

PROPOSED DEVELOPMENT OF LOT 5

STORMWATER MANAGEMENT PLAN

LOT 5 BUSH CRESCENT, PARKHURST

BTRE 1 PTY LTD

D22.320

CIVIL DESIGN



LOCALITY PLAN

(Not To Scale)



ACN 121 309 171
47 Normanby Street
Yeppoon, Queensland 4703

Phone: 07 49112553
Fax: 07 49383660
Email: admin@dileigh.com.au

ROCKHAMPTON REGIONAL COUNCIL

AMENDED PLANS APPROVED

27 October 2023

DATE

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

Development Permit No.: D/139-2022

Dated: 7 March 2023

DESIGN DRAWING LIST INDEX

SHEET NUMBER	SHEET TITLE
STORMWATER	
SW-00	TITLE PAGE
SW-01	EXISTING SITE CATCHMENTS
SW-02	PROPOSED LAYOUT AND CATCHMENTS
SW-03	STORMWATER DETAILS AND CALCULATIONS

PRELIMINARY ISSUE

FOR APPROVAL

LEGEND

- EXISTING OVERHEAD ELECTRICITY
- TELSTRA (CABLE & PIT)
- EXISTING WATER MAIN
- EXISTING SEWER MAIN & ACCESS CHAMBER
- EXISTING STORMWATER MAIN
- EXISTING KERB INLET
- PROPOSED SEWER MAIN & ACCESS CHAMBER (DESIGN AND WORKS BY RRC)
- PROPOSED SEWER CONNECTION (INDICATIVE ONLY)
- STOCKPILE/STORAGE AREA
- CATCHMENT AREA

EXISTING LEVELS AND SERVICES

1. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND LEVELS OF ALL EXISTING SERVICES WITH THE RELEVANT AUTHORITIES INCLUDING 'DIAL BEFORE YOU DIG' PRIOR TO COMMENCING CONSTRUCTION.
2. ANY COSTS ASSOCIATED WITH REPAIRING DAMAGE TO EXISTING SERVICES SHALL BE PAID FOR BY THE CONTRACTOR.
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STORMWATER CATCHMENTS

NAME	AREA (ha)	fi
CATCHMENT A	1.244	0.000
CATCHMENT B	0.899	0.000
CATCHMENT C	0.258	0.000

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CATCHMENT A
TO MCLAUGHLIN STREET

LOT 5
SP333392

CATCHMENT B
TO MCLAUGHLIN STREET

CATCHMENT C
TO BUSH CRESCENT

BUSH CRESCENT

BOUNDARY STREET

MCLAUGHLIN STREET

MCLAUGHLIN STREET CULVERT

LOT 3
SP601934

LOT 9
CP866160

LOT 8
CP866160

LOT 7
CP860026

LOT 6
CP860026

LOT 108
LN2443

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PRELIMINARY ISSUE

FOR APPROVAL

REV	REVISION DESCRIPTION	DATE
A	FOR MCU APPROVAL	05/09/2022
B	RPI RESPONSE - STORMWATER MANAGEMENT	25/01/2023
C	FURTHER ADVICE	16/02/2023
D	AMENDED SURFACE	01/06/2023
E	AMENDED CATCHMENTS AND BASIN	04/08/2023
F	AMENDED AS PER COUNCIL ADVICE	22/09/2023

DILEIGH
CIVIL/STRUCTURAL DESIGN & PROJECT MANAGEMENT

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Drafted	CER
Designed	TAH/AML
Checked	GJB
Approved	GLENN J BROWN
RPEQ 7682	Sign
22/09/2023	

BTRE 1 PTY LTD
PROPOSED DEVELOPMENT OF LOT 5
LOT 5 BUSH CRESCENT, PARKHURST
MATERIAL CHANGE OF USE
EXISTING SITE CATCHMENTS

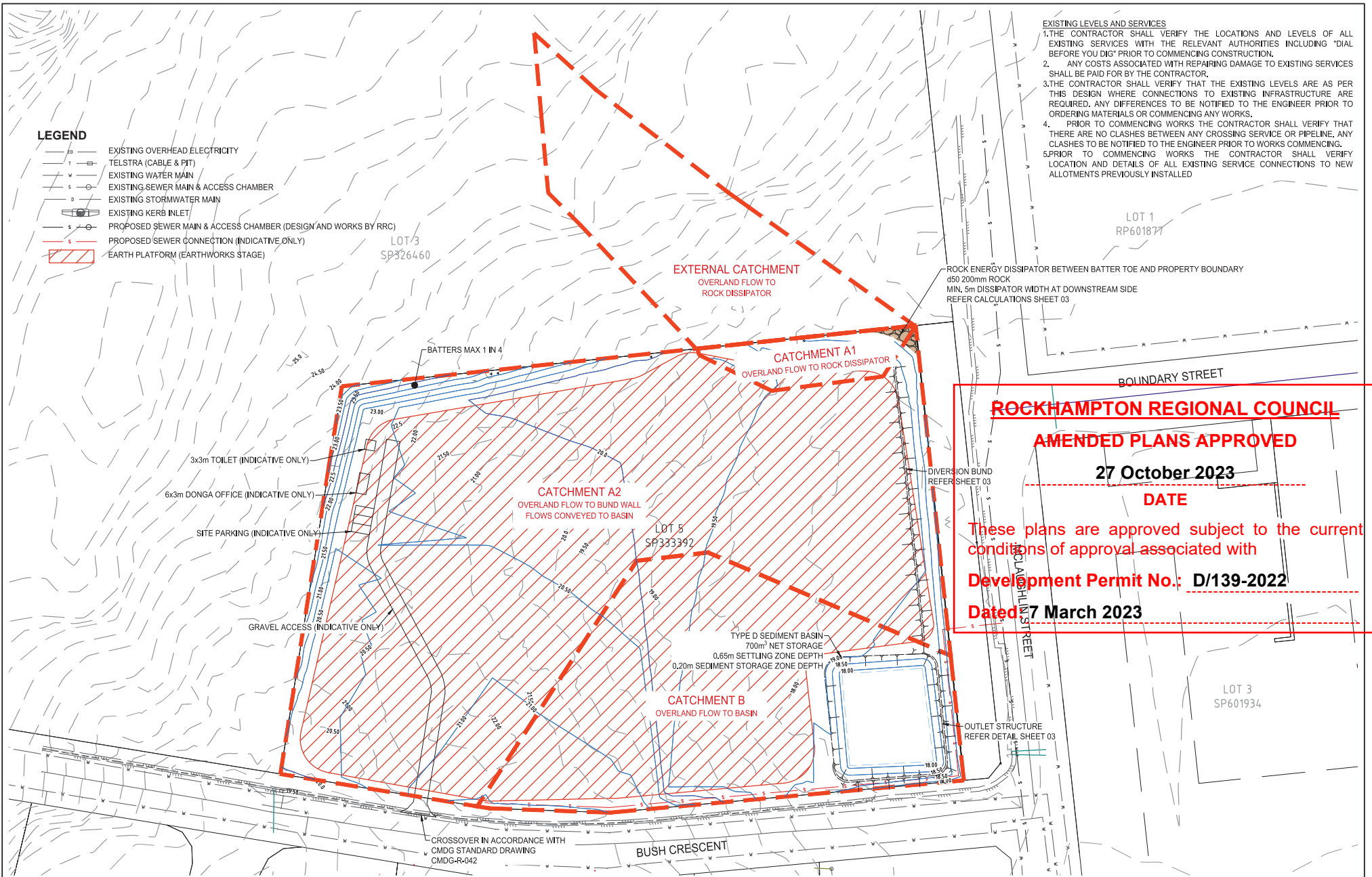
Dwg No.	D22.320-SW01
CIVIL	
Revision	F

LEGEND

- EXISTING OVERHEAD ELECTRICITY
- TELSTRA (CABLE & PIT)
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- EARTH PLATFORM (EARTHWORKS STAGE)

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PROPOSED DEVELOPMENT OF LOT 5
LOT 5 BUSH CRESCENT, PARKHURST
MATERIAL CHANGE OF USE
PROPOSED LAYOUT AND CATCHMENTS

Dwg No.	D22.320-SW02
CIVIL	
Revision	F

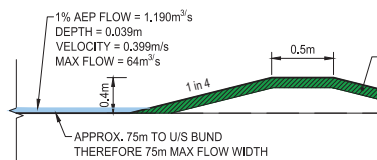
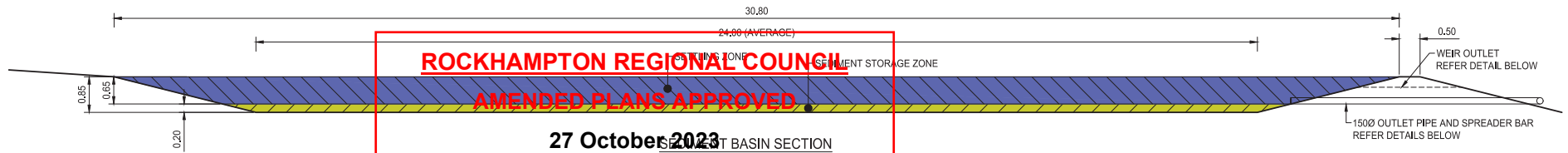
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Version: 1, Version Date: 05/10/2023

BASIN ID	CATCH AREA (HA)	BATTERS (1 IN X)	L:W RATIO	SETTLING DEPTH D _s (m)	%ILE	R (5 DAY, X%ILE)	CV	V _{SET}	SEDIMENT STORAGE					
									SED STORAGE OPTION?	RUSLE SOIL LOSS (t/ha/yr)	CLEAN OUT FREQUENCY (MONTHS)	V _{SS}	APPROX. REQ SED STORAGE DEPTH (m)	SETTLING VOLUME (m ³)
Bush Crescent	2.401	4	1	0.65	80	32.2	1.0	773	RUSLE	75	2	24	0	773

SEDIMENT BASIN SIZING CALCULATIONS



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Table 1 - Approximate length, L (m) of an energy dissipation pool containing a standard, rectangular hydraulic jump⁽¹⁾

Unit flow (m³/s)	Chute fall upstream of energy dissipator, H _r (m)									
	0.2	0.3	0.5	1.0	1.5	2.0	2.5	3.0	4.0	5.0
0.01	0.4	0.4	0.5	0.6	0.7	0.7	0.8	0.8	0.9	0.9
0.02	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.1	1.2	1.3
0.05	0.8	1.0	1.1	1.3	1.5	1.6	1.7	1.8	1.9	2.0
0.10	1.2	1.3	1.5	1.9	2.1	2.2	2.4	2.5	2.7	2.9
0.15	1.4	1.6	1.9	2.3	2.5	2.7	2.9	3.0	3.3	3.5
0.20	1.6	1.8	2.1	2.6	2.9	3.1	3.3	3.5	3.8	4.0
0.25	1.8	2.1	2.4	2.9	3.2	3.5	3.7	3.9	4.2	4.5
0.30	2.0	2.2	2.6	3.2	3.5	3.8	4.1	4.3	4.6	4.9
0.35	2.2	2.4	2.8	3.4	3.8	4.1	4.4	4.6	5.0	5.3
0.40	2.3	2.6	3.0	3.6	4.1	4.4	4.7	4.9	5.3	5.6
0.45	2.4	2.7	3.1	3.8	4.3	4.7	4.9	5.2	5.6	6.0
0.50	2.6	2.9	3.3	4.0	4.5	4.9	5.2	5.5	5.9	6.3
1.00	3.6	4.0	4.6	5.6	6.3	6.8	7.3	7.6	8.3	8.8
1.50	4.4	4.9	5.6	6.8	7.6	8.3	8.8	9.3	10.0	11.0

CATCHMENTS AND CREEKS "ROCK DISSIPATORS"

$$d_{50} = \frac{K_1 V^2}{14.5 (S_f - 1)}$$

where:

d_{50} = nominal rock size (diameter) of which 50% of the rocks are smaller [m]
 K_1 = correction factor for rock shape
 = 1.0 for angular (fractured) rock, 1.36 for rounded rock (i.e. smooth, spherical rock)
 S_f = specific gravity of rock (e.g. sandstone 2.1-2.4; granite 2.5-3.1, typically 2.6; limestone 2.6; basalt 2.7-3.0)
 V = (in Zone 1) the jet velocity immediately upstream of the dissipation pool [m/s]
 = (in Zone 2) the depth-average flow velocity at location of rock [m/s]

CATCHMENTS AND CREEKS "ROCK SIZING FOR ENERGY DISSIPATORS"

DISSIPATOR SIZING

MINIMUM LENGTH OF DISSIPATOR DETERMINED GIVEN:

- 5m FLOW WIDTH
- 0.19m³/s FROM EXTERNAL CATCHMENT AND CATCHMENT A1
- 0.03m³/s UNIT FLOW RATE, CONVERTED FROM ABOVE VALUES
- 1.3m CHUTE FALL FROM DEVELOPMENT SITE BATTER
- LINEAR INTERPOLATION USING VALUES IN TABLE

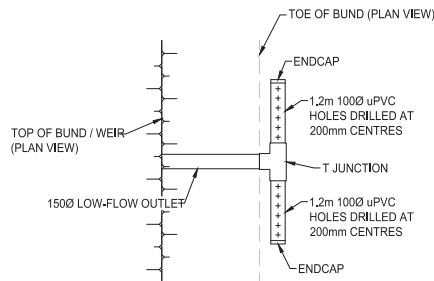
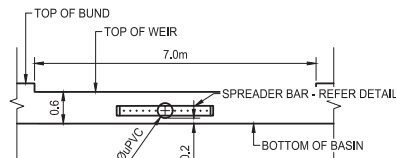
RESULTING MINIMUM LENGTH IS APPROX. 1.0m
 LENGTH DENOTED ON PLAN EXCEEDS 1.0m LENGTH AND IS CONSIDERED SUFFICIENT TO APPROPRIATELY SLOW AND SPREAD FLOWS

ROCK SIZING

ROCK SIZING FOR DISSIPATOR DETERMINED GIVEN:

- APPROXIMATE MAXIMUM FLOW VELOCITY OF 0.2m/s GIVEN EXISTING TOPOGRAPHY AND SITE CONDITIONS OF EXTERNAL CATCHMENT AND PROPOSED DEVELOPED CONDITIONS OF CONTRIBUTING SITE CATCHMENT A1 FLOWING DOWN HYDROMULCHED SITE BATTER
- ASSUMED SPECIFIC GRAVITY OF 2.6
- ASSUMED CORRECTION FACTOR OF 1.0

RESULTING ROCK SIZING IS VERY SMALL
 ASSUMING HIGHER VELOCITY OF 1.0m/s YIELDS d50 OF 43mm
 200mm WAS NOMINATED AS APPROPRIATE FOR THE NATURE OF THE DEVELOPMENT SITE AND IS BELIEVED TO BE EFFECTIVE IN APPROPRIATELY SPREADING AND SLOWING FLOWS WITHOUT BEING WASHED AWAY



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BTRE 1 PTY LTD
 PROPOSED DEVELOPMENT OF LOT 5
 LOT 5 BUSH CRESCENT, PARKHURST
 MATERIAL CHANGE OF USE
 STORMWATER DETAILS & CALCULATIONS

Dwg No.	D22.320-SW03
CIVIL	
Revision	F

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- EXISTING STORMWATER MAIN
- EXISTING KERB INLET
- PROPOSED SEWER MAIN & ACCESS CHAMBER (DESIGN AND WORKS BY RRC)
- FUTURE SEWER CONNECTION (INDICATIVE ONLY)
- FUTURE SEWER STRUCTURE LABEL
- EARTH PLATFORM / FUTURE HARDSTAND PAD

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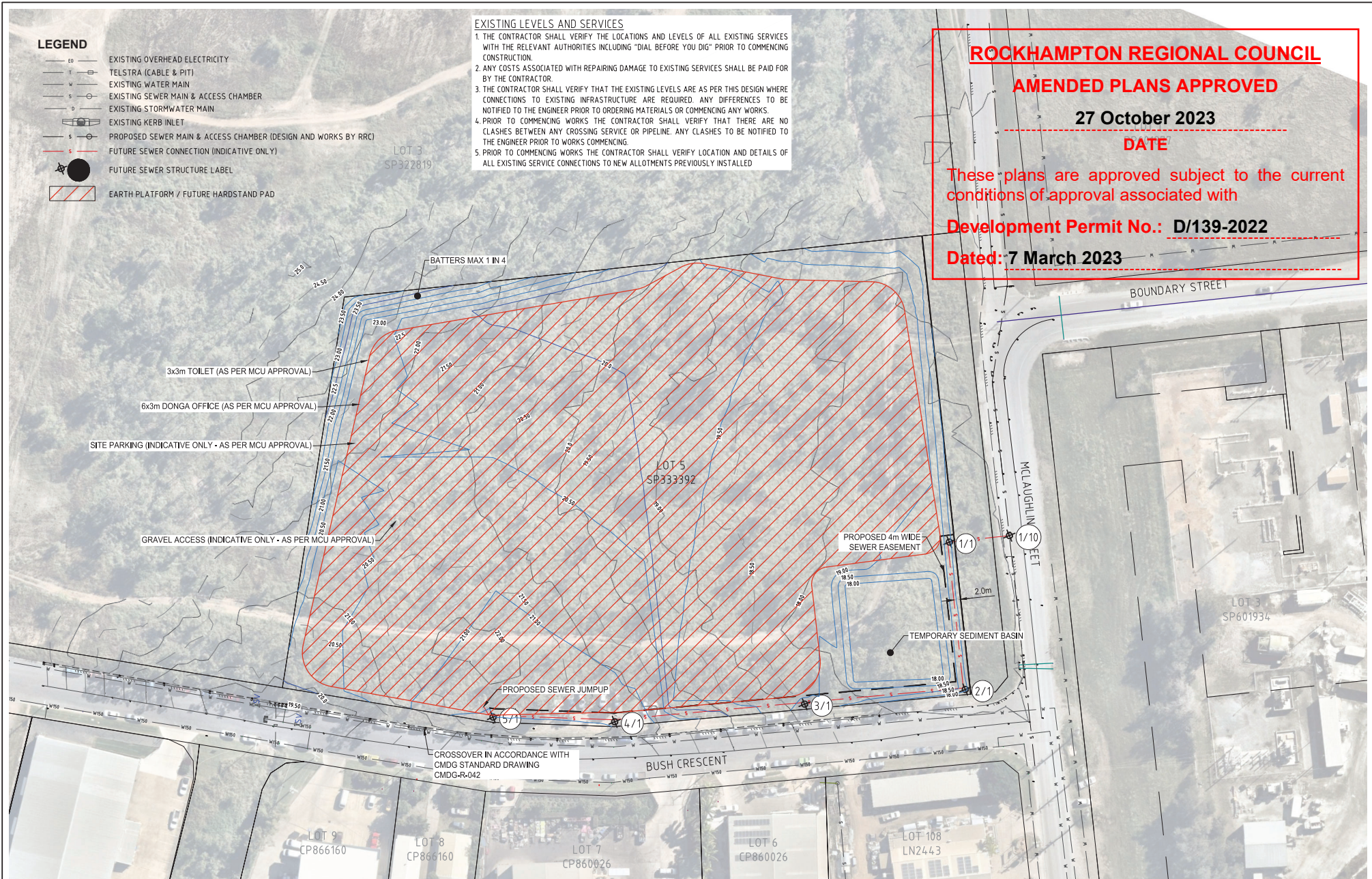
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OPERATIONAL WORKS ISSUE

FOR CONSTRUCTION ONLY WITH COUNCIL APPROVAL

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A	FOR DISCUSSION	06/07/2022
B	OPERATIONAL WORKS	08/08/2022
C	RESPONSE TO RFI	19/12/2022
D	FURTHER ADVICE RESPONSE	09/02/2023
E	AMENDED EW SURFACE	01/08/2023
F	AMENDED FOR COUNCIL ADVICE	04/08/2023

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01.09.2023	

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PROPOSED DEVELOPMENT OF LOT 5
LOT 5 BUSH CRESCENT, PARKHURST
OPERATIONAL WORKS
PROPOSED LAYOUT

Dwg No.	D22.320-02
CIVIL	
Revision	F

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LEGEND

- EO EXISTING OVERHEAD ELECTRICITY
- T TELSTRA (CABLE & PIT)
- W50 EXISTING WATER MAIN (NUMBER DENOTES PIPE SIZE)
- S EXISTING SEWER MAIN & ACCESS CHAMBER
- D EXISTING STORMWATER MAIN
- EXISTING KERB INLET

LOT 3
SP322819

LOT 5
SP333392

MCLAUGHLIN STREET

BUSH CRESCENT

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CP866160

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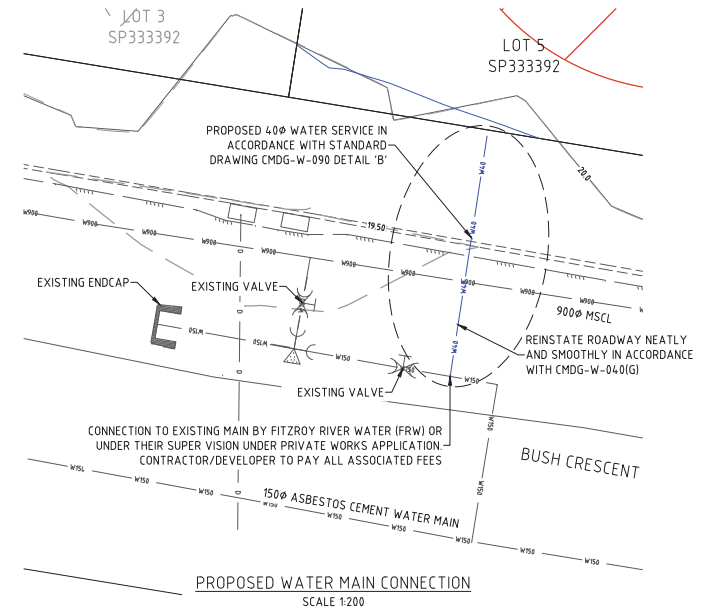
LOT 108
LN2443

EXISTING 1500 ASBESTOS
CEMENT WATER MAIN

REFER DETAIL FOR CLARITY

WATER NOTES

1. ALL WATER MAINS TO BE ON 2.5M ALIGNMENT UNLESS OTHERWISE NOTED.
2. WATER MAINS SHALL BE RRJ TO AS1477 SERIES 2 (BLUE COLOUR) UPVC CLASS 12, MPVC CLASS 16 OR OPVC CLASS 16. MATERIAL CLASS 400.
3. MINIMUM COVER TO WATER MAINS SHALL BE 900MM FOR ROAD PAVEMENTS AND 600MM ELSEWHERE.
4. CONCRETE THRUST BLOCKS TO BE CONSTRUCTED IN ACCORDANCE WITH STD. DWG. CMDG-W-041.
5. WATER SLUICE VALVES ARE TO BE ANTI-CLOCKWISE CLOSING.
6. HYDRANT BOX AS PER STD. DWG. CMDG-W-061 TO BE PROVIDED WITH 0.6M TURF SURROUND. HYDRANT MARKERS TO BE BLUE RRPM'S (STIMSONITE OR EQUIV) POSITIONED OFFSET ON CROWN OF ROAD & FIXED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. REFER STD. DWG. CMDG-W-062.
7. HYDRANTS & VALVES TO BE INSTALLED IN ACCORDANCE WITH STD. DWG. CMDG-W-060.
8. PLACE DETECTABLE MARKER TAPE IN TRENCH APPROX. 300 mm ABOVE TAPE



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OPERATIONAL WORKS
WATER CONNECTION

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