41 vph
	Strong St	62 vph	166 vph
PM Peak	Greenbanks Rd West	194 vph	-
	Greenbanks Rd East	-	72 vph
	Strong St	31 vph	83 vph

### 4.3 Intersection Future Movements

The key network impact of the traffic generation will be the intersection of Strong Street and Greenbanks Road. This intersection is currently operating with all traffic movements being left turn from Strong Street to Greenbanks Road, and right turn from Greenbanks Road to Strong Street.

Using the same assumptions for traffic generation for the balance of land accessed by Greenbanks Road, the future traffic volumes utilising the intersection excluding the proposed development is summarised in Table 2 (ie. all available land accessed via Greenbanks Road and connecting roads is fully developed with industrial lots).

**Table 2 Strong St/ Greenbanks Rd Forecast Future Volumes**

Peak	Approach	Left Turn	Through	Right Turn
AM Peak	Greenbanks Rd West	111 vph	20 vph	-
	Greenbanks Rd East	-	20 vph	205 vph
	Strong St	308 vph	-	166 vph
PM Peak	Greenbanks Rd West	194 vph	20 vph	-
	Greenbanks Rd East	-	20 vph	359 vph
	Strong St	154 vph	-	83 vph

### 4.4 Intersection Modelling

Intersection Analysis software, SIDRA Intersection (Akcelik and Associates), was used to determine the likely performance impacts of the Strong Street/ Greenbanks Road junction as a result of the intersection modifications and the traffic generated by the proposed subdivision.

SIDRA uses complex analytical traffic models coupled with iterative approximation technique to provide estimates of capacity and performance of intersections. SIDRA is endorsed as a modelling tool by Austroads.

The key outputs of the SIDRA modelling are defined as follows:

- Average delay for all vehicles (s)

The average delay in seconds for all vehicles taking into account how many vehicles are performing each manoeuvre and the average delay for that movement.

- Worst movement average delay (s)

The average delay in seconds for all vehicles undertaking the movement with the highest average delay.

- 95<sup>th</sup> percentile queue length (m)

The queue length in metres not exceeded 95% of the time for the lane with the highest queue length.

- Average level of service (LOS)

The average level of service for all vehicles taking into account how many vehicles are performing each manoeuvre and the level of service for that movement.

Level of service is a representation of average delay and describes the quality of traffic service in terms of 6 levels with level of service A (LOS A) representing the best operating condition (i.e. at or close to free flow) and level of service F (LOS F) representing the worst (i.e. forced flow).

In general, the target level of service in an urban environment such as the subject site is level of service D (LOS D).

- Worst movement level of service

The level of service for all vehicles undertaking the movement with the worst level of service.

The LOS measurement criteria used in SIDRA modelling is summarised in Table 3.

**Table 3 SIDRA Level of Service Criteria**

LOS	Average Delay per vehicle (s/veh)	Traffic Signals/ Roundabout	Give Way and Stop Signs
<b>LOS A</b>	< 14	Good operation, ideal flow conditions	Good operation, ideal flow conditions
<b>LOS B</b>	15 – 28	Good operation with acceptable delays and spare capacity	Good operation with acceptable delays and spare capacity
<b>LOS C</b>	29 – 42	Satisfactory operating conditions.	Satisfactory operating conditions.
<b>LOS D</b>	43 – 56	Operating near capacity. Generally accepted limit for urban peak periods.	Operating near capacity. Generally accepted limit for urban peak periods.
<b>LOS E</b>	57 – 70	At capacity.	At capacity, requires alternative traffic management control method.
<b>LOS F</b>	> 70	Forced flow conditions.	Forced flow conditions.

The modelling indicated a right turn lane is required on the eastern approach of Greenbanks Road. This is shown conceptually in Figure 5.

**Figure 5 Strong St/ Greenbanks Rd Conceptual Layout**



## 4.5 Modelling Outputs

The SIDRA modelling for the AM and PM peak periods are shown in Table 4 and Table 5 respectively. The modelling incorporates the proposed right turn lane on the eastern approach of Greenbanks Road.

It can be seen that the intersection operates at an acceptable level of service (LOS) during both peak periods. The worst LOS is 'C' (Strong Street approach during both peak periods). Queuing extends a reasonable distance into Strong Street during the morning peak period, with the 95<sup>th</sup> percentile queue (the queue not exceeded 95% of the time) being 122 metres. Note that the queue is largely due to the high proportion of heavy vehicles in the traffic flow.

**Table 4 AM Peak SIDRA Modelling Output – Strong St/ Greenbanks Rd**

Movement Performance - Vehicles								
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
East: Greenbanks Rd								
5	T	21	22.0	0.012	0.0	LOS A	0.0	0.0
6	R	216	22.0	0.210	10.4	LOS B	1.0	7.9
Approach		237	22.0	0.210	9.5	NA	1.0	7.9
North: Strong St								
7	L	324	22.0	0.791	22.8	LOS C	14.7	121.9
9	R	175	22.0	0.791	23.2	LOS C	14.7	121.9
Approach		499	22.0	0.791	23.0	LOS C	14.7	121.9
West: Greenbanks Rd								
10	L	117	22.0	0.085	9.0	LOS A	0.0	0.0
11	T	21	22.0	0.085	0.0	LOS A	0.0	0.0
Approach		138	22.0	0.085	7.6	NA	0.0	0.0
All Vehicles		874	22.0	0.791	16.9	NA	14.7	121.9

Level of Service (LOS) Method: Delay (HCM 2000).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

**Table 5 PM Peak SIDRA Modelling Output – Strong St/ Greenbanks Rd**

Movement Performance - Vehicles								
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
East: Greenbanks Rd								
5	T	21	22.0	0.012	0.0	LOS A	0.0	0.0
6	R	378	22.0	0.420	12.1	LOS B	2.6	22.0
Approach		399	22.0	0.420	11.4	NA	2.6	22.0
North: Strong St								
7	L	162	22.0	0.543	20.0	LOS C	4.1	34.0
9	R	87	22.0	0.543	20.3	LOS C	4.1	34.0
Approach		249	22.0	0.543	20.1	LOS C	4.1	34.0
West: Greenbanks Rd								
10	L	204	22.0	0.140	9.0	LOS A	0.0	0.0
11	T	21	22.0	0.140	0.0	LOS A	0.0	0.0
Approach		225	22.0	0.140	8.2	NA	0.0	0.0
All Vehicles		874	22.0	0.543	13.1	NA	4.1	34.0

Level of Service (LOS) Method: Delay (HCM 2000).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

## 4.6 Sight Distance

The Acceptable Solution A1 of Clause E5.6.4 of the Planning Scheme states that sight distances at an access or junction must comply with the Safe Intersection Sight Distance shown in Table E5.1 and reproduced in Table 6.

**Table 6 Planning Scheme Sight Distance Requirements**

Vehicle Speed km/h	Safe Intersection Sight Distance in metres, for speed limit of:	
	60 km/h or less	Greater than 60 km/h
50	80	90
60	105	115
70	130	140
80	165	175
90		210
100		250
110		290

Table E5.1 requires a Safe Intersection Sight Distance (SISD) of 105 metres for a vehicle speed of 60-km/h within a speed limit of 60-km/h or less.

The subdivision creates a new access junction in Lukaarlia Drive. The available sight distance at this junction will exceed 105 metres. Each lot will also provide an access to the subdivision road network. The layout of the road network will provide sufficient sight distance at each lot to satisfy the SISD requirements of the Planning Scheme.

The Acceptable Solution A1 of Clause E5.6.4 of the Planning Scheme is met.

## 4.7 Road Safety Impacts

There are no significant detrimental road safety impacts foreseen for the proposed industrial subdivision. This is based on the following:

- The surrounding road network is able to adequately absorb the traffic generated by the proposed development (peak traffic generation of 380 vehicles per hour).
- The existing road safety performance of the road network does not indicate that there are any current road safety deficiencies that might be exacerbated by the proposed development. Noting specifically that there have been no crashes reported in the surrounding road network in the most recent five-year period.
- Adequate sight distance is available at the proposed accesses in relation to the prevailing vehicle speeds.

---

#### **4.8 Parking Assessment**

Each lot should provide adequate on-site parking in accordance with the requirements of E6.0 of the Planning Scheme.

## 5. Conclusions

This traffic impact assessment (TIA) investigated the traffic and parking impacts of a proposed 30-lot industrial subdivision at Greenbanks Road, Bridgewater.

Traffic generation of potential future lot development has been estimated based on general industrial development that may occur on the rezoned land. Detailed traffic impact assessments will need to be undertaken for the development of each individual lot to determine the specific impacts of each lot on the surrounding road network. This TIA therefore provides a high-level overview of potential impacts on the broader transport network.

The key findings of the TIA are summarised as follows:

- The traffic generation of the subdivision is likely to be 4,500 vehicles per day with a peak of 380 vehicles per hour.
- The subdivision will extend Greenbanks Road to the west of the Strong Street intersection. The intersection will need to be modified to a T-junction with a channelised right turn lane on the eastern approach of Greenbanks Road.
- SIDRA traffic modelling of the intersection indicates that the Strong Street/ Greenbanks Road intersection will operate at a high level of service during the morning and afternoon peak periods when the subdivision and all nearby industrial land is fully developed.

Based on the findings of this report and subject to the recommendations above, the proposed development is supported on traffic grounds.

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**Document Status**

Revision	Author	Review	Date
0	Keith Midson	Zara Kacic-Midson	1 <sup>st</sup> December 2020

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- b) **TO** enter into and upon the servient land for the purpose of examining, operating, maintaining, repairing, modifying, adding to or replacing electricity infrastructure without doing unnecessary damage to the said servient land and making good all damage occasioned thereby;
- c) **TO** erect fencing, signs, barriers or other protective structures upon the servient land if in the opinion of TasNetworks these are necessary for reasons of safety;
- d) **TO** cause or permit electrical energy to flow or be transmitted or distributed through the said electricity infrastructure;
- e) **TO** enter into and upon the servient land for all or any of the above purposes with or without all necessary plant equipment and machinery and the means of transporting the same and if necessary to cross the remainder of the said land in consultation with the registered proprietor/s for the purpose of access and regress to and from the servient land;
- f) **NOTHING** herein contained shall prevent the registered proprietor/s for themselves and their successors in title from using the servient land **PROVIDED THAT** such use does not derogate from this grant or, in the opinion of TasNetworks compromise the safe operation of TasNetworks electricity infrastructure located on, above or under the servient land.

**SECONDLY** the benefit of a covenant for TasNetworks and its successors with the registered proprietor/s for themselves and their successors in title of the servient land not to erect any buildings or place any structures, objects, or vegetation within the said easement without the prior written consent of TasNetworks to the intent that the burden of the covenant may run with and bind the servient land and every part thereof and that the benefit thereof may be annexed to the easement hereinbefore described.

**SIGNED** by the Transferor .....

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**NOTE:-** Every annexed page shall be signed by the parties to the dealing, or where the party is a corporate body, be signed by the persons who have attested the affixing of the seal of that body to the dealing.