



DESIGN FILE No: CE24222
DESIGN STANDARD: CMDG, TMR, IPWEA & SEQ

ROAD CLASSIFICATION:	INDUSTRIAL
PAVEMENT DESIGN LIFE:	30 YRS
DESIGN SPEED:	5KM/H

NEW STRUCTURES & NETWORK, COMPLY WITH THE FOLLOWING;
 MAJOR SYSTEM: 1% AEP
 MINOR SYSTEM: 39% AEP
 BLOCKAGE FACTOR: 0.5 ON INLETS

STORMWATER REPORT: SBSMP REPORT REV B BY 'Moloney & Sons Engineering' dated 6th June 2025.

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS.
2. BEFORE PROCEEDING WITH THE WORK ANY DISCREPANCIES IN THE CONTRACT DOCUMENTS SHALL BE REFERRED FOR DECISION TO THE SUPERINTENDENT.
3. DO NOT SCALE FROM DRAWINGS.
4. ALL MATERIALS/CONSTRUCTION & WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS AND THE LOCAL AUTHORITY'S STANDARD DRAWINGS AND BY-LAWS.
5. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN ALL RELEVANT APPROVALS PRIOR TO COMMENCEMENT OF WORKS.
6. UNDERGROUND SERVICE LOCATIONS SHOWN ON THIS PLAN HAVE BEEN DETERMINED BY FIELD SURVEY AND/OR OFFICE RECORDS, AND MAY NOT REPRESENT ALL SERVICES OR EXACT LOCATIONS. THE CONTRACTOR MUST ACCURATELY LOCATE LINE & LEVEL (DEPTH) OF ALL SERVICES LIKELY TO BE ENCOUNTERED DURING CONSTRUCTION, PRIOR TO COMMENCEMENT OF ANY EXCAVATION.
7. DISPERSIVE SOILS ARE NOT TO BE USED AS FILL/EMBANKMENT MATERIAL. ALL CONSTRUCTION & EARTHWORKS TO BE COMPLETED IN ACCORDANCE WITH THE SPECIFICATION LISTED AND UNDER LEVEL 1 SUPERVISION DURING EARTHWORKS.

CMDG CONSTRUCTION SPECIFICATIONS:	
CMDG C201	CONTROL OF TRAFFIC
CMDG C211	CONTROL OF EROSION AND SEDIMENTATION
CMDG C212	CLEARING AND GRUBBING
CMDG C213	EARTHWORKS
CMDG C220	STORMWATER DRAINAGE
CMDG C221	PIPE DRAINAGE
CMDG C223	DRAINAGE STRUCTURES
CMDG C230	SUBSURFACE DRAINAGE
CMDG C232	PAVEMENT DRAINS
CMDG C242	FLEXIBLE PAVEMENTS
CMDG C244	SPAYED BITUMINOUS SURFACING
CMDG C265	BOUNDARY FENCING
CMDG C271	MINOR CONCRETE WORKS
CMDG C273	LANDSCAPING

CMDG STANDARD DRAWINGS:

D-010	EXCAVATION, BEDDING AND BACKFILLING OF CONCRETE
D-020	PRECAST STORMWATER INLET INSTALLATION DETAILS
D-022	FIELD INLET DETAILS
D-040	SUBSOIL DRAINAGE
R-060	STANDARD KERB AND CHANNEL PROFILES

IECA STANDARD DRAWINGS:

ESC-03	KERB INLET SEDIMENT TRAPS
EXIT-01	CONSTRUCTION EXIT - ROCK PAD
EXIT-02	CONSTRUCTION EXIT - NOTES
FS-02	FILTER SOCKS - SHEET FLOW
SF-01	SEDIMENT FENCE
SF-02	SEDIMENT FENCE NOTES

DOCUMENT TITLE	DOCUMENT NO.
LOCALITY PLAN & DRG. SCHEDULE	CE24222-101-CO
	CE24222-102-CO
ES, TYPICAL SECTIONS & DETAILS SHEET 1 OF 4	CE24222-103-TC
ES, TYPICAL SECTIONS & DETAILS SHEET 2 OF 4	CE24222-104-TC
ES, TYPICAL SECTIONS & DETAILS SHEET 3 OF 4	CE24222-104A-TC
ES, TYPICAL SECTIONS & DETAILS SHEET 4 OF 4	CE24222-104B-TC
S	CE24222-105-TC
LAYOUT & DEMOLITION PLAN	CE24222-106-AL
TE GENERAL ARRANGEMENT	CE24222-107-GA
TE SWEPT PATHS	CE24222-108-GA
ANS AND LONGITUDINAL SECTIONS	CE24222-110-GA
TE JOINTING LAYOUT PLAN	CE24222-111-GA
TE BULK EARTHWORKS	CE24222-112-GA
PRE DEVELOPMENT CATCHMENT PLAN	CE24222-113-DR
POST DEVELOPMENT & MUSIC CATCHMENT PLAN	CE24222-114-DR
LONGITUDINAL SECTIONS	CE24222-115-DR
ROSION CONTROL PLAN	CE24222-116-SE
ROSION CONTROL TYPICAL DETAILS SHEET 1 OF 2	CE24222-117-SE
ROSION CONTROL TYPICAL DETAILS SHEET 2 OF 2	CE24222-118-SE

Dated: 10 April 2025

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 **BEFORE
YOU DIG**
www.byda.com.au

DETAIL SURVEY BY:
SURVEY: MGA2020_ZONE 56

STANDARD DRAWINGS:
AUSTROADS DESIGN & TMR GUIDELINES / CAPRICORN MUNICIPAL
DESIGN GUIDELINES / INSTITUTE OF PUBLIC WORKS
ENGINEERING AUSTRALIA (IPWEA)

01-21-2024 02-21-2024 03-21-2024 04-21-2024 05-21-2024 06-21-2024 07-21-2024 08-21-2024 09-21-2024 10-21-2024 11-21-2024 12-21-2024 01-21-2025 02-21-2025 03-21-2025 04-21-2025 05-21-2025 06-21-2025 07-21-2025 08-21-2025 09-21-2025 10-21-2025 11-21-2025 12-21-2025 01-21-2026 02-21-2026 03-21-2026 04-21-2026 05-21-2026 06-21-2026 07-21-2026 08-21-2026 09-21-2026 10-21-2026 11-21-2026 12-21-2026 01-21-2027 02-21-2027 03-21-2027 04-21-2027 05-21-2027 06-21-2027 07-21-2027 08-21-2027 09-21-2027 10-21-2027 11-21-2027 12-21-2027 01-21-2028 02-21-2028 03-21-2028 04-21-2028 05-21-2028 06-21-2028 07-21-2028 08-21-2028 09-21-2028 10-21-2028 11-21-2028 12-21-2028 01-21-2029 02-21-2029 03-21-2029 04-21-2029 05-21-2029 06-21-2029 07-21-2029 08-21-2029 09-21-2029 10-21-2029 11-21-2029 12-21-2029 01-21-2030 02-21-2030 03-21-2030 04-21-2030 05-21-2030 06-21-2030 07-21-2030 08-21-2030 09-21-2030 10-21-2030 11-21-2030 12-21-2030 01-21-2031 02-21-2031 03-21-2031 04-21-2031 05-21-2031 06-21-2031 07-21-2031 08-21-2031 09-21-2031 10-21-2031 11-21-2031 12-21-2031 01-21-2032 02-21-2032 03-21-2032 04-21-2032 05-21-2032 06-21-2032 07-21-2032 08-21-2032 09-21-2032 10-21-2032 11-21-2032 12-21-2032 01-21-2033 02-21-2033 03-21-2033 04-21-2033 05-21-2033 06-21-2033 07-21-2033 08-21-2033 09-21-2033 10-21-2033 11-21-2033 12-21-2033 01-21-2034 02-21-2034 03-21-2034 04-21-2034 05-21-2034 06-21-2034 07-21-2034 08-21-2034 09-21-2034 10-21-2034 11-21-2034 12-21-2034 01-21-2035 02-21-2035 03-21-2035 04-21-2035 05-21-2035 06-21-2035 07-21-2035 08-21-2035 09-21-2035 10-21-2035 11-21-2035 12-21-2035 01-21-2036 02-21-2036 03-21-2036 04-21-2036 05-21-2036 06-21-2036 07-21-2036 08-21-2036 09-21-2036 10-21-2036 11-21-2036 12-21-2036 01-21-2037 02-21-2037 03-21-2037 04-21-2037 05-21-2037 06-21-2037 07-21-2037 08-21-2037 09-21-2037 10-21-2037 11-21-2037 12-21-2037 01-21-2038 02-21-2038 03-21-2038 04-21-2038 05-21-2038 06-21-2038 07-21-2038 08-21-2038 09-21-2038 10-21-2038 11-21-2038 12-21-2038 01-21-2039 02-21-2039 03-21-2039 04-21-2039 05-21-2039 06-21-2039 07-21-2039 08-21-2039 09-21-2039 10-21-2039 11-21-2039 12-21-2039 01-21-2040 02-21-2040 03-21-2040 04-21-2040 05-21-2040 06-21-2040 07-21-2040 08-21-2040 09-21-2040 10-21-2040 11-21-2040 12-21-2040 01-21-2041 02-21-2041 03-21-2041 04-21-2041 05-21-2041 06-21-2041 07-21-2041 08-21-2041 09-21-2041 10-21-2041 11-21-2041 12-21-2041 01-21-2042 02-21-2042 03-21-2042 04-21-2042 05-21-2042 06-21-2042 07-21-2042 08-21-2042 09-21-2042 10-21-2042 11-21-2042 12-21-2042 01-21-2043 02-21-2043 03-21-2043 04-21-2043 05-21-2043 06-21-2043 07-21-2043 08-21-2043 09-21-2043 10-21-2043 11-21-2043 12-21-2043 01-21-2044 02-21-2044 03-21-2044 04-21-2044 05-21-2044 06-21-2044 07-21-2044 08-21-2044 09-21-2044 10-21-2044 11-21-2044 12-21-2044 01-21-2045 02-21-2045 03-21-2045 04-21-2045 05-21-2045 06-21-2045 07-21-2045 08-21-2045 09-21-2045 10-21-2045 11-21-2045 12-21-2045 01-21-2046 02-21-2046 03-21-2046 04-21-2046 05-21-2046 06-21-2046 07-21-2046 08-21-2046 09-21-2046 10-21-2046 11-21-2046 12-21-2046 01-21-2047 02-21-2047 03-21-2047 04-21-2047 05-21-2047 06-21-2047 07-21-2047 08-21-2047 09-21-2047 10-21-2047 11-21-2047 12-21-2047 01-21-2048 02-21-2048 03-21-2048 04-21-2048 05-21-2048 06-21-2048 07-21-2048 08-21-2048 09-21-2048 10-21-2048 11-21-2048 12-21-2048 01-21-2049 02-21-2049 03-21-2049 04-21-2049 05-21-2049 06-21-2049 07-21-2049 08-21-2049 09-21-2049 10-21-2049 11-21-2049 12-21-2049 01-21-2050 02-21-2050 03-21-2050 04-21-2050 05-21-2050 06-21-2050 07-21-2050 08-21-2050 09-21-2050 10-21-2050 11-21-2050 12-21-2050	AMENDMENT DETAILS	ISSUED FOR MCU APPROVAL	ISSUED FOR RFI RESPONSE	ISSUED FOR APPROVAL	DESIGN CHECK	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW	11/24	29/11/24	24/02/25	04/06/25	LM	AW
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LEGEND

EXISTING SURVEY

	Existing Lot Boundary
	Existing Easement
	Existing to be Demolished
	Existing Edge of Bitumen
	Existing Fence Line
	Existing DBYD Sewer Main
	Existing DBYD Stormwater Main
	Existing Overhead Electrical Main
	Existing DBYD Water Main
	Existing Bitumen Surface
	Existing Surface Contours
	Existing Telstra (Manhole, Pit)
	Existing Electrical (Manhole, Pit)
	Existing Power Pole
	Existing Light Pole
	Existing Water Structures
	Existing Sewer Structures
	Existing Stormwater Structures
	Existing Drainage Structure (Gully, Sag, Grated Inlet)
	Existing Tree
	Existing Sign

PROPOSED

	Proposed Type 1 - Barrier Kerb & Channel
	Proposed Type 3 - Barrier Kerb
	Proposed Gravel Hardstand
	Proposed Concrete Pavement
	Proposed Building (By others)
	Proposed Landscaping (By others)
	Proposed Surface Contours
	Proposed Gabion Retaining Wall
	Proposed Bio-filtration Area
	Proposed Scour Protection
	Proposed Stormwater Drainage Network
	Proposed Water TPFNR Connection
	Proposed Water Connection
	Proposed Water Meter
	Proposed Sewer House Connection
	Swept Path Direction

SEDIMENT & EROSION CONTROL

	Proposed Catch Drain
	Proposed Sediment Fence
	Indicative Works Area
	Straw Bale Dam
	Cleaning & Grubbing
	Vehicle Shakedown
	Water Flow

ROCKHAMPTON REGIONAL COUNCIL

AMENDED PLANS APPROVED

2 July 2025

DATE

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

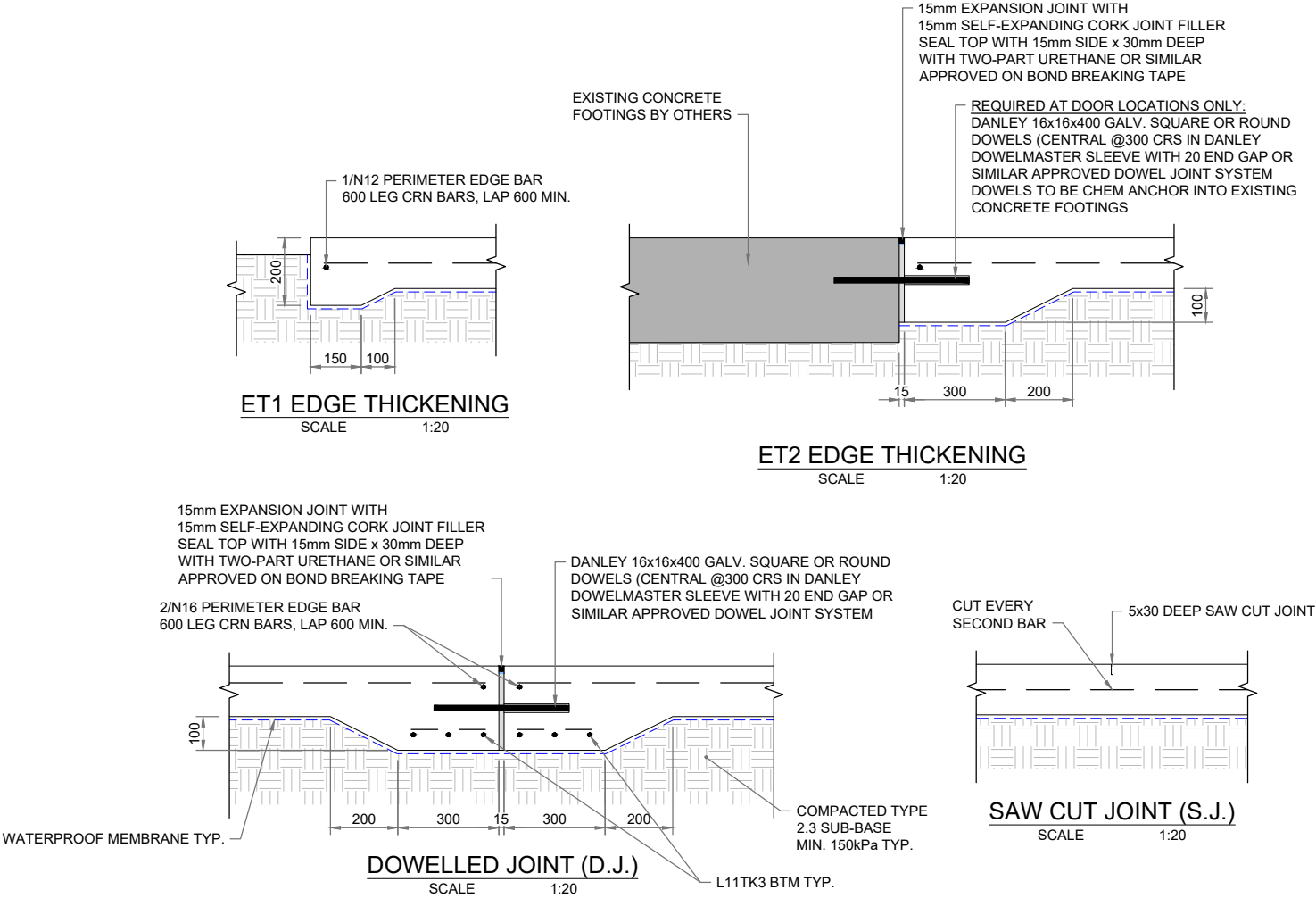
Development Permit No.: D/2-2025

Dated: 10 April 2025

FIRST ISSUE				CALCS DRAWN DATE AMENDMENT DETAILS				DESIGN CHECK				COPYRIGHT © MOLONEY SOLUTIONS PTY LTD 2024 These designs and drawings are copyright and are not to be used or reproduced without the written permission of the owner. The contents of this drawing are electronically generated, are confidential and may only be used for the purpose for which they were intended. This is an uncontrolled document issued for information purposes only, unless the checked sections are signed and approved. Figure dimensions take precedence over scale. Do not scale from this drawing. Verify dimensions prior to commencing any works.				DATUM				CLIENT AUSPROOF PTY LTD				DRAWING TITLE LEGEND											
LM AWE 11/24																PROJECT PROPOSED DEVELOPMENT								DRAWING NUMBER				ISSUE							
A LM AWE 29/11/24				ISSUED FOR MCI APPROVAL												APPROVED				RPEQ 33682				50 ENTERPRISE DR				CE24222-102-CO				C			
B LM DV 24/02/25				ISSUED FOR RFI RESPONSE												PROJECT No.				CE24222															
C LM AWE 04/06/25				ISSUED FOR APPROVAL																															

GENERAL NOTES:

1. ALL PAVEMENT PROFILES ARE SUBJECT TO SUBGRADE TESTING OF ALL AREAS PRIOR TO COMMENCING WORKS AND APPROVED BY ROCKHAMPTON REGIONAL COUNCIL AND SUPERINTENDENT.
2. EXISTING IN-SITU CUT MATERIAL MAY BE USED FOR EMBANKMENT/SELECT FILL LAYERS, HOWEVER MUST COMPLY WITH SPECIFICATION TESTING REQUIREMENTS AND ENSURE DISPERSIVE SOILS ARE NOT TO BE USED. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH CONTRACT SPECIFICATIONS AND TECHNICAL STANDARDS.
3. ALL BATTER SECTIONS ARE INDICATIVE ONLY. GEOTECHNICAL ENGINEERING ADVICE SHALL BE REQUIRED FOR ALL BATTER SLOPES TO ASSESS THE SUITABILITY OF EITHER THE CUT FACE OR FILL EMBANKMENT GEOMETRY. THE INSPECTIONS SHALL BE UNDERTAKEN BY REGISTERED GEOTECHNICAL ENGINEER. FLATTER OR STEEPER SLOPES MAY BE ADOPTED BASED ON THE RECOMMENDATIONS.



TYPICAL SUMP PIT DETAIL (PLAN VIEW)
SCALE 1:20

ROCKHAMPTON REGIONAL COUNCIL

AMENDED PLANS APPROVED

2 July 2025

DATE

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

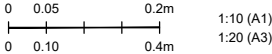
Development Permit No.: D/2-2025

Dated: 10 April 2025

PRELIMINARY PAVEMENT DESIGN:

TYPE	AREA	DESIGN	SURFACE SEAL	BASE COURSE	SUB-BASE	TOTAL PAVEMENT THICKNESS	COMMENTS
	678 m ²	GRAVEL HARDSTAND	-	150mm TYPE 2.5	-	150mm	COMPLETE BOX OUT AND PREP SUBGRADE
	4,885 m ²	CONCRETE PAVEMENT	150 THK 32MPa CONCRETE WITH SL82 MESH CENTRAL	150mm TYPE 2.1	REFER NOTE 1	300mm	COMPLETE BOX OUT AND PREP SUBGRADE

NOTE:
1. ASSUMED SUBGRADE OF CBR15 MATERIAL GRADING TESTING



ALL UNDERGROUND SERVICES SHOULD BE LOCATED ON SITE BEFORE ANY WORK IS COMMENCED



REV	DATE	BY	CHKD	DESCRIPTION
A	11/24	LM	AW	ISSUED FOR MCU APPROVAL
B	29/11/24	LM	AW	ISSUED FOR APPROVAL
C	04/06/25	LM	AW	ISSUED FOR APPROVAL

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DRAWN CHECK	PROJECT No.	
LM	CE24222	

ISSUE FOR APPROVAL	APPROVED	RPEQ 33682
	LMoloney	
	FOR & ON BEHALF OF MOLONEY & SONS ENGINEERING	

CLIENT	AUSPROOF PTY LTD
PROJECT	PROPOSED DEVELOPMENT 50 ENTERPRISE DR GRACEMERE QLD 4702



DRAWING TITLE	GENERAL NOTES TYPICAL SECTIONS & DETAILS SHEET 1 OF 4
DRAWING NUMBER	CE24222-103-TC
ISSUE	C

1. DESIGNED IN ACCORDANCE WITH:
 - 1.1. AS 4678-2002 - EARTH RETAINING STRUCTURES.
 - 1.2. AS 3600-2009 - CONCRETE STRUCTURES.
 - 1.3. AS 1170-2011 - STRUCTURAL DESIGN ACTIONS.
- DESIGN PARAMETERS ASSUMPTIONS:
 - A. $K_a=0.41$
 - B. FILL $\gamma=18 \text{ kN/m}^3$
- LOADS
 - A. DEAD LOAD=0kPa
 - B. LIVE LOAD=5kPa
- MINIMUM ULTIMATE BEARING CAPACITY = 150kPa

2. THIS DESIGN IS NOT VALID UNTIL THE DESIGN ASSUMPTIONS ABOVE MUST BE VERIFIED AND CERTIFIED BY A REGISTERED GEOTECHNICAL ENGINEER. IN CASE OF DIFFERENCE THE DESIGNER MUST BE CONTACTED WITH THE NEW DESIGN PARAMETERS FOR DESIGN VERIFICATION.
3. CONCRETE: ALL CONCRETE SHALL BE OF MINIMUM 32MPa COMPRESSIVE STRENGTH AND CONTAIN A MAXIMUM AGGREGATE SIZE OF 20mm.
4. FOOTING/PIER CONCRETE SHALL BE MINIMUM 32 MPa IN STRENGTH AND PROVIDE AT LEAST 50mm COVER TO STEEL ELEMENTS.
5. DRAINAGE PIPE: 100mm, FILTER WRAPPED (SOCKED) PERFORATED OR SLOTTED PVC OR CORRUGATED HDPE PIPE MANUFACTURED IN ACCORDANCE WITH AS/NZS 2566.
6. ALL SURFACE AND SUBSURFACE DRAINAGE SHALL BE DESIGNED IN ACCORDANCE WITH AS 4678-2002.
7. FILTER FABRIC: PROFAB AS140 NON-WOVEN GEOTEXTILE OR EQUIVALENT.

1. STRUCTURE CLASSIFICATION B, IN ACCORDANCE WITH AS 4678-2002.
2. ALL FOOTINGS/DEPTHS ARE TO BE INSPECTED BY A REGISTERED ENGINEER OF QUEENSLAND PRIOR TO CONCRETE AND BACKFILL.
3. GEOTECHNICAL ENGINEERING ADVICE WILL BE REQUIRED FOR ALL BATTER SLOPES FOLLOWING EXCAVATION TO ASSESS THE SLOPE STABILITY/SUITABILITY OF EITHER THE CUT FACE OR FILL EMBANKMENT, PRIOR TO PLACEMENT/INSTALLTION OF PROPOSED RETAINING WALL STRUCTURE. THE INSPECTIONS SHALL BE UNDERTAKEN BY REGISTERED GEOTECHNICAL ENGINEER. FLATTER OR STEEPER SLOPES MAY BE ADOPTED BASE ON THE RECOMMENDATIONS.
4. ANY CHANGES TO THE SUBJECT DESIGN AND/OR MATERIALS MUST BE APPROVED BY THE PRINCIPAL SUPERINTENDENT.
5. DISPERSIVE SOILS ARE NOT TO BE USED AS EMBANKMENT MATERIAL. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH CURRENT CDMG CONSTRUCTION SPECIFICATIONS AND GUIDELINES.
6. LOADS EXCEEDING THE DESIGN LIVE LOAD WITHIN A DISTANCE BEHIND THE RETAINING WALL EQUAL TO 1.5 TIMES THE HEIGHT OF THE RETAINING WALL MUST BE PIERED BELOW STRUCTURAL LOAD LINE.
7. NO MACHINERY EXCEEDING DESIGN LIVE LOADS TO BE TAKEN WITHIN DISTANCE OF 1.5 TIMES THE HEIGHT OF THE WALL.
8. IN ADDITION TO NOTE 1 AND 2 ABOVE, NO MACHINERY GREATER THAN 1.5T ALLOWABLE WITHIN A DISTANCE OF 1.5m DIRECTLY BEHIND RETAINING WALL.
9. NO EXCAVATIONS SHALL BE MADE WITHIN THE 'ZONE OF INFLUENCE EXTENDING 30° DOWN FROM THE LOWERMOST SLEEPER.
10. LOCATION OF THE RETAINING WALL IN RELATION TO PROPERTY LINES, UTILITY EASEMENTS, WATERSHED EASEMENTS, OR ANY OTHER TYPE OF EASEMENTS ARE THE RESPONSIBILITY OF THE OWNER. THE ENGINEER OF RECORD ASSUMES NO LIABILITY FOR THE LOCATION OF THE RETAINING WALLS, OR IF CONSTRUCTION OF THE PROPOSED CONCRETE SLEEPER RETAINING WALLS ENCLOSES ANY PROPERTY LINES OR EASEMENTS.
11. RETAINING WALL SETOUT INFORMATION IS PROVIDED IN THE PROJECT CIVIL PLANS.
12. ALL EXCAVATIONS MUST BE DONE IN ACCORDANCE WITH THE RECOMMENDATIONS PROVIDED BY TECTONIC GEOTECHNICAL & ENVIRONMENTAL ENGINEERS.
13. IF CONDITIONS VARY IN THE FIELD FROM THOSE SHOWN ON THIS PLAN, THE ENGINEER OF RECORD MUST BE NOTIFIED PRIOR TO CONSTRUCTION OF THE RETAINING WALLS TO REVIEW THE DESIGN AND / OR PLANS. MODIFICATIONS TO THE DESIGN AND / OR PLANS MAY BE REQUIRED, AND MAY TAKE UP TO TEN BUSINESS DAYS TO COMPLETE.
14. IF THERE ARE DISCREPANCIES BETWEEN ANY INFORMATION ON THESE PLANS AND INFORMATION IN THE PROJECT SPECIFICATIONS, MSE SHOULD BE NOTIFIED BEFORE CONSTRUCTION COMMENCES.
15. FILL FOUNDATION SHALL BE LEVEL 1, COMPLIANT TO TABLE 5.1 OF AS3798 AND TESTING FREQUENCIES OF FILL COMPLIES WITH TABLE 8.1 OF AS 3798 AND SHALL BE THE RESPONSIBILITY OF THE SITE SUPERINTENDENT.
16. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
17. FENCING ON THE TOP OF THE WALL IS NOT CONSIDERED IN THIS DESIGN.



SCALE 1:25

(NOT FOR CONSTRUCTION, PENDING RECEIPT OF GEOTECHNICAL SITE SOIL PARAMETERS)

Dated: 10 April 2025

[illegible]

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<i>En</i>	LRQA CERTIFIED ISO 9001:2015	CE24222

ISSUE FOR APPROVAL

APPROVED *LC Moloney* RPEQ 33682

FOR & ON BEHALF OF MOLONEY & SONS ENGINEERING

CLIENT	AUSPROOF PTY LTD
PROJECT	PROPOSED DEVELOPMENT 50 ENTERPRISE DR GRACEMERE QLD 4702



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DRAWING TITLE	
GENERAL NOTES, TYPICAL SECTIONS & DETAILS SHEET 3 OF 4	
DRAWING NUMBER	ISSUE
CE24222-104A-TC	B

ALL UNDERGROUND SERVICES
SHOULD BE LOCATED ON SITE
BEFORE ANY WORK IS COMMENCED



GABION NOTES

- 1. THE GABION MUST BE IN ACCORDANCE WITH C224 CMDG SPECIFICATION
- 2. GEOTEXTILES MUST BE IN ACCORDANCE WITH C230 CMDG SPECIFICATION
- 3. A NON WOVEN GEOTEXTILE SHALL BE INCORPORATED AT THE REAR FACE OF THE GABION UNITS
- 4. GABION BASKETS MUST BE GALVANISED AND FULLY LACED TO BOTH UPPER AND LOWER NEIGHBOURING BASKETS.
- 5. GABION MUST BE DIVIDED INTO CELL OF LENGTH NOT GREATER THAN 2m
- 6. THE FRONT FACE AND ALL OTHER EXPOSED FACES IN GABION SHALL BE HAND PACKED WITH ROCKS SO AS TO PRODUCE A SMOOTH FINISH

FOUNDATION NOTES

- 1. THE MINIMUM ALLOWABLE BEARING PRESSURE OF FOUNDATION IS 150 KPa
- 2. UNSUITABLE MATERIALS BELOW THE FOUNDATION LEVEL MUST BE REMOVED AND REPLACED WITH SELECT FILL. FOUNDATION MATERIALS MUST BE VERIFIED BY SUITABLY QUALIFIED GEOTECHNICAL ENGINEER ON SITE TO CONFIRM THE DESIGN ASSUMPTIONS
- 3. FOUNDATION BASE MUST BE LEVEL PRIOR TO PLACE THE WALL

DESIGN CRITERIA

- 1. FOR EARTHQUAKE ACCELERATION CO-EFFICIENT = REFER TO AS 5100 2 AND AS 1170 .4. FOR SPECTRAL SHAPE FACTOR = REFER TO AS 1170 .4.
- 2. SURCHARGE LOADING IS 5 kPa FOR NON- TRAFFIC
- 3. SURCHARGE LOADING IS 20kPa FOR TRAFFIC LOADING.

CONSTRUCTION SEQUENCE

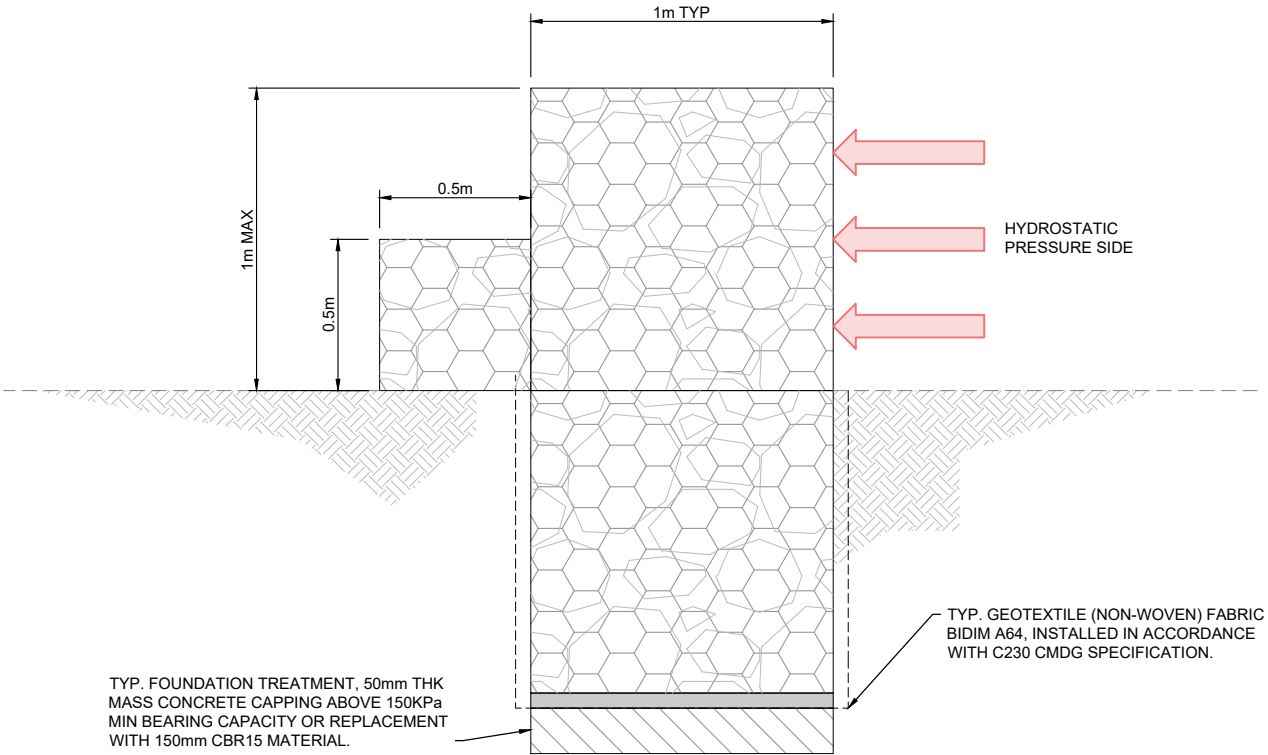
- 1. ANY UTILITIES WITHIN THE VICINITY MUST BE RELOCATED PRIOR TO EXCAVATION.
- 2. EXCAVATE DOWN TO THE FOUNDATION LEVEL ANY TEMPORARY EXCAVATION PROFILE STABILITY TO BE ASSESSED BY SUITABLY QUALIFIED GEOTECHNICAL ENGINEER
- 3. PLACE 50mm OF MASS CONCRETE
- 4. INSTALL THE GEOTEXTILE AND DRAINAGE LAYER
- 4. INSTALL THE FIRST LAYER OF GABION ON THE FOUNDATION
- 5. PLACE THE BACKFILL AND COMPACT TO MEET THE REQUIREMENT OF THE ABOVEMENTIONED SPECIFICATION.

SOIL MATERIAL

- 1. SOIL BEHIND SELECT FILL AND FOUNDATION MATERIAL PROPERTIES ASSUMED IN DESIGN ARE FOR COHESIONLESS SOIL FRICTION ANGLE 30°AND 0 KPa COHESION OR COHESIVE SOIL OF UNDRAINED COHESION 150 KPa
- 2. THIS DRAWING SET IS VALID FOR THE ASSUMED EXISTING SOIL STRENGTH/CONSISTENCY MEDIUM DENSE OR BETTER(STIFF CLAYS OR BETTER) FOR STRENGTH LESSER THAN THOSE ASSUMED, A SEPARATE DESIGN MUST BE DEVELOPED
- 3. SELECT FILL IN ACCORDANCE WITH MUST HAVE THE FOLLOWING MATERIAL PROPERTIES
 - EFFECTIVE INTERNAL FRICTION ANGLE GREATER THAN 32 DEGREES
 - MOIST UNIT WEIGHT MUST NOT LESS THAN 20 kN/ m3
 - SELECT FILL MUST BE PLACED IN LIFTS NOT EXCEEDING 150mm AND COMPACTED TO 98% STANDARD COMPACTION AT 60-90% OPTIMUM MOISTURE CONTENT

GENERAL NOTES:

- 1. ALL FOOTINGS/DEPTHS ARE TO BE INSPECTED BY A REGISTERED ENGINEER OF QUEENSLAND PRIOR TO CONCRETE AND BACKFILL.
- 2. ALL SLEEPERS TO BE SUPPLIED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS WITH ACCOMPANYING FORM 16 OR INSPECTED BY A REGISTERED ENGINEER OF QUEENSLAND PRIOR TO INSTALLATION.
- 3. GEOTECHNICAL ENGINEERING ADVICE WILL BE REQUIRED FOR ALL BATTER SLOPES FOLLOWING EXCAVATION TO ASSESS THE SLOPE STABILITY/SUITABILITY OF EITHER THE CUT FACE OR FILL EMBANKMENT, PRIOR TO PLACEMENT/INSTALLTION OF PROPOSED RETAINING WALL STRUCTURE. THE INSPECTIONS SHALL BE UNDERTAKEN BY REGISTERED GEOTECHNICAL ENGINEER. FLATTER OR STEEPER SLOPES MAY BE ADOPTED BASED ON THE RECOMMENDATIONS.
- 4. ANY CHANGES TO THE SUBJECT DESIGN AND/OR MATERIALS MUST BE APPROVED BY THE PRINCIPAL SUPERINTENDENT.
- 5. DISPERSIVE SOILS ARE NOT TO BE USED AS EMBANKMENT MATERIAL. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH CURRENT CMDG CONSTRUCTION SPECIFICATIONS AND GUIDELINES.
- 6. LOADS EXCEEDING THE DESIGN LIVE LOAD WITHIN A DISTANCE BEHIND THE RETAINING WALL EQUAL TO 1.5 TIMES THE HEIGHT OF THE RETAINING WALL MUST BE PIERED BELOW STRUCTURAL LOAD LINE.
- 7. NO MACHINERY EXCEEDING DESIGN LIVE LOADS TO BE TAKEN WITHIN DISTANCE OF 1.5 TIMES THE HEIGHT OF THE WALL.
- 8. IN ADDITION TO NOTE 6 AND 7 ABOVE, NO MACHINERY GREATER THAN 1.5T ALLOWABLE WITHIN A DISTANCE OF 1.5m DIRECTLY BEHIND RETAINING WALL.
- 9. NO EXCAVATIONS SHALL BE MADE WITHIN THE ZONE OF INFLUENCE EXTENDING 45° DOWN FROM THE LOWERMOST SLEEPER.
- 10. LOCATION OF THE RETAINING WALL IN RELATION TO PROPERTY LINES, UTILITY EASEMENTS, WATERSHED EASEMENTS, OR ANY OTHER TYPE OF EASEMENTS ARE THE RESPONSIBILITY OF THE OWNER. THE ENGINEER OF RECORD ASSUMES NO LIABILITY FOR THE LOCATION OF THE RETAINING WALLS, OR IF CONSTRUCTION OF THE PROPOSED CONCRETE SLEEPER RETAINING WALLS ENCROACHES ANY PROPERTY LINES OR EASEMENTS.
- 11. RETAINING WALL SETOUT INFORMATION IS PROVIDED IN THE PROJECT CIVIL PLANS.
- 12. SITE CLASSIFICATION PREPARED BY CQ SOIL TESTING CQ18123 DATED 16 NOVEMBER 2020.
- 13. IF CONDITIONS VARY IN THE FIELD FROM THOSE SHOWN ON THIS PLAN, THE ENGINEER OF RECORD MUST BE NOTIFIED PRIOR TO CONSTRUCTION OF THE RETAINING WALLS TO REVIEW THE DESIGN AND / OR PLANS. MODIFICATIONS TO THE DESIGN AND / OR PLANS MAY BE REQUIRED, AND MAY TAKE UP TO TEN BUSINESS DAYS TO COMPLETE.
- 14. IF THERE ARE DISCREPANCIES BETWEEN ANY INFORMATION ON THESE PLANS AND INFORMATION IN THE PROJECT SPECIFICATIONS, MSE SHOULD BE NOTIFIED BEFORE CONSTRUCTION COMMENCES.
- 15. FILL FOUNDATION SHALL BE LEVEL 1. COMPLIANT TO TABLE 5.1 OF AS3798 AND TESTING FREQUENCIES OF FILL COMPLIES WITH TABLE 8.1 OF AS 3798 AND SHALL BE THE RESPONSIBILITY OF THE SITE SUPERINTENDENT.
- 16. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
- 17. FENCING ON THE TOP OF THE WALL IS NOT CONSIDERED IN THIS DESIGN.



PRELIMINARY 1.0m VERTICAL GABION WALL TYPE 2

SCALE 1:25

(NOT FOR CONSTRUCTION, PENDING RECEIPT OF GEOTECHNICAL SITE SOIL PARAMETERS)

ROCKHAMPTON REGIONAL COUNCIL

AMENDED PLANS APPROVED

2 July 2025

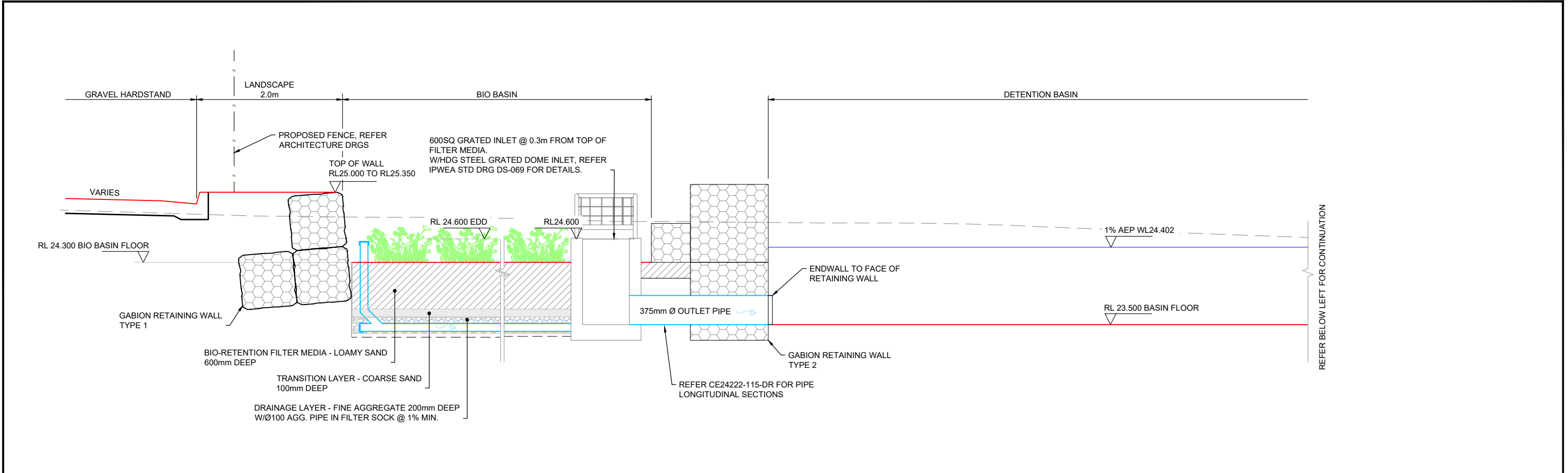
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Development Permit No.: D/2-2025

Dated: 10 April 2025

FIRST ISSUE				DESIGN CHECK		COPYRIGHT		DATUM		CLIENT		DRAWING TITLE	
CALCS DRAWN DATE				LM AWE 11/24		© MOLONEY SOLUTIONS PTY LTD 2024		PROJECT No.		AUSPROOF PTY LTD		GENERAL NOTES, TYPICAL SECTIONS & DETAILS	
LM AWE 29/11/24				ISSUED FOR MCU APPROVAL		These designs and drawings are copyright and are not to be used or reproduced without the written permission of the above. The contents of this drawing are electronically generated, are confidential and may only be used for the purpose for which they were intended. This is an uncontrolled document issued for information purposes only, unless the checked sections are signed and approved. Figured dimensions take precedence over scale. Do not scale from this drawing. Verify dimensions prior to commencing any works.		PROJECT No.		PROPOSED DEVELOPMENT		SHEET 4 OF 4	
LM AWE 04/06/25				ISSUED FOR APPROVAL		ISO 9001:2015		PROJECT No.		50 ENTERPRISE DR		DRAWING NUMBER	
								CE24222		GRACEMERE QLD 4702		CE24222-104B-TC	
												ISSUE	
												B	



BIO-RETENTION SOIL MEDIA:

FILTER MEDIA SHOULD BE A LOAMY SAND WITH AN APPROPRIATELY HIGH PERMEABILITY UNDER COMPACTION AND SHOULD BE FREE OF RUBBISH, DELETERIOUS MATERIAL, TOXICANTS, DECLARED PLANTS AND LOCAL WEEDS AND SHOULD NOT BE HYDROPHOBIC. THE FILTER MEDIA SHOULD CONTAIN SOME ORGANIC MATTER FOR INCREASED WATER HOLDING CAPACITY BUT BE LOW IN NUTRIENT CONTENT.

HYDRAULIC CONDUCTIVITY = 100-300mm/hr, AS MEASURED USING THE ASTM F1815-06 METHOD. NOTE THAT WHEN MODELLING IN MUSIC THE MODELLED HYDRAULIC CONDUCTIVITY SHOULD BE 50% OF THE SPECIFIED HYDRAULIC CONDUCTIVITY.

THE FILTER MEDIA SHOULD BE WELL-GRADED i.e. IT SHOULD HAVE ALL PARTICLE SIZE RANGES PRESENT FROM THE 0.075mm TO THE 4.75mm SIEVE (AS DEFINED BY AS1289.3.6.1-1995). THERE SHOULD BE NO GAP IN THE PARTICLE SIZE GRADING, AND THE COMPOSITION SHOULD NOT BE DOMINATED BY A SMALL PARTICLE SIZE RANGE. AN IDEAL PARTICLE SIZE DISTRIBUTION IS AS FOLLOWS:

- CLAY & SILT (<0.05mm) <3%
- VERY FINE SAND (0.05-0.15mm) 5-30%
- FINE SAND (0.15-0.25mm) 10-30%
- MEDIUM TO COARSE SAND (0.25-1.0mm) 40-60%
- COARSE SAND (1.0-2.0mm) 7-10%
- FINE GRAVEL <3% (2.0-3.4mm)

ORGANIC MATTER CONTENT - LESS THAN 5% (W/W)

pH - AS SPECIFIED FOR "NATURAL SOILS AND SOIL BLENDS" 5-7.5 (pH 1:5 IN WATER)

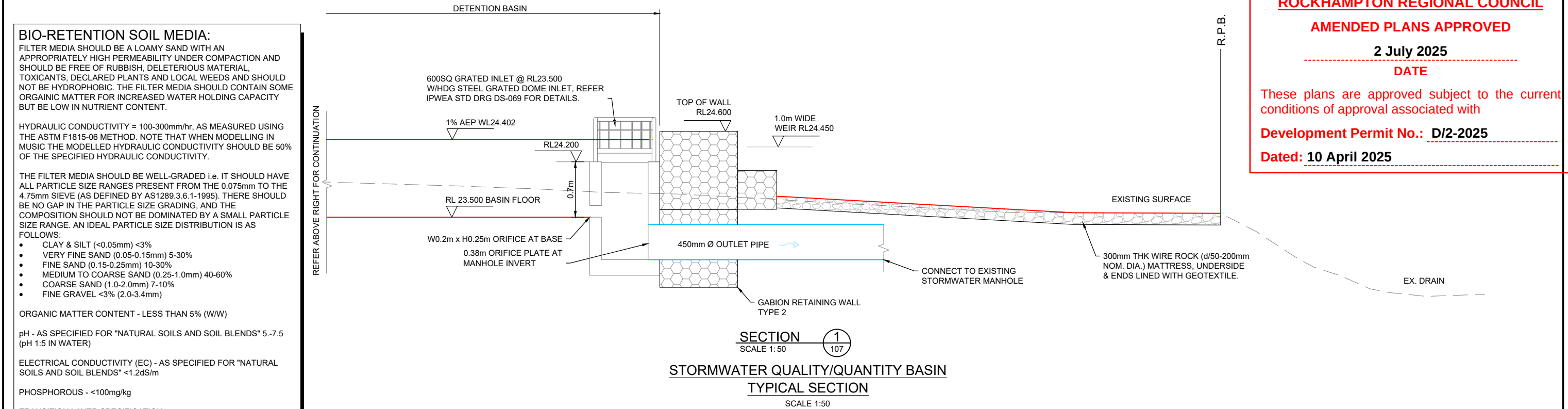
ELECTRICAL CONDUCTIVITY (EC) - AS SPECIFIED FOR "NATURAL SOILS AND SOIL BLENDS" <1.2dS/m

PHOSPHOROUS - <100mg/kg

TRANSITION LAYER SPECIFICATION:
TRANSITION LAYER SHOULD BE A CLEAN, WELL-GRADED SAND/COARSE SAND MATERIAL CONTAINING LITTLE OR NO FINES.

DRAINAGE LAYER SPECIFICATION:
DRAINAGE LAYER SHOULD BE A CLEAN, FINE GRAVEL, SUCH AS 2-5mm WASHED SCREENINGS

NOTE: THAT FILTER MEDIA, TRANSITION LAYER AND DRAINAGE LAYER ARE DESIGNED TO MINIMISE THE MIGRATION OF FINES THROUGH THE BIO-RETENTION SYSTEM, WITHOUT THE USE OF GEOTEXTILES.



BASIN PARAMETERS			
CATCH ID	BASIN No.	BIO FILTER AREA (m ²)	REQ'D VOLUME (m ³)
A	A	120	180.000

AMENDMENTS <table><tr><td>A</td><td>LM</td><td>AW</td><td>11/24</td><td></td></tr><tr><td>B</td><td>LM</td><td>AW</td><td>29/11/24</td><td>ISSUED FOR MCU APPROVAL</td></tr><tr><td></td><td>LM</td><td>AW</td><td>04/06/25</td><td>ISSUED FOR APPROVAL</td></tr></table>	A	LM	AW	11/24		B	LM	AW	29/11/24	ISSUED FOR MCU APPROVAL		LM	AW	04/06/25	ISSUED FOR APPROVAL	DESIGN CHECK LM COPYRIGHT MOLONEY SOLUTIONS PTY LTD 2024 These designs and drawings are copyright and are not to be used or reproduced without the written permission of the above. The contents of this drawing are electronically generated, are confidential and may only be used for the purpose for which they were intended. This is an uncontrolled document issued for information purposes only, unless the checked sections are signed and approved. Figured dimensions take precedence over scale. Do not scale from this drawing. Verify dimensions prior to commencing any works. LRQA CERTIFIED ISO 9001:2015 DRAWN CHECK LM PROJECT No. CE24222 DATUM FOR & ON BEHALF OF MOLONEY & SONS ENGINEERING	CLIENT AUSPROOF PTY LTD PROJECT PROPOSED DEVELOPMENT 50 ENTERPRISE DR GRACEMERE QLD 4702 APPROVED LMoloney RPEQ 33682 FOR & ON BEHALF OF MOLONEY & SONS ENGINEERING	DRAWING TITLE GENERAL NOTES, TYPICAL SECTIONS & DETAILS SHEET 2 OF 4 DRAWING NUMBER CE24222-104-TC ISSUE B
A	LM	AW	11/24															
B	LM	AW	29/11/24	ISSUED FOR MCU APPROVAL														
	LM	AW	04/06/25	ISSUED FOR APPROVAL														

ROCKHAMPTON REGIONAL COUNCIL

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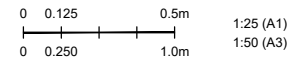
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Dated: 10 April 2025



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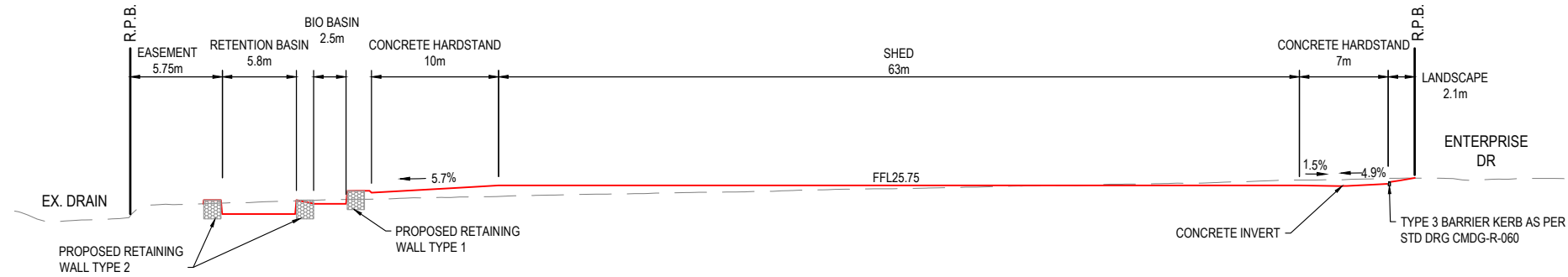


MOLONEY & SONS ENGINEERING

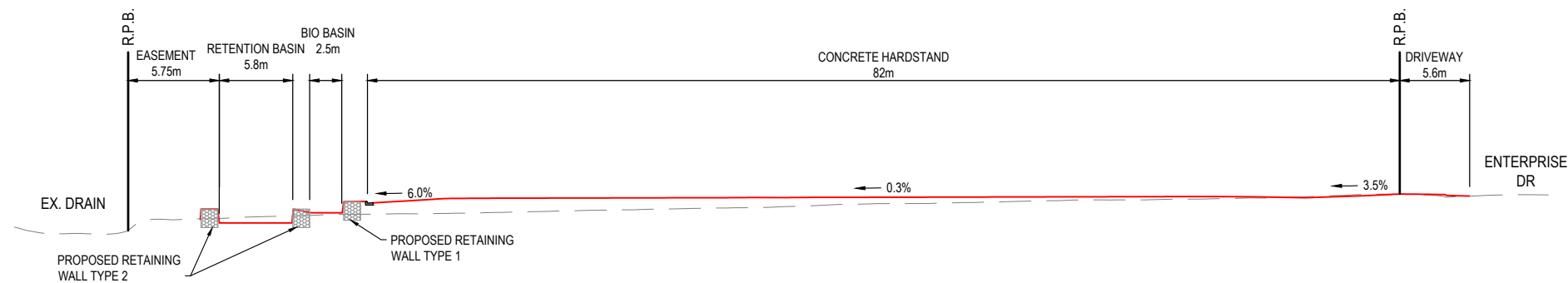
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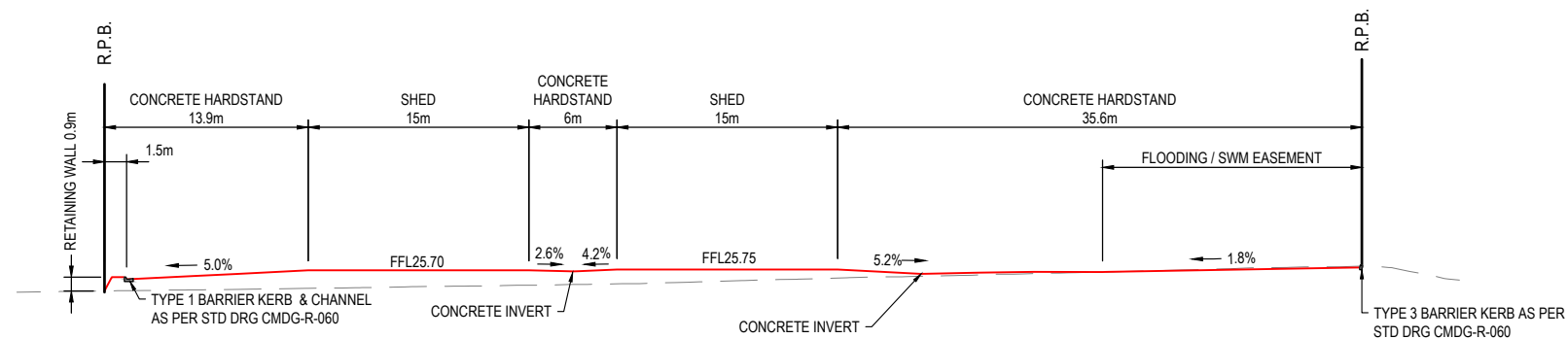
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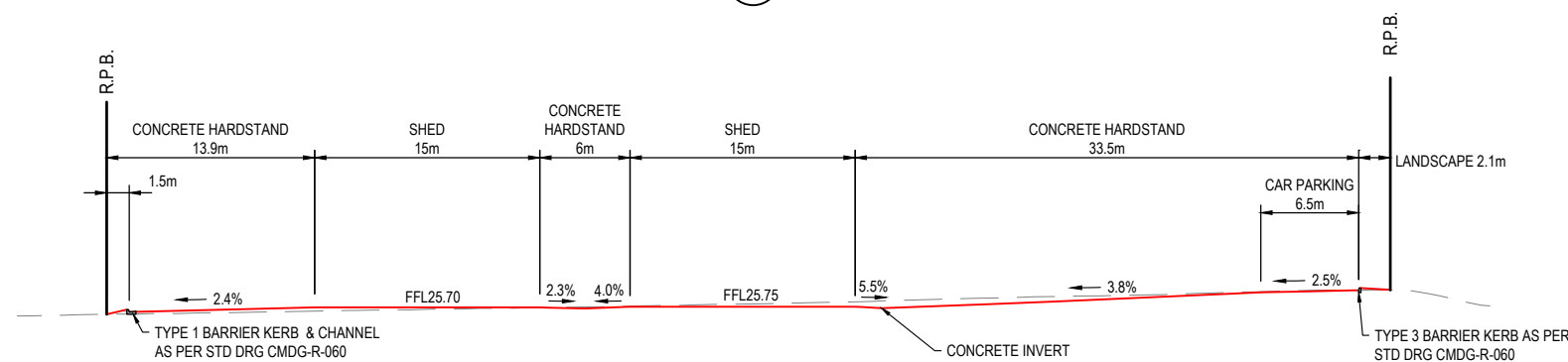
SECTION A
SCALE 1: 500



SECTION B
SCALE 1: 500



SECTION C
SCALE 1: 500



SECTION D
SCALE 1: 500

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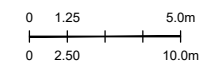
2 July 2025

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Dated: 10 April 2025



1:250 (A1)
1:500 (A3)

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FIRST ISSUE	CALCS DRAWN	DATE	AMENDMENT DETAILS
A	LM	AW	11/24
B	LM	AW	29/11/24
C	LM	AW	04/06/25

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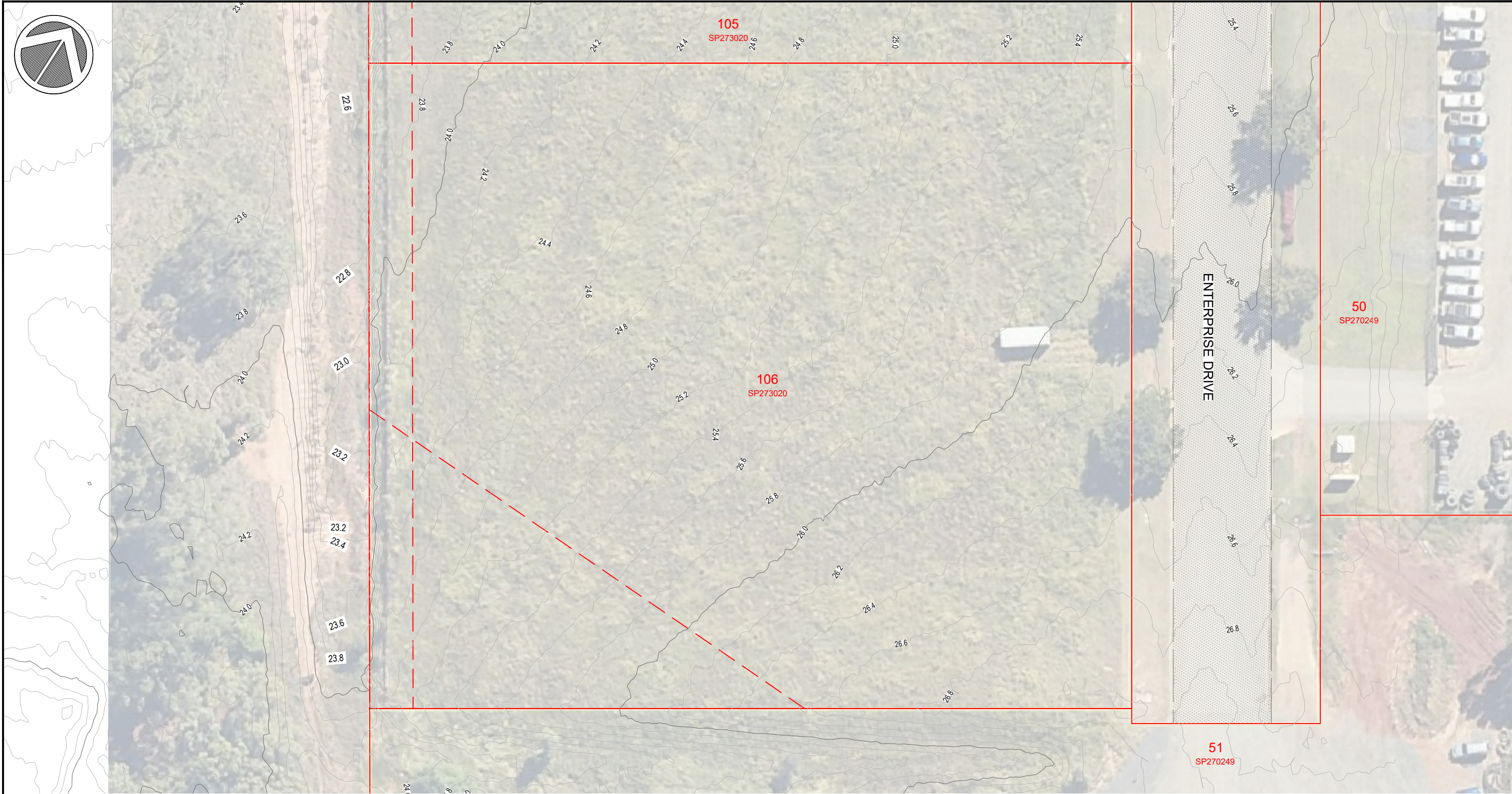
DRAWN CHECK	PROJECT No.
LM	CE24222

ISSUE FOR APPROVAL	APPROVED
LM	RPEQ 33682
LM	FOR & ON BEHALF OF MOLONEY & SONS ENGINEERING

CLIENT	PROJECT
AUSPROOF PTY LTD	PROPOSED DEVELOPMENT 50 ENTERPRISE DR GRACEMERE QLD 4702

MOLONEY & SONS ENGINEERING	P.O. Box 3203 RED HILL ROCKHAMPTON, Q 4701 www.moloneyandsons.com.au
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DRAWING TITLE	DRAWING NUMBER	ISSUE
SITE SECTIONS	CE24222-105-TC	B



EXISTING SITE LAYOUT
AND DEMOLITION PLAN
SCALE 1:500

ROCKHAMPTON REGIONAL COUNCIL

AMENDED PLANS APPROVED

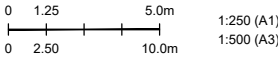
2 July 2025

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Development Permit No.: D/2-2025

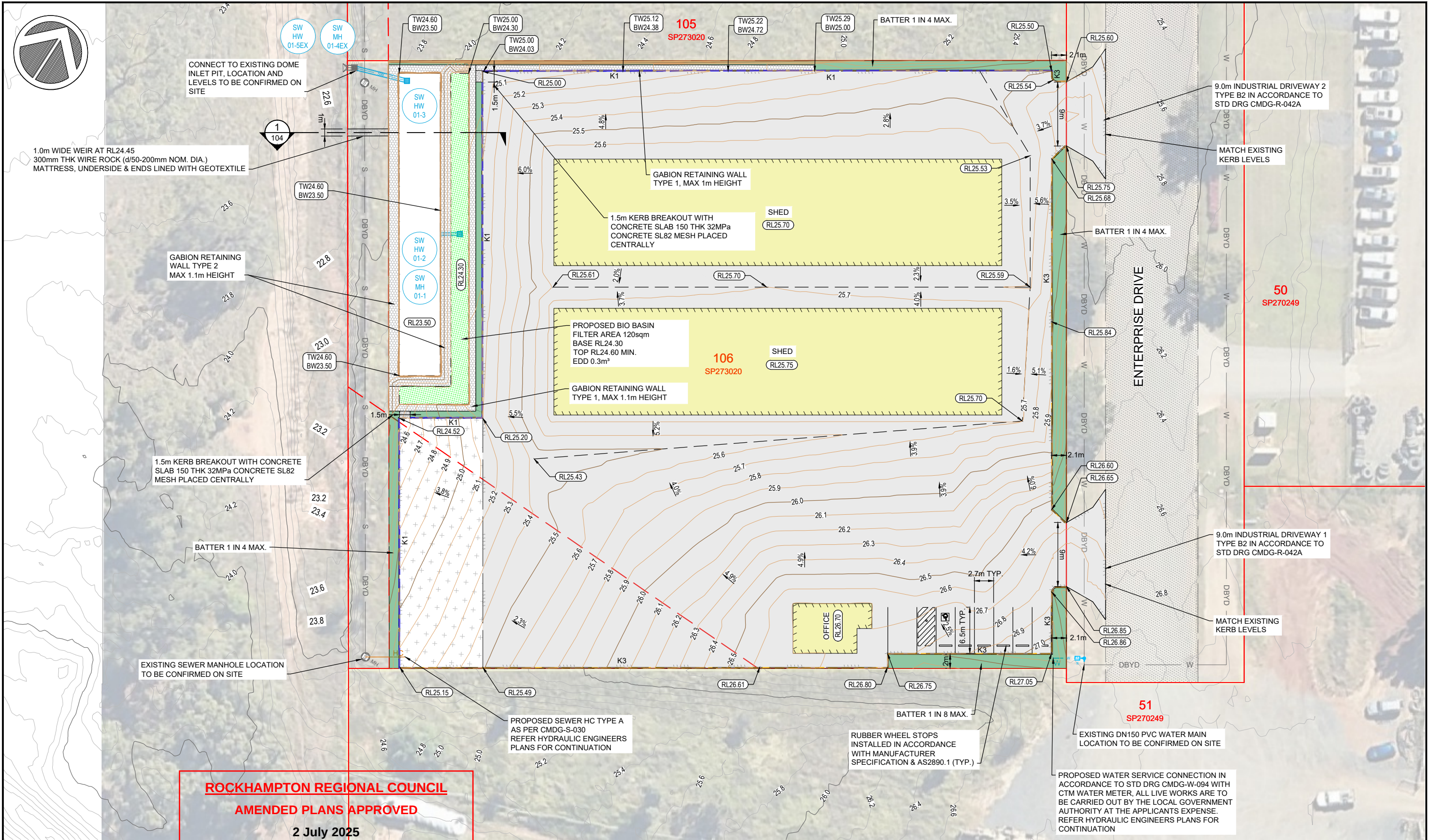
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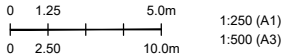


REVISED/ISSUED FOR APPROVAL	FIRST ISSUE	CALCS DRAWN	DATE	AMENDMENT DETAILS		DESIGN CHECK	COPYRIGHT		DATUM		CLIENT		 P.O. Box 3203 RED HILL ROCKHAMPTON, Q 4701 www.moloneyandsons.com.au	DRAWING TITLE	
	LM	AW	11/24				© MOLONEY SOLUTIONS PTY LTD 2024				AUSPROOF PTY LTD			EXISTING SITE LAYOUT & DEMOLITION PLAN	
	LM	AW	29/11/24	ISSUED FOR MCU APPROVAL			These designs and drawings are copyright and are not to be used or reproduced without the written permission of the above. The contents of this drawing are electronically generated, are confidential and may only be used for the purpose for which they were intended. This is an uncontrolled document issued for information purposes only, unless the checked sections are signed and approved. Figure dimensions take precedence over scale. Do not scale from this drawing. Verify dimensions prior to commencing any works.		PROJECT No.		PROPOSED DEVELOPMENT				
	LM	AW	04/06/25	ISSUED FOR APPROVAL		DRAWN CHECK			APPROVED		50 ENTERPRISE DR				
									RPEQ 33682		GRACEMERE QLD 4702				
FOR & ON BEHALF OF MOLONEY & SONS ENGINEERING												ISSUE			
												CE24222-106-AL		B	



ROCKHAMPTON REGIONAL COUNCIL
AMENDED PLANS APPROVED
2 July 2025
DATE
These plans are approved subject to the current conditions of approval associated with
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Dated: 10 April 2025

PROPOSED SITE
GENERAL ARRANGEMENT
SCALE 1:500



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AMENDMENT DETAILS			
FIRST ISSUE	CALCS DRAWN	DATE	AMENDMENT DETAILS
A	LM	AVE 11/24	
B	LM	AVE 29/11/24	ISSUED FOR MCU APPROVAL
C	LM	DV 24/02/25	ISSUED FOR RFI RESPONSE
D	LM	AVE 04/06/25	ISSUED FOR APPROVAL

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PROJECT No.
CE24222

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RPEQ 33682

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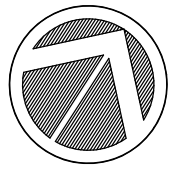
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**PROPOSED SITE
GENERAL ARRANGEMENT**

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ISSUE
C



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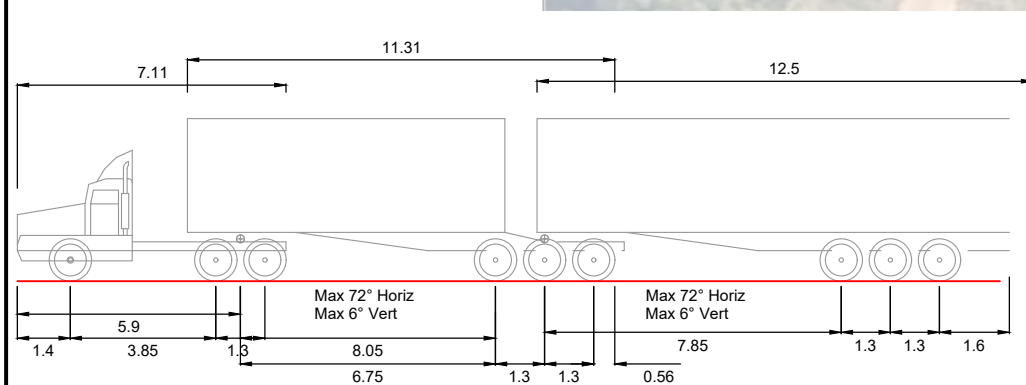
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LEGEND



Swept Path Direction

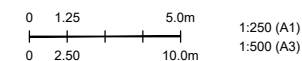


VEHICLE PROFILE - B-Double Truck

B-DOUBLE (26.0m)		
OVERALL LENGTH	26.00m	
OVERALL WIDTH	2.60m	
OVERALL BODY HEIGHT	4.30m	
MIN BODY GROUND CLEARANCE	0.54m	
TRACK WIDTH	2.50m	
LOCK-TO-LOCK TIME	6.00s	
CURB TO CURB TURNING RADIUS	15.00m	

SWEPT PATHS
B-DOUBLE

SCALE 1:500



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REV	ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	LM	LM	LM	11/24	
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C	LM	LM	LM	24/02/25	ISSUED FOR RFI RESPONSE
D	LM	LM	LM	04/06/25	ISSUED FOR APPROVAL

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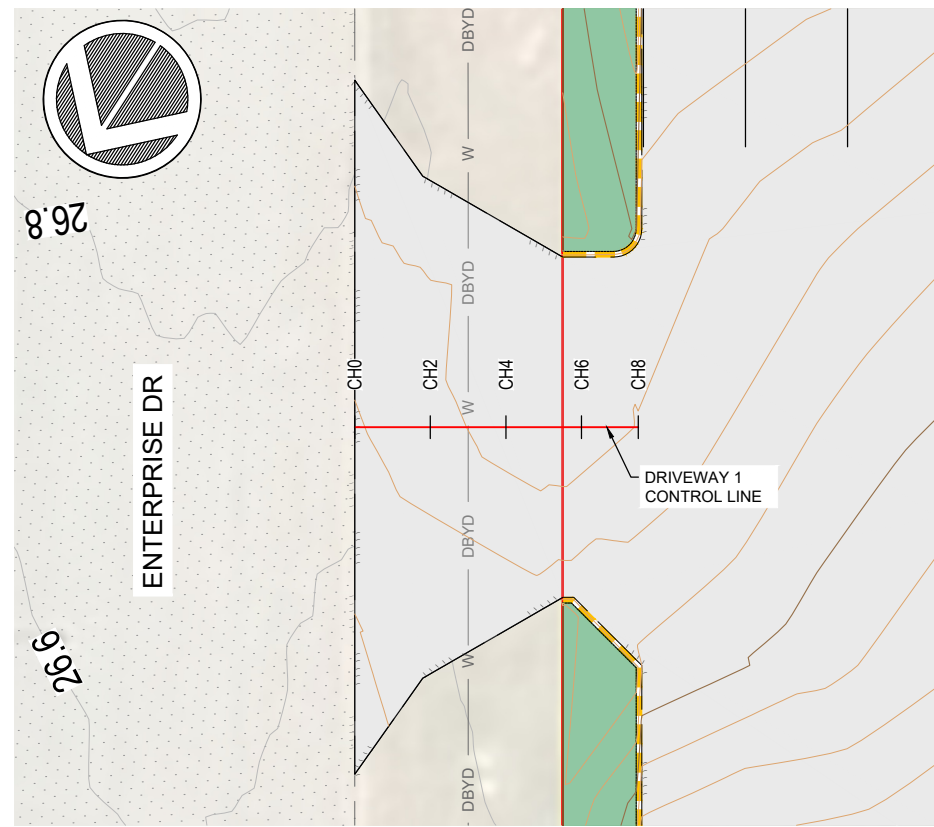
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LMoloney
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CLIENT	AUSPROOF PTY LTD
PROJECT	PROPOSED DEVELOPMENT 50 ENTERPRISE DR GRACEMERE QLD 4702

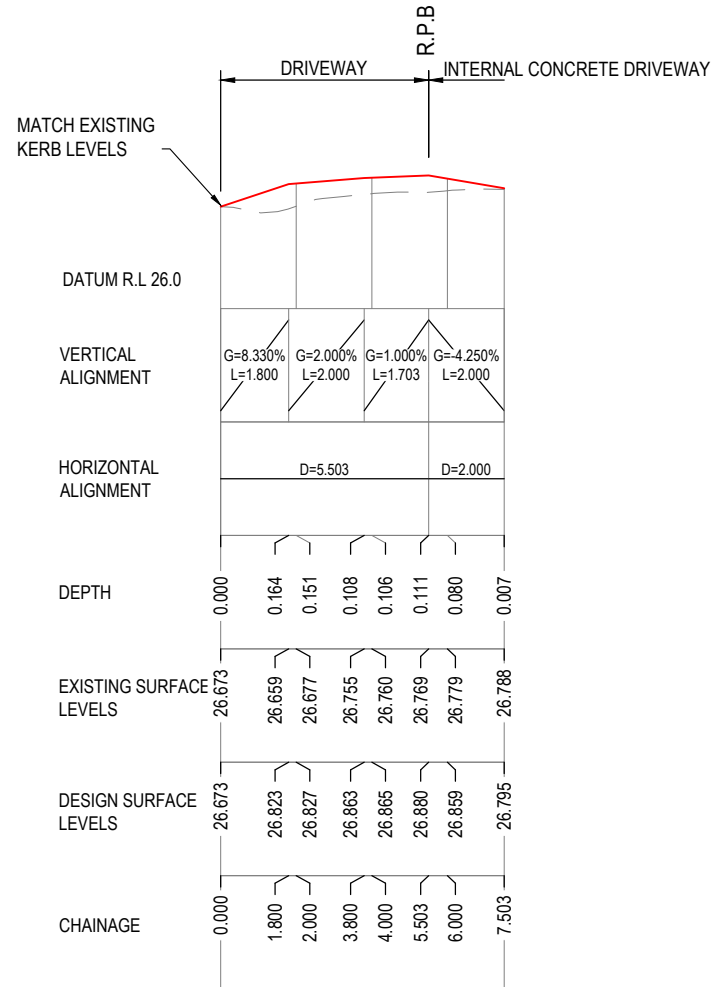


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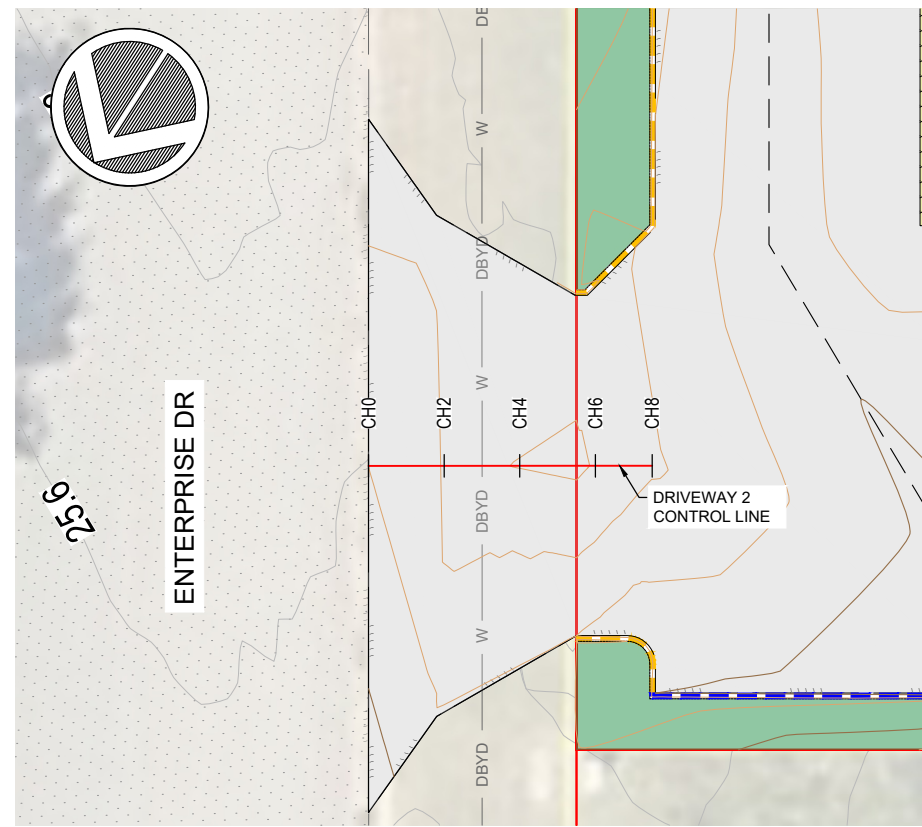
DRAWING TITLE	PROPOSED SITE SWEPT PATHS
DRAWING NUMBER	CE24222-108-GA
ISSUE	C



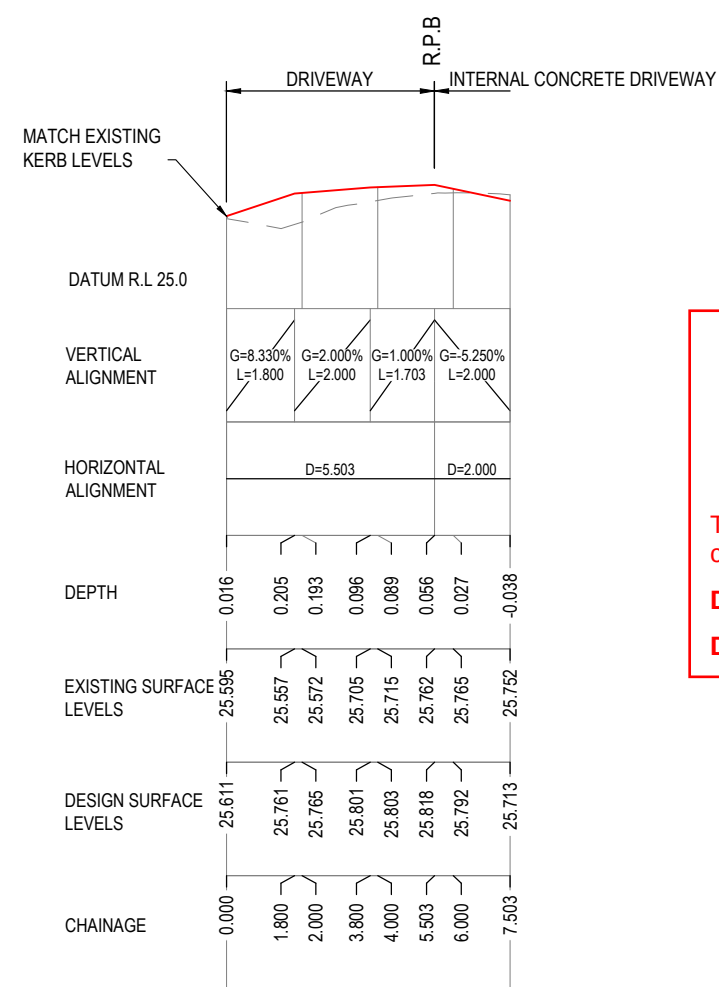
DRIVEWAY 1
LAYOUT PLAN
SCALE 1:200



LONGITUDINAL SECTION - DRIVEWAY 1
SCALE - HORIZ 1:200, VERT. 1:50



DRIVEWAY 2
LAYOUT PLAN
SCALE 1:200



LONGITUDINAL SECTION - DRIVEWAY 2
SCALE - HORIZ 1:200, VERT. 1:50

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AMENDED PLANS APPROVED

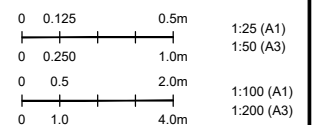
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D	LM	AW	04/06/25

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DRAWING TITLE	
DRIVEWAY PLANS & LONGITUDINAL SECTIONS	
DRAWING NUMBER	
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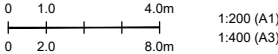
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PROPOSED SITE
JOINTING LAYOUT PLAN
SCALE 1:400



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B	LM	AW	LM	29/11/24	ISSUED FOR MCU APPROVAL
C	LM	DV	LM	24/02/25	ISSUED FOR RFI RESPONSE
	LM	AW	LM	04/06/25	ISSUED FOR APPROVAL

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DRAWN CHECK	LM



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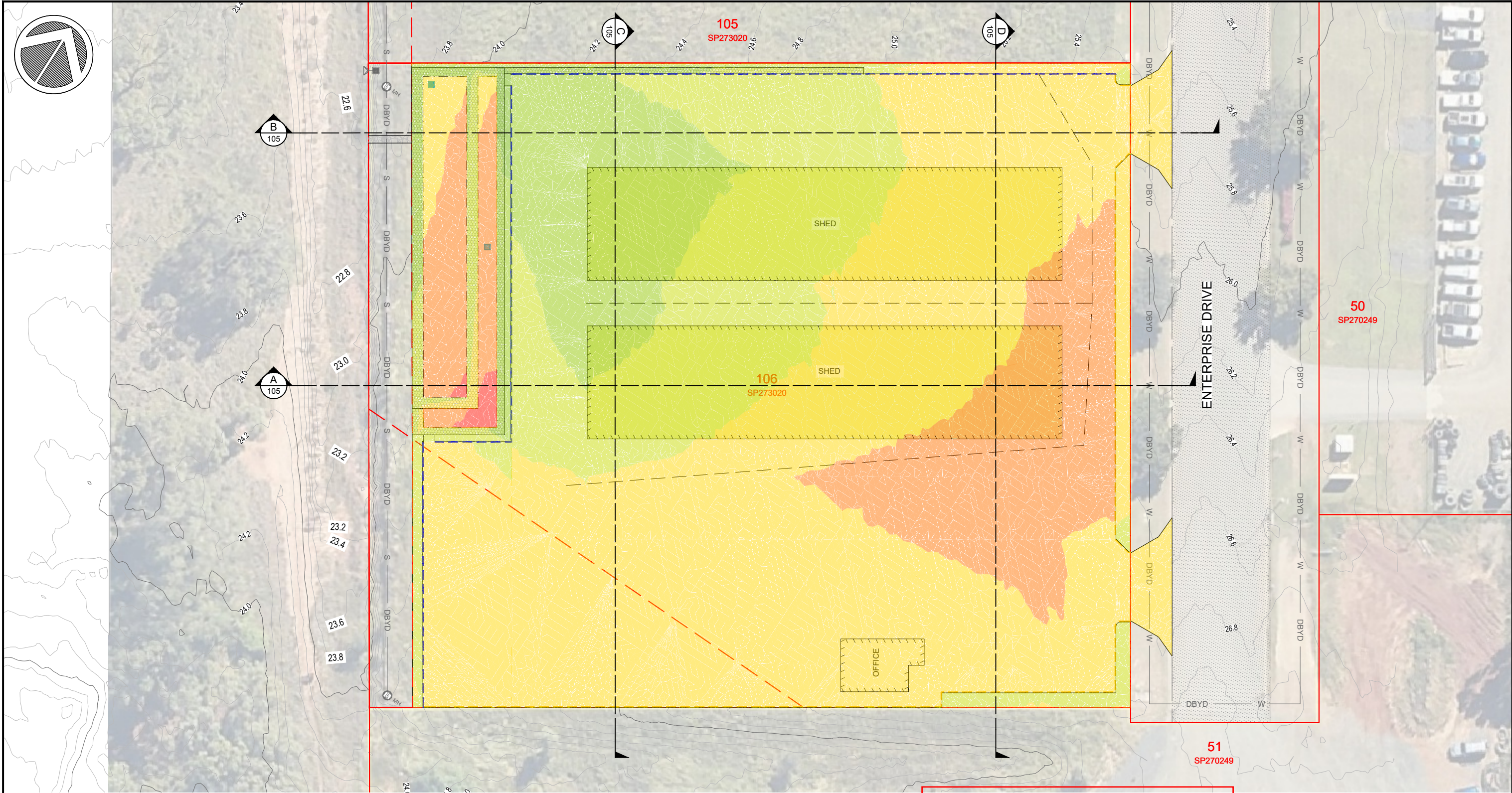
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**PROPOSED DEVELOPMENT
50 ENTERPRISE DR
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DRAWING TITLE	PROPOSED SITE JOINTING LAYOUT PLAN
DRAWING NUMBER	CE24222-111-GA
ISSUE	C



CUT & FILL DEPTH RANGE			
Number	Color	Minimum Depth (m)	Maximum Depth (m)
1	Red	-1.500	-1.000
2	Orange	-1.000	-0.500
3	Yellow	-0.500	0.000
4	Light Green	0.000	0.500
5	Green	0.500	1.000
6	Dark Green	1.000	1.500
7	Dark Green	1.500	2.000

- NOTES:**
- EXISTING IN-SITU CUT MATERIAL MAY BE USED FOR EMBANKMENT/SELECT FILL LAYERS. HOWEVER MUST COMPLY WITH SPECIFICATION TESTING REQUIREMENTS AND ENSURE DISPERSIVE SOILS ARE NOT TO BE USED. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH CONTRACT SPECIFICATIONS AND TECHNICAL STANDARDS.
 - ALL FILL BATTERS TO BE 1 IN 4, 1 IN 2 MAY BE ADOPTED IN CONSTRAINED ENVIRONMENTS SUBJECT TO SUPERINTENDENTS APPROVAL.
 - WHERE WORKS ABUTS EXISTING, ALL WORK SHALL BE NEAT, SMOOTH, WORKMANLIKE AND TO THE SUPERINTENDENTS SATISFACTION.

CUT/FILL QUANTITIES:
TOPSOIL: THE PRINCIPAL CONTRACTOR SHALL ESTABLISH APPROPRIATE DEPTH FOR CLEARING & GRUBBING.
CUT TO FILL: 1,057m³
CUT (REMOVED FROM SITE): 957m³
TOTAL VOLUME: 2,024m³
PLEASE NOTE THE ABOVE QUANTITIES ARE 'TIGHT' QUANTITIES AND DO NOT CONSIDER BULKING FACTORS AND/OR PAVEMENT LAYERS.

PROPOSED SITE
BULK EARTHWORKS
SCALE 1:500

ROCKHAMPTON REGIONAL COUNCIL
AMENDED PLANS APPROVED

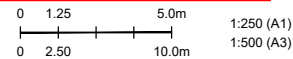
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Dated: 10 April 2025



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A	LM	AW	11/24
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LM	CE24222	

ISSUE FOR APPROVAL

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FOR & ON BEHALF OF MOLONEY & SONS ENGINEERING

CLIENT	AUSPROOF PTY LTD
PROJECT	PROPOSED DEVELOPMENT 50 ENTERPRISE DR GRACEMERE QLD 4702

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DRAWING TITLE	PROPOSED SITE BULK EARTHWORKS
DRAWING NUMBER	CE24222-112-GA
ISSUE	C



STORMWATER PRE DEVELOPMENT CACT CHMENT AREAS
SCALE 1:500

CATCHMENT PARAMETERS

CONDITION	CATCH ID	AREA (ha)	FRACTION IMP
PRE-DEVELOPMENT	A	0.864	0%

ROCKHAMPTON REGIONAL COUNCIL

AMENDED PLANS APPROVED

2 July 2025

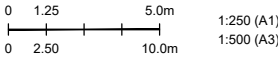
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AMENDMENTS	FIRST ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
	A	LM	AWE	11/24	
	A	LM	AWE	29/11/24	ISSUED FOR MCU APPROVAL
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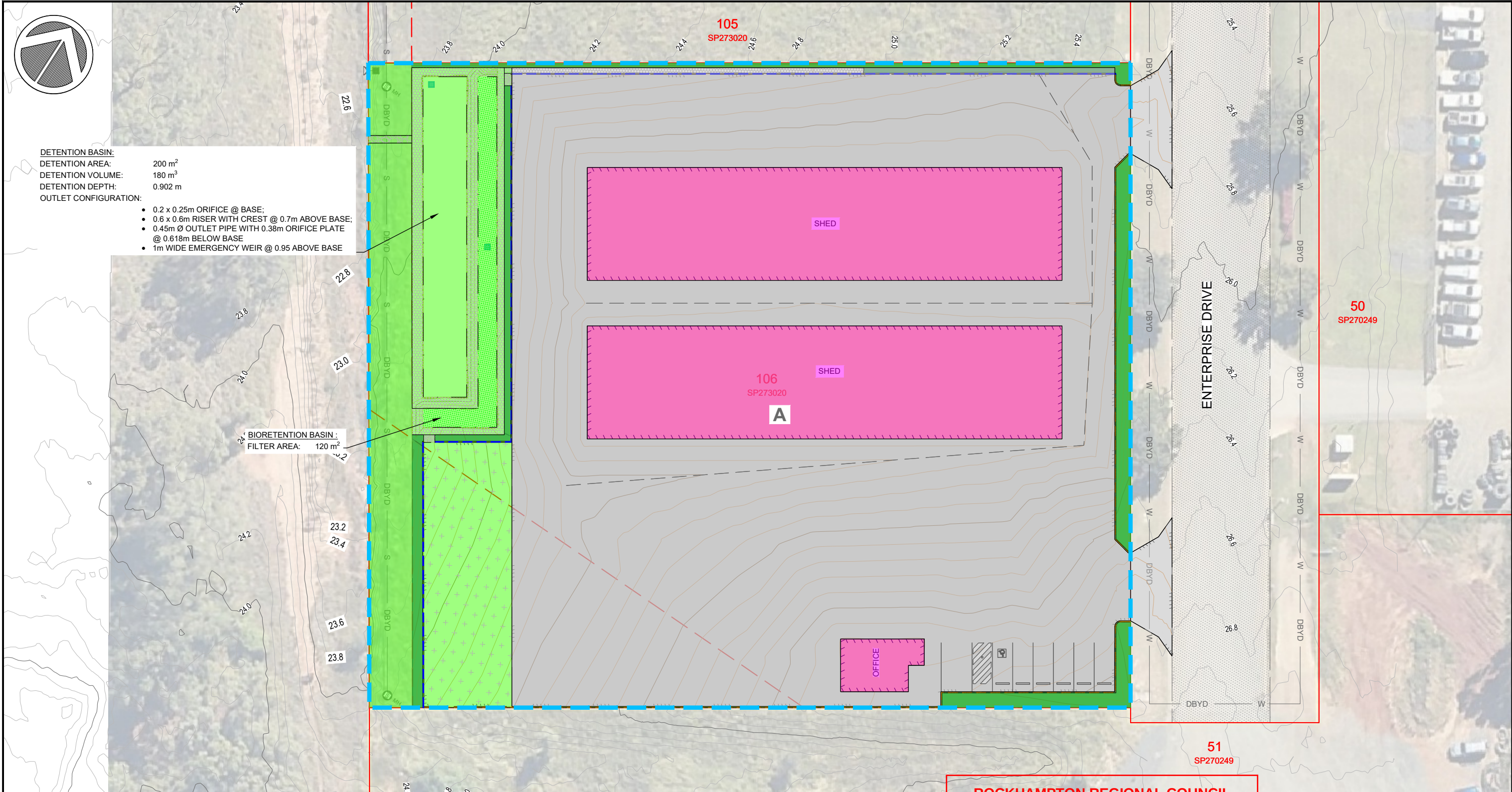
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DRAWING TITLE	STORMWATER PRE DEVELOPMENT CATCHMENT PLANS
DRAWING NUMBER	CE24222-113-DR
ISSUE	B



STORMWATER POST DEVELOPMENT CATCHMENT AREAS
SCALE 1:500

MUSIC CATCHMENT PARAMETERS

AREA	ID	A (ha)	FRACTION IMP
	ROOF	0.196	100%
	ROAD / CONCRETE SLAB	0.482	100%
	GROUND	0.186	0%
	TOTAL	0.864	

CATCHMENT PARAMETERS

CONDITION	CATCH ID	AREA (ha)	FRACTION IMP
POST-DEVELOPMENT	A	0.864	80%

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0 0.75 3.0m
0 1.5 6.0m
1:150 (A1)
1:300 (A3)

FIRST ISSUE	CALCS DRAWN	DATE	AMENDMENT DETAILS
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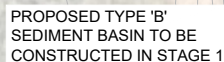
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PROJECT	PROPOSED DEVELOPMENT 50 ENTERPRISE DR GRACEMERE QLD 4702



DRAWING TITLE	STORMWATER POST DEVELOPMENT CATCHMENT PLANS
DRAWING NUMBER	CE24222-114-DR
ISSUE	B



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CONCEPTUAL ONLY

IT IS THE PRINCIPAL CONTRACTOR'S RESPONSIBILITY TO
ERECT AND MAINTAIN SATISFACTORY EROSION AND
SEDIMENT CONTROLS DURING THE ENTIRE CONSTRUCTION
PHASE OF THE PROJECT IN ACCORDANCE WITH THE
REQUIREMENTS OF THE LOCAL AUTHORITY AND THE
SUPERINTENDENT.

NOTES:

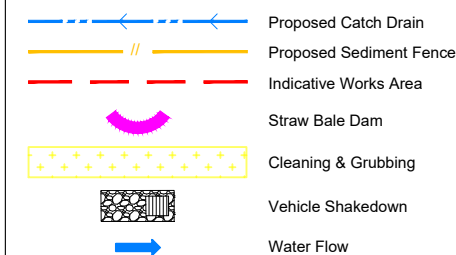
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING ALL EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH IECA BEST PRACTICE EROSION AND SEDIMENT CONTROL (2008) AND ROCKHAMPTON REGIONAL COUNCIL REQUIREMENTS.
2. A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC) SHALL OVERSEE COMPLIANCE THROUGHOUT THE PROJECT.
3. SITE CLEARING AND EARTHWORKS SHALL BE STAGED TO MINIMIZE EXPOSED SOIL AREAS AT ANY GIVEN TIME.
4. DISTURBED AREAS SHALL BE STABILIZED WITHIN 7 DAYS OF EARTHWORKS COMPLETION USING TURFING, SEEDING, MULCH, OR HYDROMULCHING.
5. STOCKPILES MUST BE LOCATED AT LEAST 5M AWAY FROM DRAINAGE PATHS, SURROUNDED BY SEDIMENT FENCES, AND COVERED IF INACTIVE FOR MORE THAN 7 DAYS.
6. EXISTING VEGETATION SHALL BE RETAINED WHERE FEASIBLE TO REDUCE EROSION RISK.
7. DIVERSION DRAINS AND CONTOUR BANKS SHALL BE INSTALLED TO DIVERT CLEAN WATER AWAY FROM DISTURBED AREAS.
8. TEMPORARY STABILIZATION TECHNIQUES, SUCH AS MULCHING AND EROSION CONTROL BLANKETS, SHALL BE USED TO PREVENT SOIL LOSS.
9. SEDIMENT BASINS SHALL BE INSTALLED IN ACCORDANCE WITH IECA GUIDELINES AND SHALL BE SIZED TO TREAT DESIGN RAINFALL EVENTS.

10. SILT FENCES, CHECK DAMS, AND GEOTEXTILE INLET FILTERS SHALL BE INSTALLED TO CONTROL SEDIMENT MIGRATION.
11. ALL STORMWATER INLETS WITHIN THE CONSTRUCTION AREA SHALL HAVE INLET PROTECTION INSTALLED.
12. WHERE PRACTICAL, FLOCCULANT DOSING SYSTEMS SHALL BE INCORPORATED INTO SEDIMENT BASINS TO ENHANCE SEDIMENTATION.
13. STABILIZED CONSTRUCTION ENTRY/EXIT POINTS SHALL BE INSTALLED USING ROCK PADS OR SHAKER GRIDS TO MINIMIZE SEDIMENT TRACKING ONTO PUBLIC ROADS.
14. ALL MUD AND DEBRIS FROM CONSTRUCTION VEHICLES MUST BE REMOVED BEFORE LEAVING THE SITE.
15. ANY SEDIMENT DEPOSITED ON PUBLIC ROADS SHALL BE IMMEDIATELY CLEANED.
16. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSPECTED WEEKLY AND AFTER RAINFALL EVENTS EXCEEDING 10MM IN 24 HOURS.
17. SEDIMENT BASINS SHALL BE DESILTED WHEN CAPACITY IS REDUCED BY 50%.
18. THE EROSION AND SEDIMENT CONTROL PLAN (ESCP) SHALL BE REVIEWED AND UPDATED AS SITE CONDITIONS CHANGE.
19. NON-COMPLIANCE WITH EROSION AND SEDIMENT CONTROL REQUIREMENTS MAY RESULT IN PENALTIES OR WORK STOPPAGES.

SEDIMENT & EROSION CONTROL PLAN

SCALE 1:500

SEDIMENT & EROSION CONTROL



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1:250 (A1)
1:500 (A3)

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DRAWING TITLE

**SEDIMENT & EROSION
CONTROL PLAN**

DRAWING NUMBER
CE24222-116-SE

ISSUE
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[illegible]

DESIGN CHECK

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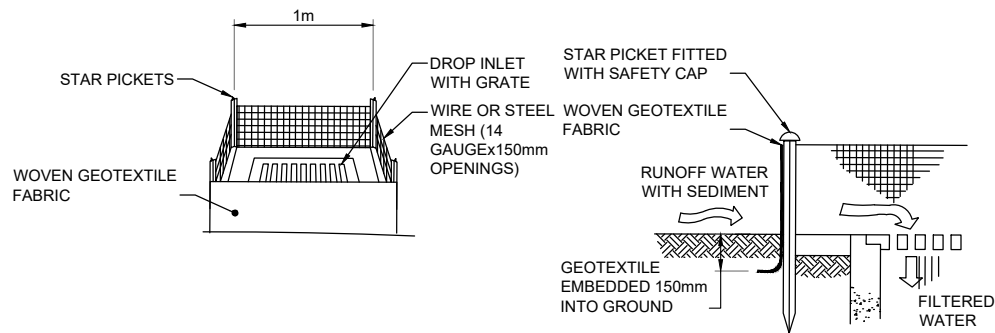


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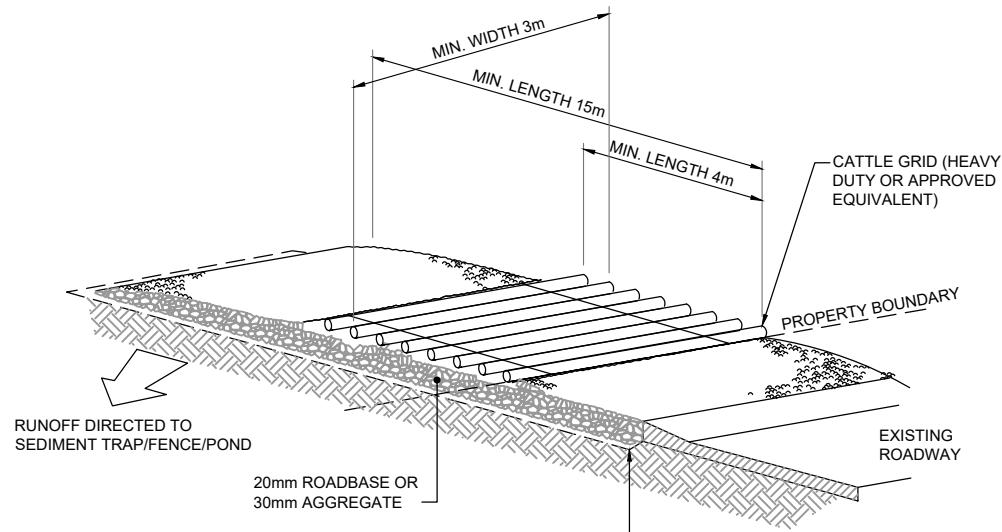
DRAWING TITLE

**SEDIMENT & EROSION
CONTROL PLAN**



- CONSTRUCTION NOTES**
1. SUPPORT GEOTEXTILE WITH MESH TIED TO POSTS AT 1m CENTERS.
 2. DO NOT COVER INLET WITH GEOTEXTILE.

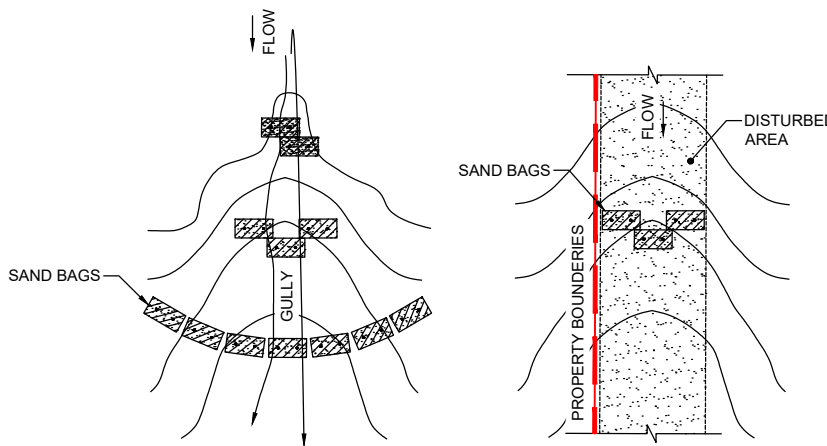
GEOTEXTILE INLET FILTER
NOT TO SCALE



GEOTEXTILE FABRIC DESIGNED TO PREVENT INTERMIXING OF SUB-GRADE AND BASE MATERIALS AND TO MAINTAIN GOOD PROPERTIES OF THE SUB-BASE LAYERS. GEOTEXTILE MAY BE A WOVEN OR NEEDLE PUNCHED PRODUCT WITH A MINIMUM CBR BURST STRENGTH (AS3706.4) OF 2.5kN.

- CONSTRUCTION NOTES**
1. STRIP TOPSOIL AND LEVEL WORK AREA.
 2. COMPACT IN-SITU SUB-GRADE MATERIAL.
 3. COVER WORK AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
 4. CONSTRUCT 200mm THICK PAD OVER GEOTEXTILE USING ROAD BASE MATERIAL OR 30mm AGGREGATE. MINIMUM LENGTH 15m OR TO BUILDING ALIGNMENT AND MINIMUM WIDTH 3m.
 5. CONSTRUCT HUMPS IMMEDIATELY WITHIN INDICATIVE WORKS AREA TO DIVERT WATER TO A SEDIMENT FENCE OR OTHER SEDIMENT TRAP (i.e. SEDIMENT POND).

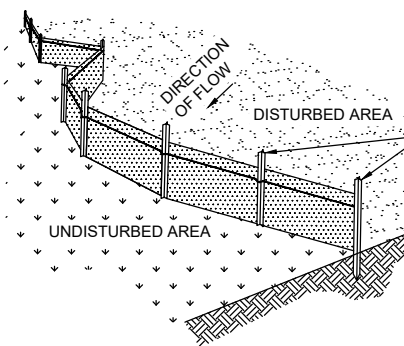
SHAKE - DOWN AREA / STABILIZED SITE ACCESS
NOT TO SCALE



- NOTES**
1. PROVIDE SAND BAGS ACROSS FLOW PATH. PROVIDE TURF AROUND SAND BAGS. EXTENT TO BE DETERMINED ON SITE BY SUPERINTENDENT.

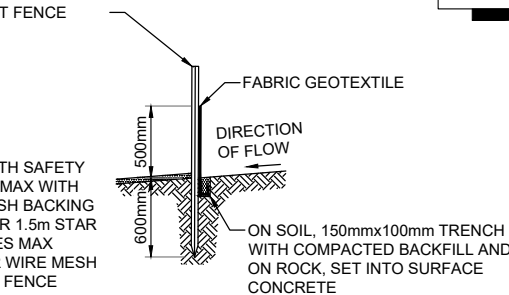
SAND BAG CHECK DAM
NOT TO SCALE

- 1.5m STAR PICKETS (WITH SAFETY CAPS) AT 3m CENTRES MAX WITH TOP WIRE OR WIRE MESH BACKING TO SEDIMENT FENCE OR 1.5m STAR PICKETS AT 2m CENTRES MAX WITHOUT TOP WIRE OR WIRE MESH BACKING TO SEDIMENT FENCE

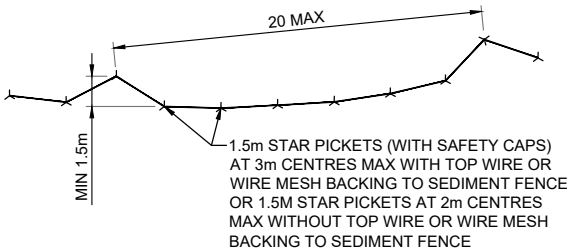


- CONSTRUCTION NOTES**
1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE OR AS DIRECTED ON SITE BY SUPERINTENDENT.
 2. DRIVE 1.5m LONG STAR PICKETS INTO GROUND, 3m APART.
 3. DIG A 150mm DEEP TRENCH ALONG THE UP-SLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
 4. BACKFILL TRENCH OVER BASE OF FABRIC.
 5. FIX SELF SUPPORTING GEOTEXTILE TO UP-SLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
 6. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.

GEOTEXTILE SEDIMENT FENCE
NOT TO SCALE



SECTION DETAILS



PLAN

CLEAN WATER DIVERSION DRAIN
NOT TO SCALE

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2 July 2025

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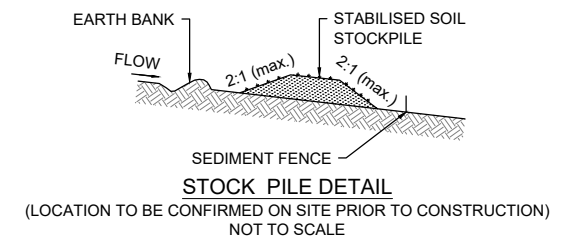
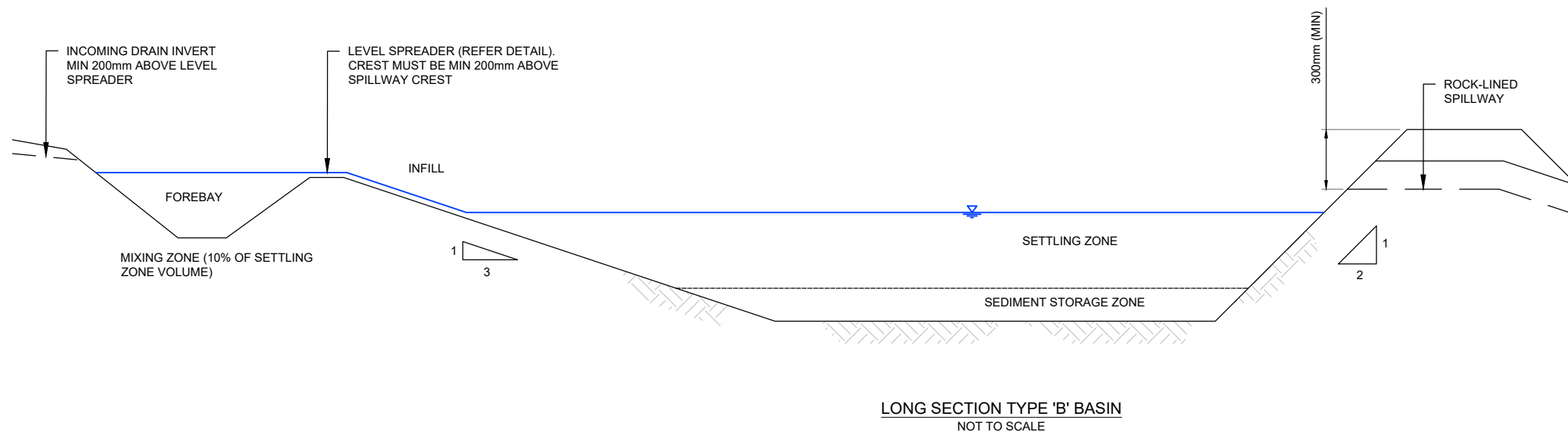
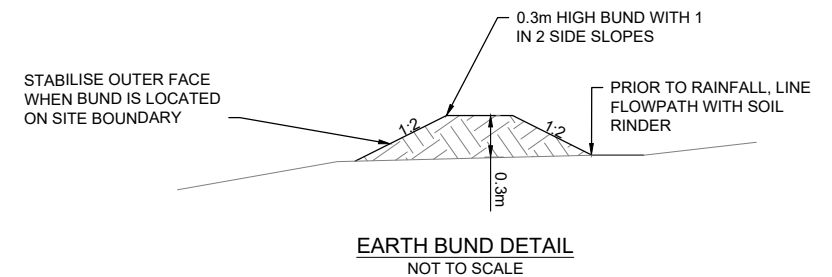
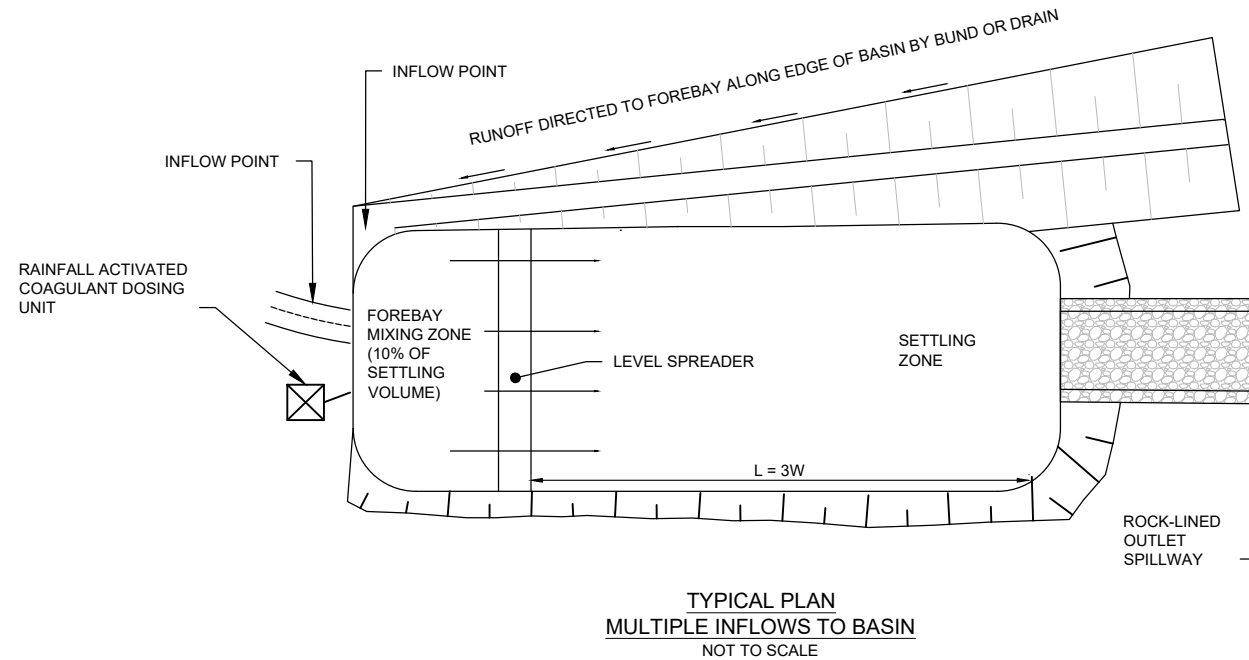
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4. DISTURBED AREAS SHALL BE STABILIZED WITHIN 7 DAYS OF EARTHWORKS COMPLETION USING TURFING, SEEDING, MULCH, OR HYDROMULCHING.
5. STOCKPILES MUST BE LOCATED AT LEAST 5M AWAY FROM DRAINAGE PATHS, SURROUNDED BY SEDIMENT FENCES, AND COVERED IF INACTIVE FOR MORE THAN 7 DAYS.
6. EXISTING VEGETATION SHALL BE RETAINED WHERE FEASIBLE TO REDUCE EROSION RISK.
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8. TEMPORARY STABILIZATION TECHNIQUES, SUCH AS MULCHING AND EROSION CONTROL BLANKETS, SHALL BE USED TO PREVENT SOIL LOSS.
9. SEDIMENT BASINS SHALL BE INSTALLED IN ACCORDANCE WITH IECA GUIDELINES AND SHALL BE SIZED TO TREAT DESIGN RAINFALL EVENTS.
10. SILT FENCES, CHECK DAMS, AND GEOTEXTILE INLET FILTERS SHALL BE INSTALLED TO CONTROL SEDIMENT MIGRATION.
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16. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSPECTED WEEKLY AND AFTER RAINFALL EVENTS EXCEEDING 10MM IN 24 HOURS.
17. SEDIMENT BASINS SHALL BE DESILTED WHEN CAPACITY IS REDUCED BY 50%.
18. THE EROSION AND SEDIMENT CONTROL PLAN (ESCP) SHALL BE REVIEWED AND UPDATED AS SITE CONDITIONS CHANGE.
19. NON-COMPLIANCE WITH EROSION AND SEDIMENT CONTROL REQUIREMENTS MAY RESULT IN PENALTIES OR WORK STOPPAGES.

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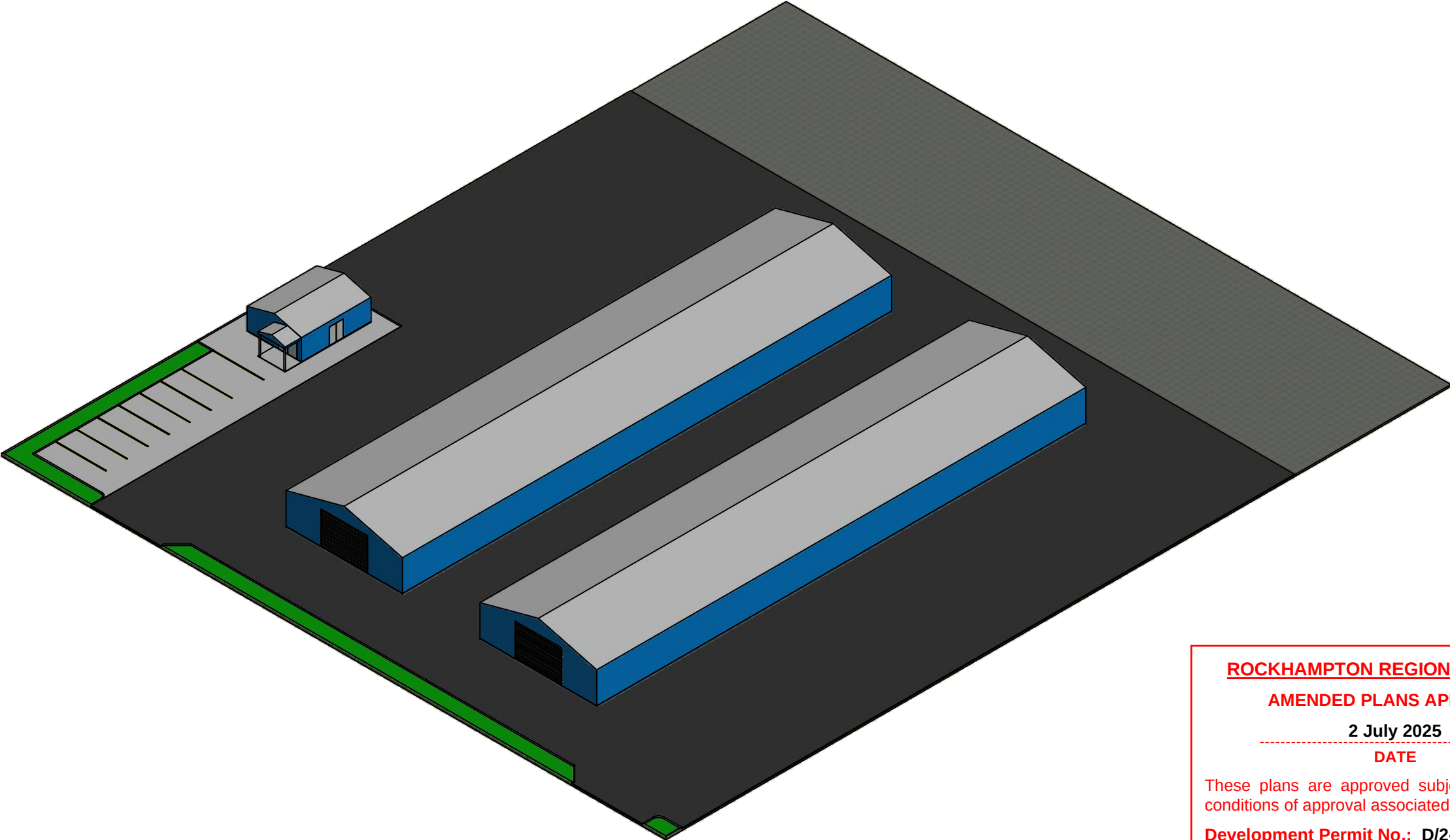
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SHEET 2 OF 2

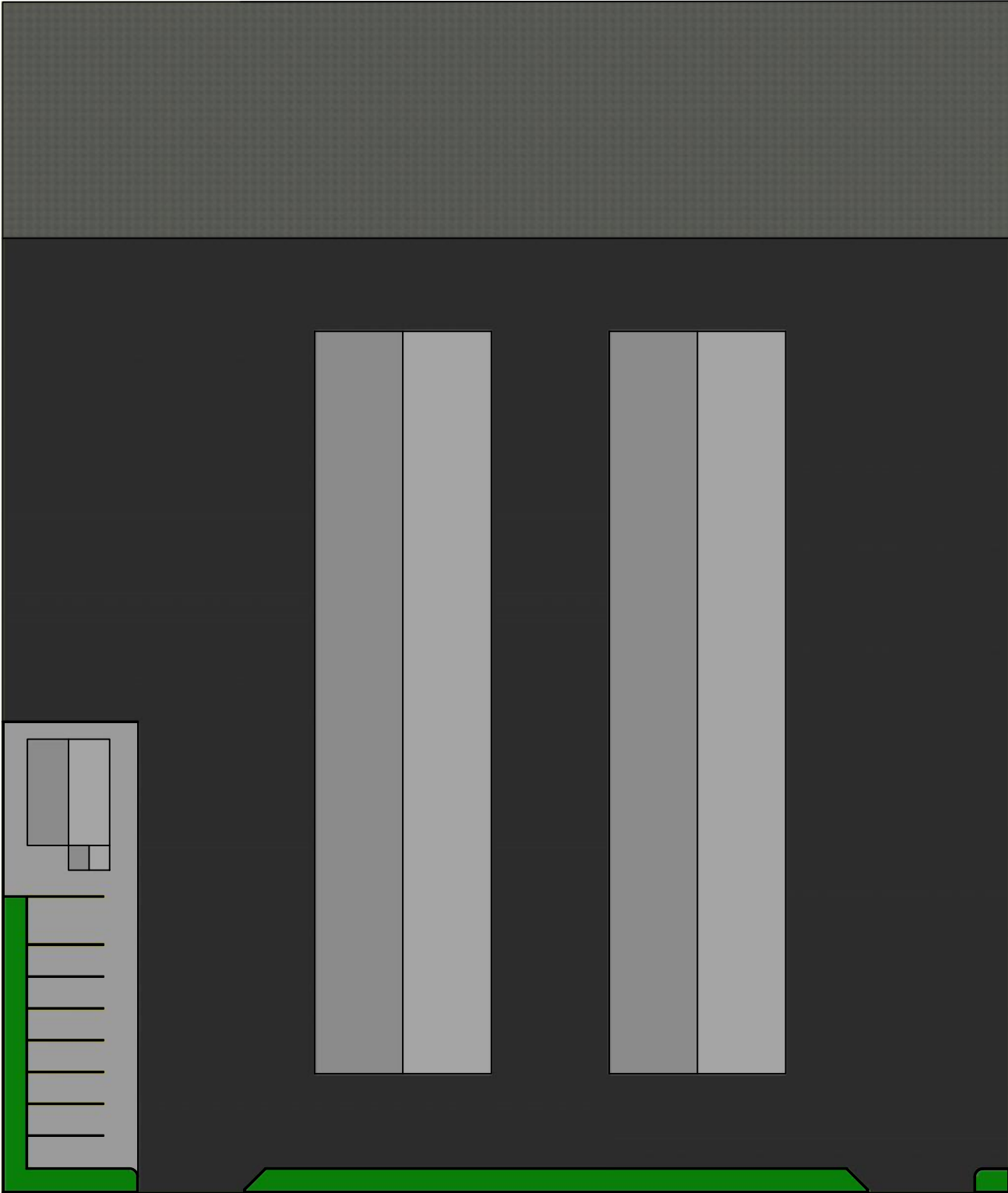


ISOMETRIC VIEW

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TOP VIEW



FRONT VIEW

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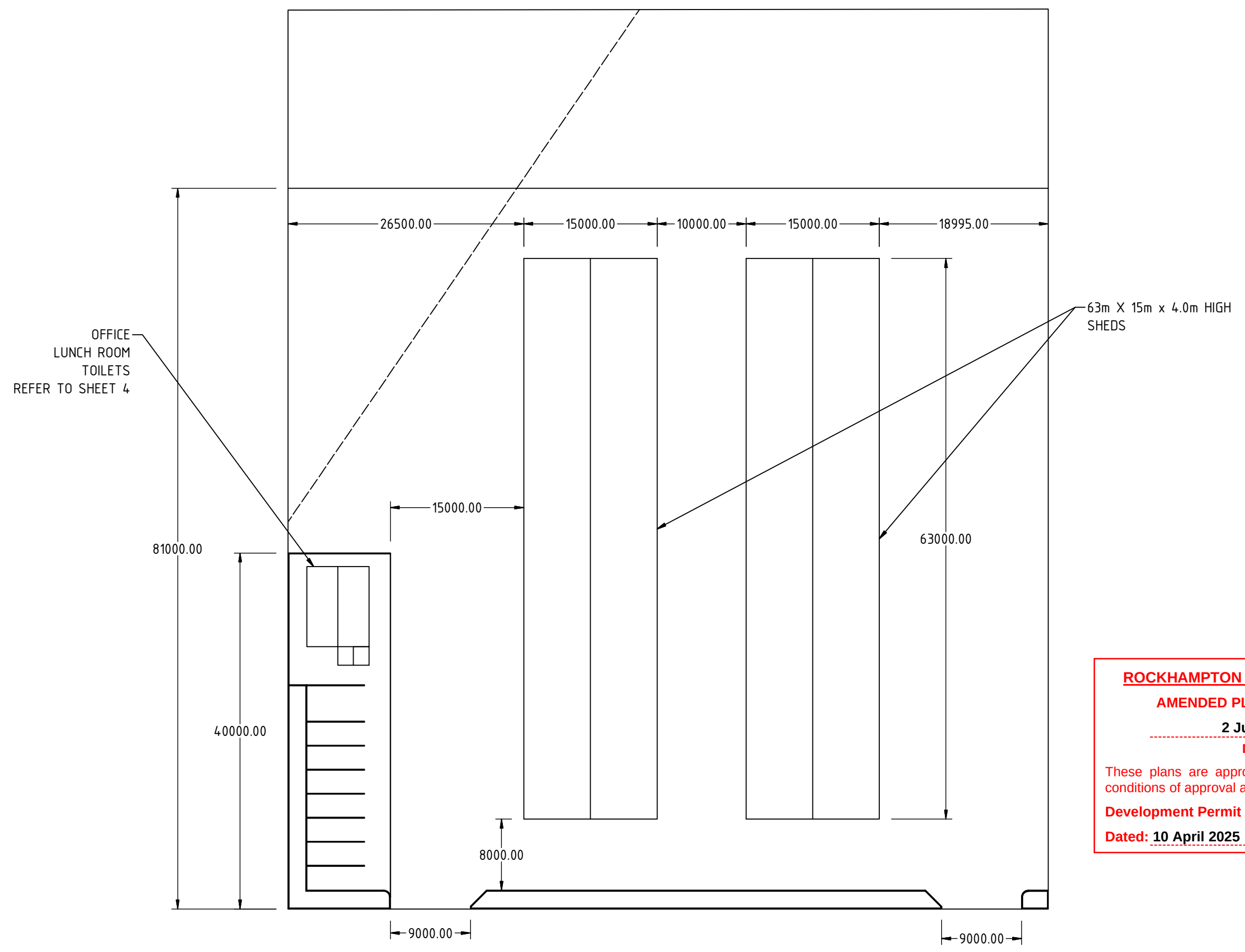
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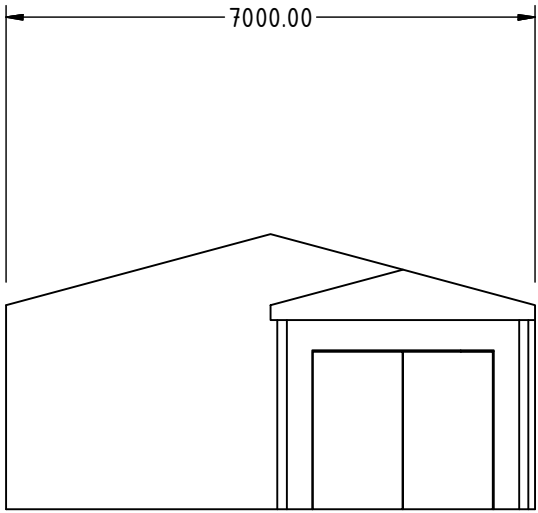
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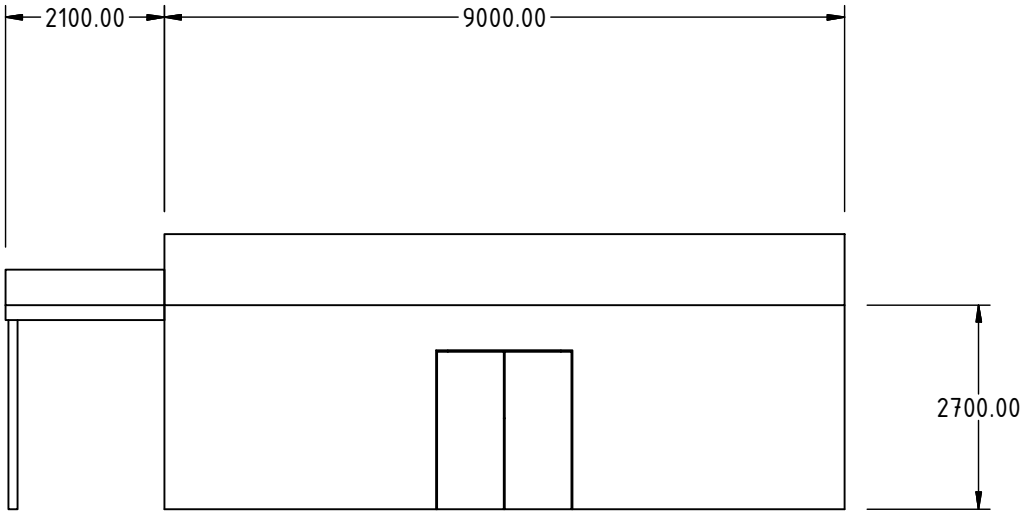


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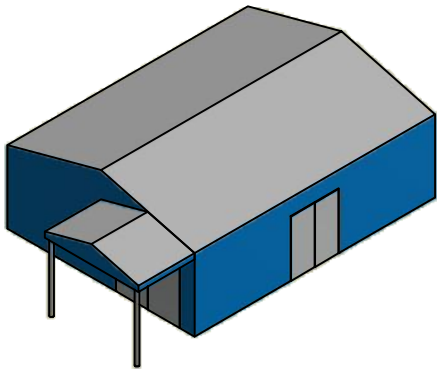
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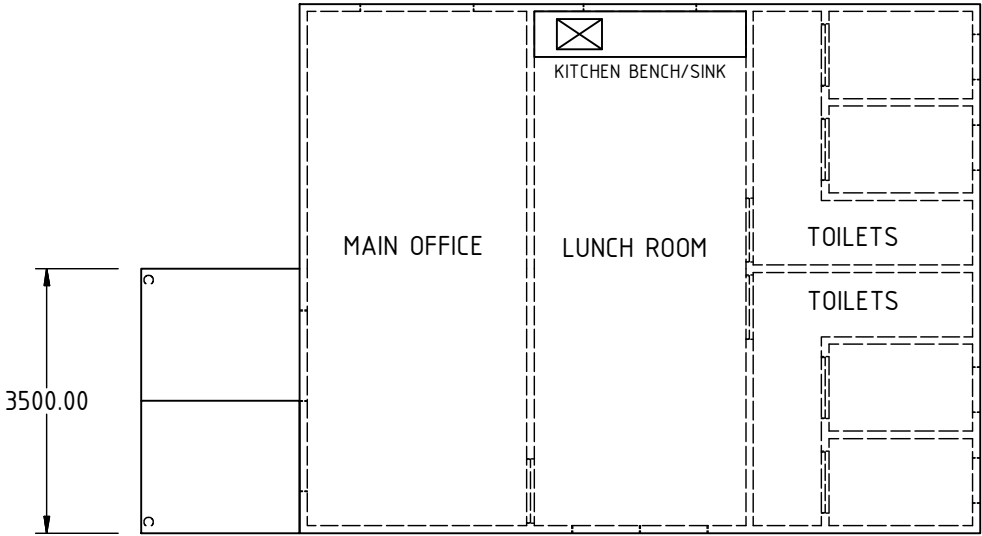
FRONT VIEW



SIDE VIEW



ISOMETRIC VIEW



TOP VIEW

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SITE BASED STORMWATER MANAGEMENT PLAN

50 Enterprise Dr, GRACEMERE QLD 4702

AusProof Pty Ltd

6 June 2025

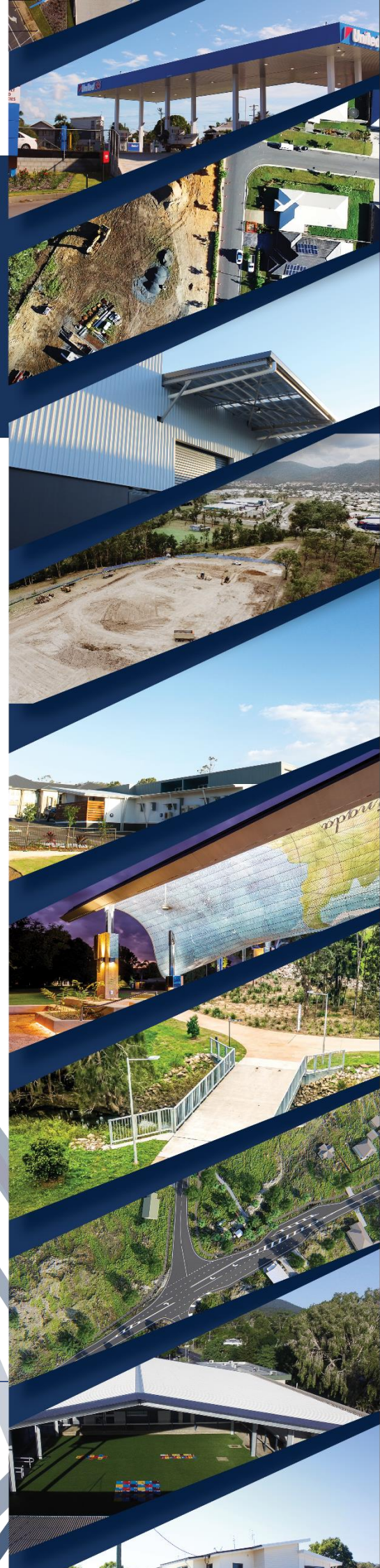
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2025

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<i>A</i>	<i>11/12/24</i>	<i>Issued for Approval</i>	<i>HN</i>	<i>LM</i>	<i>DA</i>
<i>B</i>	<i>6/06/25</i>	<i>Amended site layout</i>	<i>HN</i>	<i>LM</i>	<i>LC Moloney</i> RPEQ 33682



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1. INTRODUCTION

1.1. PROJECT COMMISSION

Moloney & Sons Engineering (MSE) has been engaged by AusProof Pty Ltd to undertake a Site Based Stormwater Management Plan (SBSWMP) for the project at 50 Enterprise Dr, Gracemere QLD.

The proposed development is the proposed Medium Impact Industry for Cable Repairs. This Site Based Stormwater Management Plan (SBSMP) was undertaken in support of the anticipated Development Application for this site.

1.2. PROJECT BACKGROUND

1.2.1. PROJECT LOCATION

The subject site is located at 50 Enterprise Dr, Gracemere, QLD is described as Lot 106 on SP273020 and is zoned residential it has an area of approximately 0.864 hectares.

The site fronts Enterprise Dr to the north-eastern and is surrounded by properties to the north-west, north and south. *Figure 1* shows the site location.



Figure 1 Locality Plan (Source: Google Maps)

1.2.2. EXISTING SITE AND LAND USE

At the time of writing this report, the subject site has a vacant lot with trees and grass. Access to the property is gained by way of Enterprise Dr to the north-east.

The subject site has a slope of ~3%, and grades from over 27.0m AHD at the south-east part to approximately 23.0 m AHD at the north-west boundary.

A topo photograph of the site is illustrated in *Figure 2*.

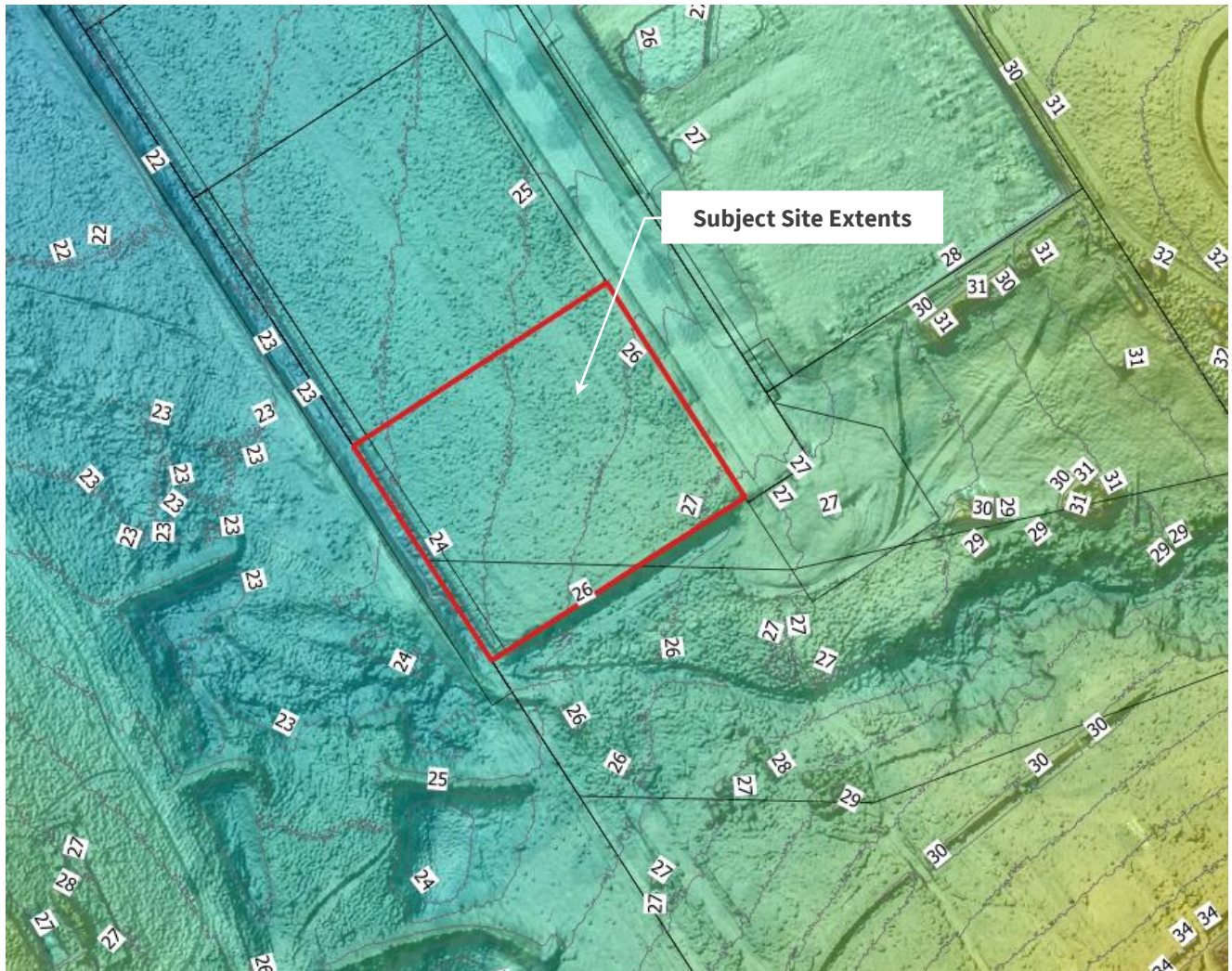


Figure 2 Site Elevation

1.3. DESCRIPTION OF PROPOSED PROJECT

The subject development proposes the construction of an Office dwelling and two (2) Sheds with associated driveways and parking. The lots access is to be provided from the frontages on Enterprise Dr only.

Please refer to Moloney & Sons Engineering, Proposed Site General Arrangement Plan included as **Appendix A** for further details of the proposed layout.

1.4. PROPOSED CONCEPTUAL DRAINAGE

It is proposed that stormwater flows generated from the subject site will be directed and captured by proposed bio/detention basin and discharged to the site's north-east corner boundary at the existing Legal Point of Discharge (LPoD). The proposed drainage regime for the development is to be facilitated by a Building Hydraulics consultant at the detailed design phase.



2. FLOOD STATEMENT SECTION

2.1. FLOODING CHARACTERISTICS

The subject site has been identified to be affected by RRC's Flood Overlay Map (as indicated on the RRC Mapping System), which is deemed to be affected by apparent flooding of the waterbody Fitzroy Creek. An extract of this mapping is reproduced below as *Figure 3*.

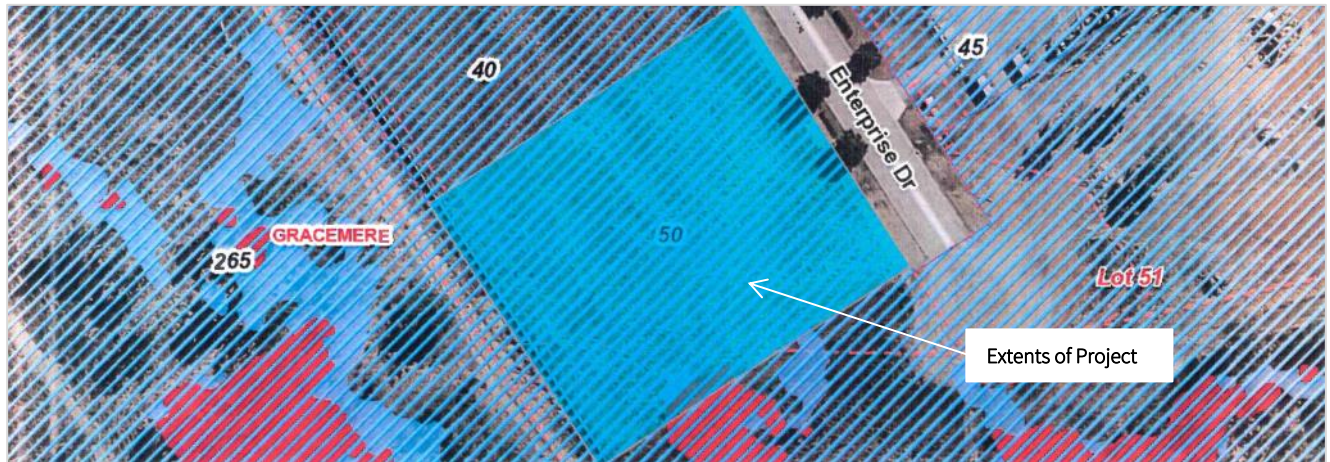


Figure 3 Flood Overlay Code Mapping

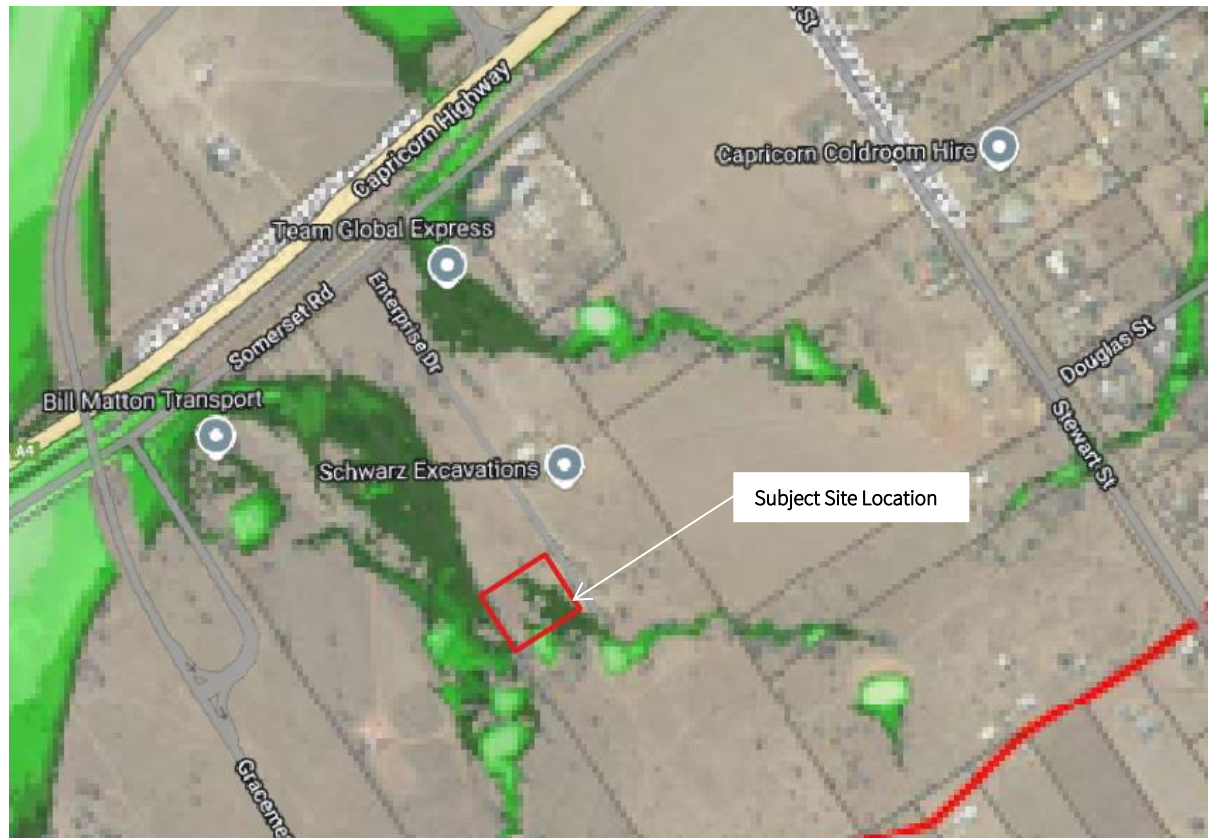


Figure 4 1% AEP Basin Flood Impacts Extract from Gracemere Catchments Flood Study



2.2. FLOOD HAZARD STATEMENT

It is noted the subject development intends to develop a portion the existing allotment also known as Lot 106 on SP273020 on 50 Enterprise Dr, Gracemere, QLD. It is the position of Moloney & Sons Engineering that this minor intensification of industrial development, represents an acceptable and tolerable flood risk level. As demonstrated in Figure 4 - the 1% AEP Flood Extents and Figure 3 - the Flood Hazard by the Queensland Recovery Authority low impact the subject development site, with an 1% AEL MAX WSL & MIN WSL of RL 26.28 and RL 23.70. The proposed developments earthworks have been engineered to ensure there is zero filling works within the existing easement and flood storage areas to ensure a zero net loss in any flood storage capacities. All facilities have also been designed to remain outside the flood easement with the proposed modular/demountable office and toilet facilities maintaining finished floor levels +300mm above the 1% AEP MAX WSL.

It is further understood that based on the advice from Rockhampton Regional Council on the 28th of November 2024 that the only mapped flooding over the site is contained within the easement, refer APPENDIX C.

Bearing the above in mind, Moloney & Sons Engineering RPEQ who has expertise in risk and flood analysis certifies that the actual level of flood risk for the development site to be an acceptable and/or tolerable level.

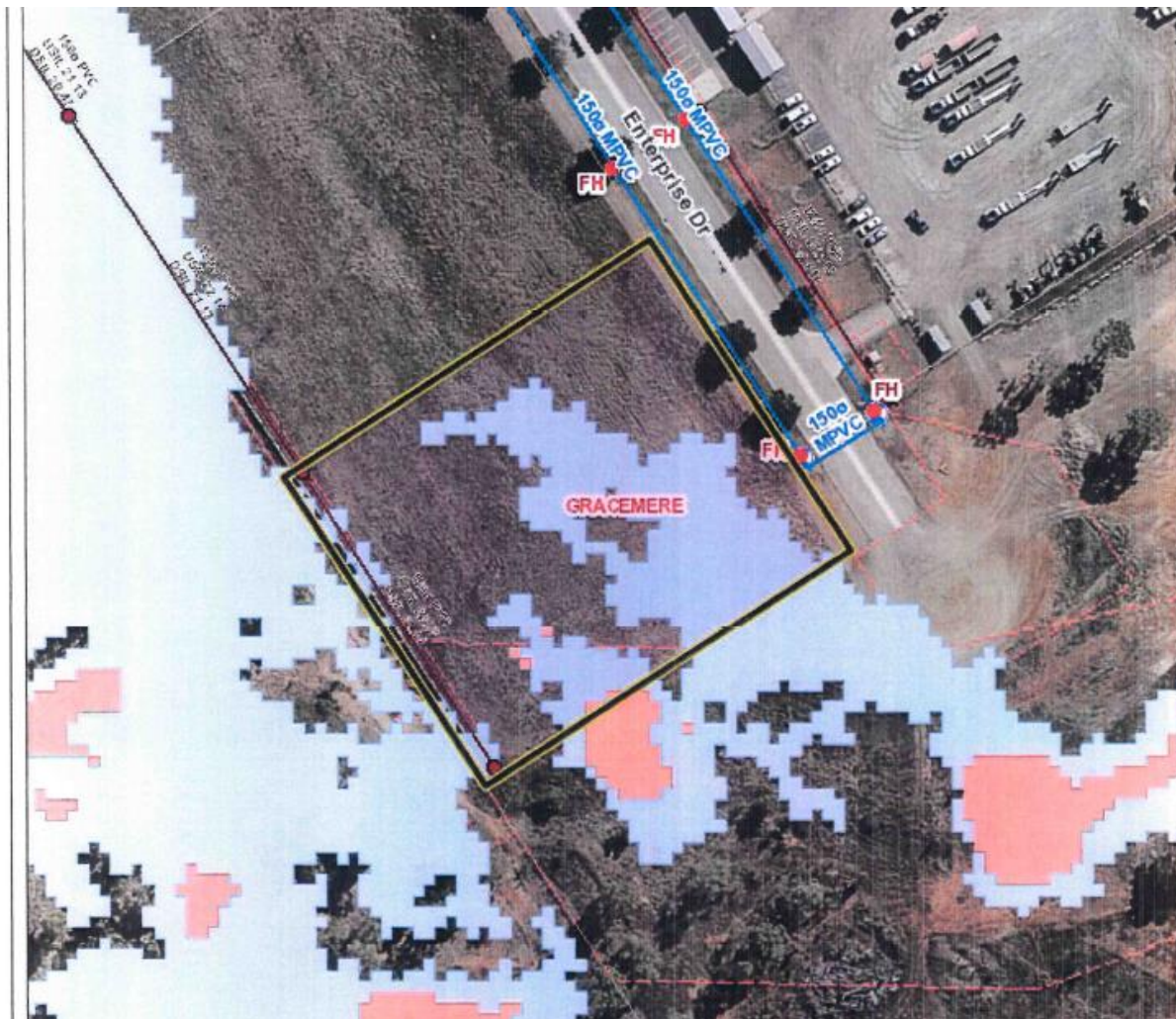


Figure 5 Flood Hazard Impacts Extract from Gracemere Catchments Flood Study



3. SITE HYDROLOGY

3.1. BACKGROUND

This section of the SBSWMP defines the method and parameters applied in the hydrological assessment of the location to simulate the expected flow pattern and maximum discharge at the LPoD.

For evaluating the peak flow rates before and after development, a Rational Method computation is presented as a reference.

The Rational Method, as discussed in *Section 4.3 of the Queensland Urban Drainage Manual 2017 (QUDM)*, is a reliable method for approximation, owing to its adaptability to the available data and its ability to generate suitable approximations of the maximum site discharge based on the data inputs mentioned below:

- specific intensity frequency duration (IFD) data.
- length/type of flow path.
- contributing catchment areas; and
- coefficient of discharge.

Intensity Frequency Duration (IFD) data for the hydrologic modelling was obtained from the Bureau of Meteorology website. The IFD data is summarised in **Table 1**.

Table 1: Intensity Frequency Duration Data

Duration (min)	1 Year ARI	2 Year ARI	5 Year ARI	10 Year ARI	20 Year ARI	50 Year ARI	100 Year ARI
5	114.00	140.00	170.00	194.00	222.00	259.00	288.00
10	94.70	117.00	141.00	161.00	184.00	216.00	241.00
15	80.90	99.60	120.00	138.00	158.00	185.00	206.00
20	70.80	87.10	105.00	121.00	138.00	162.00	181.00
25	63.00	77.50	93.70	107.00	123.00	144.00	161.00
30	56.80	69.90	84.60	97.00	111.00	130.00	146.00
45	44.20	54.50	66.20	76.00	87.20	102.00	115.00
60	36.50	45.00	54.90	63.10	72.50	85.40	95.50
90	27.40	33.90	41.60	48.00	55.30	65.40	73.40
120	22.20	27.50	34.00	39.40	45.50	54.00	60.80
180	16.40	20.50	25.60	29.80	34.60	41.40	46.80



3.2. PRE-DEVELOPMENT SCENARIO

3.2.1. CATCHMENT DEFINITION

The pre-development catchment has been analysed as a catchment with a contributing area of 0.864 hectares.

Any stormwater runoff from surfaces is conveyed as sheet flow to the north-west site boundary at the LPoD.

The catchment boundary and LPoD for the pre-development plan will be shown in **Appendix B** Conceptual Stormwater Management Drawings.

3.2.2. RATIONAL METHOD

The pre-development coefficient of runoff (C year) was determined on the fraction impervious method specified in *QUDM*. Based on the detailed survey information provided, the pre-development catchment has an impervious area of 0.00 ha, which equates to a fraction impervious of approximately 0%.

Using the Rational Method, the corresponding ten-year rainfall intensity (I_{10}) was calculated to be 63.10mm/hr and a C_{10} values of 0.7 has been adopted for catchment A.

After reviewing *Section 4.6.6 of QUDM – Overland Flow*, Friend's Equation has been applied to determine time of concentration (ToC) for the predevelopment catchment as **Table 2**.

Table 2: Pre-Development Time of Concentration

Catchment	Overland Flow	Channel/Creek Flow	Total ToC
A	Horton's (n) = 0.045 L = 100m Slope = 3% t = 17.91 minute	1minute	19minutes

The pre-development peak flow rates have been calculated for the selected storms, by utilizing the Bureau of Meteorology IFD Data's design rainfall intensities.

To determine the design peak flow rates for the site, the Rational Method ($Q = 2.78 \times 10^{-3}$ CIA) has been applied.

The coefficient of runoff, time of concentration and peak flow rate are presented in **Table 3** for the standard Annual Exceedance Probability (AEP) design storms of 39%, 10%, 5% and 1% (corresponding to the 2, 10, 20 and 100 year Average Recurrence Interval (ARI) storms).



Table 3: Pre-Development Peak Flow Estimation – Rational Method

PRE – DEVELOPMENT SCENARIO					
Annual Exceedance Probability	AEP	39%	10%	5%	1%
Coefficient of Runoff	C	0.60	0.70	0.74	0.84
Area of Catchment (ha)	A	0.864	0.864	0.864	0.864
Average Rainfall Intensity (mm/h)	I	89.3	124.0	142.0	185.0
Peak Flow Rate (m3/s)	Q	0.128	0.208	0.250	0.373

3.3. POST-DEVELOPMENT SCENARIO

3.3.1. CATCHMENT DEFINITION

The post-development catchment is the same as pre-development catchment, having a contributing area of 0.864 hectares.

Any stormwater runoff from roof areas, road and ground surfaces are conveyed as sheet flow to the north-west site boundary at the LPoD.

The catchment boundary and LPoDs for the post-development plan will be shown in **Appendix B** Conceptual Stormwater Management Drawings.

3.3.2. RATIONAL METHOD

The post-development coefficient of runoff (C year) was determined based on the fraction impervious method specified in QUDM.

Based on the provided layout, the post-development catchment A has an impervious areas of 0.691 hectares, which equate to a fraction impervious of 80%.

Using the Rational Method, the corresponding ten-year rainfall intensity (I_{10}) was calculated to be 63.10mm/hr and a C_{10} values of 0.75 has been adopted for catchment A.

The Time of Concentration for the post developed catchments has been calculated in accordance with QUDM Table 4.6.3 – Recommended roof drainage system travel times.

In accordance with Table 4.6.3 of QUDM, the post-development catchment will have a time of concentration that will incorporate 1 minute of the roof to downpipe time. This equates to a total travel time of ten (10) minutes.

The peak flow rates for the post development scenario have been calculated for the selected storms by utilizing the Bureau of Meteorology IFD Data's design rainfall intensities. Similar to pre-development peak flow calculations, the Rational Method ($Q = 2.78 \times 10^{-3} CIA$) has been applied for the post-development scenario.

The coefficient of runoff, time of concentration and peak flow rate are presented in **Table 4** for the standard Annual Exceedance Probability (AEP) design storms of 39%, 10%, 5% and 1% (corresponding to the 2, 10, 20 and 100 year Average Recurrence Interval (ARI) storms).



Table 4: Post Development Peak Flow Estimation – Rational Method

A					
Annual Exceedance Probability	AEP	39%	10%	5%	1%
Coefficient of Runoff	C	0.71	0.84	0.88	1.00
Area of Catchment (ha)	A	0.864	0.864	0.864	0.864
Average Rainfall Intensity (mm/h)	I	117.0	161.0	184.0	241.0
Peak Flow Rate (m3/s)	Q	0.200	0.325	0.389	0.578

3.4. CHANGE IN FLOW RATES

Rational Method assessment aims to evaluate the change in flow rate calculated from the pre and post development catchment. From **Table 3** and **Table 4** above, the peak flow rate for AEP design storms of 39%, 10%, 5% and 1% are compared in **Table 5**.

Table 5: Change in Peak Flow Rate

LPOD A					
Annual Exceedance Probability	AEP	39%	10%	5%	1%
Pre-Developed Peak Flow Rate (m3/s)	Q	0.128	0.208	0.250	0.373
Post-Developed Peak Flow Rate (m3/s)	Q	0.200	0.325	0.389	0.578
Change in Peak Flow Rates (m3/s)	Q	0.073	0.116	0.139	0.205

From **Table 5** it is shown that the proposed development, via the Rational Method assessment, demonstrates an increase in peak flow rates discharging from the site, therefore on-site detention is deemed required to mitigate flows to pre development conditions.

3.5. EXTERNAL CATCHMENT

An assessment was conducted on the subject site and its vicinity to identify any external catchments that could potentially impact the site. External catchment has been determined through external contours and infrastructure.

Based on the contours sourced from ELVIS data, there are no contributing external catchments having potential to discharge stormwater flows to the subject site.



4. STORMWATER QUANTITY MANAGEMENT PLAN

4.1. WATER QUANTITY OBJECTIVES

The following objective has been set for post development stormwater discharge from the site:

- No net increase in peak flows from the subject site, for all durations up to the 1% AEP design storm event, during the post-developed condition.

This objective shall be demonstrated via hydrologic and hydraulic models by on-site detention measures. XP-SWMM has been used to mitigate any increase in total site discharge rates.

4.2. XP-SWMM ANALYSIS

A XP-SWMM model has been adopted at the preliminary planning stage to ensure that the storage volume is estimated with a higher degree of confidence. Laurenson's Hydrology has been used as the routing method within XP-SWMM. Sub-catchment routing in this method is carried out using the Muskingum procedure, which is a storage routing method based on the storage equation.

A range of storm events up to 1% AEP design storm events were analysed for all standard durations ranging from 10 minutes to 360 minutes. The combined peak discharge rates for the site calculated by the XP-SWMM model are shown below for both scenarios.

Table 6: Anticipated Peak Site Discharge Rate – Extracted from XP-SWMM Model (m3/s)

LPDA						
Annual Exceedance Probability	0.5EY	0.2EY	10%	5%	2%	1%
Pre-Development	0.128	0.17	0.21	0.249	0.308	0.356
Post Development (Unmitigated)	0.253	0.309	0.375	0.432	0.497	0.558

The proposed development has demonstrated via an XP-SWMM assessment that an increase in peak flow rates discharging from Catchments A is anticipated, therefore On-Site Detention (OSD) is deemed required to mitigate flows to pre-development conditions. A comparison of the pre-development and mitigated flow rates is shown in **Table 7**.

Table 7: Comparison of Pre-Development and Post Development Mitigated flow rates – Extracted from XP-SWMM Model (m3/s)

LPDA						
Annual Exceedance Probability	0.5EY	0.2EY	10%	5%	2%	1%
Pre-Development	0.132	0.177	0.21	0.25	0.308	0.356
Post Development (Mitigated)	0.121	0.167	0.200	0.244	0.296	0.351

The hydrograph for the critical duration of the Mitigated 1% AEP storm event compared against pre and post development is shown in **Figure 6**.

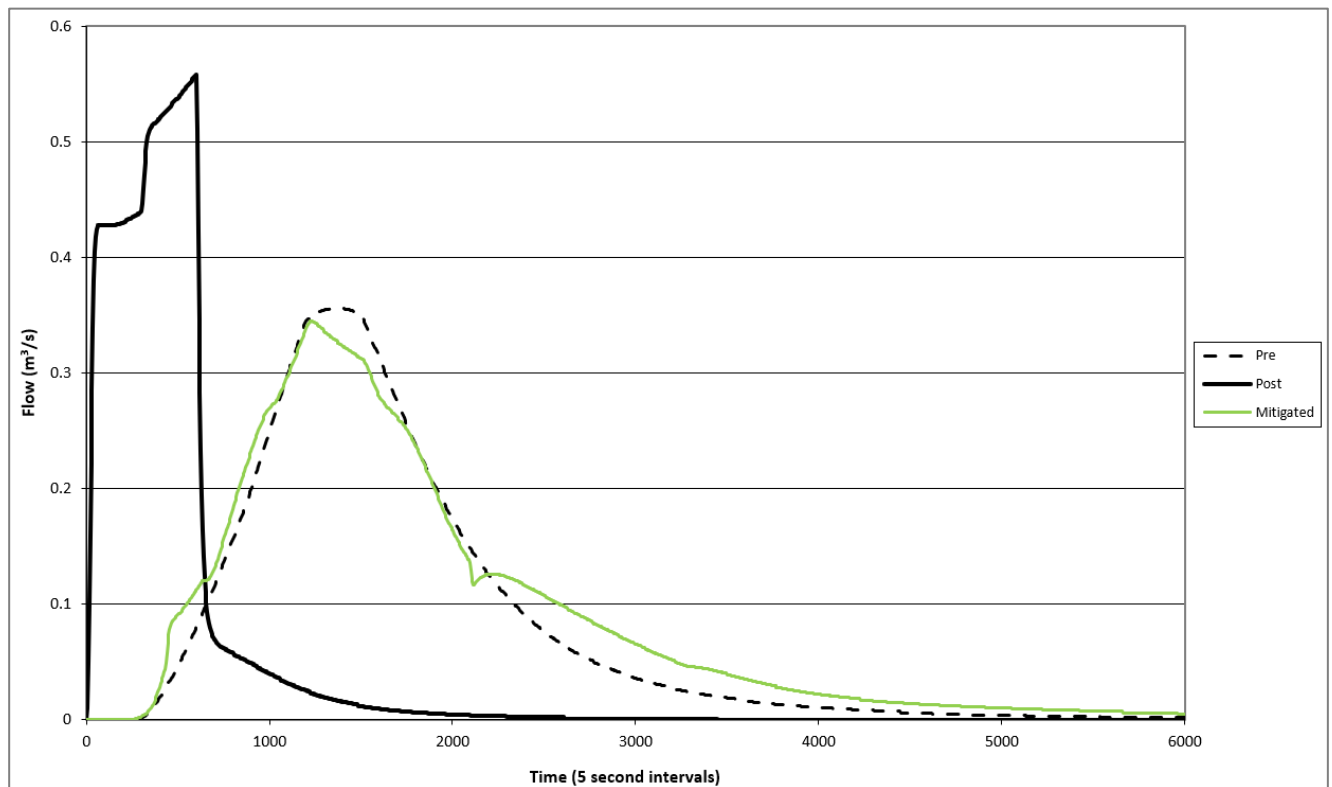


Figure 6 Pre, Post and Mitigated Flow Rates for the 1% AEP Design Storm Event at LPD A

4.3. ON SITE DETENTION (OSD) DETAILS

The following detention storage parameters were adopted to achieve the target pre-development flow rates, via mitigation of the post development flow rates. The proposed OSD systems (Bio/detention basin) is to be implemented to ensure a non-worsening of peak discharges at the LPOD.

Table 8 Adopted Outlet Configuration

I.D	Minor Event	Major Event
A	ORIFICE: 0.2x0.25m at base @ 0.138m³/s	- RISER: 0.6x0.6m, Crest at 0.7m above base; - OUTLET: 0.45m dia Outlet Pipe with 0.38m dia Orifice Plate at 0.618m below base @ 0.351 m³/s 1m Wide Emergency Weir @ 0.95m above Base

Table 9 Outlet Configuration Results

EVENT (ARI)	EVENT (AEP %)	CATCH ID	PRE-DEV FLOWS ICM One (m3/s)	POST-DEV FLOWS (m3/s)	TOTAL POST-DEV MITIGATED FLOWS (m3/s)	FLOW DIFFERENCE (m3/s)
100	1	A	0.356	0.558	0.351	-0.005
2	39	A	0.128	0.253	0.121	-0.007

The Outlet details and LPOD for the outflow control will be shown in Appendix B.



5. STORMWATER QUALITY MANAGEMENT PLAN

5.1. SITE SPECIFIC OBJECTIVES

The site development may increase the pollutant loads within stormwater runoff and downstream watercourses. During the construction and operational phase, the site disturbance the site and soil exposure result in erosion and sediment transportation, causing erosive influence of the environment. As the development is industrial in character, the water quality parameters of relevance to the site are suspended solids, nutrients (nitrogen and phosphorus), litter and faecal coliforms.

Of these parameters, the detailed modelling of litter and faecal coliforms is not possible at present, using the Industry standard analysis package (MUSIC – refer below) due to the lack of information regarding export rates.

The modelling of defined water quality objectives has therefore necessarily focused on suspended solids and nutrients (nitrogen and phosphorus).

In the absence of Rockhamton Regional Council water quality objectives, load reduction targets stated in the “State Planning Policy” for Central Coast (South) were adopted and are stated below:

- 85% Reduction of Total Suspended Solids
- 60% Reduction in Total Phosphorus
- 45% Reduction in Total Nitrogen
- 90% Reduction in Gross Pollutants

These targets are measured against the pollutant load generated for the untreated developed scenario. Load reduction targets will be modelled as they more closely represent effects on the site.

5.2. MUSIC WATER QUALITY ANALYSIS METHODOLOGY

In order to determine the effectiveness of different water quality treatment measures and meet the water quality objectives, a stormwater quality analysis was performed using the Model for Urban Stormwater Improvement Conceptualization (MUSIC) Version 6.3.

The models consist of three types of nodes:

- Source nodes representing different land uses and defining size of sub catchments
- Treatment Node representing different types of water quality treatment measures
- Receiving nodes represent the outlet point for the catchment under consideration. Each model only has one receiving node

The model requires the user to specify meteorological data (rainfall and evaporation), soil properties and pollutant loads for each catchment. Suitable parameters for the MUSIC model were adopted in accordance with the recommendations of MUSIC Modelling Guidelines Version 3.0.2018.



The hydrologic routing option for the modelling was the “No Routing” option. This option generates more conservative results from the treatment measures as the runoff is modelled reaching the treatment measure all at the same time rather than allowing for travel and detention stages as the runoff progresses through the catchment.

A MUSIC model was created to determine the post development scenario with Water Sensitive Urban Design (WSUD) treatments.

Table 10 Post Development Sub-Catchments Parameters

CATCHMENT	AREA (ha)	% IMPERVIOUS
Roof	0.196	100%
Road/ Concrete Slab	0.482	100%
Ground Level	0.186	0%

Refer to the **Figure 7** for identification of sub catchment zones / areas for post development condition. The MUSIC model is based on a split catchment approach and will incorporate various treatment nodes.

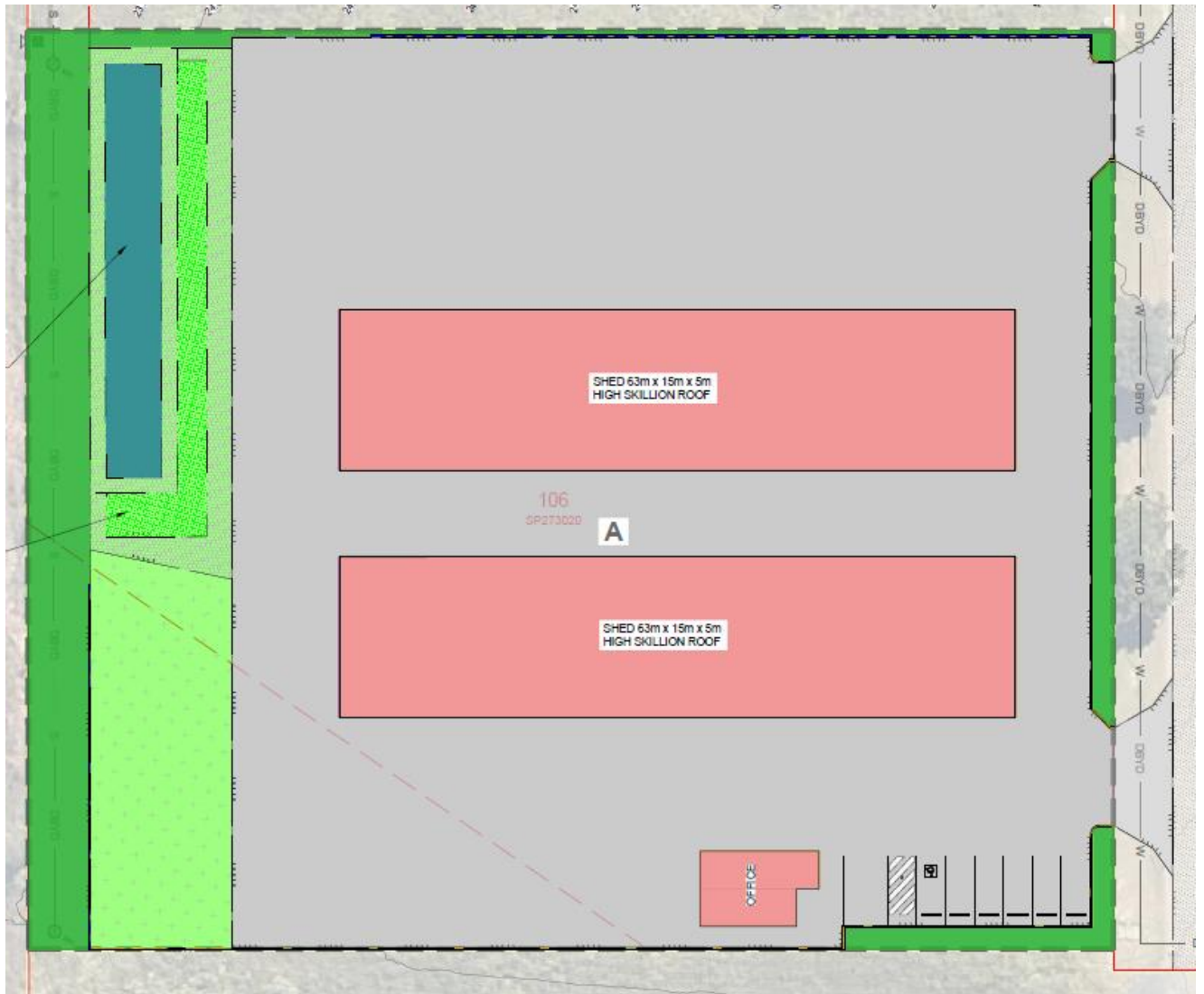


Figure 7 Proposed Site WSUB Sub-Catchments



The adopted MUSIC Runoff Generation Parameters used for the modelling are detailed in *Table 11*.

Table 11 Catchment Runoff Generation Parameters

PARAMETER	INDUSTRIAL
Field Capacity (mm)	80
Infiltration Capacity Coefficient A	243
Infiltration Capacity Exponent B	0.6
Rainfall Threshold (mm)	1
Soil Capacity (mm)	18
Initial Storage (%)	10
Daily Recharge Rate (%)	0
Daily Baseflow Rate (%)	31
Initial Depth (mm)	50
Daily Deep Seepage (%)	0

Table 12 Pollutant Export Relationships – Split Land Uses

LAND USE FOR MUSIC SOURCE NODE	PARAMETER	TOTAL SUSPENDED SOLIDS (LOG 10mg/L)		TOTAL PHOSPHORUS (LOG 10mg/L)		TOTAL NITROGEN (LOG 10mg/L)	
		BASE FLOW	STORM FLOW	BASE FLOW	STORM FLOW	BASE FLOW	STORM FLOW
Industrial - Roof	Mean	-	1.30	-	-0.89	-	0.25
	Std Deviation	-	0.44	-	0.36	-	0.32
Industrial – Roads/Parking	Mean	0.78	2.43	-1.11	-0.30	0.14	0.25
	Std Deviation	0.45	0.44	0.48	0.36	0.20	0.32
Industrial – Landscape	Mean	0.78	1.92	-1.11	-0.59	0.14	0.25
	Std Deviation	0.45	0.44	0.48	0.36	0.20	0.32



5.3. TREATMENT TRAIN

The Model for Urban Stormwater Improvement Conceptualisation (MUSIC) software was used to propose a treatment train for the developed site, which was necessary to meet the Water Quality Objectives (WQOs) at the site's LPoD.

Rainfall data has been sourced from Rainfall Station 33119 Mackay using a date range from 1990 to 1999 and a 6 Minute Time Step.

The proposed bioretention basin will be designed in accordance with the Water by Design Technical Design Guidelines during the detailed design phase of the development (Water by Design, 2014).

The bioretention basin is designed to pond stormwater allowing it to percolate through a layer of filter media, typically sandy loam. Runoff passing through the filter media is collected with a perforated pipe discharging to the downstream drainage infrastructure. The Bioretention basin shall be located to treat all stormwater from the development area. The inlet of the bio-retention basins is to be equipped with a sediment forebay to allow a control point at the entrance to the bio for maintenance and removal of sediment accumulation. It will also dissipate flows reducing pipe exit velocity and limit the occurrence of potential scour of the sensitive downstream constructed bio-retention media surface. This will ensure that the filter and surface area relationship detailed below is achieved

5.4. MUSIC MODELLING RESULTS

Results of MUSIC modelling which has been modelled for this site will be shown in **Table 13**, and these results will also be compared with reduction target for TSS, TP, TN and gross pollutants shown in Section 4.1. The results should be lower than the target parameters.

Table 13: Treatment Train Effectiveness at Receiving Node

Catchment	Parameter	Post	Post Mitigated	Reduction Achieved (%)	Water Quality Objective (%)
A	Flow (ML/yr)	5.26	5.01	4.8	-
	TSS (kg/yr)	1,620	211	87	85
	TP (kg/yr)	2.77	0.543	80.4	60
	TN (kg/yr)	12.3	5.87	52.1	45
	GP (kg/yr)	118	0	100	90

Arrangement of MUSIC model and treatment train effectiveness results are represented in **Figure 8**.

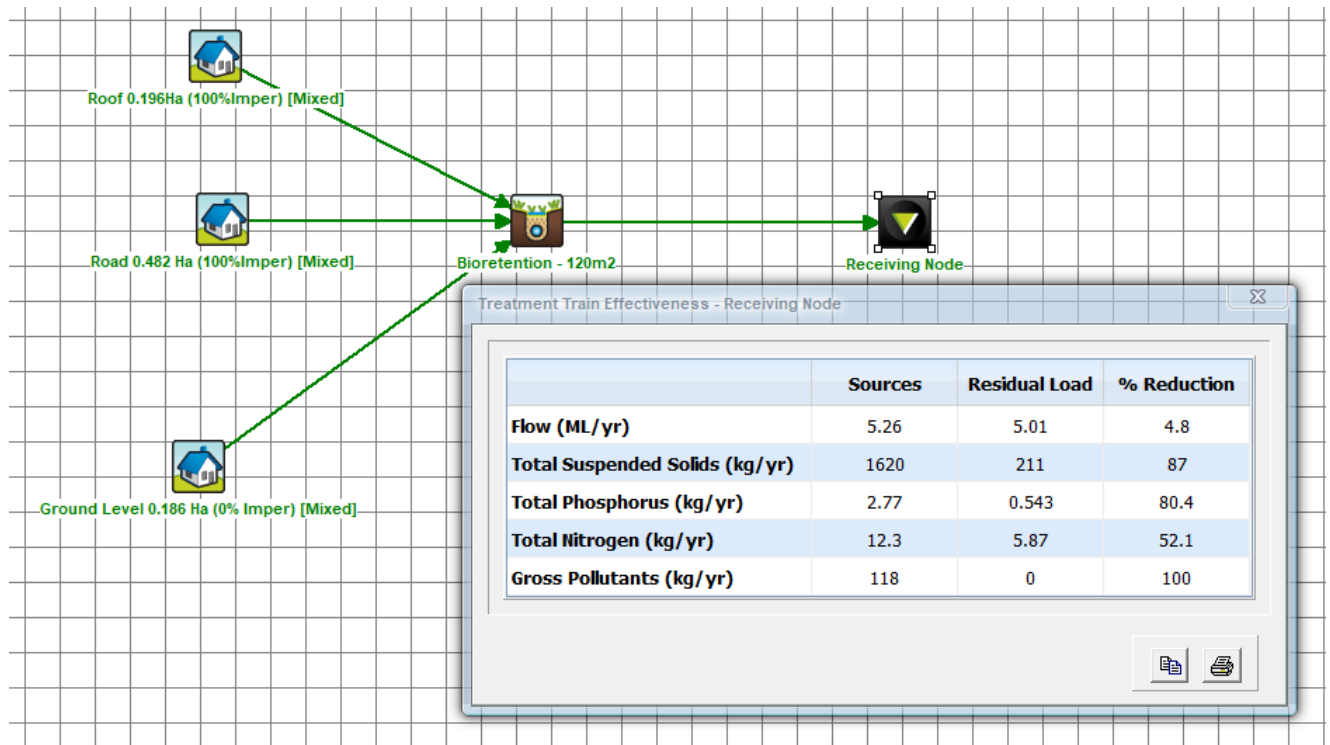


Figure 8: Treatment Train Layout and MUSIC Results – Catchment A

Properties of Bioretention - 120m2

Location: Bioretention - 120m2

Inlet Properties

Low Flow By-pass (cubic metres per sec): 0.000

High Flow By-pass (cubic metres per sec): 100.000

Storage Properties

Extended Detention Depth (metres): 0.30

Surface Area (square metres): 120.00

Filter and Media Properties

Filter Area (square metres): 120.00

Unlined Filter Media Perimeter (metres): 0.01

Saturated Hydraulic Conductivity (mm/hour): 200.00

Filter Depth (metres): 0.40

TN Content of Filter Media (mg/kg): 400

Orthophosphate Content of Filter Media (mg/kg): 30.0

Infiltration Properties

Exfiltration Rate (mm/hr): 0.00

Lining Properties

Is Base Lined? ☒ Yes ☐ No

Vegetation Properties

☒ Vegetated with Effective Nutrient Removal Plants

☐ Vegetated with Ineffective Nutrient Removal Plants

☐ Unvegetated

Outlet Properties

Overflow Weir Width (metres): 10.00

Underdrain Present? ☒ Yes ☐ No

Submerged Zone With Carbon Present? ☐ Yes ☒ No

Depth (metres): 0.45

Buttons: Fluxes..., Notes..., More, Cancel, Back, Finish

Figure 9: Bioretention Basin



6. OPERATIONAL PHASE MAINTENANCE REQUIREMENTS

The proposed stormwater management devices will require maintenance and monitoring to ensure that they function as designed. The following section provides an outline of the necessary maintenance tasks for the proposed devices.

6.1. CONSTRUCTION PHASE

Construction of the development and the following building works on site has the potential to mobilise large quantities of sediment in runoff. For Bio-Retention Basins to perform as designed there is a need to protect filter media and basin vegetation during this phase of the development. Therefore, a Staged Construction and Establishment Method for construction of the Bio-Retention Basin will be followed. The stages for construction and establishment will be as follows:

1. Functional Installation – Initially Bio-Retention Basin can be used as Sediment Basin. Once the majority of site construction works have been completed earthworks and shaping to create the layout and functional elements of the basin will be undertaken. This includes the installation of inlets, outlet structures, subsoil drainage, transition layers and filter media. The filter media is to be covered with a protective geofabric which is top-soiled and turfed or grass seeded. Silt fences are to be erected around the outside of the basin to exclude silt and restrict access to the basin.
2. Building Construction – Protective erosion and sediment control measures are to remain in place as the basin is to function as temporary Sediment Basin for the duration of the Building Construction Phase. Access to the basin is to be restricted throughout building construction phase.
3. Operational Establishment - Following completion of the Building Construction Phase turf, topsoil and protective geofabric is removed and the basin re-planted with vegetation and landscaping as proposed. For vegetation to establish properly regular watering and removal of weeds is required following planting.

6.2. OPERATION PHASE

Following construction activities regular inspections of the Bio-Retention Basin are required in order to ensure vegetation establishes and the properties of the filter media remain effective. Procedures to be adopted for the carrying out inspections and maintenance of the basin are presented in Table 14 on the following page.

6.3. WATER QUALITY MANAGEMENT SUMMARY

The proposed Water Quality strategy for the subject development confirms that stormwater discharged from site can be managed in accordance with the current best industry practices and in accordance with State Planning Policy to achieve the required annual load reduction percentages.

Table 14: Bio-Retention Basin Inspection & Maintenance Requirements

Treatment Device / Property	Inspection	Inspection Frequency	Maintenance
Bio-Retention Basin			
Litter & Weeds	Visually check for litter, weeds and debris within the Bio-Retention Basin.	Quarterly for first year then annually after establishment. Also after flood events.*	Remove litter, weeds and debris from basin and dispose of at approved waste disposal facility.
Inlet and Outlet	Visually check for blockages within the inlet and outlet pits and blocked weep holes within inlet pits.	Quarterly for first year then annually after establishment. Also after flood events.*	Remove any blockages or debris within inlet pits or blockages to weep holes.
Sedimentation	Visually check surface of Bio-Retention Basin for accumulation of sediment.	Quarterly for first year then annually after establishment. Also after flood events.*	Remove accumulated sediment where it is smothering vegetation.
Scour, Erosion and Vehicle Damage	Visually check Bio-Retention Basin surface for scouring and areas of erosion or vehicle damage.	Quarterly for first year then annually after establishment. Also after flood events.*	Repair damage to Bio-Retention Basin surface and filter media if exposed. Undertake replanting if necessary and maintain frequent watering of area until vegetation has established.
Vegetation	Visually check for any planted vegetation that has died.	Quarterly for first year then annually after establishment. Also after flood events.*	Remove dead vegetation and replace with stock of equivalent size and species as detailed in plant schedule. Maintain frequent watering until new vegetation has established.
	Photograph Bio-Retention Basin from same location for yearly review.	Annually during summer months.	N/A
	Map propagation of Bio-Retention Basin vegetation for yearly review.	Annually during summer months.	N/A
Filter Media	Check surface of Bio-Retention Basin for any isolated “boggy” areas.	Annually.	Increase infiltration rate by tilling the surface of the filter media.
	Visually check and determine time of ponding within basin after a storm event.	Annually during wetter periods.	If duration of ponding exceeds 48 hours trail tilling of the surface of the filter media. If no improvement occurs then dispose and replace the top 100 to 150mm layer of filter media.
Subsoil Drainage	Check subsoil drainage for blockages.	Every 5 years during dry periods.	If blockage discovered remove by flushing subsoil drainage pipe. Collecting and dispose flushed material appropriately.

**Source: Water by design Maintaining Vegetated Stormwater Assets, February 2012. * Note that inspections are to take place monthly and following flood events for first six (6) months of operation



7. CONCLUSION

It is our opinion that if the abovementioned recommendations are implemented, the proposed development will comply with the intent of Rockhamton Regional Council, Queensland Urban Drainage Guideline & AR&R requirements for stormwater quantity & quality management.

This SBSMP has been prepared for AusProof Pty Ltd to assist with the development of 50 Enterprise Dr, Gracemere, QLD.

A hydrological analysis demonstrated that the anticipated post-development peak flow rates discharging from the site are higher than the pre-development flow rates. A hydraulic model was built using the XP-SWMM software program, to estimate the required detention volume and arrangement.

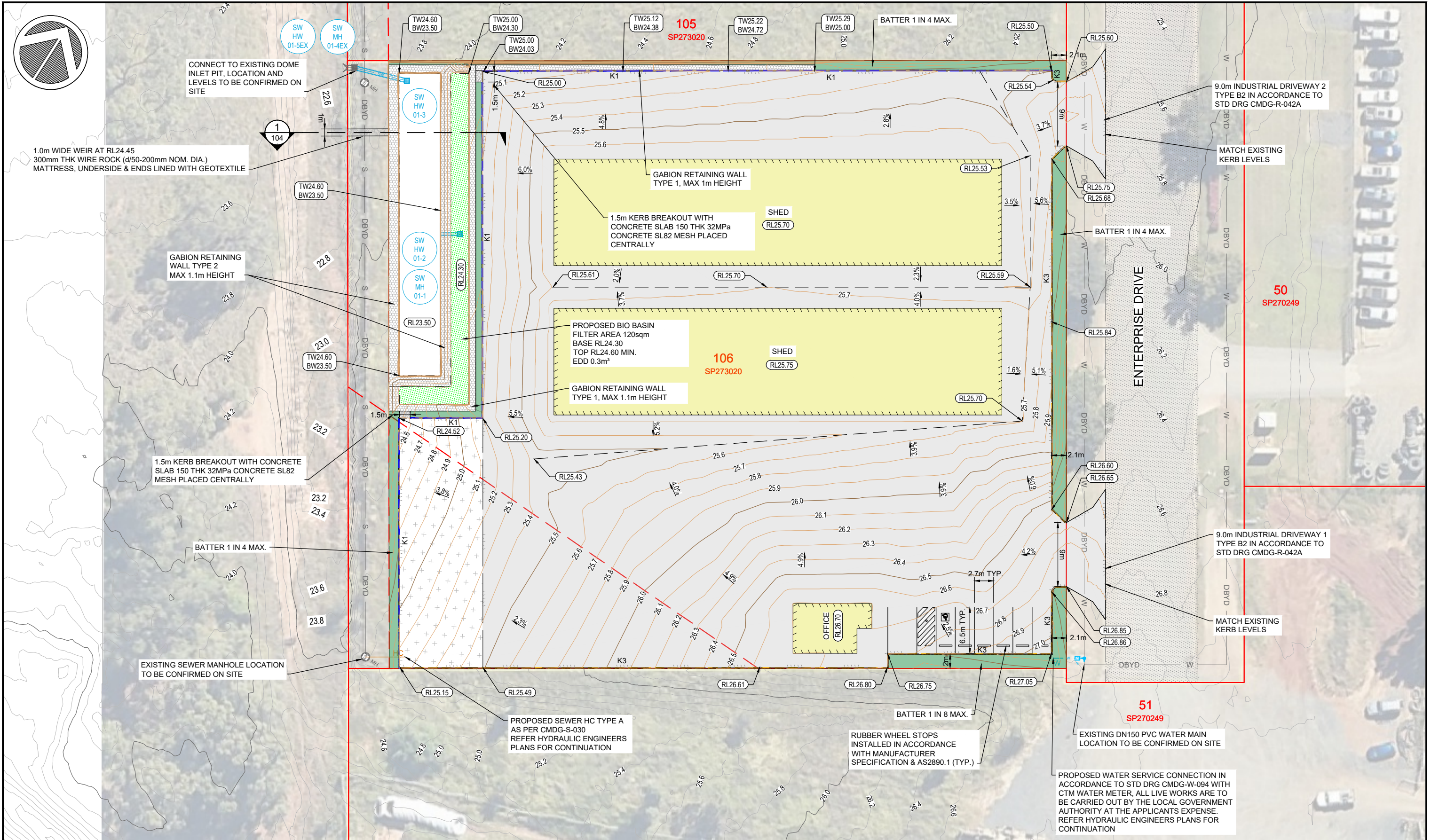
This report and stormwater management methodology have concluded that the following mitigation measures would be required:

1. One proposed detention basin with 180 m³ for quantity mitigation and detention.
2. A bioretention basin with 120 m² filter area for quality management measures.

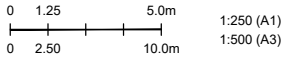
After reviewing the modelling results and subject to the detailed design and construction of the proposed stormwater management infrastructure, MSE are of the opinion that no actionable damage and/or nuisance would be generated to the subject property or external/neighboring property's and downstream infrastructure as a direct result of this development being approved.



APPENDIX A – PROPOSED LAYOUT



PROPOSED SITE
GENERAL ARRANGEMENT
SCALE 1:500



ALL UNDERGROUND SERVICES
SHOULD BE LOCATED ON SITE
BEFORE ANY WORK IS COMMENCED



AMENDMENTS			
NO.	DATE	BY	REASON
A	29/11/24	LM	ISSUED FOR MCU APPROVAL
B	24/02/25	LM	ISSUED FOR RFI RESPONSE
C	04/06/25	LM	ISSUED FOR APPROVAL

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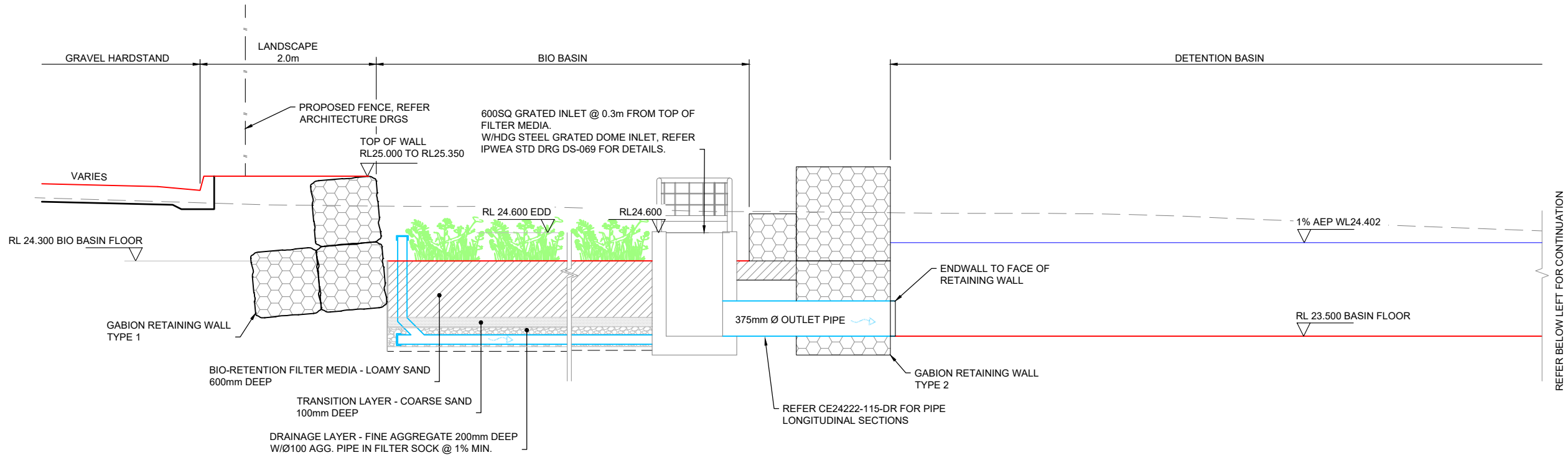
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APPENDIX B – ENGINEERING DRAWINGS



BIO-RETENTION SOIL MEDIA:

FILTER MEDIA SHOULD BE A LOAMY SAND WITH AN APPROPRIATELY HIGH PERMEABILITY UNDER COMPACTION AND SHOULD BE FREE OF RUBBISH, DELETERIOUS MATERIAL, TOXICANTS, DECLARED PLANTS AND LOCAL WEEDS AND SHOULD NOT BE HYDROPHOBIC. THE FILTER MEDIA SHOULD CONTAIN SOME ORGANIC MATTER FOR INCREASED WATER HOLDING CAPACITY BUT BE LOW IN NUTRIENT CONTENT.

HYDRAULIC CONDUCTIVITY = 100-300mm/hr, AS MEASURED USING THE ASTM F1815-06 METHOD. NOTE THAT WHEN MODELLING IN MUSIC THE MODELLED HYDRAULIC CONDUCTIVITY SHOULD BE 50% OF THE SPECIFIED HYDRAULIC CONDUCTIVITY.

THE FILTER MEDIA SHOULD BE WELL-GRADED i.e. IT SHOULD HAVE ALL PARTICLE SIZE RANGES PRESENT FROM THE 0.075mm TO THE 4.75mm SIEVE (AS DEFINED BY AS1289.3.6.1-1995). THERE SHOULD BE NO GAP IN THE PARTICLE SIZE GRADING, AND THE COMPOSITION SHOULD NOT BE DOMINATED BY A SMALL PARTICLE SIZE RANGE. AN IDEAL PARTICLE SIZE DISTRIBUTION IS AS FOLLOWS:

- CLAY & SILT (<0.05mm) <3%
- VERY FINE SAND (0.05-0.15mm) 5-30%
- FINE SAND (0.15-0.25mm) 10-30%
- MEDIUM TO COARSE SAND (0.25-1.0mm) 40-60%
- COARSE SAND (1.0-2.0mm) 7-10%
- FINE GRAVEL <3% (2.0-3.4mm)

ORGANIC MATTER CONTENT - LESS THAN 5% (W/W)

pH - AS SPECIFIED FOR "NATURAL SOILS AND SOIL BLENDS" 5-7.5 (pH 1:5 IN WATER)

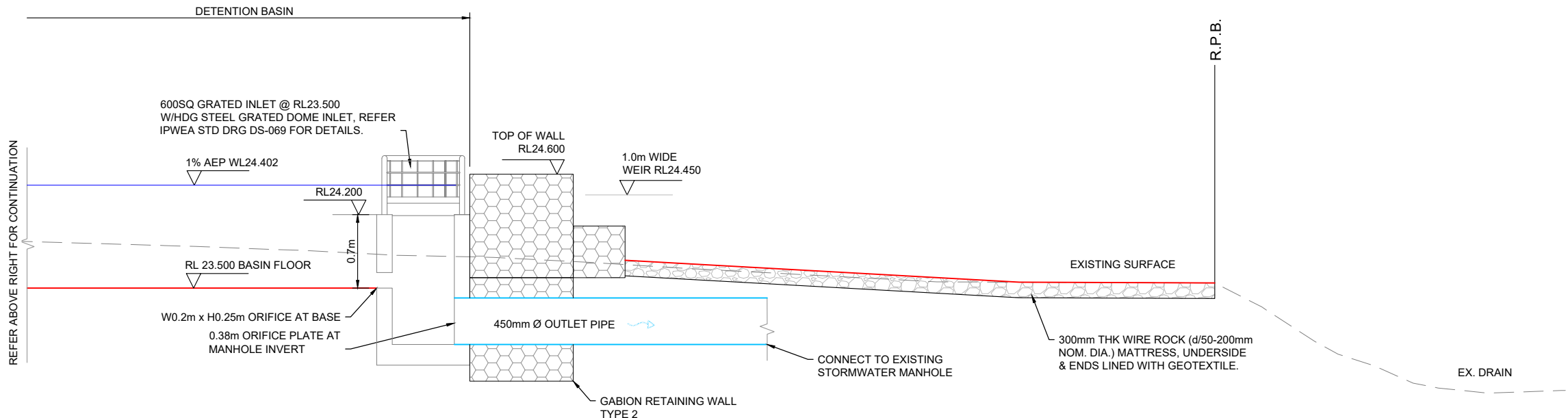
ELECTRICAL CONDUCTIVITY (EC) - AS SPECIFIED FOR "NATURAL SOILS AND SOIL BLENDS" <1.2dS/m

PHOSPHOROUS - <100mg/kg

TRANSITION LAYER SPECIFICATION:
TRANSITION LAYER SHOULD BE A CLEAN, WELL-GRADED SAND/COARSE SAND MATERIAL CONTAINING LITTLE OR NO FINES.

DRAINAGE LAYER SPECIFICATION:
DRAINAGE LAYER SHOULD BE A CLEAN, FINE GRAVEL, SUCH AS 2-5mm WASHED SCREENINGS

NOTE: THAT FILTER MEDIA, TRANSITION LAYER AND DRAINAGE LAYER ARE DESIGNED TO MINIMISE THE MIGRATION OF FINES THROUGH THE BIO-RETENTION SYSTEM, WITHOUT THE USE OF GEOTEXTILES.



SECTION 1
SCALE 1:50

STORMWATER QUALITY/QUANTITY BASIN TYPICAL SECTION

SCALE 1:50

BASIN PARAMETERS

CATCH ID	BASIN No.	BIO FILTER AREA (m ²)	REQ'D VOLUME (m ³)
A	A	120	180.000

AMENDMENTS	FIRST ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	LM	AW	11/24		
B	LM	AW	29/11/24		ISSUED FOR MCU APPROVAL
	LM	AW	04/06/25		ISSUED FOR APPROVAL

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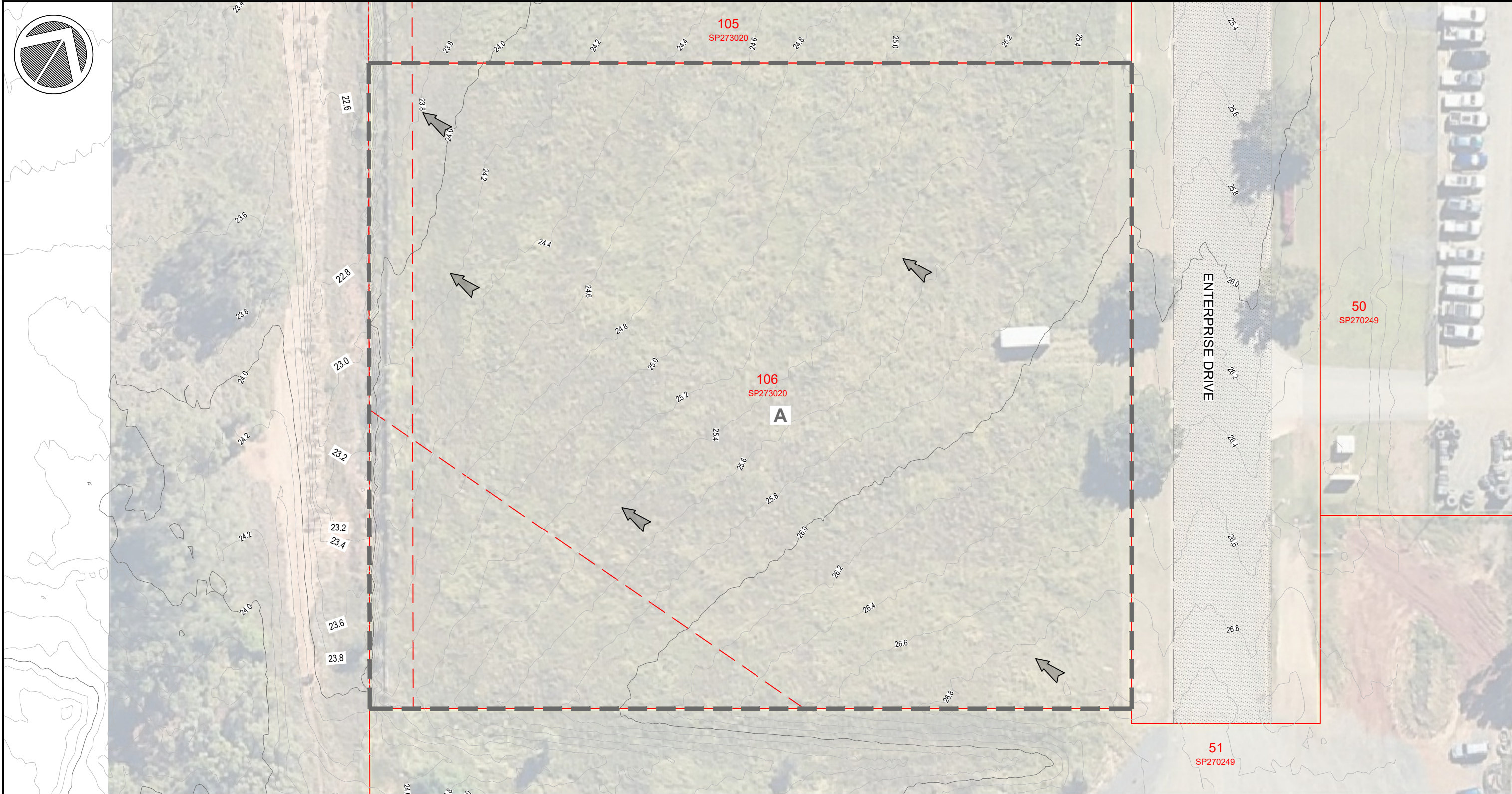
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DRAWING TITLE
GENERAL NOTES,
TYPICAL SECTIONS & DETAILS
SHEET 2 OF 4
DRAWING NUMBER
CE24222-104-TC
ISSUE
B

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0 0.250 1.0m
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1:50 (A3)

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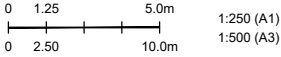




STORMWATER PRE DEVELOPMENT CATCHMENT AREAS
SCALE 1:500

CATCHMENT PARAMETERS

CONDITION	CATCH ID	AREA (ha)	FRACTION IMP
PRE-DEVELOPMENT	A	0.864	0%



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REV	DESCRIPTION	DATE	DRAWN	CHECKED	DATE	ISSUED FOR
A	LM	11/24	LM	LM	29/11/24	ISSUED FOR MCU APPROVAL
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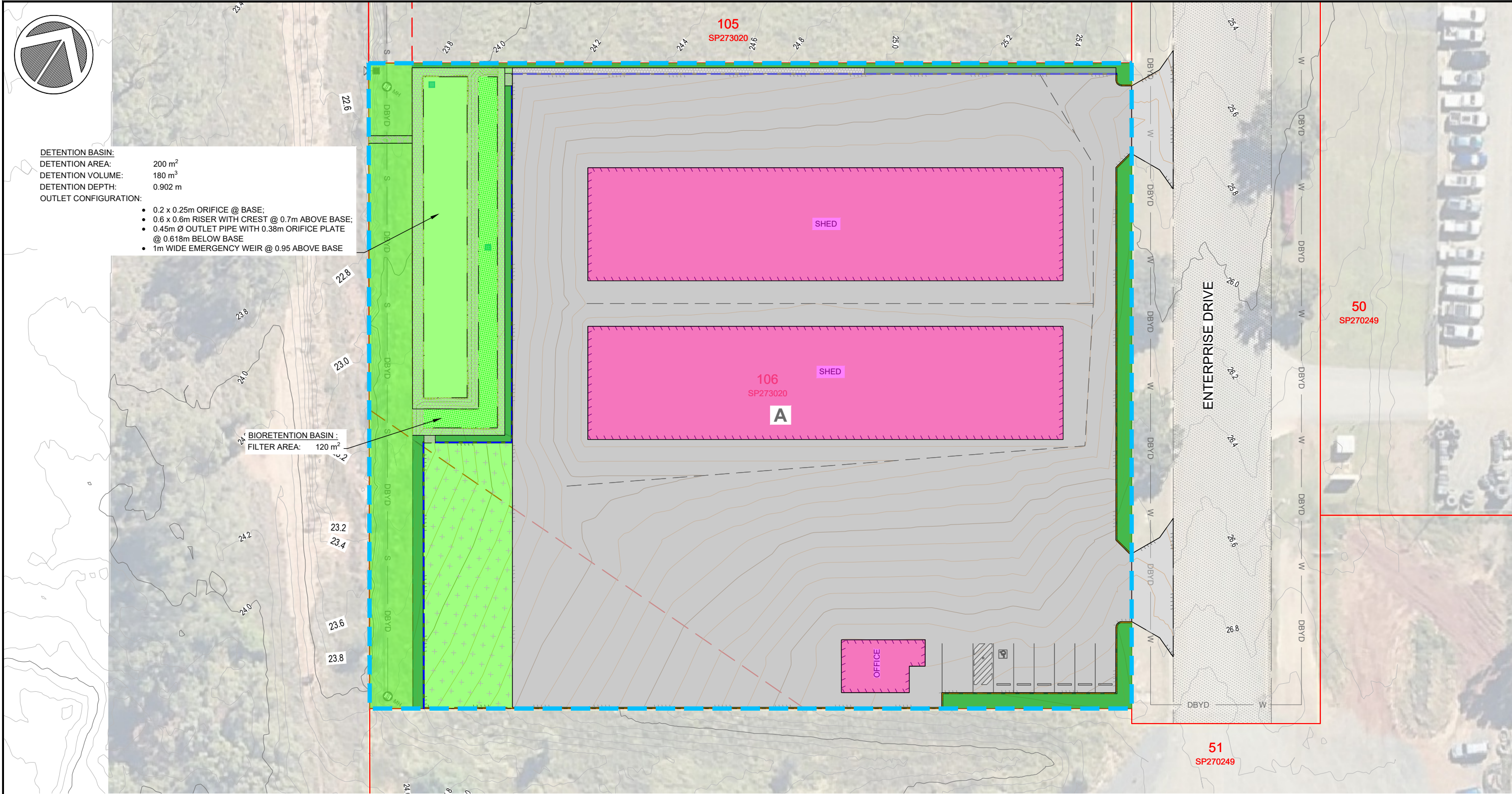
PROJECT No.
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DRAWING NUMBER CE24222-113-DR	ISSUE B



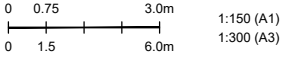
STORMWATER POST DEVELOPMENT CATCHMENT AREAS
SCALE 1:500

MUSIC CATCHMENT PARAMETERS

AREA	ID	A (ha)	FRACTION IMP
	ROOF	0.196	100%
	ROAD / CONCRETE SLAB	0.482	100%
	GROUND	0.186	0%
	TOTAL	0.864	

CATCHMENT PARAMETERS

CONDITION	CATCH ID	AREA (ha)	FRACTION IMP
POST-DEVELOPMENT	A	0.864	80%



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FIRST ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
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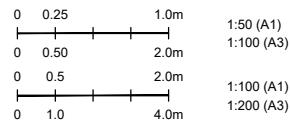
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GRACEMERE QLD 4702



DRAWING TITLE STORMWATER POST DEVELOPMENT CATCHMENT PLANS	DRAWING NUMBER CE24222-114-DR	ISSUE B
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STRUCTURE NAME	SW MH 01-1		SW HW 01-2		SW HW 01-3		SW MH 01-4EX		SW HW 01-5EX	
STRUCTURE DESCRIPTION	600SQ INLET - CE24222-104-TC		ENDWALL TO RETAINING WALL		600SQ INLET - CE24222-104-TC		EXISTING MANHOLE		EXISTING HEADWALL	
DATUM 20.000										
	PIPE DETAILS (CL to CL LENGTHS)		SW PIPE 01-1 Ø375-BMAX SN8 Length: 2.758		SW PIPE 01-2 Ø450-BMAX SN8 Length: 7.587		SW PIPE 01-3EX Ø600-EXISTING PIPE Length: 1.108			
	GRADE %		0.50%		0.50%		0.50%			
	HGL & FLOW RATE		23.78 0.254		23.30 0.305		23.22 23.05 23.04 0.305			
KNOWN CAPACITY		0.179			0.291			0.627		
COVER		0.341			0.084					
INVERT LEVEL		23.514	23.500		22.882			22.844 22.750 22.744		
DESIGN LEVEL AT MH CL		24.600	24.395		24.200			23.788 23.882		
EXISTING SURFACE		24.313	24.184		23.832			23.310 22.747		
COORDINATES		N7403299.909 E236709.482	N7403298.415 E236707.163		N7403313.994 E236691.557			N7403311.552 E236684.374 N7403310.950 E236683.443		
CHAINAGE	-5.000	0.000	2.758		24.809			32.396 33.505 35.261		

STORMWATER LINE 1
SCALE: H1:200 - V1:100



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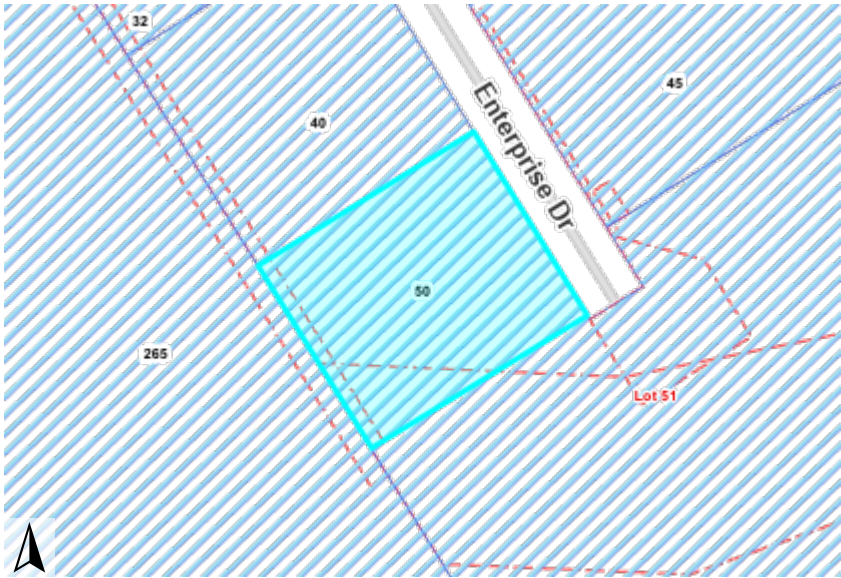
CLIENT	PROJECT
AUSPROOF PTY LTD	PROPOSED DEVELOPMENT 50 ENTERPRISE DR GRACEMERE QLD 4702

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DRAWING TITLE	DRAWING NUMBER	ISSUE
STORMWATER LONGITUDINAL SECTIONS	CE24222-115-DR	B



APPENDIX C – RRC FLOOD ADVICE



REPORT DATE 2 December 2024

PROPERTY DETAILS			
Address	50 Enterprise Drive Gracemere QLD 4702		
Parcel ID	SP273020/106	Assessment	309884
Land use	Vacant Land		
Riverine catchment			
Creek Catchment	Gracemere Catchments Hydrologic and Hydraulic Modelling Report 2014		
Mitigation Area	N/A		
Horizontal Datum	MGA Z56, GDA 2020		
Elevation / WSL	mAHD		
Velocity	m/sec		
No additional comments for this property.			

PROPERTY ELEVATION	
Ground elevation (min)	22.56
Ground Elevation (max)	27.01

LEVELS	RIVERINE			
	WATER SURFACE LEVEL		VELOCITY	
	MIN	MAX	MIN	MAX
PMF	N/A	N/A	N/A	N/A
0.05%	N/A	N/A	N/A	N/A
0.2%	N/A	N/A	N/A	N/A
0.5%	N/A	N/A	N/A	N/A
1%	N/A	N/A	N/A	N/A
2%	N/A	N/A	N/A	N/A
5%	N/A	N/A	N/A	N/A
10%	N/A	N/A	N/A	N/A
18%	N/A	N/A	N/A	N/A
39%	N/A	N/A	N/A	N/A

LEVELS	CREEK \ LOCAL CATCHMENT			
	WATER SURFACE LEVEL		VELOCITY	
	MIN	MAX	MIN	MAX
PMF	N/A	N/A	N/A	N/A
0.05%	N/A	N/A	N/A	N/A
0.2%	N/A	N/A	N/A	N/A
0.5%	N/A	N/A	N/A	N/A
1%	23.70	26.28	0.00	1.36
2%	23.78	26.22	0.07	1.76
5%	23.68	26.21	0.05	1.80
10%	24.18	26.07	0.05	1.73
18%	25.16	26.05	0.04	0.74
39%	N/A	N/A	N/A	N/A
63%	N/A	N/A	N/A	N/A



Outlook

RE: CE24222 50 Enterprise Drive, Gracemere**From** Duty Planner <DutyPlanner@rrc.qld.gov.au>**Date** Thu 28/11/2024 1:55 PM**To** Lloyd Moloney <lloyd.moloney@moloneyandsons.com.au>**Cc** CE24222 <CE24222@moloneyandsons.com.au>; sarah@zoneplanning.com.au <sarah@zoneplanning.com.au>; Vini Safatle <vini.safatle@moloneyandsons.com.au>; Derek Arrowsmith <derek.arrowsmith@moloneyandsons.com.au>; Andrew Castle <Andrew.Castle@ausproof.com.au>

📎 1 attachment (11 MB)

D492-2013 - SMP.pdf;

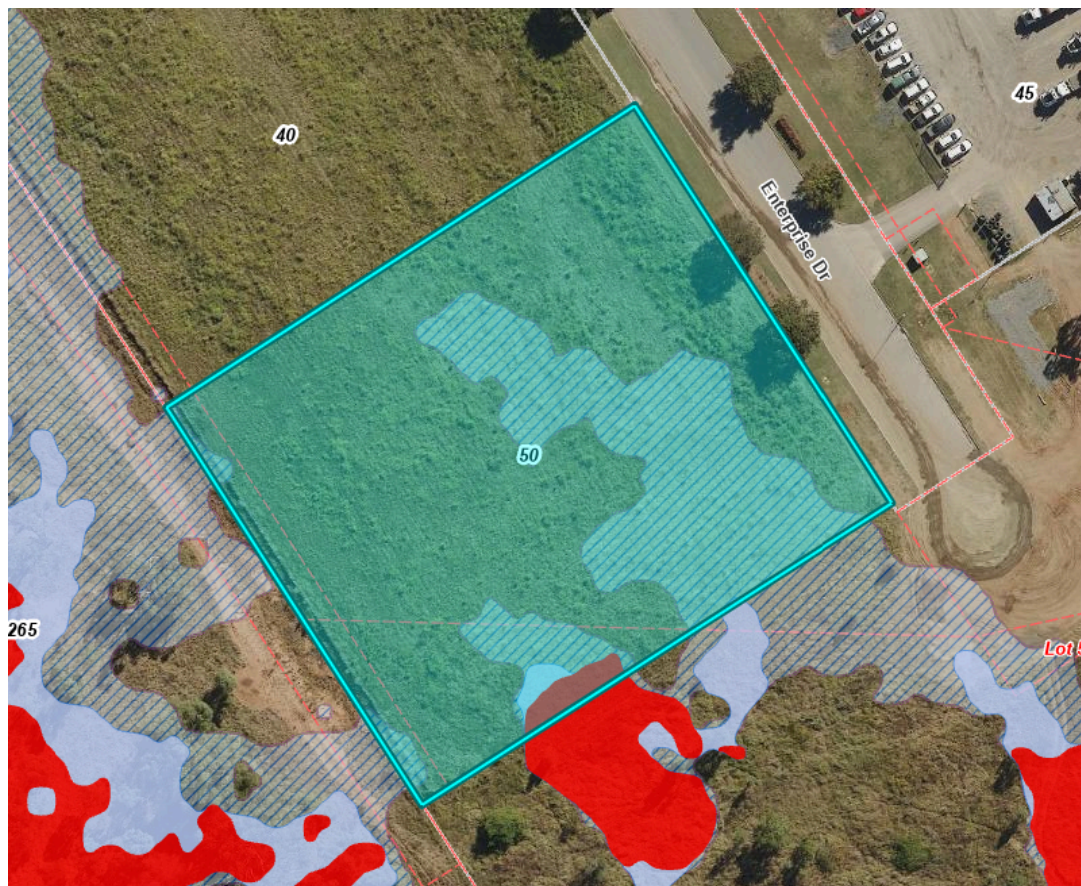
Afternoon Lloyd

Please find attached a copy of the SMP from the original ROL development.

Please be advised that revised flood modelling has occurred and the local catchment DFE (blue striped overlay) over the site is what would have been considered as the old Low Level Flooding. The new mapping under the planning scheme v4.4 removes the lower flood hazard categories for creek catchment/overland flow flooding. The only mapped flooding over the site is contained within the easement.

As it is not mapped under the Planning Scheme, development assessment cannot have regard to it in the assessment of development applications. However, we will still generally advise applicant's of the flood hazard and try for a better outcome, but we cannot condition or decide an application having regard to the DFE flood hazard.

Even though it is not mapped under the Planning Scheme, the Defined Flood Level (DFL) will still show up in our flood reports and will still apply to the lot for the purposes of building certification.



Should you require further details about the above, please do not hesitate to contact me on the below details

Kind regards,

Kathy McDonald

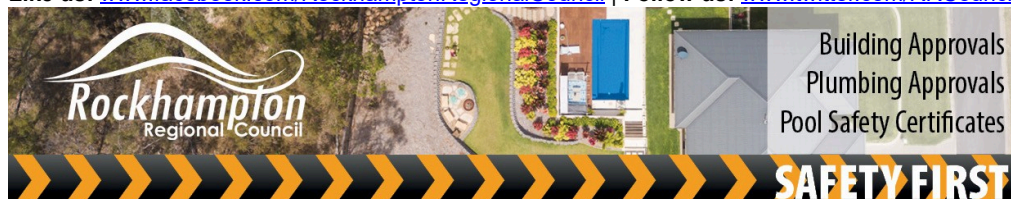
Principal Planning Officer | Development Assessment

Rockhampton Regional Council

Ph: 4932 9000 | E-mail: Kathy.mcdonald@rrc.qld.gov.au

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From: Lloyd Moloney <lloyd.moloney@moloneyandsons.com.au>

Sent: Monday, November 25, 2024 2:35 PM

To: Kathy McDonald <Kathy.McDonald@rrc.qld.gov.au>

Cc: CE24222 <CE24222@moloneyandsons.com.au>; sarah@zoneplanning.com.au; Vini Safatle <vini.safatle@moloneyandsons.com.au>; Derek Arrowsmith <derek.arrowsmith@moloneyandsons.com.au>; Andrew Castle <Andrew.Castle@ausproof.com.au>

Subject: CE24222 50 Enterprise Drive, Gracemere

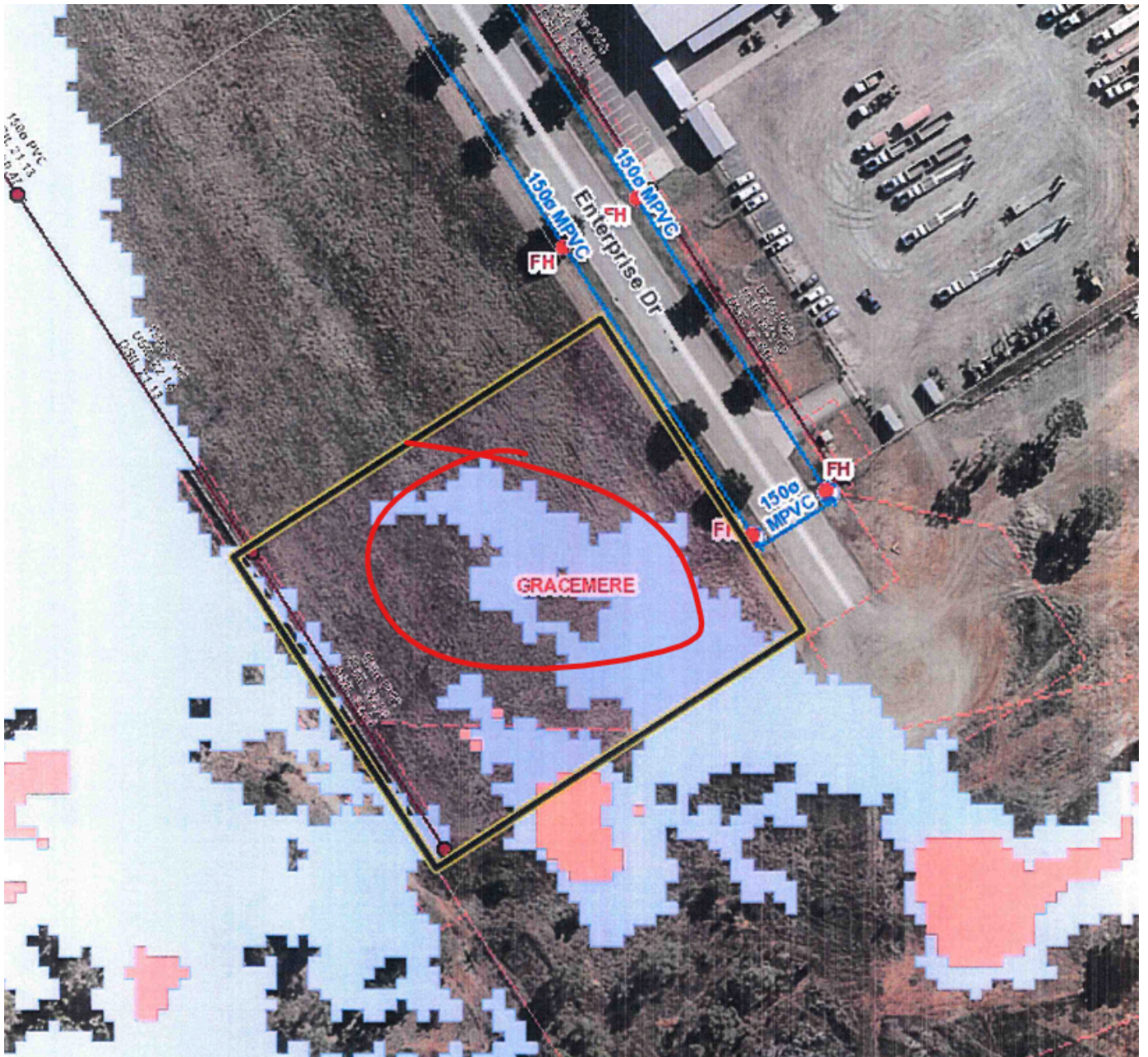
[External Email] This email was sent from outside the organisation – be cautious, especially with links and attachments.

Hi Kathy,
Hope you are doing well.

We are just in the process of working to support the MCU application on 50 Enterprise Dr Gracemere.

I was involved in the original development here with Gibb Group at the time, hoping you can supply the Stormwater Management & Flood Report for the ROL & OPW Stage of the development?

I do note that the below flood map does not appear to be contained within the existing stormwater/flood easement.



Cheers

Kind Regards,

Lloyd Moloney | Managing Director



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ABN | 39 133 970 689

Mob | 0488 434 954

Email | lloyd.moloney@moloneyandsons.com.au

Web | www.moloneyandsons.com.au





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ENGINEERING

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/2-2025

Dated: 10 April 2025

ENGINEERING SERVICES REPORT MATERIAL CHANGE OF USE (MCU) APPLICATION

50 Enterprise Drive, GRACEMERE QLD 4702

AusProof Pty Ltd

CE24222 – Engineering Services Report Rev A

Contract No. CE24222.001

A/ PO BOX 3203 RED HILL ROCKHAMPTON Q 4701

MOLONEY & SONS

ABN: 39 133 970 689





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2024

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A	29/11/24	DRAFT Material Change of Use	VS	PAJ		



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1. INTRODUCTION

1.1. BACKGROUND

Moloney & Sons Engineering was commissioned by AusProof Pty Ltd to prepare an Engineering Services Report in support of a Development Application – Material Change of Use, at Lot 106 SP 273020, known as 50 Enterprise Drive, Gracemere QLD 4702.

Currently the development site area is approximately 8,642m²

The Site is currently a vacant Lot, is located within the Rockhampton Regional Council (RRC) and has a Land Use Zoning of “Medium Impact Industry.”

This report seeks to summaries the Concept Bulk Earthworks and Concept Civil Engineering Services plans that include the existing infrastructure and any future infrastructure that may be required to service the ultimate developed site.

The Proposed development site is illustrated as *Figure 1*.



Figure 1 Subject Site Locality



1.2.EXISTING DEVELOPMENT SITE

The site is currently vacant, primarily covered with grass, scattered trees, and some localised patches of scrub. Additionally, easements run through the property.

It is bounded by Enterprise Drive to the east, an easement to the south and west, and a vacant lot to the north.

1.3.EXISTING TOPOGRAPHY

The topography of the development site varies across the registered property. The existing grades are listed below:

- Lot 106 SP 273020 Grades from RL 26.8m AHD Southwest corner to RL 23.8m AHD Northeast corner.

1.4.PROPOSED DEVELOPMENT

The Proposed Development is illustrated in *Figure 2*.

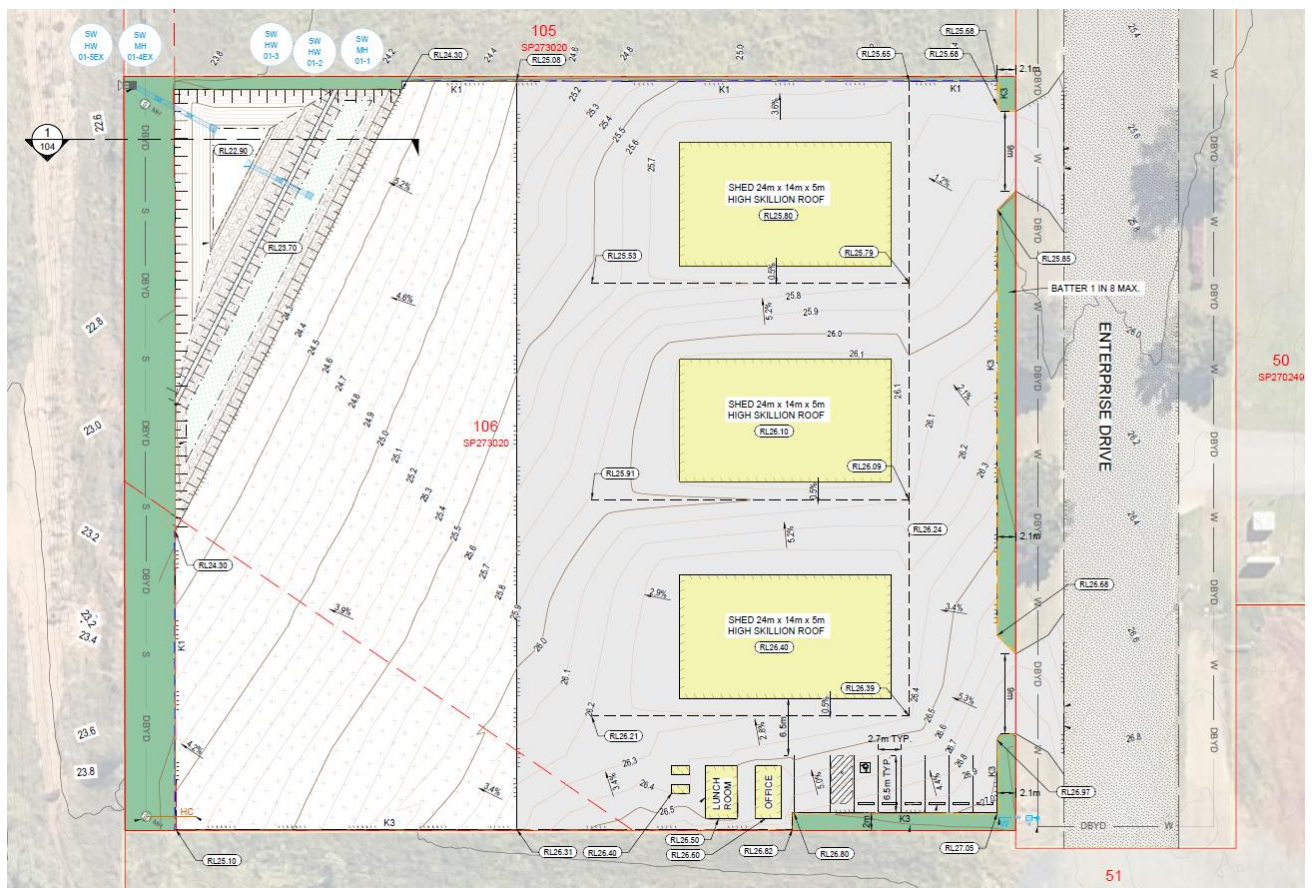


Figure 2 Proposed Development Site.



2. EARTHWORKS

2.1. CIVIL DESIGN

Bulk earthworks will be required to be undertaken across the Development area, to create suitable finished surface levels for the proposed development.

The extent of the Bulk Earthworks is illustrated in *Figure 3*.

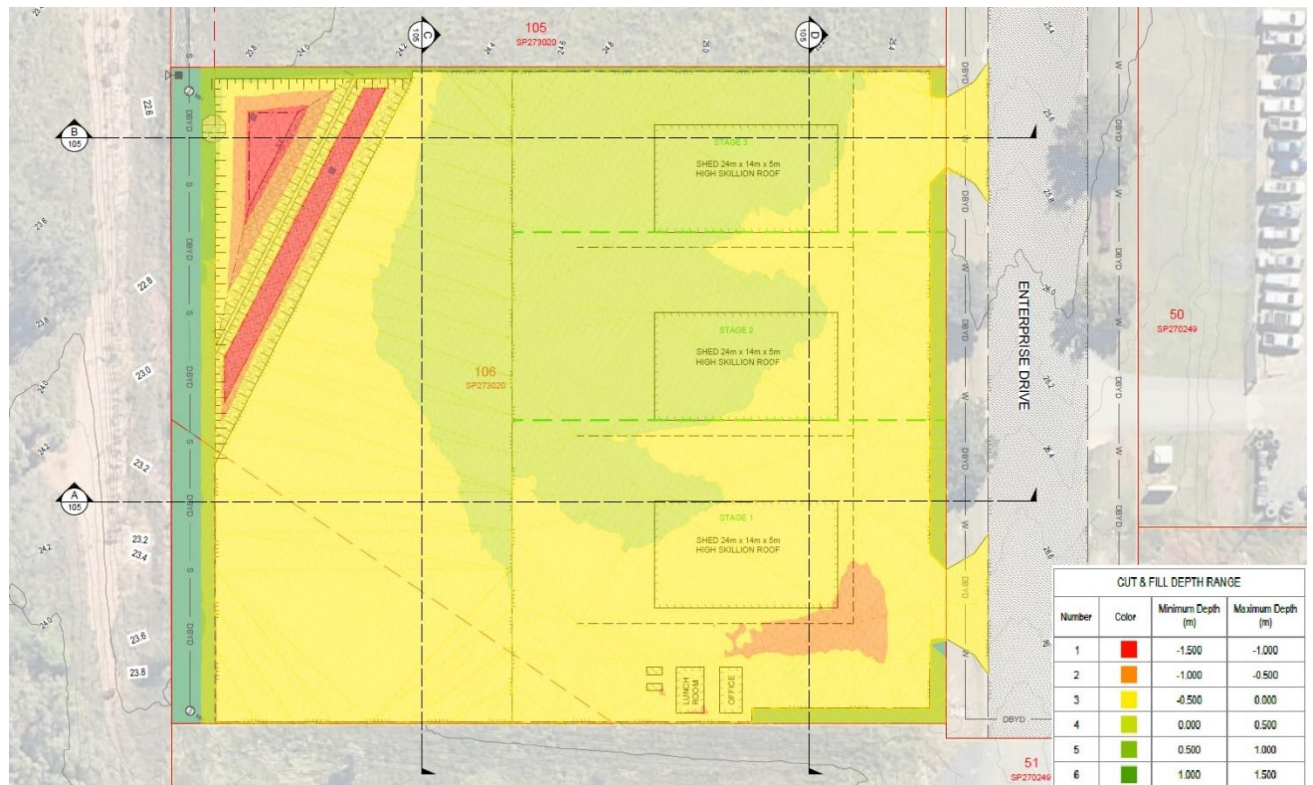


Figure 3 Bulk Earthworks Areas over the development site and Cut & Fill Elevation Range.

The Bulk Earthworks for the ultimate development, has been modelled with the following Earthwork volumes associated with the development. Please refer to *Table 1*.

Land Use	Cut to Fill (m³)	Cut – Removed from Site (m³)	Total Volume (m³)
Residential	493	1,005	1,498

Table 1 Proposed Earthworks Volumes for Total Development.

As per the abovementioned report, this Bulk Earthworks model demonstrates:

- Suitable levels for the development; and
- Suitable gradients for vehicle ingress/egress and manoeuvring can be achieved for the Proposed Development.

Bulk Earthworks Areas over the development site and Cut & Fill Elevation Range.



2.2. FLOOD PRONE PROPERTIES

The flooding impacts illustrated in the Rockhampton Region Planning Scheme Interactive Mapping Tool identify portions of 50 Enterprise Drive, Gracemere, as being within the Local Catchment Flood Planning Area. The overlay highlights areas in red and blue, representing high and low flood hazard zones, respectively, during events such as a 1% Annual Exceedance Probability (AEP) flood. These mapped hazards require careful consideration to ensure the development minimizes flood risks and complies with planning requirements. Please Refer to *Figure 4*.

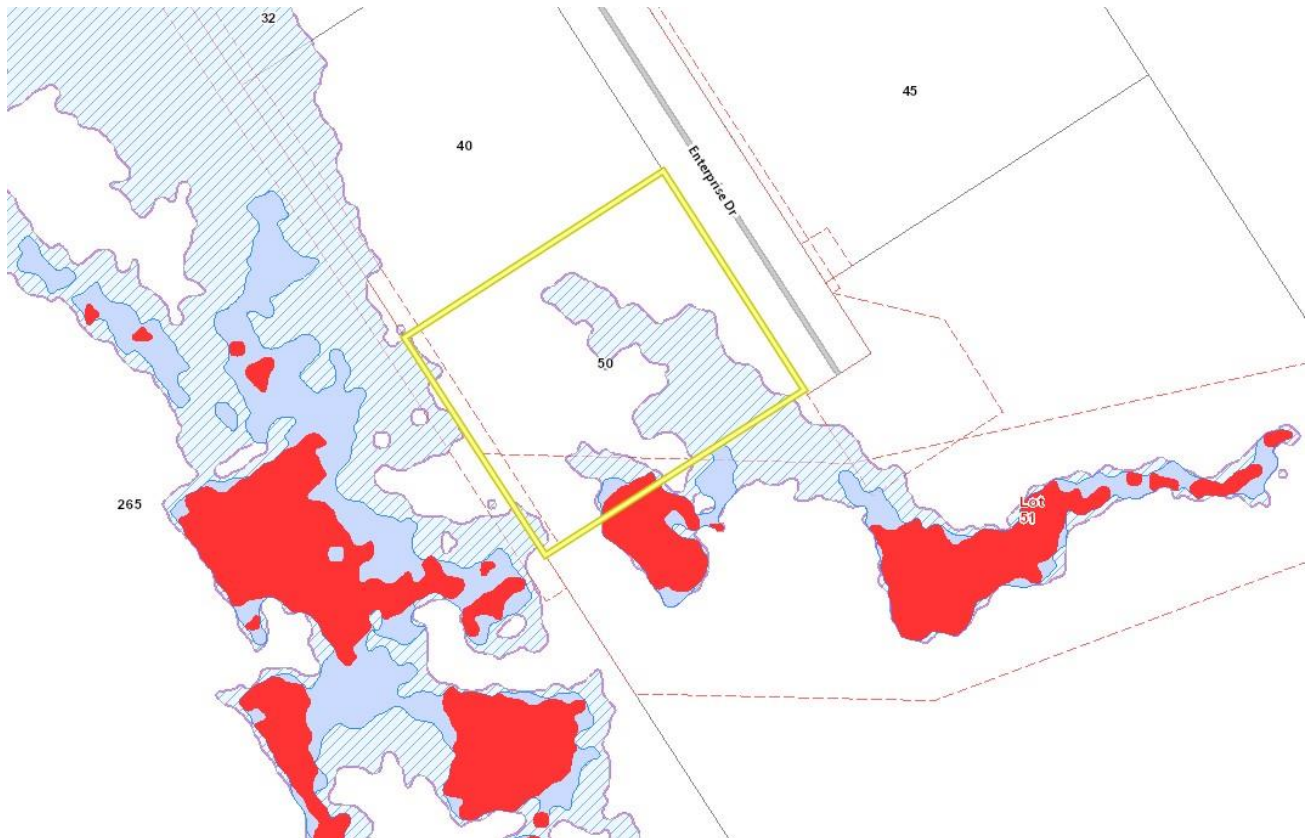


Figure 4 Flood Prone (RRC Planning Scheme Interactive Mapping Tool)

Moloney & Sons Engineering (MSE) will prepare a Site-Based Stormwater Management Plan (SBSMP) as part of this application. The report will demonstrate how stormwater runoff will be managed to maintain pre-development flow conditions, prevent exacerbation of downstream flooding, and ensure lawful points of discharge. The SBSMP will outline mitigation strategies aligned with State Planning Policy (SPP) to address flood hazards and ensure no adverse impacts on neighbouring properties.

With these mitigation measures and adherence to flood management requirements, the proposed development can proceed while minimizing risks associated with flood hazards.



3. SEWERAGE

3.1. EXISTING SEWER RETICULATION

The proposed development is situated within the Rockhampton Sewerage Catchment area.

Based on our review of the available information and the Rockhampton Regional Council sewer infrastructure data, the existing Sewer Reticulation is connected to the Council's reticulated sewerage infrastructure network.

Records indicate the presence of existing Sewer Gravity Mains located along the northwestern and northeastern boundaries of the property. Specifically, there is a 150mm PVC Sewer Gravity Main running adjacent to the western boundary, while a 225mm PVC Sewer Gravity Main is located on the northeastern side along Enterprise Drive. These sewer mains are part of the Council's reticulated system and are designed to service industrial developments in the area.

Please refer to *Figure 5*, which illustrates the existing Council sewer infrastructure in the area.

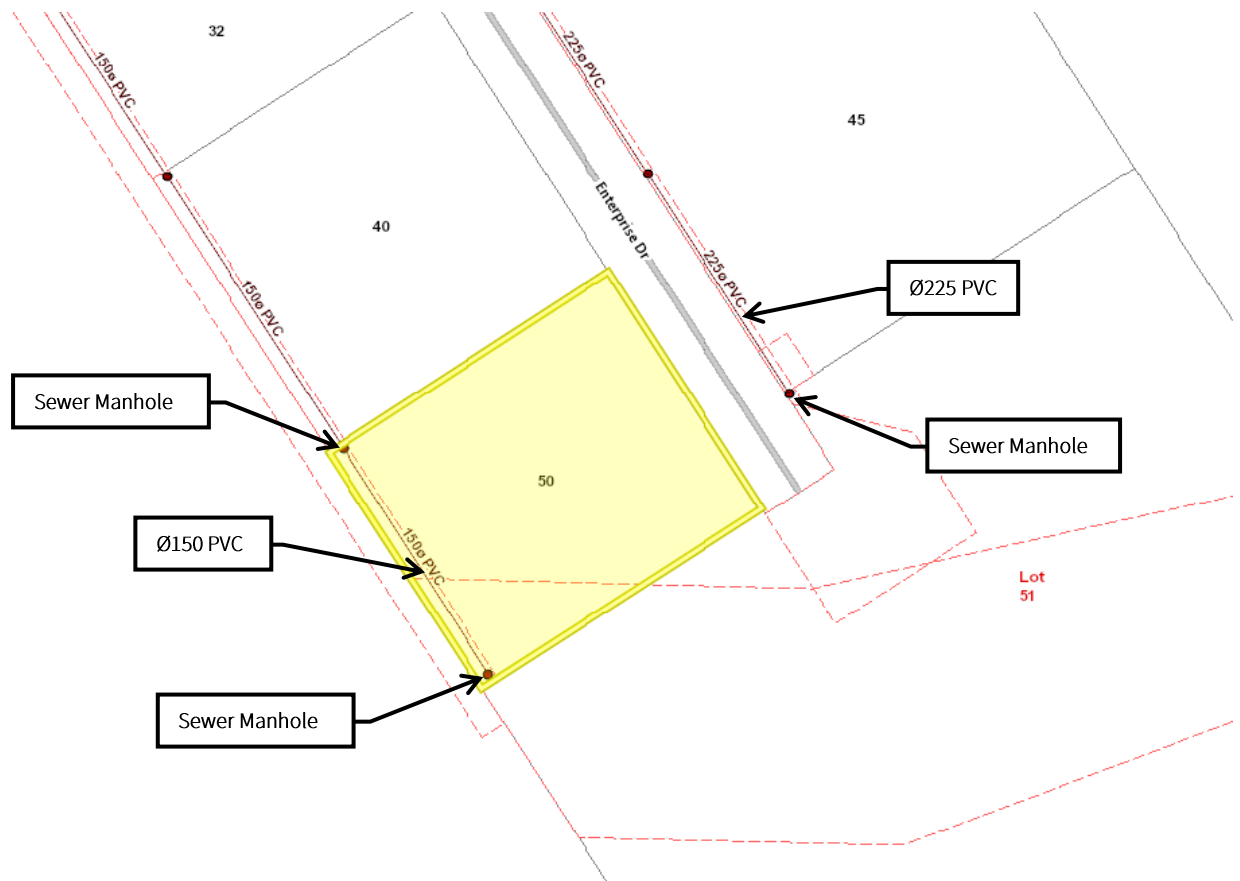


Figure 5 Existing Sewer Infrastructure Around Proposed development site.



3.2. SEWER DESIGN DEMANDS CALCULATION

The Equivalent Persons (EPs), generated by the proposed development, was calculated in accordance with the Capricorn Municipal Development Guidelines (CMDG) Sewerage System D12 Annexure D12C, Table D12.38.01 on Typical Loadings per Development type.

The number of EPs generated by the proposed development is summarised in *Table 2* and the Sewerage System Design in *Table 3*:

Item/Source	Land Use Description
Development	Industrial
Lot	1
Area (ha)	0.44
Equivalent Person (EP)	31.79

Table 2 EP Calculations for Proposed Sewer.

Item/Source	Value/Description
Average Dry Weather Flow (ADWF)	$ADWF = 540L/EP/day \times 31.79 EP \text{ (Generated)} = 17,166 L/day \text{ or } 0.199 L/s$
Peak Dry Weather Flow (PDWF)	$2.5 \times ADWF = 2.5 \times 17,166 L/day = 42,914 L/day \text{ or } 0.497 L/s$
Peak Wet Weather Flow (PWWF)	$5 \times ADWF = 5 \times 17,166 L/day = 85,829 L/day \text{ or } 0.993 L/s$

Table 3 Sewerage System Flow.

Based on the above information, the proposed development is not expected to have a significant negative impact on the existing sewer network. The calculated flow contributions fall within the standard capacity thresholds of Rockhampton Regional Council's reticulated sewerage infrastructure, particularly considering the presence of the existing 150mm and 225mm gravity mains servicing the site. These mains are likely designed to accommodate future developments of this scale.

Moloney & Sons Engineering (MSE) can further confirm that the existing sewer infrastructure is considered adequate to manage the additional load generated by the development. As part of the future Operational Works application, MSE may conduct further detailed hydraulic modeling and design to verify these preliminary assessments and ensure compliance with Council requirements.

3.3. PROPOSED SEWERAGE

The site will discharge into the existing 150mm diameter gravity sewer main located along the western boundary. The connection will be made via a new sewer house connection (HC Type A) constructed in accordance with CMDG-S-030, as per *Figure 6*. This connection will ensure the flows from the development are appropriately directed into the existing sewer network.

The proposed connection will seamlessly integrate with the existing reticulated sewerage network, ensuring that all sewage generated by the development is adequately managed. Moloney & Sons Engineering will confirm compliance with Rockhampton Regional Council standards and finalize all design and construction requirements as part of the Operational Works application process.

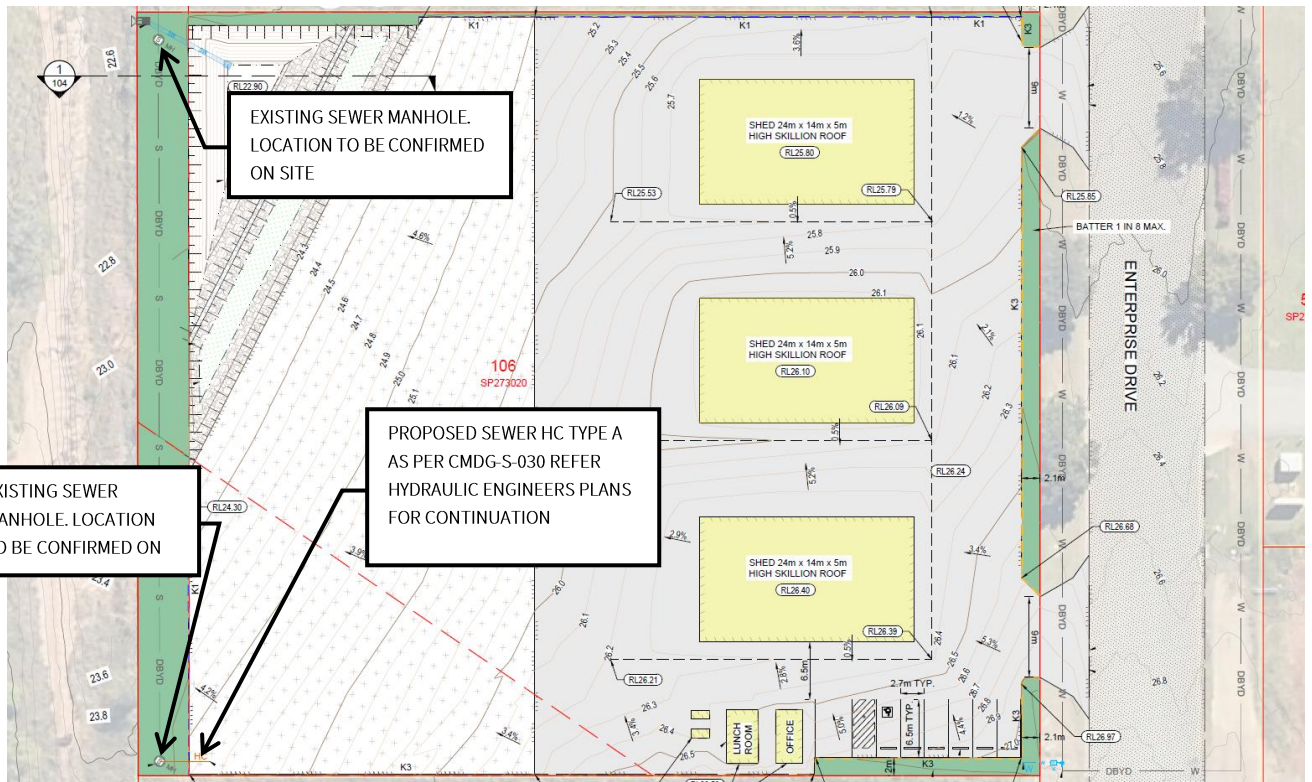


Figure 6 Proposed Sewer Connection



4. WATER SUPPLY

4.1. EXISTING WATER SUPPLY

Based on the information provided and Rockhampton Regional Council records, the proposed development is connected to the Council's reticulated water supply network. A 150mm diameter Modified Polyvinyl Chloride (MPVC) water main runs along the northeastern boundary of the property, adjacent to Enterprise Drive. Fire hydrants (FH) are strategically positioned along this main, providing firefighting capability and ensuring compliance with Council standards for industrial developments.

The existing water main is designed to cater to the demands of the area, including future industrial developments. It is anticipated that this infrastructure has sufficient capacity to accommodate the proposed development at the site. However, further flow and pressure testing may be required as part of the detailed design phase to verify compliance with the required service standards.

Please refer to *Figure 7*, which illustrates the existing Council water supply infrastructure in the area.

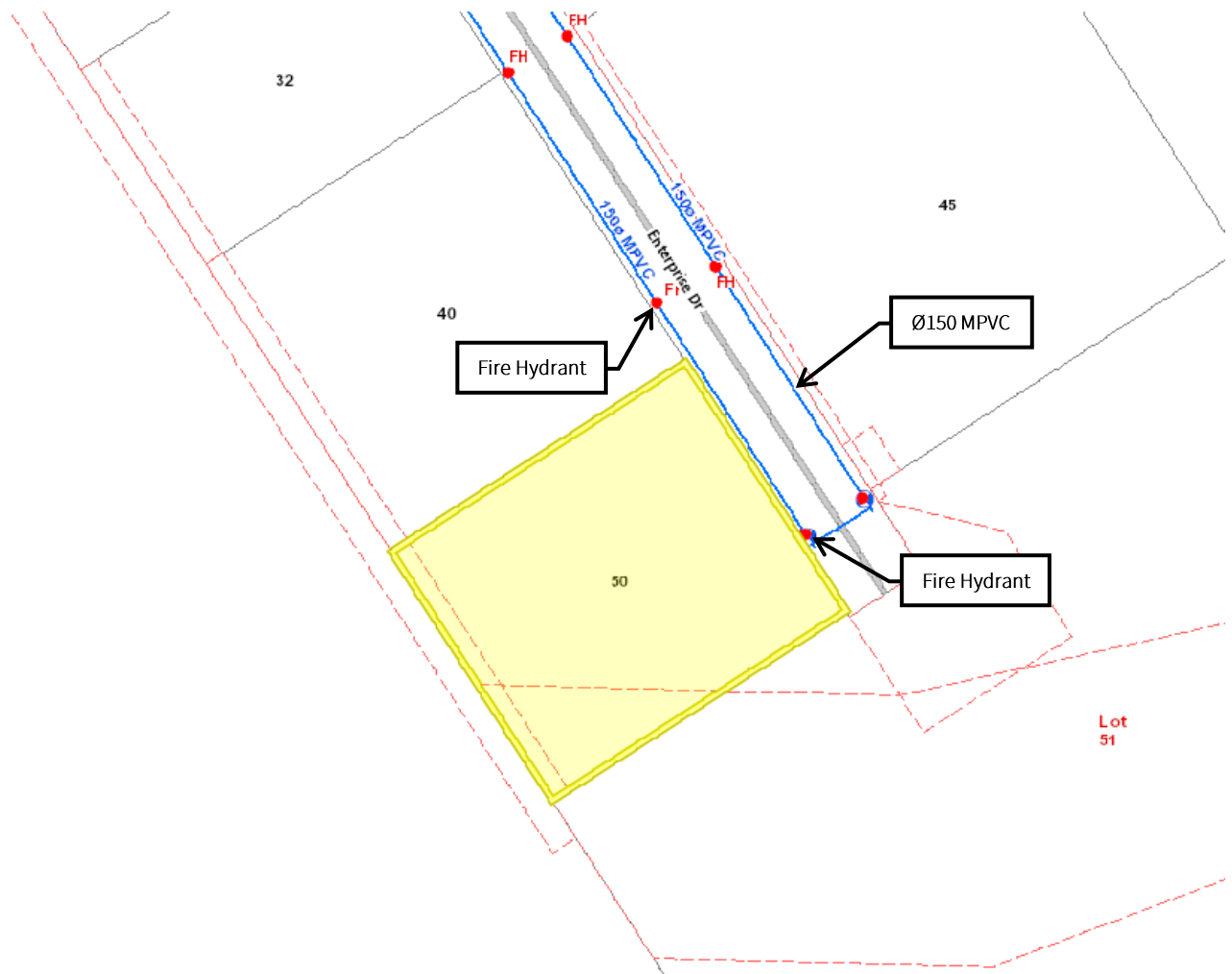


Figure 7 Existing Potable Water Infrastructure to the Development site.



4.2. WATER DESIGN DEMANDS CALCULATION

The Equivalent Persons (EPs), generated by the proposed development, was calculated in accordance with the Capricorn Municipal Development Guidelines (CMDG) Water Supply Network Annexure D11C, Table D11.32.01 on Design Eps per Land Use per Development type.

The number of EPs generated by the proposed development is summarised in *Table 4* and the Water Design Demands in *Table 5*.

Item/Source	Land Use Description
Development	Residential
Lot	1
Area	0.44
Equivalent Person (EP)	24.37

Table 4 Equivalent Persons (EPS) Generated to the proposed project development

Item/Source	Value/ Description
Average Daily Consumption (AD)	$AD = 500L/EP/day \times 12 \text{ EP (Generated)} = 12,183 \text{ L/day}$
Mean Daily Maximum Month (MDMM)	$MDMM = 1.5 \times AD = 18,274 \text{ L/day or } 0.212 \text{ L/s}$
Max Day (MD)	$MD = 2.25 \times AD = 27,411 \text{ L/day or } 0.317 \text{ L/s}$
Max Hour (MH)	$MH = 1/12 \times MD = 2,284 \text{ L/h}$

Table 5 Water Supply Design Demands

This is illustrated in APPENDIX A – MOLONEY & SONS ENGINEERING DRAWINGS

4.3. PROPOSED WATER SUPPLY

The development will connect to the existing 150mm diameter Modified Polyvinyl Chloride (MPVC) water main located along Enterprise Drive as per *Figure 8*. This connection will be made via a suitably sized water service line, which will include a water meter to measure usage and ensure compliance with CMDG-W-094.

The existing fire hydrants along Enterprise Drive provide additional firefighting capacity, which will support the development in meeting safety requirements. Hydraulic modeling may be required to confirm that the existing water main has adequate capacity to supply the proposed development's peak demands without adversely affecting the surrounding network.

During the design and construction phases, all water service connections, fittings, and meters will be installed in accordance with the Capricorn Municipal Development Guidelines (CMDG), ensuring compliance with Rockhampton Regional Council's requirements.

Further assessment and pressure testing may be undertaken as part of the Operational Works application to verify sufficient water pressure and flow rates for both domestic and fire-fighting demands.

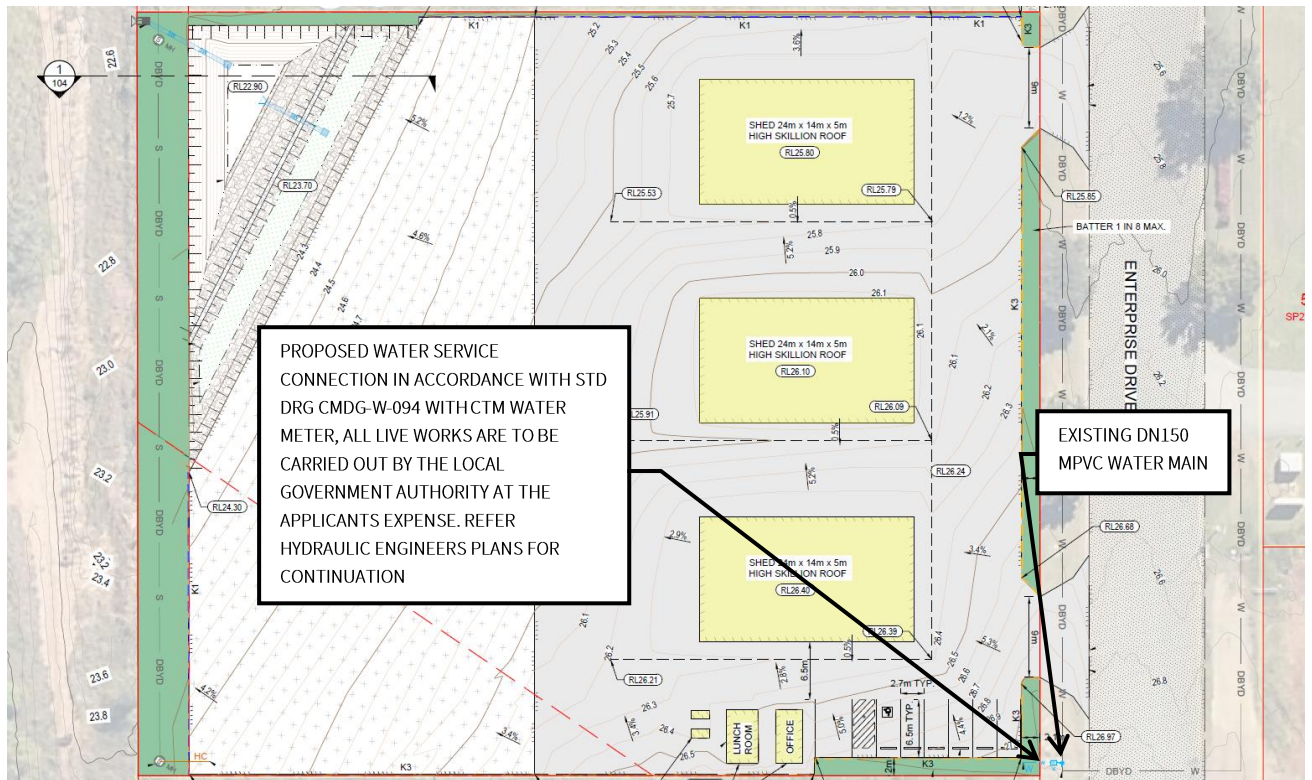


Figure 8 Proposed Water Connection



5. ACCESS & ROADWORKS

5.1. EXISTING ROAD NETWORK

Enterprise Drive is currently a two-lane (one in each direction) road with a 25-meter road reserve.

This road serves several Industrial areas.

The carriageway drains towards the kerb and channel on both sides, directing runoff into the stormwater pits. Vehicular access to the development site is detailed in Moloney and Sons Engineering (MSE).

5.2. PROPOSED ACCESS

Access to the proposed development site will be provided through two locations along Enterprise Drive for Lot 106 SP 273020.

Please refer to *Figure 9*.



Figure 9 Site Access from Enterprise Drive.



6. ELECTRICITY

6.1. EXISTING ELECTRICITY

The existing electricity supply to 50 Enterprise Drive, Gracemere, is serviced by Ergon Energy, with infrastructure consisting of both underground low-voltage (LV) cables (up to 1kV) and underground high-voltage (HV) cables (1kV to <33kV) running parallel to Enterprise Drive. The LV cables, represented by red dashed lines, provide standard power distribution, while the HV cables, shown as blue dashed lines, cater to higher electrical loads, ensuring reliable supply for industrial developments. These cables are well-positioned to support the site's power requirements, with access to robust infrastructure nearby.

Please Refer to *Figure 10*.



Figure 10 Existing Ergon Electricity



6.2. PROPOSED ELECTRICITY

The site's electrical connection can be established using the existing network, with the option of utilizing either low-voltage (LV) or high-voltage (HV) supply, depending on the development's power requirements. All connections and associated works will comply with Ergon Energy standards and Australian safety guidelines to provide a safe and reliable electricity supply.

Moloney & Sons Engineering (MSE) is confident that the existing network has sufficient capacity to support the proposed development. To confirm this, an electrical engineer will be engaged to verify the available capacity, liaise with Ergon Energy regarding new connections, and undertake the detailed electrical design at the appropriate stage of the project



7. TELECOMMUNICATIONS

7.1. EXISTING NBN TELECOMMUNICATIONS

According to Before Dig records (BYDA) received from NBN, there are no existing NBN networks located within the 50 Enterprise Drive.

7.2. EXISTING TELSTRA TELECOMMUNICATIONS

As per the records received from Telstra via Before You Dig (BYDA) *Figure 11*, there is existing Telstra infrastructure present near the proposed development site. The area is serviced by P50 (50mm PVC) and P100 (100mm PVC) conduits containing polyethylene-jacketed cables (PEHJC). The network includes main cable ducts (MC), distribution cables (Dist), and multiple access pits and joining points along the route for maintenance and connectivity. Additionally, 2 pair lead-ins connect to adjacent properties, indicating active Telstra services in the vicinity of the site.

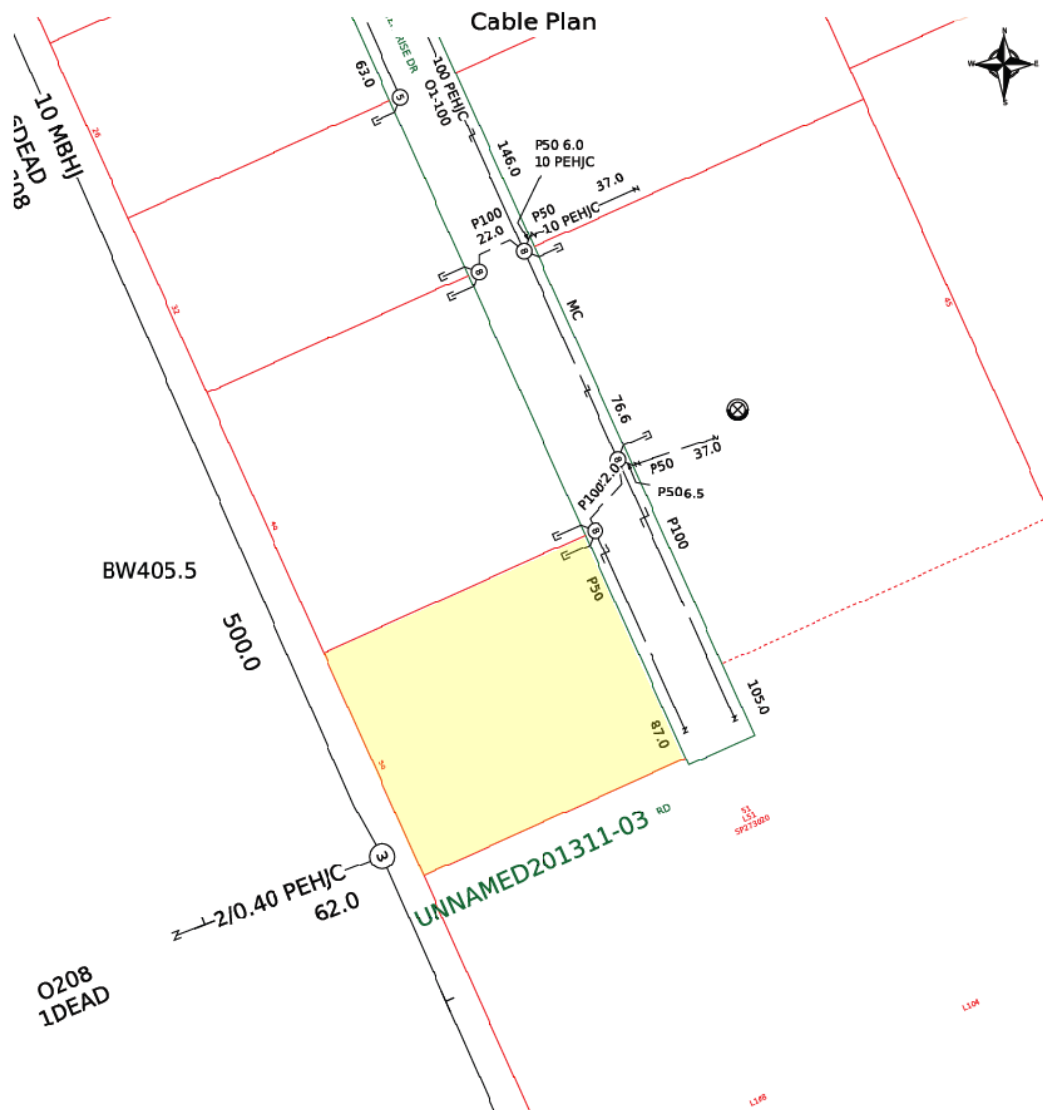


Figure 11 Existing Telstra Network



7.3. PROPOSED TELSTRA TELECOMMUNICATIONS

Preliminary discussions with Telstra representatives have indicated that the capacity of the existing infrastructure should be able to accommodate the proposed development. It is anticipated that the future development could connect to the existing Telstra network, utilizing the P50 and P100 conduits and associated infrastructure present near the site.

Any necessary upgrades or modifications to the network would be subject to detailed design by a telecommunications professional and ongoing consultation with Telstra and other relevant service authorities to ensure compliance with standards and sufficient service capacity.



8. SUMMARY

This Civil Engineering Services report has been prepared for Lot 106 SP 273020, known as 50 Enterprise Road, Gracemere QLD 4702.

Moloney & Sons assessment can be summarised as follows:

- Currently the development site area is approximately 8,642m²
- The Site is currently a residential development site, is located within the Rockhampton Regional Council (RRC) and has a Land Use Zoning of “Medium Impact Industry.”
- The site currently grades from:
 - Lot 106 SP 273020 Grades from RL 23.8m AHD northeast corner to RL 26.8m AHD Southwest corner.
- From the conceptual design, the total amount of Cut to Fill is approximately ~495m³ and Cut (Removed from Site) is approximately ~538m³.
- The flooding impacts illustrated in the Rockhampton Region Planning Scheme Interactive Mapping Tool identify portions of 50 Enterprise Drive, Gracemere, as being within the Local Catchment Flood Planning Area. The overlay highlights areas in red and blue, representing high and low flood hazard zones, respectively, during events such as a 1% Annual Exceedance Probability (AEP) flood. These mapped hazards require careful consideration to ensure the development minimizes flood risks and complies with planning requirements.
- With regards to Proposed Sewer:
 - The site will discharge into the existing 150mm diameter gravity sewer main located along the western boundary. The connection will be made via a new sewer house connection (HC Type A) constructed in accordance with CMDG-S-030. This connection will ensure the flows from the development are appropriately directed into the existing sewer network.
- With regards to Proposed Water supply:
 - The development will connect to the existing 150mm diameter Modified Polyvinyl Chloride (MPVC) water main located along Enterprise Drive. This connection will be made via a suitably sized water service line, which will include a water meter to measure usage and ensure compliance with CMDG-W-094.
- The carriageway drains towards the kerb and channel on both sides, directing runoff into the stormwater pits. Vehicular access to the development site is detailed in Moloney and Sons Engineering (MSE).
- Access to the proposed development site will be provided through two locations along Enterprise Drive for Lot 106 SP 273020.
- The existing electricity supply to 50 Enterprise Drive, Gracemere, is serviced by Ergon Energy, with infrastructure consisting of both underground low-voltage (LV) cables (up to 1kV) and underground high-voltage (HV) cables (1kV to <33kV) running parallel to Enterprise Drive. The LV cables, represented by red dashed lines, provide standard power distribution, while the HV cables, shown as blue dashed lines, cater to higher electrical loads, ensuring reliable supply for industrial developments. These cables are well-positioned to support the site's power requirements, with access to robust infrastructure nearby.
- According to Before Dig records (BYDA) received from NBN, there are no existing NBN networks located within the 50 Enterprise Drive.



- As per the records received from Telstra via Before You Dig (BYDA), there is existing Telstra infrastructure present near the proposed development site. The area is serviced by P50 (50mm PVC) and P100 (100mm PVC) conduits containing polyethylene-jacketed cables (PEHJC). The network includes main cable ducts (MC), distribution cables (Dist), and multiple access pits and jointing points along the route for maintenance and connectivity. Additionally, 2 pair lead-ins connect to adjacent properties, indicating active Telstra services in the vicinity of the site.

Based upon this report, it has been demonstrated that the proposed development, is either serviced or is capable of being serviced by civil infrastructure.

Detailed assessment and design will be undertaken as part of future applications, however there is sufficient capacity within existing (or upgraded) infrastructure to service the proposed development.



APPENDIX A – MOLONEY & SONS ENGINEERING DRAWINGS