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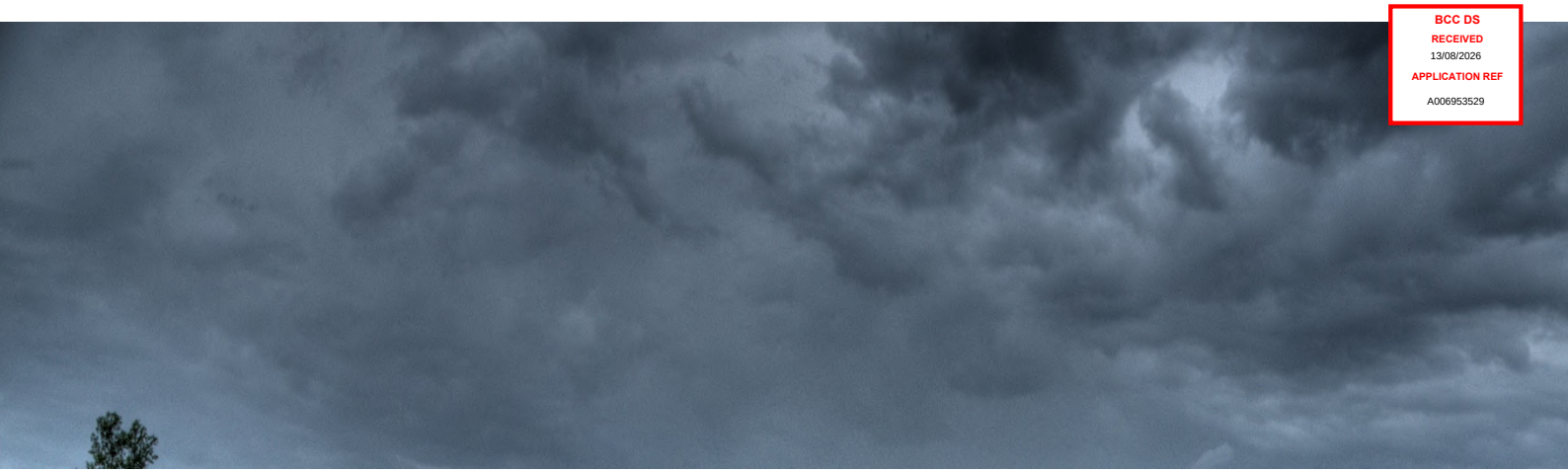

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SITE-BASED STORMWATER MANAGEMENT PLAN

70 Cloverdale Road, Doolandella QLD

PREPARED DATE: 06/08/2026

REVISION: 0

DOCUMENT CONTROL

PROJECT INFORMATION	
Site Address	70 Cloverdale Road, Doolandella QLD
RP Description	Lot 94 on RP90234
DRW Job Reference	5829
Client	Dideep Kaur Sohal
Council Ref	Brisbane City Council (BCC)
Authorised by	A. Khuzaini Sani
Signature	
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1 INTRODUCTION

DRW Consulting Pty. Ltd. (DRW) has been engaged to prepare a detailed Site-based Stormwater Management Plan (SBSMP) for the proposed development at 70 Cloverdale Road, Doolandella QLD. The land parcel is legally described as Lot 94 on RP90234 (the subject site) and is located within Brisbane City Council (BCC). Throughout this report the development area located within the above-mentioned lots is referred to as the subject site.

This assessment has been prepared generally in accordance with BCC Planning Scheme, Queensland Urban Drainage Manual (QUDM, 2016), Australian Rainfall and Runoff (ARR) and Healthy Waterways – Water by Design.

1.1 SCOPE

Specifically, this report details the following:

- Describes the environmental setting of the development site;
- Describes the nature of the proposed development as it relates to stormwater quality;
- Calculates the peak flows for both pre- and post-development conditions;
- Calculates the detention volume required to achieve the pre-development state, if required;
- Establishment of a Lawful Point of Discharge (LPD) for the subject site;
- Stormwater Quality – Including an estimate of sediment and nutrient transport from the subject site and assessment against pollutant reduction targets for runoff exiting the site; and
- Stormwater Management Controls - for the construction and operational phases.

1.2 STORMWATER MANAGEMENT OBJECTIVES

The objectives of this SBSMP are to:

1. Minimise the number of pollutants such as sediment, litter and nutrients entering surrounding waterways and stormwater drainage infrastructure.
2. Achieve no increase in pre-development peak discharge from the subject site up to and including the 1% AEP (100-year ARI) storm event.
3. Ensure stormwater is managed to minimise the impact of flooding; and
4. Minimise environmental nuisance or harm from land-disturbing activities.

These objectives will be achieved through the implementation of:

1. Management strategies designed to minimise water pollution from development of the subject site;
2. Management strategies to maintain pre-development peak discharges at the existing lawful and practical point of discharge;
3. Specific construction phase controls to minimise erosion and control sediment loss; and
4. Specific operational phase controls to minimise sediment and nutrient export from the subject site.

2 EXISTING SITE CHARACTERISTICS

2.1 SITE OVERVIEW

The site is located within Brisbane City Council (BCC) and covers a total area of 14,290m^2 (or 1.429ha) of which the proposed developable area is 4,954m^2 (or 0.495ha) within the northern extent of Lot 94 on RP90234. Therefore, for the purpose of this stormwater assessment only the developable area will be referred to as the subject site. The existing site comprises of an existing residential dwelling, associated sheds and concrete access driveway. The remaining area of the site generally consists of pervious ground surface. The existing impervious area of the site is approximately 603m^2, which amounts to 12% of the site area.

Refer to the figure below for the aerial locality plan. Refer to **Appendix A** for the Site Survey Plan.

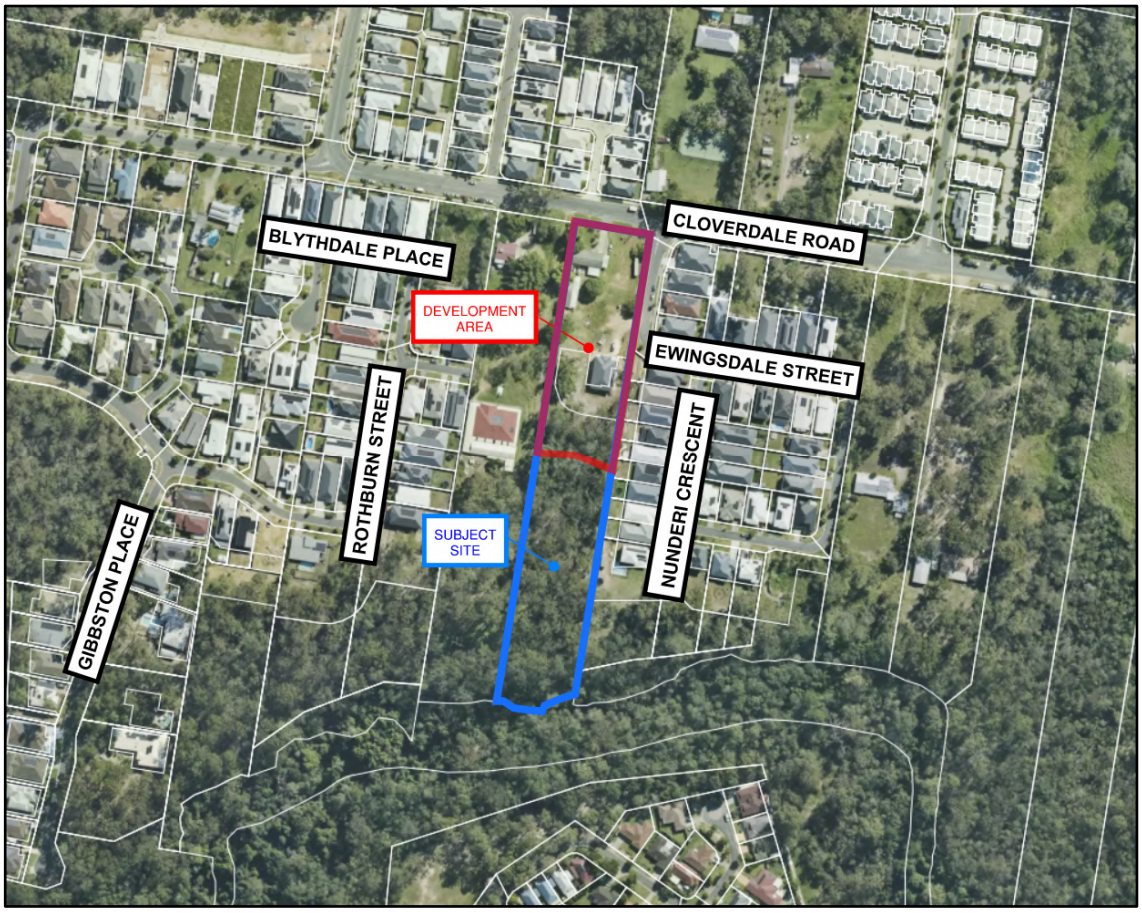


Figure 1 Site Location

2.2 EXISTING TOPOGRAPHY AND SITE DRAINAGE

The following topography details are in relation to the subject site located within 70 Cloverdale Road, Doolandella QLD;

- The natural fall of the land generally slopes from the western (side) boundary of the site to the eastern (side) boundary.
- The site levels range from RL38.50m AHD at the south-western corner of the site to RL32.34m AHD at the north-eastern corner of the site.
- The site has an average grade of 5.2%.
- No easements have been identified within the subject site.
- Data obtained from detail survey and as-constructed information identifies the following existing stormwater infrastructure within the immediate vicinity of the site:
    - Three (3) existing gully pits and four (4) existing stormwater manholes connecting to an associated underground drainage network, located within the Ewingsdale Street kerb and channel and roadway adjacent to the eastern boundary of the development.
    - One (1) existing gully pit and associated underground drainage network located within the Cloverdale Road kerb and channel located adjacent north-eastern corner of the subject site.
    - No Council drainage infrastructure is identified internal to the subject site.

Refer to **Appendix A** for the Site Survey Plan and **Appendix B** for the As-constructed information obtained from Before You Dig Australia (BYDA) and BCC Online Interactive Mapping system.

2.3 EXTERNAL UPSTREAM CATCHMENT ASSESSMENT

A review of the surrounding area has been undertaken to determine the extent of any external upstream catchments, which may flow towards the development. Based on contour maps obtained and aerial imagery from the BCC Online Interactive Mapping system there appears to be an external upstream catchment from the neighbouring property adjacent to the western boundary of the site being Lot 93 on RP90234 which will discharge surface runoff to the western extent of the development area. Therefore, the discharge flows from the external catchment will need to be considered for the proposed development site. Refer Section 6.0 below for the assessment and conveyance measures of the contributing external upstream catchment.

2.4 FLOODING ASSESSMENT

Based on an assessment of BCC Online Interactive Mapping, the subject site has been identified to be within a flood hazard area at the southern-most extent of the subject site, however outside of the proposed developable areas.

Refer to **Appendix B** for the Flood Map obtained from BCC Online Interactive Mapping system.

2.5 LAWFUL AND PRACTICAL POINT OF DISCHARGE

In accordance with the Queensland Urban Drainage Manual (QUDM), when proposing a development, it must demonstrate that a lawful point of discharge (LPD) exists.

A lawful point of discharge exists at a particular location when the following two (2) tests can be demonstrated as per QUDM:

(i) The location of the discharge is under the lawful control of the local government or other statutory authority from whom permission to discharge has been received. This can include a park, drainage or road reserve, stormwater drainage easement; and

(ii) In discharging to that location, the discharge will not cause an actionable nuisance (i.e. a nuisance for which the current or some future neighbouring proprietor may bring an action or claim for damages arising out of the nuisance), or environmental or property damage.

Roofwater from the existing dwelling and sheds appear to discharge to ground and overland flows to the eastern extent of the site. Surface runoff from the ground areas within the development area currently sheet flows to the eastern boundary of the site and to the existing infrastructure located within the Ewingsdale Street Road reserve.

In the post-development scenario, the proposed drainage infrastructure within the New Road and the existing drainage infrastructure located within the Ewingsdale Street Road reserve adjacent to the eastern boundary of the subject site will be considered the lawful point of discharge (LPD) for the development.

3 PROPOSED DEVELOPMENT

The proposed development comprises of a Reconfiguration of a Lot (ROL) Development Application submission to Council, based on the following:

- A residential development comprising of a 1 into 8 Lot subdivision.
- Relocation of the existing dwelling to the Proposed Lot 1.
- Road upgrades along the Cloverdale Road and Ewingsdale Street frontages.
- Access/egress to the new lots will be via driveway crossovers connecting to Cloverdale Road, Ewingsdale Street and the proposed new roadway.
- The total developable area within the subject site is 4,954m^2 (or 0.495ha), which is located in the northern extent of Lot 94 on RP90234.

Refer to **Appendix C** for the proposed Site Subdivision Plan.

4 STORMWATER QUANTITY ASSESSEMENT

4.1 HYDROLOGIC OBJECTIVES

Hydrologic objectives for the subject site have been set in accordance with the BCC Planning Scheme and the Queensland Urban Drainage Manual (QUDM), Fourth Edition 2016, including but not limited to:

- No increase in pre-development flows, up to and including the 100-year ARI (or 1% AEP);
- No adverse impact on adjoining or downstream properties;
- The proposed development shall ensure that all stormwater is directed to an LPD;
- A Major Design Storm Event of 100-year ARI (or 1% AEP); and
- A Minor Design Storm Event of 2-year ARI (or 39.35% AEP).

4.2 HYDROLOGICAL PARAMETERS

Catchment hydrology has been assessed for the pre and post-development scenarios and has been calculated using a DRAINS hydrological computer model (ILSAX Method). Calibration of the DRAINS hydrological computer model was achieved by comparing the DRAINS flow rates to the Rational Method calculations in accordance with QUDM (Fourth Edition, 2016), Section 4 and Section 5, and AS3500 – Plumbing and Drainage.

The default hydrological model used for this Assessment was the ILSAX Model. The following parameters were established in setting up the model:

- Paved (impervious) area depression storage (mm): 1
- Supplementary area depression storage (mm): 1
- Grassed (pervious) area depression storage (mm): 5
- Soil Type: Normal with antecedent rainfall depth for AMC 3 mm
- Rainfall Zone: Zone 3 – N.E. Coast
- AR&R 2016

4.3 DESIGN RAINFALL

The design rainfall Intensity Frequency Duration (IFD) data for all storm events up to an including 100-year ARI (or 1% AEP) has been obtained for the subject site from the Bureau of Meteorology for nominated ARI's and used in the DRAINS computer model. The design IFD data for the subject site can been seen in Figure 2 below. Rainfall temporal patterns used in the DRAINS hydrological computer model (ILSAX Method) analysis were prepared in accordance with Australian Rainfall and Runoff (AR&R 2016). Rainfall is modelled for the catchment in equal time intervals under each storm event and the subsequent runoff routed through a drainage system. To establish the most likely rain event that would require the greatest volume of detention, design storm durations of 5, 10, 15, 20, 25, 30, 45, 60, 90, 120, 180 and 360 minutes were modelled.

Location

Label: Not provided

Latitude: -27.6189 [Nearest grid cell: 27.6125 (S)]

Longitude: 152.9801 [Nearest grid cell: 152.9875 (E)]

IFD Design Rainfall Intensity (mm/h)

Issued: 06 July 2026

Rainfall intensity for Durations, Exceedance per Year (EY), and Annual Exceedance Probabilities (AEP).
FAQ for New ARR probability terminology

Table | Chart | Coefficients

Unit: mm/h

	Annual Exceedance Probability (AEP)						
Duration	**63.2%**	**50%#**	**20%***	**10%**	**5%**	**2%**	**1%**
1 min	150	170	235	278	320	375	416
2 min	123	140	196	235	274	325	366
3 min	116	132	183	219	255	301	338
4 min	111	126	175	208	241	284	317
5 min	106	121	167	198	229	269	300
10 min	87.6	99.7	137	162	186	217	240
15 min	74.1	84.4	116	137	157	183	203
20 min	64.3	73.3	101	119	137	160	177
25 min	57.0	64.9	89.5	106	122	143	158
30 min	51.2	58.3	80.5	95.5	110	129	143
45 min	39.7	45.2	62.6	74.4	86.1	102	113
1 hour	32.7	37.3	51.7	61.7	71.5	84.7	94.9
1.5 hour	24.7	28.1	39.1	46.7	54.4	64.8	72.9
2 hour	20.1	22.9	31.9	38.2	44.6	53.3	60.2
3 hour	15.1	17.2	23.9	28.7	33.6	40.3	45.7
4.5 hour	11.4	13.0	18.0	21.7	25.4	30.6	34.8
6 hour	9.37	10.6	14.8	17.8	20.9	25.3	28.7
9 hour	7.14	8.12	11.3	13.7	16.0	19.4	22.1
12 hour	5.91	6.73	9.42	11.4	13.4	16.2	18.5
18 hour	4.53	5.18	7.30	8.83	10.4	12.7	14.5
24 hour	3.75	4.29	6.10	7.40	8.73	10.7	12.2
30 hour	3.23	3.71	5.30	6.45	7.63	9.33	10.7
36 hour	2.85	3.28	4.71	5.75	6.82	8.37	9.64
48 hour	2.33	2.69	3.90	4.78	5.69	7.01	8.11
72 hour	1.73	2.01	2.93	3.62	4.33	5.37	6.24
96 hour	1.38	1.60	2.35	2.91	3.50	4.35	5.07
120 hour	1.15	1.34	1.96	2.42	2.91	3.63	4.23
144 hour	0.990	1.14	1.66	2.05	2.47	3.08	3.58
168 hour	0.867	0.996	1.44	1.77	2.12	2.65	3.07

Figure 2 IFD Data for Doolandella

4.4 PRE-DEVELOPMENT AND POST-DEVELOPMENT HYDROLOGY

The following parameters have been adopted for the existing pre-development and post-development site conditions assessed in accordance with QUDM Fourth Edition, Section 4:

Pre-Development Parameters:

- Catchment Area (CAT C1) = **0.495 ha**
- Time of Concentration, tc = **11.8 minutes**
- Fraction Impervious, fi = **0.12** (12% Impervious)
- Runoff Co-efficient, C_{10} value = **0.70**

Post-Development Parameters:

- Catchment Area (CAT C2) = **0.495 ha**
- Time of Concentration, tc = **6.6 minutes**
- Fraction Impervious, fi = **0.60** (60% Impervious)
- Runoff Co-efficient, C_{10} value = **0.78**

As there is no layout available for the future residential dwellings to be constructed on the individual lots (Lots 1-8) the exact road, roof and ground catchment areas for the new lots are unknown at this stage. As such assumptions have been made with regards to the developed catchment areas in accordance with QUDM "Table 4.5.1 – Fraction Impervious vs. Development Category". An overall fraction impervious of **0.60** has been adopted with respect to the developable area within the subject site area.

4.4.1 PRE-DEVELOPMENT DRAINS MODEL PARAMETERS

Table 1 below shows the parameters used in the DRAINS Model for the pre-development catchment scenario.

Table 1 – Pre-Development Drains Model Parameters – CAT C1

Pre-Development Catchment (C1)	Paved	Supplementary	Grassed
Percentage of Area (%)	12	0	88
Time of Concentration (minutes)	11.8	0	11.8

4.4.2 POST-DEVELOPMENT DRAINS MODEL PARAMETERS

Table 2 below shows the parameters used in the DRAINS Model for the post-development catchment scenario.

Table 2 – Post-Development Drains Model Parameters – CAT C2

Post-Development Catchment (C2)	Paved	Supplementary	Grassed
Percentage of Area (%)	60	0	40
Time of Concentration (minutes)	5.0	0	5.0

4.4.3 PRE AND POST-DEVELOPMENT MODEL RESULTS

Summaries of the hydrological calculations for the pre- and post-development (unmitigated) scenarios are demonstrated in Tables 3-5 below. The results show the median temporal pattern stormwater of the critical duration for each design storm event.

Table 3 – Pre-Development Peak Flow – CAT C1

PRE-DEVELOPMENT PEAK DISCHARGE (Q) – CAT C1				
Storm Event (year)	**Cy**	**Iy (mm/hr)**	**Peak Qy (Rational) (m^3/s)**	**Peak Qy (ILSAX) (m^3/s)**
Q2 (39.35% AEP)	0.595	104	0.085	0.087
Q5 (18.13% AEP)	0.665	131	0.120	0.128
Q10 (10% AEP)	0.700	152	0.146	0.155
Q20 (5% AEP)	0.735	174	0.176	0.184
Q50 (2% AEP)	0.805	203	0.225	0.221
Q100 (1% AEP)	0.840	225	0.260	0.249

Table 4 – Post-Development Peak Flow – CAT C2

POST-DEVELOPMENT PEAK DISCHARGE (Q) – CAT C2				
Storm Event (year)	**Cy**	**Iy (mm/hr)**	**Peak Qy (Rational) (m^3/s)**	**Peak Qy (ILSAX) (m^3/s)**
Q2 (39.35% AEP)	0.663	134	0.123	0.132
Q5 (18.13% AEP)	0.741	170	0.174	0.181
Q10 (10% AEP)	0.780	198	0.213	0.223
Q20 (5% AEP)	0.819	229	0.258	0.255
Q50 (2% AEP)	0.897	269	0.332	0.310
Q100 (1% AEP)	0.936	300	0.386	0.353

Table 5 – Pre-vs-Post-Development (Unmitigated) Peak Flow Comparison

PRE-VS-POST-DEVELOPMENT (UNMITIGATED) PEAK DISCHARGE (Q)				
Storm Event (year)	**Pre-Development Peak Qy (ILSAX) (m^3/s)**	**Post-Development Unmitigated Peak Qy (ILSAX) (m^3/s)**	**Difference (m^3/s)**	**Increase / Decrease (%)**
Q2 (39.35% AEP)	0.087	0.132	0.045	+45%
Q5 (18.13% AEP)	0.128	0.181	0.053	+53%
Q10 (10% AEP)	0.155	0.223	0.068	+68%
Q20 (5% AEP)	0.184	0.255	0.071	+71%
Q50 (2% AEP)	0.221	0.310	0.089	+89%
Q100 (1% AEP)	0.249	0.353	0.104	+104%

A comparison of the pre- and post-development peak flow rates for unmitigated stormwater discharge using DRAINS Model (ILSAX Method) indicates there will be approximately 0.045m^3/s (45 L/s) to 0.353m^3/s (353 L/s) increase in peak discharge from the subject site for all design storms (Q_2 to Q_{100}) as a result of the proposed development.

Having noted the increase in post-development flows, the existing and proposed stormwater drainage network will continue to convey all discharge flows from the development area to the Stormwater Trunk Infrastructure located within Cloverdale Road carriage. Since the Stormwater Trunk Infrastructure has been designed to cater for the catchment's fully developed scenario, therefore no further detention measures are proposed for the development site.

4.5 PROPOSED DRAINAGE WORKS

As shown on the Stormwater Management Drawings (**Appendix D**) all stormwater runoff from the proposed residential development (CAT C2) will discharge to the New Road and the Ewingsdale Street kerb and channel. Surface runoff will then be captured and conveyed via a series of stormwater gully pits and an underground drainage network that connects to the Trunk Drainage Infrastructure within the Cloverdale Roadway adjacent to the northern boundary of the subject site.

During major storm events (up to and including Q_{100}) the new road network will be designed to contain all overland flow within the kerb and channel and will not be directed towards any of the new lots or the adjacent neighbouring properties. The road network will be designed with grades/falls to direct all overland flows (in a safe manner) to the underground drainage network.

As no development works are proposed within the southern portion of the grater subject site, it will continue to convey sheet flows as per its existing conditions.

5 STORMWATER QUALITY ASSESSMENT

5.1 DEVELOPMENT TRIGGERS FOR STORMWATER QUALITY MANAGEMENT

The proposed development has been assessed against the latest State Planning Policy 2017 (SPP 2017), summarised in Table 6 below.

Table 6 – Assessment Benchmarks – Water Quality SPP (2017)

State Planning Policy Criteria	Application to Development
(1) A material change of use for an urban purpose that involves premises 2500 m² or greater in size and: (a) will result in six or more dwellings; or (b) an impervious area greater than 25 per cent of the net developable area.	Not applicable
(2) Reconfiguring a Lot for urban purposes that involves premises 2500 m² or greater in size AND will result in six or more lots; or	The existing development area is **0.495 ha**, which is greater than 2500m^2 and will result in more than six lots.
(3) Operational works for an urban purpose that involves disturbing a land area 2500 m² or greater in size.	Not applicable

Consequently, the proposed development triggers the State Planning Policy (SPP) 2017 assessment benchmarks for stormwater quality. However, the existing site levels pose constraints to providing effective traditional stormwater treatment measures such as bioretention basins. Therefore, in accordance with Item 7(a), Point #4 of Brisbane City Council's Information Request (Application Reference: A006953529, *dated 06/03/2026*), provision of two (2x) WSUD street tree treatment devices to be provided on the proposed New Road, upstream of the new gully pits which is intended to provide treatment for the new road areas. Refer to the Stormwater Management Drawings within **Appendix D** for configuration details of the WSUD treatment measures.

6 EXTERNAL UPSTREAM CATCHMENT ASSESSMENT

6.1 EXTERNAL UPSTREAM CATCHMENT HYDROLOGY

As described in Section 2.3 above, there appears to be an external upstream catchment identified from the areas of the neighbouring property, adjacent to the western (side) boundary of the subject site (being Lot 93 on RP90234) which will contribute to overland flows through the development site.

Catchment hydrology has been assessed for the external upstream catchment using a DRAINS hydrological computer model (ILSAX Method). Calibration of the DRAINS hydrological computer model was achieved by comparing the DRAINS flow rates to the Rational Method calculations in accordance with QUDM (Fourth Edition, 2016).

The following parameters have been adopted for the external upstream catchments assessed in accordance with QUDM Fourth Edition, Section 4:

External Catchment Parameters:

- Catchment Area (CAT EXT1) = **0.344 ha**
- Time of Concentration, tc = **10.4 minutes**
- Fraction Impervious, fi = **0.18** (**18%** Impervious)
- Runoff Co-efficient, C_{10} value = **0.70**

The fraction impervious for the external upstream catchments were estimated using Metromaps aerial imagery. Refer to **Appendix D** for the external catchment delineation. Table 7 below shows the summary of the hydrological calculations for the external upstream catchment.

Table 7 – External Catchment Peak Flow - (CAT EXT1)

EXTERNAL CATCHMENT PEAK DISCHARGE (Q) – CAT EXT1				
Storm Event (year)	**Cy**	**Iy (mm/hr)**	**Peak Qy (Rational) (m^3/s)**	**Peak Qy (ILSAX) (m^3/s)**
Q2 (39.35% AEP)	0.595	109	0.062	0.068
Q5 (18.13% AEP)	0.665	138	0.087	0.093
Q10 (10% AEP)	0.700	159	0.107	0.112
Q20 (5% AEP)	0.735	183	0.128	0.135
Q50 (2% AEP)	0.805	213	0.164	0.162
Q100 (1% AEP)	0.840	236	0.190	0.183

6.2 EXTERNAL UPSTREAM CATCHMENT CONVEYANCE MEASURES

It is proposed to provide a turfed swale drain to convey surface runoff from the external upstream catchment (CAT EXT1) to the north-eastern corner of the subject site.

The swale drain (Manning's n = 0.03) was sized in DRAINS computer model. The channel will be 2.0m wide and 250mm deep with a minimum average grade of 1.60% and will be aligned with the western

boundaries of proposed Lot 1 and Lot 7. The channel will tie-in with the natural surface and will convey flows to the north-western corner of the site and to the Cloverdale Road reserve.

Refer to Figure 3 below for swale drain properties during the 100-year ARI (1% AEP) peak storm event.

Additionally in accordance with Item 7(a), Point #2 of Brisbane City Council's Information Request (Application Reference: A006953529, *dated 06/03/2026*), provision of a 375mm RCP connection has been provided for the future LPD connection of the upstream property.

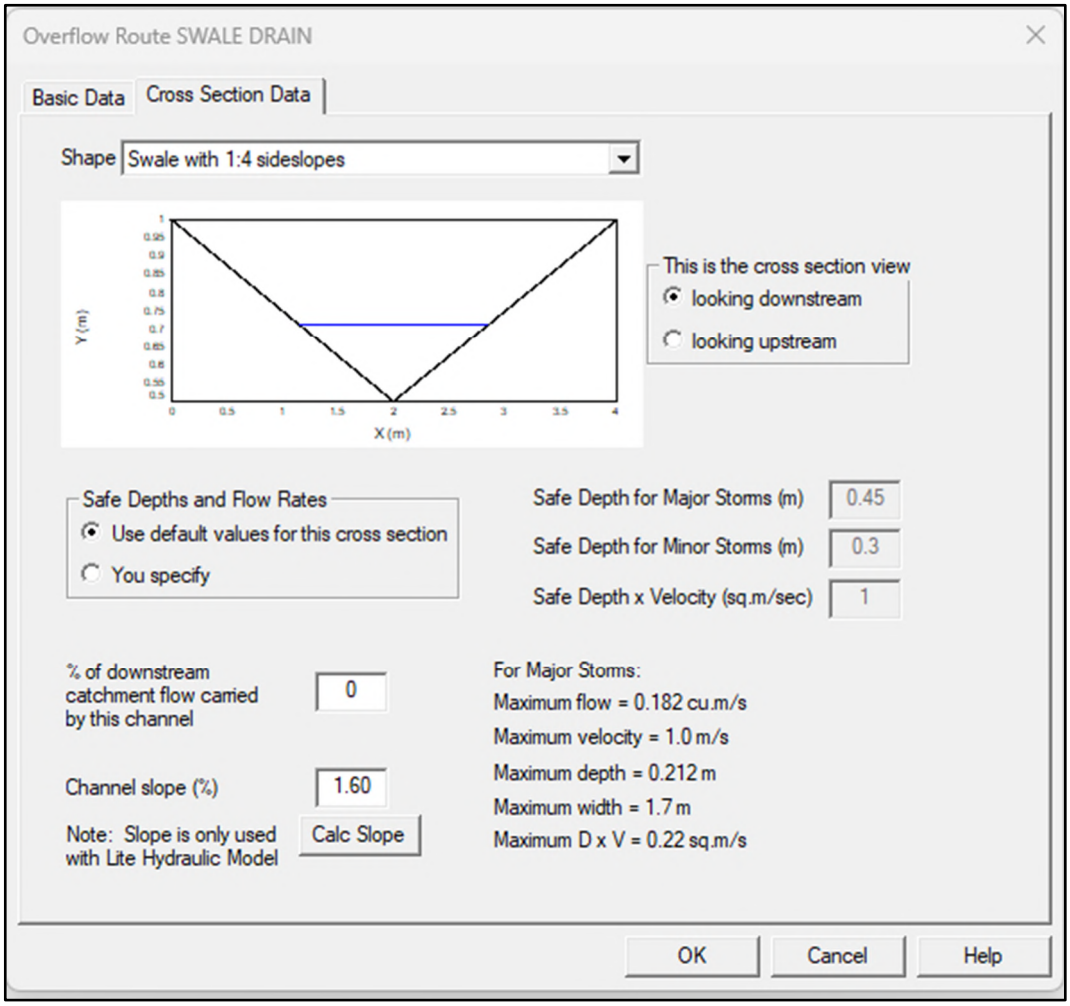


Figure 4 – Swale Drain Flow Calculations From DRAINS (Q_{100}, 1%AEP Results)

7 EROSION AND SEDIMENT MANAGEMENT

7.1 EROSION AND SEDIMENT MANAGEMENT

7.1.1 PRE-DEVELOPMENT

Prior to construction commencing, the following sediment and erosion control measures will be implemented, where appropriate, to minimise disturbance and ensure water quality is maintained:

- Designation of transport routes to ensure minimal vegetation disturbance. Transport routes will have construction exits in accordance with Best Practice Erosion and Sediment Control (BPESC) document of International Erosion Control Association (IECA) Australia
- Maximise vegetated open space areas to reduce soil disturbance and proved filter strip treatment for runoff;
- Construction entry/exit to be installed and will comprise of a designed gravel pad or equivalent material in accordance with (BPESC) document of (IECA) Australia
- Install sediment fences around the proposed bulk earthworks site (along toe of batter alignment); and
- Regularly water spray adjacent to the proposed bulk earthworks site (along property boundary) for dust suppression

7.1.2 BULK EARTHWORKS

A number of erosion and sediment control measurements listed below should be implemented, where appropriate, when the construction involves bulk earthwork. The typical control measures are listed below:

- Construct chutes to control runoff over earthworks batters;
- Construction of temporary bund at the top of all earthworks batters to ensure runoff is directed to chutes and away from exposed batters;
- Drainage structure sediment barriers will be installed at all field inlets and gully inlets;
- Vehicle shake down area will be constructed at all vehicle entry/exist points to and from the site;
- Sediment fences will be installed at all downstream developable area boundaries and down slope areas of material stockpile bases; and
- All batters to be top-soiled and seeded immediately upon reaching finished earthworks levels

7.1.3 CONSTRUCTION

The following measures will be undertaken, where appropriate, to mitigate water quality impacts during construction phase:

- Sediment fences to be erected at the downstream site boundaries and at the base of all batters and stockpiles to prevent sediment transportation off site;
- Grass filter strips to be placed along all road verges;
- Re-vegetation of all disturbed areas within two weeks of completion; and
- All sediment control structures to be maintained in an effective manner and inspected after each storm event. No structure is to accumulate sediment above 40% of its capacity.

8 MONITORING AND MAINTENANCE

8.1 GENERAL

The following monitoring and maintenance procedures (where applicable) are to be undertaken by the site supervisor during all phases of the development:

- If any validated complaints or evidence of water quality deterioration is reported downstream of the site, the following actions are to be taken:
  - Locate source of water quality deterioration
  - Construct temporary controls to prevent continuing short-term deterioration.
  - Repair existing controls, modify procedures or construct additional controls to prevent further deterioration.

The general requirement of monitoring during the construction phase (where applicable) will be:

- Work activities are restricted to designated construction areas;
- Earthworks and site clearing are undertaken in accordance with the Erosion and Sediment Control Plans;
- Erosion and sediment control devices are to be constructed/installed in accordance with the approved Erosion and Sediment Control Plans;
- Inspection of sediment fences and erosion and sediment control structures/devices on a weekly basis as well as after any rain event exceeding 25mm in 24hrs;
- Stormwater discharges from the site do not have any diverse effect on the downstream environment;
- Monitoring and recording of the performance of the drainage control devices including water quality testing where required;
- Any failure in the stormwater system shall be immediately rectified to prevent uncontrolled discharge from the disturbed area of the site; and
- Any failure to the stormwater system causing damage to surroundings should implement immediate remedial work to the damaged areas.

8.2 RESPONSIBILTY AND REPORTING

- The contractor shall be responsible for monitoring the performance of all drainage control and erosion and sediment control devices;
- Records of any failures to devices should be kept and reported to the Construction Manager;
- Regular inspections of the devices shall be reported to the Construction Manager; and
- Inspections of the devices after heavy rainfall shall be reported to the Construction Manager.

9 CONCLUSIONS

This report has assessed the hydrology and hydraulics of the proposed development at 70 Cloverdale Road, Doolandella QLD for the pre-development and post-development scenarios.

Based on this stormwater management strategy the following conclusions have been drawn:

- The proposed drainage infrastructure within the New Road and the existing drainage infrastructure located within the Ewingsdale Street Road reserve adjacent to the eastern boundary of the subject site will be considered the lawful point of discharge (LPD) for the development.
- The existing and proposed stormwater drainage network will continue to convey all discharge flows from the development area to the Stormwater Trunk Infrastructure located within Cloverdale Road carriage. Since the stormwater trunk Infrastructure has been designed to cater for the catchment's fully developed scenario, therefore no further detention measures are proposed for the development site.
- As the development triggers requirements for stormwater quality management in accordance with BCC Planning Scheme, it is proposed to provide stormwater quality treatment via the provision of two (2x) WSUD street tree treatment devices within the proposed New Road, upstream of the new gully pits.
- In accordance with BCC Online Interactive Mapping, the subject site has been identified to be within a flood hazard area at the southern-most extent of the subject site, however outside of the proposed developable areas.

This report has demonstrated that the proposed development provides an acceptable solution for stormwater management and has been designed to comply accordance with BCC Planning Scheme, Queensland Urban Drainage Manual (QUDM, 2016), Australian Rainfall and Runoff (ARR) and Healthy Waterways – Water by Design.

10 APPENDICES

Appendix A: SITE SURVEY PLAN

Appendix B: BCC AS-CONSTRUCTED AND FLOOD MAPPING

Appendix C: SITE SUBDIVISION PLAN

Appendix D: STORMWATER MANAGEMENT DRAWINGS

APPENDIX A SITE SURVEY PLAN

BCC DS
RECEIVED
03/02/2026
APPLICATION REF
A006953529

APPENDIX C – DETAIL SURVEY PLAN

SERVICE MAINS KEY

- Denotes *indicative position only of underground Stormwater Pipes
- Denotes *indicative position only of underground Sewer Pipes
- Denotes *indicative position only of underground Gas Pipes
- Denotes *indicative position only of underground Communication Lines
- Denotes *indicative position only of underground Water Pipes
- Denotes *indicative position only of underground Electricity Cables
- Denotes overhead Electricity Line by survey
- Denotes overhead Communication Line by survey

WM Water Meter · H Hydrant · V Valve · FT Field Trap · GM Gas Meter · LP Elec & Light Pole · TP Communications Pit · PP Elec Pole

*IMPORTANT NOTE: Unless stated otherwise, ALL underground service locations are indicative only (not surveyed) and have been scaled only from Dial Before You Dig mapping (DBYD). All DBYD information is indicative only and does not necessarily represent the actual location of a service. If accurate location of services is required, you must engage a Service Locator and NOT rely solely upon DBYD information!

LEGEND

RW – Retaining Wall
TOW – Top of Wall Height
CL – Clothesline
×FC – Fence Change

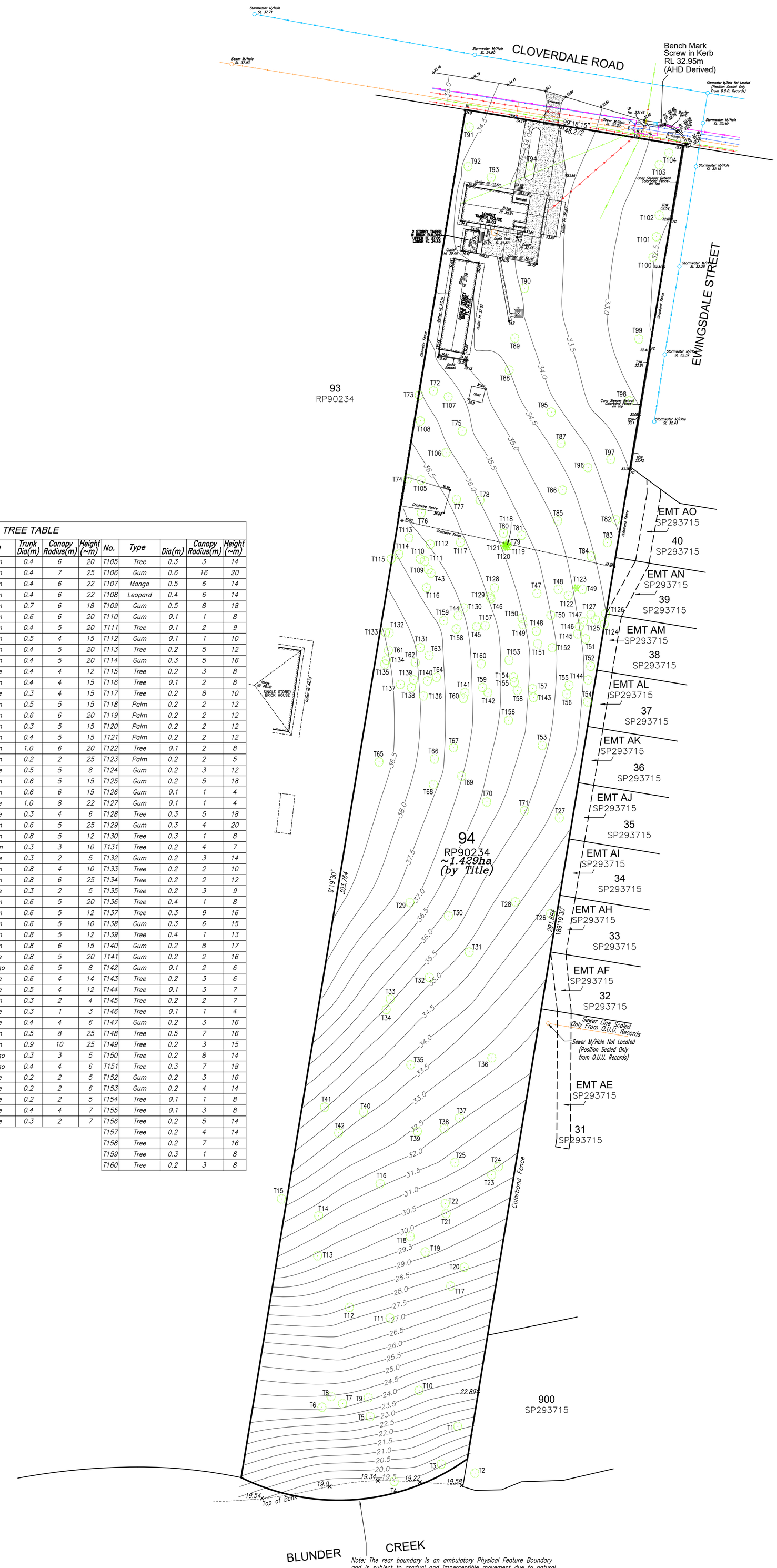
Conc · Pavers · Bitumen · Hedge

TREE TABLE

No.	Type	Trunk Dia(m)	Canopy Radius(m)	Height (~m)
T1	Gum	0.4	4	18
T2	Tree	0.5	10	25
T3	Gum	0.4	5	20
T4	Paperbark	0.8	6	25
T5	Gum	0.6	6	20
T6	Gum	1.0	8	25
T7	Gum	0.8	10	25
T8	Gum	0.6	6	25
T9	Gum	1.0	7	35
T10	Gum	0.7	6	30
T11	Gum	0.4	5	25
T12	Gum	0.8	5	30
T13	Gum	0.8	7	25
T14	Gum	0.8	6	30
T15	Gum	0.6	6	30
T16	Gum	0.8	6	30
T17	Gum	0.6	5	22
T18	Gum	0.6	5	30
T19	Gum	0.8	6	30
T20	Gum	1.0	8	25
T21	Gum	0.4	5	18
T22	Gum	0.4	5	20
T23	Gum	0.8	7	22
T24	Gum	0.6	6	15
T25	Gum	0.3	5	20
T26	Gum	0.5	6	25
T27	Gum	0.5	6	25
T28	Gum	0.4	6	20
T29	Gum	0.6	7	25
T30	Gum	0.3	4	12
T31	Gum	0.3	4	15
T32	Gum	0.8	10	30
T33	Gum	0.5	6	30
T34	Gum	0.5	6	30
T35	Gum	0.3	5	20
T36	Gum	0.5	6	25
T37	Gum	0.8	6	30
T38	Gum	0.5	7	25
T39	Gum	0.3	4	12
T40	Gum	0.4	5	18
T41	Gum	0.3	3	12
T42	Gum	0.3	4	12
T43	Tree	1.0	4	10
T44	Gum	0.3	4	8
T45	Gum	0.4	5	15
T46	Gum	0.3	4	25
T47	Gum	0.5	6	30
T48	Gum	0.3	4	10
T49	Gum	0.7	10	30
T50	Gum	0.4	3	10
T51	Gum	0.3	4	20
T52	Tree	0.5	5	10

No.	Type	Trunk Dia(m)	Canopy Radius(m)	Height (~m)
T53	Gum	0.4	6	20
T54	Gum	0.4	7	25
T55	Gum	0.4	6	22
T56	Gum	0.4	6	22
T57	Gum	0.7	6	18
T58	Gum	0.6	6	20
T59	Gum	0.4	5	20
T60	Gum	0.5	4	15
T61	Gum	0.4	5	20
T62	Gum	0.4	5	20
T63	Tree	0.4	4	12
T64	Gum	0.4	4	15
T65	Tree	0.3	4	15
T66	Gum	0.5	4	15
T67	Gum	0.4	5	20
T68	Gum	0.6	6	15
T69	Gum	0.3	5	25
T70	Gum	1.0	6	20
T71	Gum	0.2	2	25
T72	Gum	0.5	5	8
T73	Gum	0.6	5	15
T74	Gum	0.6	6	15
T75	Tree	1.0	8	22
T76	Tree	0.3	4	6
T77	Gum	0.6	5	25
T78	Gum	0.8	5	12
T79	Palm	0.3	3	10
T80	Tree	0.3	2	5
T81	Gum	0.8	4	10
T82	Gum	0.8	6	25
T83	Gum	0.8	5	20
T84	Gum	0.6	5	12
T85	Gum	0.6	5	12
T86	Gum	0.8	5	10
T87	Gum	0.8	5	12
T88	Gum	0.8	6	15
T89	Pine	0.8	5	20
T90	Mango	0.6	5	8
T91	Tree	0.6	4	14
T92	Tree	0.5	4	12
T93	Gum	0.3	2	4
T94	Tree	0.3	1	3
T95	Tree	0.4	4	6
T96	Gum	0.5	8	25
T97	Gum	0.9	10	25
T98	Mango	0.3	3	5
T99	Mango	0.4	4	6
T100	Tree	0.2	2	5
T101	Tree	0.2	2	6
T102	Tree	0.2	2	5
T103	Tree	0.4	4	7
T104	Tree	0.3	2	7

No.	Type	Dia(m)	Canopy Radius(m)	Height (~m)
T105	Tree	0.3	3	14
T106	Gum	0.6	16	20
T107	Mango	0.5	6	14
T108	Leopard	0.4	6	14
T109	Gum	0.5	8	18
T110	Gum	0.1	1	8
T111	Tree	0.1	2	9
T112	Gum	0.1	1	10
T113	Tree	0.2	5	12
T114	Gum	0.3	5	16
T115	Tree	0.2	3	8
T116	Tree	0.1	2	8
T117	Palm	0.2	2	12
T118	Palm	0.2	2	12
T119	Palm	0.2	2	12
T120	Tree	0.1	2	8
T121	Palm	0.2	2	5
T122	Tree	0.1	2	8
T123	Palm	0.2	2	5
T124	Gum	0.2	3	12
T125	Gum	0.2	5	18
T126	Gum	0.1	1	4
T127	Gum	0.3	4	7
T128	Tree	0.3	1	4
T129	Gum	0.3	4	20
T130	Tree	0.3	1	8
T131	Tree	0.2	4	7
T132	Tree	0.2	3	8
T133	Tree	0.2	2	8
T134	Tree	0.2	2	12
T135	Tree	0.2	2	12
T136	Tree	0.4	1	8
T137	Tree	0.3	9	16
T138	Gum	0.3	6	15
T139	Tree	0.4	1	13
T140	Gum	0.2	8	17
T141	Gum	0.2	2	16
T142	Gum	0.1	2	6
T143	Tree	0.2	3	6
T144	Tree	0.1	3	7
T145	Tree	0.2	2	7
T146	Tree	0.1	1	4
T147	Gum	0.2	3	16
T148	Tree	0.5	7	16
T149	Tree	0.2	3	15
T150	Tree	0.2	8	14
T151	Tree	0.3	7	18
T152	Gum	0.2	3	16
T153	Gum	0.2	4	14
T154	Tree	0.1	1	8
T155	Tree	0.1	3	8
T156	Tree	0.2	5	14
T157	Tree	0.2	4	14
T158	Tree	0.2	7	16
T159	Tree	0.3	1	8
T160	Tree	0.2	3	8



Note; The rear boundary is an ambulatory Physical Feature Boundary and is subject to gradual and imperceptible movement due to natural processes. The location depicted on this plan is as per the current authoritative plan RP90234. If re-surveyed under current legislation the location would likely change to accord with the current top of bank. As physical feature boundaries are defined by natural features, they are curvilinear and cannot be dimensioned.

Scale 1:500 – Lengths are in Metres.

0 5 10 15 20 25 30 35 40 45 50

DISCLAIMER:

Features on this plan have been located to an accuracy suitable for a Detail Survey and should not be used for exact measurements unless advised otherwise by Site Surveys®

Underground Services have NOT been located unless stated otherwise.

This is NOT a Boundary Survey, areas and dimensions shown on this plan are indicative only and subject to Cadastral Survey, unless advised otherwise by Site Surveys P/L®

Any license express of implied to use this document for any purpose whatsoever is restricted to the terms of agreement of implied agreement between Site Surveys P/L and the instructing party.

®Contact Site Surveys P/L for advice on the specific limitations of this plan.
®WARNING® Underground Services on site and in road have not been located unless otherwise stated – refer to Dial Before You Dig and Service Providers for information prior to commencing any works!
®WARNING® This property is subject to flooding – refer to Brisbane City Council FloodWise Property Report!
®See Natural Ground Plan (sheet 2) for Brisbane Cityplan 2014 defined ground level!

CLIENT: Dildeep Sohal	Date of Survey	30/11/2022
	Revision	B 06/09/2023
	Contour Interval	0.5m
Reference: 4643	Locality	DOOLANDELLA
	Local Authority	BRISBANE CITY COUNCIL
	Level Datum	AHD DERIVED FROM GNSS/CORS Obs
SHEET: 1 OF 3	Surveyor: H.L	Drafter: H.L

RESIDENTIAL SITE PLAN

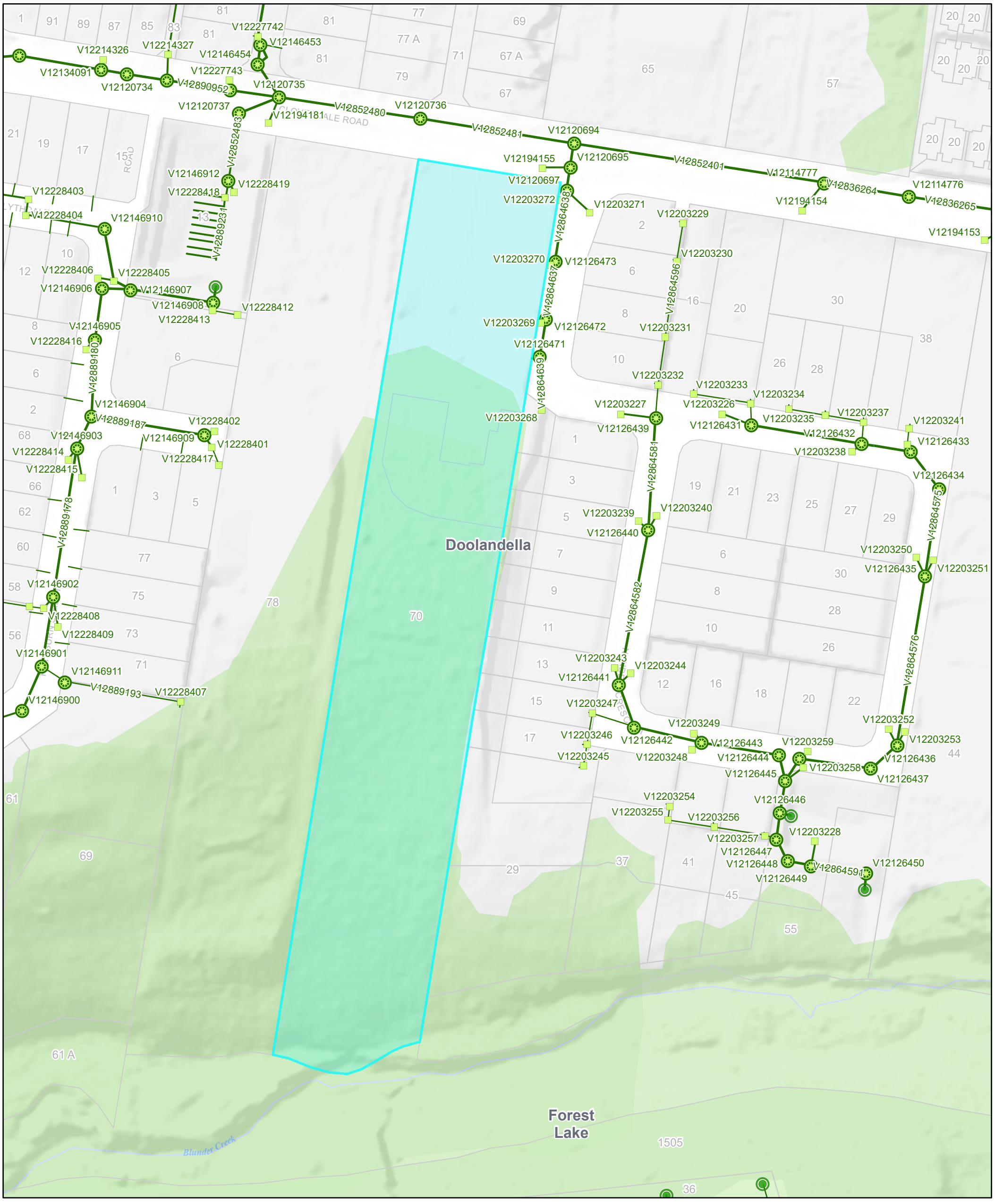
70 Cloverdale Rd, Doolandella
(LOT 94 ON RP90234)

SCALE 1:500 @ A1

SITE SURVEYS
Ph. 07 3367 0433
Email. mail@sitesurveys.com.au
Unit 2, 30 Boothby Street
KEDRON QLD 4031

APPENDIX B BCC AS-CONSTRUCTED AND FLOOD MAPPING

Community Maps



06/08/2026, 12:12:32

Culvert

End Structure

- End cap
- Flood Gate
- Pipe End Outlet
- Gully

- Junction
- Stormwater Manhole

Pipe

- DRAIN
- FOUL WATER
- GULLY CONNECT
- ROOF WATER

- SQID
- Surface Drain

Waterbody

- Artesian Well
- Detention Basin
- Lake
- Sealed Plan
- Property Parcel
- Parcel Outside BCC

1:1,196

0 0.01 0.03 0.05 mi

0 0.02 0.04 0.08 km

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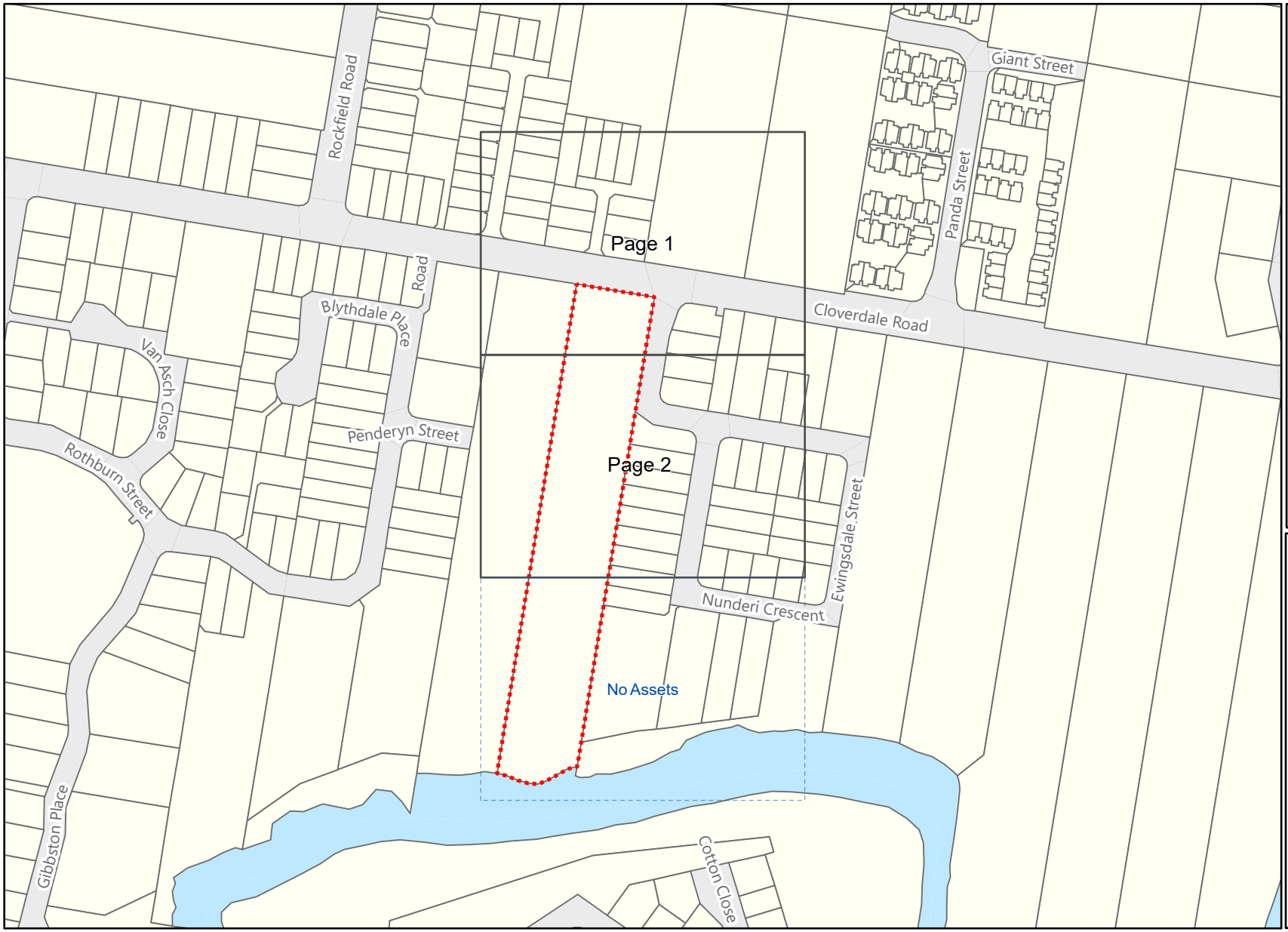
Job # 52974885
Seq # 271835054
Provider: Brisbane City Council
Telephone: (07) 3403 8888



Legend
- BYDA Enquiry
- Detailed map page
- No dig site assets

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In an emergency contact Brisbane City Council on 07 3403 8888

Index Sheet

0 37.5 75 150 m

Scale 1:3,500

Plans generated by SmarterWX™ Automate

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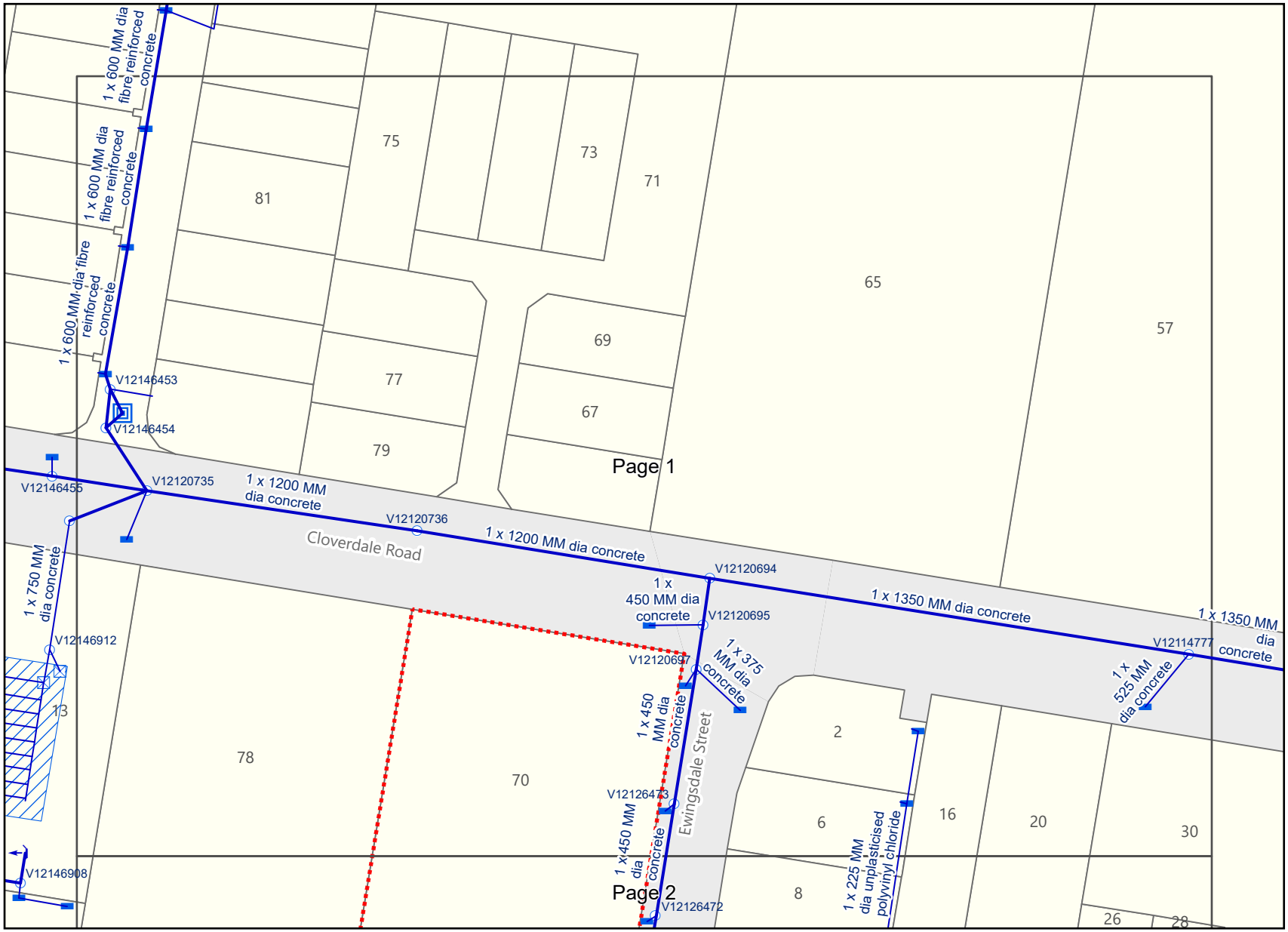

Legend

BYDA Enquiry

Stormwater Network

- Stormwater Drain
- Stormwater Gully / Roofwater Connection
- Stormwater Maintenance Hole
- Stormwater Gully Pit
- Stormwater Field Inlet
- Pipe End Outlet
- Stormwater Treatment Asset - Point
- Stormwater Treatment Asset - Area

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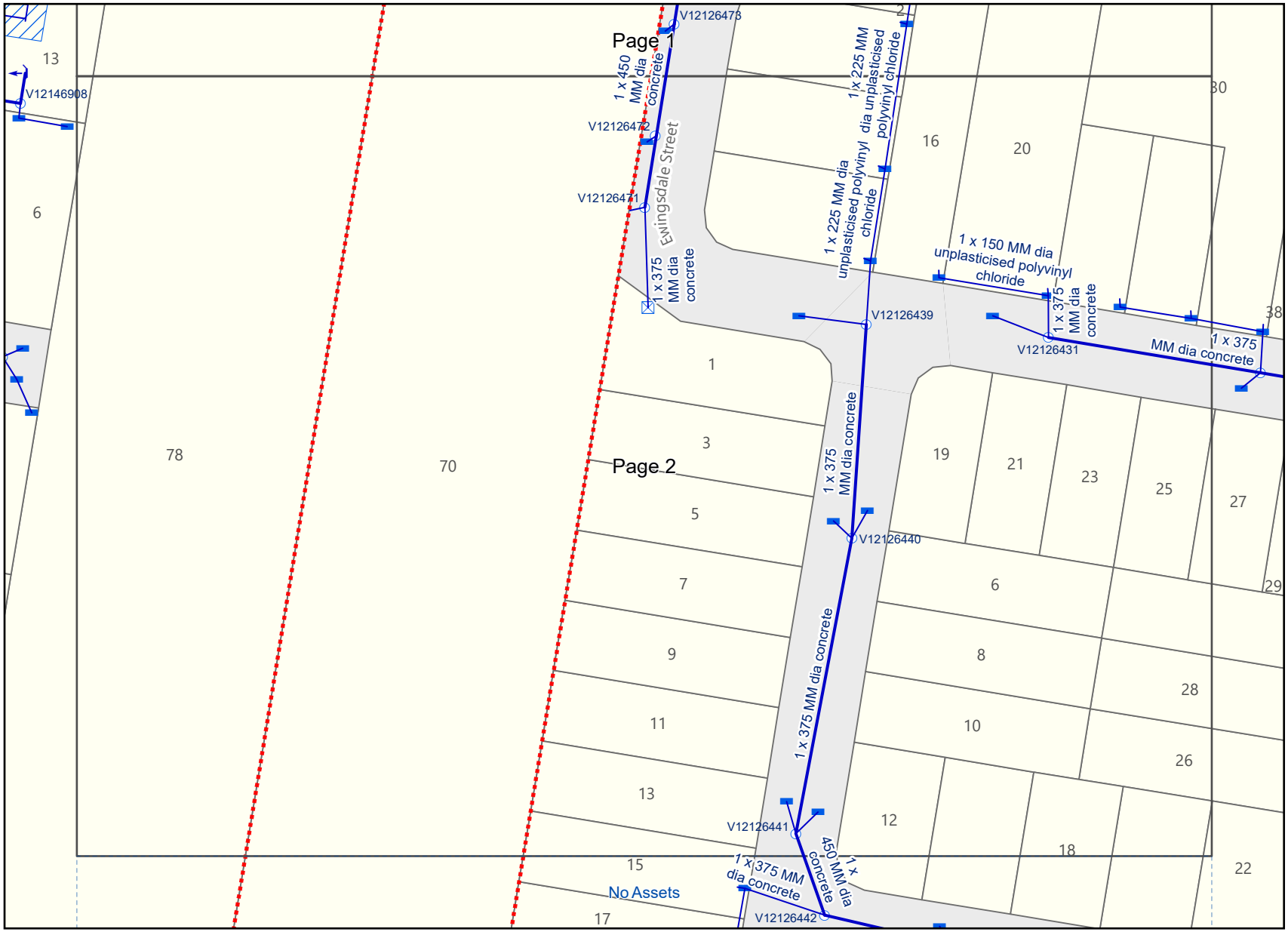
24/04/26 (valid for 30 days)

0 10 20 40 m

Scale 1:1,000

Plans generated by SmarterWX™ Automate

Job # 52974885
Seq # 271835054
Provider: Brisbane City Council
Telephone: (07) 3403 8888



Legend

BYDA Enquiry

Stormwater Network

- Stormwater Drain
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24/04/26 (valid for 30 days)

0 10 20 40 m

Scale 1:1,000

Plans generated by SmarterWX™ Automate

APPENDIX C SITE SUBDIVISION PLAN

BCC DS
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APPLICATION REF
A006953529

CLOVERDALE

ROAD

Existing Property Boundary
Subdivision Proposal
Site Contour
Adjoining Properties
Ecological Boundary
Easement

1
368.95m

House to be Re-sited to Lot 1

2
368.84m2

3
354.18m2

4
333.07m2

5
333.07m2

6
353.24m2

7
368.95m2

Structure to be Removed

NEW ROAD

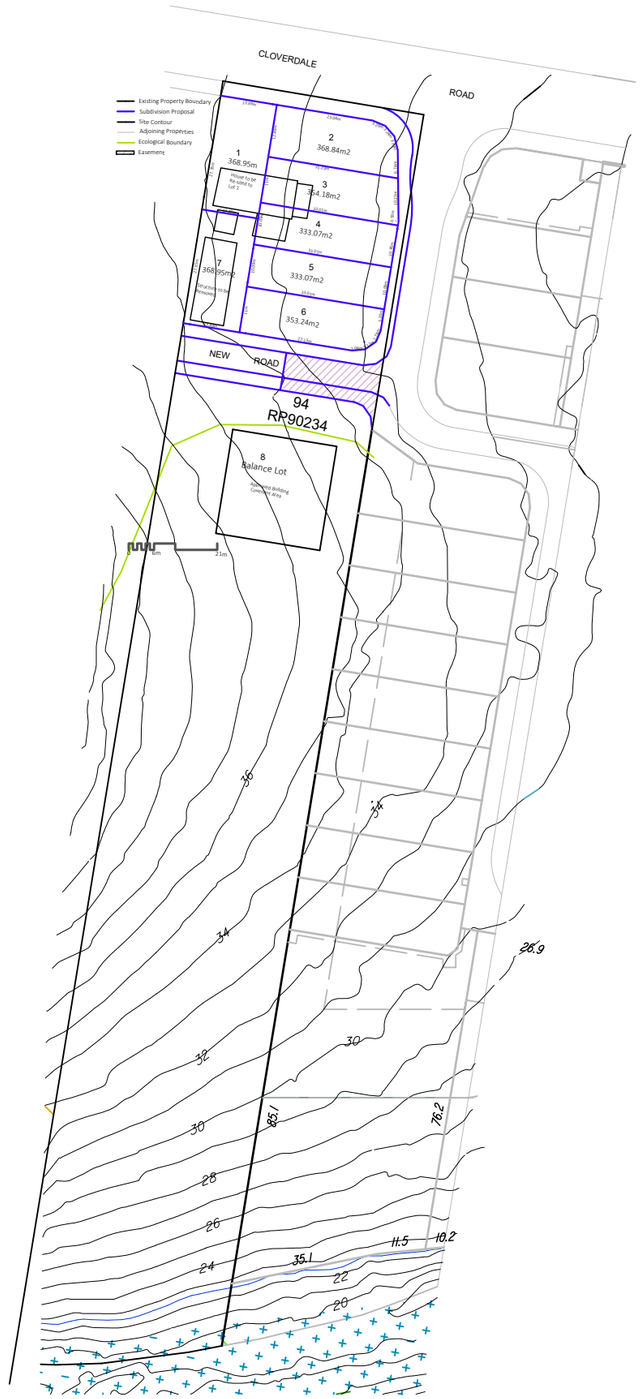
94
RP90234

8
Balance Lot

Approved Building Covenant Area

13.49m
23.04m
3.29m 3.24m 3.38m
12.49m
27.35m
31.23m
6.74m
1.1m
13.49m
10.23m
33.01m
0.92m
10.09m
10.90m
33.01m
27.35m
10.09m
10.09m
33.01m
11m
5.20m
13.49m
27.13m
3.04m 2.11m 2.78m

0 6m 21m



Reconfiguration of Lot (1 into 8 lots)

CLIENT: SANDEEP SINGH, DILDEEP SOHAL	PROJECT: RECONFIGURATION OF LOT	ZoiQ	WEBSITE: WWW.ZOIQ.AU EMAIL: PLAN@ZOIQ.AU LOCATION: BRISBANE I SYDNEY SMART PLANNING	DRAWING TITLE: RECONFIGURATION OF LOT AND MATERIAL CHANGE OF USE	REVISION: ZO7
ADDRESS: 70 CLOVERDALE ROAD, DOOLANDELLA QLD 4077	DRAWN ON: 29 JANUARY 2026				SCALE: N/A
	CHECKED BY: MR VI				ORIENTATION:

APPENDIX D STORMWATER MANAGEMENT DRAWINGS

PROPOSED DEVELOPMENT
70 CLOVERDALE RD, DOOLANDELLA

GENERAL NOTES

1. THE CONTRACTOR MUST COMPLY WITH ALL LOCAL AUTHORITY CONDITIONS RELEVANT TO THIS DEVELOPMENT. THE CONTRACTOR MUST OBTAIN ALL NECESSARY PERMITS & APPROVALS & APPROVED "FOR CONSTRUCTION" DRAWINGS PRIOR TO COMMENCEMENT OF WORK. THESE DOCUMENTS MUST BE KEPT ON SITE FOR INSPECTION AS REQUIRED.
2. THE DRAWINGS MUST BE READ IN CONJUNCTION WITH THE DEVELOPMENT APPROVAL CONDITIONS. CONSTRUCTION MUST NOT COMMENCE UNTIL FINAL OPERATIONAL WORKS APPROVAL OR OTHER RELEVANT COUNCIL APPROVAL TO COMMENCE WORK IS PROVIDED.
3. ALL LEVELS ARE TO A.H.D
4. ALL SETOUT IS TO THE INVERT OF KERB & CHANNEL OR FACE OF KERB.
5. ALL DIMENSIONS ARE TO BE CHECKED ON-SITE BEFORE WORK COMMENCES.
6. DIMENSIONS SHALL NOT BE OBTAINED BY SCALING THE DRAWING.
7. ALL WORKMANSHIP & MATERIALS SHALL BE IN ACCORDANCE WITH S.A.A. CODES & RELEVANT STANDARDS.
8. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH CURRENT LOCAL GOVERNMENT BY-LAWS, STANDARDS, DRAWINGS & SPECIFICATIONS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING ALL RELEVANT AUTHORITIES & PAYING ALL FEES,SEEKING ANY REQUIRED WORK APPROVALS NECESSARY BEFORE COMMENCING WORK, FOR LOCATING ALL EXISTING SERVICES & FOR REPAIR OF ANY SERVICES DAMAGED AS A RESULT OF THE WORKS.
10. THE CLIENTS SURVEYOR SHALL PEG PIT LOCATION & STAKE RP BOUNDARIES PRIOR TO CONSTRUCTION.
11. DAMAGED FOOTPATHS & PRIVATE PROPERTY SHALL BE REINSTATED NO WORSE THAN THE ORIGINAL CONDITION.
12. CONTRACTOR TO VERIFY ALL INVERT LEVELS, SURFACE LEVELS, COVER OVER DRAINAGE LINES, & MINIMUM FALLS ARE CORRECT & OBTAINABLE PRIOR TO COMMENCEMENT OF WORK.
13. CONTRACTOR SHALL VERIFY DIMENSIONS, BENCH MARK LEVELS & ADVISE DRW CONSULTING OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
14. CONTRACTOR SHALL ENSURE ALL EXISTING SERVICES & STRUCTURES ARE TO BE MAINTAINED & IN GOOD ORDER FOR THE DURATION OF THE CONTRACT. ANY COST ASSOCIATED WITH REPAIRING DAMAGE TO EXISTING SERVICES SHALL BE PAID FOR BY THE CONTRACTOR.
15. ALL ENVIRONMENTAL PROTECTION MEASURES SHOULD BE IMPLEMENTED PRIOR TO ANY CONSTRUCTION WORK, INCLUDING CLEARING & COMMENCING.

SAFETY - GENERAL

1. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING DIAL BEFORE YOU DIG (DBYD) DOCUMENTATION & KEEP ON SITE PRIOR CONSTRUCTION.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH THE WHS ACT 2011 (QLD)
3. A SAFE WORK MANAGEMENT PLAN IS REQUIRED TO COMPLY WITH THE ACT THAT INCLUDES THE TRAINING COMPETENCIES & LICENSES REQUIRED TO UNDERTAKE THE WORK.
5. DRW CONSULTING WILL NOT UNDERTAKE INSPECTIONS WHERE THERE IS A SAFETY NON COMPLIANCE EVIDENT.
6. ADVISED RISKS: THE DESIGNER ADVISES OF THE FOLLOWING RISKS THAT ARE PARTICULAR TO THIS PROJECT & WARRANT PARTICULAR MENTION;

a. TRENCHING IN EXCESS OF 1.5m IS A HIGH RISK ACTIVITY.
b. AS CONSTRUCTED INFORMATION MAY NOT BE CORRECT, ACCORDINGLY
c. CHECK FOR THE EXISTENCE OF ASBESTOS IN PIPES.
d. LOCATION OF EXISTING UNDERGROUND SERVICES MAY NOT BE AS SHOWN ON DRAWINGS
e. RISK ASSOCIATED WITH WORK IN CONFINED SPACES
f. RISK ASSOCIATED WITH HIGH PRESSURE WATER & COLLAPSE OF TRENCHES
g. PARTICULAR RISKS: LOW PRESSURE GAS SERVICE IN ROAD VERGE

SAFETY - TRENCHING

1. ALL EXCAVATIONS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE WORK HEALTH & SAFETY ACT 2011 & SUBSEQUENT AMENDMENTS.
2. EXCAVATION WORK SHOULD BE CAREFULLY PLANNED BEFORE WORK STARTS SO IT CAN BE CARRIED OUT SAFELY.
3. REFER TO WORKPLACE HEALTH & SAFETY QLD; EXCAVATION WORK - CODE OF PRACTICE.
4. IF THE EXCAVATION WORK IS OR INVOLVES HIGH-RISK CONSTRUCTION WORK, A PERSON CONDUCTING A BUSINESS OR UNDERTAKING MUST PREPARE A SWMS BEFORE THE HIGH-RISK CONSTRUCTION WORK START.
5. HIGH-RISK CONSTRUCTION WORK INCLUDES A TRENCH WITH AN EXCAVATED DEPTH GREATER THAN 1.5 METRES. THIS REQUIRES THAT ALL SIDES OF THE TRENCH ARE ADEQUATELY SUPPORTED BY ONE OR MORE OF THE FOLLOWING: SHORING, BENCHING, BATTERING.

OTHER CONSULTANTS

1. FOR DETAILS OF ROOF & HOUSE DRAINAGE REFER TO HYDRAULIC CONSULTANTS PLANS.
2. FOR DETAILS OF ELECTRICAL & TELECOM SERVICES REFER TO ELECTRICAL CONSULTANTS PLANS
3. FOR DETAILS OF DRIVEWAY FINISH REFER TO ARCHITECTS PLANS
4. FOR DETAILS OF INTERNAL WATER SERVICE REFER TO HYDRAULIC CONSULTANTS PLANS.
5. FOR DETAILS OF RETAINING WALLS & ANY OTHER STRUCTURES REFER TO STRUCTURAL ENGINEERS PLANS.

ENVIRONMENTAL NOTES

VEGETATION PROTECTION

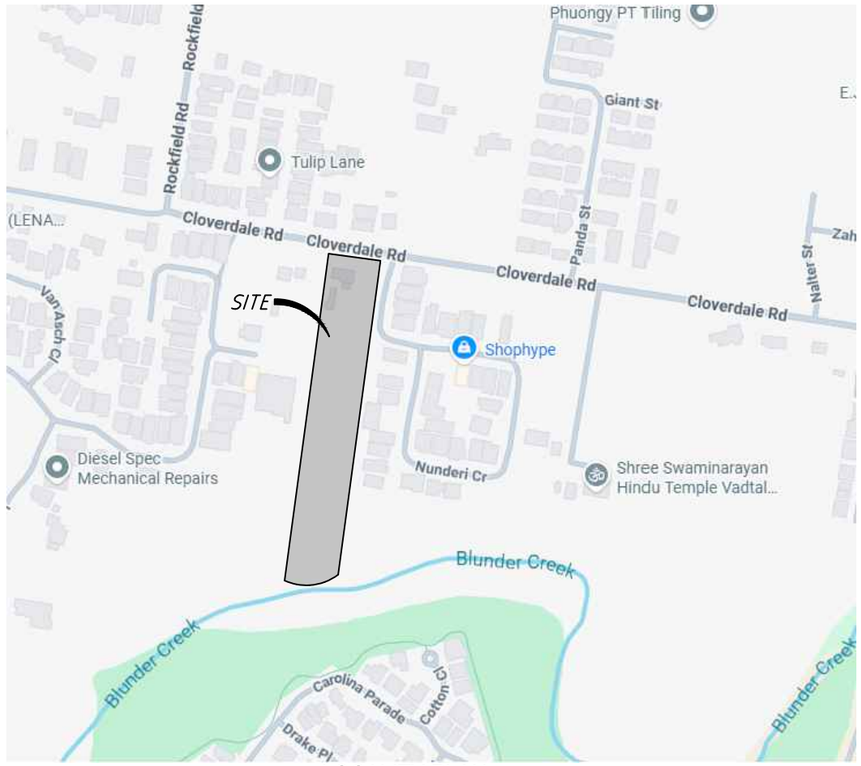
1. CONTRACTORS TO DETERMINE TREE PROTECTIONS ZONE (TPZ) & STRUCTURAL ROOT ZONE (SRZ) & COMPLY WITH AS 4970-2009 PROTECTION OF TREES ON DEVELOPMENT SITES.
2. WHERE POSSIBLE TREE ROOTS SHOULD BE TUNNELED UNDER RATHER THAN SEVERED. IF ROOTS ARE SEVERED THE DAMAGED AREA SHOULD BE TREATED WITH A SUITABLE FUNGICIDE. CONTACT COUNCIL ARBORIST FOR FURTHER ADVICE.
3. ANY TREE LOPPING REQUIRED SHOULD BE UNDERTAKEN BY COUNCIL.

TOPSOIL

1. TOPSOIL & SUBSOIL SHOULD BE STOCKPILED SEPARATELY.

REHABILITATION

1. PRE-DISTURBANCE SOIL PROFILES & COMPACTION LEVELS ARE TO BE REINSTATED.
2. PRE-DISTURBANCE VEGETATION PATTERNS SHOULD BE RESTORED. FOR FURTHER INFORMATION CONTACT LOCAL GOVERNMENT COUNCIL.



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LOCALITY PLAN

N.T.S.

DRAWING INDEX	
DRAWING No.	DESCRIPTION
SM00	LOCALITY PLAN, DRAWING INDEX & NOTES
SM01	PRE & POST DEVELOPMENT STORMWATER ASSESSMENT LAYOUT
SM02	STORMWATER DRAINAGE LAYOUT & DETAILS
SM03	EXTERNAL CATCHMENT STORMWATER ASSESSMENT LAYOUT
SM04	BCC FLOOD OVERLAY LAYOUT

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REV.	AMENDMENT	BY	DATE
PA	PRELIMINARY ISSUE	AM	06.08.26

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SURVEY INFORMATION

SURVEYOR:
SITE SURVEYS

DRAWING No.:
4643-B
VERTICAL DATUM:
AHD
REAL PROPERTY DESCRIPTION:
LOT 94
ON RP90234
SERVICES ALSO PLOTTED FROM:

BEFORE YOU DIG www.byda.com.au

THIS DOCUMENT IS TO BE READ IN CONJUNCTION WITH BEFORE YOU DIG DOCUMENTATION & LOCATION OF SERVICES CONFIRMED PRIOR TO ON-SITE CONSTRUCTION OR EXCAVATION COMMENCES.

PRELIMINARY

PROJECT
PROPOSED DEVELOPMENT
70 CLOVERDALE RD,
DOOLANDELLA

CLIENT
DIDEEP KAUR SOHAL

TITLE
LOCALITY PLAN,
DRAWING INDEX &
NOTES

DRW CONSULTING PTY LTD
CIVIL ENGINEERING DESIGN SERVICES
2/16 Vanessa Blvd Springwood. QLD. 4127.
Phone: (07) 3208 8344
Email: mail@drwconsulting.com.au
ACN 083 549 053
ABN 46 482 504 266

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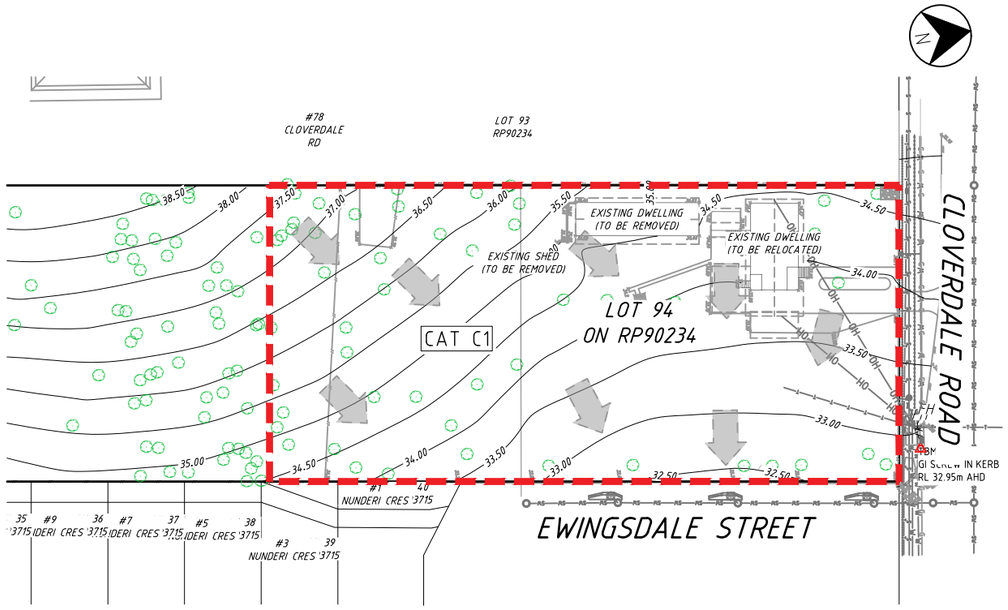
DESX	AM	06.07.26
Checked	Final Check	Scale
		AS SHOWN

Drawing No.	Rev.
5829-SM00	PA

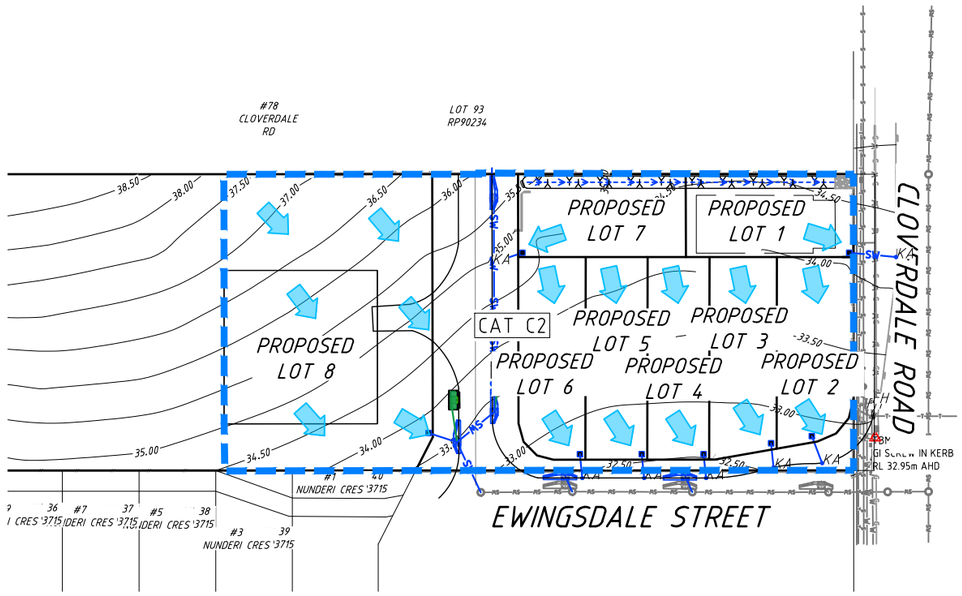
REAL PROPERTY DESCRIPTION
LOT 94 ON RP90234

RATIONAL METHOD CALCULATION TABLE	
PRE-DEVELOPMENT - CAT C1	
TOTAL SITE AREA (Ha)	0.495
IMPERVIOUS AREA (m^2)	603
FRACTION IMPERVIOUS (fi)	0.12
TIME OF CONCENTRATION, Tc (MIN.)	11.8
RUNOFF COEFFICIENT, C_{10}	0.70
MINOR STORM PEAK FLOW RATE, Q_2 (m^3/s)	0.010
MAJOR STORM PEAK FLOW RATE, Q_{100} (m^3/s)	0.032



PRE-DEVELOPMENT LAYOUT
SCALE 1:500

RATIONAL METHOD CALCULATION TABLE	
POST-DEVELOPMENT - CAT C2	
TOTAL SITE AREA (Ha)	0.495
IMPERVIOUS AREA (m^2)	2972
FRACTION IMPERVIOUS (fi)	0.60
TIME OF CONCENTRATION, Tc (MIN.)	5.0
RUNOFF COEFFICIENT, C_{10}	0.78
MINOR STORM PEAK FLOW RATE, Q_2 (m^3/s)	0.015
MAJOR STORM PEAK FLOW RATE, Q_{100} (m^3/s)	0.048



POST-DEVELOPMENT LAYOUT
SCALE 1:500

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NOT FOR CONSTRUCTION

SCALE 1:500 (A1)
0 10 20 30 40 50m
10 8 6 4 2

WARNING!
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PA	PRELIMINARY ISSUE	AM	06.08.26

LEGEND
- EXISTING WATER
- EXISTING STORMWATER
- EXISTING GAS
- EXISTING O/H ELECTRICITY
- EXISTING CONCRETE
- EXISTING CONTOURS
- DESIGN CONTOURS
- PROPOSED SWALE DRAIN
- PROPOSED DRIVEWAY
- PROPOSED STORMWATER
- PROPOSED TOP OF BATTER
- PROPOSED BOTTOM OF BATTER
- DESIGN EDGE OF ROAD KERB
- DESIGN FOOTPATH
- PROPOSED SEWER
- PROPOSED WATER MAIN
- PROPOSED WATER SERVICE
- PROPOSED WATER METER
- PROPOSED EASEMENT OTHER (SEE LABEL)
- PROPOSED EASEMENT STORMWATER
- PROPOSED RETAINING WALL
- PROPOSED BUILDING WALL (OTHERS)
- PRE-DEVELOPMENT OVERLAND FLOW DIRECTION
- PRE-DEVELOPMENT CATCHMENT
- PRE DEVELOPMENT LAWFUL POINT OF DISCHARGE (LPD)
- POST DEVELOPMENT OVERLAND FLOW DIRECTION
- POST DEVELOPMENT CATCHMENT
- POST DEVELOPMENT LAWFUL POINT OF DISCHARGE (LPD)
- EXTERNAL CATCHMENT
- EXTERNAL CATCHMENT OVERLAND FLOW DIRECTION

PRELIMINARY

PROJECT
PROPOSED DEVELOPMENT
70 CLOVERDALE RD,
DOOLANDELLA

CLIENT
DIDEEP KAUR SOHAL

TITLE
PRE & POST DEVELOPMENT STORMWATER ASSESSMENT LAYOUT

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Designed	Drawn	Date
DESX	AM	06.07.26
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5829-SM01		PA

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REAL PROPERTY DESCRIPTION
LOT 94 ON RP90234

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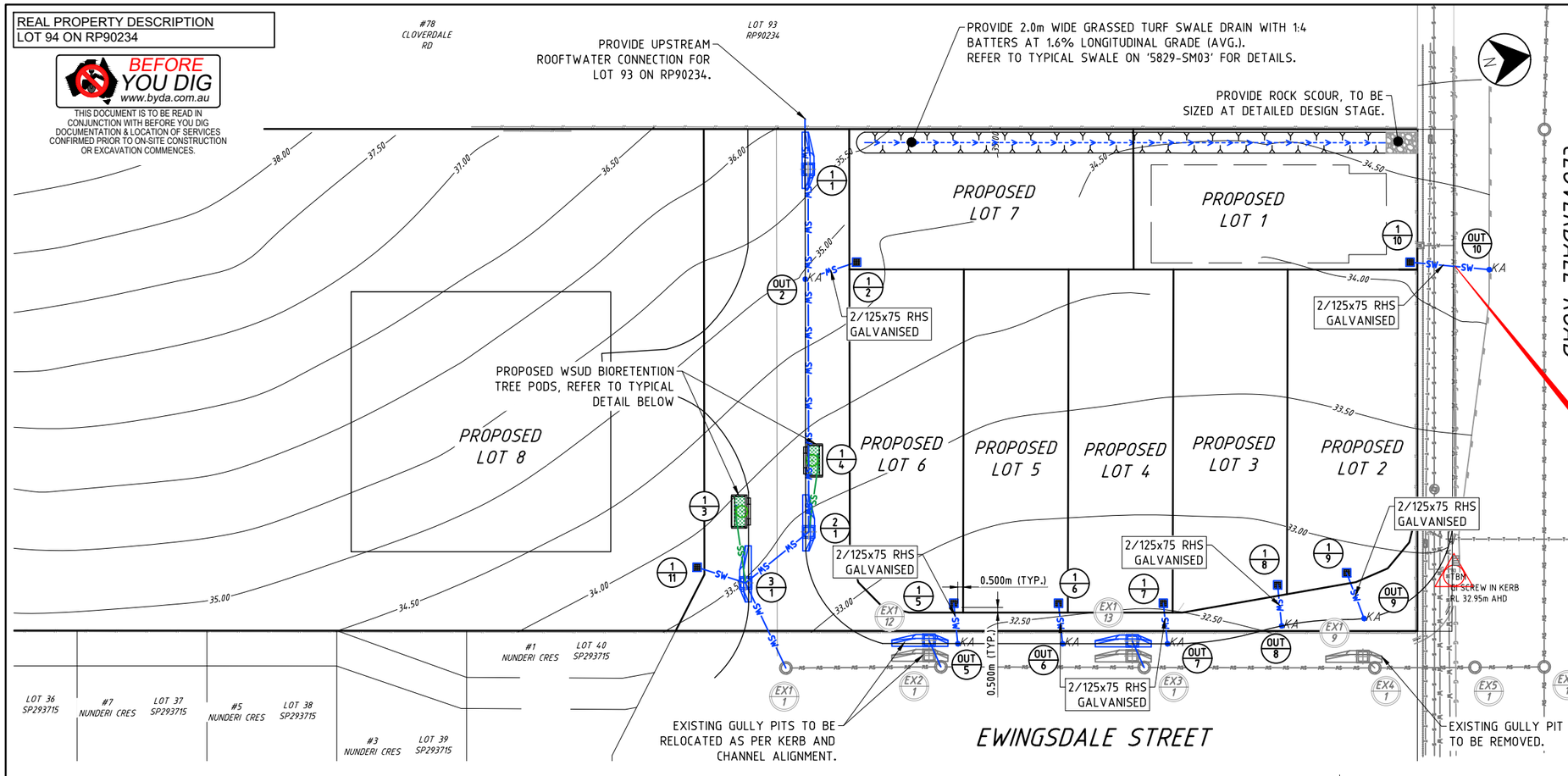


STORMWATER DRAINAGE LAYOUT

SCALE 1:250

STORMWATER DRAINAGE NOTES

1. ALL DRAINAGE EXCAVATION & CONSTRUCTION SHALL BE CARRIED OUT IN ACCORDANCE WITH AS3500 PLUMBING & DRAINAGE CODE & THE APPLICABLE LOCAL AUTHORITY SPECIFICATIONS & STANDARD DETAILS.
2. MINIMUM COVER SHALL BE 300MM IN ALL PRIVATE PROPERTY UNO.
3. ALL UPVC PIPES SHALL BE MINIMUM CLASS "SN8" UNLESS NOTED OTHERWISE (UNO). ALL RCP PIPES SHALL BE CLASS "2" UNO. ALL FRC PIPES SHALL BE CLASS "2" UNO.
4. PIPES SHALL BE LAID AT MIN. 1% GRADE UNO.
5. CONTRACTOR MUST VERIFY THAT ALL PIPE LEVELS & GRADES CAN BE ACHIEVED PRIOR TO CONSTRUCTION. ANY CONFLICT SHALL BE REFERRED TO DRW CONSULTING FOR ANY NECESSARY ALTERATIONS PRIOR TO ANY CONSTRUCTION OF CONNECTING PIPEWORK.
6. WHERE PIPES ARE TO BE LAID WITHIN THE ZONE OF INFLUENCE OF STRUCTURAL LOADINGS (E.G. BUILDING FOOTINGS, RETAINING WALLS ETC.) THE CONTRACTOR SHALL CONSULT WITH THE STRUCTURAL ENGINEER OR SUPERINTENDENT & PROVIDE ADEQUATE BRIDGING / PROTECTION. WHERE ANY DOUBT MAY EXIST .
7. BENCHING OF PIT STRUCTURES SHALL HAVE A SMOOTH FINISHED SURFACE, & PIPES SHALL NOT PROJECT INSIDE THE SHAFT OF THE PIT.
8. WHERE RECTANGULAR PIT STRUCTURES ARE USED, PIPES MUST NOT CONNECT TO THE PIT AT CORNERS.
9. A REGISTERED SURVEYOR SHALL BE ENGAGED TO CARRY OUT MGA SURVEY OF ALL INSTALLED STORMWATER PIPES (REQUIRING COUNCIL APPROVAL) PRIOR TO BACKFILLING. IF TRENCHES HAVE BEEN BACKFILLED PRIOR TO SURVEY, ALL TRENCHES WILL HAVE TO BE EXCAVATED TO EXPOSE THE PIPES FOR SURVEY.
10. SWALE DRAINS ARE TO BE TURFED & MAINTAINED UNTIL ESTABLISHED.
11. ALL ROOFWATER INSPECTION MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH LOCAL GOVERNMENTS ROOFWATER INSPECTION MANHOLE DRAWINGS OR SIMILAR IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
12. WHERE MORE THAN ONE RHS IS REQUIRED, EACH IS PLACED NOT LESS THAN 25MM APART & WELDED TOGETHER, USING A STEEL SPACER BETWEEN THE SECTIONS. THE WHOLE ITEM SHALL BE GALVANIZED AFTER FABRICATION.
13. USE KERB ADAPTORS WHEN DISCHARGING TO KERB & CHANNEL AS PER LOCAL COUNCIL STANDARDS.
14. PIPECLASS & TRENCH DETAIL HAS BEEN CHECKED USING AN APPROPRIATE METHOD CONFIRMING TO AS/NZS 3725:2007 SUCH AS CONCRETE PIPE ASSOCIATION OF AUSTRALASIA PROGRAM 'PIPECLASS' V2.0 (OR LATER). CONSTUCTION LOADS APPLIED WERE:
    a. SCRAPER - CAT621F (53.8T)
    b. EXCAVATOR - CAT325B (25.9T)
    c. COMPACTOR - CAT815F (20.9T)
    d. EXCAVATOR WITH 580mm WIDE ROLLER (25.0T)

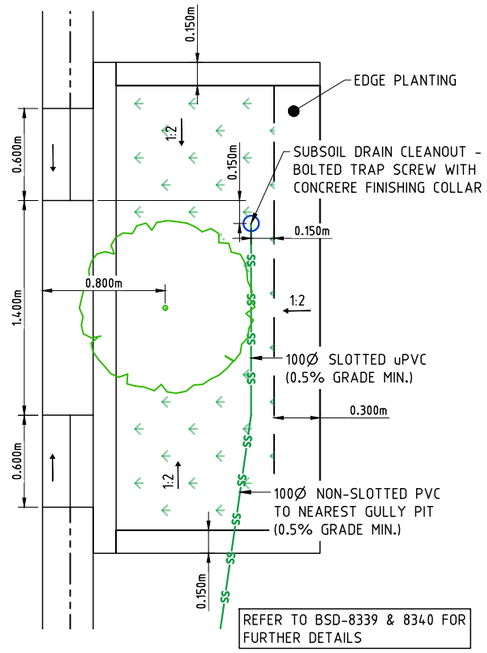
    IF THE CONTRACTOR USED DIFFERENT OR HEAVIER EQUIPMENT THAN SHOWN ABOVE, THE CONTRACTOR SHALL BE REQUIRED TO DETERMINE IF THE CLASS OF PIPE FOR THIS PROJECT IS ADEQUATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL COSTS INCURRED AS A RESULT. ADOPTED MINIMUM FILL DEPTH OF 700mm DURING CONSTRUCTION.

STORMWATER STRUCTURES TABLE

NAME	SIZE/TYPE	TRAFFICABLE
1/1	GULLY PIT WITH 2.4m ON-GRADE LINTEL	YES
2/1	GULLY PIT WITH 2.4m ON-GRADE LINTEL	YES
3/1	GULLY PIT WITH 2.4m ON-GRADE LINTEL	YES
EX1/1	RELOCATED EXISTING GULLY PIT	YES
EX2/1	EXISTING MANHOLE	YES
EX3/1	EXISTING MANHOLE	YES
EX4/1	EXISTING MANHOLE	YES
EX5/1	EXISTING MANHOLE	YES
EX6/1	EXISTING MANHOLE	YES
1/2	600 x 600 GRATED PIT	NO
OUT/2	2/ 125x75 RHS KERB ADAPTOR	YES
1/3	BIORETENTION TREE POD IN-LINE WITH KERB	YES
EX1/3	EXISTING MANHOLE	YES
1/4	BIORETENTION TREE POD IN-LINE WITH KERB	YES
1/5	600 x 600 GRATED PIT	NO
OUT/5	2/ 125x75 RHS KERB ADAPTOR	YES
1/6	600 x 600 GRATED PIT	NO
OUT/6	2/ 125x75 RHS KERB ADAPTOR	YES
1/7	600 x 600 GRATED PIT	NO
OUT/7	2/ 125x75 RHS KERB ADAPTOR	YES
1/8	600 x 600 GRATED PIT	NO
OUT/8	2/ 125x75 RHS KERB ADAPTOR	YES
1/9	600 x 600 GRATED PIT	NO
OUT/9	2/ 125x75 RHS KERB ADAPTOR	YES
EX1/9	EXISTING GULLY PIT TO BE REMOVED	YES
1/10	600 x 600 GRATED PIT	NO
OUT/10	2/ 125x75 RHS KERB ADAPTOR	YES
1/11	600 x 600 GRATED PIT	NO
EX1/12	RELOCATED EXISTING GULLY PIT	YES
EX1/13	RELOCATED EXISTING GULLY PIT	YES

* APPROVED MATERIALS NOTE: (BCC ONLY)

- STEEL REINFORCED (SRCP/RCP - CLASS AS PER MIN STATED IN CH7 OF THE PSP)
- FIBRE REINFORCED (FRC - CLASS AS PER MIN STATED IN CH7 OF THE PSP)
- UPVC AND RHS FOR INTERALLOTMENT (SN8 OR CLASS AS PER MIN STATED IN CH7 OF THE PSP)
- BLACKMAX (IPLEX - SUBJECT TO OVALITY TESTING AND INSTALLATION IN ACCORDANCE WITH AS2566.2 AND MANUFACTURER'S SPECIFICATIONS - TESTING TO OCCUR AT HOLD POINT, PRIOR TO BACKFILL)
- STORMPRO (VINIDEX - SUBJECT OVALITY TESTING AND INSTALLATION IN ACCORDANCE WITH AS2566.2 AND MANUFACTURER'S SPECIFICATIONS - TESTING TO OCCUR AT HOLD POINT, PRIOR TO BACKFILL)
- ENVIROPIPES STORMWATER (SUBJECT TO OVALITY TESTING AND INSTALLATION IN ACCORDANCE WITH AS2566.2 AND MANUFACTURER'S SPECIFICATIONS - TESTING TO OCCUR AT HOLD POINT, PRIOR TO BACKFILL)



TYPICAL BIORETENTION TREE POD

SCALE 1:20

SCALE 1:20 (A1) 0 0.4 0.8 1.2 1.6 2.0m

SCALE 1:250 (A1) 0 5 10 15 20 25m

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MAXIMUM DEPTH FOR ROOFWATER PITS

MAXIMUM DEPTH	RECTANGULAR PIT SIZES / CIRCULAR MH DIAMETERS
BRISBANE CITY COUNCIL (REFER TO STD DRG BSD-8000 SERIES)	
<750	450x450
>750 <900	600x600
>900 <1200	600x900 / 1050Ø [AS3500.3]
>1200 <1500	900x900 [AS3500.3]
>1500	1050Ø [AS3500.3]

IF PIT DEPTHS DIFFER ONSITE TO LEVELS & DEPTHS SHOWN ON DESIGN, THE CONTRACTOR IS TO CONTACT DRW CONSULTING FOR CONFIRMATION OF CORRECTED SIZES. PITS ARE **NOT** TO EXCEED MAXIMUM DEPTHS SPECIFIED

SURVEY REQUIREMENTS:
THE CONTRACTOR IS TO ORGANIZE A REGISTERED SURVEYOR TO CARRY OUT MGA SURVEY OF ALL INSTALLED STORMWATER, SEWER & WATER PIPES (REQUIRING COUNCIL APPROVAL) PRIOR TO BACKFILLING. IF TRENCHES HAVE BEEN BACKFILLED PRIOR TO SURVEY, ALL TRENCHES WILL HAVE TO BE EXCAVATED TO EXPOSE THE PIPES FOR SURVEY.

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REV.	AMENDMENT	BY	DATE
PA	PRELIMINARY ISSUE	AM	06.08.26

LEGEND

- EXISTING SEWER LINE & MANHOLE
- EXISTING TELSTRA / OPTIC FIBRE & PIT
- EXISTING WATER
- EXISTING STORMWATER
- EXISTING GAS
- EXISTING O/H ELECTRICITY
- EXISTING U/G ELECTRICITY
- EXISTING CONCRETE
- EXISTING STORMWATER MANHOLE / PIT
- +58.500 EXISTING SPOT LEVEL
- 35 EXISTING CONTOURS
- 35 DESIGN CONTOURS
- PROPOSED SWALE DRAIN
- PROPOSED DRIVEWAY
- SW PROPOSED STORMWATER
- PROPOSED CATCHMENT
- PROPOSED CATCHMENT ID
- PROPOSED STORMWATER MANHOLE / PIT
- PROPOSED SEWER
- PROPOSED WATER MAIN
- PROPOSED WATER SERVICE
- PROPOSED WATER METER
- PROPOSED EASEMENT OTHER (SEE LABEL)
- PROPOSED EASEMENT STORMWATER
- PROPOSED RETAINING WALL
- PROPOSED BUILDING WALL (OTHERS)
- EXISTING OVERLAND FLOW DIRECTION
- PROPOSED OVERLAND FLOW DIRECTION

PRELIMINARY

PROJECT
PROPOSED DEVELOPMENT
70 CLOVERDALE RD,
DOOLANDELLA

CLIENT
DIDEEP KAUR SOHAL

TITLE
STORMWATER DRAINAGE LAYOUT & DETAILS

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Email: mail@drwconsulting.com.au
ACN 083 549 053
ABN 46 482 504 266

Designed	Drawn	Date
DESX	AM	06.07.26
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Drawing No. 5829-SM02 Rev. PA

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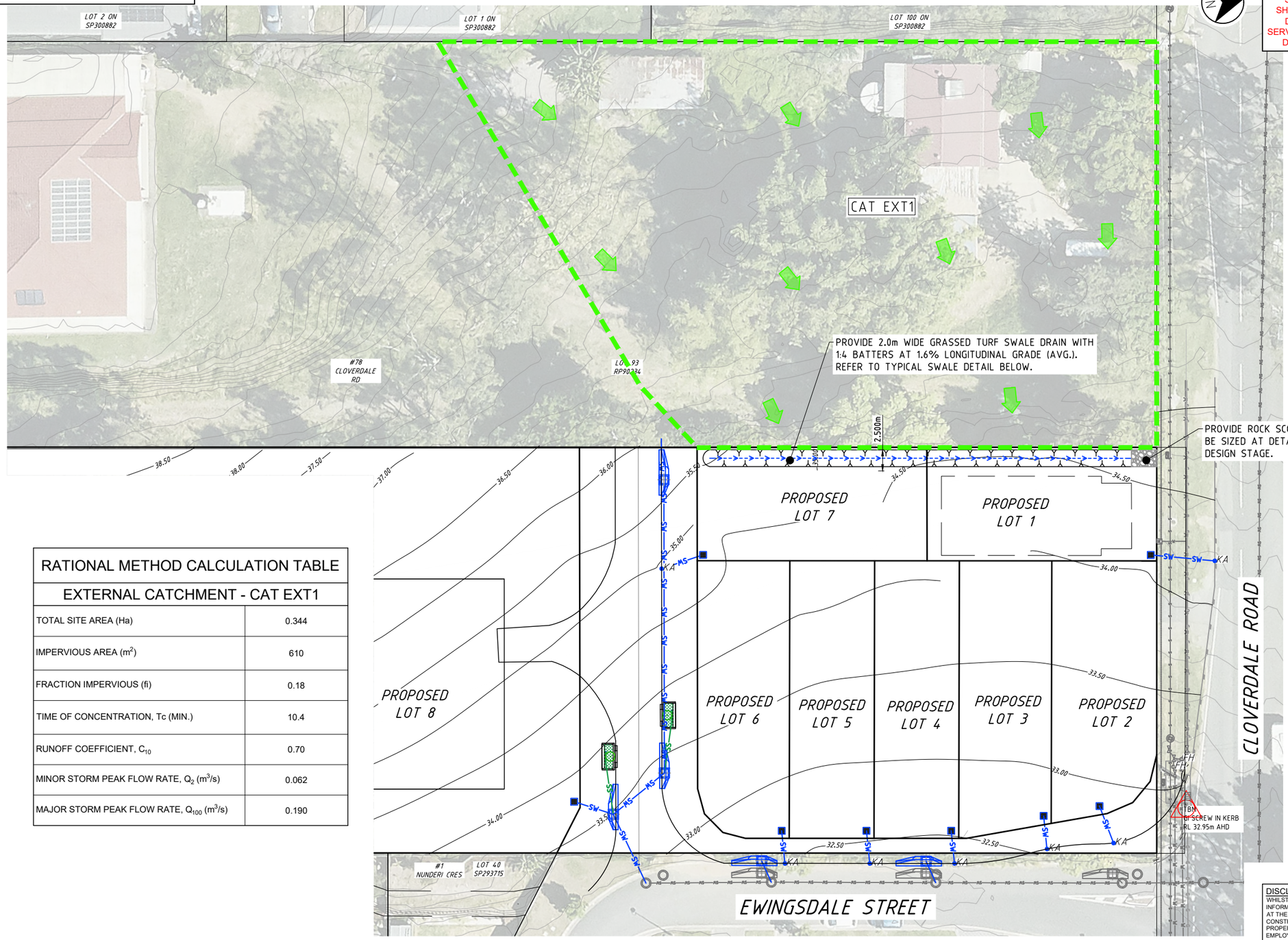
REAL PROPERTY DESCRIPTION
LOT 94 ON RP90234



RATIONAL METHOD CALCULATION TABLE

EXTERNAL CATCHMENT - CAT EXT1

TOTAL SITE AREA (Ha)	0.344
IMPERVIOUS AREA (m^2)	610
FRACTION IMPERVIOUS (fi)	0.18
TIME OF CONCENTRATION, Tc (MIN.)	10.4
RUNOFF COEFFICIENT, C_{10}	0.70
MINOR STORM PEAK FLOW RATE, Q_2 (m^3/s)	0.062
MAJOR STORM PEAK FLOW RATE, Q_{100} (m^3/s)	0.190

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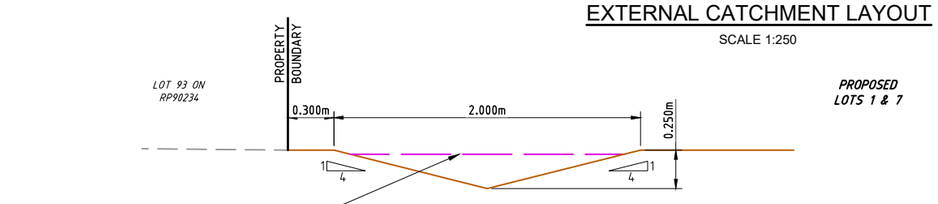
EXTERNAL CATCHMENT LAYOUT

SCALE 1:250



FOR MAJOR DESIGN STORM (1%AEP OR Q100)
MAX. OVERLAND FLOW = 0.190m^3/s
MAX. FLOW VELOCITY = 0.957m/s
MAX. WATER DEPTH = 223mm
MAX. D.V. PRODUCT = 0.213m^2/s

TYPICAL SWALE DETAIL

SCALE 1:20

WARNING!
SUBSURFACE UTILITY INVESTIGATION SHOULD BE UNDERTAKEN TO DETERMINE DETAILS OF WATER, SEWER & OTHER SERVICES. ACCURACY OF FINAL DESIGN WILL DEPEND ON THIS BEING UNDERTAKEN.

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SCALE 1:20 (A1) 0 0.4 0.8 1.2 1.6 2.0m
0.4
SCALE 1:250 (A1) 0 5 10 15 20 25m
5 4 3 2 1

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REV.	AMENDMENT	BY	DATE
PA	PRELIMINARY ISSUE	AM	06.08.26

LEGEND

- EXISTING WATER
- EXISTING STORMWATER
- EXISTING GAS
- EXISTING O/H ELECTRICITY
- EXISTING CONCRETE
- EXISTING CONTOURS
- DESIGN CONTOURS
- PROPOSED SWALE DRAIN
- PROPOSED DRIVEWAY
- PROPOSED STORMWATER
- PROPOSED TOP OF BATTER
- PROPOSED BOTTOM OF BATTER
- DESIGN EDGE OF ROAD KERB
- DESIGN FOOTPATH
- PROPOSED SEWER
- PROPOSED WATER MAIN
- PROPOSED WATER SERVICE
- PROPOSED WATER METER
- PROPOSED EASEMENT OTHER (SEE LABEL)
- PROPOSED EASEMENT STORMWATER
- PROPOSED RETAINING WALL
- PROPOSED BUILDING WALL (OTHERS)
- PRE-DEVELOPMENT OVERLAND FLOW DIRECTION
- PRE-DEVELOPMENT CATCHMENT
- PRE DEVELOPMENT LAWFUL POINT OF DISCHARGE (LPD)
- POST DEVELOPMENT OVERLAND FLOW DIRECTION
- POST DEVELOPMENT CATCHMENT
- POST DEVELOPMENT LAWFUL POINT OF DISCHARGE (LPD)
- EXTERNAL CATCHMENT
- EXTERNAL CATCHMENT OVERLAND FLOW DIRECTION

PRELIMINARY

PROJECT
PROPOSED DEVELOPMENT
70 CLOVERDALE RD,
DOOLANDELLA

CLIENT
DIDEEP KAUR SOHAL

TITLE
EXTERNAL CATCHMENT STORMWATER ASSESSMENT LAYOUT

DRW CONSULTING PTY LTD
CIVIL ENGINEERING DESIGN SERVICES
2/16 Vanessa Blvd Springwood. QLD. 4127.
Phone: (07) 3208 8344
Email: mail@drwconsulting.com.au
ACN 083 549 053
ABN 46 482 504 266

Designed	Drawn	Date
DESX	AM	06.07.26
Checked	Final Check	Scale
AS SHOWN		AS SHOWN

Drawing No. 5829-SM03 Rev. PA

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REAL PROPERTY DESCRIPTION
LOT 94 ON RP90234

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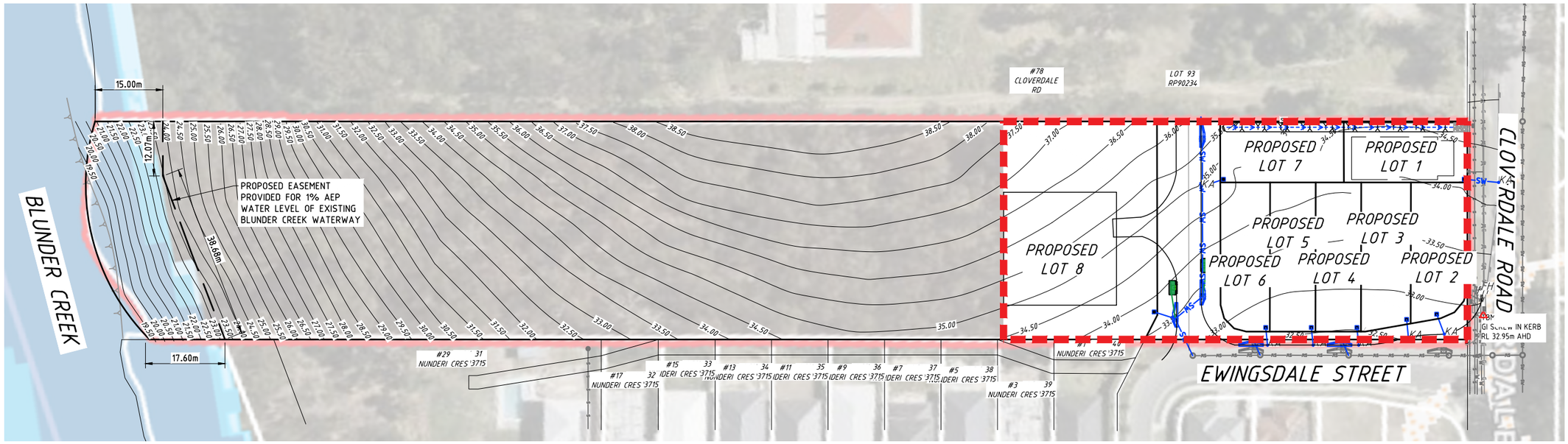

BCC FLOOD OVERLAY LAYOUT
SCALE 1:500

NOT FOR CONSTRUCTION

THIS DESIGN HAS BEEN PREPARED BASED ON SERVICE AUTHORITY AS CONSTRUCTED INFORMATION. NO POT HOLING HAS BEEN UNDERTAKEN TO VERIFY EXISTING SERVICE LOCATIONS & DEPTHS. IT IS THE CONTRACTORS RESPONSIBILITY TO UNDERTAKE POT HOLING TO VERIFY THE DESIGN.

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SCALE 1:500 (A1)
0 10 20 30 40 50m
10 8 6 4 2

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PA	PRELIMINARY ISSUE	AM	06.08.26

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- PROPOSED EASEMENT STORMWATER
- PROPOSED RETAINING WALL
- PROPOSED BUILDING WALL (OTHERS)
- DEVELOPMENT AREA EXTENT

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PROJECT
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Checked	Final Check	Scale
AS SHOWN		AS SHOWN

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