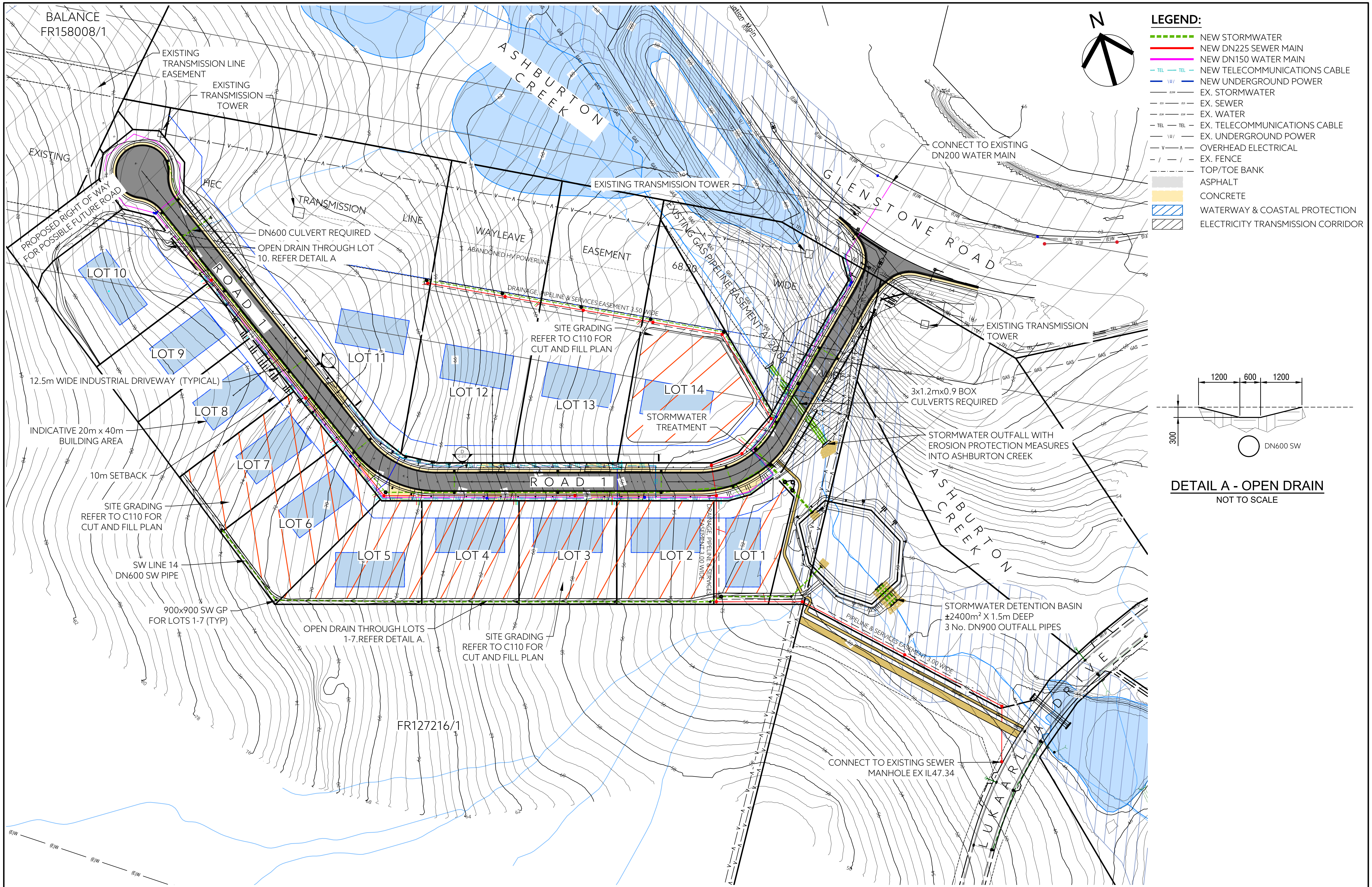

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
P4	RESPONSE TO COUNCIL RFI - 31.03.2026	DM	13/05/2026	MW
P3	STORMWATER PIPE SIZES AMENDED	GS	17/03/2026	RP/MW
P2	PLANS AMENDED IN RESPONSE TO COUNCIL RFI - 16.06.2025	GS	08/08/2025	MW
A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY

COORDINATE/ DATUM: PLANAR (LIDAR)

THIS SHEET MAY BE PRINTED USING COLOUR AND MAY BE INCOMPLETE IF COPIED

DESIGNED: RD | REVIEWED: MW

DRAWN: RD | REVIEWED: MW

JOB MANAGER: CRAIG TERRY

ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: CONCEPT SERVICING PLAN

PDA
SURVEYORS, ENGINEERS & PLANNERS

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

REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE	PAPER
------	1: 2000	(A3)

JOB NUMBER	DISCIPLINE	SHEET	REVISION
51911HC	C	100	P5

DATE/TIME: Thursday, 28 May 2026 5:08:59 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\5-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG

EXISTING TRANSMISSION TOWER

ROCK PITCHING EROSION PROTECTION FOR STORMWATER OUTFALL

LOT 11

SW12/1

SW1/15

30m RADII CUL DE SAC

SW1/14

R O A D 1

SW2/1

SW3/1

SW1/13

S2/4

SW1/12

SW1/11

S2/3

SW12/2

DN225 PVC-U SN8 (SCJ) SEWER MAIN

DN150 PVC-O PN16 (RRJ) WATER MAIN

DN150 PVC-U SN8 (SCJ) SEWER LOT CONNECTION (TYP)

DN300 PP STORMWATER LOT CONNECTION (TYP)

DN32 WATER LOT CONNECTION (TYP) PER DETAIL BELOW

INDUSTRIAL DRIVEWAY CROSSOVER WITH TRANSITION TO TYPE KCRB KERB (HEAVY VEHICLES) (TYP)

REFER TO C220 FOR CONCEPTUAL FUTURE DRIVEWAY LONG SECTIONS

PROPOSED RIGHT OF WAY FOR POSSIBLE FUTURE ROAD

LOT 10

LOT 9

LOT 8

LOT 7

FOR CONTINUATION SEE BELOW

FOR CONTINUATION SEE SHEET SK3

LOT 12

SW1/8

LOT 11

INDUSTRIAL DRIVEWAY CROSSOVER WITH TRANSITION TO TYPE KCRB KERB (HEAVY VEHICLES) (TYP)

R O A D 1

SW5/1

S2/3

SW1/10

SW1/9

S2/2

DN225 PVC-U SN8 (SCJ) SEWER MAIN

DN150 PVC-O PN16 (RRJ) WATER MAIN

DN32 WATER LOT CONNECTION (TYP) PER DETAIL BELOW

DN150 PVC-U SN8 (SCJ) SEWER LOT CONNECTION (TYP)

DN300 PP STORMWATER LOT CONNECTION (TYP)

REFER TO C220 FOR CONCEPTUAL FUTURE DRIVEWAY LONG SECTIONS

LOT 7

LOT 4

LOT 5

DN32 WATER METER INSIDE LOT BOUNDARY

DN32 (ID25) HDPE (PE100) SDR11 PN17

FL-SOC

DN32-100 REDUCER

100 FL SV

DN150 PVC-O PN16 (RRJ)

DN150 PVC-O PN16 (RRJ)

150 x 100 FL REDUCING TEE

WATER LOT CONNECTION DETAIL

NOT TO SCALE

LEGEND:

- NEW STORMWATER
- NEW DN225 SEWER MAIN
- NEW DN150 WATER MAIN
- NEW TELECOMMUNICATIONS CABLE
- NEW UNDERGROUND POWER
- EX. STORMWATER
- EX. SEWER
- EX. WATER
- EX. TELECOMMUNICATIONS CABLE
- EX. UNDERGROUND POWER
- OVERHEAD ELECTRICAL
- EX. FENCE
- TOP/TOE BANK
- ASPHALT
- CONCRETE
- WATERWAY & COASTAL PROTECTION
- ELECTRICITY TRANSMISSION CORRIDOR

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
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P2	PLANS AMENDED IN RESPONSE TO COUNCIL RFI - 16.06.2025	GS	08/08/2025	MW
A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY

COORDINATE/ DATUM: PLANAR (LIDAR)

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DESIGNED: RD | REVIEWED: MW

DRAWN: RD | REVIEWED: MW

JOB MANAGER: CRAIG TERRY

ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: CONCEPT SERVICING DETAIL PLAN SHEET 1 OF 5

PDA SURVEYORS, ENGINEERS & PLANNERS

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

REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE	PAPER
------	1: 500	(A3)

JOB NUMBER	DISCIPLINE	SHEET	REVISION
51911HC	C	101	P5

DATE/TIME: Thursday, 28 May 2026 5:09:03 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\5-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG

LOT 12

LOT 13

LOT 14

REFER TO C220 FOR CONCEPTUAL FUTURE DRIVEWAY LONG SECTIONS

INDUSTRIAL DRIVEWAY CROSSOVER WITH TRANSITION TO TYPE KCRB KERB (HEAVY VEHICLES) (TYP)

FOR CONTINUATION SEE SHEET SK2

FOR CONTINUATION SEE BELOW

SW6/1 SW8/1 SW10/1 SW11/1 SW7/1 SW1/4 SW1/5 SW1/8 SW1/7 SW1/6 S2/1 S1/7 S1/8 S1/6

6.5m WIDE ACCESS AS PER AS 2890.2:2018 (TYP).

DN225 PVC-U SN8 (SCJ) SEWER MAIN

DN150 PVC-O PN16 (RRJ) WATER MAIN

DN32 WATER LOT CONNECTION (TYP) PER DETAIL ON SK2

DN150 PVC-U SN8 (SCJ) SEWER LOT CONNECTION (TYP)

DN300 PP STORMWATER LOT CONNECTION (TYP)

LOT 4

LOT 3

LOT 2

LOT 1

FOR CONTINUATION SEE SHEET SK5

FOR CONTINUATION SEE SHEET SK5

ASHBURTON CREEK

SW13/2

EXISTING SIDE ENTRY PIT IN EXISTING MEDIAN ISLAND TO BE MADE REDUNDANT INCLUDING EXISTING SW PIPE THAT CROSSES GLENSTONE ROAD, EXISTING PAVEMENT TO BE REINSTATED PER DETAIL DETERMINED AT DESIGN STAGE.

EXISTING STREET LIGHTING INFRASTRUCTURE TO BE RELOCATED TO SUIT NEW INTERSECTION

CONNECT NEW DN150 WATER MAIN TO EXISTING DN200 WATER MAIN

GLENSTONE ROAD

LOT 14

S1/8 S1/9

SW7/1 SW7/2 SW1/4 SW1/3 SW1/2 SW9/1 SW9/2 SW9/3 ROAD 1

STORMWATER TREATMENT

SW13/1

1.5m WIDE GRAVEL FOOTPATH

FR186224/20
BRIGHTON COUNCIL
-OWNER

FOR INTERSECTION DETAIL SEE 51911CT-SK26

EXISTING STREET LIGHTING INFRASTRUCTURE TO BE RELOCATED TO SUIT NEW INTERSECTION

FOR CONTINUATION SEE SHEET SK5

FOR CONTINUATION SEE ABOVE

LEGEND:

- NEW STORMWATER
- NEW DN225 SEWER MAIN
- NEW DN150 WATER MAIN
- NEW TELECOMMUNICATIONS CABLE
- NEW UNDERGROUND POWER
- EX. STORMWATER
- EX. SEWER
- EX. WATER
- EX. TELECOMMUNICATIONS CABLE
- EX. UNDERGROUND POWER
- OVERHEAD ELECTRICAL
- EX. FENCE
- TOP/TOE BANK
- ASPHALT
- CONCRETE
- WATERWAY & COASTAL PROTECTION
- ELECTRICITY TRANSMISSION CORRIDOR

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DESIGNED: RD | REVIEWED: MW

DRAWN: RD | REVIEWED: MW

JOB MANAGER: CRAIG TERRY

ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

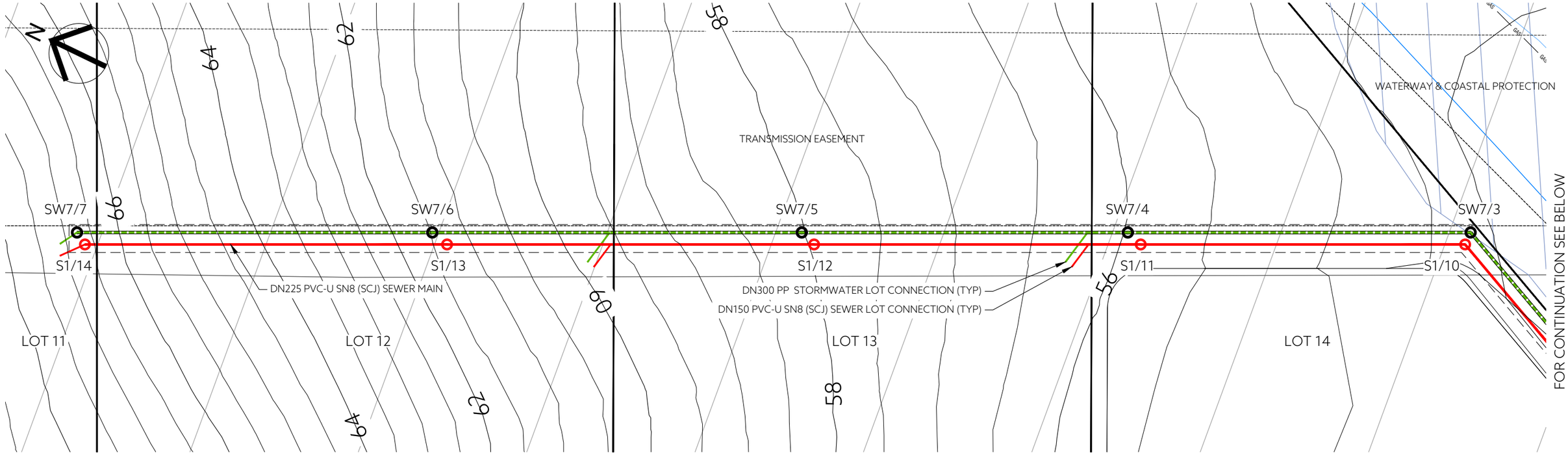
DRAWING TITLE: CONCEPT SERVICING DETAIL PLAN SHEET 2 OF 5

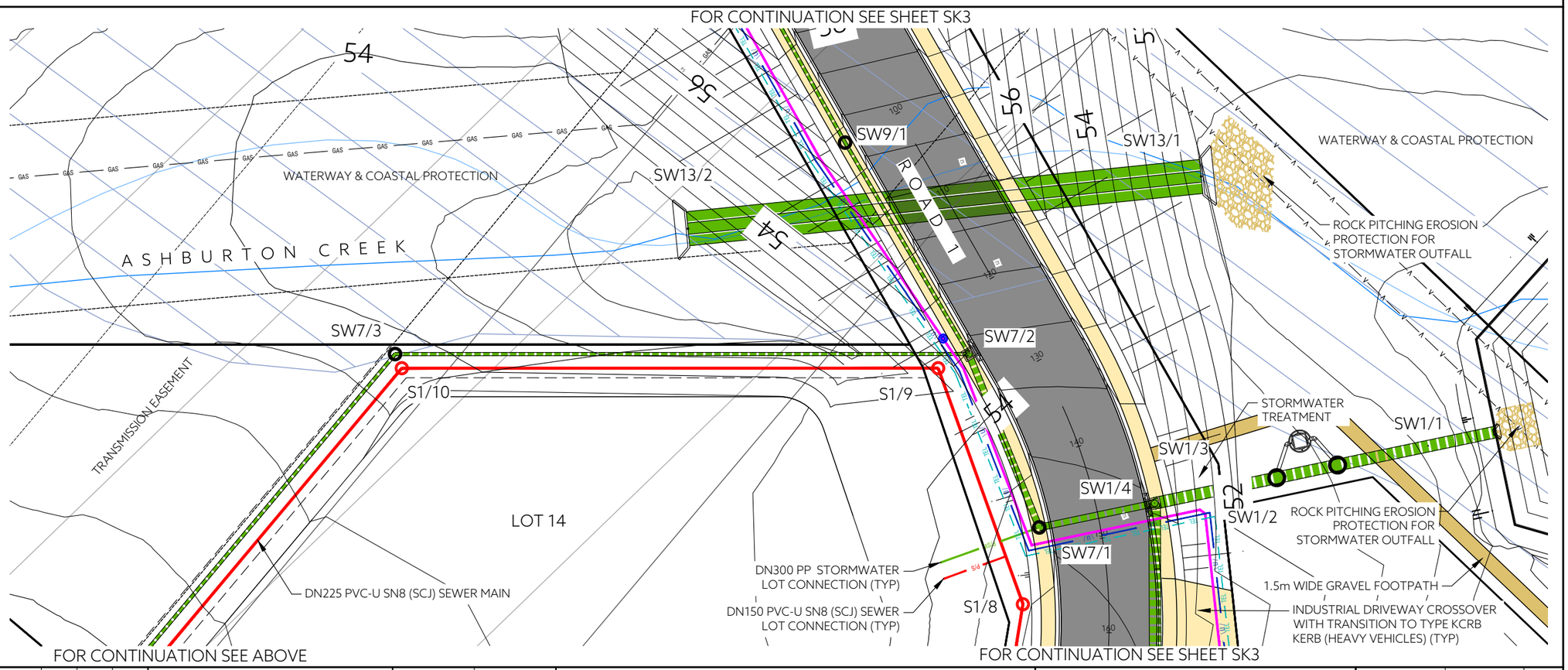
PDA
SURVEYORS, ENGINEERS & PLANNERS
127 Bathurst Street
Hobart, Tasmania, 7000
PHONE: +61 03 6234 3217
FAX: +61 03 6234 5085
EMAIL: pda.hbt@pda.com.au
www.pda.com.au
Also at: Kingston, Launceston & Burnie
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE	PAPER
------	1: 500	(A3)

JOB NUMBER	DISCIPLINE	SHEET	REVISION
51911HC	C	102	P5

DATE/TIME: Thursday, 28 May 2026 5:09:07 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\5-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG





LEGEND:

- NEW STORMWATER
- NEW DN225 SEWER MAIN
- NEW DN150 WATER MAIN
- NEW TELECOMMUNICATIONS CABLE
- NEW UNDERGROUND POWER
- EX. STORMWATER
- EX. SEWER
- EX. WATER
- EX. TELECOMMUNICATIONS CABLE
- EX. UNDERGROUND POWER
- OVERHEAD ELECTRICAL
- EX. FENCE
- TOP/TOE BANK
- ASPHALT
- CONCRETE
- WATERWAY & COASTAL PROTECTION
- ELECTRICITY TRANSMISSION CORRIDOR

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REV	AMENDMENTS	DRAWN	DATE	APPR.

DRAWING STATUS: CONCEPT ONLY

COORDINATE/ DATUM: PLANAR (LIDAR)

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DESIGNED: RD	REVIEWED: MW
DRAWN: RD	REVIEWED: MW
JOB MANAGER: CRAIG TERRY	
ISSUED DATE: 28/05/2026	

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: CONCEPT SERVICING DETAIL PLAN SHEET 3 OF 5

PDA
SURVEYORS, ENGINEERS & PLANNERS
127 Bathurst Street
Hobart, Tasmania, 7000
PHONE: +61 03 6234 3217
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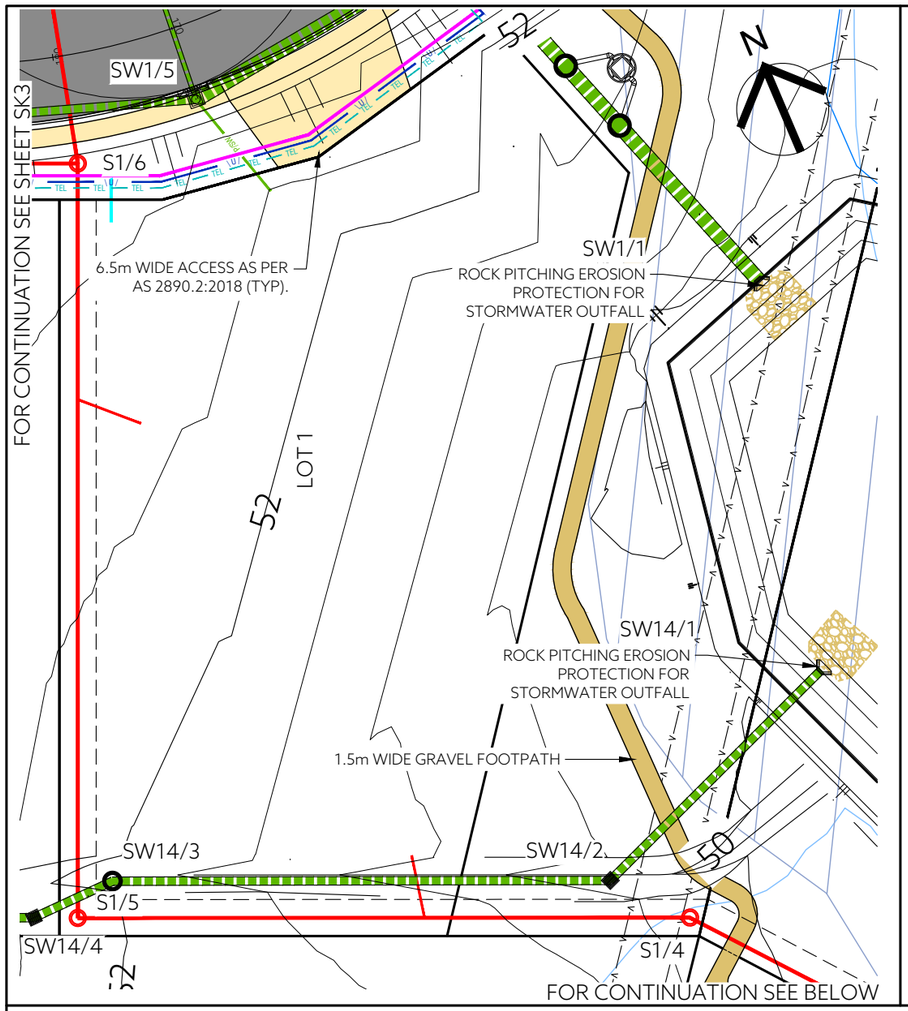
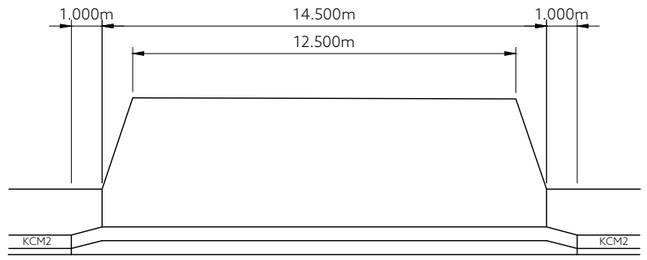
EMAIL: pda.hbt@pda.com.au
www.pda.com.au
Also at: Kingston, Launceston & Burnie
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE	PAPER
------	1: 500	(A3)

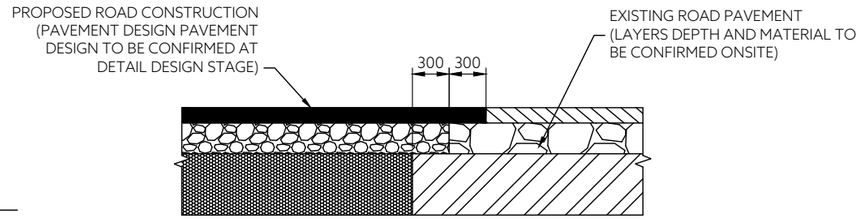
JOB NUMBER	DISCIPLINE	SHEET	REVISION
51911HC	C	103	P5

DATE/TIME: Thursday, 28 May 2026 5:09:11 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\5-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG



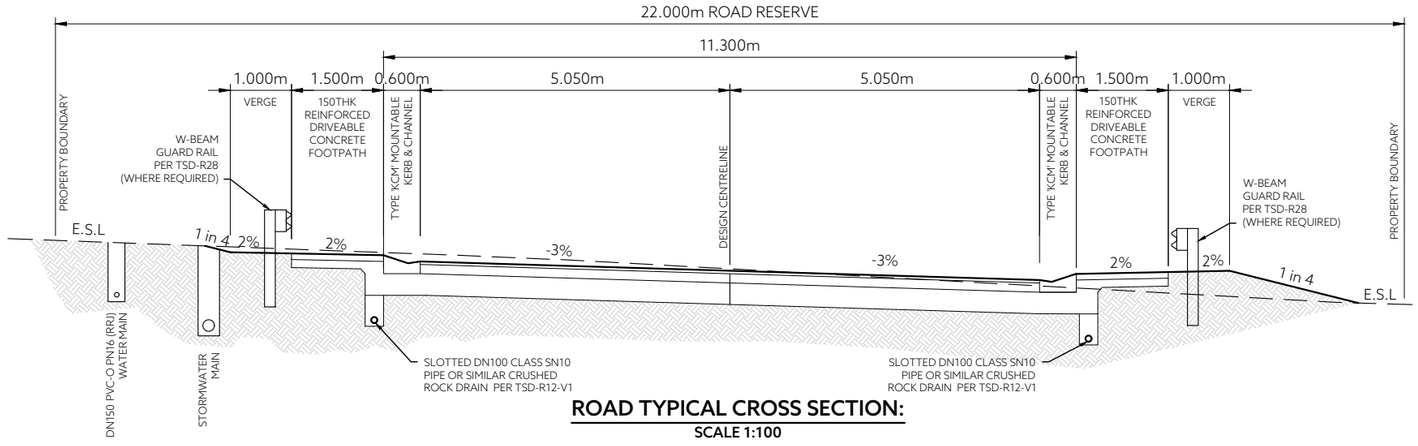


TYPICAL INDUSTRIAL DRIVEWAY DETAIL:
SCALE 1:50

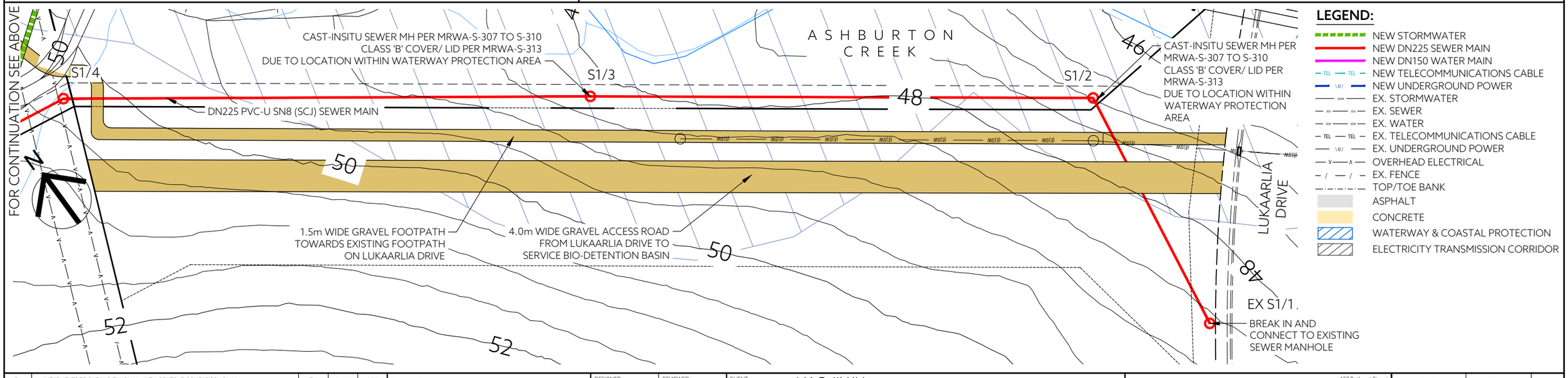


TIE IN OF PAVEMENT DESIGN:
NTS

NOTE:
EXISTING GLENSTONE ROAD EXISTING LEFT EDGE TO BE CUT BACK AS REQUIRED TO FORM STEPS 300mm LONG WITH SOUND VERTICAL FACES AND TACT COATED PRIOR TO LAYING LAYERS OF ROAD CONSTRUCTION



ROAD TYPICAL CROSS SECTION:
SCALE 1:100



LEGEND:

- NEW STORMWATER
- NEW DN225 SEWER MAIN
- NEW DN150 WATER MAIN
- NEW TELECOMMUNICATIONS CABLE
- NEW UNDERGROUND POWER
- EX. STORMWATER
- EX. SEWER
- EX. WATER
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- EX. UNDERGROUND POWER
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- ELECTRICITY TRANSMISSION CORRIDOR

REV	DESCRIPTION	DRAWN	DATE	APPR.
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DRAWING STATUS: CONCEPT ONLY
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DESIGNED: RD | REVIEWED: MW
DRAWN: RD | REVIEWED: MW
JOB MANAGER: CRAIG TERRY
ISSUED DATE: 28/05/2026

CLIENT:
PROJECT DESCRIPTION: LIAO JINJU
ADDRESS: 14 LOT INDUSTRIAL SUBDIVISION
DRAWING TITLE: 155 COBBS HILL ROAD, BRIDGEWATER
CONCEPT SERVICING DETAIL PLAN
SHEET 4 OF 5

PDA
SURVEYORS, ENGINEERS & PLANNERS
127 Bathurst Street
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REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE	PAPER
------	1: 500	(A3)

JOB NUMBER	DISCIPLINE	SHEET	REVISION
51911HC	C	104	P5

FOR CONTINUATION SEE SHEET SK3

SW11/1

SW1/4

SW1/5

S1/6

1.5m WIDE GRAVEL FOOTPATH

SW1/3

ATLAN VORTCEPTOR IVR.025 GPT
OFFLINE SETUP OR EQUIVALENT

SW1/2

DN1500 MH
BYPASS WITH
HIGH WEIR TO
DETAIL DESIGN

DN1500 MH

SW1/1

ROCK PITCHING EROSION
PROTECTION FOR
STORMWATER OUTFALL

LOT 1

STORMWATER DETENTION BASIN
±2400m² X 1.5m DEEP

SW14/1

ROCK PITCHING EROSION
PROTECTION FOR
STORMWATER OUTFALL

1.5m WIDE GRAVEL FOOTPATH

SW14/3

SW14/2

S1/5

SW14/4

S1/4

ROCK PITCHING EROSION
PROTECTION FOR
STORMWATER OUTFALL

10m WIDE X 300mm DEEP SPILLWAY CHUTE

3 No. DN900 RCP CLASS 2 STORMWATER PIPES

3m

56 54 52 50 48

N

LEGEND:

- NEW STORMWATER
- NEW DN225 SEWER MAIN
- NEW DN150 WATER MAIN
- NEW TELECOMMUNICATIONS CABLE
- NEW UNDERGROUND POWER
- EX. STORMWATER
- EX. SEWER
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TYPICAL SECTION THROUGH SW DETENTION BASIN
SCALE 1:400

REV	AMENDMENTS	DRAWN	DATE	APPR.
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DESIGNED:	REVIEWED:
RD	MW
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RD	MW

JOB MANAGER: CRAIG TERRY

ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: CONCEPT SERVICING DETAIL PLAN
SHEET 5 OF 5

PDA
SURVEYORS, ENGINEERS & PLANNERS
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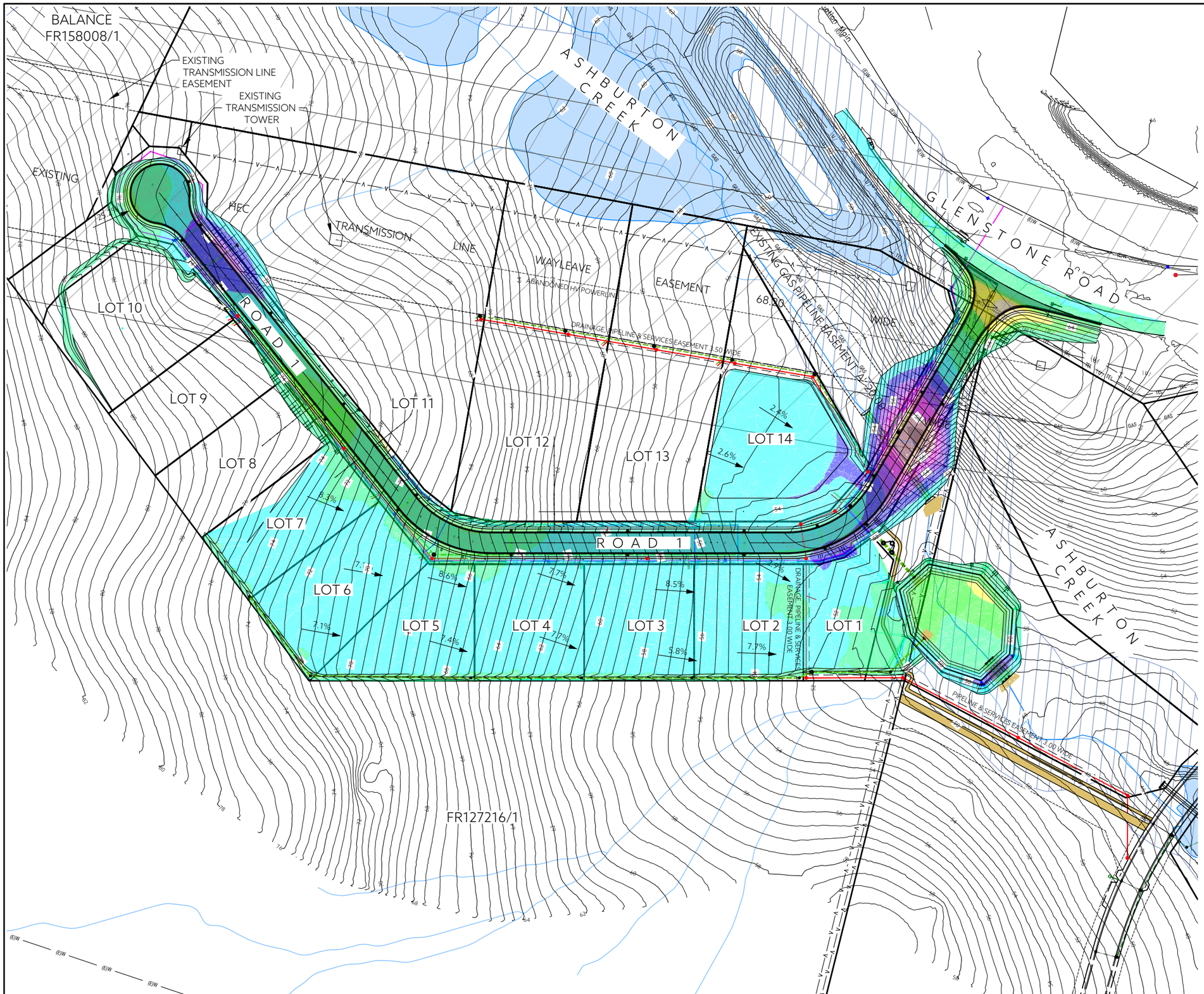
CONTRACT NO.	SCALE		PAPER
------	1: 500		(A3)
JOB NUMBER	DISCIPLINE	SHEET	REVISION
51911HC	C	105	P5

DATE/TIME: Thursday, 28 May 2026 5:09:18 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\5-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG



N

LEGEND:

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- NEW DN225 SEWER MAIN
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- NEW UNDERGROUND POWER
- EX. STORMWATER
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- ELECTRICITY TRANSMISSION CORRIDOR

CUT/FILL DEPTHS	
ELEVATION	COLOUR
-4.00 to -3.00	
-3.00 to -2.00	
-2.00 to -1.00	
-1.00 to 0.00	
0.00 to 1.00	
1.00 to 2.00	
2.00 to 3.00	
3.00 to 4.00	
4.00 to 5.00	
5.00 to 6.00	
6.00 to 7.00	

CUT/FILL INDICATIVE VOLUMES	
CUT	8,663m³
FILL	20,504m³
NET FILL	11,841m³

NOTES:

1. CUT AND FILL IS INDICATIVE ONLY
2. EXTENT OF CUT AND FILL, INCLUDING HEIGHTS, VOLUMES AND SLOPES IS CONCEPTUAL. DETAILED BULK EARTHWORKS DESIGN TO BE UNDERTAKEN AT DETAILED DESIGN STAGE
3. DEPTHS AND VOLUMES CALCULATED FROM FINAL DESIGN LEVELS
4. TRENCHING FOR PIPES, EXCAVATION FOR ROADS ETC. ARE NOT SHOWN IN THE CUT AND FILL PLAN

REV	AMENDMENTS	DRAWN	DATE	APPR.
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DESIGNED:	REVIEWED:
RD	MW
DRAWN:	REVIEWED:
RD	MW

JOB MANAGER: CRAIG TERRY

ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

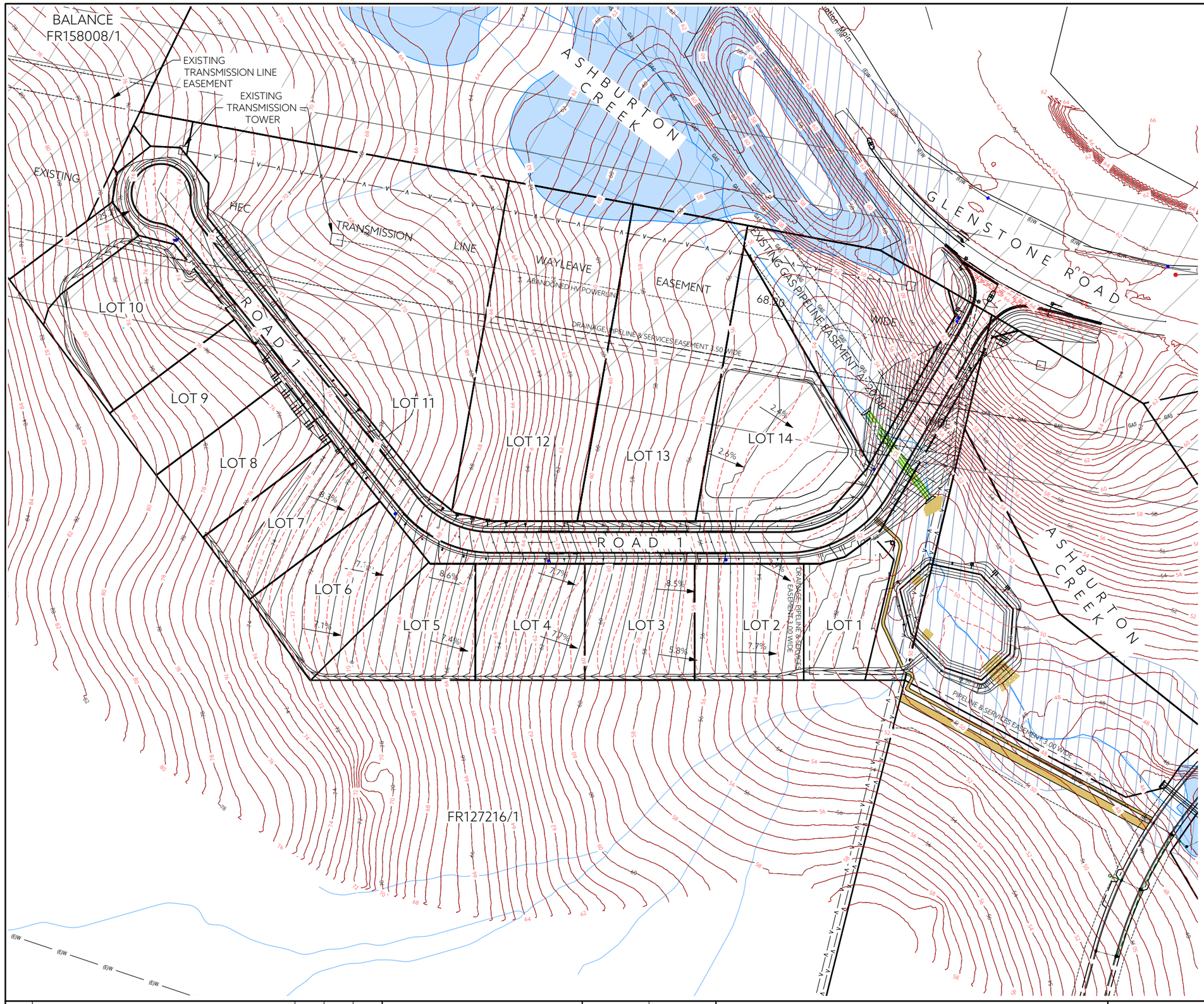
DRAWING TITLE: CUT AND FILL PLAN

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

REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE		PAPER
------	1: 2000		(A3)
JOB NUMBER	DISCIPLINE	SHEET	REVISION
51911HC	C	110	P5

DATE/TIME: Thursday, 28 May 2026 5:09:29 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\5-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG



N

LEGEND:

- EX. STORMWATER
- EX. SEWER
- EX. WATER
- EX. TELECOMMUNICATIONS CABLE
- EX. UNDERGROUND POWER
- OVERHEAD ELECTRICAL
- EX. FENCE
- TOP/TOE BANK
- WATERWAY & COASTAL PROTECTION
- ELECTRICITY TRANSMISSION CORRIDOR

CONTOUR INDEX:

- BASE SURFACE MAJOR
- BASE SURFACE MINOR
- DESIGN SURFACE MAJOR
- DESIGN SURFACE MINOR

NOTES:

1. CUT AND FILL IS INDICATIVE ONLY
2. EXTENT OF CUT AND FILL, INCLUDING HEIGHTS, VOLUMES AND SLOPES IS CONCEPTUAL. DETAILED BULK EARTHWORKS DESIGN TO BE UNDERTAKEN AT DETAILED DESIGN STAGE
3. DEPTHS AND VOLUMES CALCULATED FROM FINAL DESIGN LEVELS
4. TRENCHING FOR PIPES, EXCAVATION FOR ROADS ETC. ARE NOT SHOWN IN THE CUT AND FILL PLAN
5. PRE-EARTHWORKS CONTOURS UTILISE LIDAR DATA AND SHOULD BE TREATED WITH CAUTION
6. SUBJECT TO FINAL DESIGN AND DETAIL SUVREY
7. NO RELIANCE SHOULD BE PLACED ON THE CONTENTS OF THESE PLANS FOR ANY FINANCIAL DEALINGS INVOLVING THE LAND

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
P4	RESPONSE TO COUNCIL RFI - 31.03.2026	DM	13/05/2026	MW
P3	STORMWATER PIPE SIZES AMENDED	GS	17/03/2026	RP/MW
P2	PLANS AMENDED IN RESPONSE TO COUNCIL RFI - 16.06.2025	GS	08/08/2025	MW
A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY

COORDINATE/ DATUM: PLANAR (LIDAR)

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DESIGNED:	REVIEWED:
RD	MW
DRAWN:	REVIEWED:
RD	MW

JOB MANAGER: CRAIG TERRY

ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: CONTOUR COMPARISON PLAN

PDA
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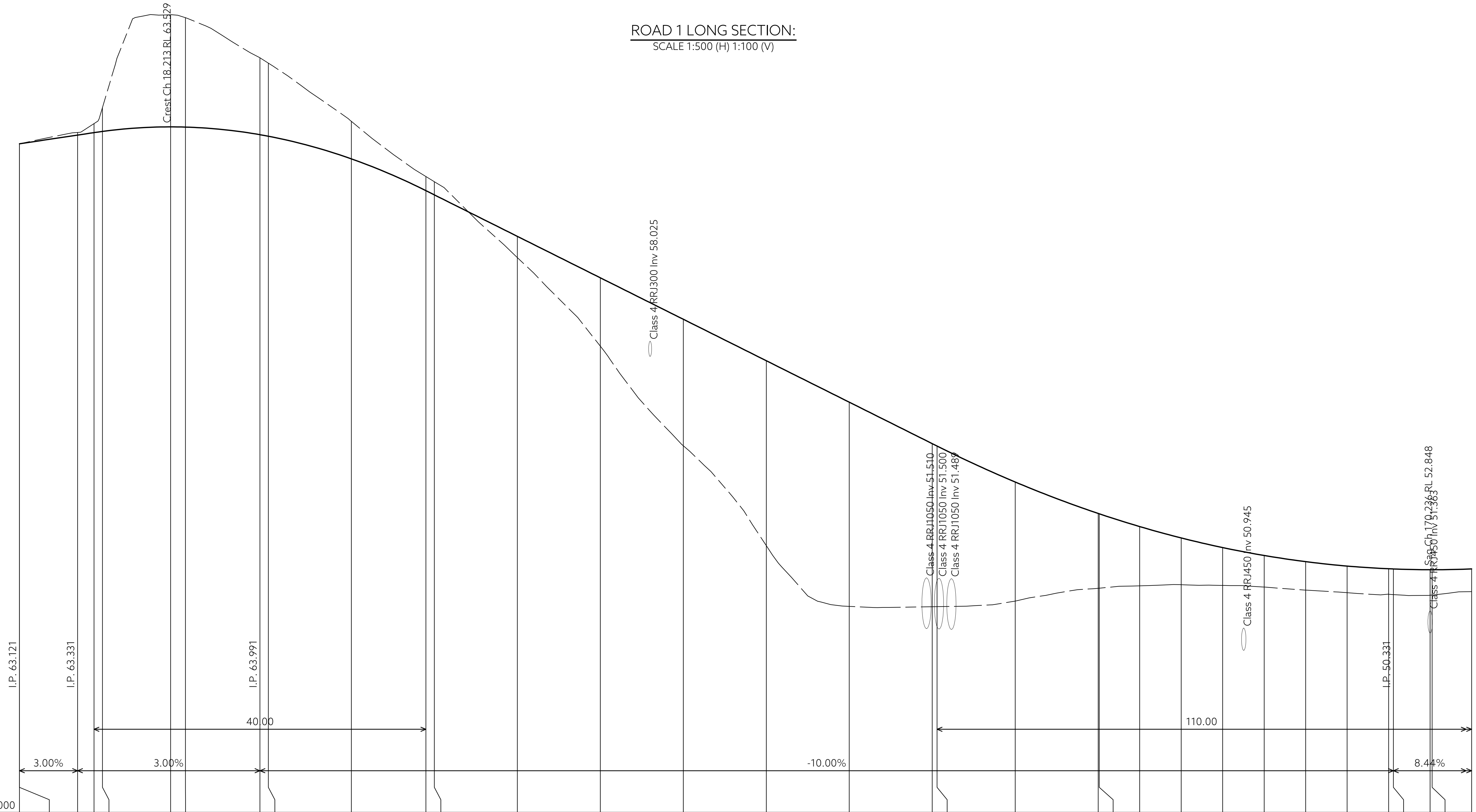
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE		PAPER
------	1: 2000		(A3)
JOB NUMBER	DISCIPLINE	SHEET	REVISION
51911HC	C	111	P5

DATE/TIME: Thursday, 28 May 2026 5:09:32 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\5-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG

ROAD 1 LONG SECTION:

SCALE 1:500 (H) 1:100 (V)



CHAINAGE	CUT FILL	DESIGN ROAD CENTRELINE	EXISTING SURFACE
0.000			63.122
0.002	-0.001	63.121	63.122
7.002	-0.064	63.331	63.395
8.982	-0.217	63.391	63.608
10.000	-0.574	63.420	63.994
18.213	-2.705	63.529	66.234
20.000	-2.638	63.524	66.162
28.982	-1.855	63.341	65.196
30.000	-1.763	63.303	65.066
40.000	-0.904	62.758	63.662
48.982	-0.340	61.991	62.331
50.000	-0.317	61.889	62.206
60.000	+0.512	60.889	60.377
70.000	+1.650	59.889	58.239
80.000	+3.051	58.889	55.838
90.000	+4.461	57.889	53.428
100.000	+4.924	56.889	51.965
110.000	+3.934	55.889	51.955
110.578	+3.874	55.831	51.957
120.000	+2.872	54.963	52.091
130.000	+1.804	54.205	52.401
130.133	+1.793	54.196	52.403
135.000	+1.430	53.889	52.459
140.000	+1.128	53.615	52.487
145.000	+0.913	53.382	52.469
150.000	+0.762	53.192	52.430
155.000	+0.687	53.043	52.356
160.000	+0.643	52.936	52.293
165.000	+0.616	52.871	52.255
165.578	+0.619	52.867	52.248
170.000	+0.615	52.848	52.233
170.236	+0.610	52.848	52.238
175.000	+0.548	52.867	52.319

HORIZONTAL GEOMETRY

L=130.133
B=226°02'46"

L=58.051
R=55.500

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
P4	RESPONSE TO COUNCIL RFI - 31.03.2026	DM	13/05/2026	MW
P3	STORMWATER PIPE SIZES AMENDED	GS	17/03/2026	RP/MW
P2	PLANS AMENDED IN RESPONSE TO COUNCIL RFI - 16.06.2025	GS	08/08/2025	MW
A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY

COORDINATE/ DATUM: PLANAR (LIDAR)

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DESIGNED: RD | REVIEWED: MW
DRAWN: RD | REVIEWED: MW
JOB MANAGER: CRAIG TERRY
ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU
PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION
ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER
DRAWING TITLE: ROAD 1 LONG SECTION
SHEET 1 OF 4

PDA
SURVEYORS, ENGINEERS & PLANNERS
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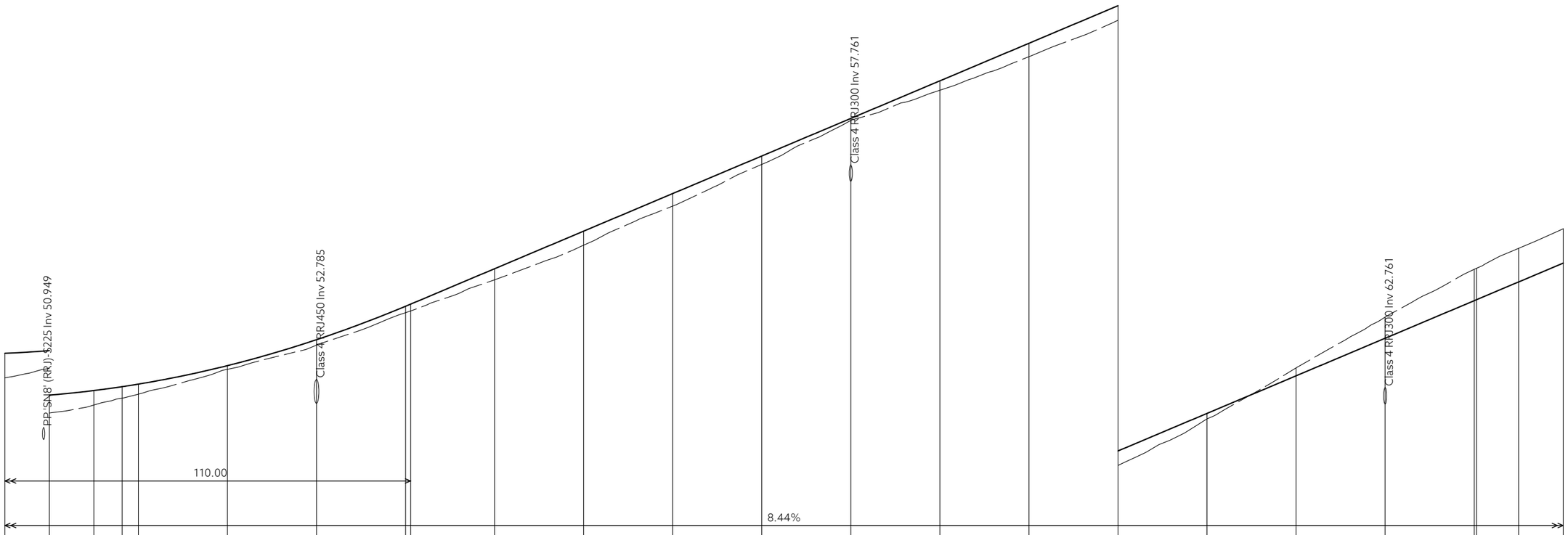
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE	PAPER
------	AS SHOWN	(A3)

JOB NUMBER	DISCIPLINE	SHEET	REVISION
51911HC	C	200	P5



R.L. 48.000		49.000															59.000									
CUT / FILL	+0.548	+0.402	+0.325	+0.257	+0.226	+0.083	+0.121	+0.144	+0.154	+0.249	+0.314	+0.281	+0.189	+0.045	+0.210	+0.301	+0.326	+0.122	-0.179	-0.474	-0.704	-0.706	-0.754	-0.773		
DESIGN ROAD CENTRELINE	52.867	52.928	53.031	53.118	53.176	53.591	54.173	54.924	54.972	55.767	56.611	57.455	58.299	59.143	59.986	60.830	61.674	62.518	63.362	64.206	65.049	65.072	65.471	65.893		
EXISTING SURFACE	52.319	52.526	52.706	**52.861**	52.950	53.508	54.052	54.780	54.818	55.518	56.297	57.174	58.110	59.098	59.776	60.529	61.348	62.396	63.541	64.680	65.753	**65.778**	66.225	66.666		
CHAINAGE	175.000	180.000	185.000	188.184	190.000	200.000	210.000	220.000	220.578	230.000	240.000	250.000	260.000	270.000	280.000	290.000	300.000	310.000	320.000	330.000	340.000	340.262	345.000	350.000		
HORIZONTAL GEOMETRY	L=58.051 R=55.500													L=152.078 B=285°58'34"											L=49.691 R=55.500	

LONG SECTION -ROAD 1
SCALES: (H) 1:500 (V) 1:100 (A3)

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
P4	RESPONSE TO COUNCIL RFI - 31.03.2026	DM	13/05/2026	MW
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A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

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DESIGNED: RD | REVIEWED: MW
DRAWN: RD | REVIEWED: MW
JOB MANAGER: CRAIG TERRY
ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU
PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION
ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER
DRAWING TITLE: ROAD 1 LONG SECTION
SHEET 2 OF 4

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CONTRACT NO.	SCALE	PAPER
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51911HC	C 201 P5	

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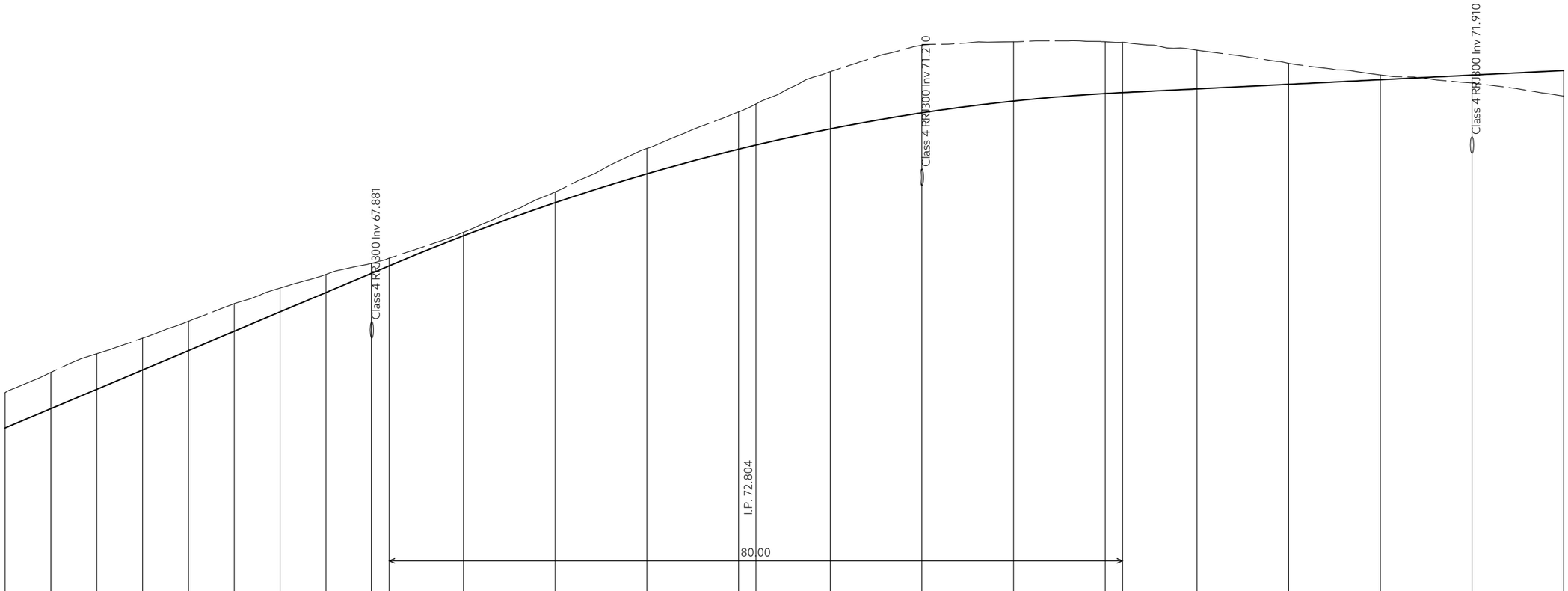

CUT / FILL	-0.773	-0.791	-0.776	-0.693	-0.638	-0.600	-0.520	-0.394	-0.218	-0.218	-0.167	-0.077	-0.235	-0.552	-0.812	-0.895	-1.248	-1.473	-1.293	-1.129	-1.095	-0.842	-0.456	-0.103	+0.170	+0.557
DESIGN ROAD CENTRELINE	65.893	66.315	66.737	67.159	67.581	68.003	68.425	68.847	69.265	69.268	69.428	70.082	70.804	71.433	71.969	72.060	72.412	72.762	73.019	73.183	73.204	73.285	73.385	73.485	73.585	73.685
EXISTING SURFACE	66.666	67.106	67.513	67.852	68.219	68.603	68.945	69.241	**69.483**	69.486	69.595	70.159	71.039	71.985	72.781	72.955	73.660	74.235	74.312	74.312	74.299	74.127	73.841	73.588	73.415	73.128
CHAINAGE	350.000	355.000	360.000	365.000	370.000	375.000	380.000	385.000	389.953	390.000	391.895	400.000	410.000	420.000	430.000	431.895	440.000	450.000	460.000	470.000	471.895	480.000	490.000	500.000	510.000	520.000
HORIZONTAL GEOMETRY	L=49.691 R=55.500											L=242.742 B=337°16'29"														

LONG SECTION -ROAD 1
SCALES: (H) 1:500 (V) 1:100 (A3)

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
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A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

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DESIGNED: RD | REVIEWED: MW
DRAWN: RD | REVIEWED: MW
JOB MANAGER: CRAIG TERRY
ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU
PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION
ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER
DRAWING TITLE: ROAD 1 LONG SECTION
SHEET 3 OF 4

PDA
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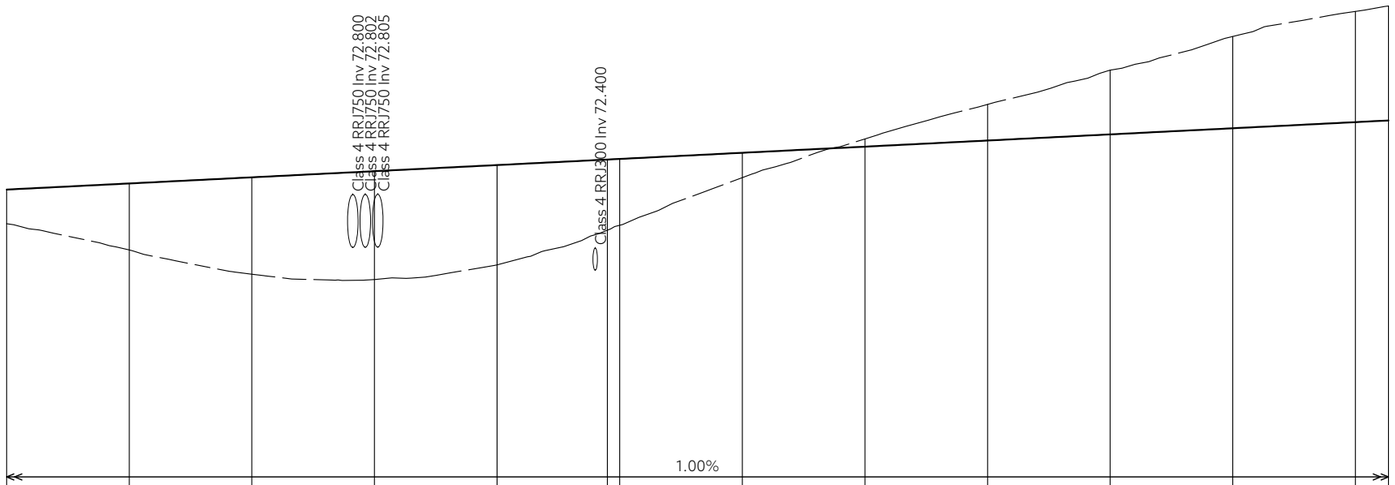
CONTRACT NO.	SCALE	PAPER
------	AS SHOWN	(A3)
JOB NUMBER	DISCIPLINE / SHEET / REVISION	
51911HC	C 202 P5	

DATE/TIME: Thursday, 28 May 2026 5:09:34 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\5-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG



R.L. 68.000

CUT / FILL	+0.557	+1.085	+1.579	+1.766	+1.626	+1.152	+1.082	+0.405	-0.126	-0.589	-1.047	-1.497	-1.805	-1.866
DESIGN ROAD CENTRELINE	73.685	73.785	73.885	73.985	74.085	74.175	74.185	74.285	74.385	74.485	74.585	74.685	74.785	74.812
EXISTING SURFACE	73.128	72.700	72.306	72.219	72.459	73.023	73.103	73.880	74.511	75.074	**75.632**	76.182	76.590	**76.678**
CHAINAGE	520.000	530.000	540.000	550.000	560.000	568.993	570.000	580.000	590.000	600.000	610.000	620.000	630.000	632.696
HORIZONTAL GEOMETRY	L=242.742 B=337°16'29"													

LONG SECTION -ROAD 1
SCALES: (H) 1:500 (V) 1:100 (A3)

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
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A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

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DESIGNED: RD | REVIEWED: MW
DRAWN: RD | REVIEWED: MW
JOB MANAGER: CRAIG TERRY
ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU
PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION
ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER
DRAWING TITLE: ROAD 1 LONG SECTION
SHEET 4 OF 4

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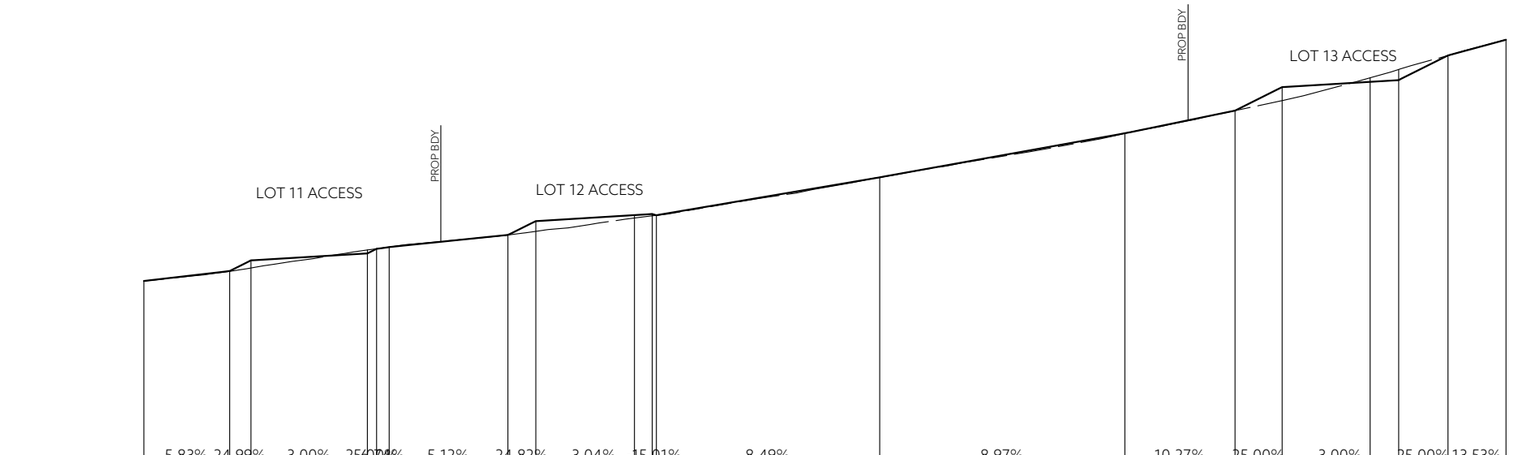
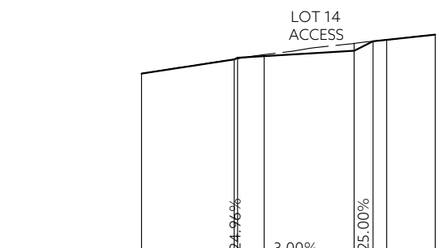
CONTRACT NO.	SCALE	PAPER
------	AS SHOWN	(A3)
JOB NUMBER	DISCIPLINE / SHEET / REVISION	
51911HC	C 203 P5	

DATE/TIME: Thursday, 28 May 2026 5:09:35 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\S-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG



R.L. 44.000																
CUT	+0.000	+0.011	+0.309	-0.138	-0.003	-0.002	+0.003	+0.417	+0.119	+0.075	+0.004	+0.000	+0.000	-0.006	+0.550	-0.164	-0.433	+0.007	+0.000
FILL																			
DESIGN CL	54.061	54.469	54.903	55.188	55.374	55.444	55.940	56.504	56.748	56.793	56.742	58.289	60.084	61.006	61.966	62.182	62.252	63.258	63.898
EXISTING SURFACE	54.061	54.458	54.594	55.326	55.377	55.446	55.937	56.087	56.629	56.718	56.738	58.289	60.084	61.012	61.416	62.346	62.685	63.251	63.898
CHAINAGE	0.000	6.987	8.724	18.224	18.971	20.000	29.683	31.955	40.000	41.454	41.791	60.000	80.000	88.980	92.822	100.000	102.322	106.349	111.076

SECTION D - LONG SECTION
Scales: (H) 1 in 500 (V) 1 in 250 (A3)



R.L. 60.500							
CUT	+0.000	-0.007	+0.039	-0.062	-0.300	-0.002	+0.000	+0.000
FILL								
DESIGN CL	70.580	71.154	71.224	71.289	71.510	71.896	71.955	72.168
EXISTING SURFACE	70.580	71.161	71.185	71.351	71.810	71.898	71.955	72.168
CHAINAGE	0.000	7.558	7.839	10.000	17.339	18.883	20.000	23.957

SECTION E - LONG SECTION
Scales: (H) 1 in 500 (V) 1 in 250 (A3)

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
P4	RESPONSE TO COUNCIL RFI - 31.03.2026	DM	13/05/2026	MW
P3	STORMWATER PIPE SIZES AMENDED	GS	17/03/2026	RP/MW
P2	PLANS AMENDED IN RESPONSE TO COUNCIL RFI - 16.06.2025	GS	08/08/2025	MW
A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY
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DESIGNED: RD | REVIEWED: MW
DRAWN: RD | REVIEWED: MW
JOB MANAGER: CRAIG TERRY
ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU
PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION
ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER
DRAWING TITLE: SITE SECTION LONG SECTIONS
SHEET 2 OF 2

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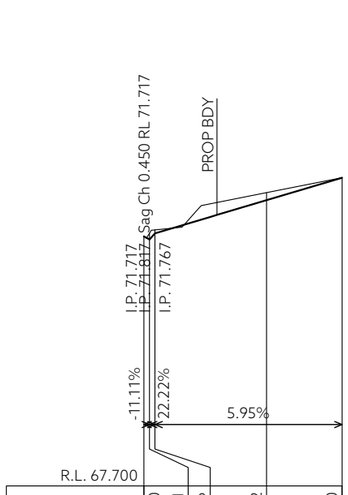
CONTRACT NO.	SCALE	PAPER
------	AS SHOWN	(A3)
JOB NUMBER	DISCIPLINE	SHEET	REVISION
51911HC	C	211	P5

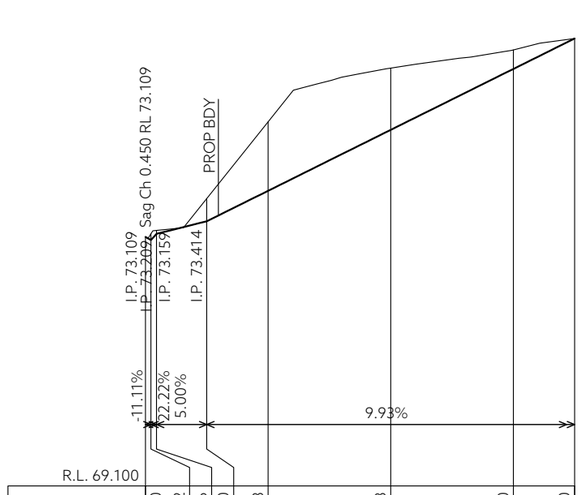
DO NOT CONSTRUCT
CONCEPTUAL FUTURE DRIVEWAYS



R.L. 67.700					
CUT / FILL	+0.000	-0.101	-0.056	-0.122	+0.000
DRIVEWAY CL	71.767	71.717	71.817	72.358	72.724
ROAD SURFACE	**71.767**	71.818	71.873	72.480	**72.724**
CHAINAGE	0.000	0.450	0.900	10.000	16.153

DRIVEWAY - LONG SECTION
Scales: (H) 1 in 500 (V) 1 in 100 (A3)

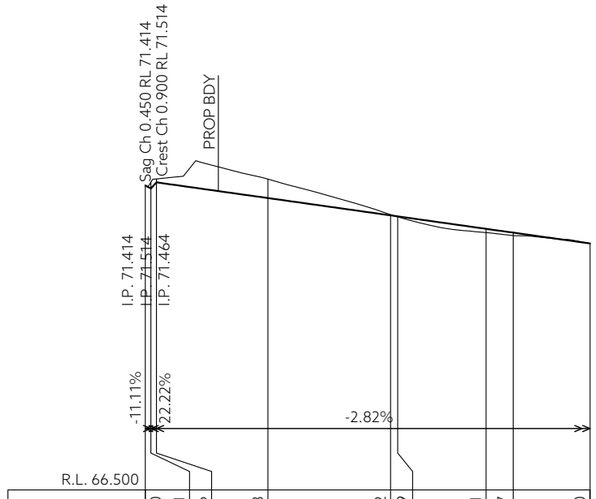
Lot 7 Driveway



R.L. 69.100						
CUT / FILL	+0.000	-0.102	-0.056	-0.370	-1.123	-1.008	-0.310	+0.000
DRIVEWAY CL	73.159	73.109	73.209	73.414	73.911	74.904	75.897	76.394
ROAD SURFACE	**73.159**	73.211	73.265	73.784	75.034	75.912	76.207	**76.394**
CHAINAGE	0.000	0.450	0.900	5.000	10.000	20.000	30.000	35.000

DRIVEWAY - LONG SECTION
Scales: (H) 1 in 500 (V) 1 in 100 (A3)

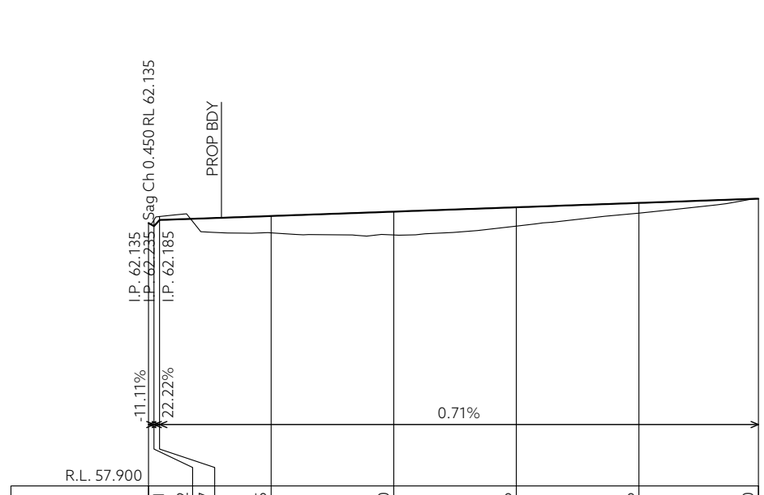
Lot 8 Driveway



R.L. 66.500								
CUT / FILL	+0.000	-0.101	-0.056	-0.308	-0.012	+0.009	+0.061	+0.047	+0.000
DRIVEWAY CL	71.464	71.414	71.514	71.258	70.976	70.959	70.756	70.694	70.517
ROAD SURFACE	**71.464**	71.515	71.570	71.566	70.988	**70.950**	**70.695**	70.647	**70.517**
CHAINAGE	0.000	0.450	0.900	10.000	20.000	20.581	27.782	30.000	36.267

DRIVEWAY - LONG SECTION
Scales: (H) 1 in 500 (V) 1 in 100 (A3)

Lot 11 Driveway



R.L. 57.900						
CUT / FILL	-0.001	-0.102	-0.057	+0.275	+0.380	+0.306	+0.166	+0.000
DRIVEWAY CL	62.185	62.135	62.235	62.300	62.371	62.442	62.513	62.583
ROAD SURFACE	**62.186**	62.237	62.292	62.025	61.991	62.136	62.347	**62.583**
CHAINAGE	0.000	0.450	0.900	10.000	20.000	30.000	40.000	49.744

DRIVEWAY - LONG SECTION
Scales: (H) 1 in 500 (V) 1 in 100 (A3)

Lot 12 Driveway

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
P4	RESPONSE TO COUNCIL RFI - 31.03.2026	DM	13/05/2026	MW
P3	STORMWATER PIPE SIZES AMENDED	GS	17/03/2026	RP/MW
P2	PLANS AMENDED IN RESPONSE TO COUNCIL RFI - 16.06.2025	GS	08/08/2025	MW
A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY
COORDINATE/ DATUM: PLANAR (LIDAR)
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DESIGNED: RD | REVIEWED: MW
DRAWN: RD | REVIEWED: MW
JOB MANAGER: CRAIG TERRY
ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU
PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION
ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER
DRAWING TITLE: DRIVEWAY LONG SECTIONS

PDA
SURVEYORS, ENGINEERS & PLANNERS
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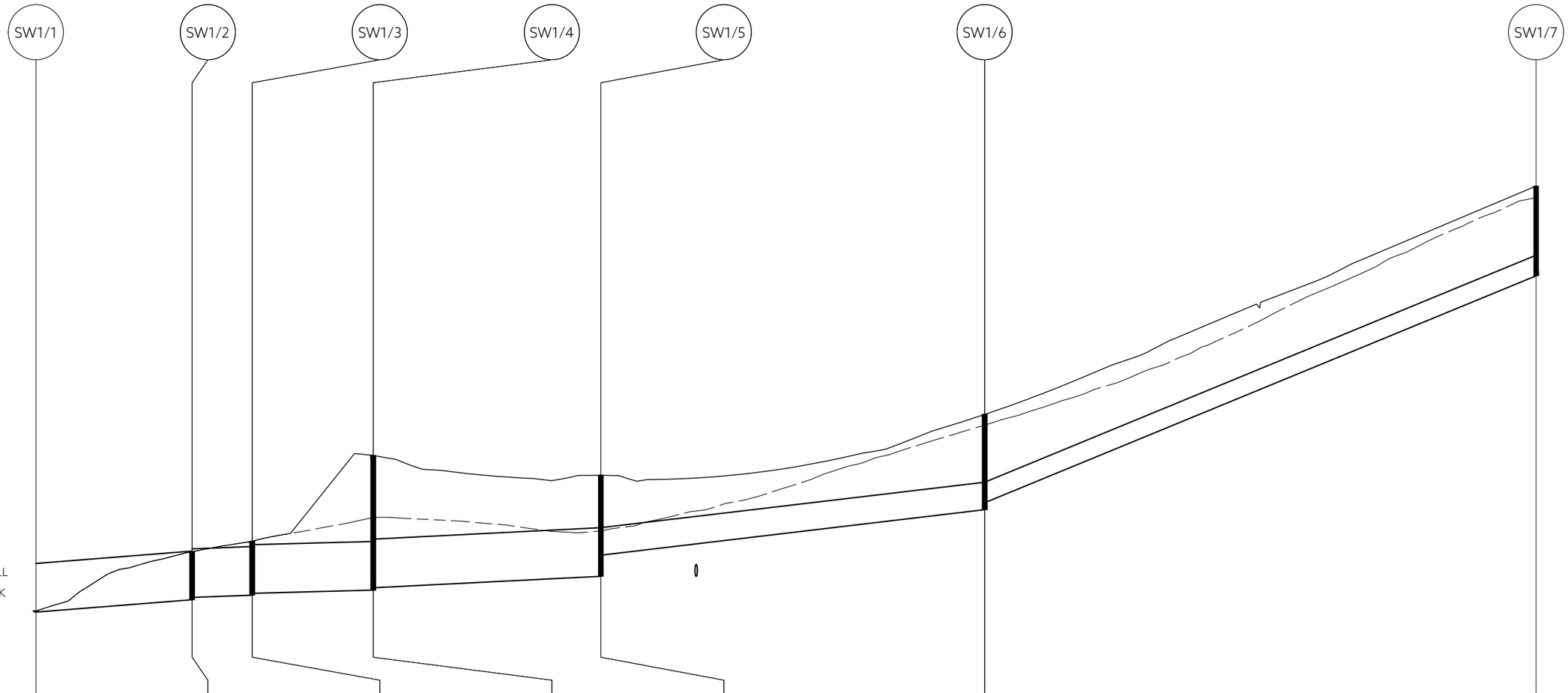
EMAIL: pda.hbt@pda.com.au
www.pda.com.au
Also at: Kingston, Launceston & Burnie
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE		PAPER
------	AS SHOWN		(A3)
JOB NUMBER	DISCIPLINE	SHEET	REVISION
51911HC	C	220	P5



PIPE DETAILS	DN1050 Class 4 RRJ	DN1050 Class 4 RRJ	DN1050 Class 4 RRJ	DN1050 Class 4 RRJ	DN600 Class 4 RRJ	DN450 PP 'SN8' (RRJ)
GRADE	1.58%	0.76%	0.53%	1.01%	2.37%	8.23%
DATUM RL 47						
COVER	-1.031 / -0.012	-0.062 / 0.116	0.076 / 1.873	1.823 / 1.141	1.476	1.506
DEPTH TO INVERT	0.027 / 1.046	0.996 / 1.174	1.134 / 2.931	2.881 / 2.199	1.739 / 2.074	1.923 / 1.953
INVERT LEVEL	50.132 / 50.400	50.450 / 50.500	50.540 / 50.610	50.660 / 50.910	51.370 / 52.360	52.511 / 57.450
FINISHED SURFACE	50.159 / 51.446	51.674	53.541	53.109	54.434	59.403
EXISTING SURFACE	50.159 / 51.446	51.674	52.192	51.898	54.200	59.164
CHAINAGE	0.000 / 16.994	16.994 / 23.537	6.544	36.704 / 13.166	61.466 / 24.762	103.234 / 41.768	163.234 / 60.000

SW LS - LINE SW1

SCALE: HORIZ 1:500 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
P4	RESPONSE TO COUNCIL RFI - 31.03.2026	DM	13/05/2026	MW
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P2	PLANS AMENDED IN RESPONSE TO COUNCIL RFI - 16.06.2025	GS	08/08/2025	MW
A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY

COORDINATE/ DATUM: PLANAR (LIDAR)

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DESIGNED:	REVIEWED:
RD	MW
DRAWN:	REVIEWED:
RD	MW

JOB MANAGER: CRAIG TERRY

ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: STORMWATER LONG SECTIONS SHEET 1 OF 12

PDA
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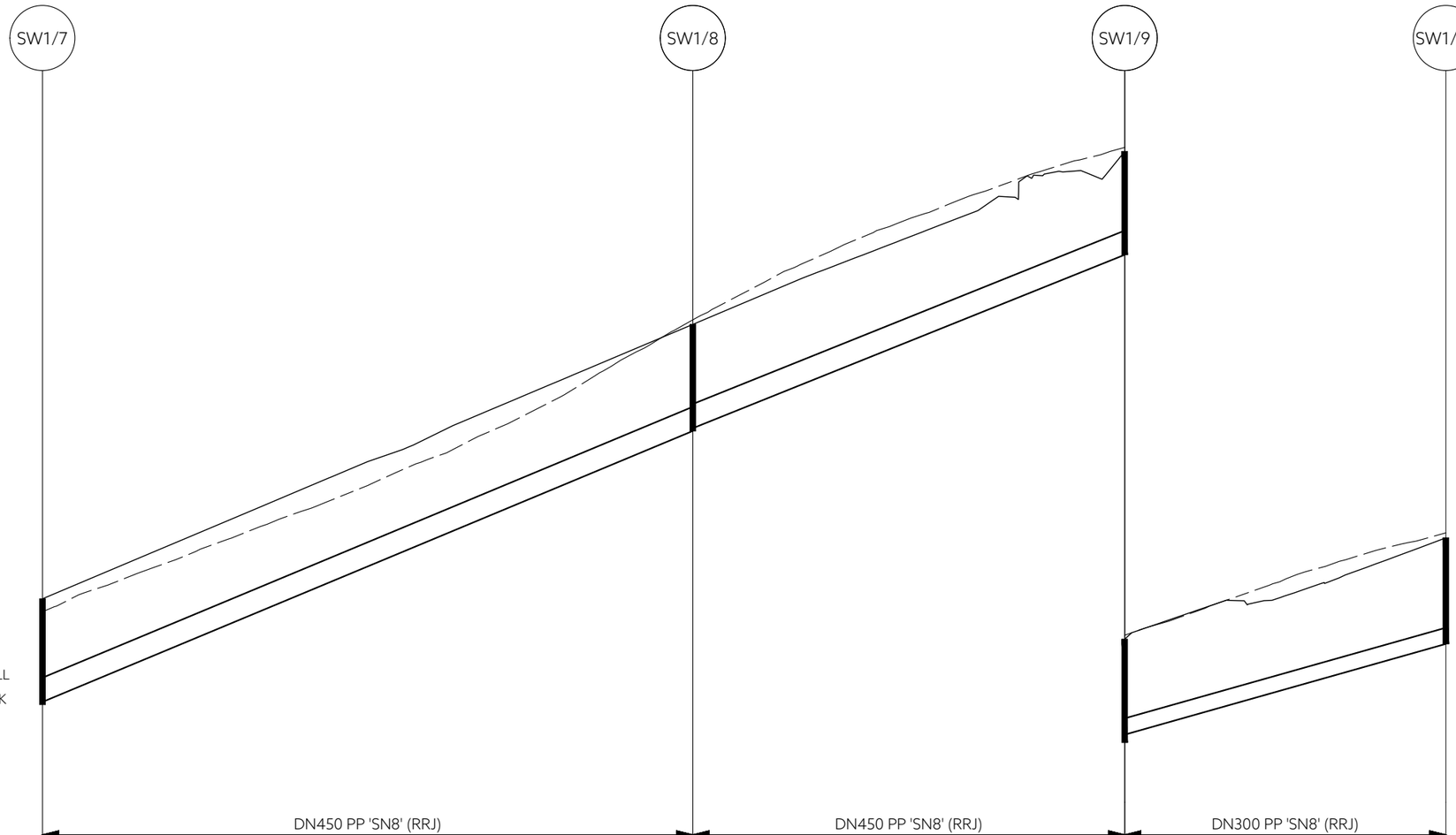
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE	PAPER
------	AS SHOWN	(A3)
JOB NUMBER	DISCIPLINE / SHEET / REVISION	
51911HC	C 400 P5	

DATE/TIME: Thursday, 28 May 2026 5:09:36 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\5-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG



PIPE DETAILS	DN450 PP 'SN8' (RRJ)	DN450 PP 'SN8' (RRJ)	DN300 PP 'SN8' (RRJ)
GRADE	8.33%	8.03%	5.65%
DATUM RL 54			RL 63
COVER	1.456 ... 1.519	1.469 ... 1.461	1.659
DEPTH TO INVERT	1.903 ... 1.966	1.916 ... 1.908	1.761 ... 1.959
INVERT LEVEL	57.500 ... 62.500	62.550 ... 65.750	65.897 ... 67.570
FINISHED SURFACE	59.403 ... 64.466	67.658	69.529
EXISTING SURFACE	59.164 ... 64.550	67.732	69.620
CHAINAGE	163.234 ... 223.234	263.075	292.701
	60.000	39.841	29.626

SW LS - LINE SW1

SCALE: HORIZ 1:500 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
P4	RESPONSE TO COUNCIL RFI - 31.03.2026	DM	13/05/2026	MW
P3	STORMWATER PIPE SIZES AMENDED	GS	17/03/2026	RP/MW
P2	PLANS AMENDED IN RESPONSE TO COUNCIL RFI - 16.06.2025	GS	08/08/2025	MW
A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY

COORDINATE/ DATUM: PLANAR (LIDAR)

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DESIGNED: RD | REVIEWED: MW

DRAWN: RD | REVIEWED: MW

JOB MANAGER: CRAIG TERRY

ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: STORMWATER LONG SECTIONS
SHEET 2 OF 12

PDA
SURVEYORS, ENGINEERS & PLANNERS
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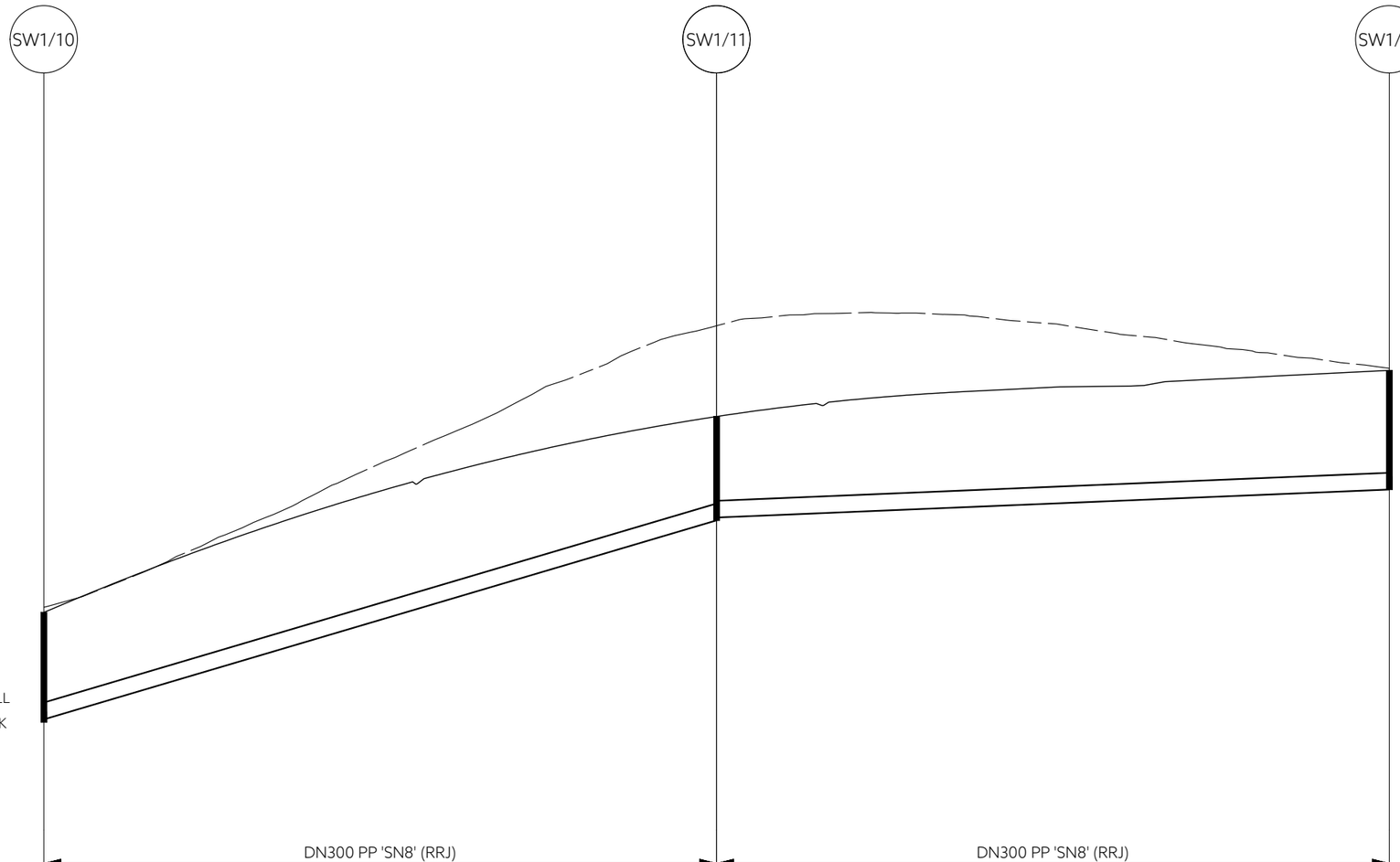
Also at: Kingston, Launceston & Burnie
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE	PAPER
------	AS SHOWN	(A3)

JOB NUMBER	DISCIPLINE	SHEET	REVISION
51911HC	C	401	P5

DATE/TIME: Thursday, 28 May 2026 5:09:37 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\S-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG



SW-LS LEGEND:

- FCR BACKFILL
- ENGINEERED FILL
- ANCHOR BLOCK PER TSD-SW01

PIPE DETAILS		DN300 PP 'SN8' (RRJ)	DN300 PP 'SN8' (RRJ)
GRADE		5.92%	0.83%
DATUM RL 64			
COVER	1.609	1.552	1.502 / 1.825
DEPTH TO INVERT	1.909	1.852	1.802 / 2.125
INVERT LEVEL	67.620	71.170	71.220 / 71.720
FINISHED SURFACE	69.529	73.022	73.845
EXISTING SURFACE	69.620	74.641	73.881
CHAINAGE	292.701	352.701	412.701
		60.000	60.000

SW LS - LINE SW1

SCALE: HORIZ 1:500 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
P4	RESPONSE TO COUNCIL RFI - 31.03.2026	DM	13/05/2026	MW
P3	STORMWATER PIPE SIZES AMENDED	GS	17/03/2026	RP/MW
P2	PLANS AMENDED IN RESPONSE TO COUNCIL RFI - 16.06.2025	GS	08/08/2025	MW
A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY

COORDINATE/ DATUM: PLANAR (LIDAR)

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DESIGNED: RD | REVIEWED: MW

DRAWN: RD | REVIEWED: MW

JOB MANAGER: CRAIG TERRY

ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: STORMWATER LONG SECTIONS SHEET 3 OF 12

PDA
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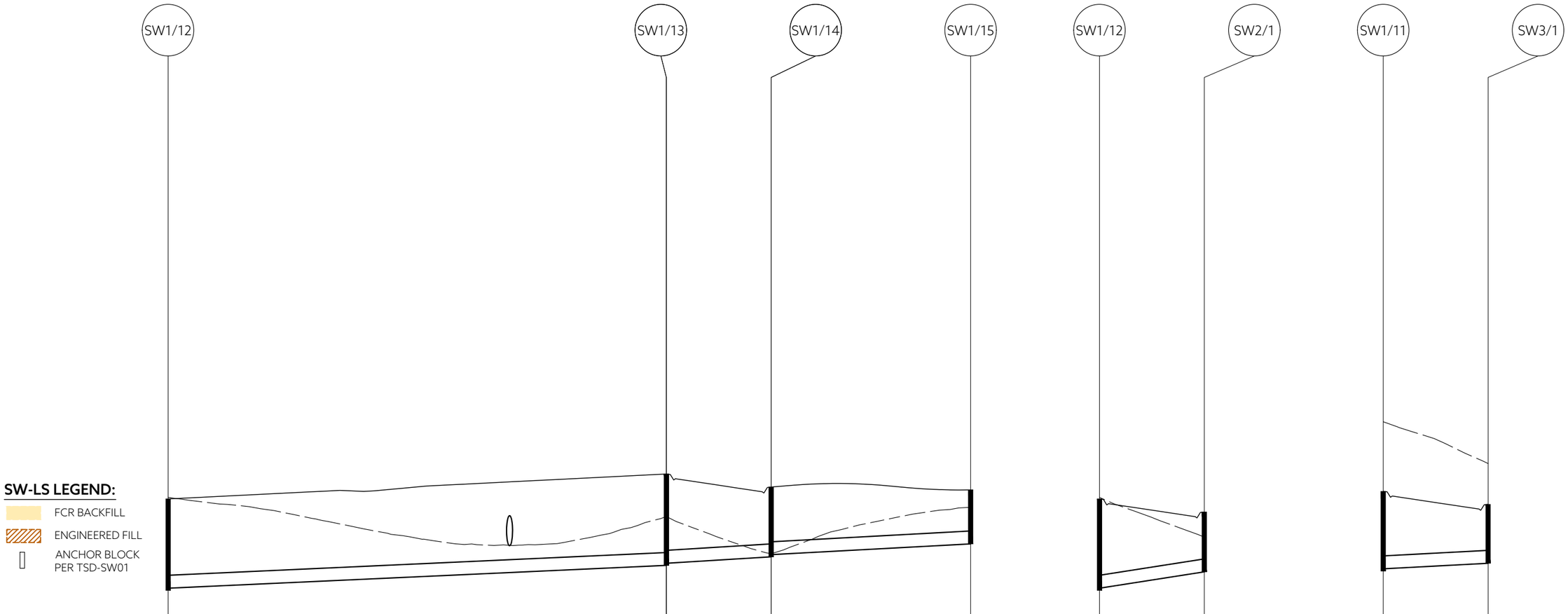
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE	PAPER
------	AS SHOWN	(A3)
JOB NUMBER	DISCIPLINE / SHEET / REVISION	
51911HC	C 402 P5	

DATE/TIME: Thursday, 28 May 2026 5:09:37 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\5-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG



PIPE DETAILS	DN300 PP 'SN8' (RRJ)		DN300 Class 4 RRJ		DN300 Class 4 RRJ	
GRADE	0.91%		1.23%		1.08%	
DATUM RL 69						
COVER	1.775	1.825	1.775	1.322	1.272	0.957
DEPTH TO INVERT	2.075	2.125	2.075	1.622	1.572	1.257
INVERT LEVEL	71.770	72.300	72.350	72.500	72.550	72.800
FINISHED SURFACE	73.845	74.425		74.122		74.057
EXISTING SURFACE	73.881	73.437		72.571		73.651
CHAINAGE	412.701	470.701	58.000	482.901	12.200	506.118	23.217

SW LS - LINE SW1

SCALE: HORIZ 1:500 VERT 1:100

	DN300 Class 4 RRJ	
	3.11%	
	1.775	1.092
	2.075	1.392
	71.770	72.150
	73.845	73.542
	73.881	72.958
	0.000	12.200
	12.200	

SW LS - LINE SW2

SCALE: HORIZ 1:500 VERT 1:100

	DN300 Class 4 RRJ	
	1.07%	
RL 68		
	1.502	1.069
	1.802	1.369
	71.220	71.350
	73.022	72.719
	74.641	73.670
	0.000	12.200
	12.200	

SW LS - LINE SW3

SCALE: HORIZ 1:500 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
P4	RESPONSE TO COUNCIL RFI - 31.03.2026	DM	13/05/2026	MW
P3	STORMWATER PIPE SIZES AMENDED	GS	17/03/2026	RP/MW
P2	PLANS AMENDED IN RESPONSE TO COUNCIL RFI - 16.06.2025	GS	08/08/2025	MW
A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY

COORDINATE/ DATUM: PLANAR (LIDAR)

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DESIGNED:	REVIEWED:
RD	MW
DRAWN:	REVIEWED:
RD	MW

JOB MANAGER: CRAIG TERRY

ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: STORMWATER LONG SECTIONS
SHEET 4 OF 12

PDA
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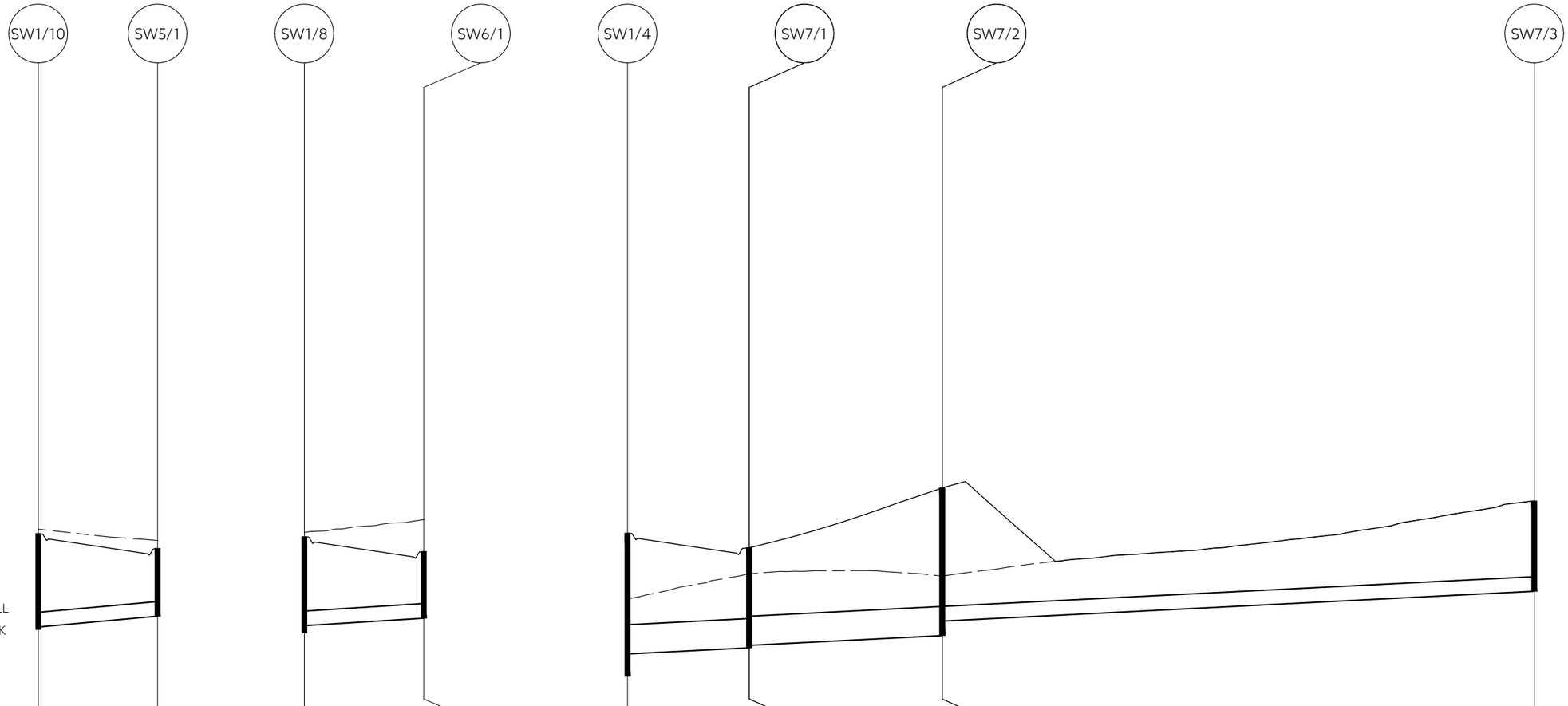
EMAIL: pda.hbt@pda.com.au
www.pda.com.au
Also at: Kingston, Launceston & Burnie
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE		PAPER
------	AS SHOWN (A3)		
JOB NUMBER	DISCIPLINE	SHEET	REVISION
51911HC	C	403	P5

DATE/TIME: Thursday, 28 May 2026 5:09:38 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\5-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG



SW-LS LEGEND:

- FCR BACKFILL
- ENGINEERED FILL
- ANCHOR BLOCK PER TSD-SW01

PIPE DETAILS	DN300 Class 4 RRJ	
GRADE	1.82%	
DATUM RL 64		
COVER	1.609	1.084
DEPTH TO INVERT	1.909	1.384
INVERT LEVEL	67.620	67.842
FINISHED SURFACE	69.529	69.226
EXISTING SURFACE	69.620	69.388
CHAINAGE	0.000	12.200
	12.200	

SW LS - LINE SW5

SCALE: HORIZ 1:500 VERT 1:100

	DN300 Class 4 RRJ	
	1.25%	
RL 59		
	1.519	1.063
	1.819	1.363
	62.647	62.800
	64.466	64.163
	64.550	64.815
	0.000	12.200
	12.200	

SW LS - LINE SW6

SCALE: HORIZ 1:500 VERT 1:100

	DN600 Class 4 RRJ		DN600 PP 'SN8' (RRJ)		DN300 PP 'SN8' (RRJ)	
	1.01%		1.01%		1.01%	
RL 48						
	1.873	1.449	1.401	2.424		1.550
	2.471	2.047	1.997	3.020	2.724	1.850
	51.070	51.195	51.245	51.445	51.741	52.350
	53.541	53.242		54.465		54.200
	52.192	52.709		52.661		54.200
	0.000	12.433		32.158		92.671
	12.433		19.726		60.512	

SW LS - LINE SW7

SCALE: HORIZ 1:500 VERT 1:100

P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
P4	RESPONSE TO COUNCIL RFI - 31.03.2026	DM	13/05/2026	MW
P3	STORMWATER PIPE SIZES AMENDED	GS	17/03/2026	RP/MW
P2	PLANS AMENDED IN RESPONSE TO COUNCIL RFI - 16.06.2025	GS	08/08/2025	MW
A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT
REV	AMENDMENTS	DRAWN	DATE	APPR.

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DESIGNED:	REVIEWED:
RD	MW
DRAWN:	REVIEWED:
RD	MW

JOB MANAGER: CRAIG TERRY

ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: STORMWATER LONG SECTIONS
SHEET 5 OF 12

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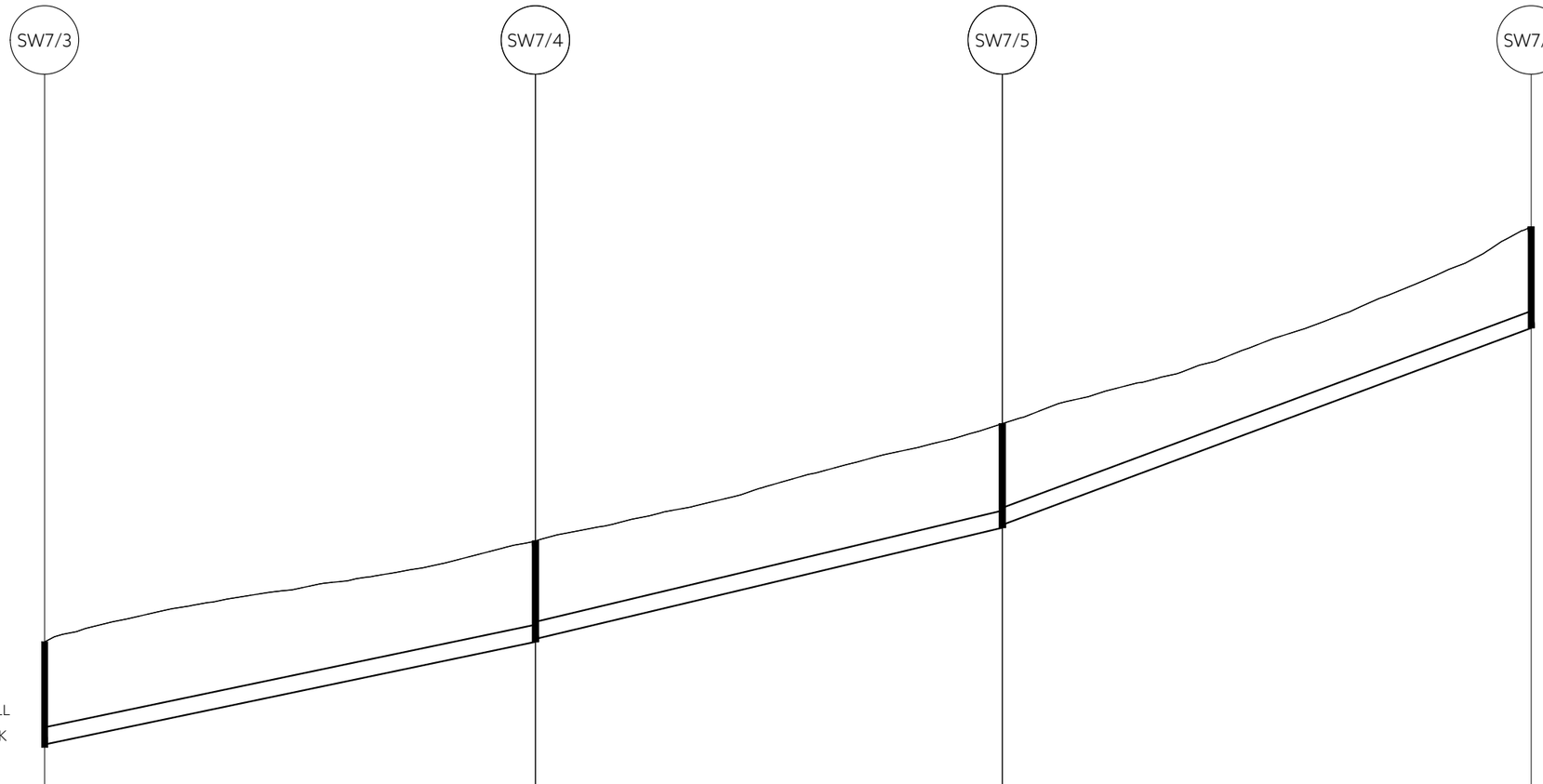
CONTRACT NO.	SCALE		PAPER
------	AS SHOWN (A3)		
JOB NUMBER	DISCIPLINE	SHEET	REVISION
51911HC	C	404	P5



PIPE DETAILS	DN300 PP 'SN8' (RRJ)				DN300 PP 'SN8' (RRJ)				DN300 PP 'SN8' (RRJ)		
GRADE	4.18%				4.76%				7.44%		
DATUM RL 49											
COVER	1.500			1.468	1.418			1.524	1.474		1.477
DEPTH TO INVERT	1.800			1.768	1.718			1.824	1.774		1.777
INVERT LEVEL	52.400			54.200	54.250			56.200	56.250		59.700
FINISHED SURFACE	54.200			55.968				58.024			61.477
EXISTING SURFACE	54.200			55.968				58.024			61.477
CHAINAGE	92.671			135.713				176.646			223.030
		43.042				40.934				46.383	

SW LS - LINE SW7

SCALE: HORIZ 1:500 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
P4	RESPONSE TO COUNCIL RFI - 31.03.2026	DM	13/05/2026	MW
P3	STORMWATER PIPE SIZES AMENDED	GS	17/03/2026	RP/MW
P2	PLANS AMENDED IN RESPONSE TO COUNCIL RFI - 16.06.2025	GS	08/08/2025	MW
A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY

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DESIGNED: RD | REVIEWED: MW

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JOB MANAGER: CRAIG TERRY

ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: STORMWATER LONG SECTIONS
SHEET 6 OF 12

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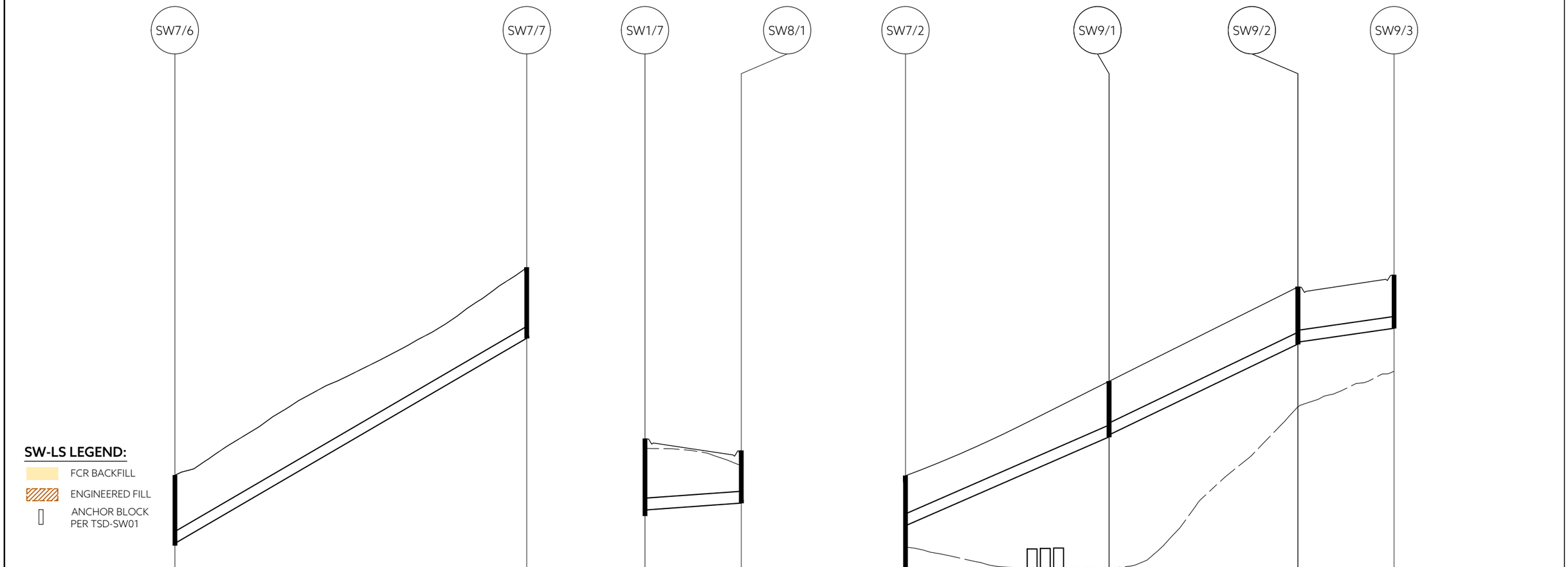
CONTRACT NO.	SCALE	PAPER
------	AS SHOWN	(A3)
JOB NUMBER	DISCIPLINE / SHEET / REVISION	
51911HC	C 405 P5	



PIPE DETAILS	DN300 PP 'SN8' (RRJ)		DN300 Class 4 RRJ		DN300 PP 'SN8' (RRJ)		DN300 PP 'SN8' (RRJ)		DN300 Class 4 RRJ	
GRADE	11.66%		1.43%		8.72%		9.61%		2.87%	
DATUM RL 57			RL 54		RL 50					
COVER	1.427	1.492	1.506	1.028	0.965	1.108	1.058	1.147	1.097	1.050
DEPTH TO INVERT	1.727	1.792	1.806	1.328	1.265	1.408	1.358	1.447	1.397	1.350
INVERT LEVEL	59.750	64.950	57.597	57.772	53.200	55.450	55.500	57.800	57.850	58.200
FINISHED SURFACE	61.477	66.742	59.403	59.100	54.465	56.858		59.247		59.550
EXISTING SURFACE	61.477	66.742	59.164	58.736	52.661	52.131		56.212		57.110
CHAINAGE	223.030	267.645	0.000	12.200	0.000	25.811		49.753		61.953
	44.616		12.200		25.811		23.942		12.200	

SW LS - LINE SW7
SCALE: HORIZ 1:500 VERT 1:100

SW LS - LINE SW8
SCALE: HORIZ 1:500 VERT 1:100

SW LS - LINE SW9
SCALE: HORIZ 1:500 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
P4	RESPONSE TO COUNCIL RFI - 31.03.2026	DM	13/05/2026	MW
P3	STORMWATER PIPE SIZES AMENDED	GS	17/03/2026	RP/MW
P2	PLANS AMENDED IN RESPONSE TO COUNCIL RFI - 16.06.2025	GS	08/08/2025	MW
A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY
COORDINATE/ DATUM: PLANAR (LIDAR)
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DESIGNED: RD | REVIEWED: MW
DRAWN: RD | REVIEWED: MW
JOB MANAGER: CRAIG TERRY
ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU
PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION
ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER
DRAWING TITLE: STORMWATER LONG SECTIONS
SHEET 7 OF 12

PDA
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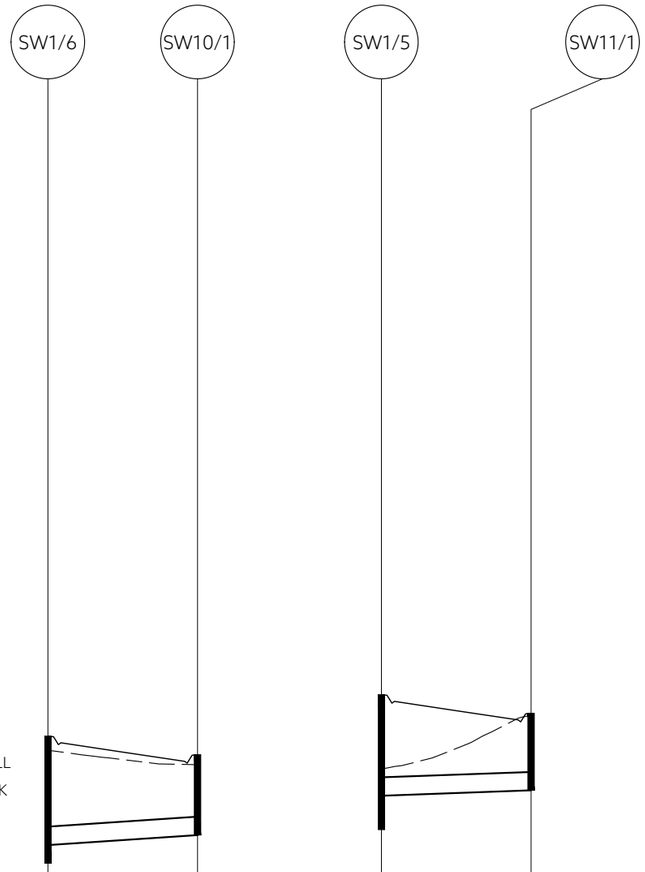
EMAIL: pda.hbt@pda.com.au
www.pda.com.au
Also at: Kingston, Launceston & Burnie
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE	PAPER
------	AS SHOWN	(A3)
JOB NUMBER	DISCIPLINE / SHEET / REVISION	
51911HC	C 406 P5	

DATE/TIME: Thursday, 28 May 2026 5:09:39 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\5-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG



SW-LS LEGEND:

- FCR BACKFILL
- ENGINEERED FILL
- ANCHOR BLOCK PER TSD-SW01

PIPE DETAILS	DN300 Class 4 RRJ	
GRADE	1.33%	
DATUM RL 50		
COVER	1.476	1.011
DEPTH TO INVERT	1.776	1.311
INVERT LEVEL	52.658	52.820
FINISHED SURFACE	54.434	54.131
EXISTING SURFACE	54.200	53.968
CHAINAGE	0.000	12.200
	12.200	

SW LS - LINE SW10

SCALE: HORIZ 1:500 VERT 1:100

PIPE DETAILS	DN300 Class 4 RRJ	
GRADE	0.72%	
RL 48		
COVER	1.347	0.956
DEPTH TO INVERT	1.647	1.256
INVERT LEVEL	51.462	51.550
FINISHED SURFACE	53.109	52.806
EXISTING SURFACE	51.898	52.774
CHAINAGE	0.000	12.200
	12.200	

SW LS - LINE SW11

SCALE: HORIZ 1:500 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
P4	RESPONSE TO COUNCIL RFI - 31.03.2026	DM	13/05/2026	MW
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P2	PLANS AMENDED IN RESPONSE TO COUNCIL RFI - 16.06.2025	GS	08/08/2025	MW
A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY

COORDINATE/ DATUM: PLANAR (LIDAR)

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DESIGNED: RD | REVIEWED: MW

DRAWN: RD | REVIEWED: MW

JOB MANAGER: CRAIG TERRY

ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: STORMWATER LONG SECTIONS SHEET 8 OF 12

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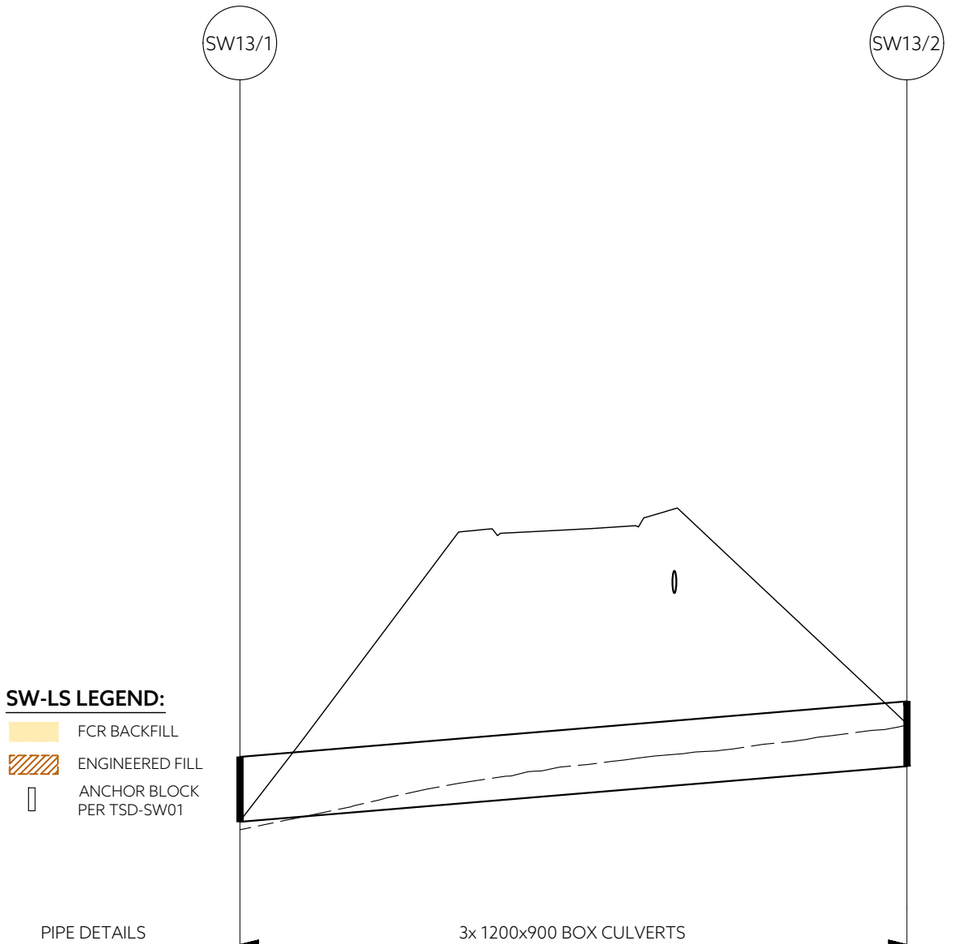
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE		PAPER
------	AS SHOWN (A3)		
JOB NUMBER	DISCIPLINE	SHEET	REVISION
51911HC	C	407	P5

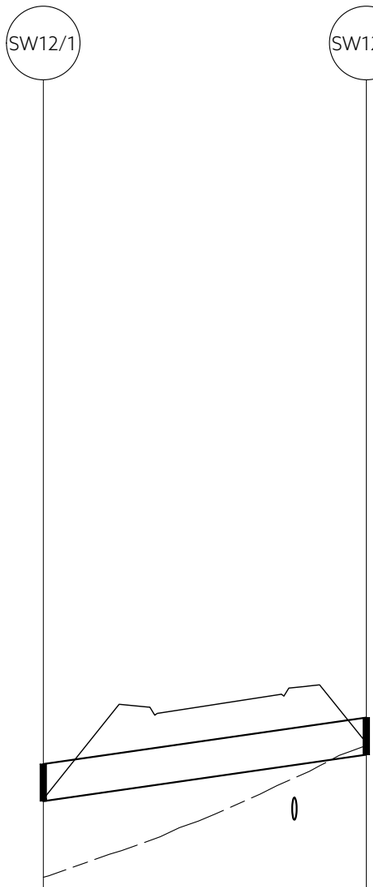
DATE/TIME: Thursday, 28 May 2026 5:09:40 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\S-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG



PIPE DETAILS	3x 1200x900 BOX CULVERTS	
GRADE	1.67%	
DATUM RL 48		
COVER	-1.049	-0.367
DEPTH TO INVERT	0.009	0.691
INVERT LEVEL	51.054	51.960
FINISHED SURFACE	51.063	52.651
EXISTING SURFACE	50.926	52.629
CHAINAGE	0.000	54.402
	54.402	

SW LS - LINE SW13

SCALE: HORIZ 1:500 VERT 1:100



PIPE DETAILS	DN600 Class 4 RRJ	
GRADE	2.88%	
DATUM RL 69		
COVER	-0.710	-0.551
DEPTH TO INVERT	0.034	0.193
INVERT LEVEL	72.389	73.147
FINISHED SURFACE	72.423	73.340
EXISTING SURFACE	71.150	73.297
CHAINAGE	0.000	26.347
	26.347	

SW LS - LINE SW12

SCALE: HORIZ 1:500 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
P4	RESPONSE TO COUNCIL RFI - 31.03.2026	DM	13/05/2026	MW
P3	STORMWATER PIPE SIZES AMENDED	GS	17/03/2026	RP/MW
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A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY

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DRAWN: RD	REVIEWED: MW
JOB MANAGER: CRAIG TERRY	
ISSUED DATE: 28/05/2026	

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: STORMWATER LONG SECTIONS
SHEET 9 OF 12

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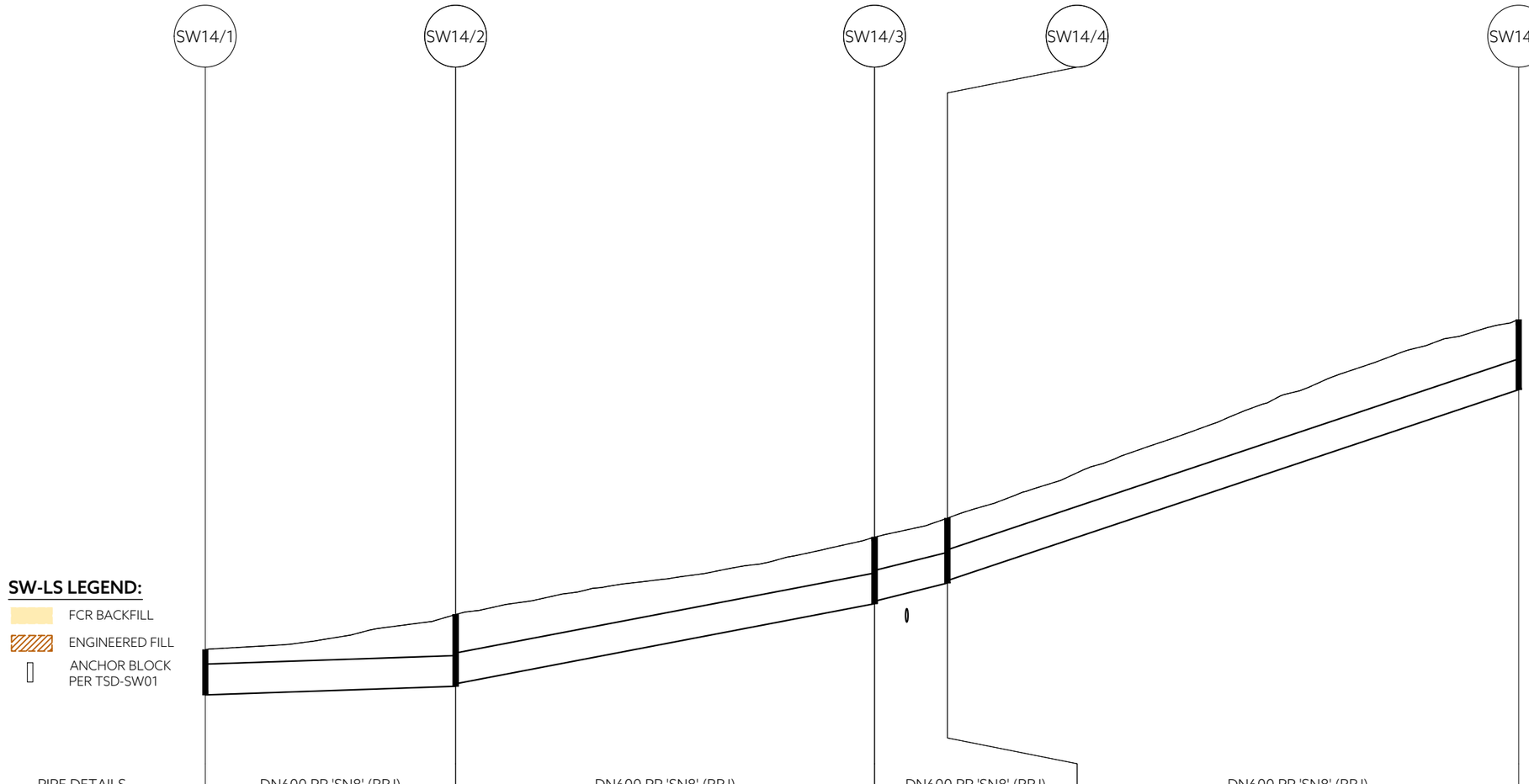
CONTRACT NO.	SCALE	PAPER
------	AS SHOWN	(A3)

JOB NUMBER	DISCIPLINE	SHEET	REVISION
51911HC	C	408	P5

DATE/TIME: Thursday, 28 May 2026 5:09:40 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\5-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG



PIPE DETAILS	DN600 PP 'SN8' (RRJ)			DN600 PP 'SN8' (RRJ)			DN600 PP 'SN8' (RRJ)	
GRADE	0.68%			3.82%			4.95%	
DATUM RL 46								
COVER	0.281		0.796	0.746		0.694	0.644	0.663	0.613		0.759
DEPTH TO INVERT	0.877		1.392	1.342		1.290	1.240	1.259	1.209		1.355
INVERT LEVEL	48.984		49.150	49.200		50.750	50.800	51.150	51.200		54.900
FINISHED SURFACE	49.861		50.542			52.040		52.409			56.255
EXISTING SURFACE	49.861		50.542			52.040		52.409			56.255
CHAINAGE	0.000	24.266	24.266		40.595	64.861		7.067	71.928		127.295

SW LS - LINE SW14

SCALE: HORIZ 1:500 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
P4	RESPONSE TO COUNCIL RFI - 31.03.2026	DM	13/05/2026	MW
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A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY

COORDINATE/ DATUM: PLANAR (LIDAR)

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DESIGNED: RD | REVIEWED: MW

DRAWN: RD | REVIEWED: MW

JOB MANAGER: CRAIG TERRY

ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: STORMWATER LONG SECTIONS
SHEET 10 OF 12

PDA
SURVEYORS, ENGINEERS & PLANNERS
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CONTRACT NO.	SCALE	PAPER
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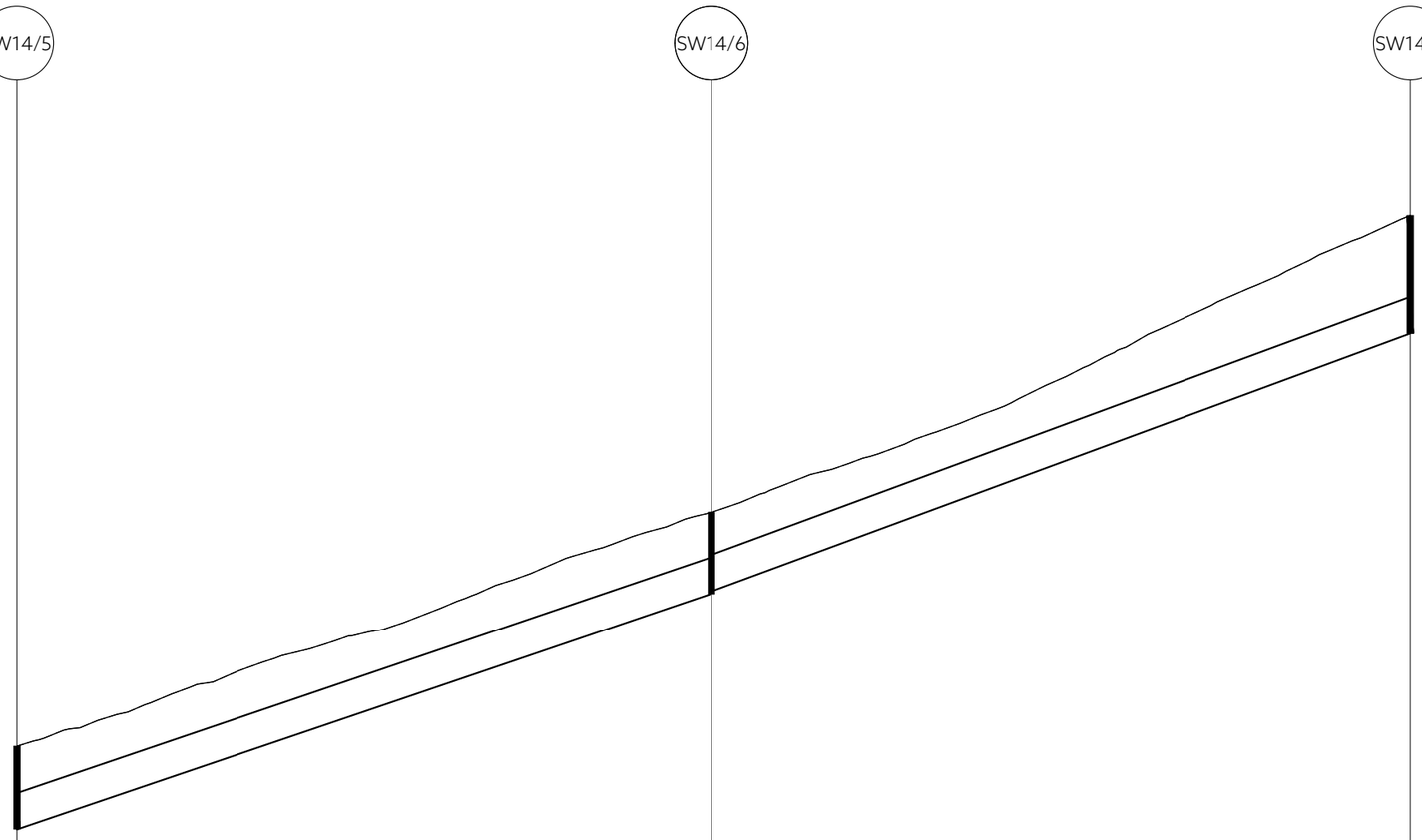
JOB NUMBER	DISCIPLINE / SHEET / REVISION	
51911HC	C 409 P5	



SW-LS LEGEND:

- FCR BACKFILL
- ENGINEERED FILL
- ANCHOR BLOCK PER TSD-SW01

PIPE DETAILS		DN600 PP 'SN8' (RRJ)	DN600 PP 'SN8' (RRJ)
GRADE		6.79%	7.37%
DATUM RL 52			
COVER	0.765	0.735	0.694 1.326
DEPTH TO INVERT	1.361	1.331	1.290 1.922
INVERT LEVEL	54.893	58.750	58.790 63.000
FINISHED SURFACE	56.255	60.081	64.922
EXISTING SURFACE	56.255	60.081	64.922
CHAINAGE	127.295	56.760 184.055	57.119 241.174

SW LS - LINE SW14

SCALE: HORIZ 1:500 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
P4	RESPONSE TO COUNCIL RFI - 31.03.2026	DM	13/05/2026	MW
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A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY

COORDINATE/ DATUM: PLANAR (LIDAR)

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DESIGNED:	RD	REVIEWED:	MW
DRAWN:	RD	REVIEWED:	MW
JOB MANAGER:	CRAIG TERRY		
ISSUED DATE:	28/05/2026		

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: STORMWATER LONG SECTIONS SHEET 11 OF 12

PDA
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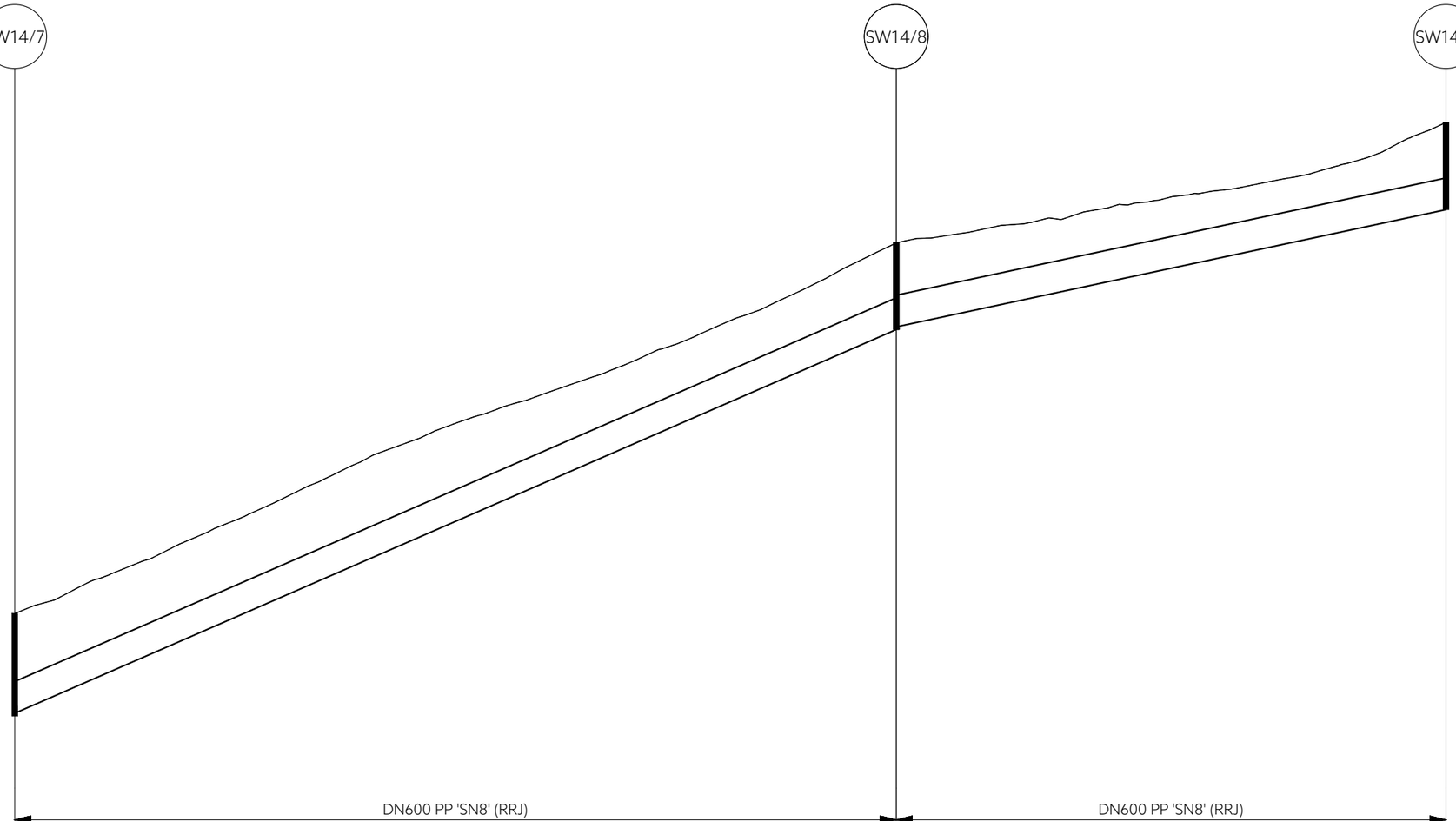
CONTRACT NO.	SCALE	PAPER
------	AS SHOWN	(A3)
JOB NUMBER	DISCIPLINE / SHEET / REVISION	
51911HC	C 410 P5	

DATE/TIME: Thursday, 28 May 2026 5:09:41 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\5-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG



SW-LS LEGEND:

- FCR BACKFILL
- ENGINEERED FILL
- ANCHOR BLOCK PER TSD-SW01

PIPE DETAILS		DN600 PP 'SN8' (RRJ)	DN600 PP 'SN8' (RRJ)
GRADE		8.71%	4.27%
DATUM RL 60			
COVER	1.276	1.033 / 0.983	1.041
DEPTH TO INVERT	1.872	1.629 / 1.579	1.637
INVERT LEVEL	63.050	70.250 / 70.300	72.500
FINISHED SURFACE	64.922	71.879	74.137
EXISTING SURFACE	64.922	71.879	74.137
CHAINAGE	241.174	323.879 / 82.705	375.456 / 51.577

SW LS - LINE SW14

SCALE: HORIZ 1:500 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
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A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY

COORDINATE/ DATUM: PLANAR (LIDAR)

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DESIGNED: RD | REVIEWED: MW

DRAWN: RD | REVIEWED: MW

JOB MANAGER: CRAIG TERRY

ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: STORMWATER LONG SECTIONS SHEET 12 OF 12

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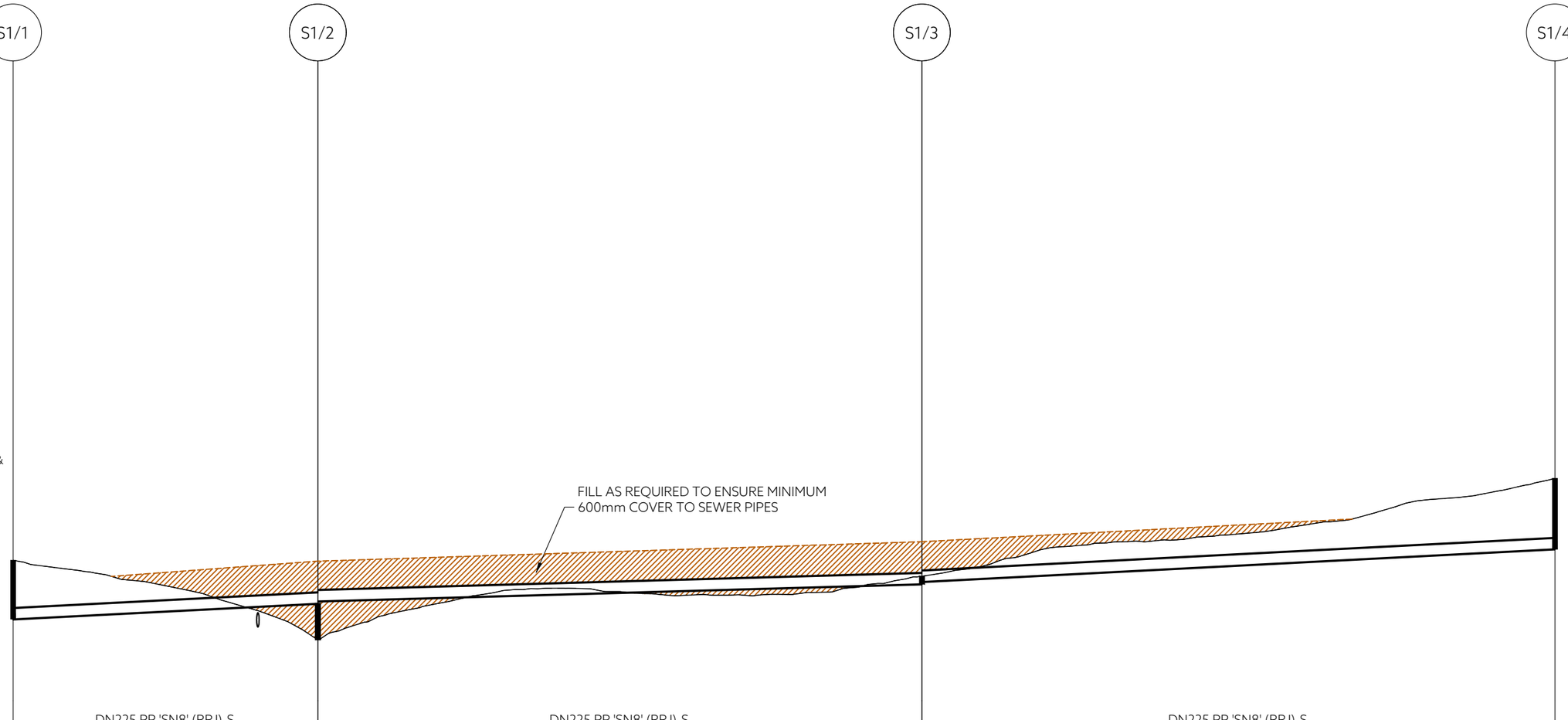
REGISTRATION NUMBER: ----

CONTRACT NO.	SCALE	PAPER
------	AS SHOWN	(A3)

JOB NUMBER	DISCIPLINE	SHEET	REVISION
51911HC	C	411	P5

DATE/TIME: Thursday, 28 May 2026 5:09:42 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\5-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG



SEWER-LS LEGEND:

- FCR BACKFILL
- ENGINEERED FILL
- TRENCH BULKHEADS & TRENCH STOPS IN ACCORDANCE WITH MRWA-S-205 & MRWA-S-206

PIPE DETAILS	DN225 PP 'SN8' (RRJ)-S				DN225 PP 'SN8' (RRJ)-S				DN225 PP 'SN8' (RRJ)-S		
GRADE	1.03%				0.57%				1.03%		
DATUM RL 44											
COVER	1.015			-0.994	-1.044			-0.061	-0.111			1.263
DEPTH TO INVERT	1.240			-0.769	-0.819			0.164	0.114			1.488
INVERT LEVEL	47.370			47.700	47.750			48.111	48.161			48.850
FINISHED SURFACE	48.610			46.931				48.275				50.338
EXISTING SURFACE	48.610			46.931				48.275				50.338
CHAINAGE	0.000		32.184	32.184		63.779		95.964		66.833		162.796

SEWER LONG SECTION - LINE S1

SCALE: HORIZ 1:500 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
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P3	STORMWATER PIPE SIZES AMENDED	GS	17/03/2026	RP/MW
P2	PLANS AMENDED IN RESPONSE TO COUNCIL RFI - 16.06.2025	GS	08/08/2025	MW
A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

DRAWING STATUS: CONCEPT ONLY

COORDINATE/ DATUM: PLANAR (LIDAR)

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DESIGNED:	RD	REVIEWED:	MW
DRAWN:	RD	REVIEWED:	MW
JOB MANAGER:	CRAIG TERRY		
ISSUED DATE:	28/05/2026		

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: SEWER LONG SECTIONS
SHEET 1 OF 6

PDA
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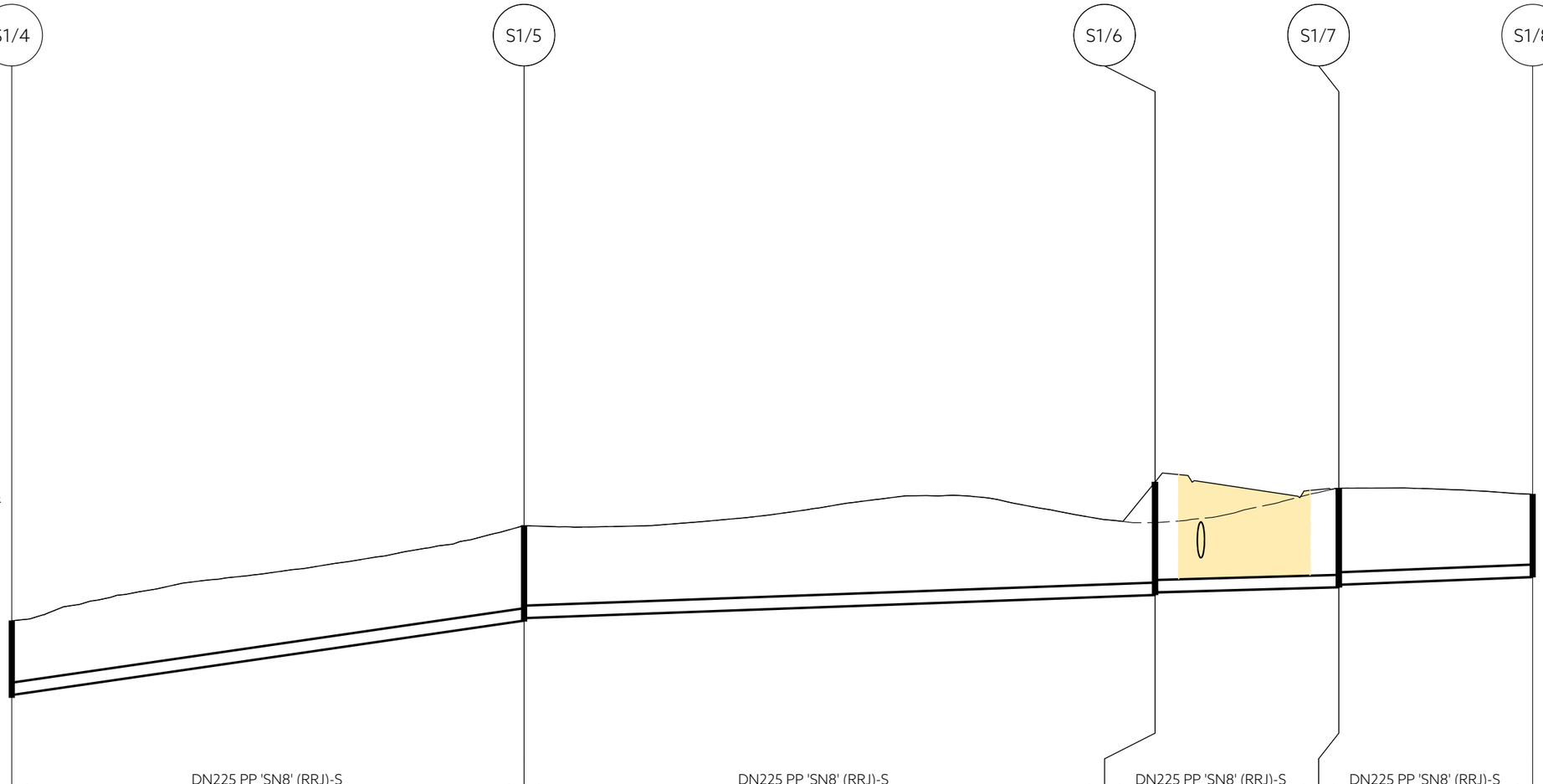
CONTRACT NO.	SCALE	PAPER
------	AS SHOWN	(A3)
JOB NUMBER	DISCIPLINE / SHEET	REVISION
51911HC	C 530	P5

DATE/TIME: Thursday, 28 May 2026 5:09:43 PM PLOTTED: FINN MURPHY FILE LOCATION: S:\51911CT - LIAO JINJU - 155 COBBS HILL ROAD, BRIDGEWATER\5-ENGINEERING\1-DRAWINGS\51911CT- CONCEPT ENG.DWG



SEWER-LS LEGEND:

- FCR BACKFILL
- ENGINEERED FILL
- TRENCH BULKHEADS & TRENCH STOPS IN ACCORDANCE WITH MRWA-S-205 & MRWA-S-206

PIPE DETAILS	DN225 PP 'SN8' (RRJ)-S	DN225 PP 'SN8' (RRJ)-S	DN225 PP 'SN8' (RRJ)-S	DN225 PP 'SN8' (RRJ)-S
GRADE	2.90%	0.73%	0.56%	0.79%
DATUM RL 46				
COVER	1.213 … 1.617	1.567 … 1.966	1.916 … 1.699	1.649 … 1.379
DEPTH TO INVERT	1.438 … 1.842	1.792 … 2.191	2.141 … 1.924	1.874 … 1.604
INVERT LEVEL	48.900 … 50.350	50.400 … 50.850	50.900 … 51.000	51.050 … 51.200
FINISHED SURFACE	50.338 … 52.192	… 53.041	… 52.924	… 52.804
EXISTING SURFACE	50.338 … 52.192	… 52.253	… 52.924	… 52.804
CHAINAGE	162.796 … 212.726	274.226	292.138	311.032
	49.929	61.501	17.912	18.893

SEWER LONG SECTION - LINE S1

SCALE: HORIZ 1:500 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
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A	INTERSECTION LOCATION REVISED PER DSG REQUEST	RD	19/02/2025	CT

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JOB MANAGER: CRAIG TERRY

ISSUED DATE: 28/05/2026

CLIENT: LIAO JINJU

PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: SEWER LONG SECTIONS SHEET 2 OF 6

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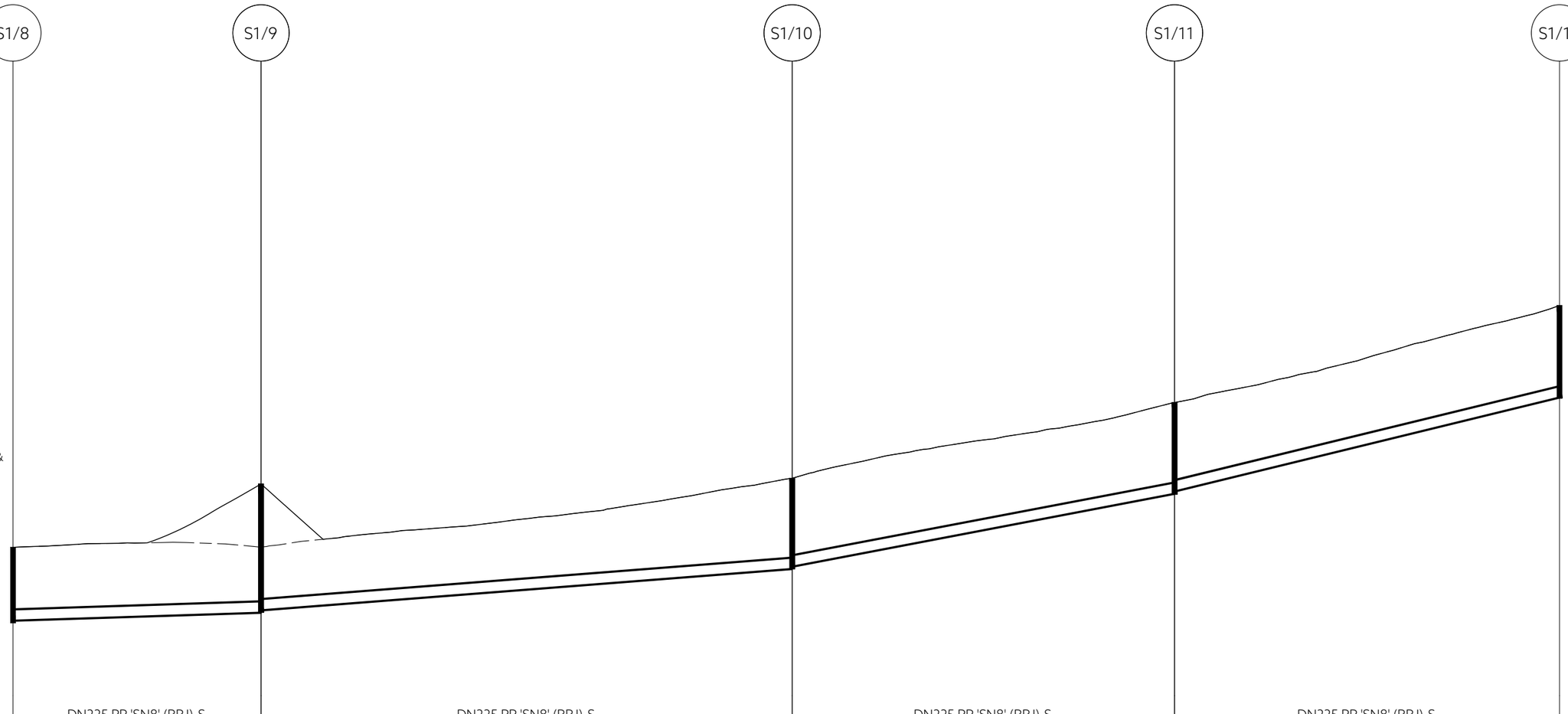

SEWER-LS LEGEND:

- FCR BACKFILL
- ENGINEERED FILL
- TRENCH BULKHEADS & TRENCH STOPS IN ACCORDANCE WITH MRWA-S-205 & MRWA-S-206

PIPE DETAILS	DN225 PP 'SN8' (RRJ)-S			DN225 PP 'SN8' (RRJ)-S			DN225 PP 'SN8' (RRJ)-S			DN225 PP 'SN8' (RRJ)-S		
GRADE	0.64%			1.56%			3.81%			4.88%		
DATUM RL 48												
COVER	1.329		2.508	2.458		1.699	1.649		1.711	1.661		1.726
DEPTH TO INVERT	1.554		2.733	2.683		1.924	1.874		1.936	1.886		1.951
INVERT LEVEL	51.250		51.420	51.470		52.350	52.400		53.950	54.000		56.000
FINISHED SURFACE	52.804		54.153			54.274			55.886			57.951
EXISTING SURFACE	52.804		52.807			54.274			55.886			57.951
CHAINAGE	311.032	26.424	337.455		56.578	394.034		40.733	434.767		41.007	475.774

SEWER LONG SECTION - LINE S1

SCALE: HORIZ 1:500 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
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CLIENT: LIAO JINJU

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ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

DRAWING TITLE: SEWER LONG SECTIONS SHEET 3 OF 6

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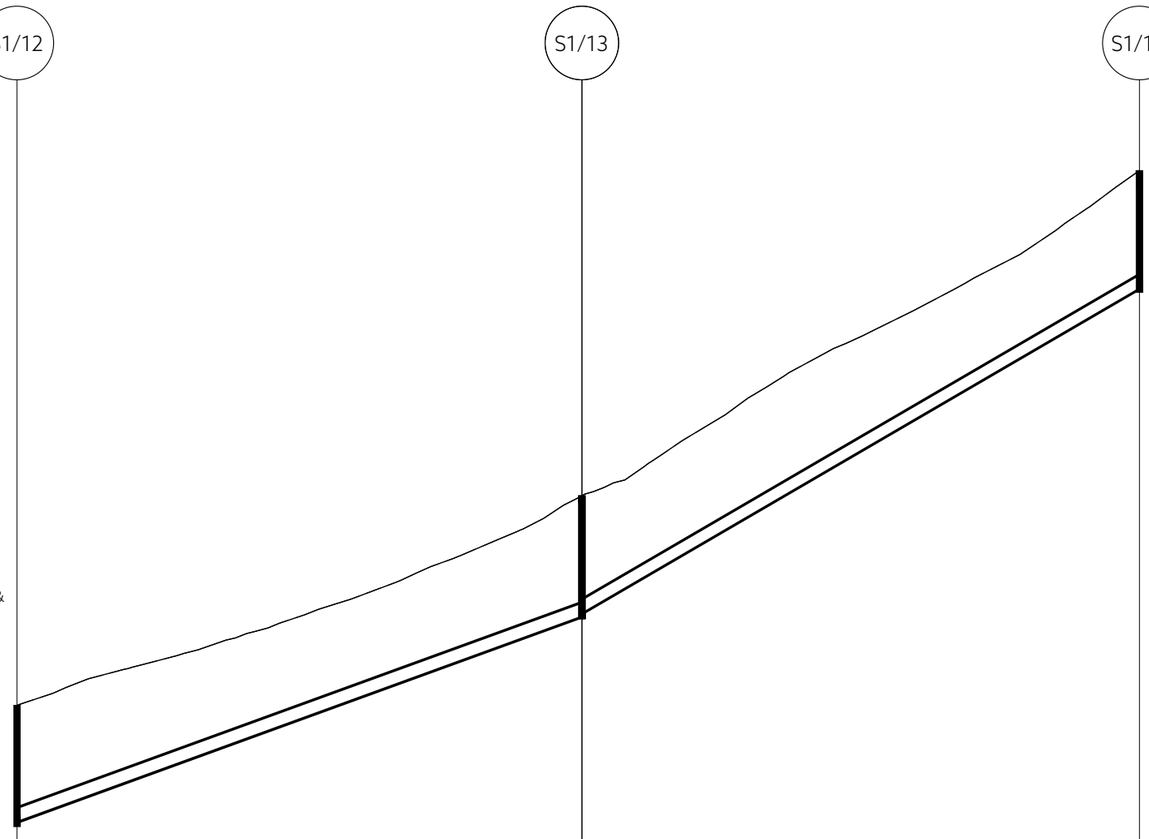

SEWER-LS LEGEND:

- FCR BACKFILL
- ENGINEERED FILL
- TRENCH BULKHEADS & TRENCH STOPS IN ACCORDANCE WITH MRWA-S-205 & MRWA-S-206

PIPE DETAILS		DN225 PP 'SN8' (RRJ)-S	DN225 PP 'SN8' (RRJ)-S
GRADE		7.27%	11.65%
DATUM RL 53			
COVER	1.676	1.746	1.696 / 1.699
DEPTH TO INVERT	1.901	1.971	1.921 / 1.924
INVERT LEVEL	56.050	59.400	59.450 / 64.746
FINISHED SURFACE	57.951	61.371	66.670
EXISTING SURFACE	57.951	61.371	66.670
CHAINAGE	475.774	521.851	567.322
	46.077		45.471

SEWER LONG SECTION - LINE S1

SCALE: HORIZ 1:500 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
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ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

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SHEET 4 OF 6

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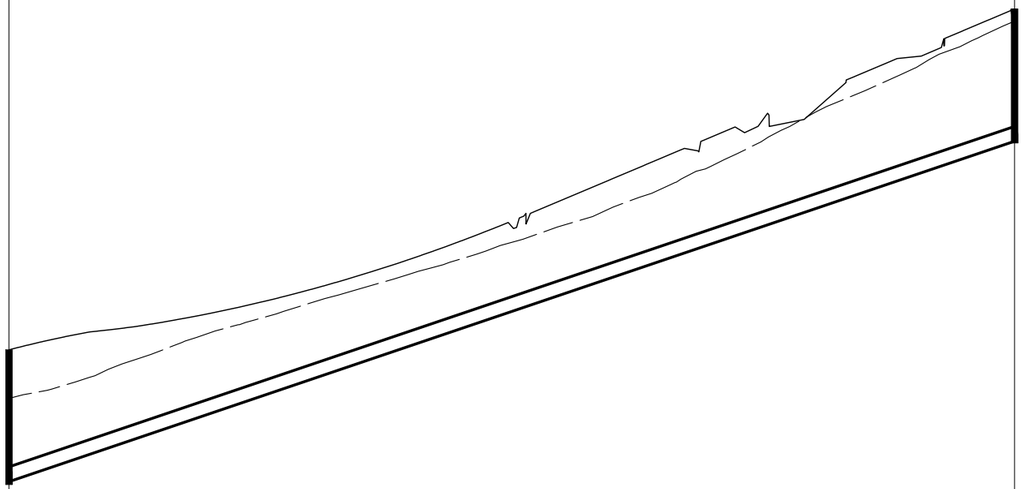
S1/6

S2/1



SEWER-LS LEGEND:

- FCR BACKFILL
- ENGINEERED FILL
- TRENCH BULKHEADS & TRENCH STOPS IN ACCORDANCE WITH MRWA-S-205 & MRWA-S-206

PIPE DETAILS	DN225 PP 'SN8' (RRJ)-S		
GRADE	6.77%		
DATUM RL 48			
COVER	1.916		1.923
DEPTH TO INVERT	2.141		2.148
INVERT LEVEL	50.900		56.450
FINISHED SURFACE	53.041		58.598
EXISTING SURFACE	52.253		58.401
CHAINAGE	0.000	82.007	82.007

SEWER LONG SECTION - LINE S2

SCALE: HORIZ 1:500 VERT 1:100

REV	AMENDMENTS	DRAWN	DATE	APPR.
P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
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ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

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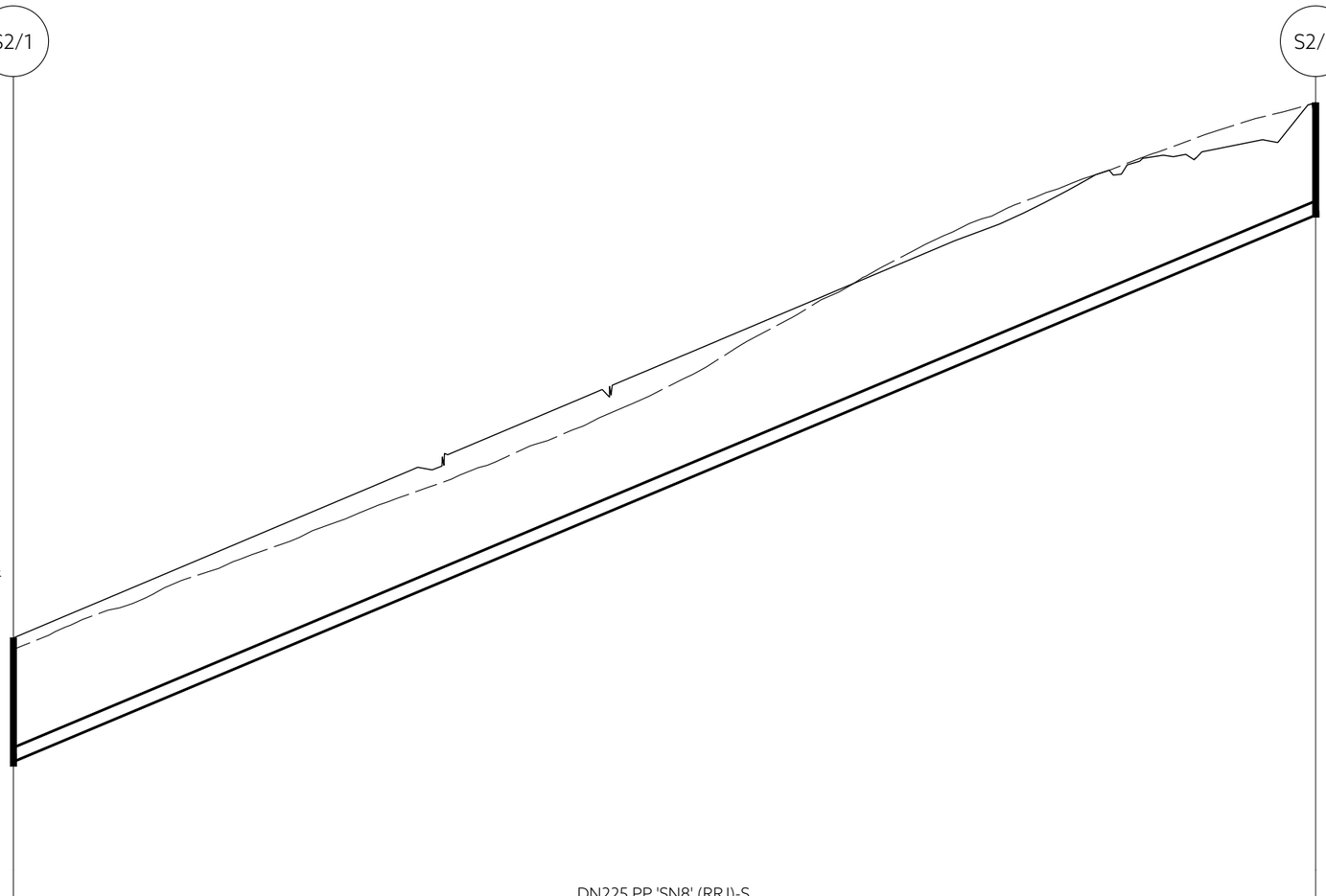

SEWER-LS LEGEND:

- FCR BACKFILL
- ENGINEERED FILL
- TRENCH BULKHEADS & TRENCH STOPS IN ACCORDANCE WITH MRWA-S-205 & MRWA-S-206

PIPE DETAILS	DN225 PP 'SN8' (RRJ)-S	
GRADE	8.40%	
DATUM RL 53		
COVER	1.873	1.679
DEPTH TO INVERT	2.098	1.904
INVERT LEVEL	56.500	65.800
FINISHED SURFACE	58.598	67.704
EXISTING SURFACE	58.401	67.704
CHAINAGE	82.007	192.785
	110.778	

SEWER LONG SECTION - LINE S2

SCALE: HORIZ 1:500 VERT 1:100

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PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION

ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER

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KEEP LEFT SIGNAGE
R2-3(L)

EX MEDIAN ISLAND TO BE REMOVED & REPLACED WITH SHORT CHANNELISED RIGHT TURN (CHR/S) TREATMENT - PAVEMENT TO BE REINSTATED, DETAIL TO BE DETERMINED AT DETAIL DESIGN STAGE

EXISTING SIDE ENTRY PIT IN EXISTING MEDIAN ISLAND TO BE MADE REDUNDANT INCLUDING EXISTING SW PIPE THAT CROSSES GLENSTONE ROAD, EXISTING PAVEMENT TO BE REINSTATED PER DETAIL DETERMINED AT DESIGN STAGE.

EX. LINE MARKING

B1 LINE MARKING

GLENSTONE ROAD

EXISTING STREET LIGHTING INFRASTRUCTURE TO BE RELOCATED TO SUIT NEW INTERSECTION

GIVEWAY SIGNAGE
R1-2

HL LINE MARKING

STREET LIGHTING OF ISLAND

NEW TYPE 'KCM' MOUNTABLE KERB

NEW ROAD PAVEMENT

CC LINE MARKING

KERB RETURN RADIUS TO BE DESIGNED TO ALLOW LEFT-TURNING B-DOUBLE TO COMPLETE TURN WITHIN THE DESIGNATED SLIP LANE

EX. POWER TRANSMISSION TOWER

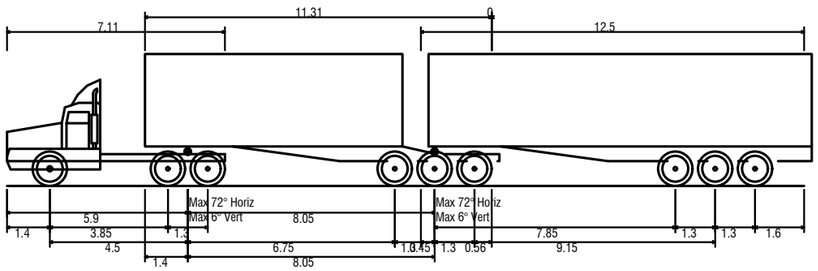
E LINE MARKING

LOT 14

ROAD 1

FR186224/20
BRIGHTON COUNCIL
-OWNER

NOTES:
- SERVICES TURNED OFF FOR CLARITY.
- LINE MARKING, ROAD ISLANDS AND EDGES OF BITUMEN DRAWN FROM AERIAL IMAGERY AND ARE APPROXIMATE ONLY.



B-Double (26.0m)	
Overall Length	26.000m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15.000m

26.0 m B-DOUBLE DESIGN VEHICLE
NTS

P5	AMENDMENTS TO CUT AND FILL PLAN + NEW CONTOUR COMPARISON PLAN	FM	28/05/2026	MW
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PROJECT DESCRIPTION: 14 LOT INDUSTRIAL SUBDIVISION
ADDRESS: 155 COBBS HILL ROAD, BRIDGEWATER
DRAWING TITLE: 26.0 m B-DOUBLE VEHICLE TURNING PATHS

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TRAFFIC & CIVIL SERVICES

14 LOT SUBDVISION
155 COBBS HILL ROAD, BRIDGEWATER

TRAFFIC IMPACT ASSESSMENT
MARCH 2024

14 Lot Subdivision
155 Cobbs Hill Road, Bridgewater

TRAFFIC IMPACT ASSESSMENT

- Draft
- March 2024

Traffic & Civil Services
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Contents

Document history and status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
1	18th Mar 2024	R Burk	R Burk	18th Mar 2024	Draft

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Draft	1	1	Craig Terry (PDA)

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Author:	Richard Burk
Project manager:	Richard Burk
Name of organisation:	TBA
Name of project:	155 Cobbs Hill Rd
Name of document:	155 Cobbs Hill Rd
Document version:	Draft
Project number:	

1. Introduction

1.1 Background

A 14-lot General Industrial subdivision of 155 Cobbs Hill Road, is proposed at Bridgewater with the balance lot accessing Cobbs Hill Road via existing ROW accesses.

This report has been prepared to assess the traffic impact of the proposal.

This TIA has been prepared based on Department of State Growth (DSG) guidelines and responds to Tasmanian Planning Scheme – Brighton Codes C3.

1.2 Objectives

A Traffic Impact Assessment is a means for assisting in the planning and design of sustainable development that considers:

- Safety and capacity
- Equity and social justice
- Economic efficiency
- The environment and future development.

This TIA considers the impact of the proposal on projected traffic volumes expected by 2034.

1.3 Scope of Traffic Impact Assessment (TIA)

This TIA considers in detail the impact of the proposal on Glenstone Road and the proposed junction with Glenstone Road.

1.4 References

- RTA Guide to Traffic Generating Development 2002
- Tasmanian Planning Scheme - Brighton
- Austroads Guide Road Design Part 4A: Unsignalised & Signalised Intersections 2021
- Guide to Traffic Management Part 6: Intersections, Interchanges & Crossings 2020.
- LGAT Tasmanian Standard Drawings

1.5 Statement of Qualifications and Experience

This TIA has been prepared by Richard Burk, an experienced and qualified traffic engineer in accordance with the requirements of the Department of State Growth's guidelines and Council's requirements. Richard's experience and qualifications include:

- 37 years professional experience in road and traffic engineering industry
    - Manager Traffic Engineering at the Department of State Growth until May 2017.
    - Previous national committee membership with Austroads Traffic Management Working Group and State Road Authorities Pavement Marking Working Group
- Master of Traffic, Monash University, 2004
- Post Graduate Diploma in Management, Deakin University, 1995
- Bachelor of Civil Engineering, University of Tasmania, 1987

Richard Burk

BE (Civil) M Traffic Dip Man. MIE Aust CPEng

Director Traffic and Civil Services Pty Ltd

1.6 Glossary of Terms

AADT	Annual Average Daily Traffic - The total number of vehicles travelling in both directions passing a point in a year divided by the number of days in a year.
Acceleration Lane	An auxiliary lane used to allow vehicles to increase speed without interfering with the main traffic stream. It is often used on the departure side of intersections.
Access	The driveway by which vehicles and/or pedestrians enter and/or leave the property adjacent to a road.
ADT	Average Daily Traffic – The average 24-hour volume being the total number of vehicles travelling in both directions passing a point in a stated period divided by the stared number of days in that period.
Austroads	The Association of Australian and New Zealand road transport and traffic authorities and includes the Australian Local Government Association.
Delay	The additional travel time experiences by a vehicle or pedestrian with reference to a vase travel time (e.g. the free flow travel time).
DSG	Department of State Growth – The Tasmanian Government Department which manages the State Road Network.
GFA	Gross Floor Area
Intersection Kerb	The place at which two or more roads meet or cross. A raised border of rigid material formed at the edge of a carriageway, pavement or bridge.
km/h	Kilometres per hour
Level of Service	An index of the operational performance of traffic on a given traffic lane, carriageway or road when accommodating various traffic volumes under different combinations of operating conditions. It is usually defined in terms of the convenience of travel and safety performance.
m	Metres
Median	A strip of road, not normally intended for use by traffic, which separates carriageways for traffic in opposite directions. Usually formed by painted lines, kerbed and paved areas grassed areas, etc.
Movement	A stream of vehicles that enters from the same approach and departs from the same exit (i.e. with the same origin and destination).
Phase	The part of a signal cycle during which one or more movements receive right-of -way subject to resolution of any vehicle or pedestrian conflicts by priority rules. A phase is identified by at least one movement gaining right-of-way at the start of it and at least one movement losing right-of-way at the end of it.

Sight Distance	The distance, measured along the road over which visibility occurs between a driver and an object or between two drivers at specific heights above the carriageway in their lane of travel.
Signal Phasing	Sequential arrangement of separately controlled groups of vehicle and pedestrian movements within a signal cycle to allow all vehicle and pedestrian movements to proceed.
SISD	Safe Intersection Sight Distance – The sight distance provides sufficient distance for a driver of a vehicle on the major road to observe a vehicle on a minor road approach moving into a collision situation and to decelerate to a stop before reaching the collision point.
Speed	Distance travelled per unit time.
85th Percentile	The speed at which 85% of car drivers will travel slower and 15% will travel faster.
Traffic-actuated Control	A control method that allows a variable sequence and variable duration of signal displays depending on vehicle and pedestrian tragic demands.
Traffic Growth Factor	A factor used to estimate the percentage annual increase in traffic volume.
Trip	A one-way vehicular movement from one point to another excluding the return journey. Therefore, a vehicle entering and leaving a land use is counted as two trips. (RTA Guide to Traffic generating Developments).
Turning Movement	The number of vehicles observed to make a particular turning movement (left or right turn, or through movement) at an intersection over a specified period.
Turning Movement Count	A traffic count at an intersection during which all turning movements are recorded.
Vehicle Actuated Traffic Signals	Traffic signals in which the phasing varies in accordance with the detected presence of vehicles on the signal approaches.
vpd	vehicles per day – The number of vehicles travelling in both directions passing a point during a day from midnight to midnight.
vph	vehicles per hour – The number of vehicles travelling in both directions passing a point during an hour.

1.7 Site Specific Glossary of Terms

BC	Brighton Council
SSA	Safe System Assessment

2. Site Description

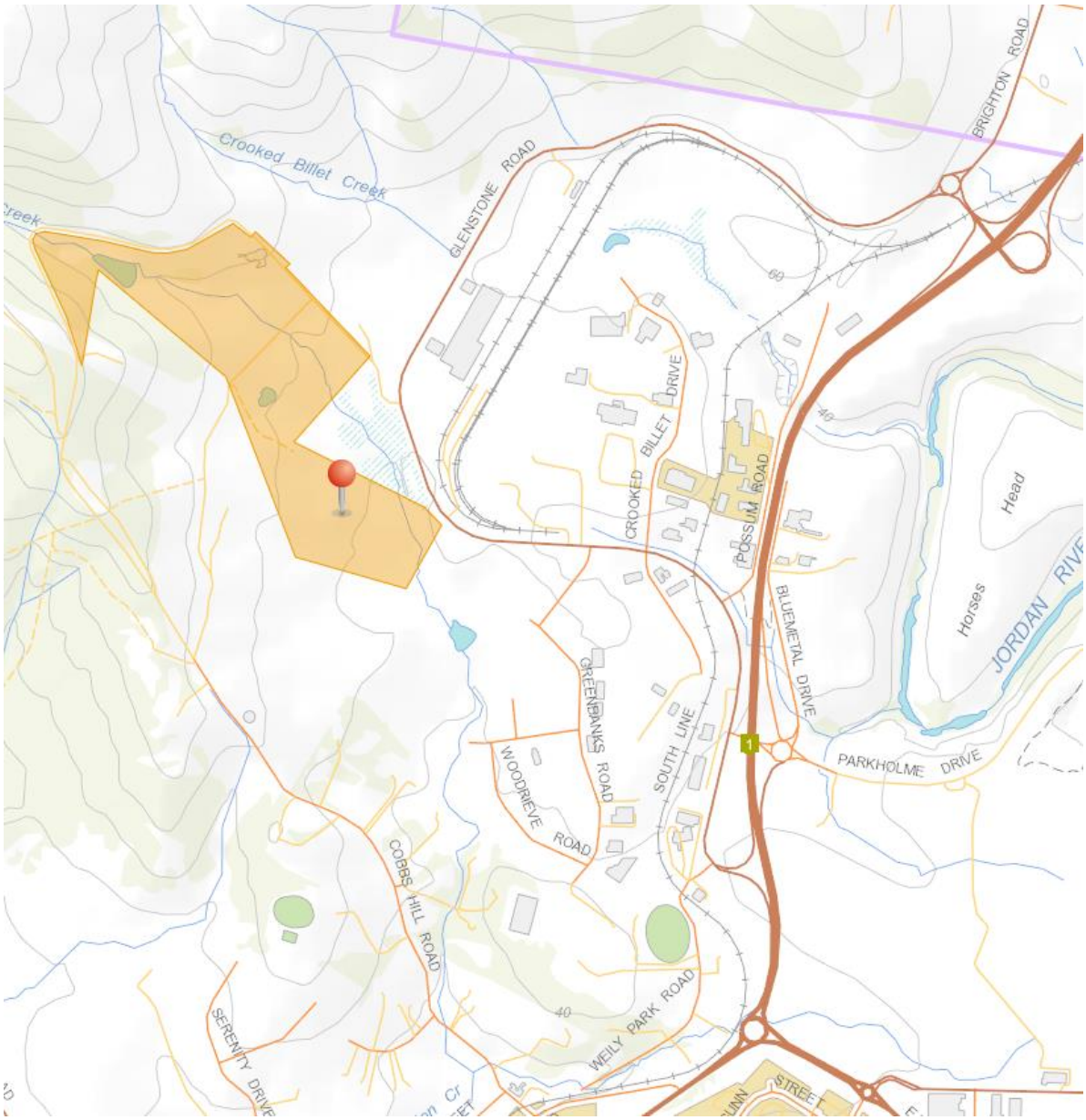
Figures 1 & 2 show the development location of 155 Cobbs Road, Bridgewater.

The proposed subdivision site has access to Cobbs Road and frontage to Glenstone Road opposite the Brighton Hub Truck access, see Figure 3. The subdivision site slopes downhill towards Ashburton Creek from Glenstone Road.

Figure 1 – Development location

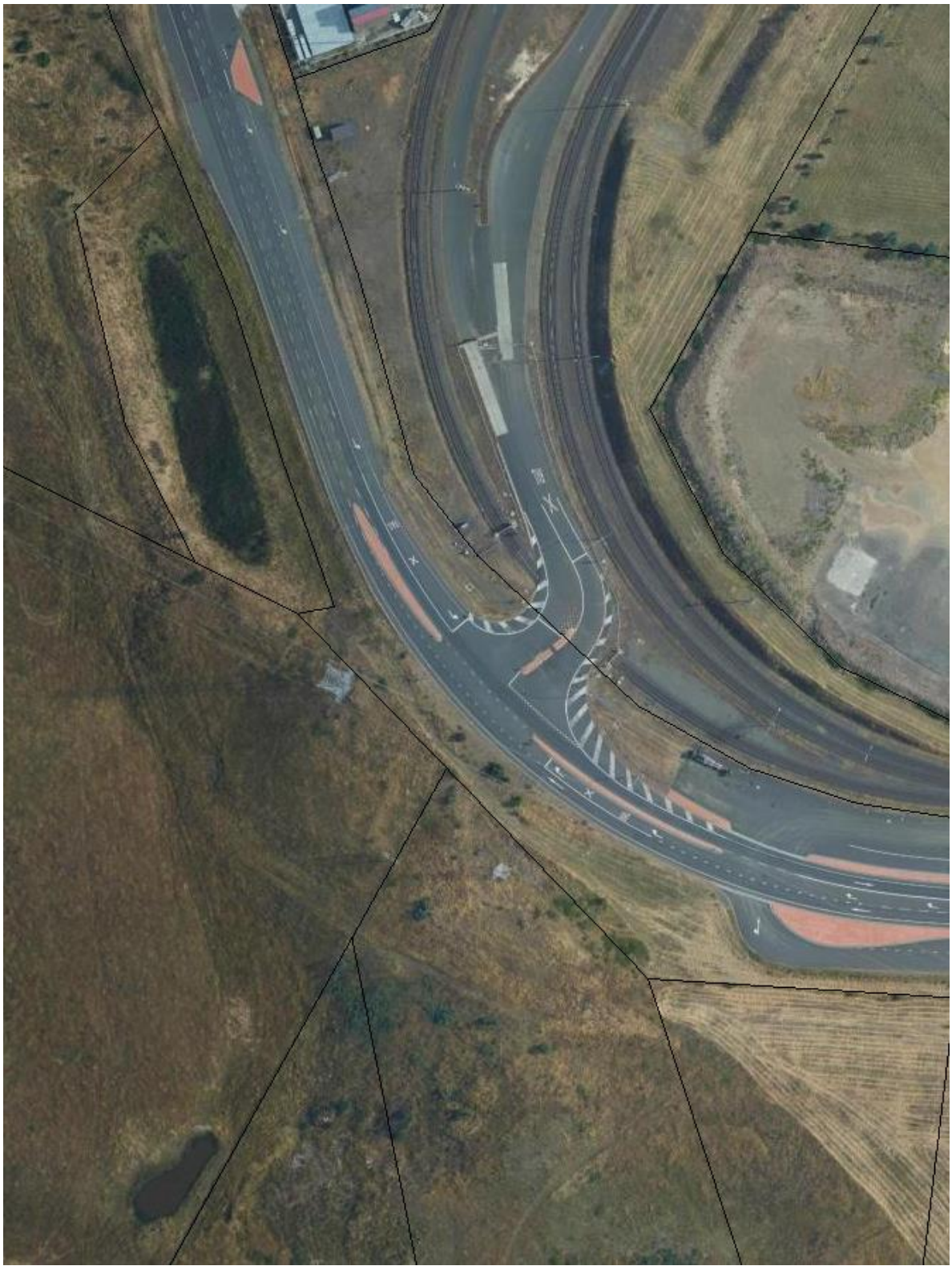
Source: The List, DPIPWE

Figure 2 – Road Network surrounding 155 Cobbs Road



Source: The List, DPIPWE

Figure 3 – Aerial view of proposed subdivision access to Glenstone Road



Source: The List, DPIPWE

3. Proposal, Planning Scheme and Road Owner objectives

3.1 Description of Proposed Development

The proposal is to subdivide 155 Cobbs Hill Road into 14 lots. Figures 4 & 5 show the proposed lot layout and road access, see Appendix A for the full Plan of Subdivision.

Figure 4 – Proposed subdivision layout at 155 Cobbs Hill Road, Bridgewater

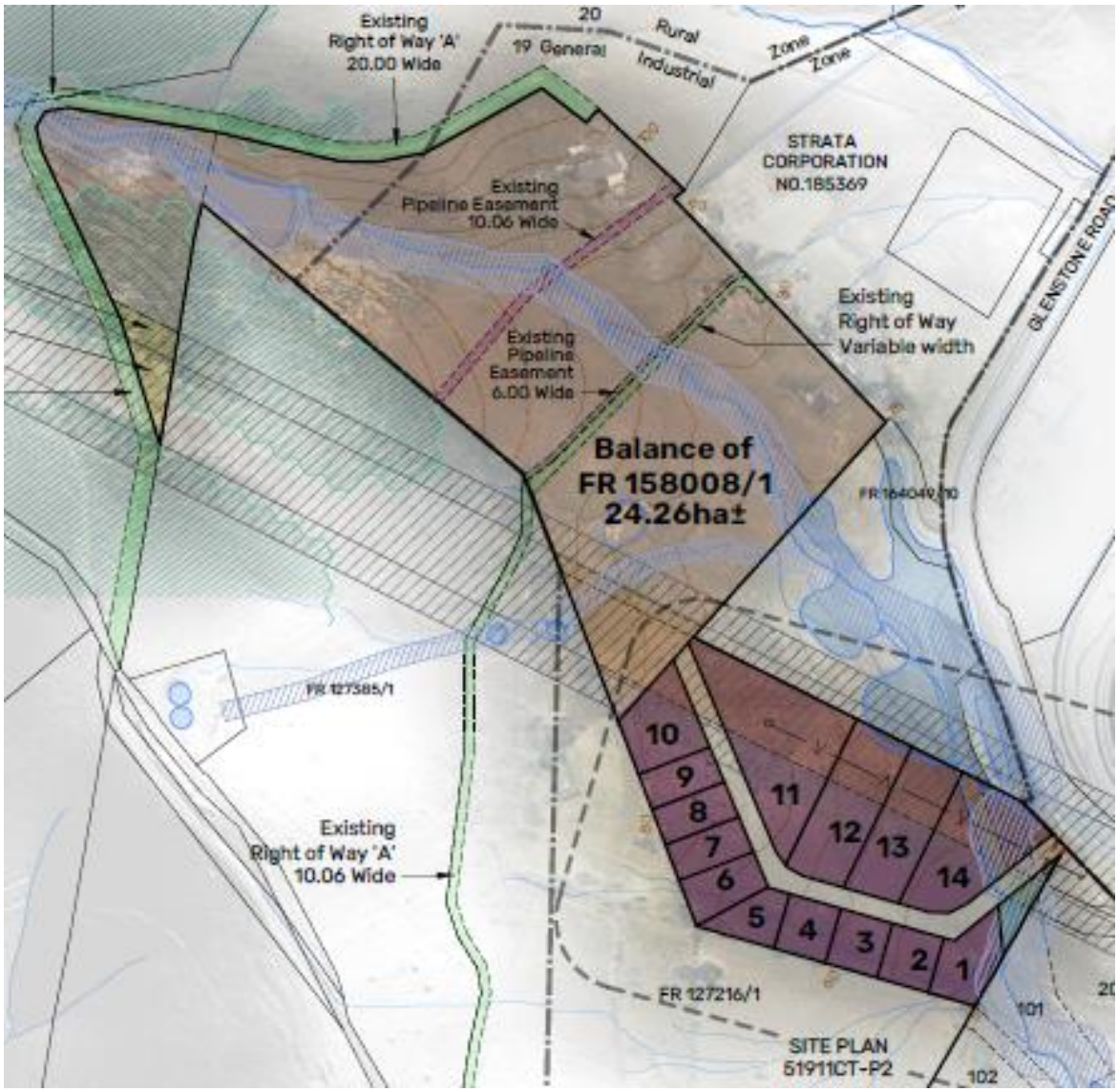
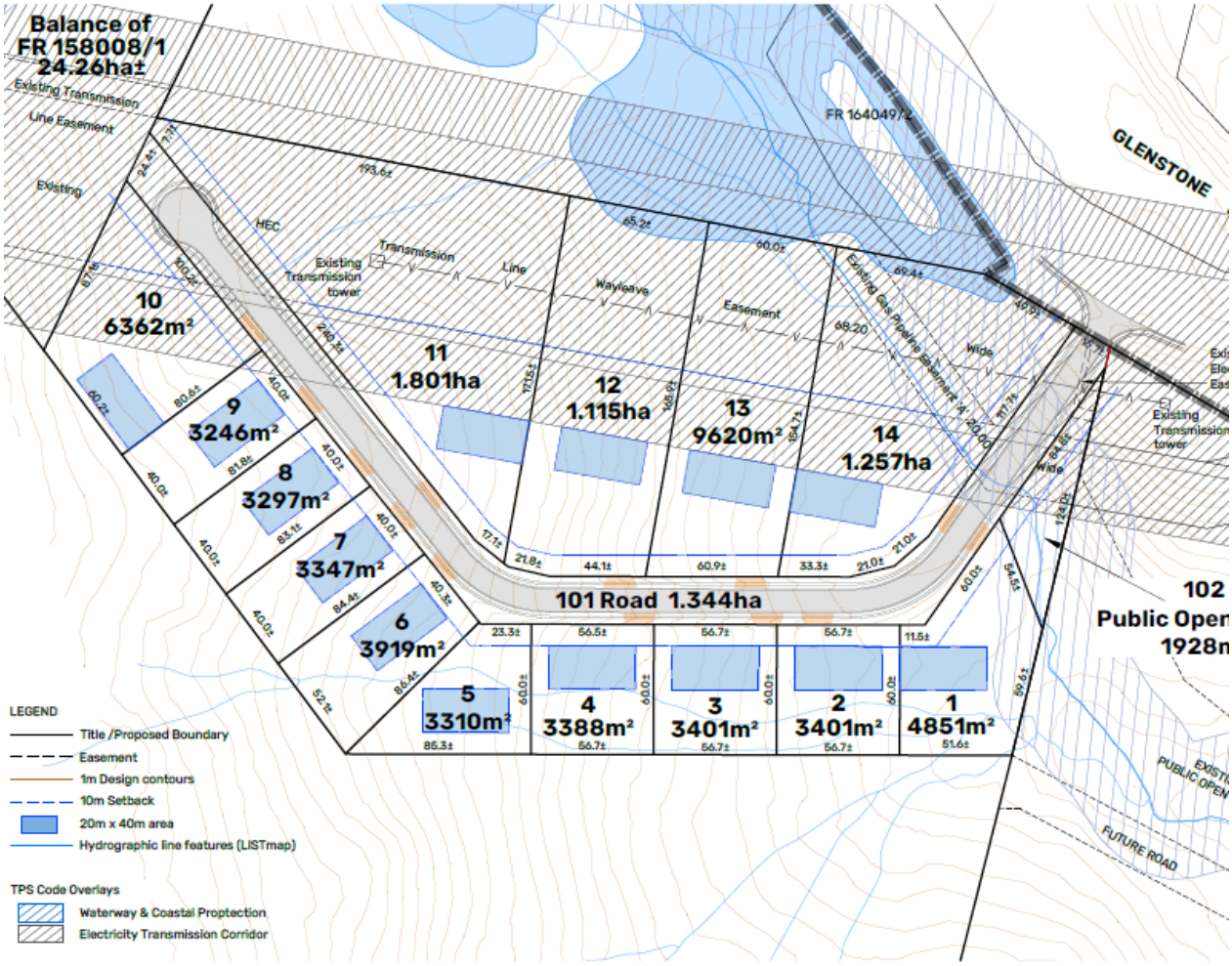


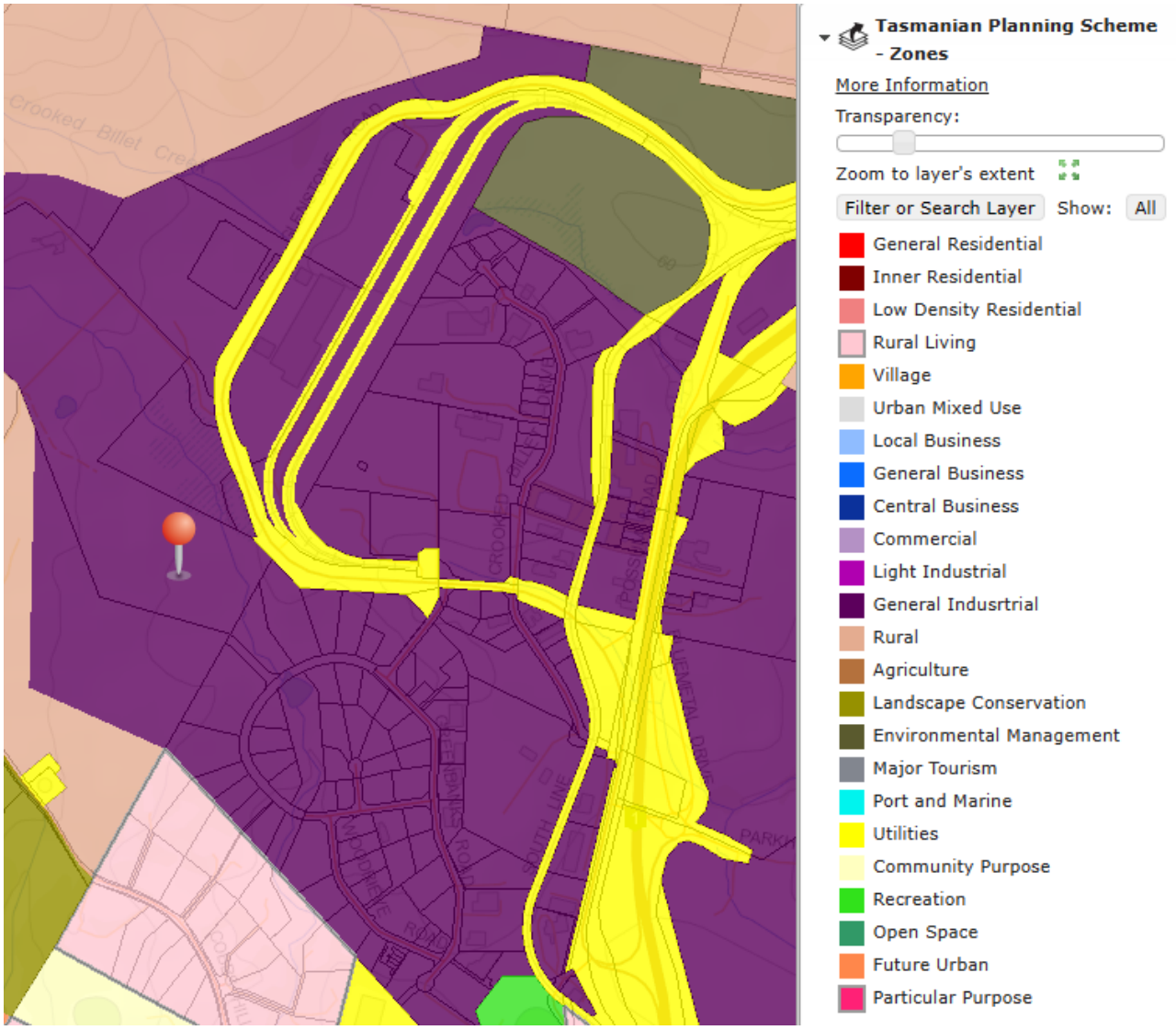
Figure 5 – Proposed subdivision layout at 155 Cobbs Hill Road, Bridgewater



3.2 Council Planning Scheme

The proposed development site zoning is shown in Figure 6 as per the Tasmanian Planning Scheme - Brighton.

Figure 6 – 155 Cobbs Hill Rd is zoned General Indistrial and Rural.



Source: The List, DPIPWE

3.3 State Road Network Objectives

DSG is the authority responsible for the State Road network impacted by the proposal. DSG objectives are to maintain traffic safety and capacity.

3.4 Local Road Network Objectives

Brighton Council (BC) is the authority responsible for the Council Road network impacted by the proposal. BC objectives are to maintain traffic safety and capacity.

4. Existing Conditions

4.1 Transport Network

The transport system adjacent the proposed development site consists of Midlands Highway, Glenstone Road and Cobbs Hill Road.

4.2 Midlands Highway, Bridgewater

Midlands Hwy is a Category 1 Trunk Road in the State Road Hierarchy. The road has Limited Access status and is part of the Tasmanian 26m Double B Network, see Appendix C.

The highway has two lanes in each direction separated by median wire rope safety barrier The traffic lanes are 3.5m wide with 2m sealed shoulders. The highway has no footpaths.

4.3 Glenstone Road, Bridgewater

Glenstone Road is a Category 2 Regional Freight Route in the State Road Hierarchy. The road does not have Limited Access status and is part of the Tasmanian 26m Double B Network, see Appendix C.

Glenstone Road has a speed limit of 70km/h on the approaches to the proposed junction, see Figure 7. The road has 3.5m traffic lanes each way , 1.5m sealed shoulders and a 5m wide median and is well delineated with Edge & Lane lines with footpath on the Northern side.

Figure 7 – Glenstone Road, Bridgewater.

4.4 Midlands Highway / Glenstone Road Interchange - North

The existing interchange is within a 110km/h Speed Limit on the Midlands Highway approaches. Figure 8 show the interchange layout and access to Glenstone Road.

Figure 8 – Midlands Highway / Glenstone Road Interchange – North

Source: *The List, DPIPWE*

4.5 Midlands Highway / Glenstone Road Interchange - South

The existing interchange is within an 80km/h Speed Limit on the Midlands Highway approaches. Figure 9 shows the interchange layout and access to Glenstone Road.

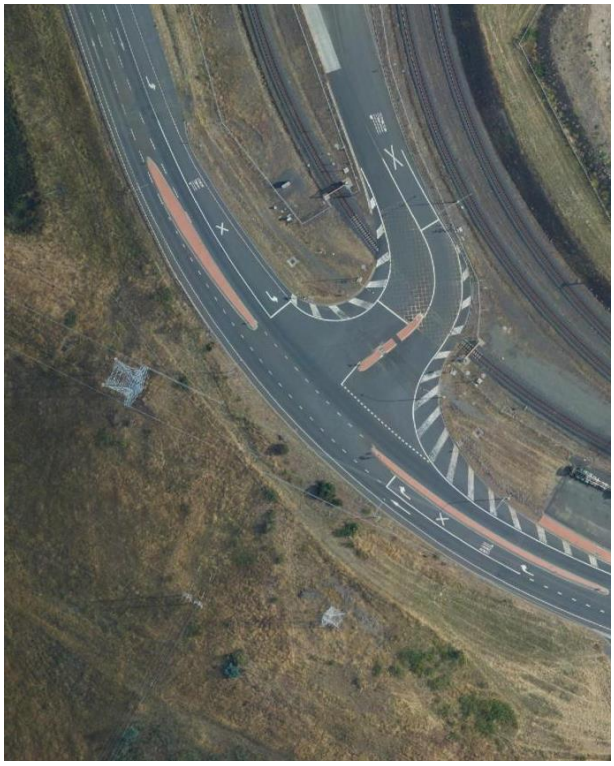
Figure 9 – Midlands Highway / Glenstone Road Interchange – South

Source: The List, DPIPWE

4.6 Glenstone Road / Proposed Road junction

The existing junction has a fully channelised layout and is situated on a gentle horizontal curve in the road. The Glenstone Road approaches to the junction have an estimated speed environment of 70km/h. Figures 10 - 15 show the nature of the junction.

Figure 10 – Glenstone Road / Proposed Road junction



Source: The List, DPIPWE

Figure 11 – Proposed Road approach to Glenstone Road

Figure 12 – Looking right from proposed road along Glenstone Road

Sight distance right is 170m.

Figure 13 – Looking left from proposed road along Glenstone Road

Sight distance left is 320m.

Figure 14 – Glenstone Road Eastern approach at proposed road

Figure 15 – Glenstone Road Northern approach to proposed road

4.7 Glenstone Road / Brighton Hub Truck Entry, Bridgewater

Figures 16 - 22 show the nature of the existing junction and approaches.

Figure 16 – Aerial view of Glenstone Road / Brighton Hub Truck Entry

Source: The List, DPIPWE

Figure 17 – Brighton Hub Truck Exit approach to Glenstone Road

Figure 18 – Looking right along Glenstone Road from Brighton Hub Truck Entry

Sight distance right is 290m.

Figure 19– Looking left along Glenstone Road from Brighton Hub Truck Entry

Sight distance left is 170m.

Figure 20 – Glenstone Road Eastern approach to Brighton Hub Truck entry

Figure 21 – Glenstone Road Eastern approach at Brighton Hub Truck entry

Figure 22 – Glenstone Road Northern approach to Brighton Hub Truck entry

4.8 Cobbs Hill Road, Bridgewater

Cobbs Hill Road is a sealed rural Council Road which functions as a local access road to rural properties. The road does not have Limited Access status and is not part of the Tasmanian 26m Double B Network, see Appendix C.

It is assumed the General Urban Speed Limit of 50km/h applies to Cobbs Hill Road.
The seal width varies from the Main Road junction to very narrow at the ROW access points to 155 Cobbs Hill Road. The road has a rural standard.

4.9 Traffic Activity

Traffic activity from DSG records is summarised as follows, see Appendix E for details.

Midlands Highway

- AADT: 22,900 vpd (2022)
- % CV: 17%
- 3.3% compound annual growth
- Projected AADT: 33,800 vpd (2034).

Glenstone Road (Southern end)

- AADT: 3,390 vpd (2022)
- % CV: 35%
- 0.9% compound annual growth
- Projected AADT: 3,775 vpd (2034) without proposal.

Glenstone Road (Northern end)

- AADT: 1,057 vpd (2022)
- % CV: 29%
- 6.6% compound annual growth
- Projected AADT: 2,275 vpd (2034) without proposal.

Glenstone Road (Proposed Access)

- AADT: 1,880 vpd (2024) (TCS survey data)
- % CV: 34%
- 3.7% compound annual growth
- Projected AADT: 2,700 vpd (2034) without proposal.
- Peak Hour 270vph i.e 135 vph each way (2034)

4.10 Crash History

The Department of State Growth is supplied with reported crashes by Tasmania Police. The Department maintains a crash database from the crash reports which is used to monitor road safety, identify problem areas and develop improvement schemes.

The 5-year reported crash history records 2 property damage only crashes on Glenstone Road in the vicinity of the Crooked Billet Drive junction, see Figures 23 & 24. The crash history provides no evidence of a crash propensity in the vicinity of the proposed junction.

Figure 23 – Glenstone Road - 5 Year Reported Crash History Summary

Crash Id	Units	DESCRIPTION	Date	Time	Severity	Light	Speed Limit	Location
50672649	LV; LV; HV	130 - Veh. in same lane/ rear end	04-JUN-2020	13:09	PDO	Daylight	70	Glenstone Rd.
51529118	LV; HV	110 - Cross traffic	22-JAN-2022	06:40	PDO	Daylight	70	Glenstone Rd. / Crooked Billet Dr Int.

PDO	Property Damage Only.
LV	Light Vehicle.
HV	Heavy Vehicle.

Figure 24 – Glenstone Road - 5 Year Reported Crash History Locations

4.11 Services

Street lighting is provided on Glenstone Road.

4.12 Road Safety Review

4.12.1 Midlands Highway

No road safety issues were identified.

4.12.2 Midlands Highway / Glenstone Road Southern interchange

No road safety issues were identified.

4.12.3 Midlands Highway / Glenstone Road Northern interchange

No road safety issues were identified.

4.12.4 Glenstone Road

No road safety issues were identified.

4.12.5 Glenstone Road / proposed road junction opposite the Brighton Transport Hub Truck Entry

The existing intersection has a Level Crossing on the Brighton Transport Hub Truck access to Glenstone Road. The level crossing is signalised in accordance with the Australian Standard.

No road safety issues were identified with the proposed junction.

4.12.6 Proposed Road

A 1050mm diameter culvert is required at Ashburton Creek at chainage 105 of the proposed road, see Appendix I, has a depth to invert of 2.1m and length of 22.893m long.

In low-speed environments assessment of the situation is required to determine if a barrier fence creates more of a roadside hazard than it would treat.

The following factors have been considered:

- The culvert design shown in Appendix I, has high headwalls, see Appendix I.3.
- The batter slopes to the culvert headwalls have a grade of some 17%.
- The culvert headwalls are at least 5m from the edge of the proposed road.

- Traffic volumes are low and involve a high proportion of commercial vehicles which are unlikely to be involved in leaving the road crashes in a low-speed environment.
- The downhill grade on the proposed road heading South from Glenstone Road is 16.85% over 66m, which is steep.
- There is adequate forward sight distance to the culvert on both approaches.
- Footpaths are proposed both sides of the road, see Figure 35, though pedestrian activity is expected to be minimal.
- Provision of steel barrier fence entails gating redirecting energy absorbing terminals (G.R.E.A.T.) on all barrier fence approaches .
- The proposed road approach to the culvert has a steep approach which may disaffect operation of the G.R.E.A.T. collapse mechanism.

Determination:

- It is considered that due to the topography steel beam barrier fence would act more as road safety hazard than benefit.
- Though the ground slopes away from the footpath at a grade of some 17% s at the culvert, pedestrian activity is expected to be minimal, so a pedestrian handrail is not considered necessary.
- Culvert lengthening by 4.8m i.e 4*1.2m pipe lengths is considered appropriate to:
    - reduce the culvert headwall height required.
    - flatten the batter and better enable pedestrians and vehicles to avoid conflict with the culvert endwalls.

4.13 Austroads Safe System Assessment

Glenstone Road has been assessed in accordance with the Austroads Safe System assessment framework. This framework involves consideration of exposure, likelihood and severity to yield a risk framework score. High risk crash types and vulnerable road user crash types are assessed for each site and aggregated to provide an overall crash risk. Crash risk is considered in terms of three components:

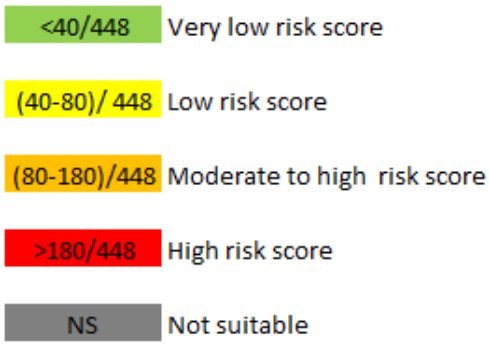
- Exposure (is low where low numbers of through and turning traffic) i.e.1 out of 4
- Likelihood (is low where the infrastructure standard is high) i.e. 1 out of 4
- Severity (is low where the speed environment is low) i.e. 1 out of 4

The Austroads Safe System Assessment process enables the relative crash risk of an intersection or road link to be assessed. Vulnerable Road users are considered along with the most common crash types.

The crash risk score is an indication of how well the infrastructure satisfies the *safe system objective which is for a forgiving road system where crashes do not result in death or serious injury*.

From safe system assessment, Glenstone Road is determined to be well aligned with the safe system objective with crash risk scores of 20 / 448. See Figure 25 and Appendix D for the assessment details.

Figure 25 – Austroads Safe System Assessment alignment between crash score and risk



5. Traffic Generation and Assignment

This section of the report estimates how traffic generated by the proposal is distributed within the adjacent road network now and ten years future.

5.1 Traffic Growth

Assumed background traffic compound annual growth of 3.3% has been assumed based on historic Midlands Highway and Glenstone Road traffic growth rates.

5.2 Trip Generation

The following RTA traffic generation rates for General Industrial operations as follows:

- Factories – 5 vpd / 100m2 GFA and peak operation of 1vph / 100m2 GFA
- Warehouses – 4 vpd / 100m2 GFA and peak operation of 0.5vph / 100m2 GFA

14* General Industrial lots each with 800m2 building GFA are proposed.

Assuming a 50:50 mix of factories and warehouses the proposal is estimated to generate 504 vpd & 84vph at peak times.

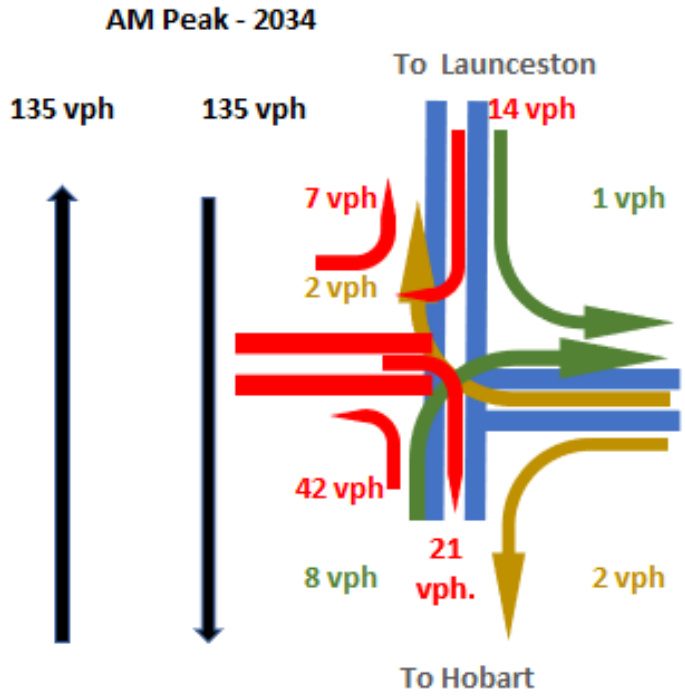
Proposed access to Glenstone Road is opposite the Brighton Hub Truck access.

The balance lot has two existing Right of Way access to Cobbs Hill Road for existing land uses not the subject of this TIA.

5.3 Trip Assignment

Traffic assignments at impacted junctions are summarised in Figure 26.

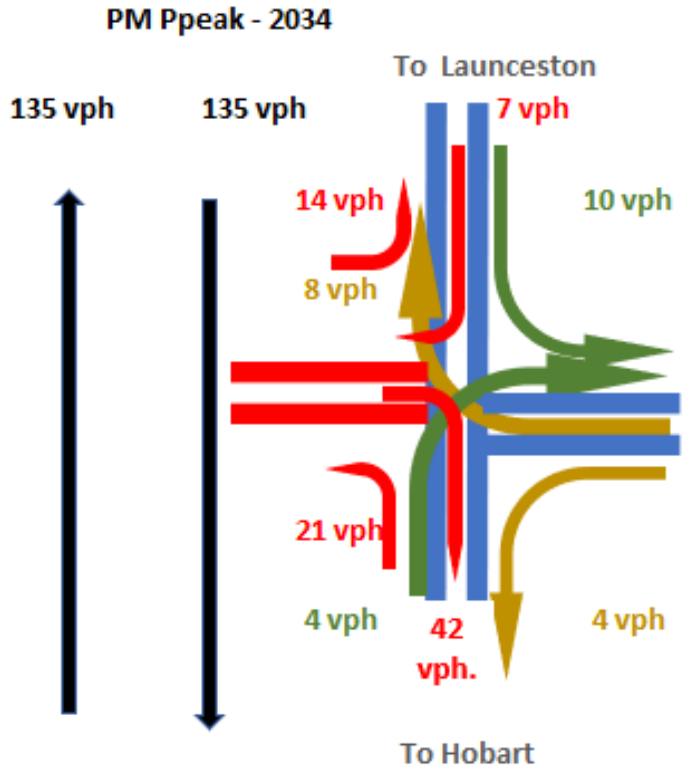
Figure 26 – 2034 Traffic Assignment at Proposed Glenstone Rd / Brighton Hub Int.



Figures in red are due to the proposal.

Brighton Hub Truck Access

Turns Movements 2034 (vph)	Tasman	
	AM	PM
Right to	14	7
Combined thru	312	291
Left to	42	21
Following thru	135	135



Brighton Hub Truck Access

6. Impact on Road Network

6.1 Sight Distance Criteria

The proposed accesses satisfy sight distance guideline, see Figure 27.

Figure 27 – Sight distance summary

Junction / Access	Speed		Road Frontage Sight Distance			
Major Rd - Minor Rd	Limit	Environment	Austroads	Available		AS/NZS 2890.1
	(km/h)	(km/h)	SISD (m)	Left(m)	Right(m)	SSD (m)
Glenstone / Proposed	70	70	151	320	170	
Proposed Lot accesses						
1	50	50	97	>45	>45	45
2	50	50	97	>45	>45	45
3	50	50	97	>45	>45	45
4	50	50	97	>45	>45	45
5	50	50	97	>45	>45	45
6	50	50	97	45	45	45
7	50	50	97	45	45	45
8	50	50	97	45	45	45
9	50	50	97	>45	>45	45
10	50	50	97	>45	>45	45
11	50	50	97	45	45	45
12	50	50	97	>45	>45	45
13	50	50	97	>45	>45	45
14	50	50	97	>45	>45	45

Austroads Junction Compliant

AS/ NZS 2890.1 Property Access Compliant

6.2 Junction warrants

Junction layout requirements are based on Austroads Guidelines which take into account the standard of the road, speed limit, through & side road traffic i.e. Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings – 2020.

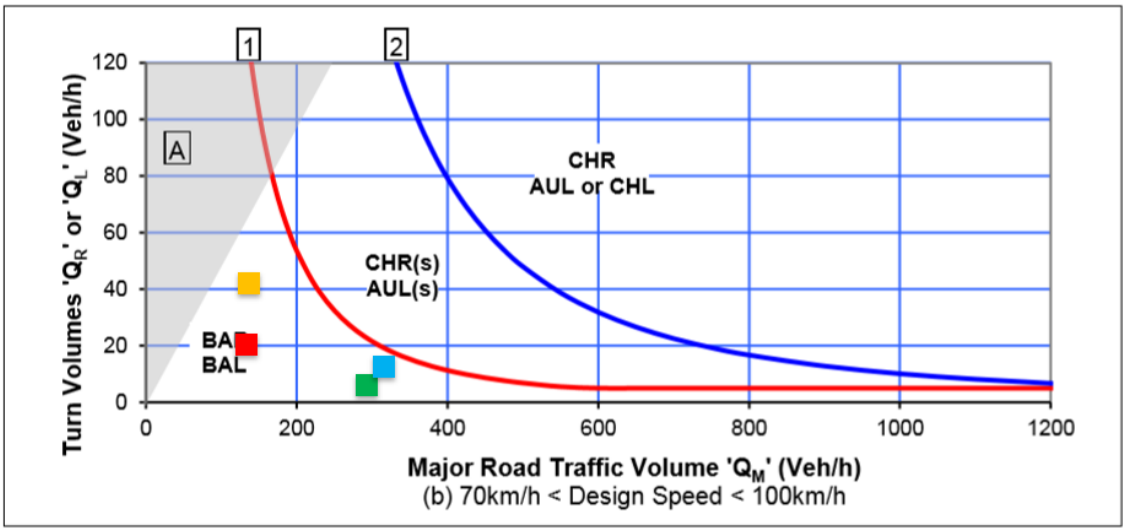
6.2.1 Glenstone Road / Proposed Road Junction

Figure 28 shows the relevant Austroads junction layout warrant for the Glenstone Road / Proposed Road junction. Figure 28 demonstrates that the turning movements warrant:

- Basic Right (BAR) right turn facility from Glenstone Rd to the Proposed Rd
- Basic Left (BAL) left turn facility from Glenstone Rd to the Proposed Rd.

The proposed junction layout satisfies the DSG BAL layout, see Appendix F. A median right turn lane can be retrofitted to satisfy the need for a BAR equivalent right turn facility.

Figure 28 – Austroads Warrant for Glenstone Rd / Proposed Road junction 2034.



Source: Austroads GTM Part 6-2020

Turns Movements 2034 (vph)	Tasman	
	AM	PM
Right to	14	7
Combined thru	312	291
Left to	42	21
Following thru	135	135

Figure 29 shows the footprint for a suitable right turn facility and BAL junction layout. Also see Figures 30 - 33 showing available width for road widening. The proposed road should be positioned as far north of the existing Brighton Hub Truck access as possible, subject to infrastructure constraints i.e power line infrastructure, to avoid conflict between vehicles turning right from Glenstone Road.

Figure 29 – Proposed BAR &BAL for Glenstone Rd / Proposed Road junction.

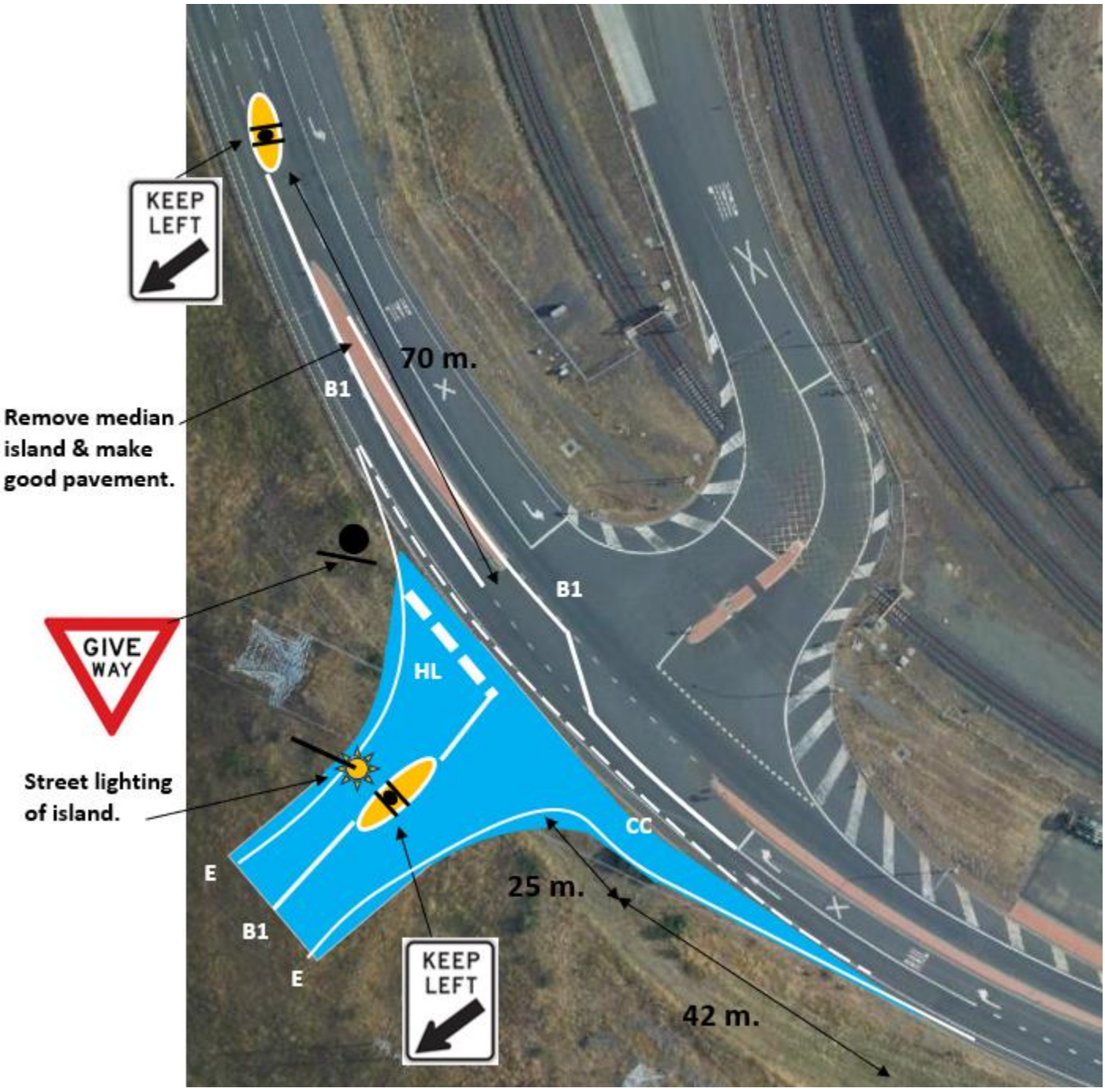


Figure 30 – Available roadside width Glenstone Rd / Proposed Rd junction

A BAL left turn facility can be retrofitted by excavation of the adjacent ground to establish the width required for a 4m wide left turn lane from face of kerb. Rock excavation will be required , see ground conditions in Figures 30 &31.

Figure 31 – Available roadside width Glenstone Rd / Proposed Rd junction

Figure 32 – Available road median width Glenstone Rd / Proposed Rd junction

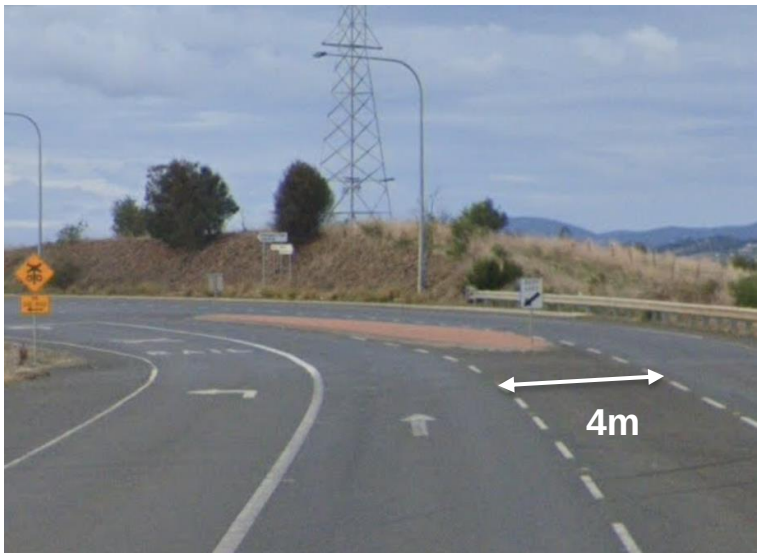


Figure 33 – Available road median width Glenstone Rd / Proposed Rd junction

The existing median area can be harnessed for use as a right turn facility as adequate width and length is available, see Figures 32 & 33.

6.3 Impact of traffic generated by the proposal.

6.3.1 Midlands Highway

The proposal is estimated to have a negligible impact on Midland Hwy / Glenstone Road interchanges as the existing ramps and roundabouts operate at low traffic volumes and the Midlands Highway has ample capacity to absorb the estimated increase in Glenstone Road traffic of:

- 333 vpd i.e 33 vph at the Southern interchange.
- 171 vpd i.e 17 vph at the Northern interchange.

The Midlands Highway projected AADT of 35,000 vpd by 2034 with peak hour flow of 3,500 vph across 4 lanes of traffic i.e typical peak lane flows of 850 vph. Lane capacity on rural roads is some 2,000 vph.

The existing interchanges and roundabouts are estimated to operate between Level of Service A & B by 2034. Appendix B describes Austroads Levels of Service definitions.

6.3.2 Glenstone Road / Proposed Road junction

The proposed junction is estimated to have a negligible impact on Glenstone Road and the junction with the Brighton Hub Truck Access. The existing and forecast traffic volumes are low and Glenstone Road has ample capacity to absorb the estimated increase in Glenstone Road traffic of:

- 504 vpd i.e 84 vph at peak times.

Glenstone Rd projected AADT is 2,700 vpd by 2034 with peak hour flow of 270 vph across 2 lanes of traffic i.e lane flows of 135 vph. Lane capacity on rural roads is some 2,000 vph.

The proposed junction is estimated to operate at Level of Service A by 2034.

6.4 Tasmanian Subdivision Guideline Considerations

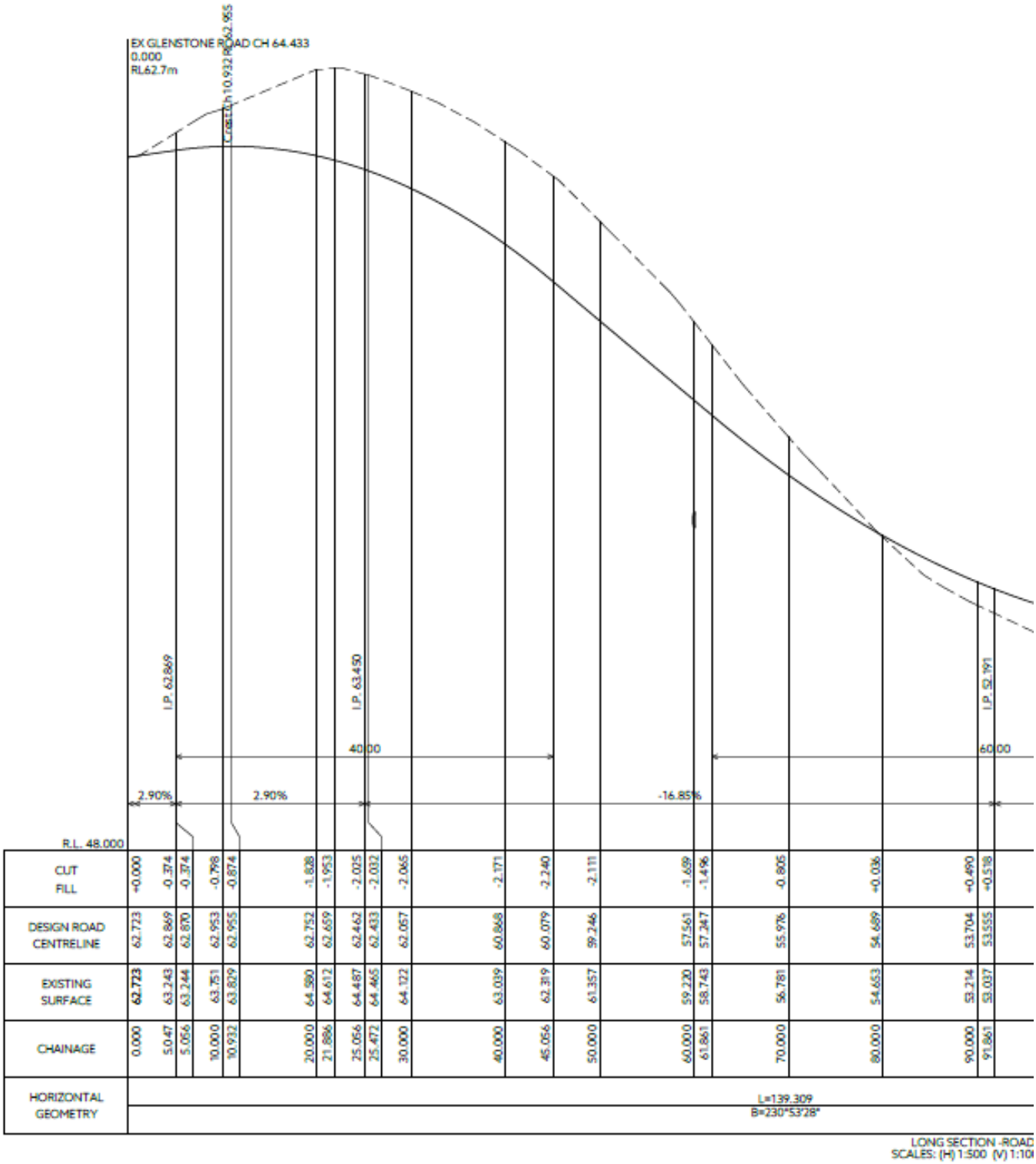
The proposed road has a 66m section with a grade of 16.85%., see Figure 34.

Tasmanian Subdivision Guidelines for allowable longitudinal grades are attached in Appendix H.

Council may permit grades of up to 20% over distances of 70m.

The proposed grades are within the guidelines that Council may permit.

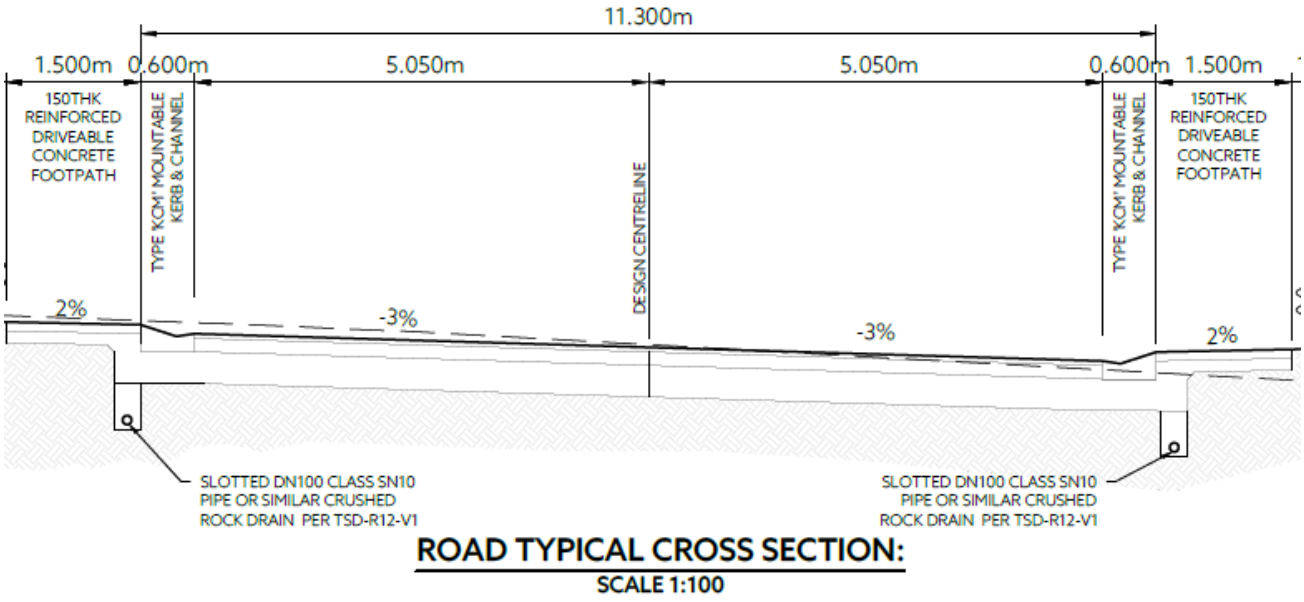
Figure 34 – Proposed subdivision road standard.



6.5 Transport Planning Considerations

The proposed road standard is shown in Figure 35 satisfies the LGAT road width standard for a sealed urban Collector Road i.e 11m road width with footpath both sides.

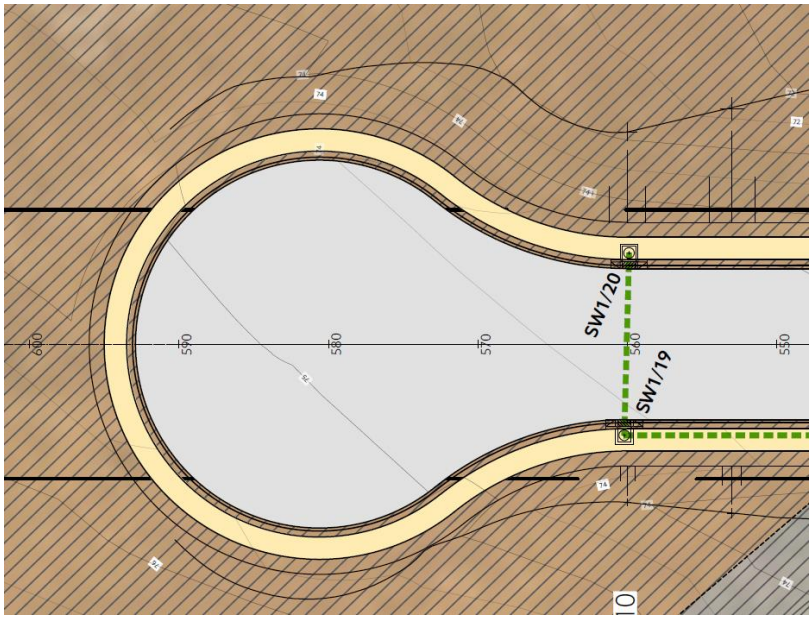
Figure 35 – Proposed subdivision road standard.



6.6 Proposed internal traffic management.

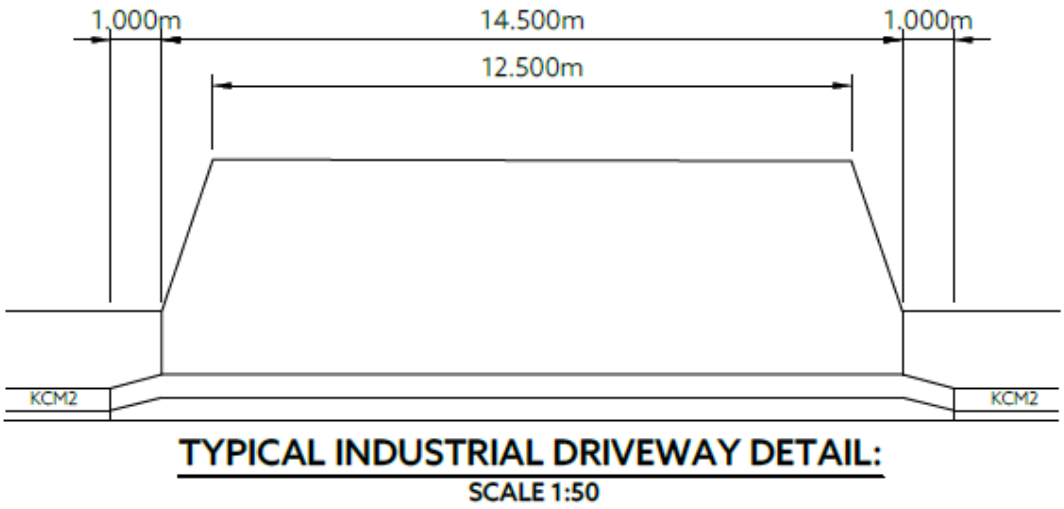
The proposed sealed road width is 11.3m and the road terminates with a 25m diameter Cul-De-Sac, see Figure 36. LGAT standard drawing TSD-R08 specifies an 18m minimum sealed diameter for urban & rural Cul -De-Sacs.

Figure 36 – Proposed subdivision road Cul-De-Sac.



The proposed driveways satisfy LGAT standard drawing TSD-R09 for urban road driveways, see Figure 37. If the cul-de-sac is to be use by triaxle semi-trailers of 26m B Doubles a 30m diameter is required.

Figure 37 – Proposed driveway.



LGAT standard drawings are available online at:
https://www.lgat.tas.gov.au/__data/assets/pdf_file/0027/813735/Tasmanian-Municipal-Standards-Drawings-v3-December-20202.pdf

6.7 Impacts on road users.

6.7.1 Public Transport

No impact.

6.7.2 Delivery Vehicles

No impact. All proposed accesses have sufficient width for Fire fighting vehicles.

6.7.3 Pedestrians and Cyclists

No impact.

6.7.4 Motorcyclists

Minimal impact.

6.8 Other impacts

6.8.1 Environmental

No applicable environmental impacts were identified in relation to:

- Noise, vibration or visual impact
- Community severance, pedestrian amenity
- Hazardous loads, air pollution or ecological impacts
- Heritage and Conservation

6.8.2 Street Lighting and Furniture

Street lighting is required on the proposed road and at the proposed junction.

6.9 Liveability, Safety and Amenity Guidelines

Guidelines for the safety and amenity of a residential areas include:

- Residential precincts need to be bounded by traffic routes and/or natural barriers to minimise conflict.
- Direct vehicular and pedestrian access should be avoided from single dwelling units onto road with over 2,000 vehicles per day.
- Effective street lengths should be less than 200-250m in order to achieve typical vehicle speeds of 40km/h.
- Cyclist and pedestrian demands should be catered for separately using path or cycle networks.

To maximise the liveability, safety and amenity of the local area, road and street network layout should be such that:

- A minimum of 60% of lots should abut residential streets with less than 300vpd passing traffic.
- A minimum of 80% of lots should abut residential streets with less than 600 vpd passing traffic.
- A maximum of 5% of single dwelling lots should abut residential streets with between 1,000-2,000 vpd passing traffic.
- A maximum of 1% of single dwelling lots should abut local streets or collectors with less than 3,000 vpd passing traffic, and
- No single dwelling lot should abut a route with > 3,000 vpd passing traffic.

These guidelines are from *TE&M Chapter 2.2: Design of New Urban Networks*.

The proposal does not involve residential areas so there will be no impact on liveability, safety and amenity targets described above.

6.10 Tasmanian Planning Scheme – Brighton

Road and Railway Assets Code C3

C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction.

Acceptable Solution A1.1 – **Not applicable** as the relevant roads are not Category 1.

Acceptable Solution A1.2 *– For a road, excluding a Category 1 road or a limited access road, written consent for a new junction, vehicle crossing, or level crossing to serve the use and development has been issued by the road authority.*

Written consent from the road owner (DSG) has not been issued. This TIA has been prepared to assist DSG with assessing the proposal. **A1.2 is currently not satisfied.**

Acceptable Solution A1.3 **– Not applicable** as no rail network is involved.

Acceptable solution A1.4: *Vehicular traffic to and from the site, using an existing vehicle crossing or private level crossing will not increase by more than:*

(a) The amounts in Table C3.1

(b) Allowed by a licence issued under Part IVA of the Roads and Jetties Act 1935 in respect to a limited access road; and

The proposal involves traffic from 14 General Industrial lots estimated at 504 vpd.

Table C3.1 allows up to 10 vpd increase for vehicles up to 5.5m in length on major roads. Glenstone Road is a major road. **A1.4 is not Satisfied**.

Performance Criteria P1: *Vehicular traffic to and from the site must minimise any adverse effects on the safety of a junction, vehicle crossing or level crossing or safety or efficiency of the road or rail network, having regard to:*

(a) any increase in traffic caused by the use.

(b) the nature of the traffic generated by the use.

(c) the nature of the road.

(d) the speed limit and traffic flow of the road.

(e) any alternative access to a road.

(f) the need for the use.

(g) any traffic impact assessment; and

(h) any advice received from the rail or road authority.

(a) The increase in traffic due to the proposal is estimated at 504 vpd.

A suitable right turn facility & BAL junction layout is proposed at the Glenstone Road / proposed road junction opposite the Brighton Hub Truck access.

The junction standard is consistent with Austroads & DSG guidelines for projected traffic in 2034.

(b) The nature of the traffic generated by the use will be 36% commercial vehicles.

(c) Glenstone Road and the proposed road are of suitable standard to cope with projected traffic activity in 2034, see Section 6. The proposed road satisfies the LGAT standard for an urban road.

(d) Glenstone Road has a speed limit of 70km/h considered suitable for the situation.

(e) No suitable alternative accesses are available.

(f) The use is consistent with the Land Use zoning for the area.

(g) This TIA finds no reason to disallow the proposal due to traffic impacts.

(h) No specific advice on traffic management has been received from DSG. DSG have provided general guidance that the proposed access site is feasible.

In summary there are no traffic safety or capacity issues due to the proposal. **P1 is satisfied.**

Acceptable solution A1.5: Vehicular traffic must be able to enter and leave a major road in a forward direction. **A1.5 is satisfied.**

C3.6.1 Habitable buildings for sensitive uses within a road or railway attenuation area

Not applicable as habitable buildings (sensitive uses) are not proposed as part of the General Industrial subdivision.

C3.7.1 Subdivision for sensitive uses within a road or railway attenuation area

Not applicable as habitable buildings (sensitive uses) are not proposed within a road or railway attenuation area.

6.11 Department of State Growth requirements

DSG review of TIA

These reviews are required to:

- consider proposals and whether the TIA prepared satisfies DSG requirements.
- resolve any issues so the TIA can be finalised.
- enable the TIA endorsement provided by DSG to be communicated to Council as part of the Development application process.

These reviews are usually arranged by the TIA author. The email address for submissions is: Development@stategrowth.tas.gov.au

Crown landowner consent

This is to provide DSG to opportunity to check alignment of proposals with DSG objectives for the road. If the proposal aligns with DSG objectives Crown Land Consent is issued by DSG. Crown Landowner Consent is required where there is a proposed change in use of property adjacent to a state road. The website for Crown Landowner Consent is: https://www.transport.tas.gov.au/road/permits/crown_landownerconsent\

Access works permits

Developers must obtain an access works permit from DSG for proposed work within a state road reservation. Applications need to include:

- suitably design plans detailing the proposal and services affected.
- relevant design calculations for stormwater management and pavement design
- a traffic impact assessment

The website for access works permit applications is: https://www.transport.tas.gov.au/road/permits/road-access

Summary of DGS requirements

DSG is to be supplied a copy of this TIA for advice on acceptability to be attached to Appendix G.

The developer will need to apply for Crown Landowner consent.

The developer will need to apply for an Access works permit to undertake the required works in the State Road reservation i.e BAR and BAL junction construction in accordance with the concept shown in Figure 29.


TRAFFIC & CIVIL SERVICES

7. Recommendations and Conclusions

This traffic impact assessment has been prepared to assess the proposed 14 lot General Industrial subdivision of 155 Cobbs Hill Rd, Bridgewater. It is estimated the proposal will generate up to 504 vpd once fully developed.

The assessment has reviewed traffic activity at the site, existing road conditions, road safety, crash history, Austroads junction warrants and Tasmanian Planning Scheme – Brighton - Road & Railway Assets Code C3 requirements.

Glenstone Road is projected to have traffic activity of 2,700 vpd by 2034 within a 70km/h speed limit. The proposed junction site has no recorded crashes over the last 5 years and from traffic safety review and Safe System Assessment, is considered a low crash risk.

The proposal will increase traffic activity on Glenstone Road from estimated ,2,700 vpd (2034) by 504vpd to 3,204vpd which is a low traffic activity level. The proposed Glenstone Road / Proposed Road junction will require a right turn facility and BAL layout to support the safe and efficient operation of the junction.

Evidence is provided to demonstrate the proposal can satisfy the Tasmanian Planning Scheme - Brighton - Code C3.

Recommendations:

Obtain DSG approvals.

- *Crown Landowner Consent from DSG if required.*
- *Access Works Permit from DSG for BAR & BAL junction construction.*

Glenstone Road / Proposed Road junction

- *Construct the junction with a right turn facility and BAL layout to suit an 80km/h design speed consistent with Figure 29 layout which includes:*
  - *Give Way sign R1-2(B) at the proposed approach to Glenstone Road.*
  - *Islands with Keep Left R2-3L(B)signs on Glenstone and Proposed roads.*
  - *Line marking.*
  - *Street lighting of the proposed island on the approach to Glenstone Road.*

Proposed Road

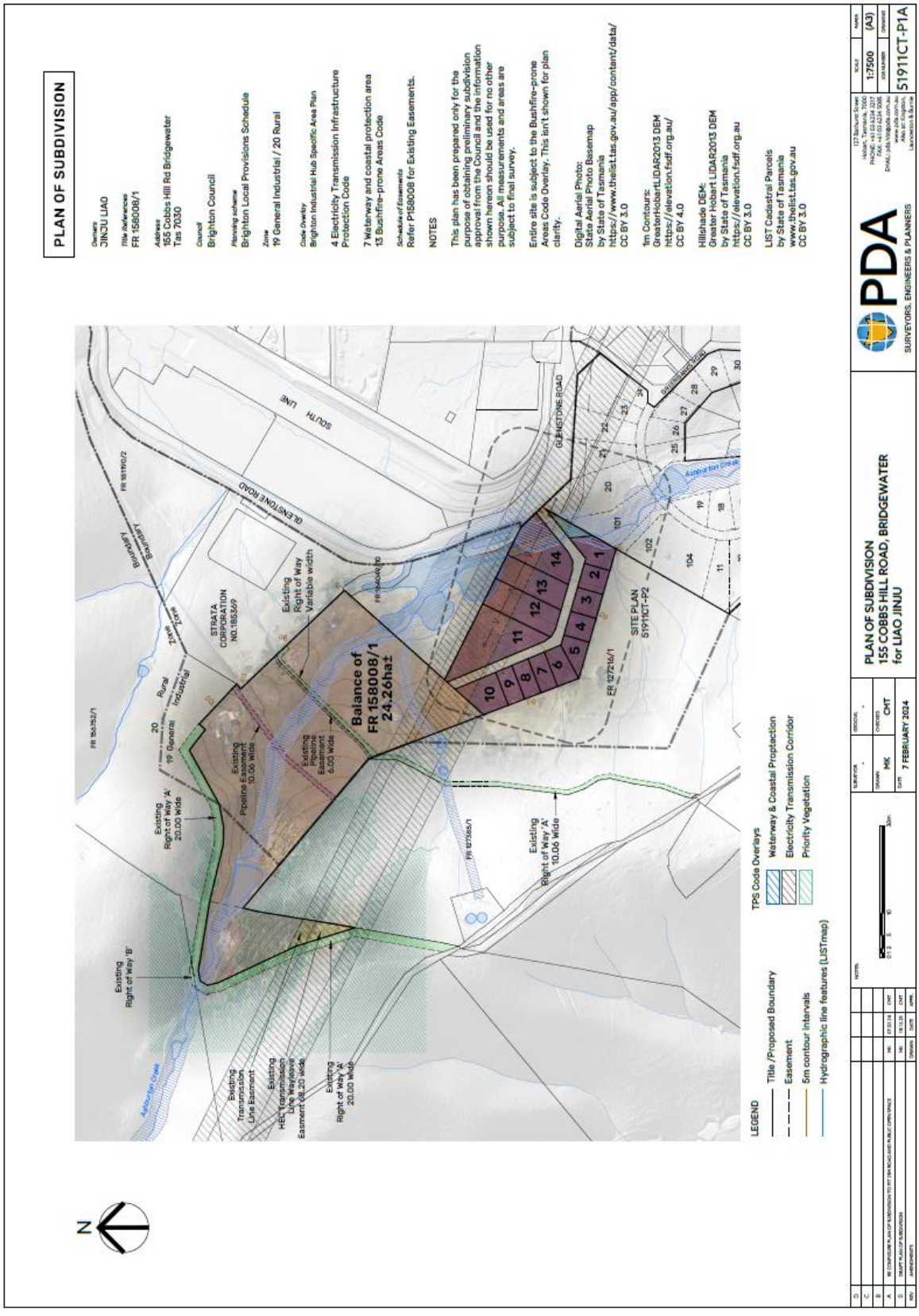
- *Provide street lighting in accordance with Brighton Council policy for General Industrial subdivisions.*
- *Lengthen the Ashburton Creek culvert by 4.8m i.e with 4*1.2m pipe lengths, see discussion in Section 4.12.6, rather than install steel beam guardrail.*
- *For triaxle semi-trailer/26m B Double access provide a 30m dia. cul-de-sac.*

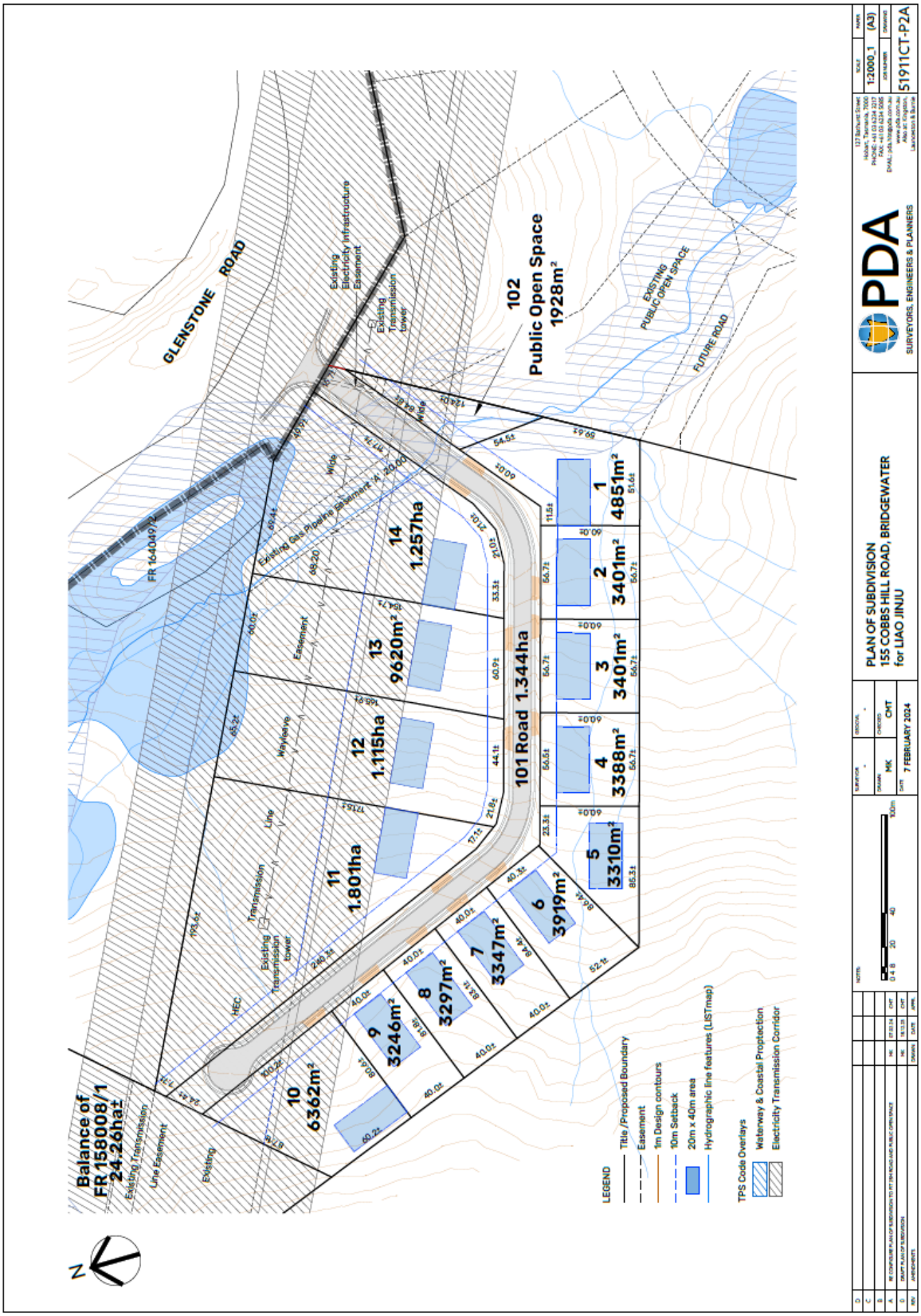
DSG confirmation of acceptability of this TIA is to be attached in Appendix G.

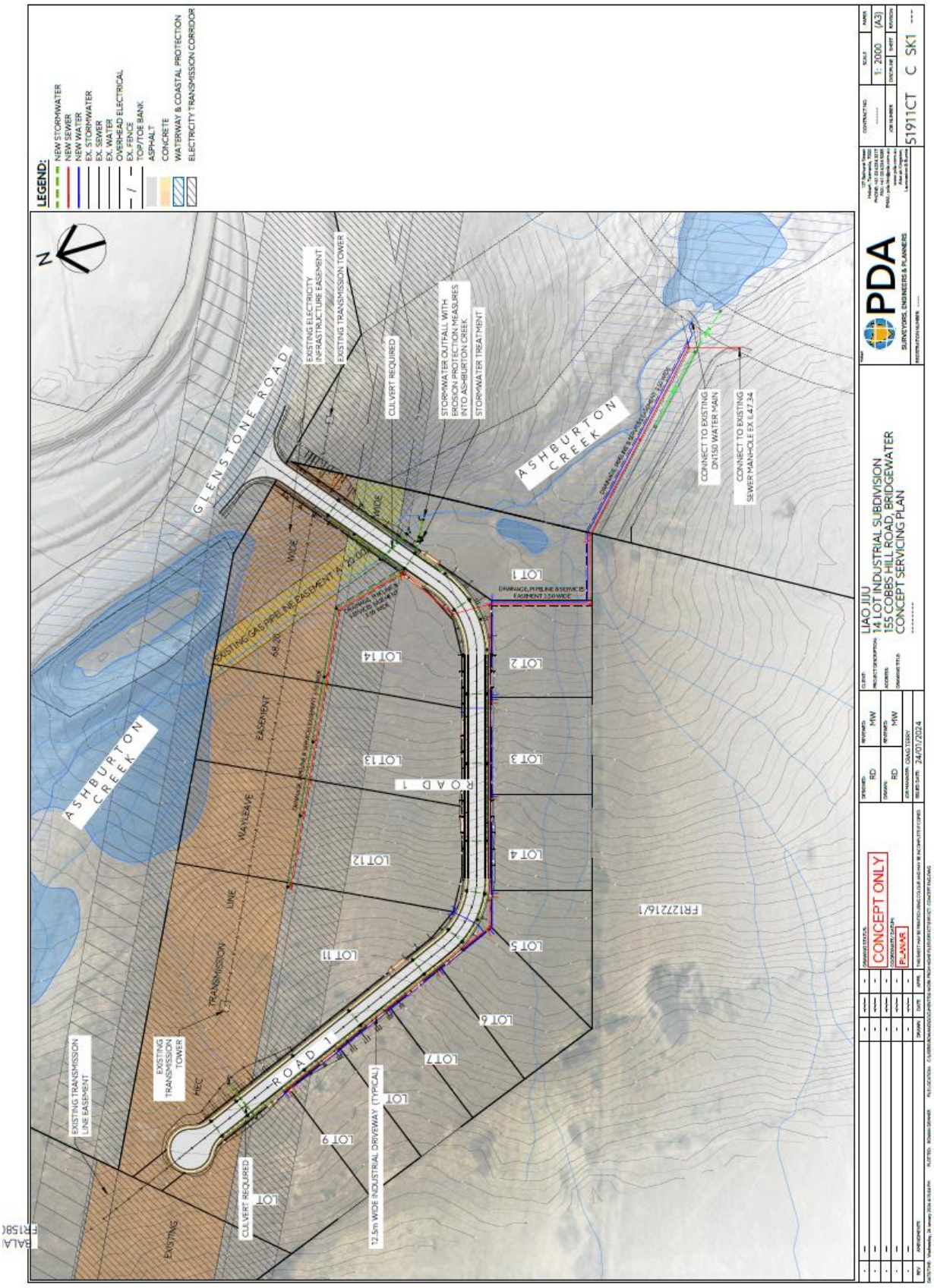
Overall, it has been concluded that the existing roads and proposed development should operate safely and efficiently provided the above recommendations are implemented. Based on the findings of this report the proposal is supported on traffic grounds.

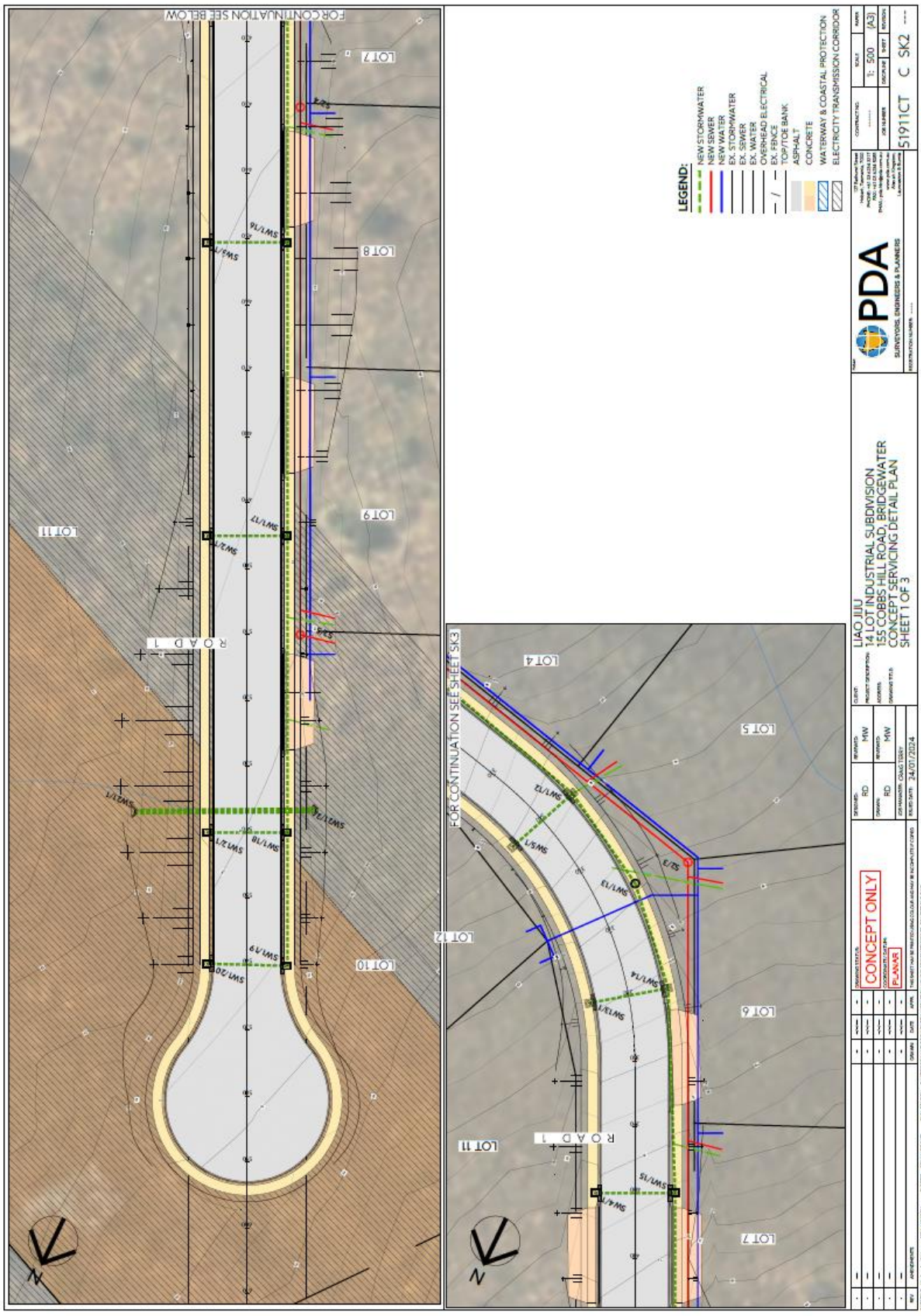
Appendices

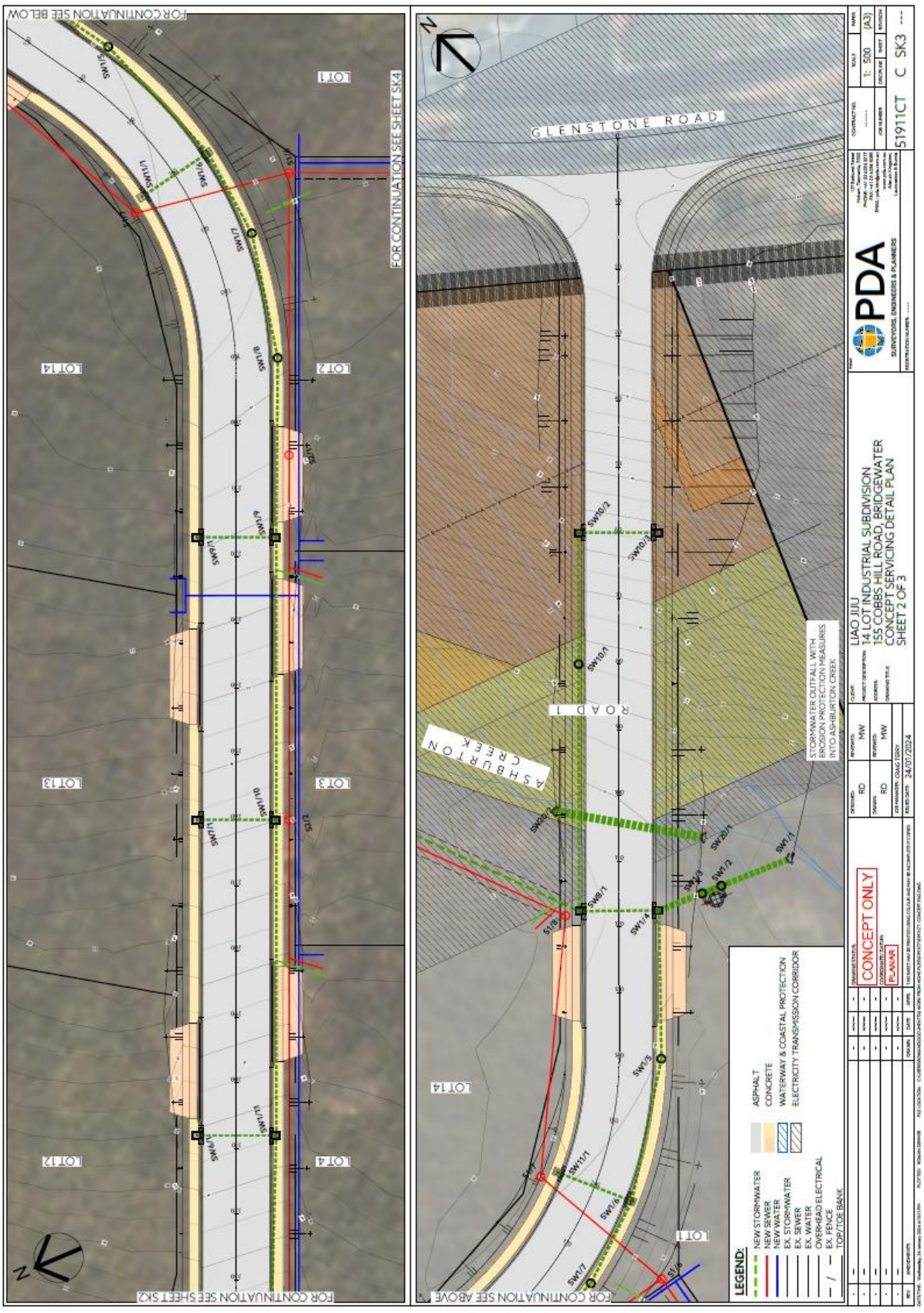
Appendix A – Proposed Plan of Subdivision

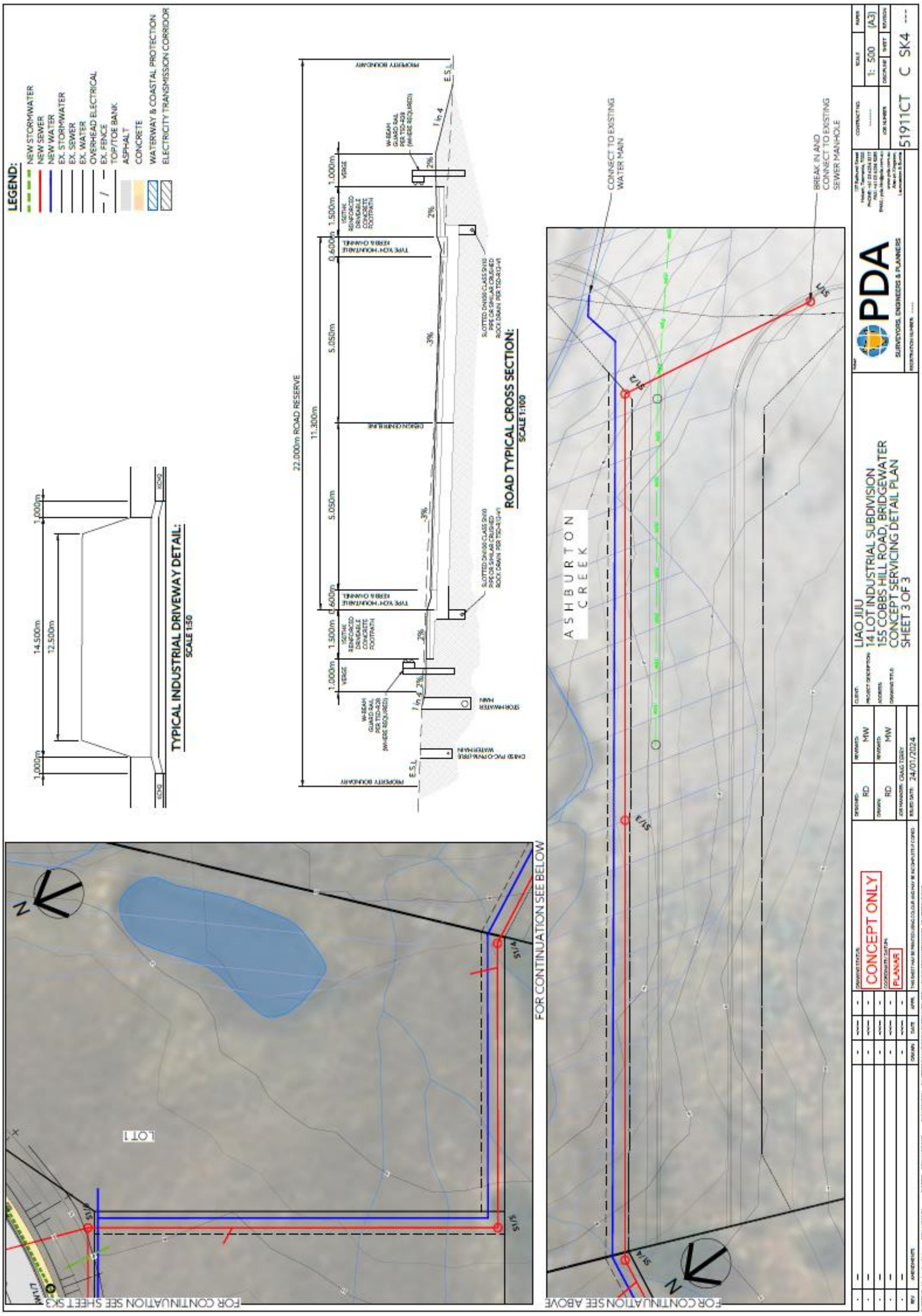



GLENSTONE ROAD
102
Public Open Space
1928m²
EXISTING PUBLIC OPEN SPACE
FUTURE ROAD
Existing Electricity Infrastructure Easement
Existing Transmission tower
Existing Gas Pipeline Easement
FR 164049/2
Balance of FR 158008/1 24.26ha±
Existing Transmission Line Easement
Existing
HEC
Transmission Line
Existing Transmission tower
Wayleave
Easement
10 6362m²
9 3246m²
8 3297m²
7 3347m²
6 3919m²
5 3310m²
4 3388m²
3 3401m²
2 3401m²
1 4851m²
11 1.801ha
12 1.115ha
13 9620m²
14 1.257ha
101 Road 1.344ha
LEGEND
Title /Proposed Boundary
Easement
1m Design contours
10m Setback
20m x 40m area
Hydrographic line features (LISTmap)
TPS Code Overlays
Waterway & Coastal Proptection
Electricity Transmission Corridor
PDA
SURVEYORS, ENGINEERS & PLANNERS
PLAN OF SUBDIVISION
155 COBBS HILL ROAD, BRIDGEWATER
for LIAO JINJU
7 FEBRUARY 2024
1:2000_1 (A3)
51911CT-P2A

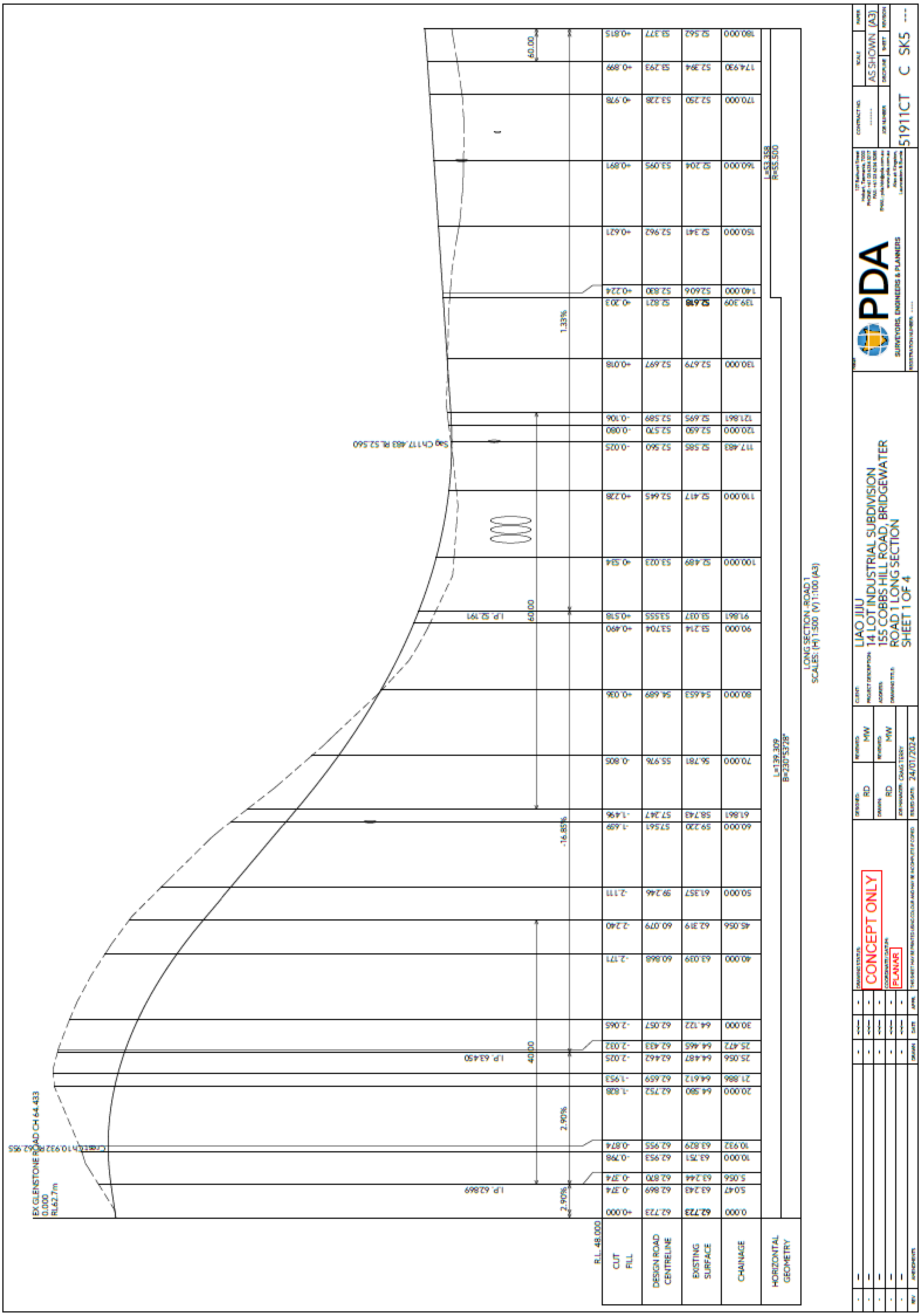

LEGEND:
NEW STORMWATER
NEW SEWER
NEW WATER
EX. STORMWATER
EX. SEWER
EX. WATER
OVERHEAD ELECTRICAL
EX. FENCE
TOP/TOE BANK
ASPHALT
CONCRETE
WATERWAY & COASTAL PROTECTION
ELECTRICITY TRANSMISSION CORRIDOR
GLENSTONE ROAD
EXISTING ELECTRICITY INFRASTRUCTURE EASEMENT
EXISTING TRANSMISSION TOWER
CULVERT REQUIRED
STORMWATER OUTFALL WITH EROSION PROTECTION MEASURES INTO ASHBURTON CREEK
STORMWATER TREATMENT
ASHBURTON CREEK
CONNECT TO EXISTING DN150 WATER MAIN
CONNECT TO EXISTING SEWER MANHOLE EX IL 47.34
EXISTING GAS PIPELINE EASEMENT
WAYLEAVE EASEMENT
TRANSMISSION LINE
EXISTING TRANSMISSION LINE EASEMENT
EXISTING TRANSMISSION TOWER
ROAD 1
12.5m WIDE INDUSTRIAL DRIVEWAY (TYPICAL)
CULVERT REQUIRED
EXISTING
LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
LOT 6
LOT 7
LOT 9
LOT 11
LOT 12
LOT 13
LOT 14
FR122719/1
CONCEPT ONLY
PLANAS
PDA
SURVEYORS, ENGINEERS & PLANNERS
LIAO JIJU
14 LOT INDUSTRIAL SUBDIVISION
155 COBBS HILL ROAD, BRIDGEWATER
CONCEPT SERVICING PLAN
1: 2000 (A3)
51911CT C SK1

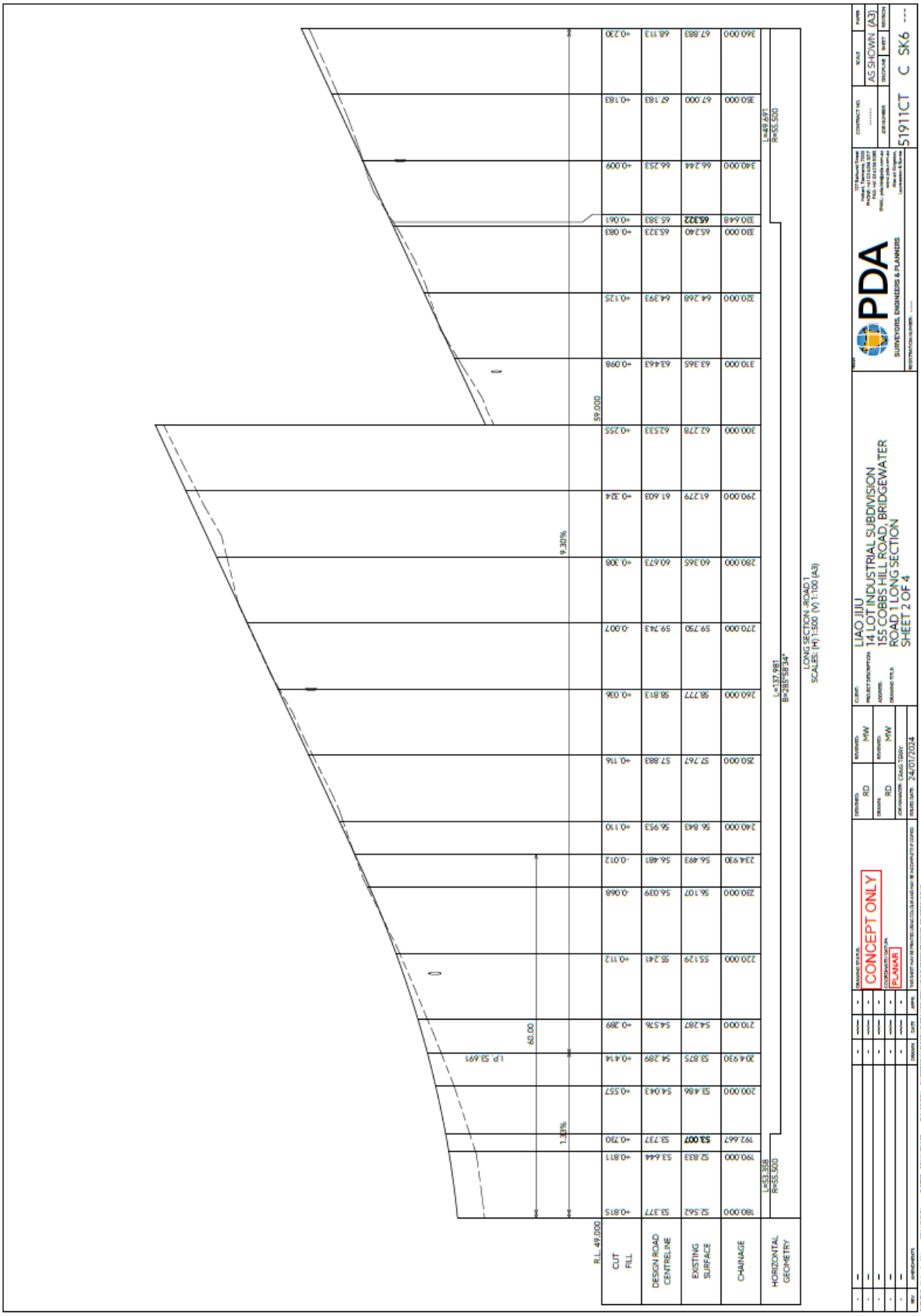

LEGEND:
NEW STORMWATER
NEW SEWER
NEW WATER
EX. STORMWATER
EX. SEWER
EX. WATER
OVERHEAD ELECTRICAL
EX. FENCE
TOP/TOE BANK
ASPHALT
CONCRETE
WATERWAY & COASTAL PROTECTION
ELECTRICITY TRANSMISSION CORRIDOR
FOR CONTINUATION SEE BELOW
FOR CONTINUATION SEE SHEET SK3
ROAD 1
LOT 7
LOT 8
LOT 9
LOT 10
LOT 11
LOT 12
LOT 4
LOT 5
LOT 6
LOT 7
LOT 11
CONCEPT ONLY
PLANNING
LIAO JIJU
14 LOT INDUSTRIAL SUBDIVISION
155 COBBS HILL ROAD, BRIDGEWATER
CONCEPT SERVICING DETAIL PLAN
SHEET 1 OF 3
PDA
SURVEYORS, ENGINEERS & PLANNERS
51911CT C SK2
1: 500 (A3)

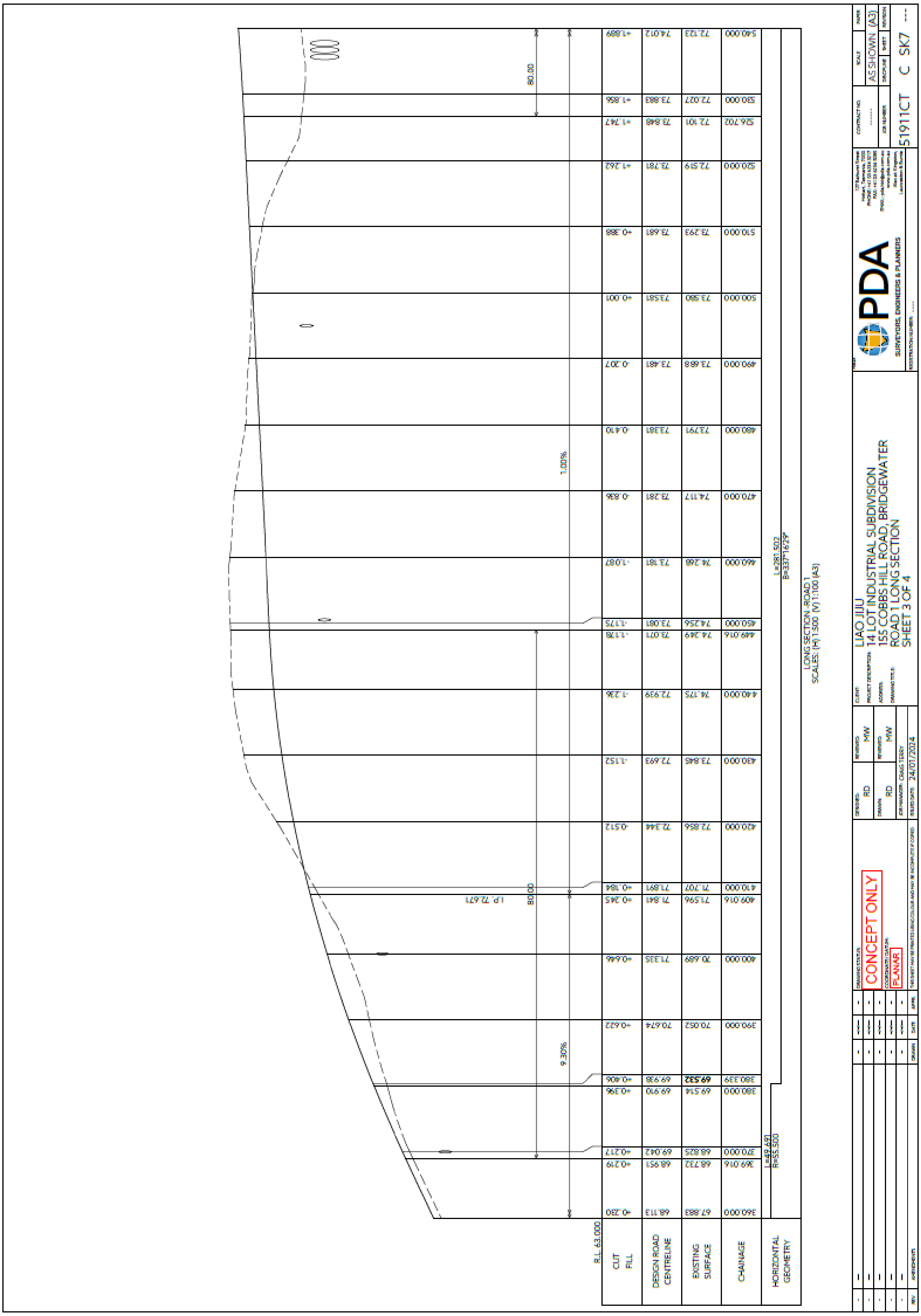

GLENSTONE ROAD
ROAD 1
ASHBURTON CREEK
FOR CONTINUATION SEE SHEET SK4
FOR CONTINUATION SEE SHEET SK2
FOR CONTINUATION SEE ABOVE
LOT 1
LOT 2
LOT 3
LOT 4
LOT 13
LOT 14
LOT 17
STORMWATER OUTFALL WITH EROSION PROTECTION MEASURES INTO ASHBURTON CREEK
LEGEND:
NEW STORMWATER
NEW SEWER
NEW WATER
EX. STORMWATER
EX. SEWER
EX. WATER
OVERHEAD ELECTRICAL
EX. FENCE
TOP/TOE BANK
ASPHALT
CONCRETE
WATERWAY & COASTAL PROTECTION
ELECTRICITY TRANSMISSION CORRIDOR
CONCEPT ONLY
PLANS
PDA
SURVEYORS, ENGINEERS & PLANNERS
LIAO JIJU
14 LOT INDUSTRIAL SUBDIVISION
155 COBBS HILL ROAD, BRIDGEWATER
CONCEPT SERVICING DETAIL PLAN
SHEET 2 OF 3
51911CT C SK3
1: 500 (A3)
24/01/2024

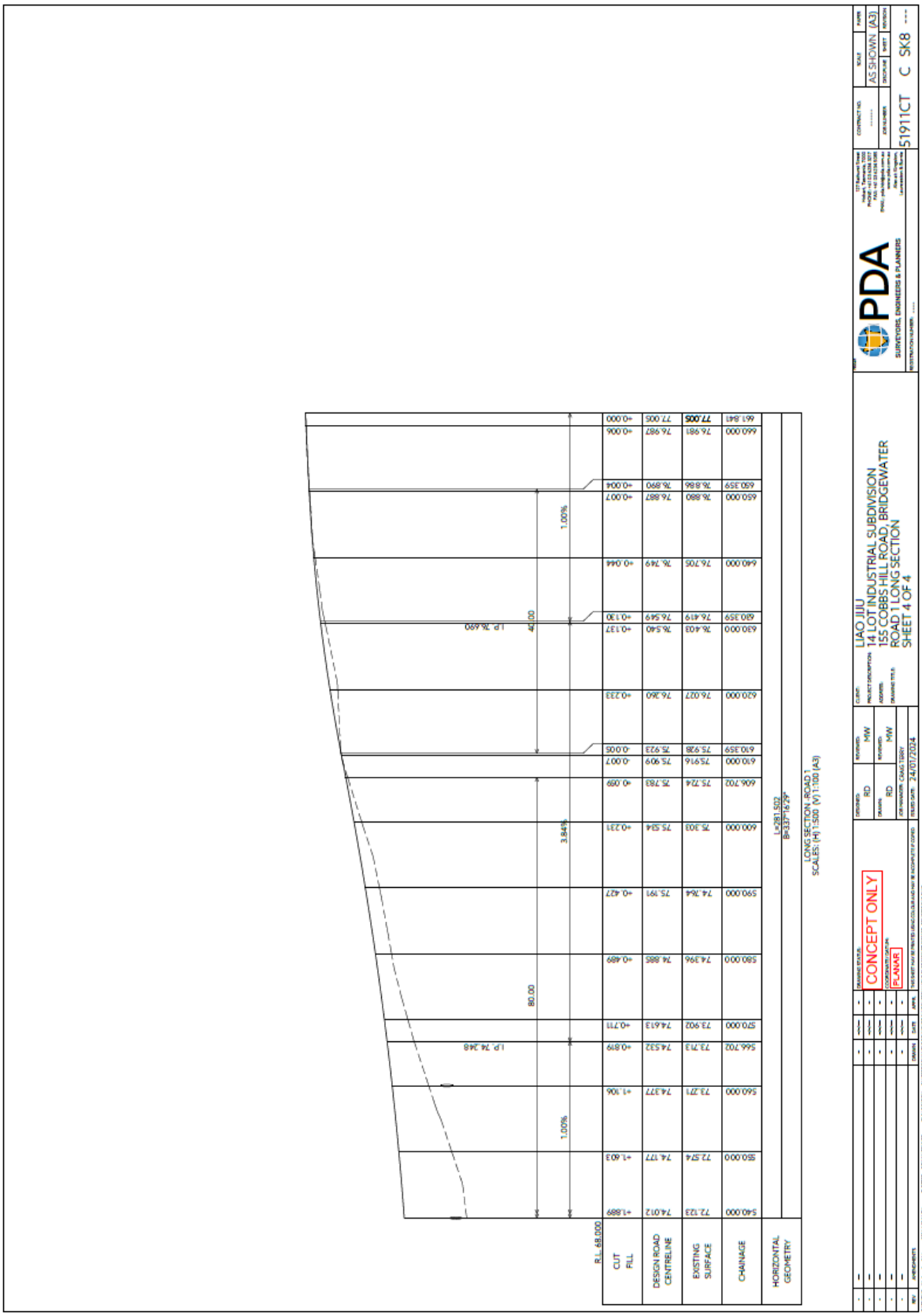


LEGEND:
NEW STORMWATER
NEW SEWER
NEW WATER
EX. STORMWATER
EX. SEWER
EX. WATER
OVERHEAD ELECTRICAL
EX. FENCE
TOP/TOE BANK
ASPHALT
CONCRETE
WATERWAY & COASTAL PROTECTION
ELECTRICITY TRANSMISSION CORRIDOR
TYPICAL INDUSTRIAL DRIVEWAY DETAIL
SCALE 1:50
ROAD TYPICAL CROSS SECTION
SCALE 1:100
22.000m ROAD RESERVE
CONNECT TO EXISTING WATER MAIN
BREAK IN AND CONNECT TO EXISTING SEWER MANHOLE
ASHBURTON CREEK
FOR CONTINUATION SEE BELOW
FOR CONTINUATION SEE ABOVE
LOT 1
CONCEPT ONLY
PDA
SURVEYORS, ENGINEERS & PLANNERS
LIAO JIU
14 LOT INDUSTRIAL SUBDIVISION
155 COBBS HILL ROAD, BRIDGEWATER
CONCEPT SERVICING DETAIL PLAN
SHEET 3 OF 3
51911CT C SK4
1: 500 (A3)
24/01/2024


LONG SECTION -ROAD 1
SCALES: (H) 1:500 (V) 1:100 (A3)
HORIZONTAL GEOMETRY
CHAINAGE
EXISTING SURFACE
DESIGN ROAD CENTRELINE
CUT FILL
LIAO JIJU
14 LOT INDUSTRIAL SUBDIVISION
155 COBBS HILL ROAD, BRIDGEWATER
ROAD 1 LONG SECTION
SHEET 1 OF 4
CONCEPT ONLY
PLANAR
PDA
SURVEYORS, ENGINEERS & PLANNERS
AS SHOWN (A3)
51911CT
C
SK5
24/07/2024


LIAO JIU
14 LOT INDUSTRIAL SUBDIVISION
155 COBBS HILL ROAD, BRIDGEWATER
ROAD 1 LONG SECTION
SHEET 2 OF 4
LONG SECTION :ROAD 1
SCALES: (H) 1:500 (V) 1:100 (A3)
PDA
SURVEYORS, ENGINEERS & PLANNERS
CONCEPT ONLY
PLANAR
51911CT C SK6
AS SHOWN (A3)
24/07/2024
CHAINAGE
EXISTING SURFACE
DESIGN ROAD CENTRELINE
CUT
FILL
HORIZONTAL GEOMETRY
R.L. 49.000
9.30%
1.33%
60.00
59.000
L=137.981
R=285°58'34"
L453.358
R=55.500
L449.691
R=55.500


R.L. 63.000
CUT
FILL
DESIGN ROAD CENTRELINE
EXISTING SURFACE
CHAINAGE
HORIZONTAL GEOMETRY
9.30%
1.00%
LONG SECTION - ROAD 1
SCALES: (H) 1:500 (V) 1:100 (A3)
CONCEPT ONLY
PLANAR
LIAO JIU
14 LOT INDUSTRIAL SUBDIVISION
155 COBBS HILL ROAD, BRIDGEWATER
ROAD 1 LONG SECTION
SHEET 3 OF 4
24/07/2024
PDA
SURVEYORS, ENGINEERS & PLANNERS
51911CT
C
SK7
AS SHOWN (A3)

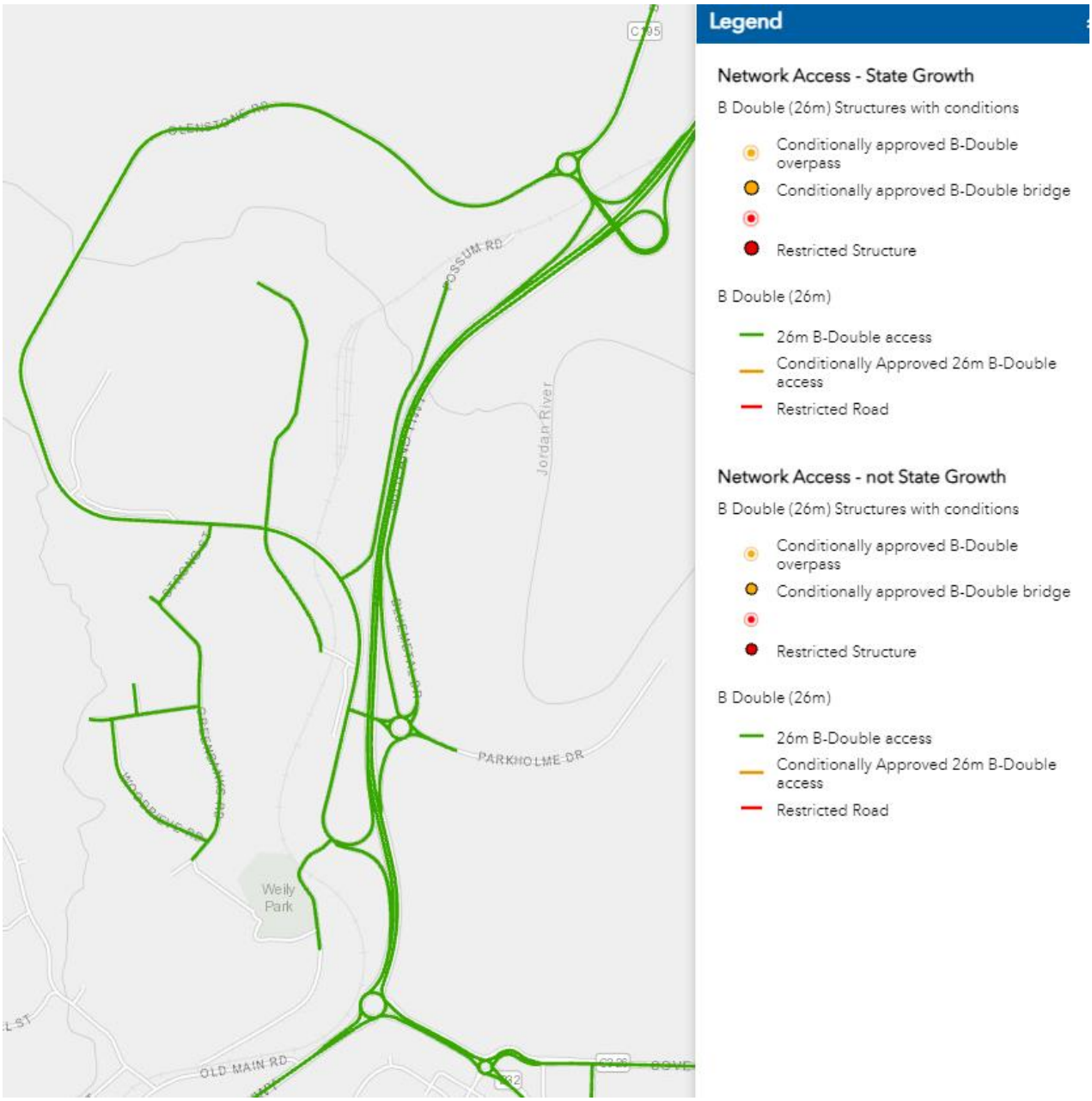

LIAO JIU
14 LOT INDUSTRIAL SUBDIVISION
155 COBBS HILL ROAD, BRIDGEWATER
ROAD 1 LONG SECTION
SHEET 4 OF 4
PDA
SURVEYORS, ENGINEERS & PLANNERS
CONCEPT ONLY
51911CT C SK8
AS SHOWN (A3)
LONG SECTION: ROAD 1
SCALES: (H) 1:500 (V) 1:100 (A3)
R.L. 68.000
CUT
FILL
DESIGN ROAD CENTRELINE
EXISTING SURFACE
CHAINAGE
HORIZONTAL GEOMETRY
L=281.502
R=337°16'29"
1.00%
3.84%
1.00%
80.00
40.00
I.P. 74.348
I.P. 76.490
24/07/2024

Appendix B – Austroads Level of Service descriptions

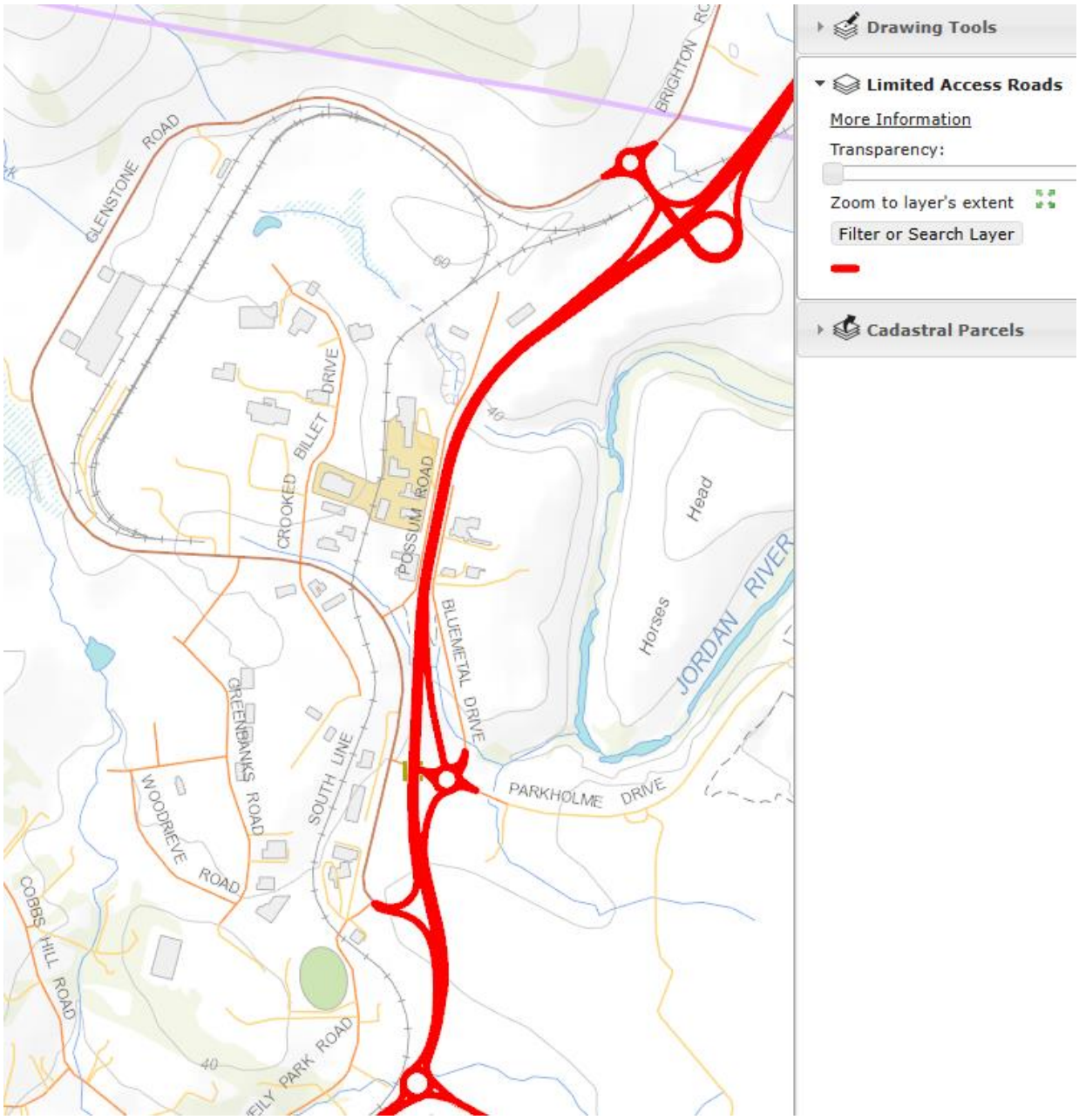
Level of service A	A condition of free-flow in which individual drivers are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high, and the general level of comfort and convenience provided is excellent.
Level of service B	In the zone of stable flow where drivers still have reasonable freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience is a little less than with level of service A.
Level of service C	Also in the zone of stable flow, but most drivers are restricted to some extent in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience declines noticeably at this level.
Level of service D	Close to the limit of stable flow and approaching unstable flow. All drivers are severely restricted in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience is poor, and small increases in traffic flow will generally cause operational problems.
Level of service E	Traffic volumes are at or close to capacity, and there is virtually no freedom to select desired speeds or to manoeuvre within the traffic stream. Flow is unstable and minor disturbances within the traffic stream will cause breakdown.
Level of service F	In the zone of forced flow, where the amount of traffic approaching the point under consideration exceeds that which can pass it. Flow breakdown occurs, and queuing and delays result.

Appendix C – State Road Information

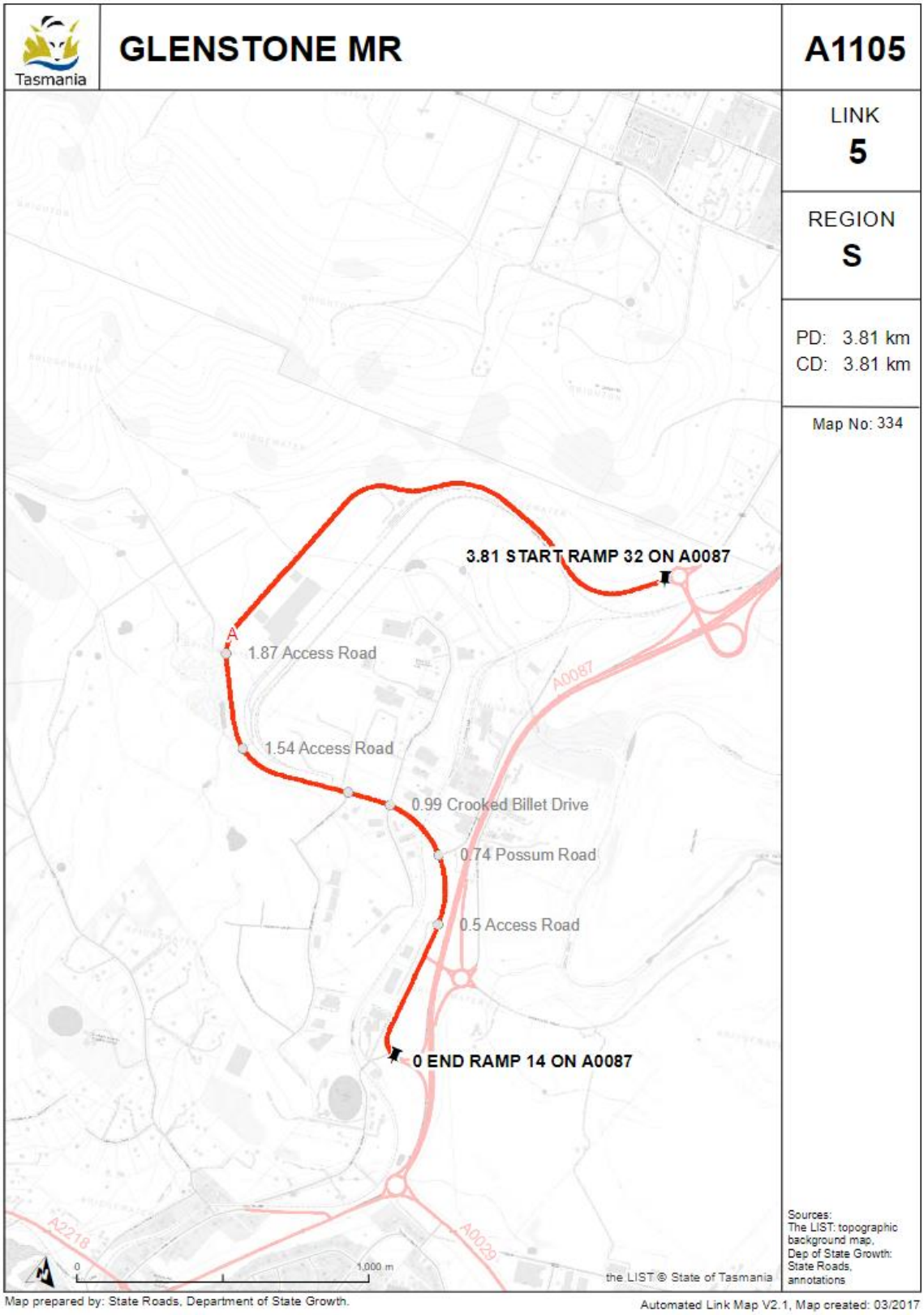
Tasmanian 26m B Double Network



Limited Access State Road Network



Department of State Growth Link Maps



Appendix D – Safe Systems Assessment

Safe System Assessment **Glenstone Road (2024)**

		Run-off-road	Head-on	Intersection	Other	Pedestrian	Cyclist	Motorcyclist	
Exposure	**Justification (AADT 1,100 to 3,400 vpd)**	Low traffic volume, no reported crash history	Low traffic volume, no reported crash history	Low traffic volume on priority road and side road (240vpd) and no reported crashes	26m B Double Route	Very low pedestrian activity in rural environment	Low cyclist activity	Low motorcyclist activity	
	Score /4	1	1	1	1	1	1	1	
Likelihood	**Justification**	Category 2 State Road with slight curves, 17m seal width, standard delineation, adequate sight distance and no roadside hazards.	Category 2 State Road with slight curves, 17m seal width, standard delineation, adequate sight distance and no roadside hazards.	Fully channelised junction	26m B Double Route with truck turning bays.	Pedestrian path way Eastern side.	Pedestrian path way Eastern side.	Category 2 State Road with slight curves, 17m seal width, standard delineation, adequate sight distance and no roadside hazards.	
	Score /4	1	1	1	1	1	1	1	
Severity	**Justification (70 km/h speed limit)**	Moderate speed environment	Moderate speed environment	Moderate speed environment	Moderate speed environment	High Severity for pedestrians	High Severity for cyclists	High Severity for motorcyclists	
	Score /4	2	2	2	2	4	4	4	**Total /448**
Product	**Total Score /64**	**2**	**2**	**2**	**2**	**4**	**4**	**4**	**20**

Appendix E – Traffic Count Data

Midlands Hwy - DSG Data

A0087201 - Midland Highway 440m N Of East Derwent Hwy
City: Bridgewater
Route number: A0087

Site Data

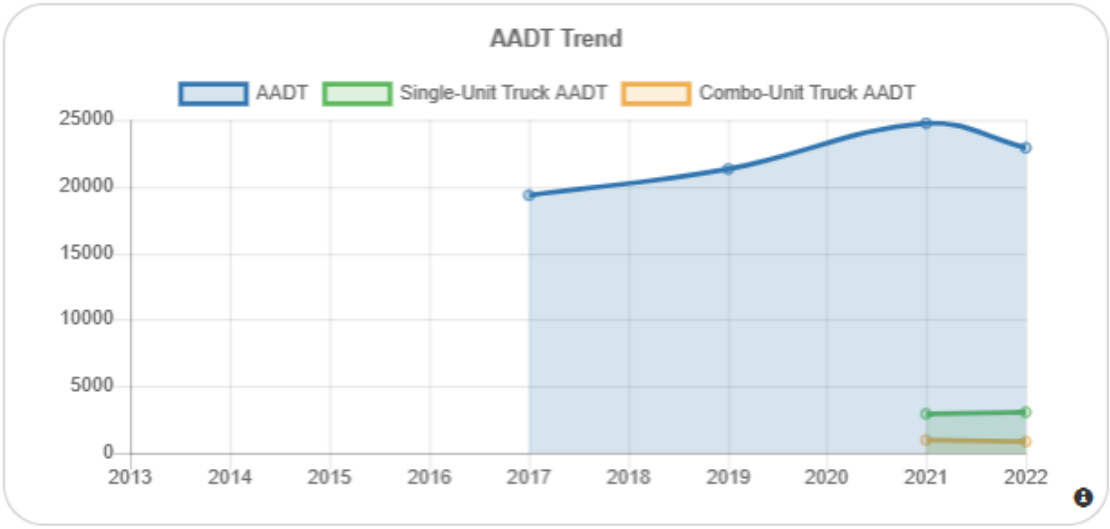
80 km/h

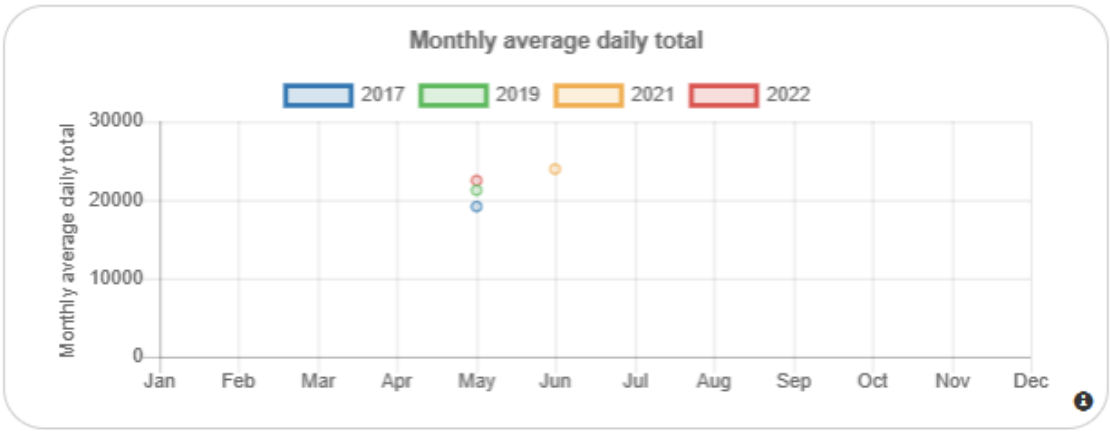
Traffic Statistics by Direction

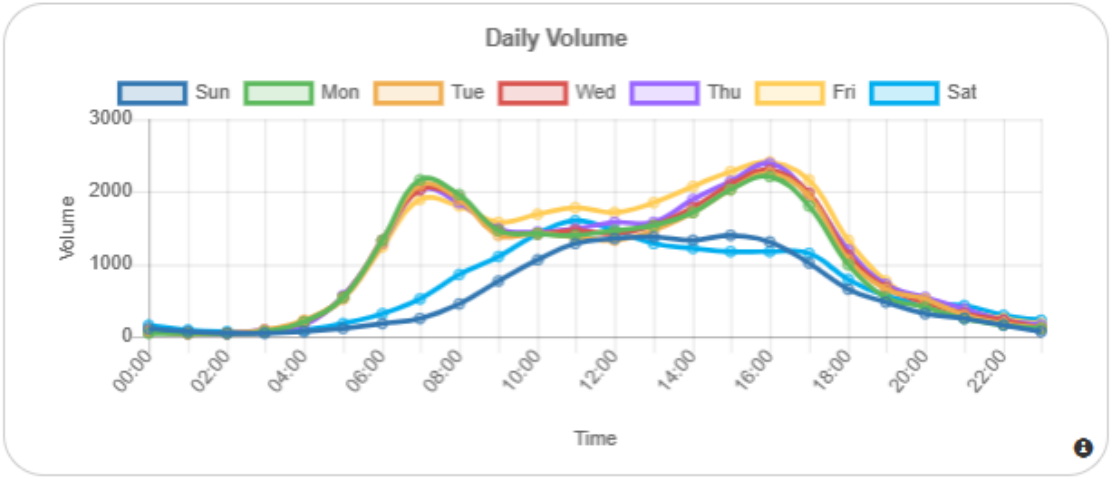
Direction	Weekday average total traffic	7-day average traffic	Weekly traffic total
North	12,185	9,464	75,709
South	12,760	9,980	79,836
Total	24,945	19,444	155,545

Annual Statistics

Data Item	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
AADT	-	-	-	-	19,407	-	21,308	-	24,740	**22,900**
% HV	-	-	-	-	12.5%	-	15.6%	-	15.5%	**17.2%**







Midlands Hwy AADT:

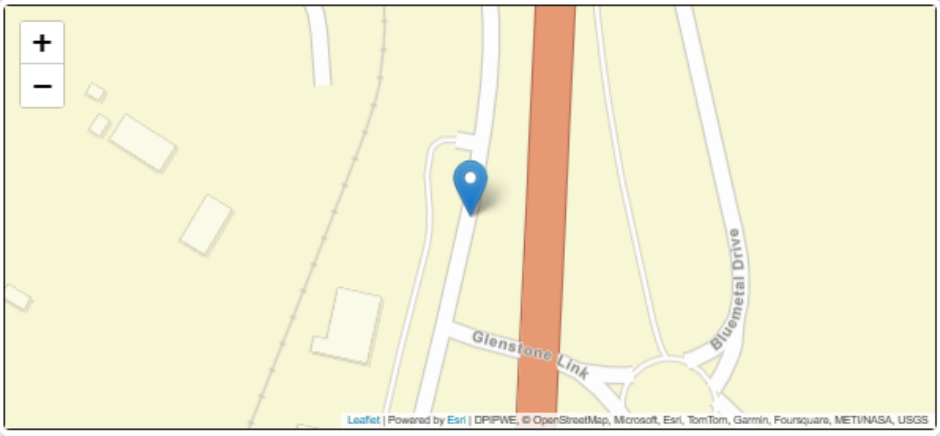
- **22,900 vpd (2022)**
- **2,400 vph (2022)**
- **17 % Trucks**
- **Compound Annual Growth Rate: 3.3%**
- **3,400 vph (2034)**

Glenstone Road, Southern end - DSG Data

A1105100 - Glenstone Main Road 70m N of Glenstone Link Rd
City: Bridgewater
Route number: A1105

Site Data

60 km/h

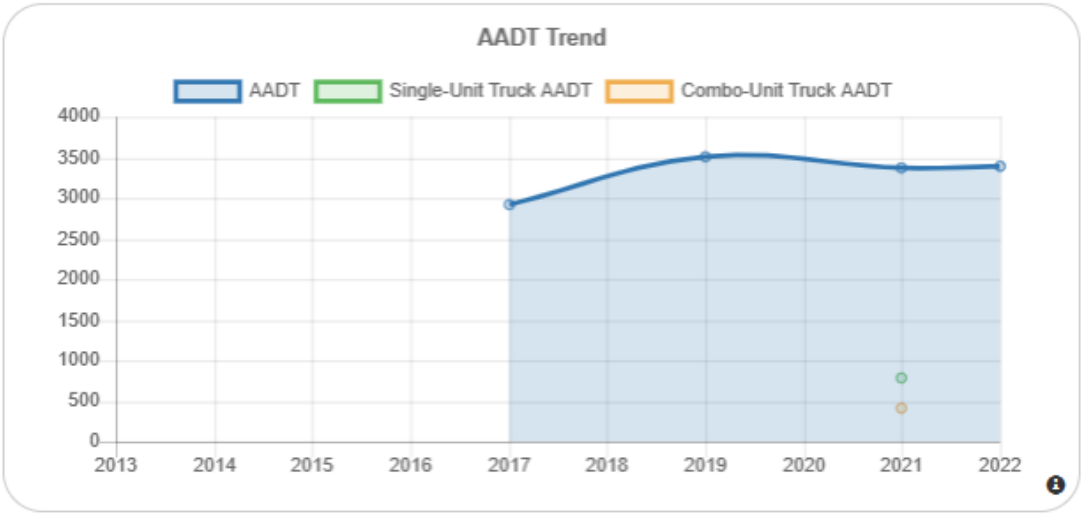


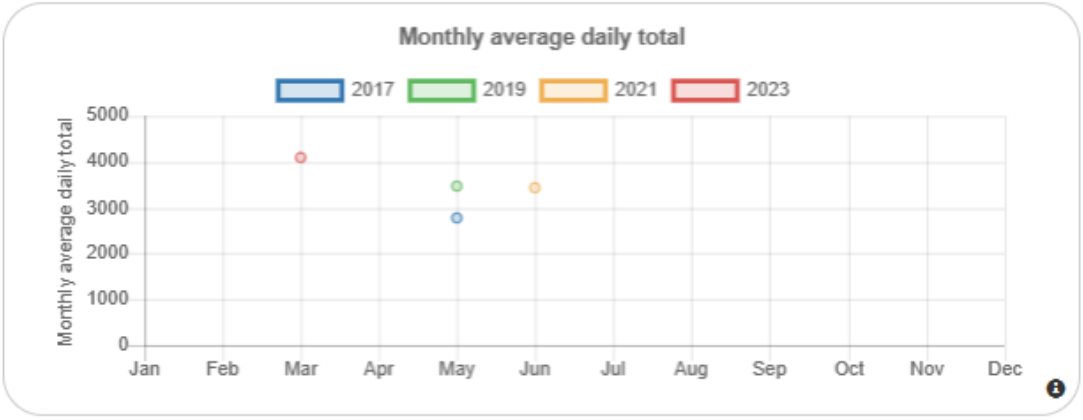
Traffic Statistics by Direction

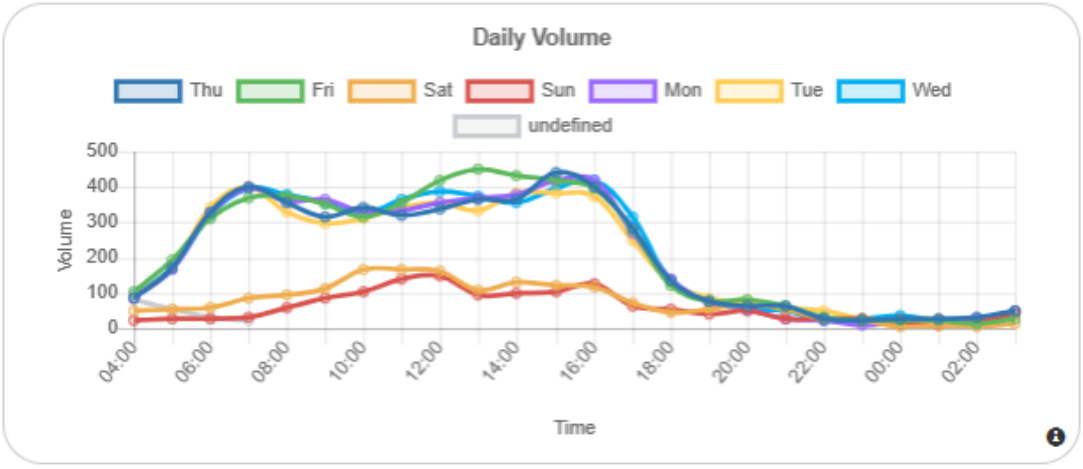
Direction	Weekday average total traffic	7-day average traffic	Weekly traffic total
North	2,093	1,765	14,117
South	2,175	1,835	14,683
Total	4,268	3,600	28,800

Annual Statistics

Data Item	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
AADT	-	-	-	-	2,918	-	3,505	-	3,373	3,390
% HV	-	-	-	-	33.8%	-	39.9%	-	35.3%	-







Glenstone Road (Sth. End) AADT:

- **2,918 vpd (2017)**
- **3,390 vph (2022)**
- **35 % Trucks**
- **Compound Annual Growth Rate: 0.9%**

Glenstone Road, Northern end - DSG Data

A1105120 - Glenstone Main Road 630m S of Midland Hwy
City: Brighton
Route number: A1105

Site Data

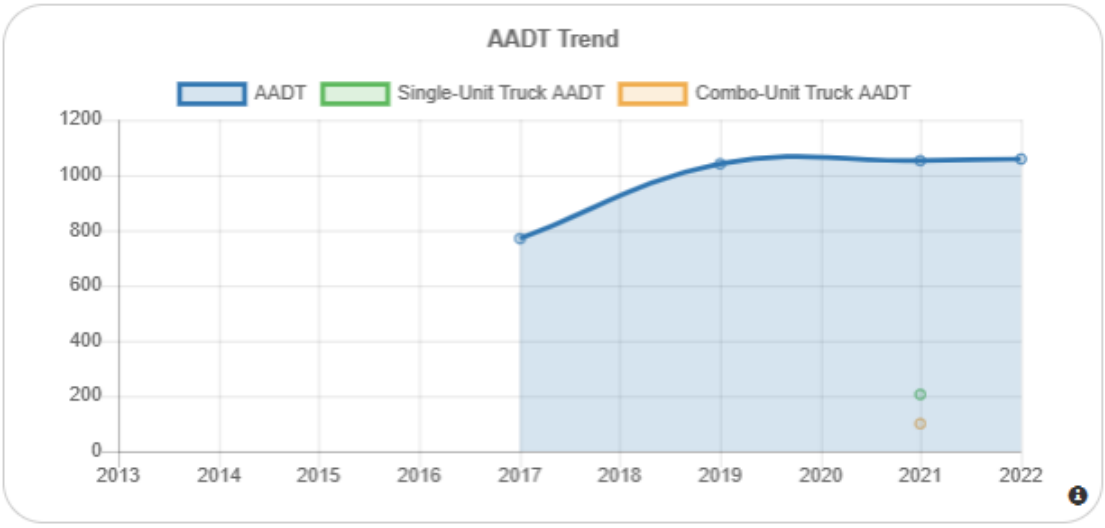
60 km/h

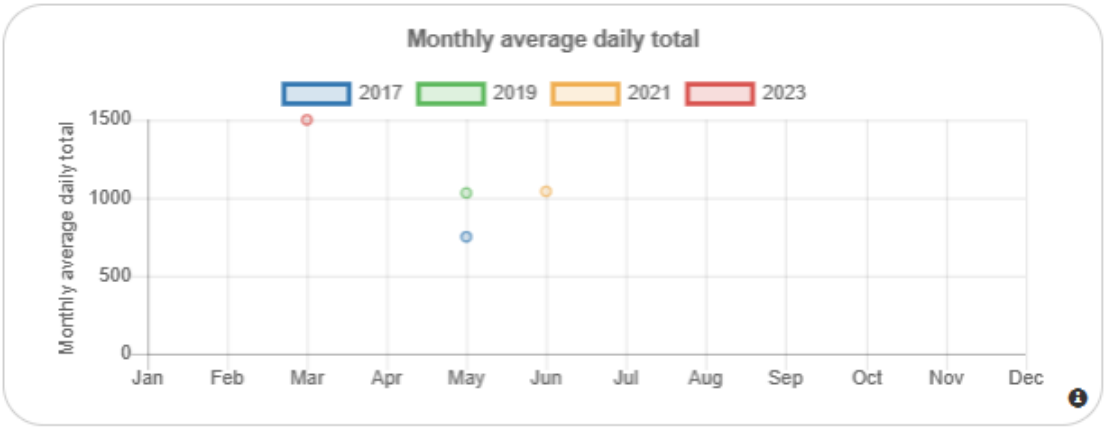
Traffic Statistics by Direction

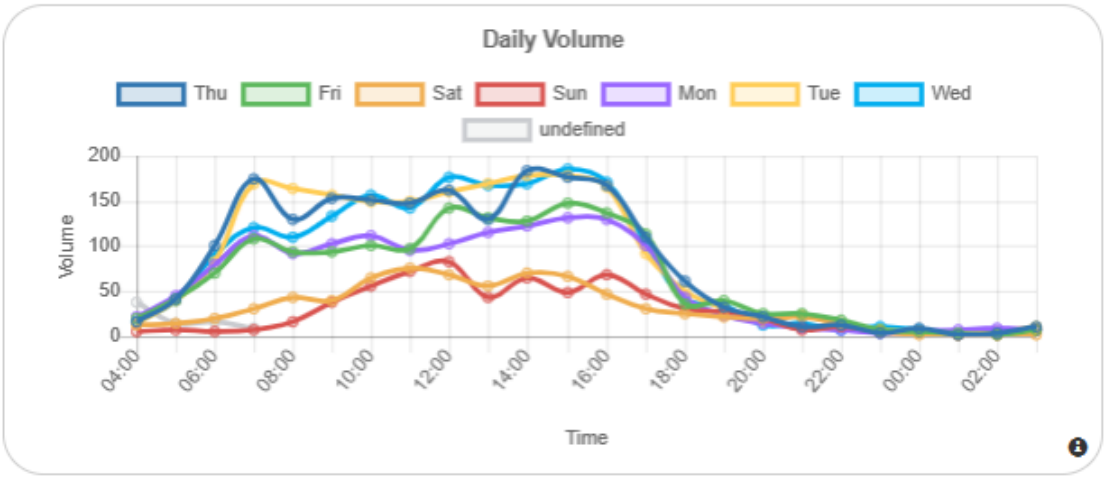
Direction	Weekday average total traffic	7-day average traffic	Weekly traffic total
East	752	653	5,221
West	773	667	5,338
Total	1,525	1,320	10,559

Annual Statistics

Data Item	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
AADT	-	-	-	-	772	-	1,041	-	1,052	1,057
% HV	-	-	-	-	35.6%	-	34.4%	-	28.8%	-







Glenstone Road (Nth. End) AADT:

- **772 vpd (2017)**
- **1,057 vph (2022)**
- **29 % Trucks**
- **Compound Annual Growth Rate: 6.6%**

Glenstone Road - TCS Turning Count Survey

Turn Count Summary

Location: Glen stone Road at Brighton Hub Access, Brighton
GPS Coordinates:
Date: 2024-03-08
Day of week: Friday
Weather: Sunny
Analyst: Richard Burk

Total vehicle traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
12:55	0	8	0	0	0	0	0	8	1	0	0	0	17
13:00	0	10	0	0	0	1	0	6	1	0	0	0	18
13:05	0	9	0	0	0	0	0	7	2	0	0	0	18
13:10	0	8	0	1	0	0	0	1	0	0	0	0	10
13:15	0	6	0	0	0	0	0	12	0	0	0	0	18
13:20	0	6	0	0	0	0	0	13	0	0	0	0	19

Car traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
12:55	0	6	0	0	0	0	0	6	0	0	0	0	12
13:00	0	8	0	0	0	0	0	4	0	0	0	0	12
13:05	0	3	0	0	0	0	0	6	0	0	0	0	9
13:10	0	6	0	0	0	0	0	1	0	0	0	0	7
13:15	0	4	0	0	0	0	0	10	0	0	0	0	14
13:20	0	3	0	0	0	0	0	9	0	0	0	0	12

Truck traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
12:55	0	2	0	0	0	0	0	2	1	0	0	0	5
13:00	0	2	0	0	0	1	0	2	1	0	0	0	6
13:05	0	6	0	0	0	0	0	1	2	0	0	0	9
13:10	0	2	0	1	0	0	0	0	0	0	0	0	3
13:15	0	2	0	0	0	0	0	2	0	0	0	0	4
13:20	0	3	0	0	0	0	0	4	0	0	0	0	7

Intersection Count Summary

12:55 - 13:24

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	0	47	0	1	0	1	0	47	4	0	0	0	100

Vehicle Summary

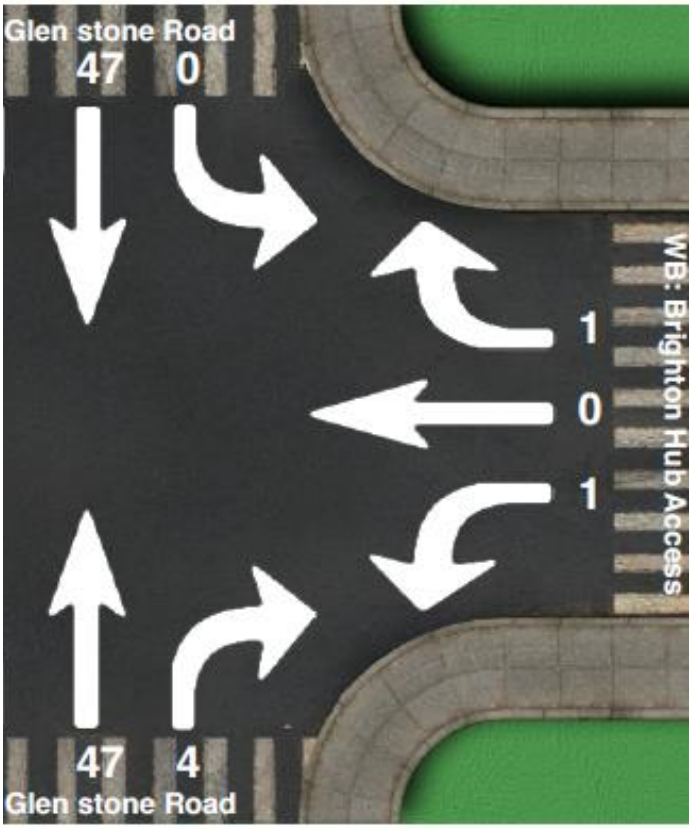
Vehicle	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Car	0	30	0	0	0	0	0	36	0	0	0	0	66
Truck	0	17	0	1	0	1	0	11	4	0	0	0	34
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0	0

Pedestrians Summary

	NE			NW			SW			SE			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Count Summary

Location: Glen stone Road at Brighton Hub Access, Brighton
GPS Coordinates:
Date: 2024-03-08
Day of week: Friday
Weather: Sunny
Analyst: Richard Burk



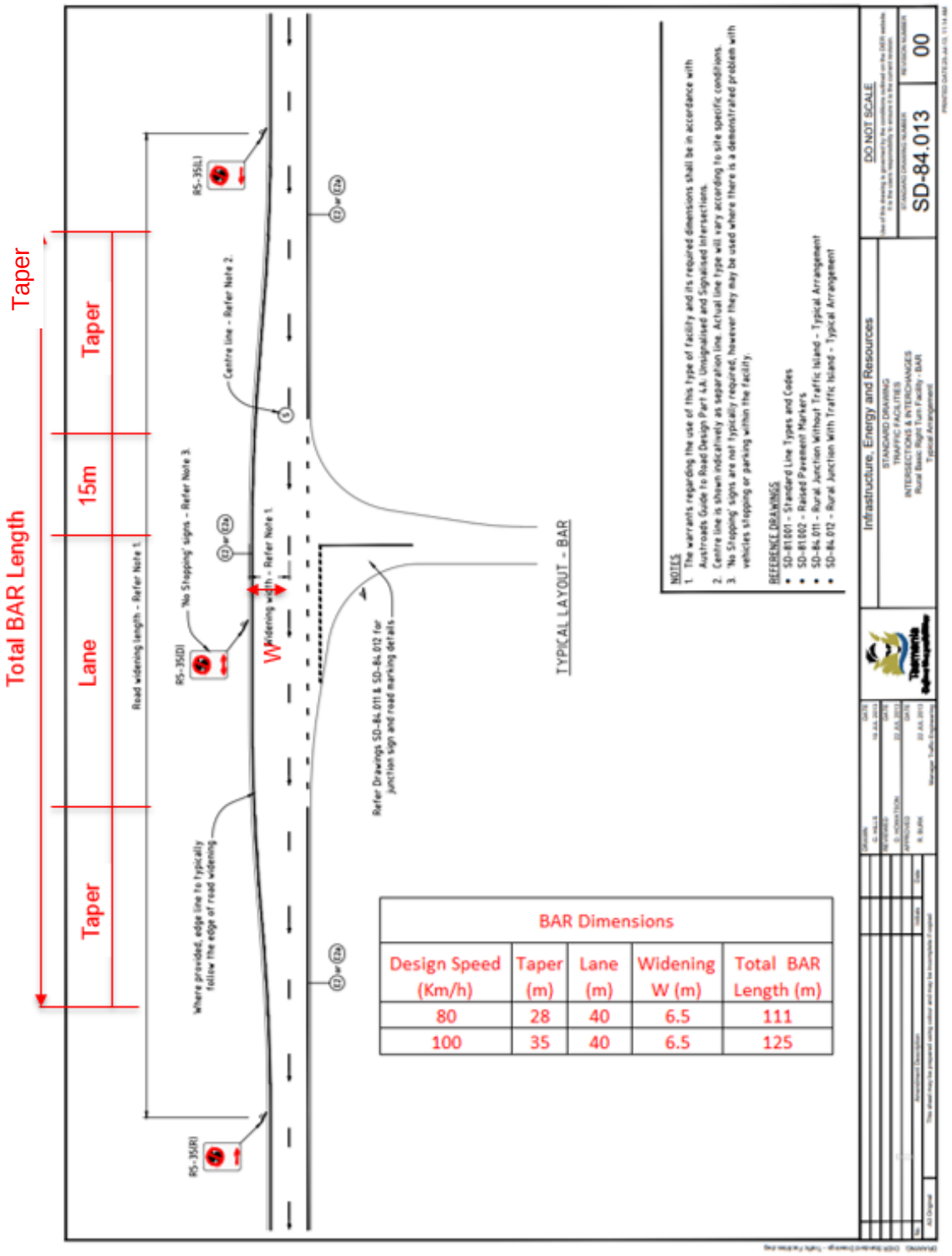
Intersection Count Summary

12:55 - 13:24

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	0	47	0	1	0	1	0	47	4	0	0	0	100

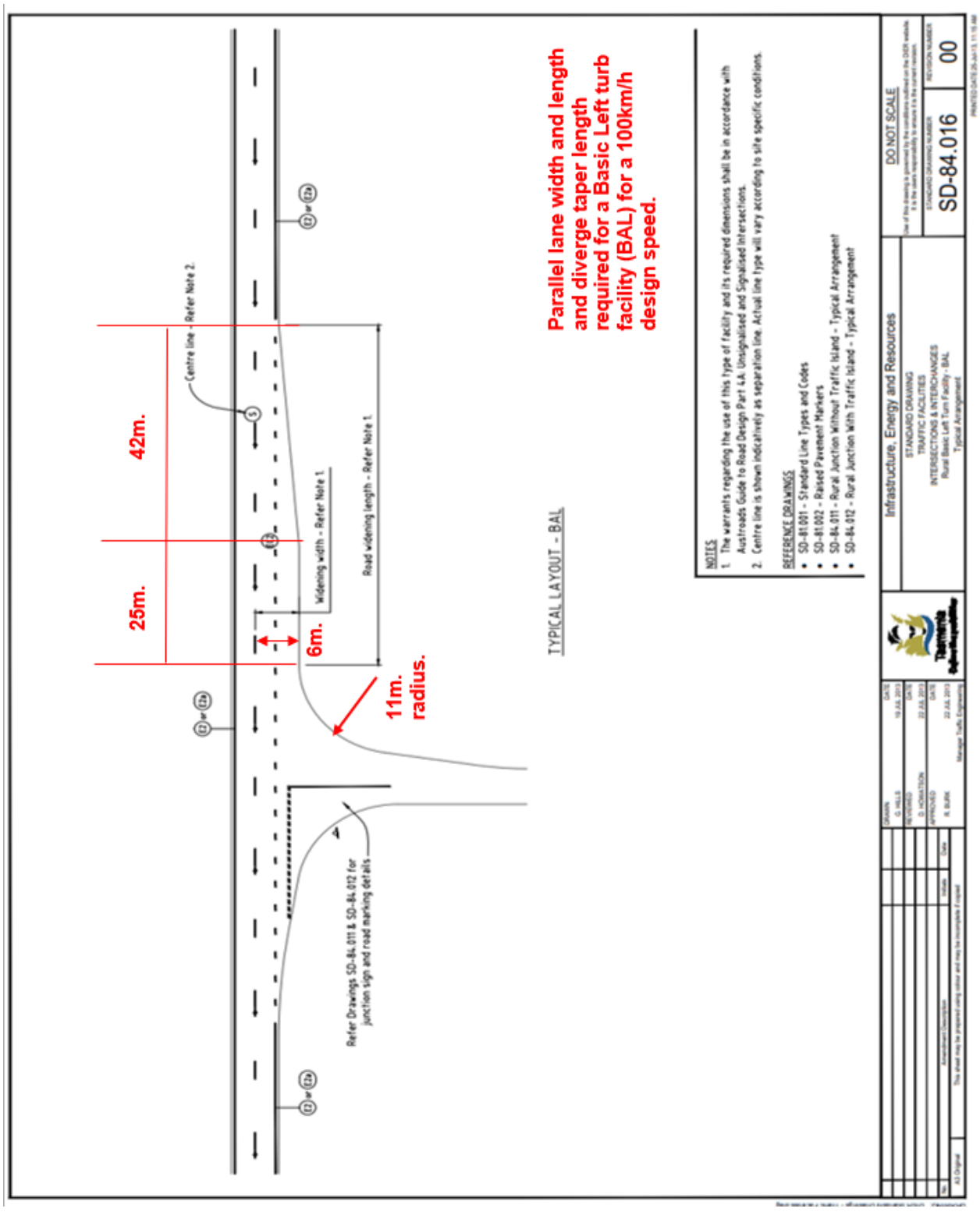
Appendix F – DSG Junction Layouts

BAR junction layout



Source: DSG – State Roads

BAL junction layout



Appendix G – DSG advice on TIA acceptability

Appendix H – Tas. Subdivision Guidelines

Allowable Longitudinal Grades

11.1 All concrete for construction works shall comply with Council's Standard Drawings and where appropriate shall comply with AS3600 for coastal and salinity affected areas.

11.2 Subject to Clause 14, footpaths and kerb and channel are not required in rural roads.

11.3 Subject to Clause 14, kerb and channel may be substituted with appropriate WSUD systems.

11.4 If kerb and channel access crossings, footpaths and footpath crossings are required then each is to be formed to the following minimum requirements:-

11.4.1 **Kerb and channel**

(i) Kerb and channel is to be formed using a continuous forming machine in accordance with the dimensions shown on the Council's Standard Drawing. Kerb & channel profile 'KC' shall be used unless otherwise specified in **Appendix 2** or otherwise approved by the Council.

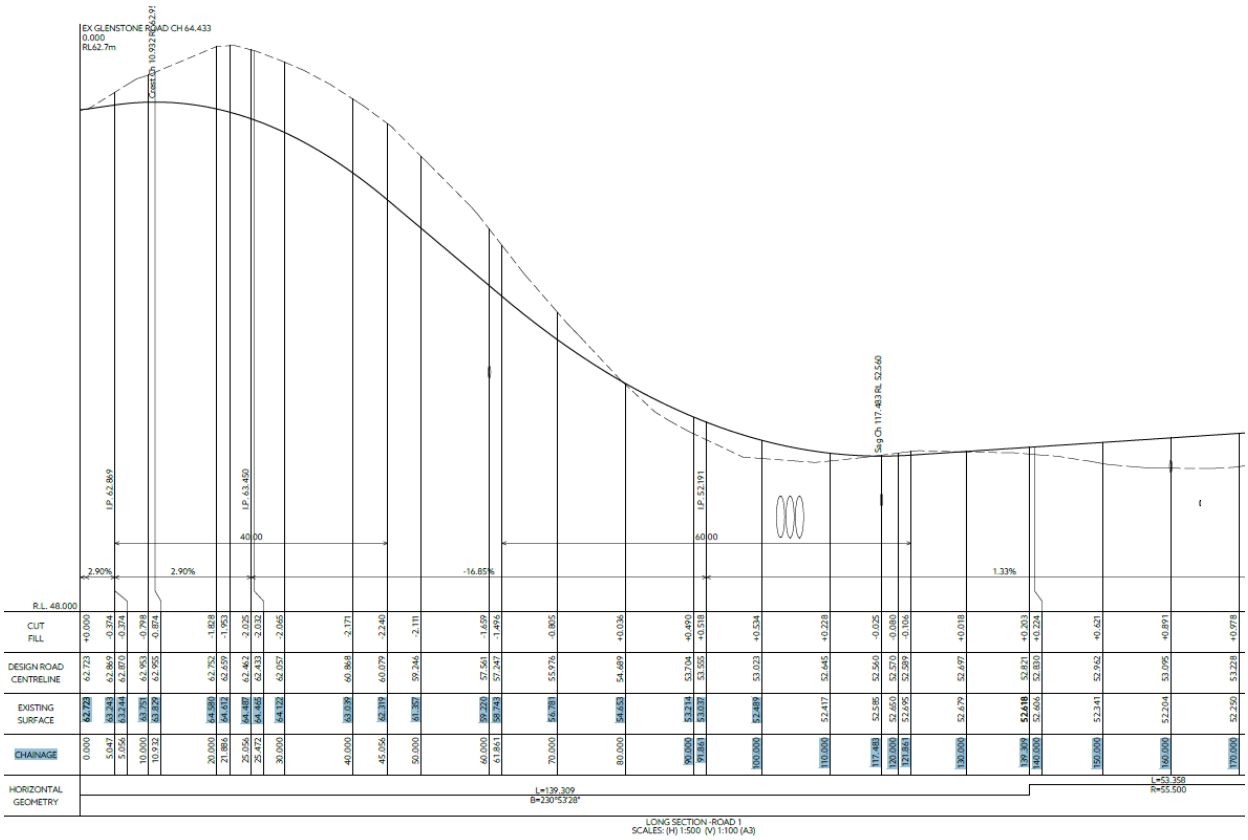
(ii) Except as provided in Clause 7, the kerb and channel is to have a longitudinal gradient not flatter than 0.5% (except for instantaneous grade) and not steeper than 14% except that in special circumstances the Council may permit a grade of 20% for short lengths of road up to 70m;

(iii) The aggregate length of road at a grade steeper than 14% is not to exceed;

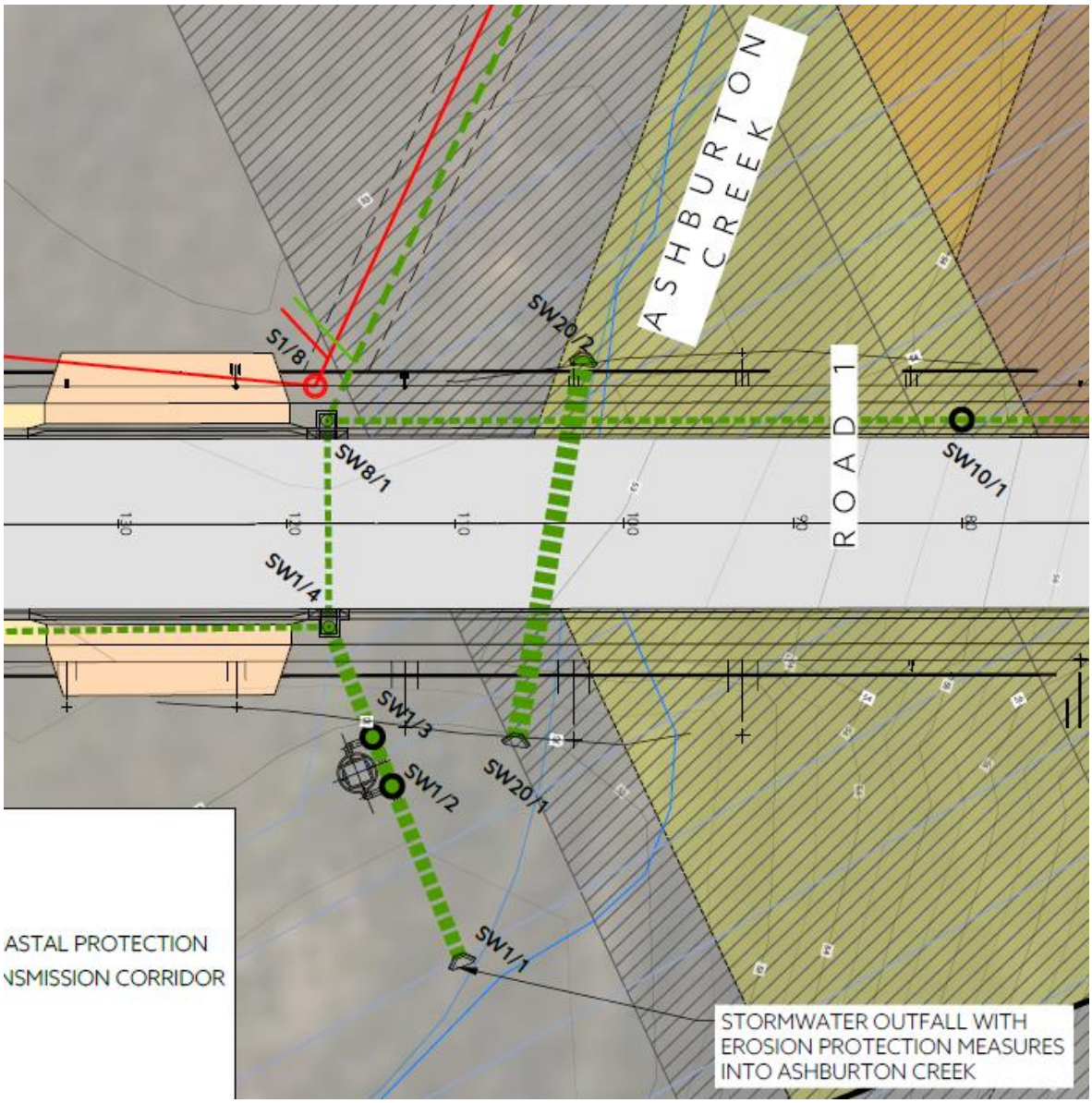
- a total length of 100m, or
- 20% of the total road length, whichever is the greater.

Appendix I – Ashburton Creek Culvert

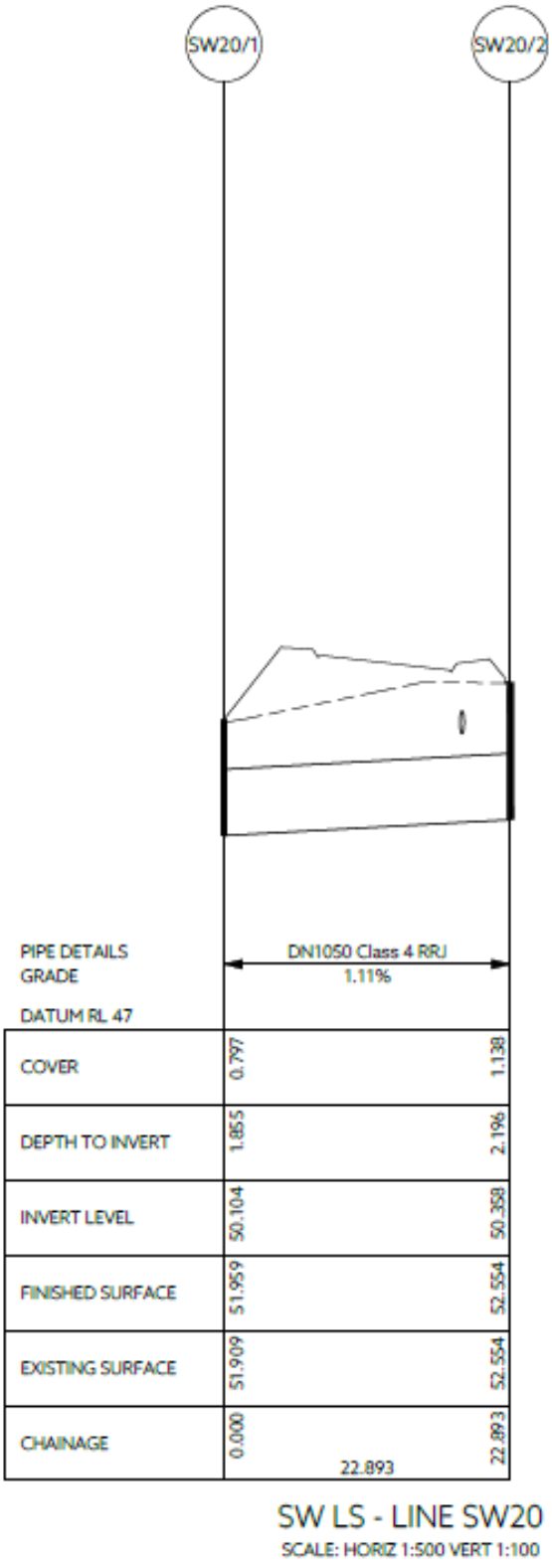
Appendix I.1 – Proposed Road vertical alignment over Ashburton Creek



Appendix I.2 – Plan view of Ashburton Creek Culvert



Appendix I.3 – Ashburton Creek Culvert Design



GES

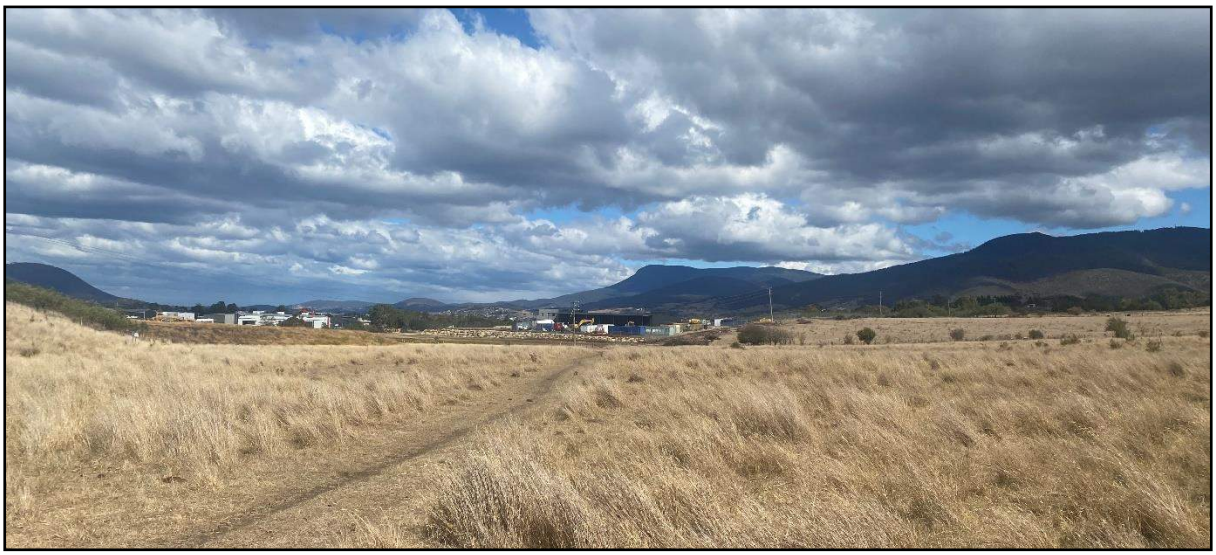
GEO-ENVIRONMENTAL

SOLUTIONS

Proposed Subdivision

155 Cobbs Hill Road, Bridgewater

Bushfire Hazard Report



Applicant: Liao Jinju

March 2024, J10064v1

Geo-Environmental Solutions - 29 Kirksway Place, Battery point, Tasmania, 7004.
Phone: 036223 1839 Email: Web: www.geosolutions.net.au

Contents

1.0 Introduction

This Bushfire Hazard Report has been completed to form part of supporting documentation for a planning permit application for a proposed subdivision. The proposed subdivision occurs in a Bushfire-prone Area defined by the Tasmanian Planning Scheme – Brighton. This report has been prepared by Mark Van den Berg a qualified person under Part 4a of the *Fire Service Act 1979* of Geo Environmental Solutions Pty Ltd for Liao Jinju

The report considers all the relevant standards of Code C13 of the planning scheme, specifically;

- The requirements for appropriate Hazard Management Areas (HMA's) in relation to building areas;
- The requirements for Public and Private access;
- The provision of water supplies for firefighting purposes;
- Compliance with the planning scheme, and
- Provides a Bushfire Hazard Management Plan to facilitate appropriate compliant future development.

2.0 Proposal

It is proposed that a fourteen-lot plus balance subdivision is developed on the site described as per the proposed plan of subdivision in appendix A. Public access to new lots will be provided by the construction of new public roadway, firefighting water supplies will be provided by a new reticulated water supply system with associated fire hydrants. The development is proposed to occur in one stage. The subdivision area is undeveloped and is approximately 34 Ha in extent.

3.0 Site Description

The subject site comprises private land on one title at 155 Cobbs Hill Road, Bridgewater FR 158008/1, (figure 1). The site occurs in the municipality of Brighton, this application is administered through the Tasmanian Planning Scheming - Brighton which makes provision for subdivision. The proposed development occurs within the General Industrial and Rural zones.

The site is located north north-west of the Bridgwater settled area approximately 1.1 km east of Genappe Spur (figure 1). The site is dominated by grassland vegetation with a small area of native forest and woodland vegetation in the north-western portion of the title area. It has gentle slopes with a generally south-easterly aspect, which in this circumstance is unlikely to significantly influence bushfire attack at the sites (figure 2).

Figure 1. The site in a topographical context, pink line defines the subdivision boundary (approximate).

Figure 2. Aerial photo of the site, pink line denotes the subdivision boundary (approximate).

4.0 Bushfire Hazard Assessment

4.1 Vegetation

The site and adjacent lands within 100 metres of the proposed building areas carry grassland vegetation (figures 3 to 5). Surrounding lands carry grassland vegetation grading into woodland vegetation types to the west and south of the sites, lands to the north and east of the sites support the Brighton transport and Industrial Hub.

4.2 slopes

The effective slopes in relation to the proposed building areas are gentle (less than 5° downslope) and are uniform with the exclusion of the north-western portion of the subdivision area. Whilst the site is large, all building areas have a south-easterly aspect, (figures 3 to 4).

Figure 3. Grassland vegetation on lots 1 to 3 from the building area on lot 14.

Figure 4. Grassland vegetation looking north from the vicinity of lot 5.

Figure 4. Grassland vegetation looking north-east from the vicinity of the building area on lot 12.

4.3 Bushfire Attack Level

An assessment of vegetation and topography was undertaken within and adjacent to the subdivision area. A bushfire attack level assessment as per *AS3959-2018* was competed which has determined suitable setbacks for each building area from bushfire-prone vegetation such that subsequent residential development does not exceed BAL-19 of AS3959-2018 (appendix B). This process defined the building area for each lot. The building area and bushfire attack level is identified on the BHMP for each lot.

5.0 Bushfire Prone Areas Code

Code C13 of the planning scheme articulates requirements for the provision of hazard management areas, standards for access and firefighting water supplies and requirements for hazard management for staged subdivisions.

5.1 Hazard Management Areas

Hazard management areas will be required to be established for the building area on each lot, they provide an area around the building within which fuels are managed to reduce the impacts of direct flame contact, radiant heat and ember attack on the site, requirements for hazard management areas are detailed in s5.1.3. The Bushfire Hazard Management Plan (BHMP) shows building areas and the associated Hazard Management Areas (HMA) for each lot, guidance for establishment and maintenance of HMA's is provided below. Hazard management areas on lots 6 to 9 inclusive will be established prior to the sealing of titles, establishment is the responsibility of the developer, ongoing maintenance will be the responsibility of each lot owner. A suitable instrument to ensure the ongoing maintenance of hazard management areas on lots 6 to 9 inclusive should be included as part of the sealing of titles.

5.1.1 Hazard Management areas for Stages

The subdivision is to occur in a single stage, each lot has a building area and associated hazard management area which is contained within the lots proposed title boundaries. In this circumstance there are no requirements for staged bushfire management provisions.

5.1.2 Building areas

Building areas are shown on the BHMP. Each lot has been assessed and a Bushfire Attack Level (BAL) assigned to it. If future buildings are located within the building area and comply with the minimum setbacks for the hazard management area the buildings may be constructed to the bushfire attack level assigned to that building area. If associated structures like sheds are proposed, they do not need to conform to a BAL unless they are within 6 metres of the building to be protected.

5.1.3 Hazard Management Area requirements

A hazard management area is the area, between a habitable building or building area and the bushfire prone vegetation which provides access to a fire front for firefighting, 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. This can be achieved through, but is not limited to the following strategies;

- Remove fallen limbs, sticks, leaf and bark litter;
- Maintain grass at less than a 100mm height;
- Avoid the use of flammable mulches (especially against buildings);
- Prune low-hanging tree branches (<2m from the ground) to maintain vertical separation between fuel layers;
- Prune larger trees to maintain horizontal separation between tree canopies;
- Minimise the storage of flammable materials such as firewood;
- Maintain vegetation clearance around vehicular access and water supply points;
- Use low-flammability plant species for landscaping purposes where possible;
- Clear out any accumulated leaf and other debris from roof gutters and other debris accumulation points.

It is not necessary to remove all vegetation from the hazard management area, trees and shrubs may provide protection from wind borne embers and radiant heat under some circumstances if other fuels are appropriately managed.

5.2 Public and firefighting Access

5.2.1 Public Roads

Construction of a new public road is proposed for this subdivision. New roads are required to conform with the following specifications consistent with Code C13, Table C13.1. of the planning scheme unless the development standards of the zone require a higher standard. There is no proposal for fire trails as part of this development.

- two-wheel drive, all-weather construction;
- load capacity of at least 20t, including for bridges and culverts;
- minimum carriageway width is 7m for a through road, or 5.5m for a 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, and 10 degrees (1:5.5 or 18%) for unsealed roads;
- curves have a minimum inner radius of 10m;
- dead-end or cul-de-sac roads are not more than 200m in length unless the carriageway is 7 metres in width;
- dead-end or cul-de-sac roads have a turning circle with a minimum 12m outer radius;
- carriageways less than 7m wide have 'No Parking' zones on one side, indicated by a road sign that complies with Australian Standard AS1743-2001 Road signs-specifications.

5.2.3 Property access (for building compliance) Lots 1 to 14

In this circumstance there are no specific requirements for the design and construction of property access for lots 1 to 14 inclusive. Each lot will be provided with access to a water connection point (fire hydrant) connected to reticulated water supply system which is compliant with s5.3.

5.2.4 Property access (for building compliance) Balance Lot

Property access length is greater than 30 metres and access is required for a fire appliance to connect to a firefighting water point. The following design and construction requirements apply to property access:

(a) All-weather construction;

(b) Load capacity of at least 20 tonnes, including for bridges and culverts;

(c) Minimum carriageway width of 4 metres;

(d) Minimum vertical clearance of 4 metres;

(e) Minimum horizontal clearance of 0.5 metres from the edge of the carriageway;

(f) Cross falls of less than 3° (1:20 or 5%);

(g) Dips less than 7° (1:8 or 12.5%) entry and exit angle;

(h) Curves with a minimum inner radius of 10 metres;

(i) Maximum gradient of 15° (1:3.5 or 28%) for sealed roads, and 10° (1:5.5 or 18%) for unsealed roads; and

(j) Terminate with a turning area for fire appliances provided by one of the following:

(i) A turning circle with a minimum outer radius of 10 metres;

(ii) A property access encircling the building; or

(iii) A hammerhead “T” or “Y” turning head 4 metres wide and 8 metres long

5.3 Water supplies for firefighting

The subdivision will be serviced by a reticulated water supply system which will be owned and managed by TasWater and will include fire hydrants. The fire hydrants will be required to conform with the specifications of table 1.

Table 1. Specifications for reticulated water supplies for firefighting.

Element		Requirement
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 firefighting 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.

5.3.1 Water supplies for firefighting (building compliance) Lots 1 to 14 inclusive

Dedicated water supplies for firefighting will be provided by an existing fire hydrant connected to a reticulated water supply system managed by TasWater. The existing hydrant will be required to conform with the following specifications;

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

5.3.2 Water supplies for firefighting (building compliance) Balance Lot

The site is serviced by a reticulated water supply, however, due to the proximity of the existing fire hydrants to the site, a dedicated, static firefighting water supply will be provided in accordance with table 2.

Table 2. Requirements for Static Water Supplies dedicated for Firefighting

Element		Requirement
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 90 metres of the firefighting water point of a static water supply; and (b) The distance must be measured as a hose lay, between the firefighting water point and the furthest part of the building area
B.	Static Water Supplies	A static water supply: (a) May have a remotely located offtake connected to the static water supply; (b) May be a supply for combined use (firefighting and other uses) but the specified minimum quantity of firefighting water must be available at all times; (c) Must be a minimum of 10,000 litres per building area to be protected. This volume of water must not be used for any other purpose including firefighting sprinkler or spray systems; (d) Must be metal, concrete or lagged by non-combustible materials if above ground; and (e) If a tank can be located so it is shielded in all directions in compliance with Section 3.5 of AS 3959:2018, the tank may be constructed of any material provided that the lowest 400 mm of the tank exterior is protected by: (i) metal;

Element		Requirement
		(ii) non-combustible material; or (iii) fibre-cement a minimum of 6 mm thickness.
C.	Fittings, pipework and accessories (including stands and tank supports)	Fittings and pipework associated with a firefighting water point for a static water supply must: (a) Have a minimum nominal internal diameter of 50mm; (b) Be fitted with a valve with a minimum nominal internal diameter of 50mm; (c) Be metal or lagged by non-combustible materials if above ground; (d) Where buried, have a minimum depth of 300mm; (e) Provide a DIN or NEN standard forged Storz 65 mm coupling fitted with a suction washer for connection to firefighting equipment; (f) Ensure the coupling is accessible and available for connection at all times; (g) Ensure the coupling is fitted with a blank cap and securing chain (minimum 220 mm length); (h) Ensure underground tanks have either an opening at the top of not less than 250 mm diameter or a coupling compliant with this Table; and (i) Where a remote offtake is installed, ensure the offtake is in a position that is: (i) Visible; (ii) Accessible to allow connection by firefighting equipment; (iii) At a working height of 450 – 600mm above ground level; and (iv) Protected from possible damage, including damage by vehicles.
D.	Signage for static water connections	The firefighting water point for a static water supply must be identified by a sign permanently fixed to the exterior of the assembly in a visible location. The sign must: (a) comply with water tank signage requirements within AS 2304:2019; or (b) comply with the Tasmania Fire Service Water Supply Signage Guideline published by the Tasmania Fire Service.
E.	Hardstand A hardstand area for fire appliances must be provided:	(a) No more than three metres from the firefighting water point, measured as a hose lay (including the minimum water level in dams, swimming pools and the like); (b) No closer than six metres from the building area to be protected; (c) With a minimum width of three metres 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.

6.0 Compliance

6.1 Planning Compliance

Table 3 summarises the compliance requirements for subdivisions in bushfire prone areas against Code C13 of the planning scheme as they apply to this proposal. A planning certificate has been issued for the associated BHMP as being compliant with the relevant standards and is located in appendix D.

Table #. Compliance with Code 13 of the Tasmanian Planning Scheme - Glenorchy

Clause	Compliance
C13.4 Use or development exempt from this code	Not applicable.
C13.5 1 Vulnerable Uses	Not applicable.
C13.5.2 Hazardous Uses	Not applicable
C13.6.1 Subdivision: Provision of hazard management areas	The Bushfire Hazard Management Plan is certified by an accredited person. Each lot within the subdivision has a building area and associated hazard management area shown which does not exceed the requirements for BAL-19 construction standards. The proposal is compliant with the acceptable solution at A1, (b).
C13.6.2 Subdivision: Public and firefighting access	The Bushfire Hazard Management Plan specifies minimum standards for proposed public roadways consistent with the requirements of table C13.1. Proposed property access is compliant with table C13.2. There is no proposal for fire trails as part of this development. The Bushfire Hazard Management Plan is certified by an accredited person. The proposal is compliant with the acceptable solution at A1, (b).

Clause	Compliance
C13.6.3 Subdivision: Provision of water supply for firefighting purposes	The Bushfire Hazard Management Plan requires the installation of fire hydrants consistent with the requirements of table C13.4, an indicative location of fire hydrants is shown on the BHMP. Static water supplies for firefighting are specified for the balance lot and are consistent with the requirements of table C13.5. The proposal is compliant with the acceptable solution A1, (b) and A2, (b).

6.2 Building Compliance (for future development)

Future development may not require assessment for bushfire management requirements at the planning application stage. Subsequent building applications will require demonstrated compliance with the Directors Determination – Bushfire Hazard Areas. If future development is undertaken in compliance with the Bushfire Hazard Management Plan associated with this report, a building surveyor may rely upon it for building compliance purposes if it is not more than 6 years old.

7.0 Summary

The proposed development occurs within a bushfire-prone area. The vegetation is classified as grassland, with the highest risk is presented by vegetation to the north and north-west of the subdivision area.

A bushfire hazard management plan has been developed and shows hazard management areas and building areas with construction standards, the location of proposed public roadways and minimum standards for their construction, the indicative location of property access to building areas and specifications for the installation of fire hydrants and their indicative locations.

Hazard management areas on lots 6 to 9 inclusive will be established prior to the sealing of titles, establishment is the responsibility of the developer, ongoing maintenance will be the responsibility of each lot owner. A suitable instrument to ensure the ongoing maintenance of hazard management areas on lots 6 to 9 inclusive should be included as part of the sealing of titles.

If future development on an individual lot is proposed and is compliant with all the specifications of the bushfire hazard management plan, it may be relied upon for building compliance purposes. If subsequent development does not comply with all the specifications a new assessment will be required.

8.0 Limitations Statement

This Bushfire Hazard Report has been prepared in accordance with the scope of services between Geo-Environmental Solutions Pty. Ltd. (GES) and the applicant. To the best of GES's knowledge, the information presented herein represents the Client's requirements at the time of printing of the report. However, the passage of time, manifestation of latent conditions or impacts of future events may result in findings differing from that described in this report. In preparing this report, GES has relied upon data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations referenced herein. Except as otherwise stated in this report, GES has not verified the accuracy or completeness of such data, surveys, analyses, designs, plans and other information.

The scope of this study does not allow for the review of every possible bushfire hazard condition and does not provide a guarantee that no loss of property or life will occur as a result of bushfire. As stated in AS3959-2018 “It should be borne in mind that the measures contained in this Standard cannot guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the degree of vegetation management, the unpredictable nature and behaviour of fire, and extreme weather conditions”. In addition, no responsibility is taken for any loss which is a result of actions contrary to AS3959-2018 or the Tasmanian Planning Commission Bushfire code.

This report does not purport to provide legal advice. Readers of the report should engage professional legal practitioners for this purpose as required. No responsibility is accepted for use of any part of this report in any other context or for any other purpose by third party.

9.0 References

Building Amendment (Bushfire-Prone Areas) Regulations 2014

Directors Determination, Bushfire Hazard Areas. Version 1.1, 8th April 2021. Consumer, Building and Occupational Services, Department of Justice, Tasmania

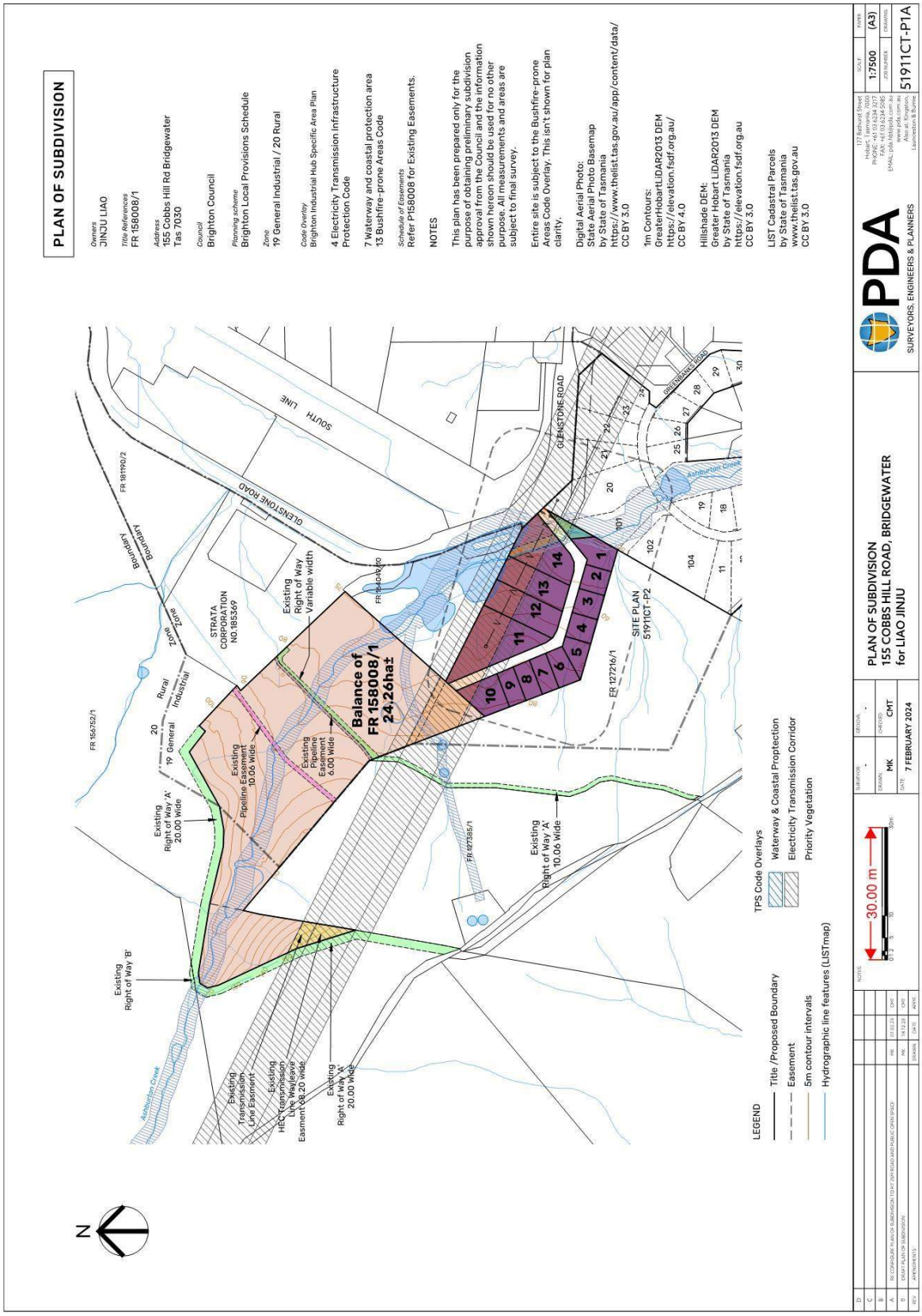
Standards Australia 2018, *Construction of buildings in bushfire prone areas,* Standards Australia, Sydney.

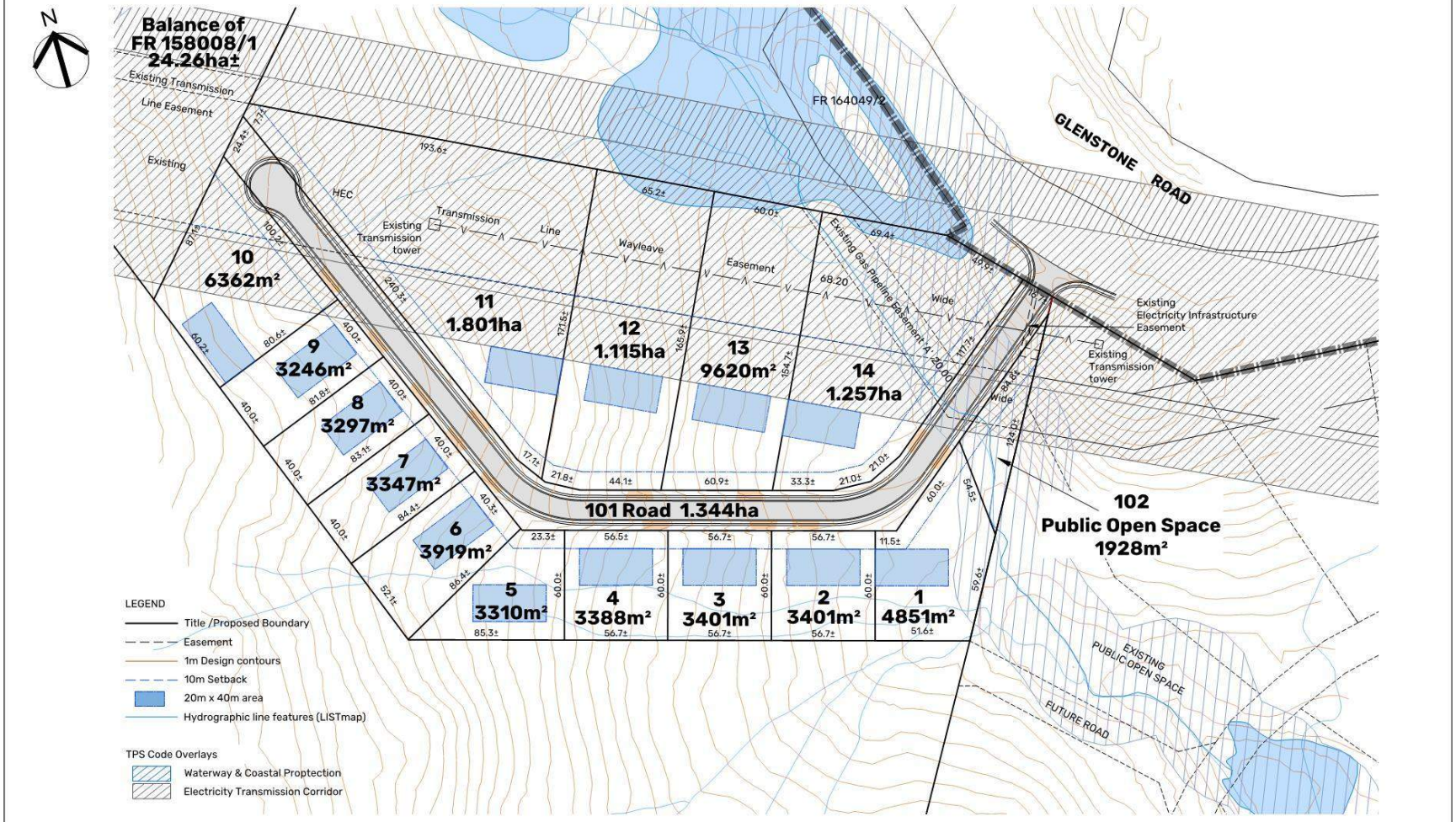
Tasmanian Planning Commission 2017, *Planning Directive No.5.1 – Bushfire prone Areas Code*. Tasmanian Planning Commission, Hobart. 1st September 2017.

The Bushfire Planning Group 2005, *Guidelines for development in bushfire prone areas of Tasmania – Living with fire in Tasmania,* Tasmania Fire Service, Hobart.

Tasmanian Planning Scheme – Brighton.

Appendix A – Plan of Subdivision





REV	AMENDMENTS	DRAWN	DATE	APPR.
D				
C				
B				
A	RE CONFIGURE PLAN OF SUBDIVISION TO FIT JSM ROAD AND PUBLIC OPEN SPACE	MK	07.02.24	CMT
0	DRAFT PLAN OF SUBDIVISION	MK	14.12.23	CMT

NOTES:

0 4 8 20 40 100m

SURVEYOR	GEOCWL
-	-
DRAWN	CHECKED
MK	CMT
DATE	
7 FEBRUARY 2024	

PLAN OF SUBDIVISION
155 COBBS HILL ROAD, BRIDGEWATER
for LIAO JINJU

PDA
SURVEYORS, ENGINEERS & PLANNERS

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SCALE	PAPER
1:2000_1	(A3)
JOB NUMBER	DRAWING
51911CT-P2A	

Appendix B – Bushfire Attack Level Assessment

The following assessment tables represent lots and /or building areas which are within 100 metres of bushfire-prone vegetation.

Lots 1 to 4 inclusive

Azimuth	Vegetation Classification	Effective Slope	Distance to Bushfire-prone vegetation	Hazard management area width	Bushfire Attack Level
North	Grassland^	flat 0º	0 to 100 metres	10 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		
East	Grassland^	>0 to 5º downslope	0 to >100 metres	11 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		
South	Grassland^	flat 0º	0 to 100 metres	10 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		
West	Grassland^	upslope	0 to >100 metres	10 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		

^ Vegetation classification as per AS3959-2018 Table 2.3 and Figures 2.4(A) to 2.4 (G).
^^ Exclusions as per AS3959-2018, section 2.2.3.2, (a) to (f).

Lot 5

Azimuth	Vegetation Classification	Effective Slope	Distance to Bushfire-prone vegetation	Hazard management area width	Bushfire Attack Level
North	Grassland^	flat 0º	0 to 100 metres	10 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		
East	Grassland^	>0 to 5º downslope	0 to >100 metres	11 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		
South	Grassland^	flat 0º	0 to 100 metres	10 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		
North-west	Exclusion 2.2.3.2 (e, f)^	flat 0º	0 to >100 metres	Title boundary	**BAL-LOW**
	--	--	--		
	--	--	--		
	--	--	--		

^ Vegetation classification as per AS3959-2018 Table 2.3 and Figures 2.4(A) to 2.4 (G).
^^ Exclusions as per AS3959-2018, section 2.2.3.2, (a) to (f).

Lot 6

Azimuth	Vegetation Classification	Effective Slope	Distance to Bushfire-prone vegetation	Hazard management area width	Bushfire Attack Level
North-east	Grassland^	>0 to 5º downslope	0 to 10 metres	10 metres	**BAL-12.5**
	Exclusion 2.2.3.2 (e, f)^	>0 to 5º downslope	10 to 30 metres		
	Grassland^	>0 to 5º downslope	30 to 100 metres		
	--	--	--		
South-east	Grassland^	>0 to 5º downslope	0 to >100 metres	11 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		
South-west	Grassland^	upslope	0 to 100 metres	10 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		
North-west	Exclusion 2.2.3.2 (e, f)^	flat 0º	0 to >100 metres	Title boundary	**BAL-LOW**
	--	--	--		
	--	--	--		
	--	--	--		

^ Vegetation classification as per AS3959-2018 Table 2.3 and Figures 2.4(A) to 2.4 (G).
^^ Exclusions as per AS3959-2018, section 2.2.3.2, (a) to (f).

Lot 7

Azimuth	Vegetation Classification	Effective Slope	Distance to Bushfire-prone vegetation	Hazard management area width	Bushfire Attack Level
North-east	Grassland^	>0 to 5º downslope	0 to 10 metres	10 metres	**BAL-12.5**
	Exclusion 2.2.3.2 (e, f)^	>0 to 5º downslope	10 to 30 metres		
	Grassland^	>0 to 5º downslope	30 to 100 metres		
	--	--	--		
South-east	Exclusion 2.2.3.2 (e, f)^	>0 to 5º downslope	0 to 40 metres	Title boundary	**BAL-12.5**
	Grassland^	>0 to 5º downslope	40 to 100 metres		
	--	--	--		
	--	--	--		
South-west	Grassland^	upslope	0 to 100 metres	10 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		
North-west	Exclusion 2.2.3.2 (e, f)^	flat 0º	0 to 80 metres	Title boundary	**BAL-LOW**
	--	--	--		
	--	--	--		
	--	--	--		

^ Vegetation classification as per AS3959-2018 Table 2.3 and Figures 2.4(A) to 2.4 (G).
^^ Exclusions as per AS3959-2018, section 2.2.3.2, (a) to (f).

Lot 8

Azimuth	Vegetation Classification	Effective Slope	Distance to Bushfire-prone vegetation	Hazard management area width	Bushfire Attack Level
North-east	Grassland^	>0 to 5º downslope	0 to 10 metres	10 metres	**BAL-12.5**
	Exclusion 2.2.3.2 (e, f)^	>0 to 5º downslope	10 to 30 metres		
	Grassland^	>0 to 5º downslope	30 to 100 metres		
	--	--	--		
South-east	Exclusion 2.2.3.2 (e, f)^	>0 to 5º downslope	0 to 80 metres	Title boundary	**BAL-LOW**
	Grassland^	>0 to 5º downslope	80 to 100 metres		
	--	--	--		
	--	--	--		
South-west	Grassland^	upslope	0 to 100 metres	10 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		
North-west	Exclusion 2.2.3.2 (e, f)^	flat 0º	0 to 40 metres	Title boundary	**BAL-12.5**
	Grassland^	flat 0º	40 to 100 metres		
	--	--	--		
	--	--	--		

^ Vegetation classification as per AS3959-2018 Table 2.3 and Figures 2.4(A) to 2.4 (G).
^^ Exclusions as per AS3959-2018, section 2.2.3.2, (a) to (f).

Lot 9

Azimuth	Vegetation Classification	Effective Slope	Distance to Bushfire-prone vegetation	Hazard management area width	Bushfire Attack Level
North-east	Grassland^	>0 to 5º downslope	0 to 10 metres	10 metres	**BAL-12.5**
	Exclusion 2.2.3.2 (e, f)^	>0 to 5º downslope	10 to 30 metres		
	Grassland^	>0 to 5º downslope	30 to 100 metres		
	--	--	--		
South-east	Exclusion 2.2.3.2 (e, f)^	>0 to 5º downslope	0 to 100 metres	Title boundary	**BAL-LOW**
	--	--	--		
	--	--	--		
	--	--	--		
South-west	Grassland^	upslope	0 to 100 metres	10 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		
North-west	Grassland^	flat 0º	0 to 100 metres	10 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		

^ Vegetation classification as per AS3959-2018 Table 2.3 and Figures 2.4(A) to 2.4 (G).
^^ Exclusions as per AS3959-2018, section 2.2.3.2, (a) to (f).

Lot 10

Azimuth	Vegetation Classification	Effective Slope	Distance to Bushfire-prone vegetation	Hazard management area width	Bushfire Attack Level
North-east	Grassland^	>0 to 5º downslope	0 to 10 metres	10 metres	**BAL-12.5**
	Exclusion 2.2.3.2 (e, f)^	>0 to 5º downslope	10 to 30 metres		
	Grassland^	>0 to 5º downslope	30 to 100 metres		
	--	--	--		
South-east	Exclusion 2.2.3.2 (e, f)^	>0 to 5º downslope	0 to 100 metres	Title boundary	**BAL-LOW**
	--	--	--		
	--	--	--		
	--	--	--		
South-west	Grassland^	upslope	0 to 100 metres	10 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		
North-west	Grassland^	flat 0º	0 to 100 metres	10 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		

^ Vegetation classification as per AS3959-2018 Table 2.3 and Figures 2.4(A) to 2.4 (G).
^^ Exclusions as per AS3959-2018, section 2.2.3.2, (a) to (f).

Lots 11 to 14 inclusive

Azimuth	Vegetation Classification	Effective Slope	Distance to Bushfire-prone vegetation	Hazard management area width	Bushfire Attack Level
North	Grassland^	flat 0º	0 to 100 metres	11 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		
East	Grassland^	>0 to 5º downslope	0 to >100 metres	11 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		
South	Grassland^	flat 0º	0 to min 25 metres	10 metres	**BAL-12.5**
	Exclusion 2.2.3.2 (e, f)^	flat 0º	min 25 to 45 metres		
	Grassland^	flat 0º	45 to 100 metres		
	--	--	--		
West	Exclusion 2.2.3.2 (e, f)^	upslope	0 to >100 metres	10 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		

^ Vegetation classification as per AS3959-2018 Table 2.3 and Figures 2.4(A) to 2.4 (G).
^^ Exclusions as per AS3959-2018, section 2.2.3.2, (a) to (f).

Balance Lot

Azimuth	Vegetation Classification	Effective Slope	Distance to Bushfire-prone vegetation	Hazard management area width	Bushfire Attack Level
North-east	Grassland^	flat 0º	0 to 100 metres	10 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		
South-east	Grassland^	>0 to 5º downslope	0 to 100 metres	11 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		
South-west	Grassland^	flat 0º	0 to 100 metres	10 metres	**BAL-12.5**
	--	--	--		
	--	--	--		
	--	--	--		
North-west	Grassland^	upslope	0 to >100 metres	10 metres	**BAL-19**
	--	--	--		
	--	--	--		
	--	--	--		

^ Vegetation classification as per AS3959-2018 Table 2.3 and Figures 2.4(A) to 2.4 (G).
^^ Exclusions as per AS3959-2018, section 2.2.3.2, (a) to (f).

Appendix C

Bushfire Hazard Management Plan

BUSHFIRE HAZARD MANAGEMENT PLAN

Bushfire Hazard Management Plan, 155 Cobbs Hill Road,
Bridgewater. March 2024. J10064v1.
Tasmanian Planning Scheme - Brighton

GES
GEO-ENVIRONMENTAL
SOLUTIONS
29 Kirksway Place, Battery Point.
T| 62231839 E| office@geosolutions.net.au

Compliance Requirements

Property Access

Property access length is 30 metres or greater; and access is required for a fire appliance to connect to a firefighting water point.
The following design and construction requirements apply to property access:
(a) All-weather construction;
(b) Load capacity of at least 20 tonnes, including for bridges and culverts;
(c) Minimum carriageway width of 4 metres;
(d) Minimum vertical clearance of 4 metres;
(e) Minimum horizontal clearance of 0.5 metres from the edge of the carriageway;
(f) Cross falls of less than 3° (1:20 or 5%);
(g) Dips less than 7° (1:8 or 12.5%) entry and exit angle;
(h) Curves with a minimum inner radius of 10 metres;
(i) Maximum gradient of 15° (1:3.5 or 28%) for sealed roads, and 10° (1:5.5 or 18%) for unsealed roads; and
(j) Terminate with a turning area for fire appliances provided by one of the following:
(i) A turning circle with a minimum outer radius of 10 metres;
(ii) A property access encircling the building; or
(iii) A hammerhead "T" or "Y" turning head 4 metres wide and 8 metres long

Water Supplies for Firefighting

The site is not serviced by a reticulated water supply, therefore a dedicated, static firefighting water supply will be provided in accordance with the following;

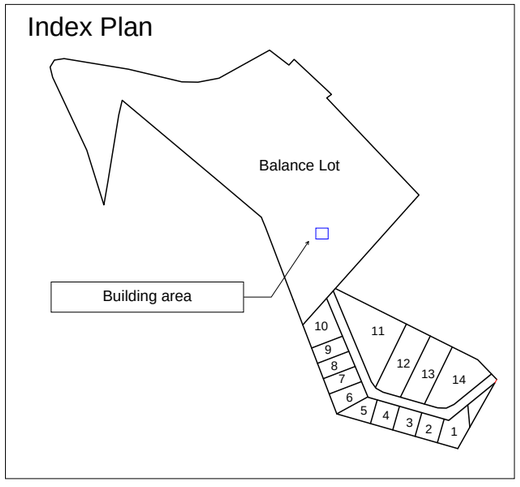
A) Distance between building area to be protected and water supply
The following requirements apply:
(a) The building area to be protected must be located within 90 metres of the fire fighting water point of a static water supply; and
(b) The distance must be measured as a hose lay, between the fire fighting water point and the furthest part of the building area.

B) Static Water Supplies
A static water supply:
(a) May have a remotely located offtake connected to the static water supply;
(b) May be a supply for combined use (fire fighting and other uses) but the specified minimum quantity of fire fighting water must be available at all times;
(c) Must be a minimum of 10,000 litres per building area to be protected. This volume of water must not be used for any other purpose including fire fighting sprinkler or spray systems;
(d) Must be metal, concrete or lagged by non-combustible materials if above ground; and
(e) If a tank can be located so it is shielded in all directions in compliance with Section 3.5 of AS 3959-2009, the tank may be constructed of any material provided that the lowest 400 mm of the tank exterior is protected by:
(i) metal;
(ii) non-combustible material; or
(iii) fibre-cement a minimum of 6 mm thickness.

C) Fittings and pipework associated with a fire fighting water point for a static water supply must:
(a) Have a minimum nominal internal diameter of 50mm; (2) Be fitted with a valve with a minimum nominal internal diameter of 50mm;
(b) Be fitted with a valve with a minimum nominal internal diameter of 50mm;
(c) Be metal or lagged by non-combustible materials if above ground;
(d) Where buried, have a minimum depth of 300mm (compliant with AS/NZS 3500.1-2003 Clause 5.23);
(e) Provide a DIN or NEN standard forged Storz 65 mm coupling fitted with a suction washer for connection to fire fighting equipment;
(f) Ensure the coupling is accessible and available for connection at all times;
(g) Ensure the coupling is fitted with a blank cap and securing chain (minimum 220 mm length);
(h) Ensure underground tanks have either an opening at the top of not less than 250 mm diameter or a coupling compliant with this Table; and
(i) Where a remote offtake is installed, ensure the offtake is in a position that is:
(i) Visible;
(ii) Accessible to allow connection by fire fighting equipment,
(iii) At a working height of 450 – 600mm above ground level; and
(iv) Protected from possible damage, including damage by vehicles.

D) Signage for static water connections
The fire fighting water point for a static water supply must be identified by a sign permanently fixed to the exterior of the assembly in a visible location. The sign must comply with the Tasmania Fire Service Water Supply Signage Guideline published by the Tasmania Fire Service

Index Plan



E) Hardstand
A hardstand area for fire appliances must be provided:
(a) No more than three metres from the fire fighting water point, measured as a hose lay (including the minimum
water level in dams, swimming pools and the like); (b) No closer than six metres from the building area to be protected;
(c) With a minimum width of three metres 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.

Hazard Management Areas

A hazard management area is required to be established and maintained for the life of the building and is shown on this BHMP. Guidance for the establishment and maintenance of the hazard management area is also provided.

Property access

Building Area

W Static Water Supply Point

Hazard Management Area

Certification No. 10064

Mark Van den Berg
Acc. No. BFP-108
Scope 1, 2, 3A, 3B, 3C.

Hazard Management Area

A hazard management area is the area, between a habitable building or building area and the bushfire prone vegetation, which provides access to a fire front for firefighting, 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. This can be achieved through, but is not limited to the following actions;

- Remove fallen limbs, sticks, leaf and bark litter;
- Maintain grass at less than a 100mm height;
- Remove pine bark and other flammable mulch (especially from against buildings);
- Thin out under-story vegetation to provide horizontal separation between fuels;
- Prune low-hanging tree branches (<2m from the ground) to provide (vertical separation between fuel layers;
- Prune larger trees to maintain horizontal separation between canopies;
- Minimise the storage of flammable materials such as firewood;
- Maintain vegetation clearance around vehicular access and water supply points;
- Use low-flammability species for landscaping purposes where appropriate;
- Clear out any accumulated leaf and other debris from roof gutters and other accumulation points.

It is not necessary to remove all vegetation from the hazard management area, trees may provide protection from wind borne embers and radiant heat under some circumstances.

Do not scale from these drawings. Dimensions to take precedence over scale. Written specifications to take precedence over diagrammatic representations.	Jinju Liao 155 Cobbs Hill Road, Bridgewater, Tas., 7030	C.T.: 158008/1 PID: 2990423	Date: 08/03/2024	Bushfire Hazard Management Plan 155 Cobbs Hill Road, Bridgewater. March 2024. J10064v1. Bushfire Management Report 155 Cobbs Hill Road, Bridgewater. March 2024. J10064v1.	Drawing Number: A01	Sheet 1 of 2 Prepared by: MvdB

BUSHFIRE HAZARD MANAGEMENT PLAN

Bushfire Hazard Management Plan, 155 Cobbs Hill Road, Bridgewater. March 2024. J10064v1.
Tasmanian Planning Scheme - Brighton

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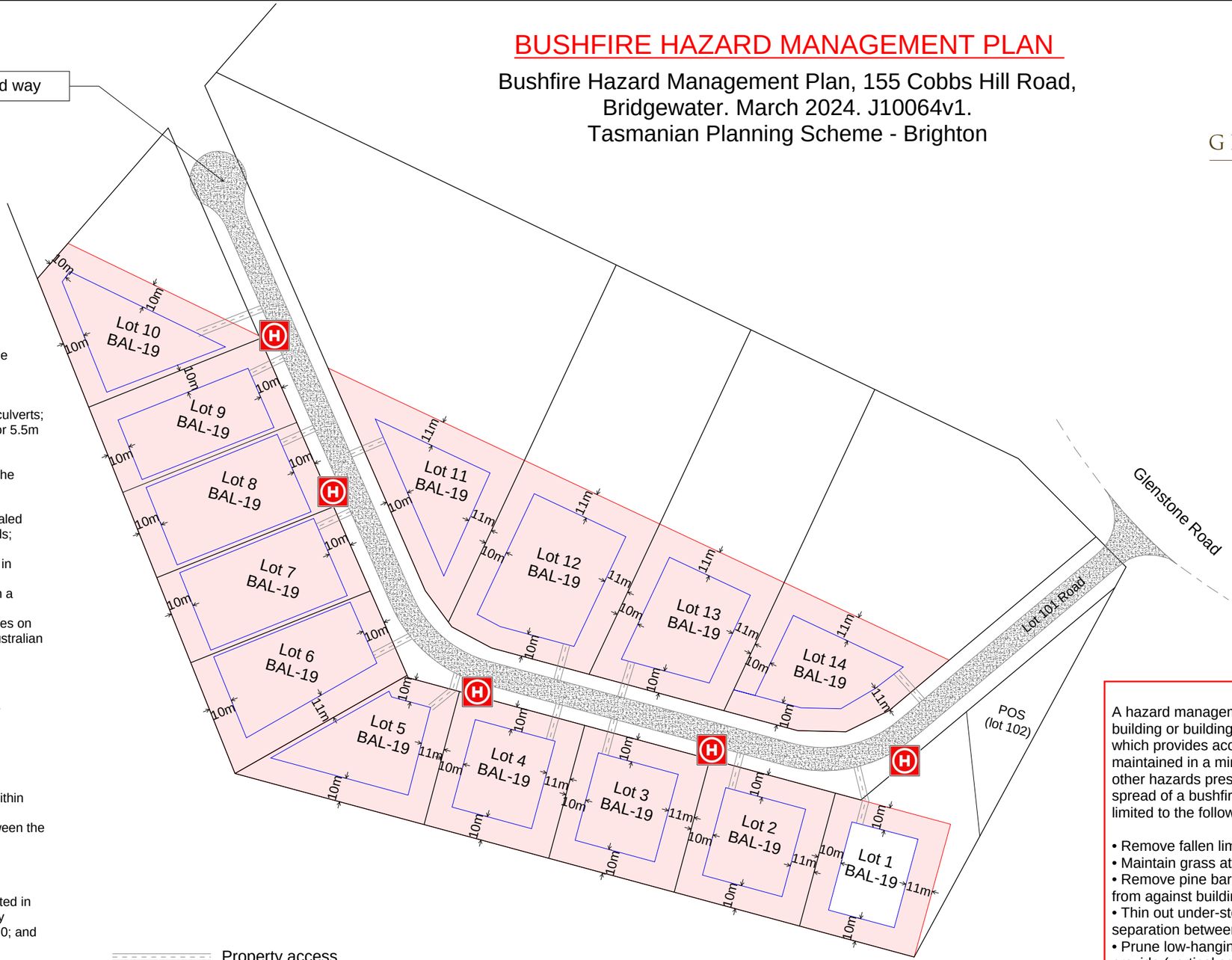

New Public Roadways

Construction of new public roadways will comply with the following minimum standards:

•two-wheel drive, all-weather construction;
•load capacity of at least 20t, including for bridges and culverts;
•minimum carriageway width is 7m for a through road, or 5.5m for a 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, and 10 degrees (1:5.5 or 18%) for unsealed roads;
•curves have a minimum inner radius of 10m;
•dead-end or cul-de-sac roads are not more than 200m in length unless the carriageway is 7 metres in width;
•dead-end or cul-de-sac roads have a turning circle with a minimum 12m outer radius;
•carriageways less than 7m wide have 'No Parking' zones on one side, indicated by a road sign that complies with Australian Standard AS1743-2001 Road signs-specifications.

Firefighting Water Supplies

New reticulated water supply points will comply with the following:

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 120 metres 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 Edition 2.0; and
(b) Fire hydrants are not installed in parking areas.

C. Hardstand
A hardstand area for fire appliances must be provided:
(a) No more than three metres from the hydrant, measured as a hose lay;
(b) No closer than six metres from the building area to be protected;
(c) With a minimum width of three metres 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.

Hazard Management Areas

The hazard management area is required to be established and maintained until the Balance Lot has been divided into lots . Guidance for the establishment and maintenance of the hazard management area is provided below.

Property access

Building Area

Indicative hydrant location

Hazard Management Area

Note:
Hazard management areas on lots 6 to 9 inclusive will be established prior to the sealing of titles, establishment is the responsibility of the developer, ongoing maintenance will be the responsibility of each lot owner. A suitable instrument to ensure the ongoing maintenance of hazard management areas on lots 6 to 9 inclusive should be included as part of the sealing of titles and is required to validate this Bushfire Hazard Management Plan.

New Crossovers and hydrants subject to final civil and hydraulic design.

Hazard Management Area
A hazard management area is the area, between a habitable building or building area and the bushfire prone vegetation, which provides access to a fire front for firefighting, 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. This can be achieved through, but is not limited to the following actions;

• Remove fallen limbs, sticks, leaf and bark litter;
• Maintain grass at less than a 100mm height;
• Remove pine bark and other flammable mulch (especially from against buildings);
• Thin out under-story vegetation to provide horizontal separation between fuels;
• Prune low-hanging tree branches (<2m from the ground) to provide (vertical separation between fuel layers;
• Prune larger trees to maintain horizontal separation between canopies;
• Minimise the storage of flammable materials such as firewood;
• Maintain vegetation clearance around vehicular access and water supply points;
• Use low-flammability species for landscaping purposes where appropriate;
• Clear out any accumulated leaf and other debris from roof gutters and other accumulation points.

It is not necessary to remove all vegetation from the hazard management area, trees may provide protection from wind borne embers and radiant heat under some circumstances.

Certification No. 10064

Mark Van den Berg
Acc. No. BFP-108
Scope 1, 2, 3A, 3B, 3C.

Do not scale from these drawings. Dimensions to take precedence over scale. Written specifications to take precedence over diagrammatic representations.	Jinju Liao 155 Cobbs Hill Road, Bridgewater, Tas., 7030	C.T.: 158008/1 PID: 2990423	Date: 08/03/2024	Bushfire Hazard Management Plan 155 Cobbs Hill Road, Bridgewater. March 2024. J10064v1. Bushfire Management Report 155 Cobbs Hill Road, Bridgewater. March 2024. J10064v1.	Drawing Number: A01	Sheet 2 of 2 Prepared by: MvdB

Appendix D

Planning Certificate

BUSHFIRE-PRONE AREAS CODE

CERTIFICATE[1] 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:	155 Cobbs Hill Road, Bridgewater
Certificate of Title / PID:	158008/1

2. Proposed Use or Development

Description of proposed Use and Development:	Fourteen lot plus balance Subdivision with new public roadway construction and water infrastructure.
Applicable Planning Scheme:	Tasmanian Planning Scheme – Brighton

3. Documents relied upon

This certificate relates to the following documents:

Title	Author	Date	Version
Plan of Subdivision	PDA Surveyors	07/02/2024	51911CT-P1A
Bushfire Hazard Report 155 Cobbs Hill Road, Bridgewater. March 2024. J10064v1.	Geo-Environmental Solutions. M. Van den Berg	08/03/2024	V1
Bushfire Hazard Management Plan 155 Cobbs Hill Road, Bridgewater. March 2024. J10064v1.	Geo-Environmental Solutions. M. Van den Berg	08/03/2024	V1

[1] 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:

☐	**E1.4 / C13.4 – Use or development exempt from this Code**	
	Compliance test	**Compliance Requirement**
☐	E1.4(a) / C13.4.1(a)	Insufficient increase in risk

☐	**E1.5.1 / C13.5.1 – Vulnerable Uses**	
	Acceptable Solution	**Compliance Requirement**
☐	E1.5.1 P1 / C13.5.1 P1	***Planning authority discretion required. A proposal cannot be certified as compliant with P1.***
☐	E1.5.1 A2 / C13.5.1 A2	Emergency management strategy
☐	E1.5.1 A3 / C13.5.1 A2	Bushfire hazard management plan

☐	**E1.5.2 / C13.5.2 – Hazardous Uses**	
	Acceptable Solution	**Compliance Requirement**
☐	E1.5.2 P1 / C13.5.2 P1	***Planning authority discretion required. A proposal cannot be certified as compliant with P1.***
☐	E1.5.2 A2 / C13.5.2 A2	Emergency management strategy
☐	E1.5.2 A3 / C13.5.2 A3	Bushfire hazard management plan

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

☐	**E1.6.2 / C13.6.2 Subdivision: Public and fire fighting access**	
	Acceptable Solution	**Compliance Requirement**
☐	E1.6.2 P1 / C13.6.2 P1	***Planning authority discretion required. A proposal cannot be certified as compliant with P1.***
☐	E1.6.2 A1 (a) / C13.6.2 A1 (a)	Insufficient increase in risk
☒	E1.6.2 A1 (b) / C13.6.2 A1 (b)	Access complies with relevant Tables

☐	**E1.6.3 / C13.1.6.3 Subdivision: Provision of water supply for fire fighting purposes**	
	Acceptable Solution	**Compliance Requirement**
☐	E1.6.3 A1 (a) / C13.6.3 A1 (a)	Insufficient increase in risk
☒	E1.6.3 A1 (b) / C13.6.3 A1 (b)	Reticulated water supply complies with relevant Table (Lots 1 to 14)
☐	E1.6.3 A1 (c) / C13.6.3 A1 (c)	Water supply consistent with the objective
☐	E1.6.3 A2 (a) / C13.6.3 A2 (a)	Insufficient increase in risk
☒	E1.6.3 A2 (b) / C13.6.3 A2 (b)	Static water supply complies with relevant Table (Balance Lot)
☐	E1.6.3 A2 (c) / C13.6.3 A2 (c)	Static water supply consistent with the objective

5. Bushfire Hazard Practitioner

Name:	Mark Van den Berg	**Phone No:**	03 62231839
Postal Address:	29 Kirksway Place, Battery Point. Tas. 7004	**Email Address:**	mvandenberg@geosolutions.net.au
Accreditation No:	BFP – 108	**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: Mark Van den Berg **Date:** 08/03/2024

Certificate Number: J10064v1

(for Practitioner Use only)