Application for Planning Approval

Land Use Planning and Approvals Act 1993

APPLICATION NO.

SA2023/019

LOCATION OF AFFECTED AREA

10 ALANAH COURT, OLD BEACH; 89 BASKERVILLE ROAD, OLD BEACH & 31 BASKERVILLE ROAD, OLD BEACH.

DESCRIPTION OF DEVELOPMENT PROPOSAL

SUBDIVISION (3 LOTS PLUS BALANCE)

A COPY OF THE DEVELOPMENT APPLICATION MAY BE VIEWED AT www.brighton.tas.gov.au AND AT THE COUNCIL OFFICES, 1 TIVOLI ROAD, OLD BEACH, BETWEEN 8:15 A.M. AND 4:45 P.M, MONDAY TO FRIDAY OR VIA THE QR CODE BELOW. ANY PERSON MAY MAKE WRITTEN REPRESENTATIONS IN ACCORDANCE WITH S.57(5) OF THE LAND USE PLANNING AND APPROVALS ACT 1993 CONCERNING THIS APPLICATION UNTIL 4:45 P.M. ON **08/07/2024**. ADDRESSED TO THE GENERAL MANAGER AT 1 TIVOLI ROAD, OLD BEACH, 7017 OR BY EMAIL AT development@brighton.tas.gov.au. REPRESENTATIONS SHOULD INCLUDE A DAYTIME TELEPHONE NUMBER TO ALLOW COUNCIL OFFICERS TO DISCUSS, IF NECESSARY, ANY MATTERS RAISED.

JAMES DRYBURGH
General Manager

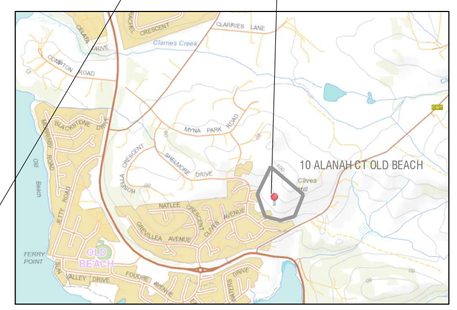
SCAN ME

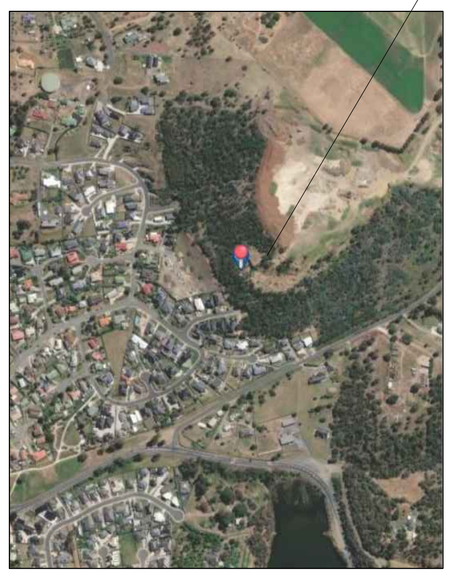
Brighton
going places

LOCALITY SKETCH

Not to Scale

SITE





10 ALANAH CT, OLD BEACH

NOT FOR CONSTRUCTION

DOCUMENT CONTROL SCHEDULE				
	DRAWING	CONTENT	SHEET	REV
GENERAL				
	C01	COVER SHEET, LOCALILTY MAP AND DRAWING LIST	1	E
	C01A	GENERAL NOTES	2A	A
ENGINEERING PLANS				
	C02	OVERALL PLAN	2	D
	C03	ROAD ACCESS & VEHICLE PLAN	3	D
	C03b	WATER, SEWER & STORMWATER PLAN	3b	E
	C04	ALANAH COURT LONG SECTION AND TYPICAL SECTION	4	C
	C04B	ALANAH COURT CROSS SECTION	4B	B
	C05	VEHICLE ACCESS LONGSECTIONS	5	D
	C05a	ACCESS CROSS SECTIONS	5A	D
	C05b	TYPICAL RETAINING WALL DETAIL	5B	D
	C06	~~TYPICAL CROSS SECTION WITHDRAWN~~	6	A
	C07a	PIPE LONGSECTION: SEWER	7a	A
	C07b	PIPE LONGSECTION: STORMWATER	7b	D
HYDRAULIC ANALYSIS	C08	STORMWATER CATCHMENT & RUNOFF PLAN	8	D

NOTES

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3. LOT BOUNDARIES ARE SUBJECT TO CHANGE - REFER TO SURVEYOR'S PLANS FOR ACCURATE BOUNDARY LOCATIONS.
4. TAS NETWORKS AND TELSTRA SERVICES ARE NOT SHOWN. REFER TO TAS NETWORKS AND TELSTRA DRAWINGS BY OTHERS.
5. YOU MUST CONTACT DIAL BEFORE YOU DIG TO CHECK THE LOCATIONS OF ANY SITE SERVICES BEFORE WORK STARTS.

CLIENT: CLIENT: ASCF MI Pty Ltd

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APPROVED:

Stephen Cole, Principal Engineer
B Eng (Civil & Environmental), CPEng
WST Accreditation: Engineer Civil CC5900 T

No.	AMENDMENT DESCRIPTION	DATE
A	FOR PLANNING APPROVAL	06/06/2023
B	FOR PLANNING APPROVAL	20/11/2023
C	NOTES SHEET ADDED TO CONTROL SCHEDULE	15/02/2024
D	NOTES SHEET ADDED TO CONTROL SCHEDULE	22/04/2024
E	NOTES SHEET ADDED TO CONTROL SCHEDULE	21/05/2024

3 LOT SUBDIVISION
10 ALANAH CT, OLD BEACH
COVER PAGE

SCALE 1:100
DRAWN E.LEGG
DATE SEP 2023

DRAWING No. 22190 C01

REVISION (E)

GENERAL NOTES

1. BEFORE COMMENCING ANY EARTHWORKS YOU MUST CONTACT DIAL BEFORE YOU DIG 1100 REGARDING THE LOCATION OF UNDERGROUND ASSETS ON SITE
2. PRIOR TO COMMENCING WORKS, THE CONTRACTOR MUST SUBMIT AN APPLICATION FOR (WS02A) AND RECEIVE A PERMIT TO CONSTRUCT NEW TASWATER INFRASTRUCTURE (WS02P).
3. PIPE DEPTHS ARE SHOWN TO INVERT ONLY. ALLOW EXTRA 100MM DEPTH FOR BEDDING
4. ALL CONCRETE IS GRADE N25 U.N.O.
5. ALL WORKS TO COUNCIL STANDARD SPECIFICATIONS AND DRAWING U.N.O
6. CONNECTIONS TO EXISTING TASWATER AND COUNCIL SERVICES TO BE TO TASWATER AND COUNCIL STANDARDS AND APPROVAL
7. ALL AREAS OF FILL OR DISTURBANCE TO BE REINSTATED WITH MINIMUM OF 100MM OF APPROVED TOPSOIL & SEEDED WITH APPROVED SEED MIX
8. MARKERS TO BE PLACED FOR TELSTRA CONDUIT LOCATION UNDER ACCESSES
9. WATER CONNECTIONS TO EXISTING TAS WATER SERVICES TO BE UNDERTAKEN BY TASWATER AT DEVELOPER'S COST

SOIL AND WATER MANAGEMENT

SOIL & WATER MANAGEMENT IS TO COMPLY WITH BEST PRACTICE TO PREVENT ANY TRANSFER OF SOIL MATERIAL OUTSIDE OF THE AREA SPECIFICALLY NECESSARILY DISTURBED FOR CONSTRUCTION OF THE SUBDIVISION. PARTICULAR ATTENTION SHALL BE PAID TO ENSURE THAT NO SOIL MATERIAL IS TRACKED ONTO ROADS & FOOTPATHS OR TO ENTER COUNCILS STORMWATER SYSTEM. ALL ASPECTS & PROTECTION MEASURES IN CONNECTION WITH SOIL & WATER MANAGEMENT ARE TO COMPLY WITH THE REQUIREMENTS COUNCILS DEVELOPMENT ENGINEER. THE CONTRACTOR SHALL SUBMIT A SOIL & WATER MANAGEMENT PLAN PRIOR TO STARTING WORK ON SITE.

REFER SOIL AND WATER MANAGEMENT CODE OF PRACTICE FOR HOBART AND REGIONAL COUNCILS.

ROAD AND STORMWATER NOTES

1. ALL WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH THE TASMANIAN COUNCILS STANDARDS FOR SUBDIVISIONS AND IPWEA AND AWA STANDARD DRAWINGS WHERE APPLICABLE.
2. ALL SERVICES WITHIN THE ROAD RESERVATION TO BE LOCATED IN ACCORDANCE WITH TSD -G02
3. ALL PIPEWORK UNDER ROADS AND DRIVEWAYS TO BE BACKFILLED WITH FCR.
4. ALL SIDE ENTRY PITS TO BE CONSTRUCTED IN ACCORDANCE WITH TSD-SW09 OR TSD-SW10 UNLESS OTHERWISE APPROVED BY THE MUNICIPAL ENGINEER.

SEWER NOTES

5. CONNECTIONS TO EXISTING SEWER MAINS TO BE CARRIED OUT BY TASWATER AT THE DEVELOPERS EXPENSE.
6. ALL MAINTENANCE STRUCTURES TO BE IN ACCORDANCE WITH WSA SEW1300 SERIES.
7. MANHOLE LIDS TO BE IN ACCORDANCE WITH AS3996:2006 & WSAA. CLASS 'D' IN ROAD RESERVES AND CLASS 'B' IN NON TRAFFICABLE AREAS.
8. PROVIDE 100Ø SEWER CONNECTION TO EACH LOT AS INDICATED ON THE PLAN. SEWER CONNECTION I.O'S TO BE RAISED TO THE SURFACE AND PROTECTED WITH A POLY COVER TO TASWATER APPROVAL PER STD DWG MRWA S-301 & 302 & TASWATER SEWER CODE SUPPLEMENT.
9. ALL PIPEWORK UNDER ROADS, DRIVEWAYS AND TRAFFICABLE AREAS TO BE BACKFILLED WITH FCR IN ACCORDANCE WITH STD DWG MRWA-S-201. TRAFFICABLE COVERS TO MRWA SECT 4.15.2.
10. ALL WORKS TO BE IN ACCORDANCE WITH THE SEWERAGE CODE OF AUSTRALIA WSA 02-2014-3.1 MRWA VERSION 2.0 & TASWATER SUPPLEMENT.
11. ALL WORKS MUST BE INSPECTED AND TESTED BY TASWATER PRIOR TO BACKFILL.
12. MINIMUM PIPE COVER TO BE PER STD DWG MRWA-S-201 OF THE SEWERAGE CODE OF AUSTRALIA WSA 02-2014-3.1 MRWA VERSION 2.0
13. CLEARANCES BETWEEN SEWER & OTHER UNDERGROUND SERVICES TO BE IN ACCORDANCE WITH WSA 02-2014-3.1 MRWA VERSION 2.0 TABLE 4.2

WATER NOTES

1. CONNECTIONS TO EXISTING WATER MAINS TO BE CARRIED OUT BY TASWATER AT DEVELOPERS EXPENSE.
2. HOUSE CONNECTION TO EACH LOT TO BE DN25 PE 100 PN 16 PIPE AS INDICATED ON THE PLANS. IN ACCORDANCE WITH TWS-W-0002. EACH LOT IS TO BE SUPPLIED WITH AN INDIVIDUAL 20MM DIAMETER METER WITH INTEGRAL DUAL CHECK VALVE AND GATE VALVE WITH A PVC BOX AS SPECIFIED BY TASWATER.
3. DETECTOR TAPE IS TO BE INSTALLED OVER ALL NON-METALLIC WATER MAINS.
4. ALL FIRE HYDRANT COMPONENTS TO BE DN100.
5. HYDRANT ROAD MARKING INDICATORS SHALL BE INSTALLED IN ACCORDANCE WITH SEC.8 IPWEA TAS "FIRE HYDRANT GUIDELINES"
6. ALL PIPEWORK UNDER ROADS AND DRIVEWAYS TO BE BACKFILLED WITH FCR IN ACCORDANCE WITH WAT-1201-V.
7. ALL WORKS MUST BE TO THE WATER SUPPLY CODE OF AUSTRALIA WSA 03 -2011-3.1 VERSION 3.1 MRWA EDITION V2. AND TASWATER'S SUPPLEMENTS, TASWATER'S STANDARD DRAWINGS TW-SD-W-20 SERIES, WATER METERING POLICY / METERING GUIDELINES, BOUNDARY BACKFLOW CONTAINMENT REQUIREMENTS & AS3500.1:2003.
8. WATER MAINS >= 100mm TO BE mPVC OR oPVC TYPE 2 CLASS 16 PIPE OR <100mm TO BE PE PIPE CLASS 16.
9. ALL WORKS MUST BE INSPECTED AND TESTED BY TAS WATER PRIOR TO BACKFILL.
10. MINIMUM PIPE COVER TO BE PER TABLE 5.4.2.1 OF TAS WATER SUPPLEMENT TO WATER SUPPLY CODE OF AUSTRALIA WSA V3.1 03-2011 & TAS WATER SUPPLEMENT.
11. THRUST BLOCKS TO BE IN ACCORDANCE WITH WATER SUPPLY CODE OF AUSTRALIA WSA V3.1 03-2011
12. FOR WATERMAINS OF 200MM DIA OR LESS THE HORIZONTAL CLEARANCE TO OTHER SERVICES OR SERVICE STRUCTURES SHALL BE PROVIDED IN ACCORDANCE WITH WSA 03-2011-3.1 MRWA ED VERS 2 AND TASWATER SUPPLEMENT.

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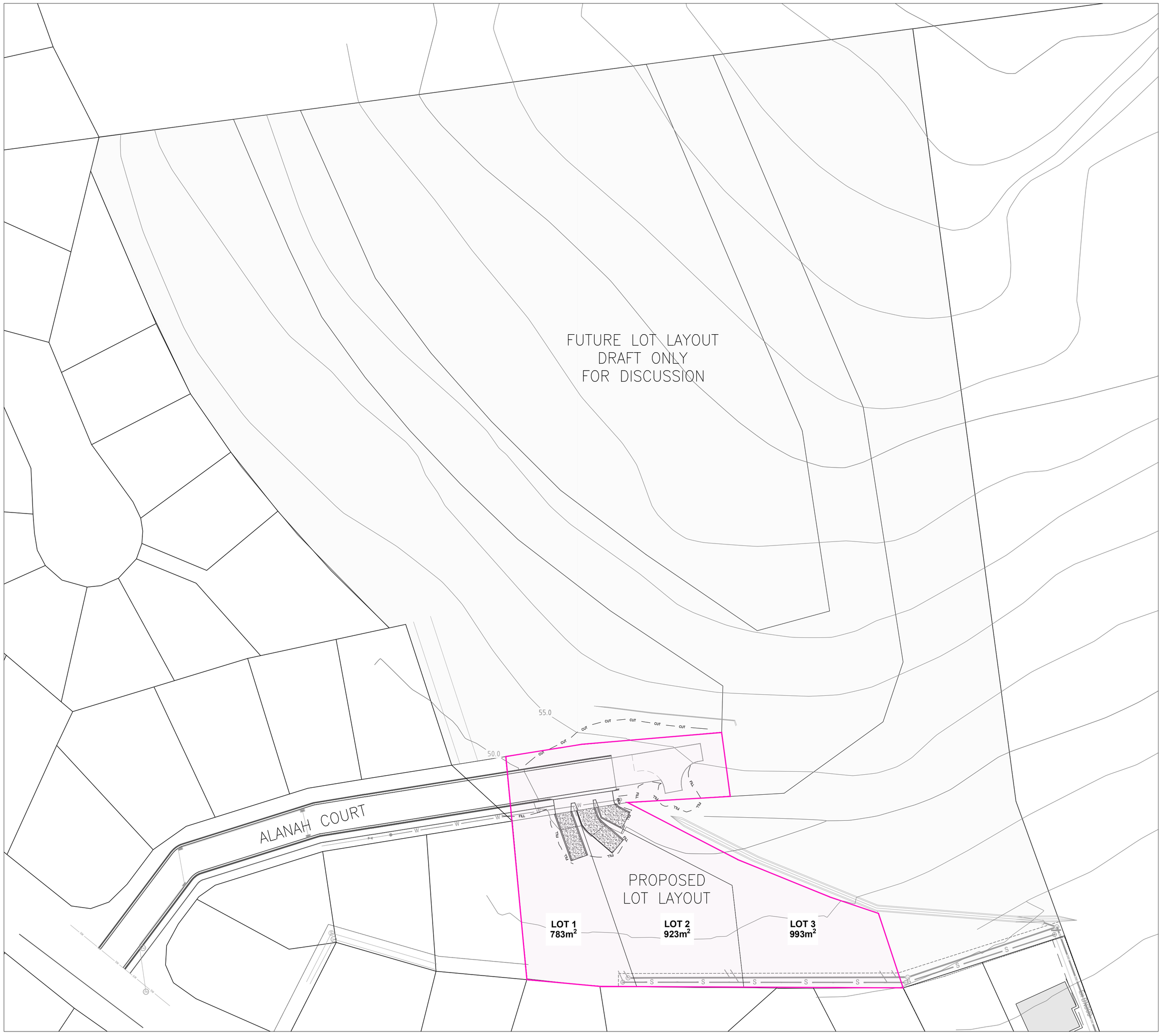
No.	AMENDMENT DESCRIPTION	DATE
A	NOTE SHEET ADDED	15/02/2024

3 LOT SUBDIVISION
10 ALANAH CT, OLD BEACH
GENERAL NOTES

SCALE NA
DRAWN E.LEGG
DATE SEP 2023

DRAWING No. 22190 C01A
REVISION A



GENERAL NOTES

LAYOUT OF FUTURE LOTS IS FOR DISCUSSION PURPOSES ONLY.

ROAD ALIGNMENT AND LOT LAYOUT SHOWN MAY CHANGE IN THE FUTURE AND ONLY TO BE TAKEN IN CONSIDERATION FOR ACCESSIBILITY FROM ALANAH COURT.

EXTENSION OF ALANAH COURT TO OCCUR AS FAR AS TURNING HEAD, SEE SHEET 5 FOR DETAILS.

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22/05/2024

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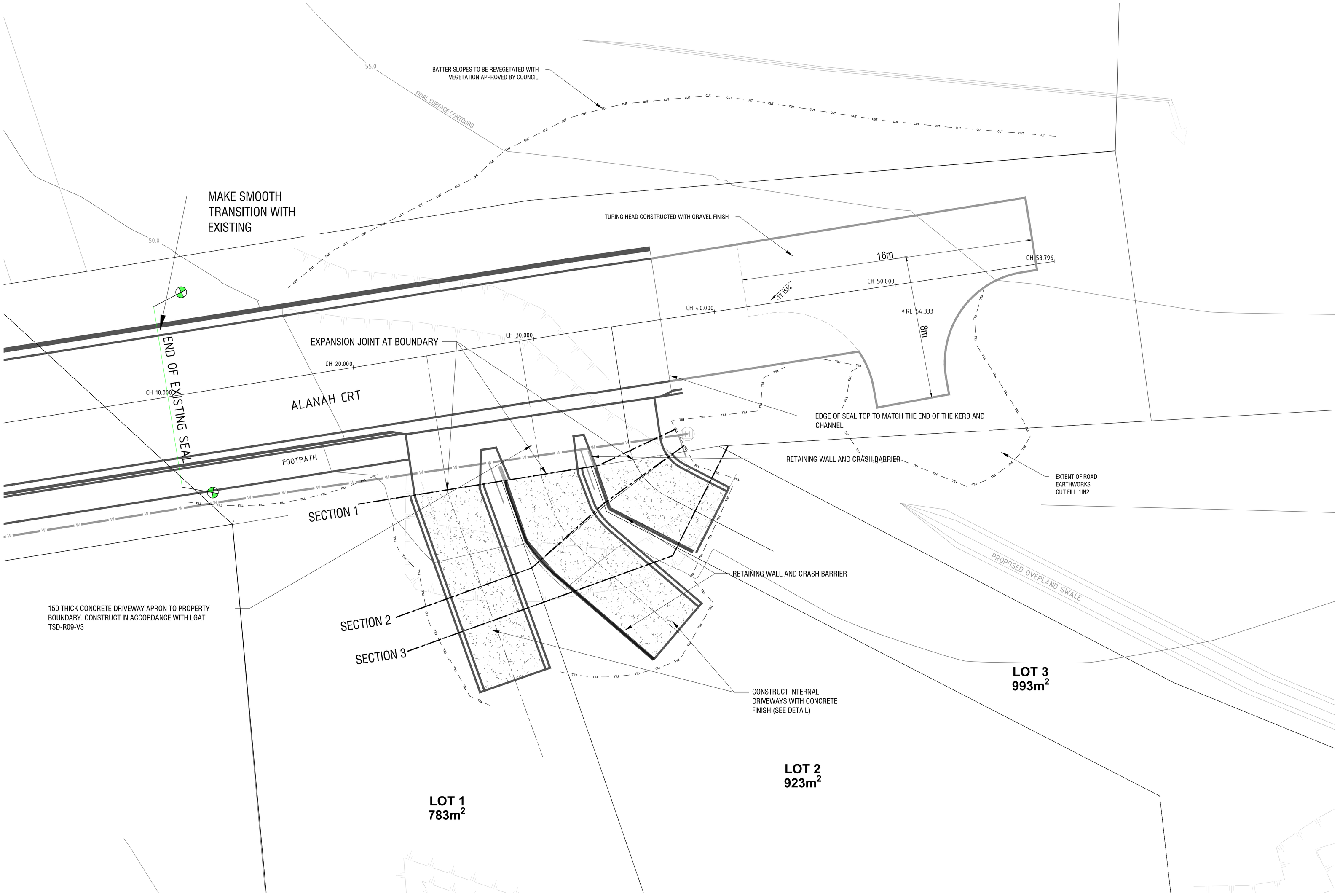
No.	AMENDMENT DESCRIPTION	DATE
A	FOR PLANNING APPROVAL	06/06/2023
B	FOR PLANNING APPROVAL	20/11/2023
C	ROAD CROSS SECTIONS	14/03/2024
D	CHANGES TO DRIVEWAY ALIGNMENT	22/04/2024

3 LOT SUBDIVISION
10 ALANAH CT, OLD BEACH
OVERALL PLAN

SCALE 1:500
DRAWN E.LEGG
DATE SEP 2023

DRAWING No. 22190 C02

REVISION D



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No.	AMENDMENT DESCRIPTION	DATE
A	FOR PLANNING APPROVAL	06/06/2023
B	FOR PLANNING APPROVAL	20/11/2023
C	DRAFT FOR COUNCIL COMMENT	18/03/2024
D	CHANGES TO DRIVEWAY ALIGNMENT	22/04/2024

3 LOT SUBDIVISION
10 ALANAH CT, OLD BEACH
ROAD & VEHICLE ACCESS PLAN

SCALE 1:100
DRAWN E.LEGG
DATE SEP 2023

DRAWING No. 22190 C03

REVISION (D)

GENERAL NOTES

STORMWATER PROPERTY CONNECTIONS
ALL STORMWATER LOT CONNECTIONS TO BE ø150 BUILT IN ACCORDANCE WITH TSW-SW25-v3

SEWER PROPERTY CONNECTIONS
LOT 1 PROPERTY CONNECTION TO MANHOLE TO BE ø100 TYPE A OF MRWA-S-303

LOTS 2 & 3 PROPERTY CONNECTION TO PIPE TO BE ø100 TYPE S OF MRWA-S-301

WATER PROPERTY CONNECTION
ALL LOTS TO HAVE DN20 HDPE PN16 WATER CONNECTION IN ACCORDANCE WITH TW-SD-W-20 SH1

Ex FIRE TRAIL

55.0 FINAL SURFACE CONTOURS

50.0

400 DEEP CUT-OFF DRAIN, SIDE SLOPE 1:2

MIN 2% MAX 5% FALL TO OUTLET

ALANAH COURT
FUTURE

TURING HEAD CONSTRUCTED WITH GRAVEL FINISH

HYDRANT

EXISTING FIRE HYDRANT

FOOTPATH

WATER PROPERTY CONNECTION TO BE IN ACCORDANCE WITH MRWA-W-110 & MRWA-W-111

EXTENSION OF WATER MAIN TO CONNECT TO EXISTING HYDRANT

500 DEEP CUT-OFF DRAIN, SIDE SLOPE 1:3

LOT 1
783m²

LOT 2
923m²

LOT 3
993m²

LOT 1 STORMWATER CONNECTION
LOT 1 SEWER CONNECTION

LOT 2 STORMWATER CONNECTION
LOT 2 SEWER CONNECTION

LOT 3 STORMWATER CONNECTION
LOT 3 SEWER CONNECTION

DN300 MIN FALL 1% TO PIT 1.1

HEADWALL IN ACCORDANCE WITH LGAT TSD-SW17-v3

SWALE TO DIRECT OVERFLOW WATER FROM HEADWALL INTO NEIGHBORING BUSHLAND

HW2.1

SW1.1

S1.1

300MM HIGH BERM ON LOW SIDE OF PIT TO DIRECT OVERFLOW FROM MANHOLE INTO NEIGHBORING BUSHLAND

PROPOSED DRAINAGE & SEWER EASEMENT
(3m WIDE & VARIABLE)

DN300

DN150

SW1.3

SW1.2

S1.3

S1.2

DN225

DN150

NEW SEWER MAN HOLE CONSTRUCTED OVER END OF EXISTING PIPE

EXISTING SEWER PIPE. NOT CURRENTLY SHOWN ON TASWATER SEWER PLAN.

NO DEFECTS OBSERVED IN CCTV REPORT.

PROPOSED TO BE TAKEN OVER BY TASWATER.

PROPOSED DRAINAGE & SEWER EASEMENT
(3m WIDE)

SW Ex

S. Ex

31 BASKERVILLE ROAD

29 BASKERVILLE ROAD

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P2405/002v

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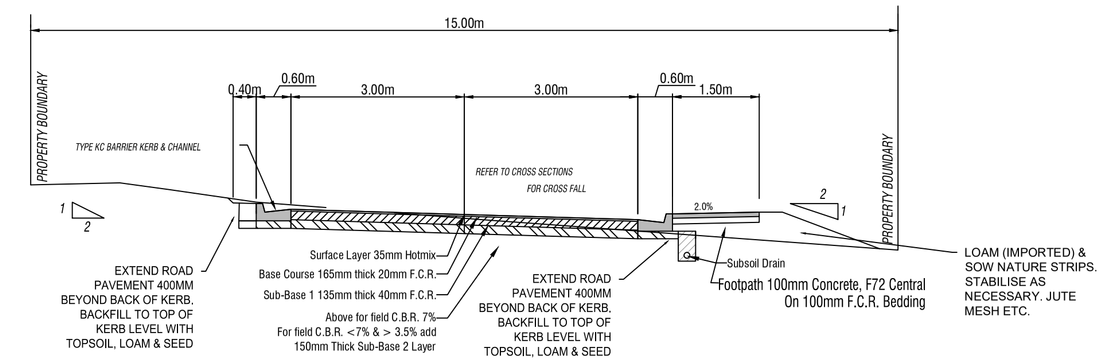
No.	AMENDMENT DESCRIPTION	DATE
A	FOR PLANNING APPROVAL	20/11/2023
B	EXISTING SEWER PIPE LOCATED AND SHOWN	15/02/2024
C	EXTENT OF EARTHWORKS CUT AND FILL	14/03/2024
D	CHANGES TO DRIVEWAY ALIGNMENT	22/04/2024
E	CHANGES TO STORMWATER NETWORK	21/05/2024

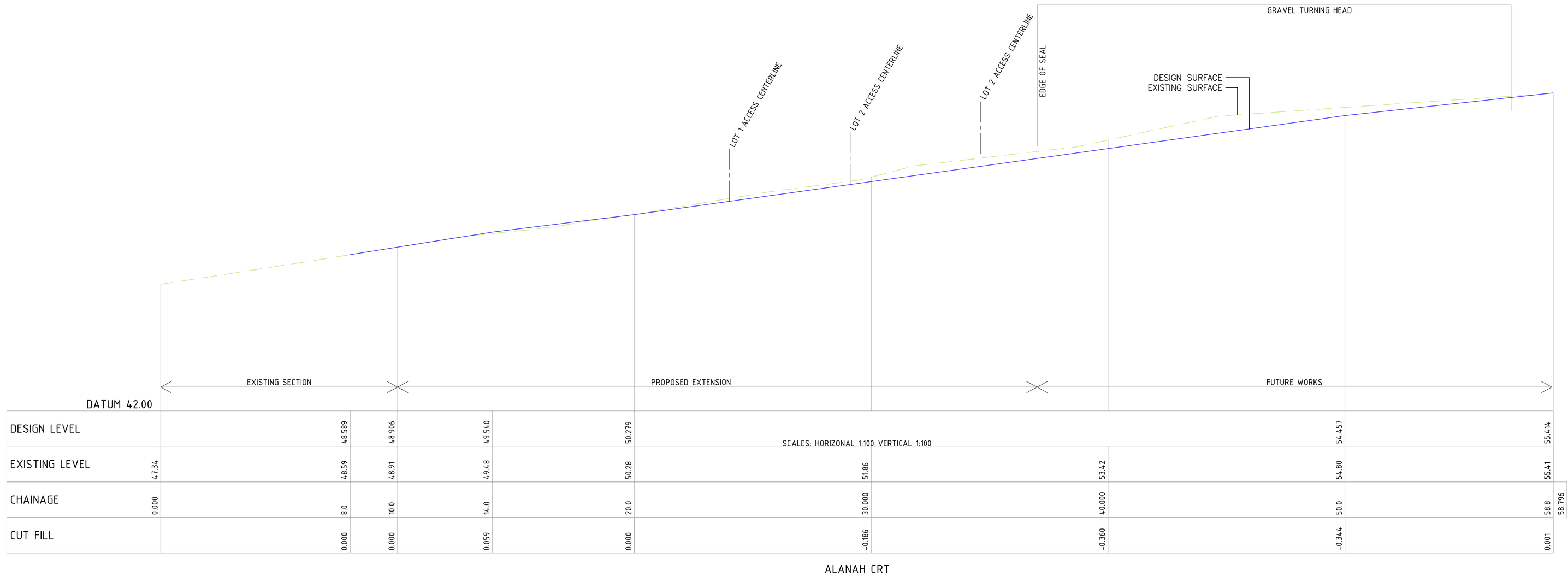
3 LOT SUBDIVISION
10 ALANAH CT, OLD BEACH
WATER, SEWER & STORMWATER PLAN

SCALE 1:250
DRAWN E.LEGG
DATE SEP 2023

DRAWING No. 22190 C03b
REVISION E



TYPICAL CROSS SECTION
ALANAH COURT



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P:\22190\

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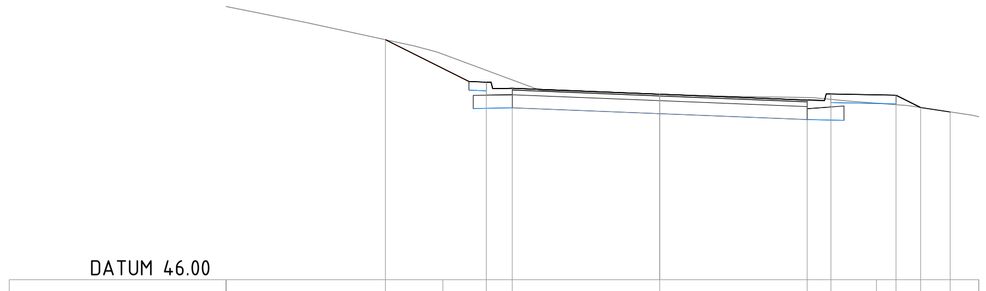
No.	AMENDMENT DESCRIPTION	DATE
A	FOR PLANNING APPROVAL	06/06/2023
B	FOR PLANNING APPROVAL	20/11/2023
C	CHANGES TO DRIVEWAY ALIGNMENT	22/04/2024

3 LOT SUBDIVISION
10 ALANAH CT, OLD BEACH
ALANAH COURT LONG SECTION AND TYPICAL SECTION

SCALE 1:100
DRAWN E.LEGG
DATE SEP 2023

DRAWING No. 22190 C04

REVISION C



DATUM 46.00

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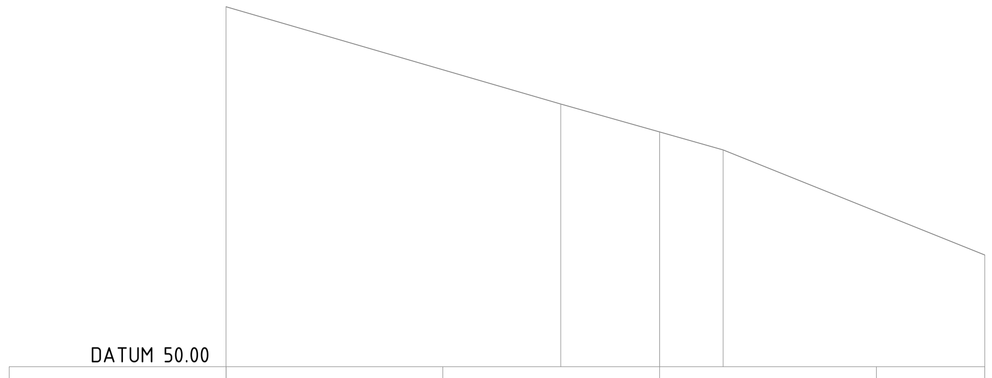
ALANAH CRT
CH 20.000



DATUM 50.00

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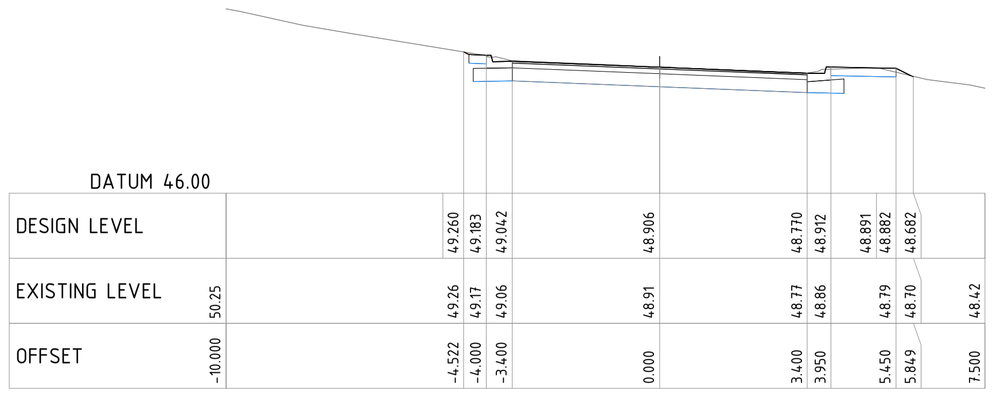
ALANAH CRT
CH 58.796



DATUM 46.00

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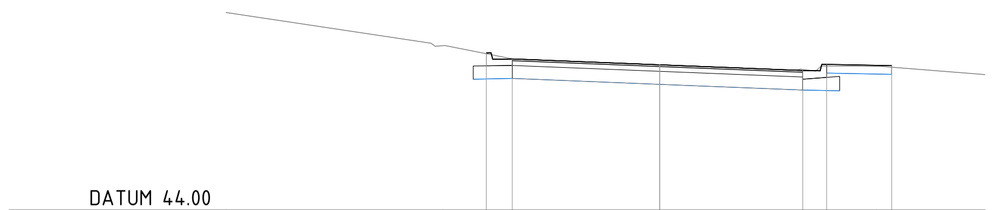
ALANAH CRT
CH 10.000



DATUM 44.00

DESIGN LEVEL			47.618	47.477		47.341		47.209	47.351		47.328	47.321			
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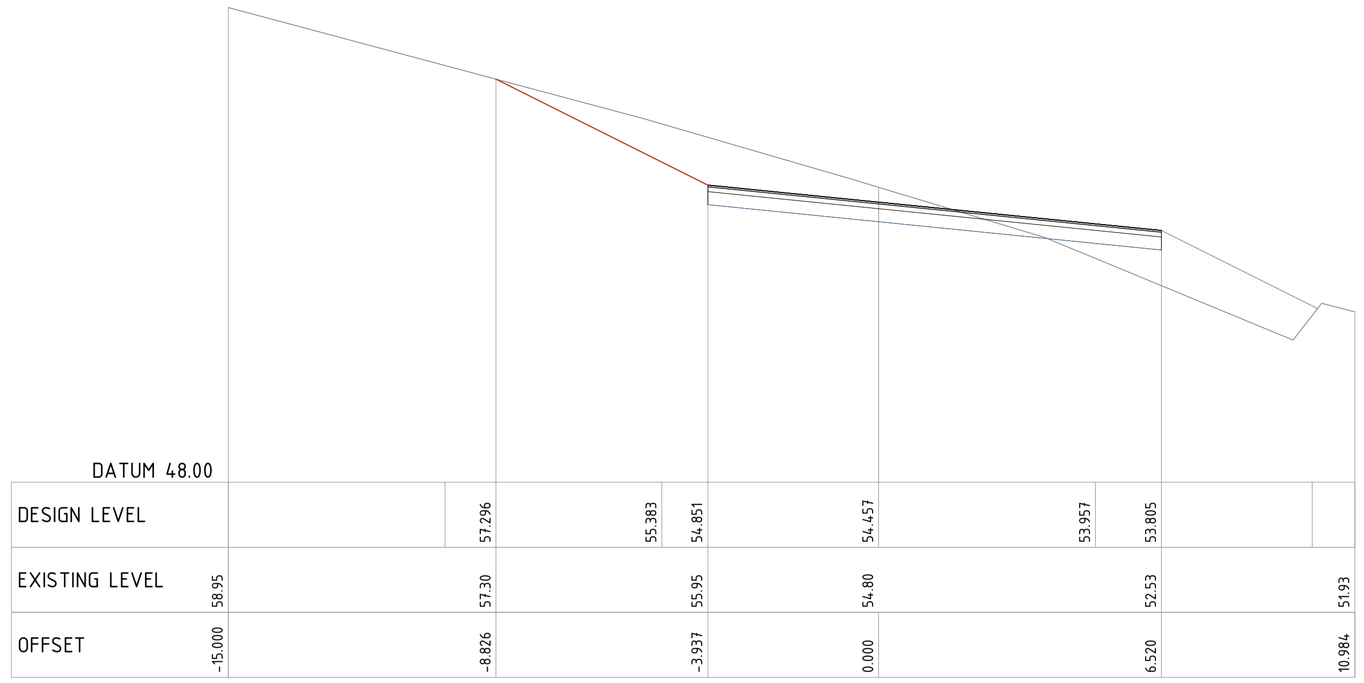
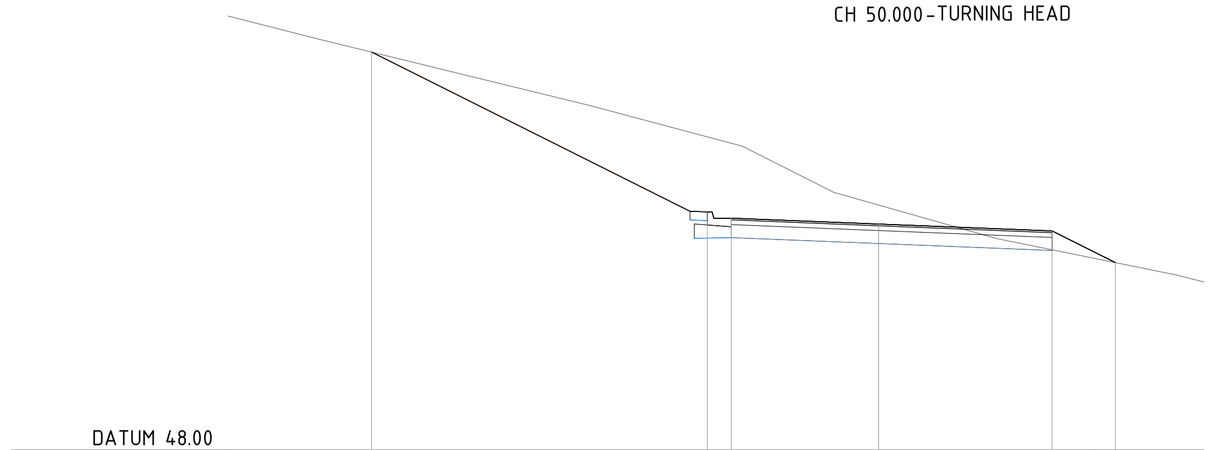
EXISTING ROAD SECTION
CH 0.000



DATUM 48.00

DESIGN LEVEL		57.296			55.383		54.851			54.457			53.957	53.805	
EXISTING LEVEL	58.95	57.30			55.95		54.80			52.53			51.93		
OFFSET	-15.000	-8.826			-3.937		0.000			6.520			10.984		

ALANAH CRT
CH 50.000 - TURNING HEAD



DATUM 48.00

DESIGN LEVEL		57.169		56.323		53.823	53.482	53.340		53.204		53.044	52.544	52.393	
EXISTING LEVEL	58.00	57.17					55.21	55.07		53.64		52.61		52.31	51.87
OFFSET	-15.000	-11.693					-3.950	-3.400		0.000		4.000		5.461	7.500

ALANAH CRT
CH 41.000

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APPROVED:

Stephen Cole, Principal Engineer
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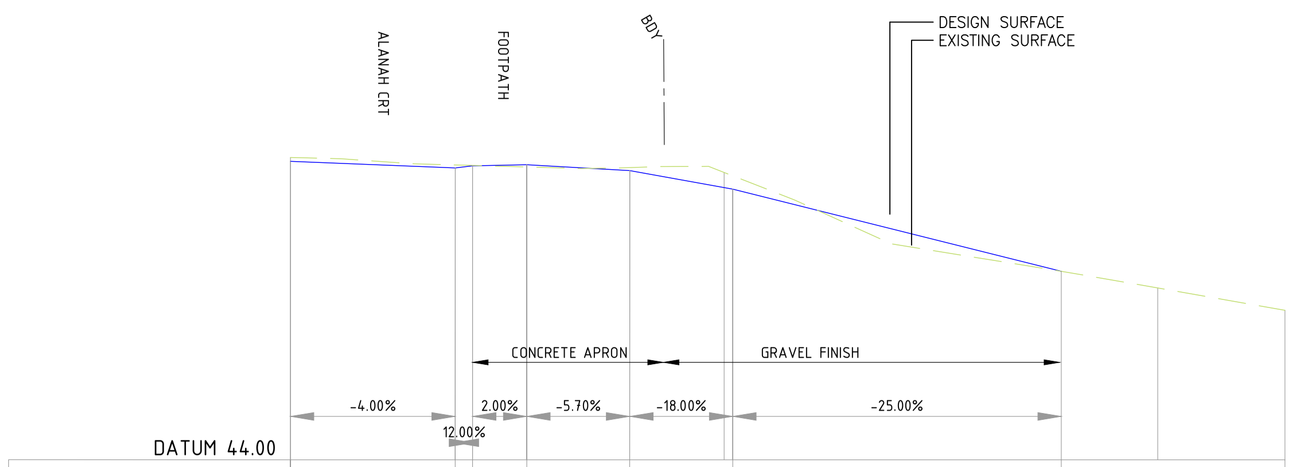
WST Accreditation: Engineer Civil CC5900 T

No.	AMENDMENT DESCRIPTION	DATE
A	FOR PLANNING APPROVAL	13/03/2024
B	CHANGES TO DRIVEWAY ALIGNMENT	22/04/2024

3 LOT SUBDIVISION
10 ALANAH CT, OLD BEACH
ALANAH COURT CROSS SECTIONS

SCALE 1:100
DRAWN E.LEGG
DATE SEP 2023

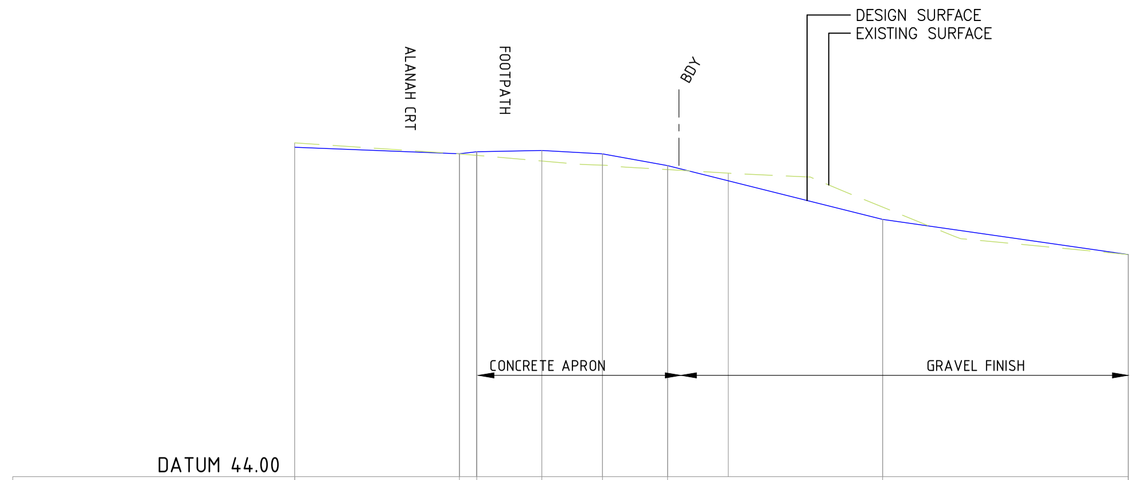
DRAWING No. 22190 C04b
REVISION B



DATUM 44.00								
DESIGN LEVEL	50.883	50.731	50.779	50.804	50.668	50.241		48.347
EXISTING LEVEL	50.88	50.73	50.78	50.80	50.67	50.28	50.24	48.35
CHAINAGE	0.00	3.80	4.20	5.45	7.82	10.20		17.78
CUT FILL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Lot 1

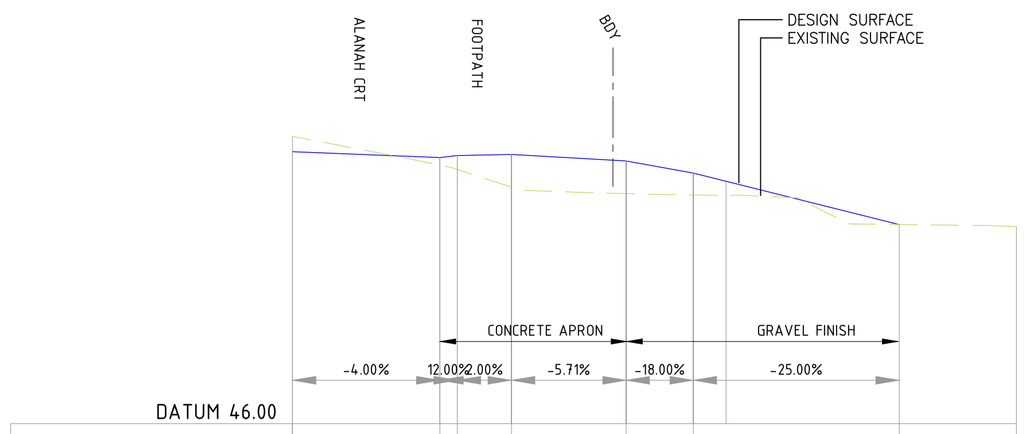
SCALES: HORIZONAL 1:100 VERTICAL 1:100



DATUM 44.00								
DESIGN LEVEL	51.597	51.445	51.493	51.523	51.443	51.173		49.933	49.123
EXISTING LEVEL	51.70	51.44	51.41	51.28	51.18	51.08	51.00	50.22	49.12
CHAINAGE	0.00	3.80	4.20	5.70	7.10	8.60		13.56	19.22
CUT FILL	-0.100	0.002	0.084	0.243	0.260	0.091	-0.177	-0.283	0.000

Lot 2

SCALES: HORIZONAL 1:100 VERTICAL 1:100



DATUM 46.00								
DESIGN LEVEL	52.271	52.135	52.183	52.208	52.057	51.778	50.590	
EXISTING LEVEL	52.62	51.96	51.86	51.45	51.30	51.27	51.27	50.59	50.54
CHAINAGE	0.00	3.40	3.80	5.05	7.69	9.24	13.99	
CUT FILL	-0.354	0.174	0.321	0.755	0.753	0.504	0.322	-0.001	

Lot 3

SCALES: HORIZONAL 1:100 VERTICAL 1:100

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WST Accreditation: Engineer Civil CC5900 T

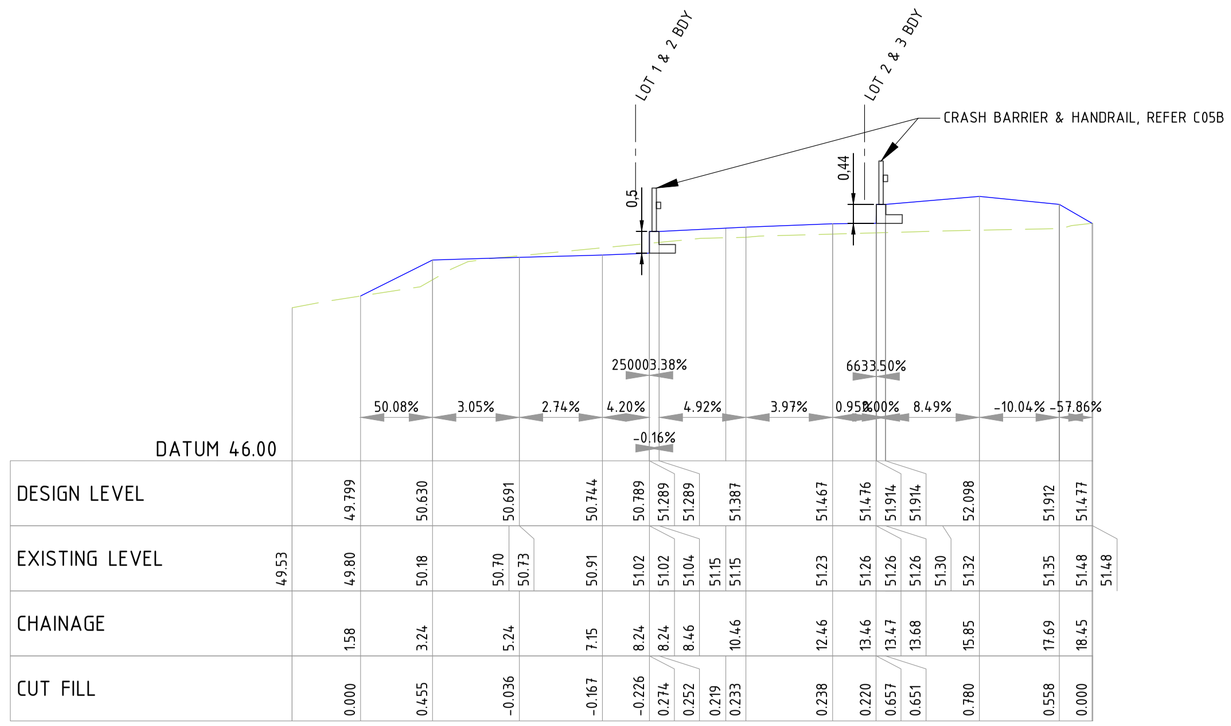
No.	AMENDMENT DESCRIPTION	DATE
A	FOR PLANNING APPROVAL	06/06/2023
B	FOR PLANNING APPROVAL	20/11/2023
C	DRAFT FOR COUNCIL COMMENT	18/03/2024
D	CHANGES TO DRIVEWAY ALIGNMENT	22/04/2024

3 LOT SUBDIVISION
10 ALANAH CT, OLD BEACH
VEHICLE ACCESS LONGSECTIONS

SCALE 1:100
DRAWN E.LEGG
DATE SEP 2023

DRAWING No. 22190 C05

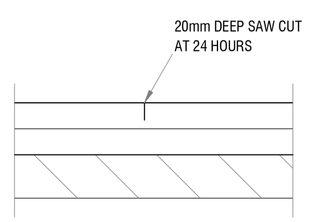
REVISION D



DESIGN LEVEL		49.399	50.630	50.691	50.744	50.789	51.289	51.289	51.387	51.467	51.476	51.914	51.914	52.098	51.912	51.477	
EXISTING LEVEL	49.53	49.80	50.18	50.70	50.73	50.91	51.02	51.02	51.04	51.15	51.15	51.23	51.26	51.26	51.26	51.30	51.32	51.35	51.48	51.48
CHAINAGE		1.58	3.24	5.24		7.15	8.24	8.24	8.46	10.46		12.46	13.46	13.47	13.68	15.85	17.69	18.45	
CUT FILL		0.000	0.455	-0.036		-0.167	-0.226	0.274	0.252	0.219	0.233	0.238	0.220	0.657	0.651	0.780	0.558	0.000	

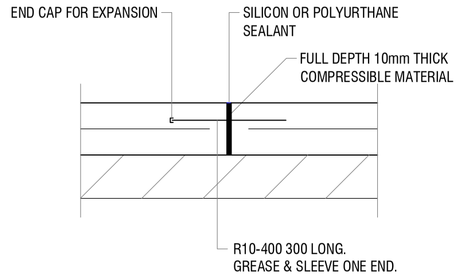
Section 1

SCALES: HORIZONAL 1:100 VERTICAL 1:100



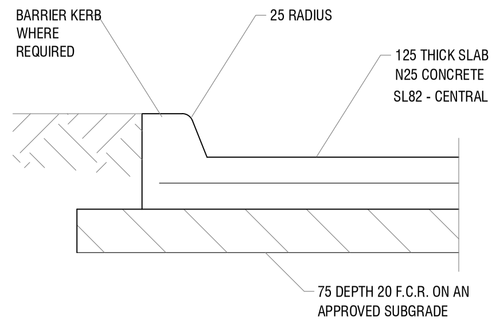
SAWN JOINT 's'

MAX. 5m CRS
SCALE 1:10



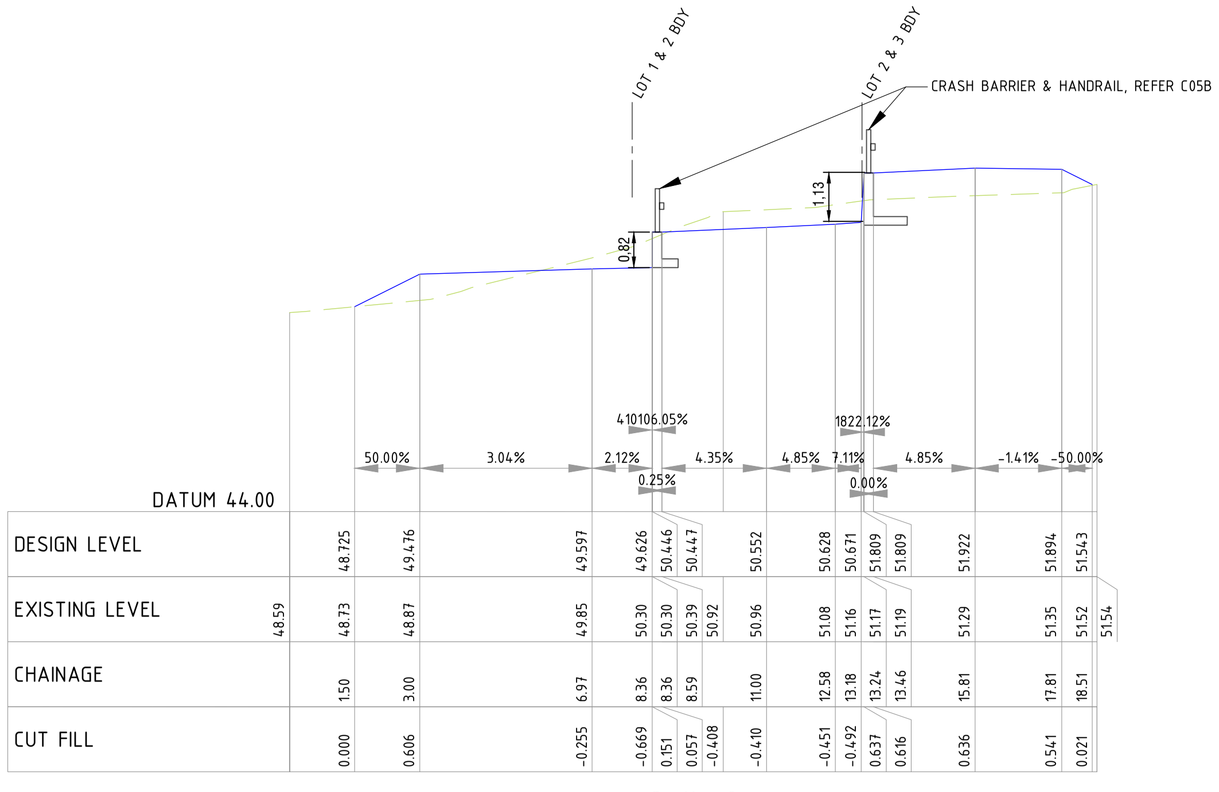
TYPICAL EXPANSION JOINT

MAX. 18m CRS
SCALE 1:10



TYPICAL CONCRETE PAVEMENT-PRIVATE DRIVEWAY

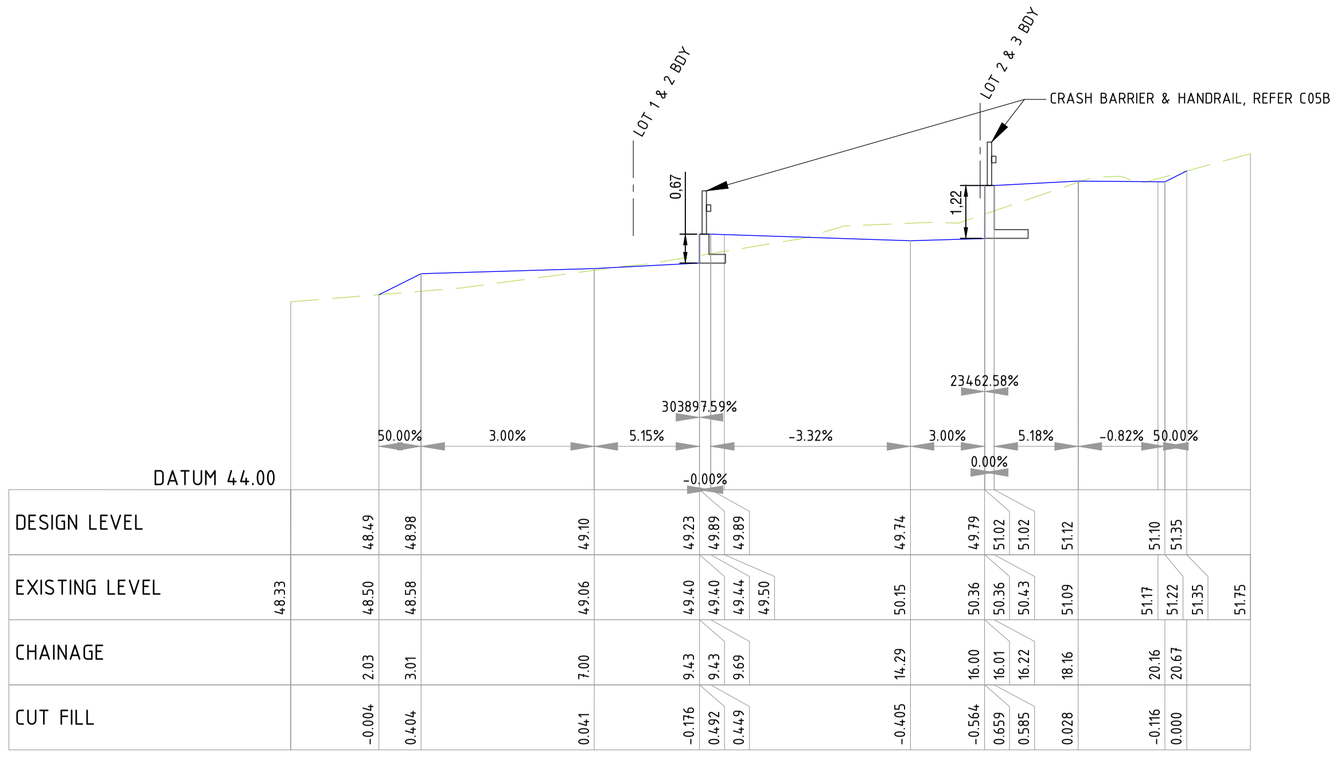
PRIVATE DRIVEWAY
SCALE 1:10



DESIGN LEVEL		48.725	49.476	49.597	49.626	50.446	50.447	50.552	50.628	50.671	51.809	51.809	51.922	51.894	51.543		
EXISTING LEVEL	48.59	48.73	48.87	49.85	50.30	50.30	50.39	50.92	50.96	51.08	51.16	51.17	51.19	51.29	51.35	51.52	51.54
CHAINAGE		1.50	3.00	6.97	8.36	8.36	8.59	11.00	12.58	13.18	13.24	13.46	15.81	17.81	18.51		
CUT FILL		0.000	0.606	-0.255	-0.669	0.151	0.057	-0.410	-0.451	-0.492	0.637	0.616	0.636	0.541	0.021		

Section 2

SCALES: HORIZONAL 1:100 VERTICAL 1:100



DESIGN LEVEL		48.49	48.98	49.10	49.23	49.89	49.89	49.74	49.79	51.02	51.02	51.12	51.10	51.35			
EXISTING LEVEL	48.33	48.50	48.58	49.06	49.40	49.40	49.44	49.50	50.15	50.36	50.36	50.43	51.09	51.17	51.22	51.35	51.75
CHAINAGE		2.03	3.01	7.00	9.43	9.43	9.69	14.29	16.00	16.01	16.22	18.16	20.16	20.67			
CUT FILL		-0.004	0.404	0.041	-0.176	0.492	0.449	-0.405	-0.564	0.659	0.585	0.028	-0.116	0.000			

Section 3

SCALES: HORIZONAL 1:100 VERTICAL 1:100

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No.	AMENDMENT DESCRIPTION	DATE
A	FOR PLANNING APPROVAL	14/03/2024
C	DRAFT FOR COUNCIL COMMENT	18/03/2024
D	CHANGES TO DRIVEWAY ALIGNMENT	22/04/2024

3 LOT SUBDIVISION
10 ALANAH CT, OLD BEACH
VEHICLE ACCESS CROSS SECTIONS

SCALE 1:100
DRAWN E.LEGG
DATE SEP 2023

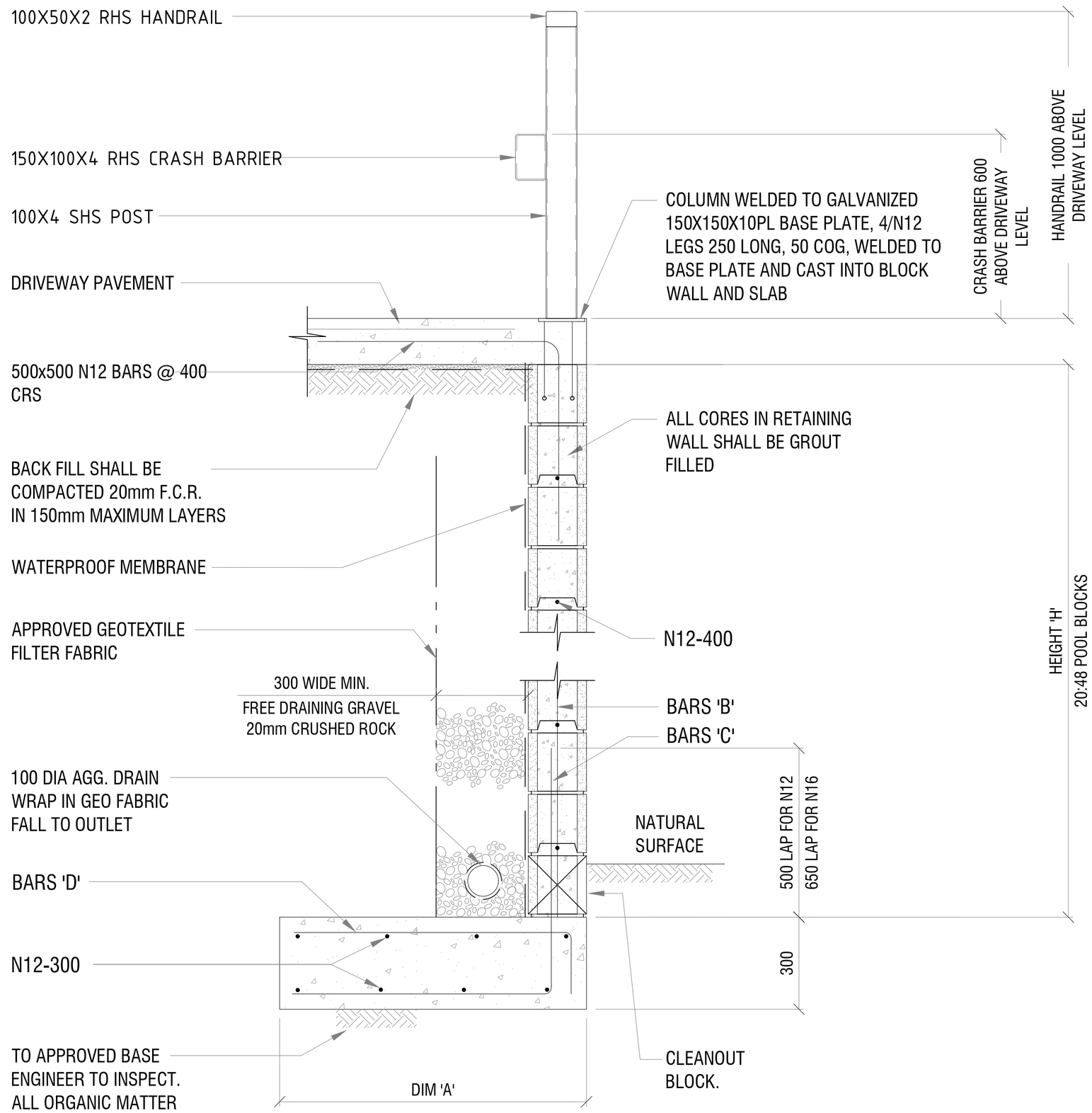
DRAWING No. 22190 C05A
REVISION D

RETAINING WALL CONSTRUCTION NOTES

1. MORTAR SHALL BE CEMENT : LIME : SAND RATIO THUS:1 : 0-0.25 : 3
2. BLOCKS TO BE GRADE 12 TO A.S. 2733
3. GROUT - MAX. AGGREGATE SIZE 10mm - SLUMP 230 +/- 30 - MIN. CHARACTERISTIC STRENGTH 20 MPa.
4. CLEANOUT HOLES ARE TO BE PROVIDED TO THE BASE OF ALL CORES. AT THE END OF EACH DAYS BLOCK LAYING, & BEFORE THE WALL IS FILLED, MORTAR DROPPINGS ARE TO BE WASHED OUT REINFORCEMENT TIED AND HOLES BLOCKED OFF.
5. RETAINING WALL FOOTINGS ARE TO BE FOUNDED ON APPROVED TRIMMED SUBGRADE WITH A MIN. BEARING CAPACITY OF 150 KPa.
6. CONCRETE STRENGTH(MPa)/SLUMP(mm) FOOTINGS 25/90
7. 50 COVER TO FOOTING BASE REINFORCEMENT
8. ALL CORES SHALL BE GROUT FILLED TO ONE COURSE ABOVE FINISHED SURFACE LEVEL.
9. ALLOW MIN. 14 DAYS AFTER FILLING BLOCKS PRIOR TO BACKFILLING BEHIND WALL.
10. CORE FILL TO BE PLACED WITH A PENCIL VIBRATOR.
11. MOIST CURE WALL CONCRETE FOR 14 DAYS PRIOR TO WATERPROOFING.
12. BACK OF WALL TO BE COATED WITH MIN. 2 COATS OF AN APPROVED BITUMINOUS PAINT, LINED WITH FORTECON PROTECTED BY COREFLUTE OR SIMILAR SACRIFICIAL SHEETING.
13. PROVIDE EXPANSION JOINTS AT MAX. 10m CRS. PROVIDE R10 DOWEL BARS ACROSS JOINTS AT 400 CRS., GREASED AND CAPPED ONE END

REINFORCING LAP CHART

SIZE	LAP LENGTH U.N.O.
N12	500
N16	650
N20	800
N24	1000
N28	1150
N32	1300
N36	1450



DIM 'H'	DIM 'A'	BARS 'B'	BARS 'C'	BARS 'D'
800	600	N12-400	N12-400	N12-400
1200	800	N12-400	N12-400	N12-400
1600	1000	N12-400	N16-400	N16-400
2000	1400	N16-400	N16-200	N16-400

STRIP FOOTING (SF1) AS SPECIFIED ON PLANS MAY BE USED WHERE RETAINED HEIGHTIS LESS THAN 0.8M

RETAINING WALL - RW1

SCALE 1:10

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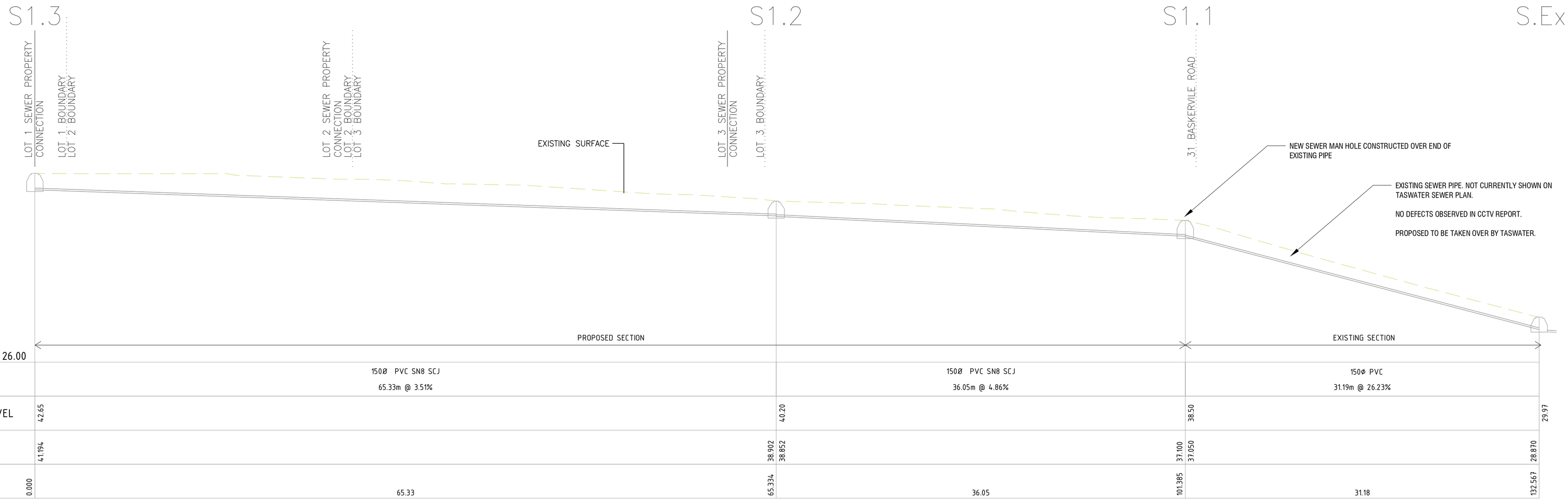
No.	AMENDMENT DESCRIPTION	DATE
A	FOR PLANNING APPROVAL	14/03/2024
C	DRAFT FOR COUNCIL COMMENT	18/03/2024
D	CRASH BARRIER DETAIL	21/05/2024

3 LOT SUBDIVISION
10 ALANAH CT, OLD BEACH
CRASH BARRIER DETAIL

SCALE 1:10
DRAWN E.LEGG
DATE SEP 2023

DRAWING No. 22190 C05B
REVISION D



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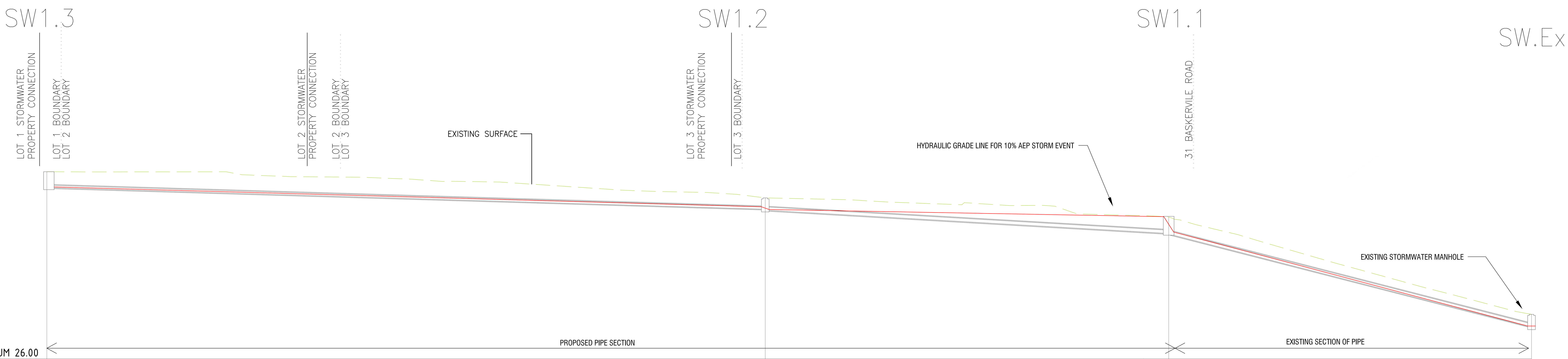
No.	AMENDMENT DESCRIPTION	DATE
A	FOR PLANNING APPROVAL	21/05/2024

3 LOT SUBDIVISION
10 ALANAH CT, OLD BEACH
SEWER LONGSECTIONS

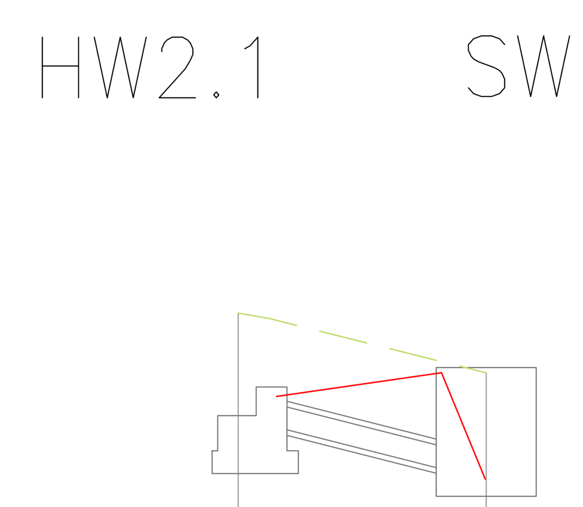
SCALE	1:100
DRAWN	E.LEGG
DATE	SEP 2023

DRAWING No. 22190 C07a
REVISION A



DATUM 26.00			
PIPE DETAILS	225Ø PVC SN8 SCJ 64.52m @ 3.00%	300Ø PVC SN8 SCJ 36.33m @ 5.77%	300Ø PVC SN8 SCJ 32.68m @ 25.68%
ESTIMATED 10% AEP POST DEVELOPMENT FLOW RATE FROM CATCHMENT 3 LOTS SUBDIVISION	CALCULATED 0.025m³/s SYSTEM CAPACITY =0.143m³/s	CALCULATED 0.038m³/s SYSTEM CAPACITY =0.139m³/s	CALCULATED 0.124m³/s SYSTEM CAPACITY =0.124m³/s
HGL LEVEL - 20% AEP	41.504 / 39.757	39.469 / 38.832	37.343 / 28.953
FINISHED SURFACE LEVEL	42.86	40.50	38.84 / 30.00
INVERT LEVEL	41.418 / 39.482	39.387 / 37.290	37.240 / 28.850
CHAINAGE	0.18 / 64.52m / 64.70	36.33m / 101.03	32.68m / 133.70

STORMWATER LONGSECTION



DATUM 35.00	
PIPE DETAILS	300Ø PVC SN8 SCJ 2.79m @ 25.33%
ESTIMATED 10% AEP POST DEVELOPMENT FLOW RATE FROM CATCHMENT 3 LOTS SUBDIVISION	CALCULATED 0.090m³/s SYSTEM CAPACITY =0.103m³/s
HGL LEVEL - 20% AEP	39.023 / 38.832
FINISHED SURFACE LEVEL	38.59 / 38.84
INVERT LEVEL	38.060 / 37.354
CHAINAGE	98.75 / 2.79m / 101.03

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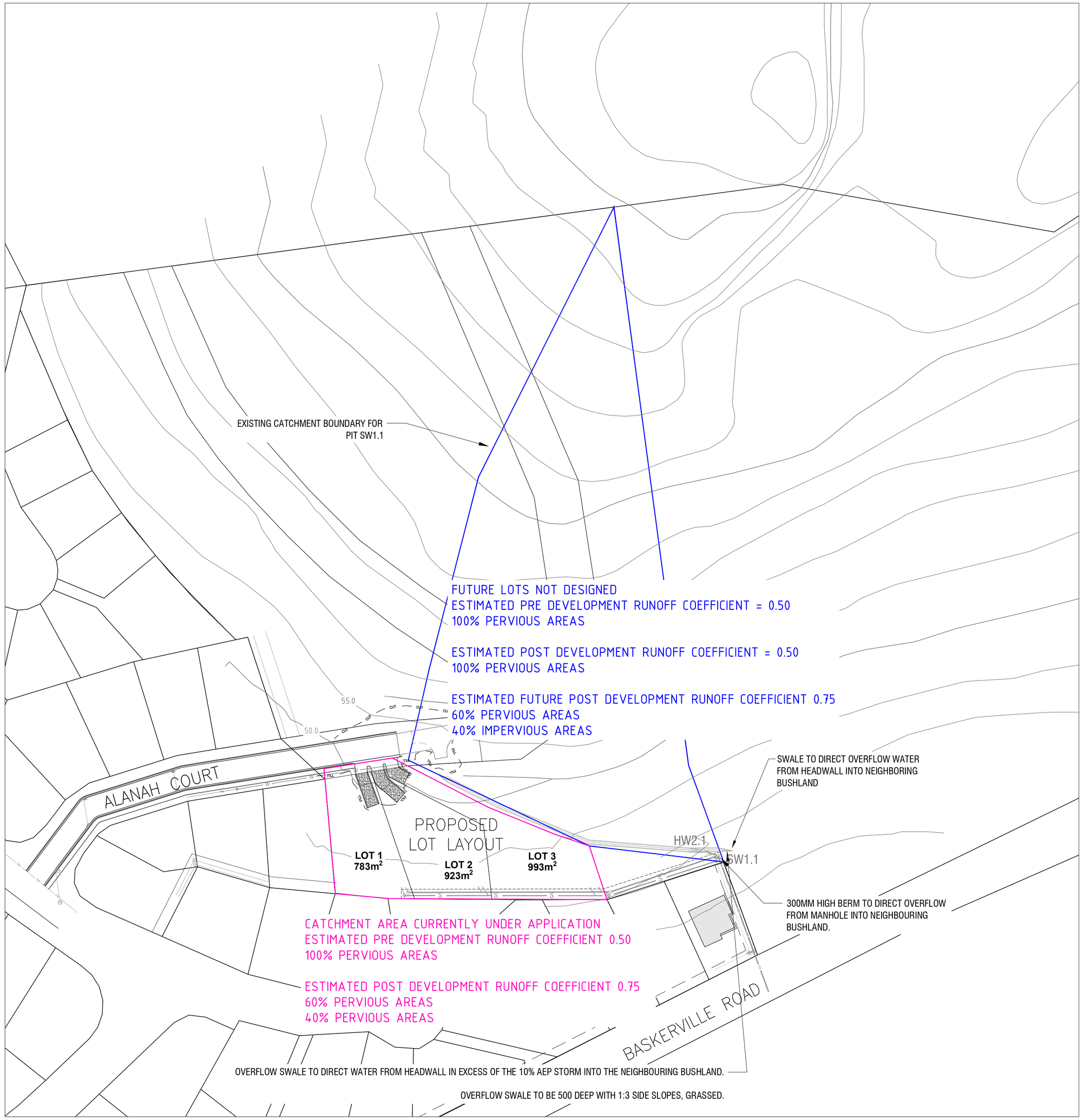
No.	AMENDMENT DESCRIPTION	DATE
A	FOR PLANNING APPROVAL	06/06/2023
B	FOR PLANNING APPROVAL	20/11/2023
C	EXISTING SEWER PIPE LOCATED AND SHOWN	15/02/2024
D	UPDATED STORMWATER LINE	21/05/2024

3 LOT SUBDIVISION
10 ALANAH CT, OLD BEACH
STORMWATER LONGSECTIONS

SCALE 1:100
DRAWN E.LEGG
DATE SEP 2023
DRAWING No. 22190 C07b
REVISION D



CATCHMENT ANALYSIS OF PROPOSED 3 LOT SUBDIVISION.

PRE DEVELOPMENT ASSESSMENT

5% AEP STORM, 10 MINUTE STORM EVENT

RUNOFF FROM SUBDIVISION= 0.152m^3/s

1% AEP STORM, 10 MINUTE STORM EVENT

RUNOFF FROM SUBDIVISION= 0.211m^3/s

POST DEVELOPMENT ASSESSMENT

10% AEP STORM, 10 MINUTE STORM EVENT

RUNOFF FROM SUBDIVISION = 0.124m^3/s

SYSTEM CAPACITY ESTIMATED TO BE 0.124m^3/s.

5% AEP STORM, 10 MINUTE STORM EVENT

RUNOFF FROM SUBDIVISION = 0.161m^3/s

SYSTEM CAPACITY EXCEEDED BY 0.032m^3/s.

1% AEP STORM, 10 MINUTE STORM EVENT

RUNOFF FROM SUBDIVISION= 0.223m^3/s

SYSTEM CAPACITY EXCEEDED BY 0.099m^3/s.

OVERFLOW FROM HW2.1 AND SW1.1 TO BE DIRECTED INTO NEIGHBOURING BUSHLAND.

CATCHMENT ANALYSIS OF POSSIBLE FUTURE DEVELOPMENT

POST DEVELOPMENT ASSESSMENT

5% AEP STORM, 10 MINUTE STORM EVENT

RUNOFF FROM SUBDIVISION INCLUDING FUTURE LOTS= 0.221m^3/s

SYSTEM CAPACITY EXCEEDED BY 0.097m^3/s.

1% AEP STORM, 10 MINUTE STORM EVENT

RUNOFF FROM SUBDIVISION INCLUDING FUTURE LOTS= 0.306m^3/s

SYSTEM CAPACITY EXCEEDED BY 0.182m^3/s.

THE EXISTING STORMWATER PIPE SW. Ex HAS INSUFFICIENT CAPACITY FOR ADDITIONAL HARDSTAND AREAS TO BE CONSTRUCTED ON THE CATCHMENT ABOVE.

ANY FUTURE DEVELOPMENT ON THE HILL ABOVE THE CURRENT PROPOSED DEVELOPMENT WILL NEED TO BE DESIGNED IN A WAY THAT DOES NOT OVERLOAD THIS PIPE, AND PROVIDES A SAFE MEANS FOR WATER TO DRAIN FROM THE HILL.

NOTES
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4. TAS NETWORKS AND TELSTRA SERVICES ARE NOT SHOWN. REFER TO TAS NETWORKS AND TELSTRA DRAWINGS BY OTHERS.
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CLIENT: ASCF MI Pty Ltd

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Stephen Cole, Principal Engineer
B Eng (Civil & Environmental), CPEng
WST Accreditation: Engineer Civil CC5900 T

No.	AMENDMENT DESCRIPTION	DATE
A	FOR PLANNING APPROVAL	20/11/2023
B	FOR PLANNING APPROVAL	14/03/2024
C	CHANGES TO CATCHMENT DETAILS	22/04/2024
D	CHANGES TO CATCHMENT DETAILS	21/05/2024

3 LOT SUBDIVISION
10 ALANAH CT, OLD BEACH
STORMWATER CATCHMENT & RUNOFF PLAN- 3 LOT SUBDIVISION

SCALE 1:750
DRAWN E.LEGG
DATE SEP 2023

DRAWING No. 22190 C08
REVISION D

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INTEGRAL CONSULTING ENGINEERS
Civil ∞ Structural ∞ Project Management

STORMWATER ASSESSMENT

FOR A PROPOSED 3 LOT SUBDIVISION AT

10 ALANAH COURT, OLD BEACH

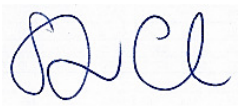
I.C.E. Project No: 22190

Client name: ASCF MI Pty Ltd

Document No. 22190-01 (Rev A)

11/06/2024

Document Approved by:



Stephen Cole **BEng (Civil & Environmental) CPEng**
Principal Civil / Structural Engineer
Integral Consulting Engineers Pty Ltd
WST Accreditation: Engineer Civil CC5900 T

1. Introduction

This stormwater management report presents a hydrological analysis of the proposed stormwater infrastructure for the 10 Alanah Court Subdivision in Old Beach. It evaluates the effects of post-development conditions on stormwater runoff. The assessment calculations were done using Autodesk's Civil 3D software, using rainfall data imported from the Bureau of Meteorology.

Appendix 1 contains the stormwater assessment results, and Appendix B shows the data behind the calculations.

2. Existing Site Conditions

The proposed development consists of one property, 10 Alanah Court, Old Beach. The total area of this property is 3.24Ha. The stormwater catchment area that drains to the stormwater system for this development is 1.45Ha and is contained entirely within the property.

The existing site is covered by predominantly scrubby bushland. One corner of the property was previously used as a quarry and is currently under rehabilitation.

The Aspect is southerly. Slope varies from flat at the top of the hill, to 25% towards the proposed lots.

The average annual rainfall is approx. 495mm (source: BOM Hobart Airport station, 10km away from the site).

The underlying geology is Jurassic Dolerite.

3. Stormwater Runoff and Drainage Assessment for the Proposed Development

Drainage System Overview

The area of the proposed development of 3 lots and the associated road extension is 0.27 Ha, 19% of the catchment. The remainder of the catchment will remain unchanged.

Currently, runoff from the subject property flows onto the properties below as a sheet flow.

The proposed stormwater drainage system for the development consists of a stormwater cut-off drain above the 3 lots and a piped stormwater connection for each lot. The cut-off drain and pipe are proposed to be connected to the top end of an existing DN300 stormwater main that flows down to Baskerville Rd.

Minor Stormwater Event

The minor stormwater event, the 5% Annual Exceedance Probability (AEP) flow, has been analysed.

Since most of the catchment will remain unchanged, the increase in flow due to the development is small. The main issue however is that flows from the catchment will be concentrated into the top of the existing stormwater pipe, SW1.1 on the design drawings.

The calculated flow into SW1.1 for the 5% AEP event is 0.156m3/sec. The calculated capacity of the existing stormwater pipe downstream from here is 0.124m3/sec. Therefore the existing pipe is unable to contain all of the 5% AEP flow from the development.

The estimated flow in the catchment prior to the development is 0.152m3/sec. This is also greater than the estimated capacity of the existing pipe.

A calculation has been done to determine what higher-frequency, lower-intensity rainfall event will be contained entirely within the pipe. This calculation found that the 20% AEP event will be contained within the pipe. This rainfall event is shown in the hydraulic grade line analysis on the stormwater pipe long section.

All higher intensity events will result in some surcharge from the stormwater manhole SW1.1. The design includes a 300mm high berm on the low side of the manhole to direct the overflow water into the bushland on the neighbouring property, 89 Baskerville Rd, Old Beach.

For larger storm events and if the inlet pipe blocks, headwall HW2.1 will overflow. The design includes a swale to direct the overflow water into the neighbouring bushland.

The owner of 89 Baskerville Rd, Old Beach has been notified about this development.

Major Stormwater Event

The minor stormwater event, the 5% Annual Exceedance Probability (AEP) flow, has also been analysed.

The finction of the stormwater system for the the major event will operate in a similar way to the minor event, where some of the stormwater will be contained within the stormwater main, and part of it will surcharge from manhole SW1.1 and / or headwall HW2.1. The difference is that the amount of surcharge or overflow will be higher.

The berm on the low side of the manhole and the overflow channel from the headwall have been designed to contain all of the surcharge flow for the major stormwater event, and direct it into the neighbouring bushland.

Management of the Existing Stormwater Main

As previously stated, the existing DN300 stormwater in 31 Baskerville Rd has insufficient capacity to contain all of the minor stormwater flow from the development and the upstream catchment.

A subdivision is planned for the land above the current proposed development. When that subdivision is implemented, additional stormwater capacity will be needed to drain that area down to Baskerville Rd or Alanah Court. To achieve an optimal drainage system for that subdivision, it is recommended that the design for that additional sotmrwater capacity be done for that future subdivision, and not as part of the current proposal.

Therefore this design allows for utilising the existing DN300 stormwater main and provision for overflow, and no additional drainage infrastructure below SW1.1.

4. Stormwater Quality Control

My opinion is that stormwater treatment infrastructure for this development would be impractical for Council to maintain.

Therefore I propose that Stormwater quality treatment is offset via a cost contribution from the developer to the Council, in accordance with the Brighton Council Stormwater Quality Control Contributions Policy.

5. Stormwater Quantity Control

We have been advised by the Council that the downstream stormwater network is at capacity.

The proposed development will result in a small increase in flows, 9L/s for the minor storm event and 12L/s for the major storm event.

A stormwater detention system on this slope for the small number of blocks is impractical to construct and maintain.

Therefore to ensure the development does not increase stormwater flows, I propose that the developer make a cost contribution to the Council for a larger stormwater detention system downstream. This contribution should be calculated proportionate to the additional flow created by the development relative to the total detention volume and the construction cost of the additional detention capacity.

6. Conclusion

This report and the associated calculations demonstrates that the subdivision design drawings sufficiently address all of the stormwater management requirements, with the following exceptions:

stormwater quality - it is proposed that the developer make a cost contribution towards larger infrastructure for these things in a more practical location.

stormwater detention -it is proposed that the developer make a cost contribution towards larger infrastructure for these things in a more practical location.

The existing stormwater main downstream from the development has insufficient capacity for the 1% and 5% AEP flows. The system has been designed so that overflows from this stormwater system will be directed into 89 Baskerville Rd. The owner of the property has been notified. It is recommended that additional stormwater capacity be designed as part of the proposed future development of the catchment above.

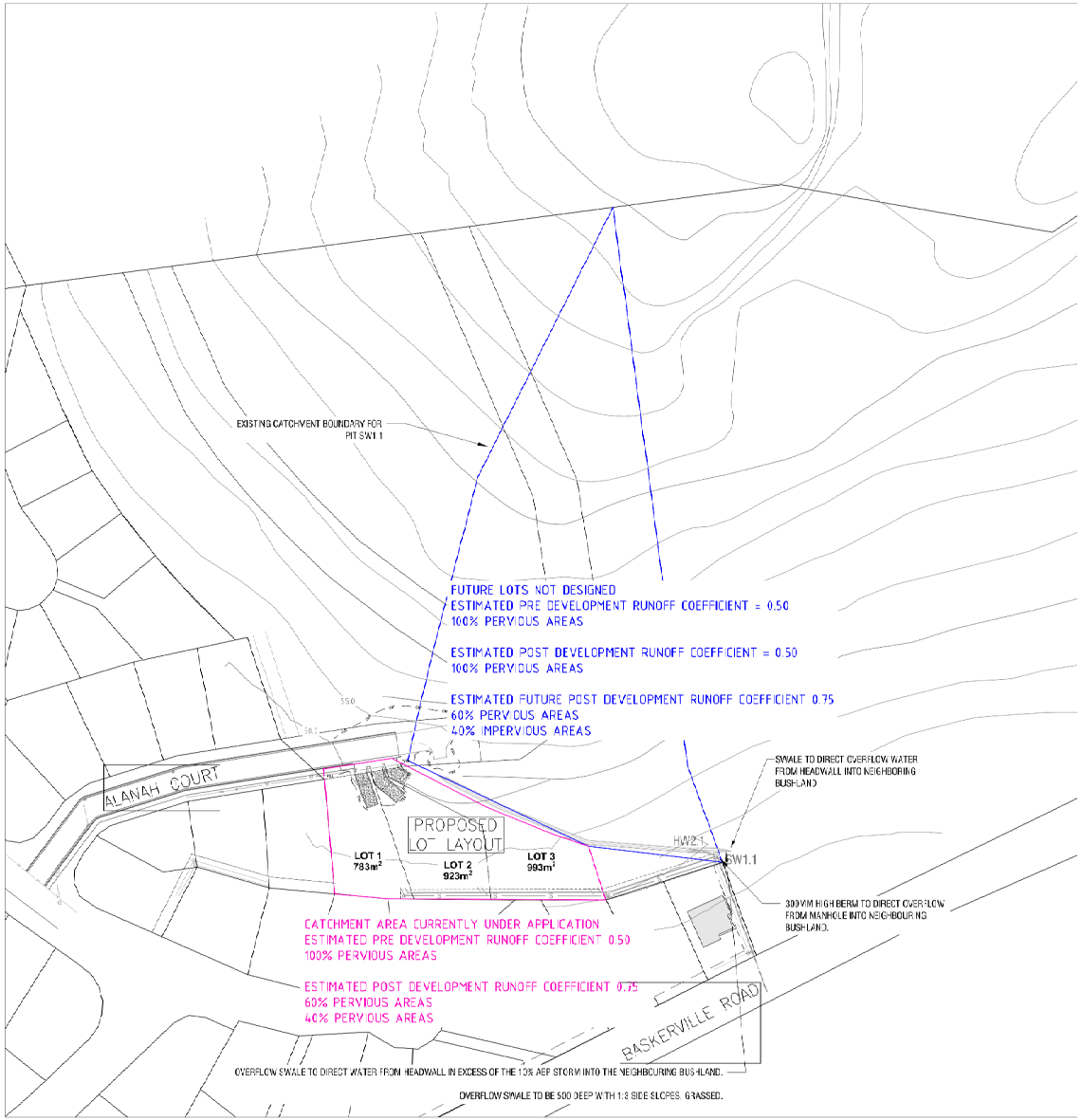
7. Appendices

Appendix 1: Stormwater Catchment and Run-off Plan

Appendix 2: Detailed Stormwater Calculations

Appendix 3: Photos

Appendix 1: Stormwater Catchment and Run-off Plan



CATCHMENT ANALYSIS OF PROPOSED 3 LOT SUBDIVISION.

PRE DEVELOPMENT ASSESSMENT

5% AEP STORM, 10 MINUTE STORM EVENT

RUNOFF FROM SUBDIVISION= 0.152m³/s

1% AEP STORM, 10 MINUTE STORM EVENT

RUNOFF FROM SUBDIVISION= 0.211m³/s

POST DEVELOPMENT ASSESSMENT

10% AEP STORM, 10 MINUTE STORM EVENT

RUNOFF FROM SUBDIVISION = 0.124m³/s

SYSTEM CAPACITY ESTIMATED TO BE 0.124m³/s.

5% AEP STORM, 10 MINUTE STORM EVENT

RUNOFF FROM SUBDIVISION = 0.161m³/s

SYSTEM CAPACITY EXCEEDED BY 0.032m³/s.

1% AEP STORM, 10 MINUTE STORM EVENT

RUNOFF FROM SUBDIVISION= 0.223m³/s

SYSTEM CAPACITY EXCEEDED BY 0.095m³/s.

OVERFLOW FROM HW2.1 AND SW1.1 TO BE DIRECTED INTO NEIGHBOURING BUSHLAND.

CATCHMENT ANALYSIS OF POSSIBLE FUTURE DEVELOPMENT

POST DEVELOPMENT ASSESSMENT

5% AEP STORM, 10 MINUTE STORM EVENT

RUNOFF FROM SUBDIVISION INCLUDING FUTURE LOTS= 0.221m³/s

SYSTEM CAPACITY EXCEEDED BY 0.097m³/s.

1% AEP STORM, 10 MINUTE STORM EVENT

RUNOFF FROM SUBDIVISION INCLUDING FUTURE LOTS= 0.306m³/s

SYSTEM CAPACITY EXCEEDED BY 0.182m³/s.

THE EXISTING STORMWATER PIPE SW_Ex HAS INSUFFICIENT CAPACITY FOR ADDITIONAL HARDSTAND AREAS TO BE CONSTRUCTED ON THE CATCHMENT ABOVE.

ANY FUTURE DEVELOPMENT ON THE HILL ABOVE THE CURRENT PROPOSED DEVELOPMENT WILL NEED TO BE DESIGNED IN A WAY THAT DOES NOT OVERLOAD THIS PIPE, AND PROVIDES A SAFE MEANS FOR WATER TO DRAIN FROM THE HILL.

CLIENT:

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Kenton Cole, Principal Engineer
B Eng (Civil & Environmental), CPEng
NER Accreditation: Engineers Australia

No	AMENDMENT DESCRIPTION	DATE
A	FOR PLANNING APPROVAL	20/11/2023
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D	CHANGES TO CATCHMENT DETAILS	21/05/2024

3 LOT SUBDIVISION
10 ALANAH CT, OLD BEACH
STORMWATER CATCHMENT & RUNOFF PLAN- 3 LOT SUBDIVISION

SCALE 1:250
DRAWN E.LEGG
DATE SEP 2023

DRAWING NO. 22190 C08
REVISION (D)

Appendix 2: Detailed Stormwater Calculations

Pre Development Assessment – 5% AEP

Pipe	From	To	3D Length	Drainage	Drainage	Runoff Co	Area X "C"	Area X "C"	Time of Cc	Time of Cc	Rain "I"	Runoff "Q"	Known Q	Total Q	Pipe Dia.	Full Q	Velocity Fu	Velocity D	Sec Time	Invert Elev	Invert Elev	Crown Dro	Slope
			(m)	(sq. m)	(sq. m)		(sq. m)	(sq. m)	(min)	(min)	(mm/hr)	(cu. m/sec	(cu. m/sec	(cu. m/sec	(m)	(cu. m/sec	(m/s)	(m/s)	(min)	(m)	(m)	(m)	
SW Ex - SV	SW1.1	Ex 1	33.603	11834.87	14540.72	0.5	5917.44	7270.36	7.8	7.8	75.317	0.152	0	0.152	0.3	0.474	6.709	5.968	0.094	36.692	28.85	N/A	24.00%
SW1.1 - SV	SW1.2	SW1.1	36.425	996.16	2705.85	0.5	498.08	1352.92	5.94	6.742	78.788	0.03	0	0.03	0.3	0.261	3.695	2.449	0.248	39.387	36.742	N/A	7.28%
SW1.2 - SV	SW1.4	SW1.2	64.532	1709.69	1709.69	0.5	854.84	854.84	6	6	81.224	0.019	0	0.019	0.225	0.067	1.675	1.449	0.742	40.898	39.482	N/A	2.20%

Struct. ID	D	Q	L	V	d	dc	v^2/2g	EGLo	HGLo	Sf	Total Pipe	EGLi	HGLi	Ea	EGLa	U/STOC	Surface E	Step4*	Step7*	Step14*			
	(m)	(cu. m/se	(m)	(m/s)	(m)	(m)	(m)	(m)	(m)		(m)	(m)	(m)	(m)	(m)	(m)	(m)						
Ex 1								0	0							29.15	30.001						
SW1.1	0.3	0.152	33.603	5.968	0.117	0.283	1.817	30.784	28.967	0	0	38.626	36.809	1.934	38.626	37.042	38.772	N/A	Case A	N/A			
SW1.2	0.3	0.03	36.425	2.449	0.068	0.132	0.306	38.629	38.62	0.001	0	39.761	39.455	0.374	39.761	39.707	40.504	Case B	N/A	Case D			
SW1.4	0.225	0.019	64.532	1.449	0.083	0.115	0.107	39.766	39.754	0.002	0	41.088	40.981	0.19	41.088	---	42.862	Case B	N/A	Case D			

Struct. ID	Exit Ho	Hf	Hb	Hc	He	Hj	Total	Ei	y+(P/gam	DI	Eai	CB	C-theta	Cp	Ha	Ea							
	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)		(m)				(m)	(m)							
Ex 1																							
SW1.1	0	0	0	0	0	0	0	1.934	0.117	1.255	0.559	0	0.61	4.126	0	1.934							
SW1.2	0.004	0	0	0	0	0	0	0.374	0.068	0.244	0.187	0	0.472	1.142	0	0.374							
SW1.4	0.005	0	0	0	0	0	0	0.19	0.083	0.327	0.17	0	0	7.97	0	0.19							

Name	Stat.	Drain. Are	Runoff Co	Time of Cc	Rainfall In	Q=CIA/Kc	Known Q	Longitudir	Cross Slop	Cross Slop	Prev. Bypa	Total Gutt	Depth d	Gutter Wic	Spread T	W / T	Inlet Type	Grate Leng	Grate Wid	Curb Oper	Curb Oper	Intercept F	Bypass Flo
	(m)	(sq. m)		(min)	(mm/hr)	(cu. m/sec	(cu. m/sec)				(cu. m/sec	(cu. m/sec	(m)	(m)	(m)			(m)	(m)	(m)	(m)	(cu. m/sec	(cu. m/sec
SW1.4	0.184	1709.69	0.5	6	81.224	0.019	0	-1	0.02	0.05	0	0.019	0	1	2	0.378	Grate inlet	1	1	---	---	0.019	0
SW1.2	64.7	996.16	0.5	5.94	81.421	0.011	0	-1	0.02	0.05	0	0.011	0	1	1	0.564	Grate inlet	1	1	---	---	0.011	0
SW1.1	101.03	11834.87	0.5	7.8	75.317	0.124	0	-1	0.02	0.05	0	0.124	0	1	6	0.103	Grate inlet	1	1	---	---	0.124	0

Pre Development Assessment – 1% AEP

Pipe	From	To	3D Length	Drainage A	Drainage A	Runoff Co	Area X "C"	Area X "C"	Time of Co	Time of Co	Rain "I"	Runoff "Q"	Known Q	Total Q	Pipe Dia.	Full Q	Velocity Fu	Velocity D	Sec Time	Invert Elev	Invert Elev	Crown Dro	Slope
			(m)	(sq. m)	(sq. m)		(sq. m)	(sq. m)	(min)	(min)	(mm/hr)	(cu. m/se	(cu. m/se	(cu. m/se	(m)	(cu. m/se	(m/s)	(m/s)	(min)	(m)	(m)	(m)	
SW Ex - SV	SW1.1	Ex 1	33.603	11834.87	14540.72	0.5	5917.44	7270.36	7.8	7.8	104.239	0.211	0	0.211	0.3	0.474	6.709	6.505	0.086	36.692	28.85	N/A	24.00%
SW1.1 - SV	SW1.2	SW1.1	36.425	996.16	2705.85	0.5	498.08	1352.92	5.94	6.681	108.939	0.041	0	0.041	0.3	0.261	3.695	2.69	0.226	39.387	36.742	N/A	7.28%
SW1.2 - SV	SW1.4	SW1.2	64.532	1709.69	1709.69	0.5	854.84	854.84	6	6	111.801	0.027	0	0.027	0.225	0.067	1.675	1.579	0.681	40.898	39.482	N/A	2.20%

Struct. ID	D	Q	L	V	d	dc	v^2/2g	EGLo	HGLo	Sf	Total Pipe	EGLi	HGLi	Ea	EGLa	U/S TOC	Surface E	Step4*	Step7*	Step14*
	(m)	(cu. m/se	(m)	(m/s)	(m)	(m)	(m)	(m)	(m)		(m)	(m)	(m)	(m)	(m)	(m)	(m)			
Ex 1								0	0							29.15	30.001			
SW1.1	0.3	0.211	33.603	6.505	0.14	0.295	2.158	31.148	28.99	0	0	38.99	36.832	2.298	38.99	37.042	38.772	N/A	Case A	N/A
SW1.2	0.3	0.041	36.425	2.69	0.08	0.156	0.369	38.997	38.98	0.002	0	39.836	39.467	0.449	39.836	39.707	40.504	Case B	N/A	Case D
SW1.4	0.225	0.027	64.532	1.579	0.099	0.136	0.127	39.845	39.823	0.003	0	41.124	40.997	0.226	41.124	---	42.862	Case B	N/A	Case D

Struct. ID	Exit Ho	Hf	Hb	Hc	He	Hj	Total	Ei	y+(P/gam	DI	Eai	CB	C-theta	Cp	Ha	Ea
	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)		(m)				(m)	(m)
Ex 1																
SW1.1	0	0	0	0	0	0	0	2.298	0.14	1.737	0.905	0	0.609	3.187	0	2.298
SW1.2	0.007	0	0	0	0	0	0	0.449	0.08	0.338	0.232	0	0.47	1.087	0	0.449
SW1.4	0.009	0	0	0	0	0	0	0.226	0.099	0.45	0.211	0	0	7.79	0	0.226

Name	Stat.	Drain. Area A	Runoff Coeff. C	Time of Conc.	Rainfall Intens.	Q=CIA/Kc	Known Q	Longitudinal Slope SL	Cross Slope Sx	Cross Slope Sw	Prev. Bypass Flow	Total Gutter Flow	Depth d	Gutter Width	Spread T	W / T	Inlet Type	Grate Length	Grate Width	Curb Opening Length	Curb Opening Height	Intercept Flow Qi	Bypass Flow Qb	Bypass Structure
	(m)	(sq. m)		(min)	(mm/hr)	(cu. m/se	(cu. m/sec)				(cu. m/se	(cu. m/se	(m)	(m)	(m)			(m)	(m)	(m)	(m)	(cu. m/se	(cu. m/sec)	
SW1.4	0.184	1709.69	0.5	6	111.801	0.027	0	-1	0.02	0.05	0	0.027	0	1	2	0.3	Grate inlet	1	1	---	---	0.027	0	---
SW1.2	64.7	996.16	0.5	5.94	112.053	0.016	0	-1	0.02	0.05	0	0.016	0	1	1	0.444	Grate inlet	1	1	---	---	0.041	0	---
SW1.1	101.03	11834.87	0.5	7.8	104.239	0.171	0	-1	0.02	0.05	0	0.171	0	1	7	0.082	Grate inlet	1	1	---	---	0.211	0	---

Post Development Assessment – 10% AEP

#Line	Pipe	From	To	3D Length	Drainage .	Drainage .	Runoff Co	Area X "C"	Area X "C"	Time of Co	Time of Co	Rain "I"	Runoff "Q"	Known Q	Total Q	Pipe Dia.	Full Q	Velocity Fu	Velocity D	Sec Time	Invert Elev	Invert Elev	Crown Dro	Slope
				(m)	(sq. m)	(sq. m)		(sq. m)	(sq. m)	(min)	(min)	(mm/hr)	(cu. m/sec	(cu. m/sec	(cu. m/sec	(m)	(cu. m/sec	(m/s)	(m/s)	(min)	(m)	(m)	(m)	
1	SW Ex - SV	SW1.1	Ex 1	33.735	0	13388.64	0	0	7370.78	0	9.009	60.528	0.124	0	0.124	0.3	0.491	6.939	5.781	0.097	37.24	28.85	N/A	25.68%
2	SW1.1 - SV	SW1.2	SW1.1	36.39	996.16	2705.85	0.75	747.12	2029.39	5.94	6.62	67.355	0.038	0	0.038	0.3	0.233	3.29	2.423	0.25	39.387	37.29	N/A	5.77%
3	SW1.2 - SV	SW1.3	SW1.2	64.546	1709.69	1709.69	0.75	1282.26	1282.26	6	6	69.126	0.025	0	0.025	0.225	0.078	1.958	1.735	0.62	41.418	39.482	N/A	3.00%
4	sw2.1	HW2.1	SW1.1	2.878	10682.8	10682.8	0.5	5341.4	5341.4	9	9	60.554	0.09	0	0.09	0.3	0.487	6.892	5.255	0.009	38.06	37.354	N/A	25.33%

#Line	Struct. ID	D	Q	L	V	d	dc	v^2/2g	EGLo	HGLo	Sf	Total Pipe	EGLi	HGLi	Ea	EGLa	U/STOC	Surface E	Step4*	Step7*	Step14*
		(m)	(cu. m/se	(m)	(m/s)	(m)	(m)	(m)	(m)	(m)		(m)	(m)	(m)	(m)	(m)	(m)	(m)			
0	Ex 1								0	0							29.15	30.001			
1	SW1.1	0.3	0.124	33.735	5.781	0.103	0.267	1.705	30.658	28.953	0	0	39.048	37.343	1.808	39.048	37.59	38.841	N/A	Case A	N/A
2	SW1.2	0.3	0.038	36.39	2.423	0.082	0.15	0.299	39.054	39.039	0.002	0	39.768	39.469	0.381	39.768	39.707	40.504	Case B	N/A	Case D
3	SW1.3	0.225	0.025	64.546	1.735	0.087	0.131	0.154	39.776	39.757	0.003	0	41.658	41.504	0.241	41.658	---	42.862	Case B	N/A	Case D
4	HW2.1	0.3	0.09	2.878	1.271	0.3	n/a	0.082	39.081	38.998	0.009	0.025	39.105	39.023	1.062	39.122	---	38.585	Case B	N/A	Case A

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#Line	Struct. ID	Exit Ho	Hf	Hb	Hc	He	Hj	Total	Ei	y+(P/gam	DI	Eai	CB	C-theta	Cp	Ha	Ea
		(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)		(m)				(m)	(m)
0	Ex 1																
1	SW1.1	0	0	0	0	0	0	0	1.808	0.103	1.022	0.487	-0.822	2.445	0	0	1.808
2	SW1.2	0.006	0	0	0	0	0	0	0.381	0.082	0.313	0.221	0	0.47	1.101	0	0.381
3	SW1.3	0.008	0	0	0	0	0	0	0.241	0.087	0.417	0.2	0	0	5.528	0	0.241
4	HW2.1	0.033	0.025	0	0	0	0	0.025	1.045	0.963	0.741	1.062	0	0	0	0	1.062

No.	Name	Stat.	Drain. Area A	Runoff Coeff. C	Time of Conc.	Rainfall Intens.	Q=CIA/Kc	Known Q	Longitudi nal Slope SL	Cross Slope Sx	Cross Slope Sw	Prev. Bypass Flow	Total Gutter Flow	Depth d	Gutter Width	Spread T	W / T	Inlet Type	Grate Length	Grate Width	Curb Opening Length	Curb Opening Height	Intercept Flow Qi	Bypass Flow Qb	Bypass Structure
		(m)	(sq. m)		(min)	(mm/hr)	(cu. m/sec	(cu. m/sec)				(cu. m/sec	(cu. m/sec	(m)	(m)	(m)			(m)	(m)	(m)	(m)	(cu. m/sec	(cu. m/sec)	
1	SW1.3	0.184	1709.69	0.75	6	69.126	0.025	0	0.02	0.02	0.05	0	0.025	0	1	1	0.425	Grate inle	1	1	---	---	0.022	0.003	SW1.2
2	SW1.2	64.7	996.16	0.75	5.94	69.298	0.014	0	0.02	0.02	0.05	0.003	0.017	0	1	1	0.519	Combinat	1	1	1	0	0.017	0.001	SW1.1
3	HW2.1	98.748	10682.8	0.5	9	60.554	0.09	0	-1	0.02	0.05	0	0.09	0	1	4	0.135	Grate inle	1	1	---	---	0.09	0	---

Post Development Assessment – 5% AEP

#Line	Pipe	From	To	3D Length	Drainage	Drainage	Runoff Co	Area X "C"	Area X "C"	Time of Cc	Time of Cc	Rain "I"	Runoff "Q"	Known Q	Total Q	Pipe Dia.	Full Q	Velocity Fi	Velocity D	Sec Time	Invert Elev	Invert Elev	Crown Dro	Slope
				(m)	(sq. m)	(sq. m)		(sq. m)	(sq. m)	(min)	(min)	(mm/hr)	(cu. m/se	(cu. m/se	(cu. m/se	(m)	(cu. m/se	(m/s)	(m/s)	(min)	(m)	(m)	(m)	
1	SW Ex - SV	SW1.1	Ex 1	33.735	0	14300.14	0	0	7826.53	0	8.168	74.108	0.161	0	0.161	0.3	0.491	6.939	6.213	0.09	37.24	28.85	N/A	25.68%
2	SW1.1 - SV	SW1.2	SW1.1	36.39	996.16	2705.85	0.75	747.12	2029.39	5.94	6.594	79.276	0.045	0	0.045	0.3	0.233	3.29	2.538	0.239	39.387	37.29	N/A	5.77%
3	SW1.2 - SV	SW1.3	SW1.2	64.546	1709.69	1709.69	0.75	1282.26	1282.26	6	6	81.224	0.029	0	0.029	0.225	0.078	1.958	1.812	0.594	41.418	39.482	N/A	3.00%
4	sw2.1	HW2.1	SW1.1	2.878	11594.29	11594.29	0.5	5797.15	5797.15	8.16	8.16	74.136	0.119	0	0.119	0.3	0.487	6.892	5.693	0.008	38.06	37.354	N/A	25.33%

#Line	Struct. ID	D	Q	L	V	d	dc	v^2/2g	EGLo	HGLo	Sf	Total Pipe	EGLi	HGLi	Ea	EGLa	U/S TOC	Surface E	Step4*	Step7*	Step14*
		(m)	(cu. m/se	(m)	(m/s)	(m)	(m)	(m)	(m)	(m)		(m)	(m)	(m)	(m)	(m)	(m)	(m)			
0	Ex 1								0	0							29.15	30.001			
1	SW1.1	0.3	0.161	33.735	6.213	0.118	0.286	1.969	30.937	28.968	0	0	39.327	37.358	2.087	39.327	37.59	38.841	N/A	Case A	N/A
2	SW1.2	0.3	0.045	36.39	2.538	0.089	0.163	0.329	39.335	39.315	0.002	0	39.805	39.476	0.418	39.805	39.707	40.504	Case B	N/A	Case D
3	SW1.3	0.225	0.029	64.546	1.812	0.095	0.142	0.167	39.815	39.788	0.004	0	41.68	41.513	0.263	41.68	---	42.862	Case B	N/A	Case D
4	HW2.1	0.3	0.119	2.878	1.689	0.3	n/a	0.145	39.386	39.24	0.015	0.044	39.429	39.284	1.398	39.458	---	38.585	Case B	N/A	Case A

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#Line	Struct. ID	Exit Ho	Hf	Hb	Hc	He	Hj	Total	Ei	y+(P/gam	DI	Eai	CB	C-theta	Cp	Ha	Ea
		(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)		(m)				(m)	(m)
0	Ex 1																
1	SW1.1	0	0	0	0	0	0	0	2.087	0.118	1.329	0.581	-0.743	2.385	0	0	2.087
2	SW1.2	0.008	0	0	0	0	0	0	0.418	0.089	0.369	0.246	0	0.469	1.07	0	0.418
3	SW1.3	0.011	0	0	0	0	0	0	0.263	0.095	0.49	0.223	0	0	5.426	0	0.263
4	HW2.1	0.058	0.044	0	0	0	0	0.044	1.369	1.224	0.985	1.398	0	0	0	0	1.398

No.	Name	Stat.	Drain. Area A	Runoff Coeff. C	Time of Conc.	Rainfall Intens.	Q=CIA/Kc	Known Q	Longitudi nal Slope SL	Cross Slope Sx	Cross Slope Sw	Prev. Bypass Flow	Total Gutter Flow	Depth d	Gutter Width	Spread T	W / T	Inlet Type	Grate Length	Grate Width	Curb Opening Length	Curb Opening Height	Intercept Flow Qi	Bypass Flow Qb	Bypass Structure
		(m)	(sq. m)		(min)	(mm/hr)	(cu. m/se	(cu. m/sec)				(cu. m/se	(cu. m/se	(m)	(m)	(m)			(m)	(m)	(m)	(m)	(cu. m/se	(cu. m/sec)	
1	SW1.3	0.184	1709.69	0.75	6	81.224	0.029	0	0.02	0.02	0.05	0	NA	NA	NA	NA	NA	Grate inle	NA	NA	NA	NA	0.029	0	SW1.2
2	SW1.2	64.7	996.16	0.75	5.94	81.421	0.017	0	0.02	0.02	0.05	0	NA	NA	NA	NA	NA	Combinat	NA	NA	NA	NA	0.045	0	SW1.1
3	HW2.1	98.748	11594.29	0.5	8.16	74.136	0.119	0	-1	0.02	0.05	0	NA	NA	NA	NA	NA	Grate inle	NA	NA	NA	NA	0.124	0.037	OFFSITE

#Line	Pipe	From	To	3D Length	Drainage A	Drainage A	Runoff Co	Area X "C"	Area X "C"	Time of Cc	Time of Cc	Rain "I"	Runoff "Q"	Known Q	Total Q	Pipe Dia.	Full Q	Velocity Fu	Velocity D	Sec Time	Invert Elev	Invert Elev	Crown Dro	Slope	
				(m)	(sq. m)	(sq. m)		(sq. m)	(sq. m)	(min)	(min)	(mm/hr)	(cu. m/se	(cu. m/se	(cu. m/se	(m)	(cu. m/se	(m/s)	(m/s)	(min)	(m)	(m)	(m)		
1	SW Ex - SW	SW1.1	Ex 1	33.735	0	14300.14	0	0	7826.53	0	8.168	102.694	0.223	0	0.223	0.3	0.491	6.939	6.771	0.083	37.24	28.85	N/A	25.68%	
2	SW1.1 - SV	SW1.2	SW1.1	36.39	996.16	2705.85	0.75	747.12	2029.39	5.94	6.547	109.504	0.062	0	0.062	0.3	0.233	3.29	2.779	0.218	39.387	37.29	N/A	5.77%	
3	SW1.2 - SV	SW1.3	SW1.2	64.546	1709.69	1709.69	0.75	1282.26	1282.26	6	6	111.801	0.04	0	0.04	0.225	0.078	1.958	1.968	0.547	41.418	39.482	N/A	3.00%	
4	sw2.1	HW2.1	SW1.1	2.878	11594.29	11594.29	0.5	5797.15	5797.15	8.16	8.16	102.726	0.165	0	0.165	0.3	0.487	6.892	6.226	0.008	38.06	37.354	N/A	25.33%	

#Line	Struct. ID	D	Q	L	V	d	dc	v^2/2g	EGLo	HGLo	Sf	Total Pipe	EGLi	HGLi	Ea	EGLa	U/S TOC	Surface E	Step4*	Step7*	Step14*			
		(m)	(cu. m/se	(m)	(m/s)	(m)	(m)	(m)	(m)	(m)		(m)	(m)	(m)	(m)	(m)	(m)	(m)							
0	Ex 1								0	0							29.15	30.001							
1	SW1.1	0.3	0.223	33.735	6.771	0.142	0.296	2.339	31.331	28.992	0	0	39.721	37.382	2.481	39.721	37.59	38.841	N/A	Case A	N/A				
2	SW1.2	0.3	0.062	36.39	0.873	0.3	n/a	0.039	39.736	39.698	0.004	0.148	39.885	39.846	0.515	39.902	39.707	40.504	Case B	N/A	Case A				
3	SW1.3	0.225	0.04	64.546	1.968	0.114	0.167	0.197	39.922	39.871	0.008	0	41.729	41.532	0.312	41.729	---	42.862	Case B	N/A	Case D				
4	HW2.1	0.3	0.165	2.878	2.34	0.3	n/a	0.279	39.833	39.553	0.029	0.084	39.917	39.637	1.913	39.973	---	38.585	Case B	N/A	Case A				

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#Line	Struct. ID	Exit Ho	Hf	Hb	Hc	He	Hj	Total	Ei	y+(P/gam	DI	Eai	CB	C-theta	Cp	Ha	Ea								
		(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)		(m)				(m)	(m)								
0	Ex 1																								
1	SW1.1	0	0	0	0	0	0	0	2.481	0.142	1.842	1.018	-0.6	2.382	0	0	2.481								
2	SW1.2	0.016	0.148	0	0	0	0	0.148	0.498	0.459	0.509	0.506	0	0.467	0.751	0.009	0.515								
3	SW1.3	0.02	0	0	0	0	0	0	0.312	0.114	0.674	0.276	0	0	5.189	0	0.312								
4	HW2.1	0.112	0.084	0	0	0	0	0.084	1.857	1.577	1.365	1.913	0	0	0	0	1.913								

No.	Name	Stat.	Drain. Area A	Runoff Coeff. C	Time of Conc.	Rainfall Intens.	Q=CIA/Kc	Known Q	Longitudinal Slope SL	Cross Slope Sx	Cross Slope Sw	Prev. Bypass Flow	Total Gutter Flow	Depth d	Gutter Width	Spread T	W / T	Inlet Type	Grate Length	Grate Width	Curb Opening Length	Curb Opening Height	Intercept Flow Qi	Bypass Flow Qb	Bypass Structure
		(m)	(sq. m)		(min)	(mm/hr)	(cu. m/se	(cu. m/sec)				(cu. m/se	(cu. m/se	(m)	(m)	(m)			(m)	(m)	(m)	(m)	(cu. m/se	(cu. m/sec)	
1	SW1.3	0.184	1709.69	0.75	6	111.801	0.04	0	0.02	0.02	0.05	0	NA	NA	NA	NA	NA	Grate inle	NA	NA	NA	NA	0.032	0.008	SW1.2
2	SW1.2	64.7	996.16	0.75	5.94	112.053	0.023	0	0.02	0.02	0.05	0	NA	NA	NA	NA	NA	Combinat	NA	NA	NA	NA	0.028	0.004	SW1.1
3	HW2.1	98.748	11594.29	0.5	8.16	102.726	0.165	0	-1	0.02	0.05	0	NA	NA	NA	NA	NA	Grate inle	NA	NA	NA	NA	0.165	0	---

Post Development Assessment, Assumed Development of Catchment Above – 5% AEP

Pipe	From	To	3D Length	Drainage .	Drainage .	Runoff Co	Area X "C"	Area X "C"	Time of Cc	Time of Cc	Rain "I"	Runoff "Q"	Known Q	Total Q	Pipe Dia.	Full Q	Velocity Fu	Velocity D	Sec Time	Invert Elev	Invert Elev	Crown Drc	Slope	
			(m)	(sq. m)	(sq. m)		(sq. m)	(sq. m)	(min)	(min)	(mm/hr)	(cu. m/sec	(cu. m/sec	(cu. m/sec	(m)	(cu. m/sec	(m/s)	(m/s)	(min)	(m)	(m)	(m)		
SW Ex - SV	SW1.1	Ex 1	33.735	0	14300.14	0	0	10725.1	0	8.168	74.111	0.221	0	0.221	0.3	0.491	6.939	6.752	0.083	37.24	28.85	N/A	25.68%	
SW1.1 - SV	SW1.2	SW1.1	36.39	996.16	2705.85	0.75	747.12	2029.39	5.94	6.594	79.276	0.045	0	0.045	0.3	0.233	3.29	2.538	0.239	39.387	37.29	N/A	5.77%	
SW1.2 - SV	SW1.3	SW1.2	64.546	1709.69	1709.69	0.75	1282.26	1282.26	6	6	81.224	0.029	0	0.029	0.225	0.078	1.958	1.812	0.594	41.418	39.482	N/A	3.00%	
sw2.1	HW2.1	SW1.1	2.878	11594.29	11594.29	0.75	8695.72	8695.72	8.16	8.16	74.136	0.179	0	0.179	0.3	0.487	6.892	6.36	0.008	38.06	37.354	N/A	25.33%	

Struct. ID	D	Q	L	V	d	dc	v^2/2g	EGLo	HGLo	Sf	Total Pipe	EGLi	HGLi	Ea	EGLa	U/S TOC	Surface E	Step4*	Step7*	Step14*				
	(m)	(cu. m/se	(m)	(m/s)	(m)	(m)	(m)	(m)	(m)		(m)	(m)	(m)	(m)	(m)	(m)	(m)							
Ex 1								0	0							29.15	30.001							
SW1.1	0.3	0.221	33.735	6.752	0.141	0.296	2.325	31.317	28.991	0	0	39.707	37.381	2.467	39.707	37.59	38.841	N/A	Case A	N/A				
SW1.2	0.3	0.045	36.39	0.632	0.3	n/a	0.02	39.715	39.694	0.002	0.078	39.792	39.772	0.415	39.802	39.707	40.504	Case B	N/A	Case A				
SW1.3	0.225	0.029	64.546	1.812	0.095	0.142	0.167	39.813	39.786	0.004	0	41.68	41.513	0.263	41.68	---	42.862	Case B	N/A	Case D				
HW2.1	0.3	0.179	2.878	2.533	0.3	n/a	0.327	39.838	39.51	0.034	0.099	39.936	39.609	1.942	40.002	---	38.585	Case B	N/A	Case A				

Struct. ID	Exit Ho	Hf	Hb	Hc	He	Hj	Total	Ei	y+(P/gam	DI	Eai	CB	C-theta	Cp	Ha	Ea								
	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)		(m)				(m)	(m)								
Ex 1																								
SW1.1	0	0	0	0	0	0	0	2.467	0.141	1.821	0.995	-0.6	2.286	0	0	2.467								
SW1.2	0.008	0.078	0	0	0	0	0.078	0.406	0.385	0.369	0.41	0	0.469	0.869	0.005	0.415								
SW1.3	0.011	0	0	0	0	0	0	0.263	0.095	0.49	0.223	0	0	5.426	0	0.263								
HW2.1	0.131	0.099	0	0	0	0	0.099	1.876	1.549	1.477	1.942	0	0	0	0	1.942								

Name	Stat.	Drain. Area A	Runoff Coeff. C	Time of Conc.	Rainfall Intens.	Q=CIA/Kc	Known Q	Longitudi nal Slope SL	Cross Slope Sx	Cross Slope Sw	Prev. Bypass Flow	Total Gutter Flow	Depth d	Gutter Width	Spread T	W / T	Inlet Type	Grate Length	Grate Width	Curb Opening Length	Curb Opening Height	Intercept Flow Qi	Bypass Flow Qb	Bypass Structure
	(m)	(sq. m)		(min)	(mm/hr)	(cu. m/sec	(cu. m/sec)				(cu. m/sec	(cu. m/sec	(m)	(m)	(m)			(m)	(m)	(m)	(m)	(cu. m/sec	(cu. m/sec)	
SW1.3	0.184	1709.69	0.75	6	81.224	0.029	0	0.02	0.02	0.05	0	NA	NA	NA	NA	NA	Grate inlet	NA	NA	NA	NA	0.25	0	SW1.2
SW1.2	64.7	996.16	0.75	5.94	81.421	0.017	0	0.02	0.02	0.05	0	NA	NA	NA	NA	NA	Combinat	NA	NA	NA	NA	0.45	0	SW1.1
HW2.1	98.748	11594.29	0.75	8.16	74.136	0.179	0	-1	0.02	0.05	0	NA	NA	NA	NA	NA	Grate inlet	NA	NA	NA	NA	0.124	0.097	OFFSITE

Post Development Assessment, Assumed Development of Catchment Above – 1% AEP

#Line	Pipe	From	To	3D Length	Drainage A	Drainage A	Runoff Co	Area X "C"	Area X "C"	Time of Cc	Time of Cc	Rain "I"	Runoff "Q"	Known Q	Total Q	Pipe Dia.	Full Q	Velocity Fi	Velocity D	Sec Time	Invert Elev	Invert Elev	Crown Dro	Slope	
				(m)	(sq. m)	(sq. m)		(sq. m)	(sq. m)	(min)	(min)	(mm/hr)	(cu. m/se	(cu. m/se	(cu. m/se	(m)	(cu. m/se	(m/s)	(m/s)	(min)	(m)	(m)	(m)		
1	SW Ex - SV	SW1.1	Ex 1	33.735	0	14300.14	0	0	10725.1	0	8.167	102.697	0.306	0	0.306	0.3	0.491	6.939	7.313	0.077	37.24	28.85	N/A	25.68%	
2	SW1.1 - SV	SW1.2	SW1.1	36.39	996.16	2705.85	0.75	747.12	2029.39	5.94	6.547	109.504	0.062	0	0.062	0.3	0.233	3.29	2.779	0.218	39.387	37.29	N/A	5.77%	
3	SW1.2 - SV	SW1.3	SW1.2	64.546	1709.69	1709.69	0.75	1282.26	1282.26	6	6	111.801	0.04	0	0.04	0.225	0.078	1.958	1.968	0.547	41.418	39.482	N/A	3.00%	
4	sw2.1	HW2.1	SW1.1	2.878	11594.29	11594.29	0.75	8695.72	8695.72	8.16	8.16	102.726	0.248	0	0.248	0.3	0.487	6.892	6.919	0.007	38.06	37.354	N/A	25.33%	

#Line	Struct. ID	D	Q	L	V	d	dc	v^2/2g	EGLo	HGLo	Sf	Total Pipe	EGLi	HGLi	Ea	EGLa	U/S TOC	Surface E	Step4*	Step7*	Step14*				
		(m)	(cu. m/se	(m)	(m/s)	(m)	(m)	(m)	(m)	(m)		(m)	(m)	(m)	(m)	(m)	(m)	(m)							
0	Ex 1								0	0							29.15	30.001							
1	SW1.1	0.3	0.306	33.735	7.313	0.172	0.299	2.728	31.75	29.022	0	0	40.14	37.412	2.9	40.14	37.59	38.841	N/A	Case A	N/A				
2	SW1.2	0.3	0.062	36.39	0.873	0.3	n/a	0.039	40.155	40.116	0.004	0.148	40.304	40.265	0.93	40.317	39.707	40.504	Case B	N/A	Case A				
3	SW1.3	0.225	0.04	64.546	1.968	0.114	0.167	0.197	40.337	40.286	0.008	0	41.729	41.532	0.312	41.729	---	42.862	Case B	N/A	Case D				
4	HW2.1	0.3	0.248	2.878	3.51	0.3	n/a	0.629	40.391	39.763	0.066	0.189	40.581	39.952	2.646	40.706	---	38.585	Case B	N/A	Case A				

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#Line	Struct. ID	Exit Ho	Hf	Hb	Hc	He	Hj	Total	Ei	y+(P/gam	DI	Eai	CB	C-theta	Cp	Ha	Ea								
		(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)		(m)				(m)	(m)								
0	Ex 1																								
1	SW1.1	0	0	0	0	0	0	0	2.9	0.172	2.524	1.911	-0.6	2.284	0	0	2.9								
2	SW1.2	0.016	0.148	0	0	0	0	0.148	0.917	0.878	0.509	0.925	0	0.467	0.237	0.005	0.93								
3	SW1.3	0.02	0	0	0	0	0	0	0.312	0.114	0.674	0.276	0	0	5.189	0	0.312								
4	HW2.1	0.251	0.189	0	0	0	0	0.189	2.521	1.892	2.047	2.646	0	0	0	0	2.646								

No.	Name	Stat.	Drain. Are	Runoff Co	Time of Cc	Rainfall In	Q=CIA/Kc	Known Q	Longitudir	Cross Slop	Cross Slop	Prev. Bypa	Total Gutt	Depth d	Gutter Wic	Spread T	W / T	Inlet Type	Grate Leng	Grate Wid	Curb Oper	Curb Oper	Intercept F	Bypass Fl	Bypass Str
		(m)	(sq. m)		(min)	(mm/hr)	(cu. m/se	(cu. m/sec)				(cu. m/se	(cu. m/se	(m)	(m)	(m)			(m)	(m)	(m)	(m)	(cu. m/se	(cu. m/sec)	
1	SW1.3	0.184	1709.69	0.75	6	111.801	0.04	0	0.02	0.02	0.05	0	NA	NA	NA	NA	NA	Grate inle	NA	NA	NA	NA	0.04	0	SW1.2
2	SW1.2	64.7	996.16	0.75	5.94	112.053	0.023	0	0.02	0.02	0.05	0	NA	NA	NA	NA	NA	Combinat	NA	NA	NA	NA	0.062	0	SW1.1
3	HW2.1	98.748	11594.29	0.75	8.16	102.726	0.248	0	-1	0.02	0.05	0	NA	NA	NA	NA	NA	Grate inle	NA	NA	NA	NA	0.124	0.182	OFFSITE

Appendix 3: Photos

	Photo 1: Proposed Lot 1
	Photo 2: Proposed Lot 3

	Photo 3: View of the site, from the end of the existing road.
	Photo 4: View of the site including existing fire trail
	Photo 5: view of the site including the rear of lots where the stormwater line will be constructed

BUSHFIRE HAZARD REPORT

3 LOT SUBDIVISION & BALANCE

10 ALANAH COURT, OLD BEACH

CERTIFIED BY N M CREESE

21st December 2023

LARK & CREESE

62 Channel Highway, Kingston 7050 Ph 6229 6563 info@larkandcreese.com.au

CONTENTS

Disclaimer:
AS 3959:2018 cannot guarantee that a habitable building will survive a bushfire attack, however the implementation of the measures contained within *AS 3959:2018*, this report and accompanying plan will improve the likelihood of survival of the structure. This report and accompanying plan are based on the conditions prevailing at the time of assessment. No responsibility can be accepted to actions by the landowner, governmental or other agencies or other persons that compromise the effectiveness of this plan. The contents of this plan are based on the requirements of the legislation prevailing at the time of report.

1. SUMMARY:

This Bushfire Hazard Report has been prepared to support the development of a new 3 lot and balance residential subdivision at 10 Alanah Court, Old Beach. The site is subject to a bushfire prone areas overlay under the under the relevant planning scheme and has also been deemed to be bushfire prone due to its proximity to the areas of bushfire prone vegetation surrounding the site.

This report identifies the protective features and controls that must be incorporated into the design and construction works to ensure compliance with the standards. Fire management solutions are as defined in *AS 3959:2018 Construction of Buildings in Bushfire-Prone Areas and C13.0 Bushfire Prone Areas Code, Tasmanian Planning Scheme - Brighton (Code)*.

All lots have been designed to achieve a bushfire attack level of BAL-19 (or lower) of *AS 3959:2018* in accordance with *C13.0* the *Code*. New habitable buildings on these lots are to be constructed to this level, or greater, with the establishment and maintenance of the specified Hazard Management Areas to ensure ongoing protection from the risk from bushfire attack. A reduced bushfire attack level may be permitted where the separation distance between the bushfire prone vegetation and the building exceeds that required for BAL-19, subject to a revised assessment at the time of application for building approval.

Compliance with the following provisions of the *Code* will be required:

- *C13.6.1 Provision of hazard management areas*
- *C13.6.2 Public and fire fighting access*
- *C13.6.3 Provision of water supply for fire fighting purposes*

The effectiveness of the measures and recommendations detailed in this report and *AS 3959:2018* is dependent on their implementation and maintenance for the life of the development or until the site characteristics that this assessment has been measured from alter from those identified. No liability can be accepted for actions by lot owners, Council or governmental agencies which compromise the effectiveness of this report.

This report has been prepared and certified by Nick Creese, principal of Lark & Creese Surveyors. Nick is a registered surveyor in Tasmania and is accredited by the Tasmanian Fire Service to prepare Bushfire Hazard Management Plans (scope 1, 2, 3a, 3b & 3c.

Site survey was carried out on 24th November 2022.

2. LOCATION:

Property address:	10 Alanah Court, Old Beach
Title owner:	Thinking of Marketing Pty Ltd
Title reference:	C.T. 184468/11
PID N°:	2270100
Title area:	3.241 Ha
Municipal area:	Brighton
Zoning:	General Residential/Rural

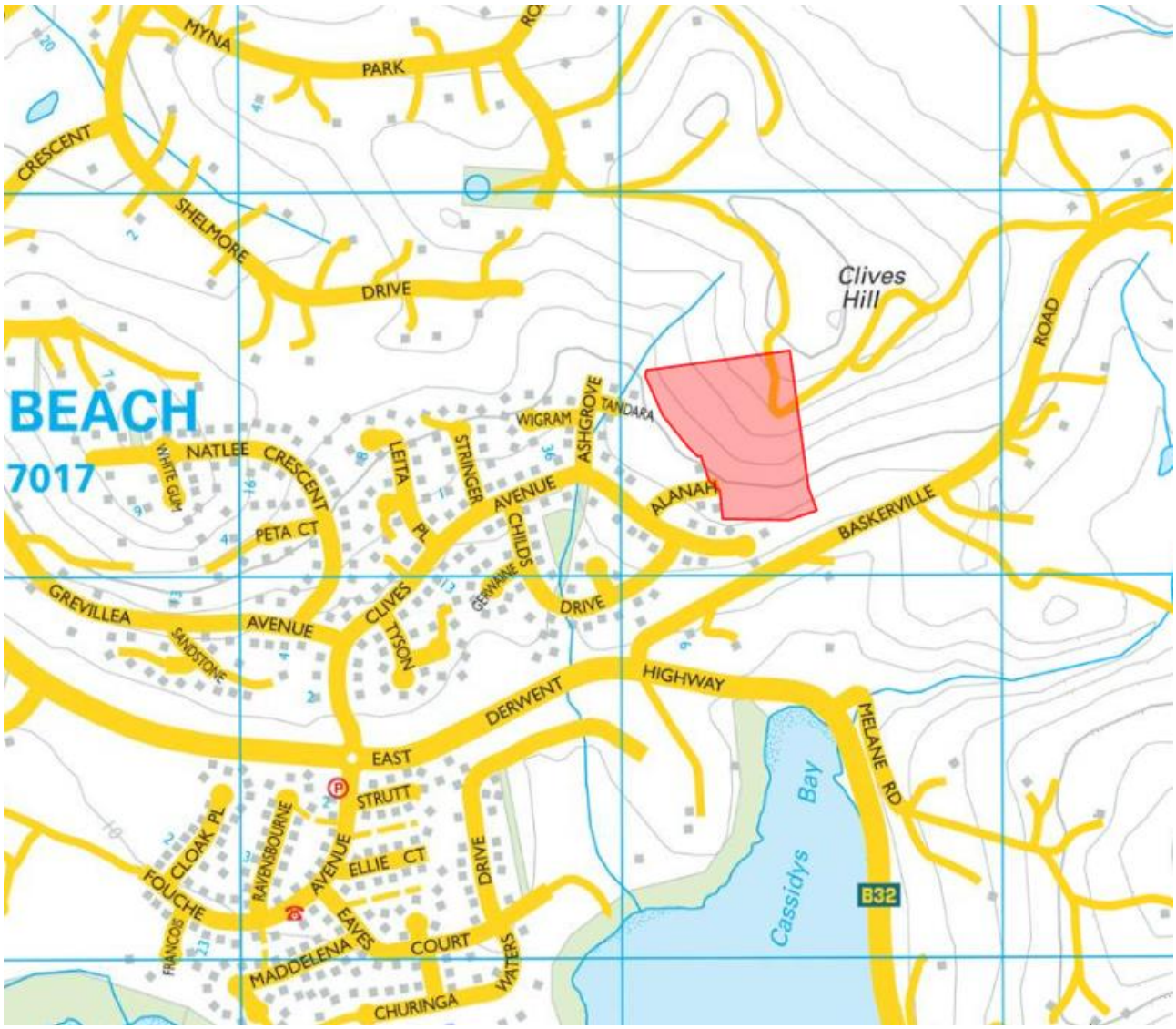


Image 1: Site location (Source *The LIST)*

3. SITE DESCRIPTION:

The site is located at the end of Alanah Court, approximately 600m north east of the intersection of Clives Avenue and East Derwent Highway, Old Beach. The site is located at an elevation range of approximately 40-100 metres, with grades typically falling to the south and south west in the order of 10-15°.

At the time of assessment the site was undeveloped and was vegetated by a mix of grassed areas in the east and areas of native trees and shrubs in the north and south. At the northeast corner of the site was part of a disused quarry.

The allotments to the north and east consisted of a disused quarry and areas of native trees and shrubs.

To the south and west of the site was a well-established area of residential allotments, Baskerville Road, Alanah Court, Clives Avenue, Shelmore Drive, and Tandara Court. The residential allotments included dwellings, sheds, accesses, and gardens. The roads included grassed nature strips, concrete footpaths, and bitumen carriageways. A new residential subdivision has just been completed to the west of the site and included bitumen roads and vacant lots. Minimal vegetation existed across the lots.

Reticulated water supply is available to the site with domestic water supply requirements reliant on TasWater mains supply.

Image 2: Aerial image of site and surrounds (Source: *The LIST*)

Image 3: Looking south east towards development site.

Image 4: Looking west towards development site.

Planning Controls:

Planning controls are administered by the Brighton Council under the *Tasmanian Planning Scheme - Brighton.* The site is subject to the Natural Assets Code and Bushfire-prone Areas Code overlays and is zoned General Residential and Rural.

Image 5: Council zoning and overlays

Red:	General Residential
Cream:	Rural
Green hatch:	Natural Assets Code
Whole site:	Bushfire-prone Areas Code

Fire History:

From the Fire History overlay detailed within *The LIST* map imagery, three bushfire events are mapped within a 2 km range of the site.

Year	Name	Area	Cause
1967	1967 Fire	±200,000 ha	Unknown
2006	Mt Direction	±25 ha	Unknown
2013	Mt Direction MTNRA001S	±456 ha	Planned

Image 6: Bushfire History (Source: *The LIST)*

4. PROPOSED DEVELOPMENT:

A 3 lot and balance area subdivision is proposed for the site. Access to the new residential lots will be from a new road extension on Alana Court with new water, sewer and stormwater services to be installed.

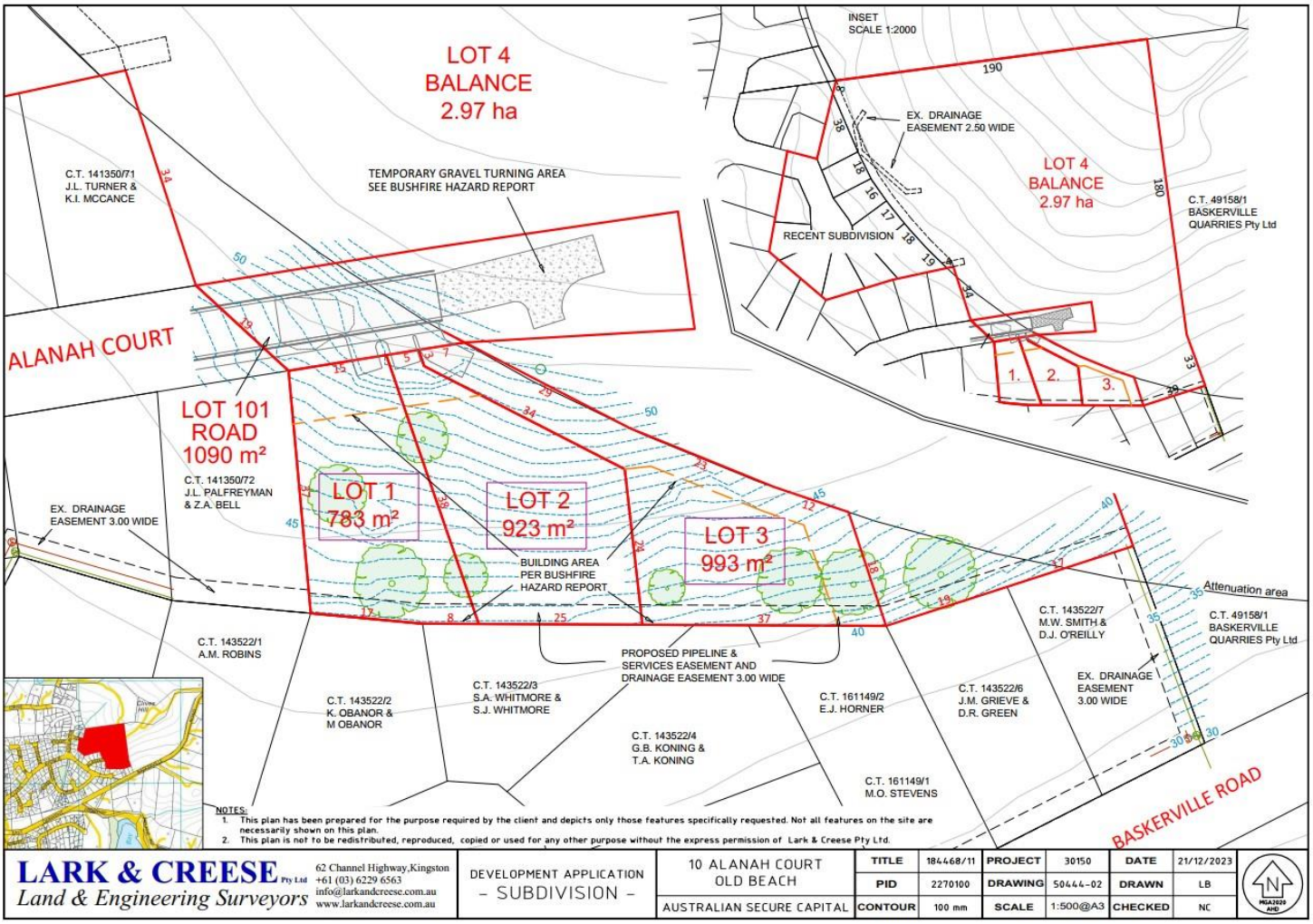


Image 7: Subdivision layout

5. BUSHFIRE ATTACK LEVEL:

Fire Danger Index (FDI): The Fire Index Rating for Tasmania is adopted as 50.

Vegetation Assessment:
Following assessment of the characteristics of the site, the vegetation types, separation distances from development site and slope under the vegetation have been identified as shown in Table 1 below:

Lot N°	Direction:	Vegetation type:	Distance (m):	Slope:
1	North	Forest	0-100	17° up
	East	Forest	0-100	3° down
	South	LTV	0-100	11° down
	West:	LTV	0-100	16° down
2	North	Forest Grass	0-60 60-100	17° up 10° up
	East	Forest	0-100	5° down
	South	LTV	0-100	11° down
	West	Forest LTV	0-53 53-100	Level 16° down
3	North	Forest Grassland	0-60 60-100	18° up 14° up
	East	Forest	0-100	3° down
	South	LTV	0-100	11° down
	West	Forest LTV	0-60 60-100	Level 16° down
4	North:	Forest	0-100	11° up
	Northeast:	Forest Grassland Forest	0-20 20-55 55-100	12° up 13° up 14° up
	East:	Forest	0-100	Level
	South:	Forest LTV Forest	0-20 20-100 55-65	9° down
	West:	Grassland LTV	0-10 10-100	8° down

Table 1: Site Assessment

NOTE: The vegetation identified above has been assessed in consideration of *Table 2.3* and *Figures 2.4 (A)-(H), AS 3959:2018* as follows

The majority of the vegetation within the subject property consisted of eucalypts, 5-15 metres in height, with an understory of smaller trees and shrubs with a foliage coverage of >30% and is assessed in accordance with *Figure 2.4(B)* as *Open Forest A-03* resulting in a vegetation classification of **A: Forest**. The vegetation within the reminder of the allotment consisted of grasses that were more than 100 mm in height and have been assessed in accordance with *Figure 2.4(H)* as *Closed Tussock Grassland G-21* resulting in a vegetation classification of **G: Grassland**.

To the south and west of the site was an extensive area of well-established residential allotments and several roads. The residential allotments included dwellings, sheds, accesses, and gardens. Baskerville Road to the south included grassed nature strips and a bitumen carriageway. Childs Drive, Clives Avenue, Alanah Court, Shelmore Drive, Tandara Court, and Wigram Court, to the west of the site consisted of grassed nature strips, grassed nature strips, and bitumen carriageways. As such the vegetation to the south and west has been classified as **Low Threat Vegetation** (LTV) in accordance with *Part 2.2.3.2 (e) & (f), AS 3959:2018*.

Vegetation Classification:

In consideration of vegetation classifications under *Table 2.3* and *Figures 2.4 (A)-(H), AS 3959:2018* and as detailed above, the predominant vegetation, separation distances from development site and slope under the classified vegetation is assessed as shown in Table 2 below:

Direction:	Vegetation Type:	Distance (m):	Slope:	Exclusions:
LOT 1				
North:	**A: Forest**	**0-100**	**17° up**	**No**
East:	**A: Forest**	**0-100**	**3° down**	**No**
South:	**LTV**	**0-100**	**11° down**	***2.2.3.2 (e) & (f)***
West:	**LTV**	**0-100**	**16° down**	***2.2.3.2 (e) & (f)***
LOT 2				
North:	**A: Forest** **G: Grassland**	**0-60** **60-100**	**17° up** **10° up**	**No** **No**
East:	**A: Forest**	**0-100**	**5° down**	**No**
South:	**LTV**	**0-100**	**11° down**	***2.2.3.2 (e) & (f)***
West:	**A: Forest** **LTV**	**0-28** **28-100**	**Level** **16° down**	**No** ***2.2.3.2 (e) & (f)***
LOT 3				
North:	**A: Forest** **G: Grassland**	**0-60** **60-100**	**18° up** **14° up**	**No** **No**
East:	**A: Forest**	**0-100**	**3° down**	**No**
South:	**LTV**	**0-100**	**11° down**	***2.2.3.2 (e) & (f)***
West:	**A: Forest** **LTV**	**0-60** **60-100**	**Level** **16° down**	**No** ***2.2.3.2 (e) & (f)***
LOT 4				
North:	**A: Forest**	**0-100**	**11° up**	**No**
East:	**A: Forest**	**0-100**	**Level**	**No**
South:	**A: Forest** **LTV** **A: Forest**	**0-20** **20-100** **55-65**	**9° down**	**No** ***2.2.3.2 (e) & (f)*** **No**
West:	**G: Grassland** **LTV**	**0-10** **10-100**	**8° down**	**No** ***2.2.3.2 (e) & (f)***

Image 8: Aerial image of assessed vegetation (Source *The LIST*)

Image 9: Predominate vegetation to the north of site – **A: Forest**

Image 10: Predominate vegetation to the east of site - **A: Forest**

Image 11: Predominate vegetation to the south of site – **Low Threat Vegetation**

Image 12: Predominate vegetation to the west of site – **Low Threat Vegetation**

Bushfire Attack Level (BAL):

Based on the predominant vegetation detailed above, and the separation distances available between the predominant vegetation and the development, the BAL applicable for a compliant building area within each lot has been determined from *Table 2.6, AS 3959:2018* as follows:

LOT N°	Direction	Vegetation Classification	Slope	HMA per Table 2.6	Boundary setback
1	North	A: Forest	17° up	23-<32 m	8m ***
	East	A: Forest	3° d	27-<38 m	0m **
	South	LTV	11° d	N/A	0m
	West	LTV	16° d	N/A	0m
2	North	A: Forest	17° up	23-<32 m	8m ***
	East	A: Forest	5° d	34-<46 m	0m **
	South	LTV	11° d	N/A	0m
	West	A: Forest	Level	23-<32 m	0m **
3	North	A: Forest	18° up	23-<32 m	4m ++
	East	A: Forest	3° d	27-<38 m	7m ++
	South	LTV	11° d	N/A	0m
	West	A: Forest	Level	23-<32 m	0m **
4	North	A: Forest	11° up	23-<32 m	23m <<
	East	A: Forest	Level	23-<32 m	23m <<
	South	A: Forest	9° d	34-<46 m	0m **
	West	G: Grassland	8° d	13-<19 m	0m

Table 2: Assessed Bushfire Attack Level for each lot

** Boundary setbacks are 0m as a result of clearing of the HMA required to the north and east for Lot 3 and within Lots 1, 2 & 3.

*** Boundary setback of 8m is required as a result of the bushfire threat associated with the vegetation on the northern side of the road within Lot 4.

++ A 20m HMA is to be established outside boundaries of Lot 3 to north and east to provide minimum setback to classified vegetation. A Part 5 Agreement will be required to ensure on-going management of this area.

<< Lot 4 is the balance area and has numerous possible building areas. This site currently has limited development potential due to its Rural zoning and disused

quarry site in the east with the most likely building area to be as shown on the BHMP. This land is likely to be subdivided in the future subject to rezoning. Any future building areas will be considered at that time.

6. COMPLIANCE:

The site has been assessed as being within 100 metres of bushfire prone vegetation and compliance is assessed against the provisions of *C13.0, Bushfire Prone Areas Code* in the following manner:

C13.6.1 Provision of hazard management areas:

That subdivision provides for hazard management areas that:

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

A1	***Acceptable Solutions***
(a)	*TFS or an accredited person certifies that there is an insufficient increase in risk from bushfire to warrant the provision of hazard management areas as part of a subdivision; or*
(b)	*The proposed plan of subdivision;* *(i) Shows all lots that are within of partly within a bushfire-prone area, including those developed at each stage of a staged subdivision;* *(ii) Shows the building area for each lot;* *(iii) Shows hazard management areas between bushfire-prone vegetation and each building area that have dimensions equal to or greater than, the separation distances required for BAL-19 in Table 2.6 of Australian Standard AS 3959:2018 Construction of buildings in bushfire-prone areas; and* *(iv) Is accompanied by a bushfire hazard management plan that addresses all the individual lots and that is certified by the TFS or accredited person, showing hazard management areas equal to , or greater than , the separation distances required for BAL-19 in Table 2.6 of Australian Standard AS 3959:2018 Construction of buildings in bushfire-prone areas; and*
(c)	*If hazard management areas are to be located on land external to the proposed subdivision the application is accompanied by the written consent of the owner of the land to enter into an agreement under section 71 of the Act that will be registered on the title of the neighbouring property providing for the affected land to be managed in accordance with the bushfire hazard management plan.*

The proposed subdivision has been assessed as being compliant with the Acceptable Solutions (b) as follows.

(i) The plan of subdivision shows all lots within or partly within a bushfire-prone area.

(ii) The plan of subdivision shows compliant building areas for all proposed allotments.

(iii) Each lot is capable of complying with the hazard management requirements of at least those required for BAL-19.

(iv) The attached hazard management plan shows hazard management areas for each lot that are equal to or greater than the distances required for BAL-19.

Lots assessed as **BAL-19** are:
LOTS: 1 - 4

Compliance with the requirements of *C13.6.1(b)(iii)* is dependent on the establishment of a Hazard Management Area within Lot 4 to provide sufficient separation between the building areas on Lots 1, 2 & 3 and the classified vegetation. In accordance with *C13.6.1 A1(c),* a Part 5 Agreement is to be registered on the titles to the lots to ensure the establishment and maintenance of this HMA in a low fuel condition. Establishment of this HMA is the responsibility of the developer and is to occur prior to the Council sealing of the Plan of Survey. On-going management is to be the responsibility of the owner of Lot 4. Provisions are to be contained within the Part 5 to permit dispensation of these requirements should that portion of Lot 4 be subdivided into residential allotments, or permanently maintained on a low fuel condition as a result of an approved use on the site.

Hazard Management Area requirements (boundary setbacks)				
Direction	North	East	South	West
Lot 1	8m	0m	0m	0m
Lot 2	8m	0m	0m	0m
Lot 3	4m	7m	0m	0m
Lot 4	23m	23m	0m	0m
HMA establishment recommendations	• Establishing non-flammable areas around the dwelling such as paths, patios, driveway, lawns etc. • Locating dams, orchards, vegetable garden, effluent disposal areas etc on the bushfire prone side of the building. • Providing heat shields and ember trap on the bushfire prone side of the dwelling such as non-flammable fencing, hedges, separated garden shrubs and small tress, • Store flammable materials such as wood piles, fuels and rubbish heaps are stored away from the dwelling. • Replace highly flammable vegetation with low flammability species. See Tasmanian Fire Service web site (www.fire.tas.gov.au) publications - Fire resisting garden plants. • Provided separation between significant trees such that groups are no greater than 20 metres in width, and more than 20 metres of the other groups of significant trees. Note that the retention of some trees can screen a dwelling from windborne embers. • Trim lower branches of retained trees to a minimum of 2 metres above ground level. • Strips of vegetation less than 20 metres in width and not within 20 metres of the site or other areas of bushfire-prone vegetation may be beneficial as an ember trap, wind breaks etc. • Removal of ground fuels such as leaves, bark, fallen branches etc.			
Ongoing Management practices	• Slash or mow grasses to less than 100 mm. • Remove dead and fallen vegetation including branches, bark and leaves regularly. • Trim any regrowth branches of retained trees within HMA that are less than 2m above ground level.			

C13.6.2 Subdivision: Public and fire fighting access

That access roads to, and the layout of roads, tracks and trails, in a subdivision:

(a) allow safe access and egress for residents, firefighters and emergency service personnel;
(b) provide access to the bushfire-prone vegetation that enables both property to be defended when under bushfire attack and for hazard management works to be undertaken;
(c) are designed and constructed to allow for fire appliances to be manoeuvred;
(d) provide access to water supplies for fire appliances; and
(e) are designed to allow connectivity, and where needed, offering multiple evacuation points.

A1	***Acceptable solutions***
(a)	*TFS or an accredited person certifies that there is insufficient increase in risk from bushfire to warrant specific measures for public access in the subdivision for the purposes of fire fighting; or*
(b)	*A proposed plan of subdivision showing the layout of roads, fire trails and the location of property access to building areas is included in a bushfire hazard management plan that;* *(i) demonstrates proposed roads will comply with Table E1, proposed private accesses will comply with Table E2 and proposed fire trails will comply with Table E3; and* *(ii) is certified by the TFS of an accredited person.*

The proposed subdivision has been assessed as being compliant with the Acceptable Solutions (b) as follows.

(i) The attached plan of subdivision shows the layout of roads, fire trails and the location of the property accesses to the building areas in compliance with *Table C13.1, Table C13.2* and *Table C13.3*. Note variation in turning area in accordance with *C13.6.2 P1.*

(ii) This bushfire hazard report and attached bushfire hazard management area plan has been certified by N.M. Creese, an accredited bushfire practitioner BFP-118, scope 1 ,2 ,3A, 3B & 3C.

The development requires the construction of a short extension to the Alanah Court carriageway and is to comply with the requirements of *Table C13.1*. A temporary turning head at the end of Alanah Court is installed. Due to site constraints, a 'Y' turning area is proposed in accordance with *C13.6.2 P1.*

P1	***Performance Criteria***
A proposed plan of subdivision shows access and egress for residents, fire-fighting vehicles and emergency service personnel to enable protection from bushfires, having regard to appropriate design measures, including:	
(a)	A proposed plan of subdivision shows access and egress for residents, fire-fighting vehicles and emergency service personnel to enable protection from bushfires, having regard to: appropriate design measures, including: (i) two way traffic; (ii) all weather surfaces; (iii) height and width of any vegetation clearances; (iv) load capacity; (v) provision of passing bays; (vi) traffic control devices; (vii) geometry, alignment and slope of roads, tracks and trails; (viii) use of through roads to provide for connectivity; (ix) limits on the length of cul-de- sacs and dead-end roads; (x) provision of turning areas; (xi) provision for parking areas; (xii) perimeter access; and (xiii) fire trails; and
(b)	the provision of access to: (i) bushfire-prone vegetation to permit the undertaking of hazard management works; and (ii) fire fighting water supplies; and
(c)	Any advice from the TFS

Due to the limitations associated with slope in the vicinity of the termination of the new road, a variation on the design of the turning area is proposed. A 'Y" design turning area has been designed by the engineer to facilitate a 3 point turn of a standard medium-rigid fire appliance. This area is to be of a compacted gravel formation and lies within the proposed road corridor extension and will be transferred to the Brighton Council in conjunction with the extension of the sealed portion of Alanah Court. Improved separation between the turning area and the unmanaged vegetation on the down-slope side is facilitated through the creation of the HMA within Lot 4 to the east of Lot 1 which is to be maintained in a low fuel condition in accordance with the requirements of this report. The turning area lies within an area proposed for a future subdivision road extending to the east and north (subject to rezoning and Council approval) which will provide for connector roads to land to the north, and additional turning areas.

Table C13.1 Standards for Roads		
Elements		***Requirement***
A	*Roads*	*Unless the development standards in the zone require a higher standard, the following apply;* *(a) Two-wheel drive, all-weather construction;* *(b) Load capacity of at least 20t, including for bridges and culverts;*

		(c) Minimum carriageway width is 7m for through road, or 5.5m for dead-end or cul-de-sac road; *(d) Minimum vertical clearance of 4m;* *(e) Minimum horizontal clearance of 2m from the edge of the carriageway;* *(f) Cross falls of less than 3 degrees (1:20 or 5%);* *(g) Maximum gradient of 15 degree (1:3.5 or 28%) for sealed roads, and 10 degrees (1:5.5 or 18%) for unsealed roads;* *(h) Curves have a minimum inner radius or 10m;* *(i) Dead-end or cul-de-sac roads are not more than 200m in length unless the carriageway is 7m in width;* *(j) Dead-end or cul-de-sac roads have a turning circle with a minimum 12m outer radius; and* *(k) Carriageways less then 7m wide have 'No Parking' zones on one side, indicated by a road sign that complies with Australian Standard AS 1743-2001 road signs-Specifications.*

New private accesses must be constructed from the edge of the turning area to the property boundaries of the lots in compliance with *Table C13.2*. Access to the building areas on each lot is less than 30m in length and is to comply with the requirements of *Element A, Table C13.2*. No standards apply.

Should an access exceed 30m in length, access is to comply with the requirements of *Element B, Table C13.2.* Where this occurs, construction of the access to the building area and on-site turning is not required at the time of subdivision however is to be installed at the time of development of a building required to comply with the standards.

Table C13.2 Standards for Property Access		
Elements		***Requirement***
A	*Property access length is less than 30m; or access in not required for a fire appliance to access a firefighting water point*	*There are no specified design and construction requirements.*
B	*Property access length is 30m or greater; or access is required for a fire appliance to a fire fighting water point.*	*The following design and construction requirements apply to property access;* *(a) All-weather construction;* *(b) Load capacity of at least 20t, including for bridges and culverts;* *(c) Minimum carriageway width of 4m;* *(d) Minimum vertical clearance of 4m;* *(e) Minimum horizontal clearance of 0.5m from the edge of the carriageway;* *(f) Cross falls of less than 3 degrees (1:20 or 5%);*

		(g) Dips less than 7 degrees (1:8 or 12.5%) entry and exit angles; *(h) Curves with a minimum inner radius of 10m;* *(i) Maximum gradient of 15 degrees (1:3.5 or 28%) for sealed roads, and 10 degrees (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 tuning circle with a minimum outer radius of 10m; or* *(ii) A property access encircling the building; or* *(iii) A hammerhead 'T' or 'Y' turning head 4m wide and 8m long.*
C	*Property access length is 200m or greater.*	*The following design and construction requirements apply to property access:* *(a) The requirements of B above; and* *(b) Passing bays of 2m additional carriageway width and 20m length provided every 200m.*
D	*Property access length is greater than 30m, and access is provided to 3 or more properties.*	*The following design and constructions requirements apply to property access:* *(a) Complies with requirement b above; and* *(b) Passing bays of 2m additional carriageway width and 20m length must be provided every 100m.*

C13.6.3 Provision of water supply for fire fighting purposes

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

In areas serviced with reticulated water by the water corporation	
A1	***Acceptable solutions***
(a)	*TFS or an accredited person certifies that there is an insufficient increase in risk from bushfire to warrant the provision of a water supply for fire fighting purposes;*
(b)	*A proposed plan of subdivision showing the layout of fire hydrants, and building areas, is included in a bushfire hazard management plan approved by the TFS or accredited person as being compliant with Table E4; or*
(c)	*A bushfire hazard management plan certified by the TFS or an accredited person demonstrates that the provision of water supply for fire fighting purposes is sufficient to manage the risks to property and lives in the event of a bushfire.*

In accordance with *Acceptable Solution A1(b)* all lots are assessed as being within a bushfire prone area and must be provided with a fire fighting supply of water from a reticulated supply in compliance with the provisions of *Table C13.4, E1.6.2,* the *Code* as follows:

Table C13.4 Reticulated water supply for Fire Fighting		
Element		***Requirement***
A	*Distance between buildings area to be protected and water supply*	*The following requirements apply:* *(a) The building area to be protected must be located within 120m of a fire hydrant; and* *(b) The distance must be measured as a hose lay, between the fire fighting water point and the furthest part of the building area.*
B	*Design criteria for fire hydrants*	*The following requirements apply:* *(a) Fire hydrant system must be designed and constructed in accordance with TasWater Supplements to Water Supplement to Water Supply Code of Australia WSA 03-2001-3.1 MRWA 2nd Editions; and* *(b) Fire hydrants are not installed in parking areas.*
C	*Hardstand*	*A hardstand area for fire appliances must be:* *(a) No more the 3m from the hydrant, measured as a hoselay;* *(b) No closer than 6m from the building area to be protected;* *(c) A minimum width of 3, 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.*

The building area within each allotment has been identified as being within a 120-metre hose lay of the proposed fire hydrant located in Alanah Court in compliance with *Table C13.4*.

7. CONCLUSIONS & RECOMMENDATIONS:

This Bushfire Hazard Report and Bushfire Hazard Management Plan have been prepared to support application for planning approval for a subdivision at 10 Alanah Court, Old Beach. The report has reviewed the bushfire risks associated with the site, and determined the fire management strategies that must be carried out to ensure the development on the site is at reduced risk from bushfire attack.

Provided the elements detailed in this report are implemented, the development on the site is capable of compliance with *AS 3959:2018* and *C13.6 Bushfire-Prone Areas Code* and any potential bushfire risk to the site is reduced.

The proposed lots have been assessed as compliant with bushfire attack levels (BAL) detailed in Table 2. The Council approval issued for the development should contain conditions requiring that the protective elements defined in this report and *C13.6*, *Bushfire-Prone Areas Code* be implemented during the construction phase. Any new building required to comply with this assessment must be constructed to the bushfire attack level described in Table 2, within the prescribed building areas noted on the Bushfire Hazard Management Plan. Should the extent or classification of the bushfire prone vegetation surrounding the site alters from that assessed by this report, building on the lots affected by this variation may be constructed to a lower level subject to the preparation of a revised assessment.

Lot No.	Compliant BAL
1 - 4	BAL-19

Table 3: Compliant BAL for each lot

- Each lot contains a building area with minimum setbacks required for BAL-19 in accordance with *C13.6.1 Provision of hazard management areas*. Hazard Management Areas are to be established at the time of subdivision with on-going management to be the responsibility of each lot owner. A Part 5 Agreement is to be established to require management of the HMA within Lot 4 to the east and north of Lot 3 in a low fuel condition. This area is to be established at the time of subdivision with on-going management to be the responsibility of the owner of Lot 4.
- The new public road is to comply with the requirements of *Table 13.1 Standards for Road.* This is to include a temporary turning area at the end of Alanah Court. Private accesses are to be constructed from Alanah Court to the boundary of each property in accordance with *Table C13.2 Property Access*.
- A fire hydrant is proposed within the Alanah Court Road Reserve and is to comply with the requirements of *Table C13.4. Reticulated water supply for fire fighting.*

All works required by this report are to be completed prior to the Council sealing the final Plan of Survey unless noted otherwise.

Although not mandatory, any increase in the construction standards above the assessed Bushfire Attack Level will afford improved protection from bushfire and this should be considered by the owner, designer and/or builder prior to construction commencing.

Hazard Management Areas must be established and maintained in a minimal fuel condition in accordance with this plan and the TFS guidelines. It is the owner's responsibility to ensure the long-term maintenance of the hazard management areas in accordance with the requirements of this report.

This report does not recommend or endorse the removal of any vegetation within or adjoining the site for the purpose of bushfire protection without the explicit approval of the local authority.

N M Creese
Bushfire Hazard Practitioner BFP-118
Scope 1, 2, 3A, 3B & 3C

8. REFERENCES:

- *AS 3959:2018 - Construction of Buildings in Bushfire Prone Areas.*
- *Tasmanian Planning Scheme - Brighton.*
- *The LIST* - Department of Primary Industry Parks Water & Environment.

9. GLOSSARY

AS 3959:2018	Australian Standards AS 3959:2018 *Construction of buildings in bushfire-prone areas.*
BAL (Bushfire Attack Level)	A means of measuring the severity of a building's potential exposure to ember attack, radiant heat and direct flame contact, using increments of radiant heat expressed in kilowatts per metre squared, and the basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire. The following BAL levels, based on heat flux exposure threshold are used within AS3959:2018; BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40, BAL-FZ.
Bushfire	An unplanned fire burning vegetation.
Bushfire Hazard Management Plan	A plan showing means of protection from bushfire in a form approved in writing by the Chief Officer.
Bushfire-Prone Area	An area that is subject to, or likely to be subject to, bushfire attack. Land that has been designated under legislation; or Has been identified under environmental planning instrument, development control plan or in the course of processing and determining a development application.
Carriageway (also vehicular access)	The section of the road formation which is used by traffic, and includes all the area of the traffic lane pavement together with the formed shoulder.
Classified vegetation	Vegetation that has been classified in accordance with Clause 2.2.3 of AS3959:2018.
Distance to	The distance between the building, or building area to the classified vegetation.
FDI (Fire Danger Index)	The chance of a fire starting, its rate of spread, its intensity and the difficulty of its suppression, according to various combinations of air temperature, relative humidity, wind speed and both long- and short-term drought effects.
Fire Fighting Water Point	Means the point where a fire appliance is able to connect to a water supply for fire fighting purposes. This includes a coupling in the case of a fire hydrant, offtake or outlet, or the minimum water level in the case of a static water body (including a dam, lake or pool).
Gradient under	The slope of the ground under the classified vegetation.
Hazard Management Area	The area between a habitable building or building area and bushfire-prone vegetation, which provides access to a fire front for fire fighting, which is maintained in a minimal fuel condition and in which there are no other hazards present which will significantly contribute to the spread of a bushfire.
Hose lay	The distance between two points established by a fire hose laid out on the ground, inclusive of obstructions.
Predominate vegetation	The vegetation that poses the greatest bushfire threat to the development site.
Water supply - Reticulated (Fire hydrant)	An assembly installed on a branch from a water pipeline, which provides a valved outlet to permit a supply of water to be taken from the pipeline for fire fighting.
Water supply - Static	Water stored on a tank, swimming pool, dam, or lake, that is available for fire fighting purposes at all times.

LOT 4
BALANCE
2.97 ha

INSET
SCALE 1:2000

EX. DRAINAGE
EASEMENT 2.50 WIDE

LOT 4
BALANCE
2.97 ha

C.T. 49158/1
BASKERVILLE
QUARRIES Pty Ltd

RECENT SUBDIVISION

1.
2.
3.

C.T. 141350/71
J.L. TURNER &
K.I. MCCANCE

TEMPORARY GRAVEL TURNING AREA
SEE BUSHFIRE HAZARD REPORT

ALANAH COURT

LOT 101
ROAD
1090 m²

C.T. 141350/72
J.L. PALFREYMAN
& Z.A. BELL

LOT 1
783 m²

LOT 2
923 m²

LOT 3
993 m²

EX. DRAINAGE
EASEMENT 3.00 WIDE

BUILDING AREA
PER BUSHFIRE
HAZARD REPORT

Attenuation area

C.T. 143522/1
A.M. ROBINS

C.T. 143522/7
M.W. SMITH &
D.J. O'REILLY

C.T. 49158/1
BASKERVILLE
QUARRIES Pty Ltd

PROPOSED PIPELINE &
SERVICES EASEMENT AND
DRAINAGE EASEMENT 3.00 WIDE

C.T. 143522/2
K. OBANOR &
M OBANOR

C.T. 143522/3
S.A. WHITMORE &
S.J. WHITMORE

C.T. 161149/2
E.J. HORNER

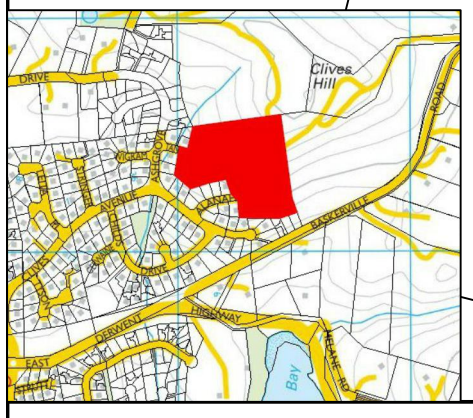
C.T. 143522/6
J.M. GRIEVE &
D.R. GREEN

EX. DRAINAGE
EASEMENT
3.00 WIDE

C.T. 143522/4
G.B. KONING &
T.A. KONING

C.T. 161149/1
M.O. STEVENS

BASKERVILLE ROAD



NOTES:
1. This plan has been prepared for the purpose required by the client and depicts only those features specifically requested. Not all features on the site are necessarily shown on this plan.
2. This plan is not to be redistributed, reproduced, copied or used for any other purpose without the express permission of Lark & Creese Pty Ltd.

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62 Channel Highway,Kingston
+61 (03) 6229 6563
info@larkandcreese.com.au
www.larkandcreese.com.au

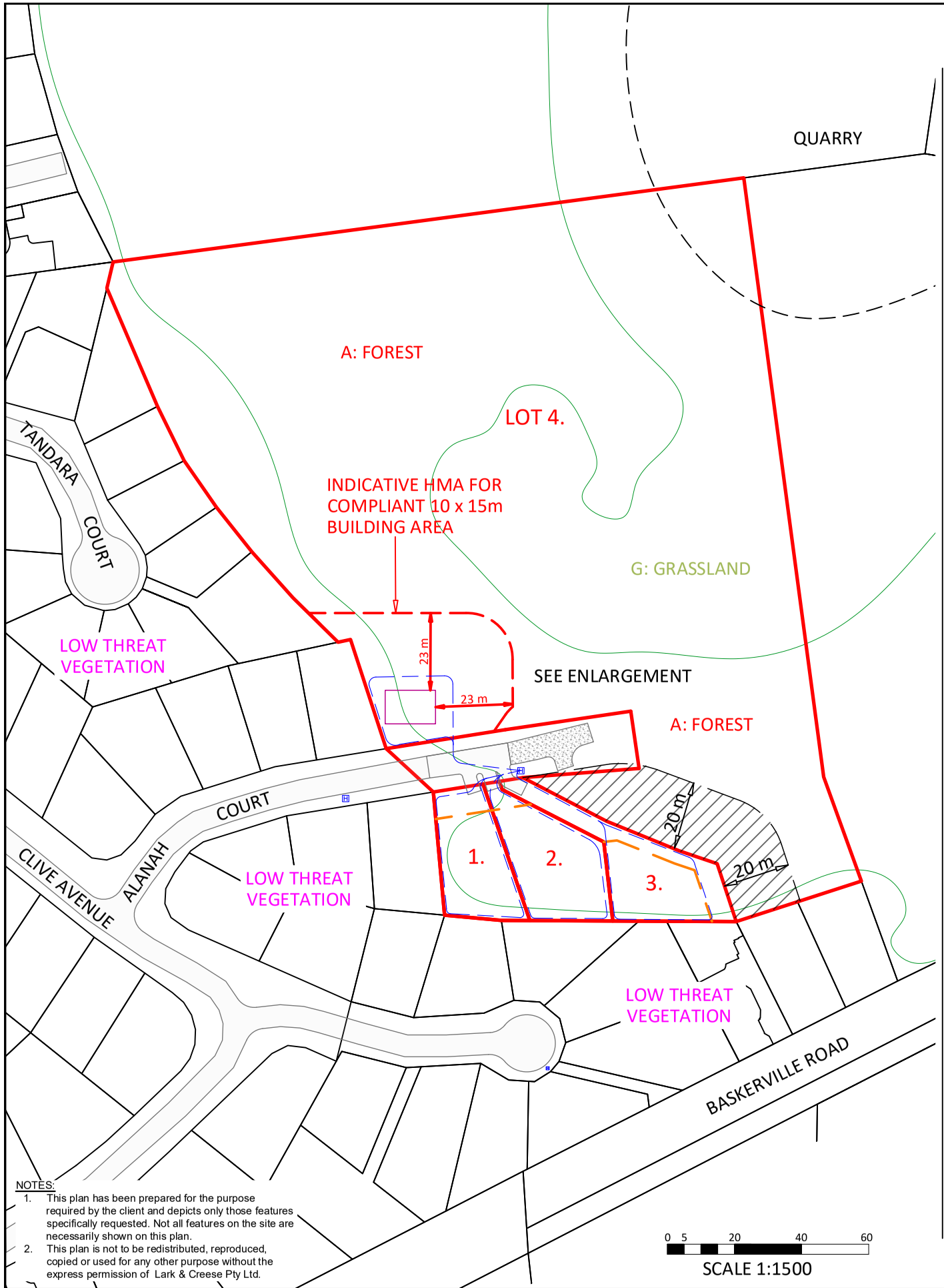
DEVELOPMENT APPLICATION
– SUBDIVISION –

10 ALANAH COURT
OLD BEACH

AUSTRALIAN SECURE CAPITAL

TITLE	184468/11	PROJECT	30150	DATE	21/12/2023
PID	2270100	DRAWING	50444-02	DRAWN	LB
CONTOUR	100 mm	SCALE	1:500@A3	CHECKED	NC

N
MGA2020
AHD



NOTES:
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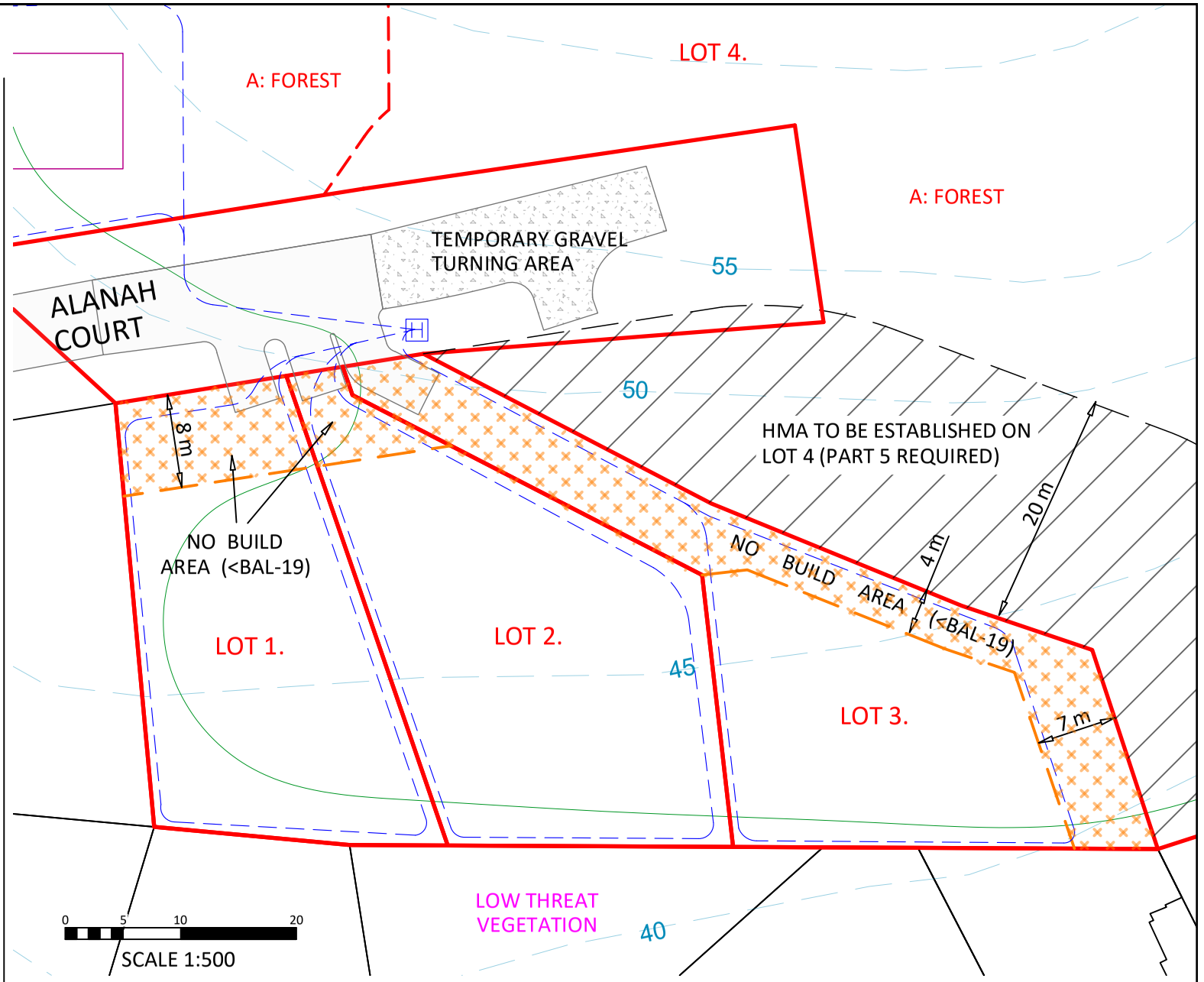

PLANNING SCHEME COMPLIANCE

C13.6, Development Standards for Subdivision, Bushfire Prone Areas Code, Tasmanian Planning Scheme - Brighton

C13.6.1 Provision of hazard management area

- *Acceptable Solution A1 (b):* Each lot contains a building area with hazard management areas equal to, or greater than the separation distance required for **BAL-19** in *Table 2.6* of *Australian Standard AS 3959:2018 Construction of buildings in bushfire-prone areas.* A Part 5 agreement will be requried to provide where HMA for Lots 1-3 lies within Lot 4.

C13.6.2 Public and fire fighting access

- *Acceptable Solution A1(b):* Public Road is to comply with the requirements of *Table C13.1, the Code.* Note variation to turning area in accordance with C13.6.2 P1. Property access to the building areas are to comply with the requirements of *Table C13.2, the Code.* Access to each building area is less than 30m in length and is requried to comply with Element A. No standards apply.

C13.6.3 Provision of water supply for fire fighting

- *Acceptable Solution A1(b):* A water supply for fire fighting purposes is to be made available in compliance with *Table C13.4.*

LEGEND

- HAZARD MANAGEMENT AREA
- NO BUILD AREA (>BAL-19)
- PUBLIC ROAD AND TURNING AREA
- PROPERTY ACCESS
- FIRE HYDRANT, HARDSTAND AND HOSELAY

Certified by N M Creese
Accredited Bushfire Hazard Practitioner BFP-118
Scope 1, 2, 3a, 3b, 3c
23/12/2023

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www.larkandcreese.com.au

BUSHFIRE HAZARD MANAGEMENT PLAN

10 ALANAH COURT
OLD BEACH

AUSTRALIAN SECURE CAPITAL

TITLE	184468/11	PROJECT	30150	DATE	21/12/23
PID	2270100	DRAWING	50442-02	DRAWN	NC
CONTOUR	5m	SCALE	AS SHOWN	CHECKED	NC

N
MGA2020
AHD

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:	10 ALANAH COURT, OLD BEACH
Certificate of Title / PID:	**C.T. 184468/11 PID 2270100**

2. Proposed Use or Development

Description of proposed Use and Development:	SUBDIVISON
Applicable Planning Scheme:	TASMANIAN PLANNING SCHEME - BRIGHTON

3. Documents relied upon

This certificate relates to the following documents:

Title	Author	Date	Version
SUBDIVISON PROPOSAL	Lark & Creese Pty Ltd	21/12/2023	50444-02
BUSHFIRE HAZARD REPORT	N.M. Creese	21/12/2023	50442-02

[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.*** (TURNING AREA ONLY)
☐	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 (EXCLUDING TURNING AREA)

☐	**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
☐	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
☐	E1.6.3 A2 (c) / C13.6.3 A2 (c)	Static water supply consistent with the objective

5. Bushfire Hazard Practitioner

Name:	NICHOLAS MARK CREESE	**Phone No:**	62296563
Postal Address:	62 CHANNEL HIGHWAY KINGSTON, TAS, 7050	**Email Address:**	info@larkandcreese.com.au
Accreditation No:	BFP – 118	**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: N.M. Creese **Date:** 21/12/2023

Certificate Number: 50442-02

(for Practitioner Use only)

Amended Submission to Planning Authority Notice

Council Planning Permit No.	SA 2023 / 00019	**Council notice date**	31/07/2023
TasWater details			
TasWater Reference No.	TWDA 2023/01014-BTN	**Date of response** **Amended date**	28/02/2024 18/06/2024
TasWater Contact	Jake Walley **Phone No.**	0467 625 805	
Response issued to			
Council name	BRIGHTON COUNCIL		
Contact details	development@brighton.tas.gov.au		
Development details			
Address	10 ALANAH CT, OLD BEACH	**Property ID (PID)**	9352107
Description of development	Subdivision - 3 Lots + Balance (CT 184468/11)		

Schedule of drawings/documents

Prepared by	Drawing/document No.	Revision No.	Date of Issue
Integral Consulting Engineers	22190 Sheet C03b	E	21/05/2024

Conditions

Pursuant to the *Water and Sewerage Industry Act* 2008 (TAS) Section 56P(1) TasWater imposes the following conditions on the permit for this application:

CONNECTIONS, METERING & BACKFLOW

1. A suitably sized water supply with metered connection and sewerage system and connection to each lot of the development must be designed and constructed to TasWater's satisfaction and be in accordance with any other conditions in this permit.
2. Any removal/supply and installation of water meters and/or the removal of redundant and/or installation of new and modified property service connections must be carried out by TasWater at the developer's cost.
3. Prior to commencing construction of the subdivision/use of the development, any water connection utilised for construction/the development must have a backflow prevention device and water meter installed, to the satisfaction of TasWater.

ASSET CREATION & INFRASTRUCTURE WORKS

4. Plans submitted with the application for Engineering Design Approval must, to the satisfaction of TasWater show, all existing, redundant and/or proposed property services and mains.
5. Prior to applying for a Permit to Construct new infrastructure the developer must obtain from TasWater Engineering Design Approval for new TasWater infrastructure. The application for Engineering Design Approval must include engineering design plans prepared by a suitably qualified person showing the hydraulic servicing requirements for water and sewerage to TasWater's satisfaction.
6. Prior to works commencing, a Permit to Construct must be applied for and issued by TasWater. All infrastructure works must be inspected by TasWater and be to TasWater's satisfaction.
7. In addition to any other conditions in this permit, all works must be constructed under the supervision of a suitably qualified person in accordance with TasWater's requirements.
8. Prior to the issue of a Certificate of Water and sewerage Compliance (Building and/or Plumbing) all

additions, extensions, alterations or upgrades to TasWater's water and sewerage infrastructure required to service the development, are to be completed generally as shown on, and in accordance with, the plans listed in the schedule of drawings/documents, and are to be constructed at the expense of the developer to the satisfaction of TasWater, with live connections performed by TasWater.

9. After testing/disinfection, to TasWater's requirements, of newly created works, the developer must apply to TasWater for connection of these works to existing TasWater infrastructure, at the developer's cost.

10. At practical completion of the water and sewerage works and prior to applying to TasWater for a Certificate of Water and Sewerage Compliance (Building and/or Plumbing), the developer must obtain a Certificate of Practical Completion from TasWater for the works that will be transferred to TasWater. To obtain a Certificate of Practical Completion:

    a. Written confirmation from the supervising suitably qualified person certifying that the works have been constructed in accordance with the TasWater approved plans and specifications and that the appropriate level of workmanship has been achieved.

    b. A request for a joint on-site inspection with TasWater's authorised representative must be made.

    c. Security for the twelve (12) month defects liability period to the value of 10% of the works must be lodged with TasWater. This security must be in the form of a bank guarantee.

    d. Work As Constructed drawings and documentation must be prepared by a suitably qualified person to TasWater's satisfaction and forwarded to TasWater.

    Upon TasWater issuing a Certificate of Practical Completion, the newly constructed infrastructure is deemed to have transferred to TasWater.

11. After the Certificate of Practical Completion has been issued, a 12-month defects liability period applies to this infrastructure. During this period all defects must be rectified at the developer's cost and to the satisfaction of TasWater. A further 12-month defects liability period may be applied to defects after rectification. TasWater may, at its discretion, undertake rectification of any defects at the developer's cost. Upon completion, of the defects liability period the developer must request TasWater to issue a "Certificate of Final Acceptance". TasWater will release any security held for the defect's liability period.

12. The developer must take all precautions to protect existing TasWater infrastructure. Any damage caused to existing TasWater infrastructure during the construction period must be promptly reported to TasWater and repaired by TasWater at the developer's cost.

13. Ground levels over the TasWater assets and/or easements must not be altered without the written approval of TasWater.

14. A construction management plan must be submitted with the application for TasWater Engineering Design Approval. The construction management plan must detail how the new TasWater infrastructure will be constructed while maintaining current levels of services provided by TasWater to the community. The construction plan must also include a risk assessment and contingency plans covering major risks to TasWater during any works. The construction plan must be to the satisfaction of TasWater prior to TasWater's Engineering Design Approval being issued.

FINAL PLANS, EASEMENTS & ENDORSEMENTS

15. Prior to the Sealing of the Final Plan of Survey, a Consent to Register a Legal Document must be obtained from TasWater as evidence of compliance with these conditions when application for sealing is made.

Advice: Council will refer the Final Plan of Survey to TasWater requesting Consent to Register a Legal Document be issued directly to them on behalf of the applicant.

16. Pipeline easements, to TasWater's satisfaction, must be created over any existing or proposed TasWater infrastructure and be in accordance with TasWater's standard pipeline easement conditions.

17. Prior to the issue of a TasWater Consent to Register a Legal Document, the applicant must submit a .dwg file, prepared by a suitably qualified person to TasWater's satisfaction, showing:

    a. the exact location of the existing water/sewerage infrastructure,

    b. the easement protecting that infrastructure.

    The developer must locate the existing TasWater infrastructure and clearly show it on the .dwg file. Existing TasWater infrastructure may be located by a surveyor and/or a private contractor engaged at the developers cost.

DEVELOPMENT ASSESSMENT FEES

18. The applicant or landowner as the case may be, must pay a development assessment fee of $389.86 and a Consent to Register a Legal Document fee of $248.30 to TasWater, as approved by the Economic Regulator and the fee will be indexed, until the date paid to TasWater.

    The payment is required within 30 days of the issue of an invoice by TasWater.

Advice

General

For information on TasWater development standards, please visit https://www.taswater.com.au/building-and-development/technical-standards

For application forms please visit https://www.taswater.com.au/building-and-development/development-application-form

Service Locations

Please note that the developer is responsible for arranging to locate the existing TasWater infrastructure and clearly showing it on the drawings. Existing TasWater infrastructure may be located by a surveyor and/or a private contractor engaged at the developers cost to locate the infrastructure.

(a) A permit is required to work within TasWater's easements or in the vicinity of its infrastructure. Further information can be obtained from TasWater.

(b) TasWater has listed a number of service providers who can provide asset detection and location services should you require it. Visit https://www.taswater.com.au/building-and-development/service-locations for a list of companies.

(c) Sewer drainage plans or Inspection Openings (IO) for residential properties are available from your local council.

NOTE: In accordance with the WATER AND SEWERAGE INDUSTRY ACT 2008 - SECT 56ZB A regulated entity may charge a person for the reasonable cost of –

(a) a meter; and

(b) installing a meter.

Declaration

The drawings/documents and conditions stated above constitute TasWater's Submission to Planning Authority Notice.

TasWater Contact Details

Phone	13 6992	Email	development@taswater.com.au
Mail	GPO Box 1393 Hobart TAS 7001	Web	www.taswater.com.au