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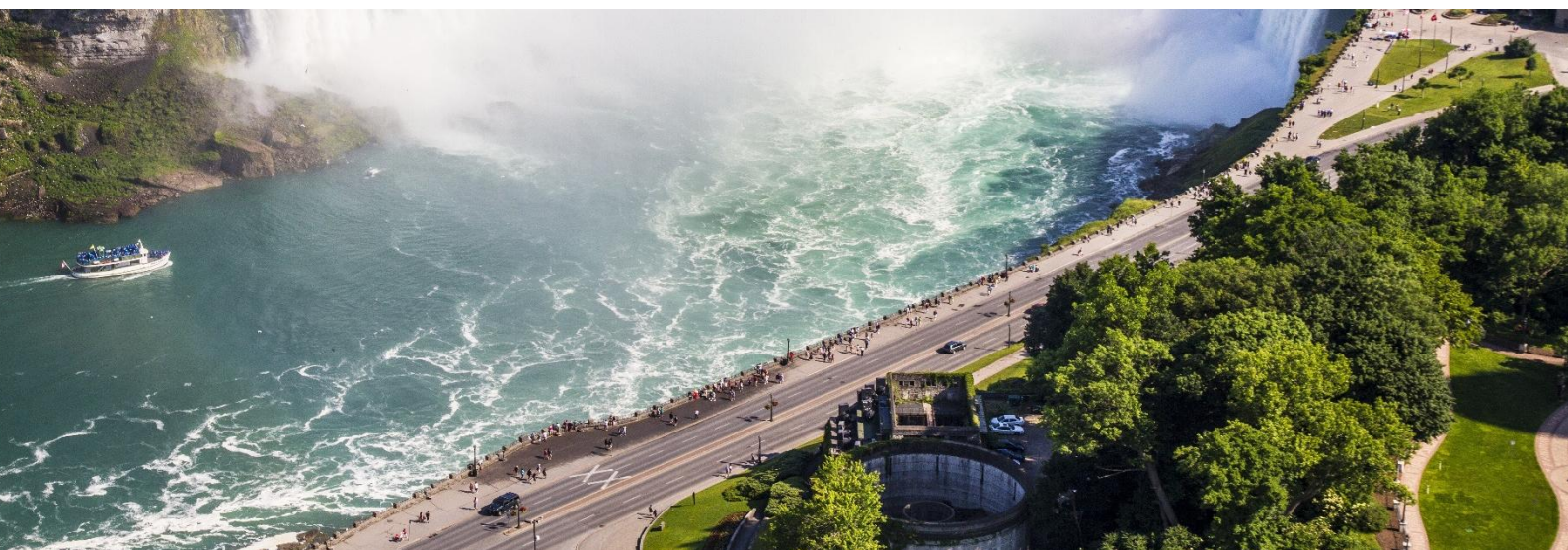


SITE BASED STORMWATER MANAGEMENT PLAN

50 Kates Street, Morningside QLD

PREPARED DATE: 07/09/2026

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1 INTRODUCTION

DRW Consulting Pty. Ltd. (DRW) has been engaged to prepare a Site-based Stormwater Management Plan (SBSMP) for the proposed development at 50 Kates Street, Morningside QLD. The land parcel is legally described as Lot 2 on RP82062 (the subject site) and is located within Brisbane City Council (BCC).

This assessment has been prepared generally in accordance with BCC's City Plan 2014, 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 is 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 subject site is located within Brisbane City Council (BCC) and covers a total area of 1386m² (or 0.139ha). The land use of the existing site includes one residential building and associated concrete pavement areas. The remaining ground surface generally consists of grassed and landscaping areas with small to medium sized trees scattered throughout the site. The total impervious area of the existing site is approximately 516m², which is 37% of the total site area.

Refer to the figure below for the aerial locality plan. Refer to **Appendix A** for the site survey.

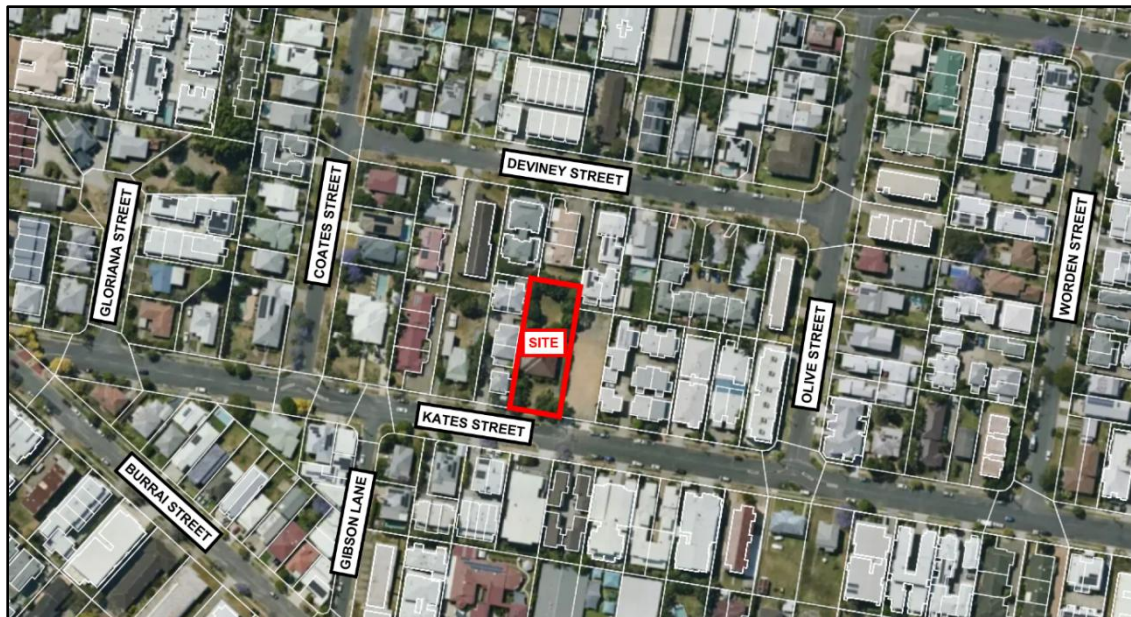


Figure 1 Site Location

2.2 EXISTING TOPOGRAPHY AND SITE DRAINAGE

The following topography details are in relation to the subject site being 50 Kates Street, Morningside QLD;

- The natural fall of the land generally slopes from the southern (front) boundary of the site to the northern (rear) boundary of the site.
- The site levels range from approximately RL16.34m AHD at south-western corner of the site to RL14.71m AHD at the north-eastern corner of the site.
- The site has an average grade of 2.1%.
- An easement has been identified within the subject site legally described as ARP846753, located in the north-western corner of the subject site.
- An easement (continuation of ARP846753) has been identified on the northern neighbouring property (21 Deviney Street, Morningside).
- The following stormwater infrastructure has been identified on the site (via inspection and site survey):
 - Concrete stormwater pit at the north-western corner of the site.
 - 100mm diameter stormwater pipe outlet from the stormwater pit, running underneath Easement ARP846753 and discharging to the kerb and channel of Deviney Street via kerb adaptors.

Refer to **Appendix A** for the site survey.

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 subject site. Based on detailed survey there appears to be no external upstream catchment which may contribute to overland flow through the site.

2.4 FLOODING ASSESSMENT

Based on an assessment of BCC's City Plan 2014, the subject site has not been identified to be within a flood inundation area. The Flood Overlay Code is therefore not triggered for the subject site.

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.

Surface runoff from the ground areas and roof water runoff from the existing dwelling currently sheet flow to the existing stormwater pit at the rear of the subject site and to the northern neighbouring properties, before discharging to the kerb and channel of Deviney Street.

In the post-development scenario, it is proposed to direct roof water runoff to the kerb and channel of Kates Street. Surface runoff will be captured by the internal stormwater drainage and discharged to the existing stormwater pit at the rear of the site, before discharging to the kerb and channel of Deviney Street. The kerb and channel of Kates Street is considered to be the lawful point of discharge (LPD) for the subject site.

3 PROPOSED DEVELOPMENT

The proposed development comprises of a Material Change of Use (MCU) Development Application submission to Council, based on the following:

- Nine (9) two-storey townhouse units.
- Access and egress to the site will be via a single vehicle crossover (VXO) connecting to Kates Street.
- Internal driveway and carpark space provided for vehicular manoeuvring and parking as well as a dedicated concrete bin pad area.
- Internal footpaths for pedestrian access to each townhouse unit.
- Dedicated landscaping / deep planting areas throughout the development site.

Refer **Appendix B** for the proposed development plans.

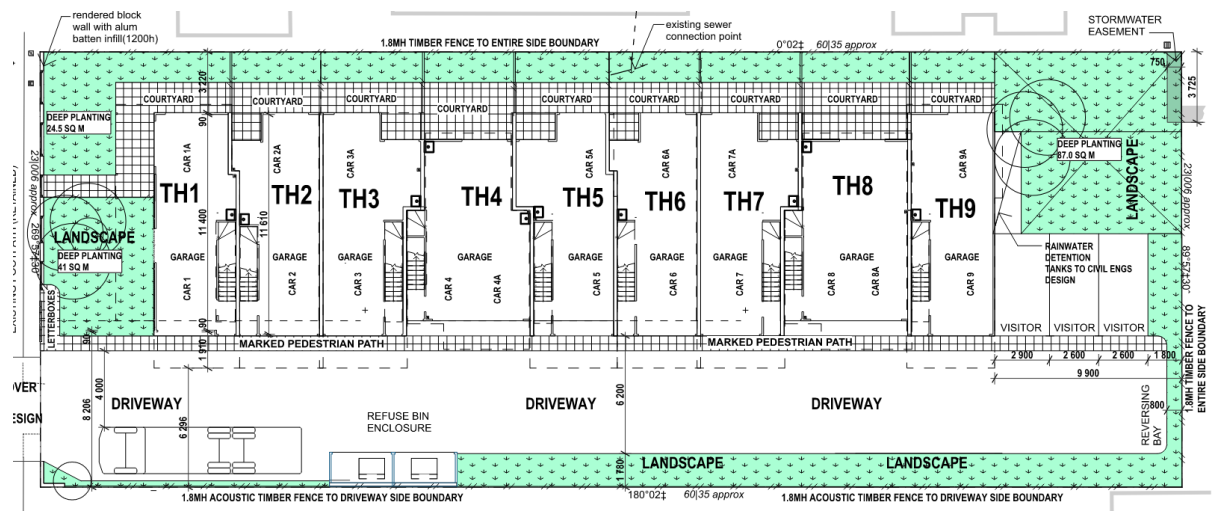


Figure 2 Development Site Plan

4 STORMWATER QUANTITY ASSESSEMENT

4.1 HYDROLOGIC OBJECTIVES

Hydrologic objectives for the subject site have been set in accordance with BCC's City Plan 2014 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 and 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 be seen in Figure 3 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: -27.4654 [Nearest grid cell: 27.4625 (S)]

Longitude: 153.0742 [Nearest grid cell: 153.0625 (E)]



IFD Design Rainfall Intensity (mm/h)

Issued: 19 November 2025

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** ▼

Duration	Annual Exceedance Probability (AEP)						
	63.2%	50%#	20%*	10%	5%	2%	1%
1 min	159	180	244	288	330	386	428
2 min	132	149	205	243	281	332	371
3 min	124	140	192	227	262	309	344
4 min	118	134	183	216	248	292	324
5 min	113	128	174	206	236	277	308
10 min	93.0	105	143	168	192	224	248
15 min	78.9	89.2	121	143	163	190	210
20 min	68.6	77.6	106	124	142	166	184
25 min	60.9	68.9	93.8	110	127	148	164
30 min	54.8	62.1	84.6	99.7	114	134	148
45 min	42.6	48.3	66.0	78.0	89.8	105	117
1 hour	35.2	39.9	54.7	64.8	74.8	88.1	98.4
1.5 hour	26.7	30.2	41.5	49.4	57.2	67.7	76.0
2 hour	21.8	24.7	34.0	40.5	47.1	56.0	63.0
3 hour	16.4	18.6	25.7	30.7	35.8	42.8	48.3
4.5 hour	12.4	14.0	19.5	23.4	27.4	32.8	37.2
6 hour	10.2	11.6	16.1	19.4	22.7	27.4	31.1
9 hour	7.76	8.84	12.4	15.0	17.6	21.3	24.3
12 hour	6.43	7.34	10.4	12.6	14.8	18.0	20.6
18 hour	4.94	5.68	8.10	9.87	11.7	14.3	16.3
24 hour	4.10	4.73	6.81	8.33	9.90	12.1	13.9
30 hour	3.54	4.10	5.95	7.30	8.70	10.7	12.3
36 hour	3.14	3.64	5.32	6.54	7.81	9.62	11.1
48 hour	2.58	3.00	4.43	5.47	6.56	8.11	9.39
72 hour	1.92	2.25	3.36	4.17	5.02	6.25	7.26
96 hour	1.54	1.81	2.70	3.37	4.06	5.06	5.90
120 hour	1.28	1.51	2.25	2.80	3.38	4.22	4.93
144 hour	1.10	1.29	1.91	2.38	2.87	3.58	4.18
168 hour	0.960	1.12	1.65	2.05	2.47	3.07	3.59

Figure 3 IFD Data for Morningside

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) = **0.139 ha**
- Time of Concentration, t_c = **12.1 minutes**
- Fraction Impervious, f_i = **0.37** (37% Impervious)
- Runoff Co-efficient, C_{10} value = **0.70**

Post-Development Parameters:

- Catchment Area (CAT C2) = **0.139 ha**
- Time of Concentration, t_c = **6.0 minutes**
- Fraction Impervious, f_i = **0.79** (79% Impervious)
- Runoff Co-efficient, C_{10} value = **0.83**

Refer to the **Appendix D** for delineation of the pre and post-development the catchment boundaries.

4.4.1 PRE-DEVELOPMENT DRAINS MODEL PARAMETERS

Table 1 below show 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 (%)	37	0	63
Time of Concentration (minutes)	12.1	0	12.1

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 (%)	76	0	24
Time of Concentration (minutes)	6.0	0	6.0

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 the 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	105	0.024	0.030
Q5 (18.13% AEP)	0.665	131	0.034	0.041
Q10 (10% AEP)	0.700	151	0.041	0.048
Q20 (5% AEP)	0.735	172	0.049	0.056
Q50 (2% AEP)	0.805	200	0.062	0.067
Q100 (1% AEP)	0.840	221	0.072	0.075

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)	0.706	131	0.036	0.043
Q5 (18.13% AEP)	0.789	165	0.050	0.055
Q10 (10% AEP)	0.830	191	0.061	0.066
Q20 (5% AEP)	0.872	220	0.074	0.076
Q50 (2% AEP)	0.955	258	0.095	0.088
Q100 (1% AEP)	0.996	287	0.110	0.098

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 (CAT C1) (ILSAX) (m ³ /s)	Post-Development Unmitigated Peak Qy (CAT C2) (ILSAX) (m ³ /s)	Difference (m ³ /s)	Increase / Decrease (%)
Q2 (39.35% AEP)	0.030	0.043	0.013	+36
Q5 (18.13% AEP)	0.041	0.054	0.014	+29
Q10 (10% AEP)	0.048	0.066	0.018	+32
Q20 (5% AEP)	0.056	0.076	0.020	+30
Q50 (2% AEP)	0.067	0.088	0.021	+27
Q100 (1% AEP)	0.075	0.098	0.023	+27

A comparison of the pre- and post-development peak flow rates for the unmitigated stormwater discharge using DRAINS Model (ILSAX Method) indicates there will be approximately 0.013m³/s (13 L/s) to 0.023m³/s (23 L/s) increase in peak discharge from the subject site for all design storms (Q₂ to Q₁₀₀) as a result of the proposed development.

Therefore, On-site Stormwater Detention (OSD) is required for the proposed development in order to ensure there is no increase in pre-development peak flow rates from the subject site at the LPD.

4.5 ON-SITE DETENTION

To satisfy the objective of no increase in pre-development peak flows, a DRAINS software computer model has been developed to determine the required On-site Stormwater Detention (OSD) device characteristics (volume and outlet arrangement).

The peak discharge from the proposed development for all design storms up to and including the 1% AEP will be mitigated to equal to or less than pre-development flow via the implementation of a 30kL above ground detention tank. Refer to the table below for the above-ground detention tank summary.

Table 6 – On-Site Stormwater Detention Device Details

ON-SITE STORMWATER DETENTION (OSD) DEVICE DETAILS	
OSD Device	Above ground detention tank
Tank Surface Area (m ²)	15.228
Tank Height (m)	1.970
Tank Volume (kL)	30.0

It is proposed to discharge all stormwater runoff from the roof area of the proposed building to the above-ground detention tank. Runoff from the above-ground detention tank will further discharge to the kerb and channel of Kates Street via kerb adaptors.

The above ground detention tank has been designed to over-mitigate the stormwater runoff from the associated roof areas to allow stormwater runoff from all ground areas across the site to discharge unmitigated.

Refer to **Appendix C** for the Stormwater Management Plans which show the location and details of the proposed above ground detention tank.

It is proposed to undersize the outlets to restrict outflows from the above ground detention tank. This will ensure that peak flows from the proposed development are discharged at pre-development conditions or less at the LPD. The table below shows the outlet configuration summary of the above ground detention tank.

Table 7 – Detention Tank Outlet Configuration Summary

Outlet Type	Diameter, Ø (mm)	Distance from Tank Base (m)
Low-flow Orifice	50	0
High-flow Outlet	100	0.95
Discharge Outlet	2/125x75 (RHS)	0

Table 8 below provides a summary of the DRAINS model results for the post development mitigated site scenario (with the implementation of the above ground detention tank within the DRAINS model). The results show the outflow from the detention tank (total tank outflow), the water depth within the detention tank (tank water depth) and the volume reached within the detention tank (tank detention volume) to ensure that pre-development flow conditions for all storms are achieved.

Table 8 – DRAINS Post-Development (Mitigated) Detention Tank Summary

POST-DEVELOPMENT (MITIGATED) DETENTION TANK SUMMARY						
Storm Event (year)	Low-Flow Outflow (m ³ /s)	High-Flow Outflow (m ³ /s)	Total Tank Outflow (m ³ /s)	Tank Water Depth (m)	Freeboard Within Tank (m)	Detention Volume (m ³)
Q2 (39.35% AEP)	0.005	0.003	0.008	1.000	0.970	15.230
Q5 (18.13% AEP)	0.005	0.009	0.014	1.100	0.870	16.750
Q10 (10% AEP)	0.005	0.011	0.016	1.180	0.790	17.970
Q20 (5% AEP)	0.006	0.012	0.018	1.310	0.660	19.950
Q50 (2% AEP)	0.006	0.016	0.022	1.500	0.470	22.840
Q100 (1% AEP)	0.006	0.018	0.024	1.640	0.330	24.970

4.6 POST DEVELOPMENT MITIGATED DISCHARGE RESULTS

The following table provides a summary of the DRAINS model results for the post development mitigated site scenario (including total post-development mitigated peak discharge rates from the above ground detention tanks and post-development bypass/unmitigated peak discharge rates from the ground areas).

Table 9 – Total Post-Development Mitigated Discharge

TOTAL POST DEVELOPMENT MITIGATED PEAK DISCHARGE (Q)			
Storm Event (year)	30kL Detention Tank (m ³ /s)	Bypass Ground Areas (m ³ /s)	Total Post-Development (m ³ /s)
Q2 (39.35% AEP)	0.008	0.021	0.029
Q5 (18.13% AEP)	0.014	0.027	0.041
Q10 (10% AEP)	0.016	0.032	0.048
Q20 (5% AEP)	0.018	0.038	0.056
Q50 (2% AEP)	0.022	0.045	0.067
Q100 (1% AEP)	0.024	0.050	0.074

The following table provides a comparison of the pre-development peak flow rates from the subject site to the post-development mitigated peak discharge rates from the subject site at the LPD with the implementation of the above ground detention tank within the DRAINS model.

Table 10 – Comparison of Pre- vs. Post-Development Mitigated Discharge

PRE VS POST DEVELOPMENT MITIGATED PEAK DISCHARGE (Q)				
Storm Event (year)	Pre-Dev Qy (m ³ /s)	Post-Dev Mitigated Qy (m ³ /s)	Difference (m ³ /s)	Reduction Y/N
Q2 (39.35% AEP)	0.030	0.029	-0.001	Y
Q5 (18.13% AEP)	0.041	0.041	0.000	Y
Q10 (10% AEP)	0.048	0.048	0.000	Y
Q20 (5% AEP)	0.056	0.056	0.000	Y
Q50 (2% AEP)	0.067	0.066	0.000	Y
Q100 (1% AEP)	0.075	0.074	-0.001	Y

4.7 PROPOSED DRAINAGE WORKS

It is proposed to discharge all stormwater runoff from the roof area of the proposed building to the above-ground detention tank. Runoff from the above-ground detention tank will further discharge to the kerb and channel of Kates Street via kerb adaptors.

It is proposed to discharge all stormwater runoff from the roof area of the proposed building to the above-ground detention tank. Surface runoff will discharge to a rubble pit at the rear of the site and further to the existing stormwater pit. The aboveground detention tank has been designed to mitigate stormwater to allow surface runoff from the ground areas to discharge to the rear of the site, as per existing conditions, at reduced flow rates.

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 11 below.

Table 11 – 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 m ² 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.	The development site is 1386m² , which is less than 2500m ² .
(2) Reconfiguring a Lot for urban purposes that involves premises 2500 m ² or greater in size AND will result in six or more Lots; or	Not Applicable
(3) Operational works for an urban purpose that involves disturbing a land area 2500 m ² or greater in size.	Not applicable

Consequently, the proposed development does not trigger the State Planning Policy (SPP) 2017 assessment benchmarks for stormwater quality and as such stormwater quality design objectives against Council's Infrastructure Design Code is not required.

6 EROSION AND SEDIMENT MANAGEMENT

6.1 EROSION AND SEDIMENT MANAGEMENT

6.1.1 PRE-DEVELOPMENT

Prior to construction commencing, the following sediment and erosion control measures will be implemented 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 IEAust Guidelines;
- Maximise vegetated open space areas to reduce soil disturbance and provide filter strip treatment for runoff;
- Construction entry/exit to be installed and will comprise of a designed gravel pad or placement of hardwood logs in accordance with the IEAust Guidelines;
- Install sediment fences around the proposed bulk earthworks site (along toe of batter alignment); and
- Install dust control fences adjacent to the proposed bulk earthworks site (along property boundary).

6.1.2 BULK EARTHWORKS

Filling during the bulk earthworks phase is to occur so as to direct runoff towards sediment and erosion controls measures. The following measures will be implemented.

- 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.

6.1.3 CONSTRUCTION

The following measures will be undertaken 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.

7 MONITORING AND MAINTENANCE

7.1 GENERAL

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

- Inspections of Stormwater, Sediment and Erosion Controls are to be conducted at the end of each construction day and after each rainfall event (>25mm).
- 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 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.

7.2 RESPONSIBILITY 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.

8 CONCLUSIONS

This report has assessed the hydrology and hydraulics of the proposed development at 50 Kates Street, Morningside QLD for the pre-development and post-development scenarios.

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

- The kerb and channel of Kates Street is considered to be the lawful point of discharge (LPD) for the subject site.
- Peak stormwater discharge from the proposed development for all design storms up to and including the Q₁₀₀ ARI (1% AEP) critical storm will be mitigated to equal to or less than pre-development flow rates via the implementation of a 30kL above ground detention tank.
- The development does not trigger requirements for stormwater quality management in accordance with State Planning Policy 2017, therefore stormwater quality treatment is not required for the development site.
- In accordance with BCC Online Interactive Mapping, the subject site has not been identified to be within a flood inundation area, and as such, does not require flood assessment.

This report has demonstrated that the proposed development provides an acceptable solution for stormwater management and has been designed to comply accordance with Brisbane City Plan 2014, Queensland Urban Drainage Manual (QUDM, 2016), Australian Rainfall and Runoff (ARR) and Healthy Waterways – Water by Design.

9 APPENDICES

Appendix A: SITE SURVEY

Appendix C: DEVELOPMENT PLANS

Appendix D: STORMWATER MANAGEMENT PLANS

APPENDIX A SITE SURVEY

SERVICES LINE LEGEND	
SEWER (UTILITY AUTHORITY)	—S—S—
DRAINAGE (PRIVATE)	—D—D—
STORMWATER	—SW—SW—
WATER	—W—W—
UNDERGROUND ELECTRICITY	—UE—UE—
OVERHEAD POWER	—W—W—H—
COMMUNICATIONS	—T—T—
GAS	—G—G—



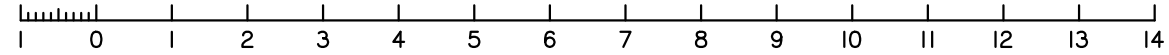
LEGEND	
●	LIGHT POLE
●	ORIGINAL PEG
●	POWER POLE
●	FIRE HYDRANT
●	VALVE
●	SEWER MANHOLE
●	ROOFWATER PIT
●	POWER BOX
●	TELSTRA PIT
—	RETAINING WALL
—	STORMWATER MANHOLE
—	GAS SUPPLY/GAS CYLINDER
—	TEMPORARY BENCH MARK (TBM)
—	PERMANENT SURVEY MARK
—	GULLY GRATE
—	WATER METER
—	SIGN
—	HEADWALL/CROSSOVER
—	ROCK WALL
—	PALM
—	TREE T ⁵ 4220/3
—	4.0M CANOPY SPREAD RADIUS
—	0.250M TRUNK DIAMETER
—	3 SIGNIFICANT TRUNKS

- ! The NORTH POINT shown relates to the subject survey plan unless noted otherwise in the title block. The user should ensure this is suitable for their purpose.
- ! Green contour lines denote "ground level" as defined by BCC Cityplan 2014.
- ! No survey marks were located at time of survey. It is recommended that an Identification Survey be carried out prior to any construction. All boundary positions are approximate only.
- ! Levels shown on this plan are correct in relation to the benchmarks placed on this plan. AJS Surveys accepts no responsibility for any subsequent plans or works that do not use the same level datum as shown on this plan.
- ! Subject title has not been obtained, therefore AJS Surveys can not certify that no easements affect this lot. A full title search should be carried out prior to any construction.
- ! This plan has been prepared for the purpose of designing new constructions and should not be used for any other purpose. Title boundaries were not marked at time of survey and have been determined by plan dimensions and not by field measurement. Unless noted otherwise only visible services have been located.
- ! Prior to any demolition, excavation or construction on the site, the relevant authorities should be contacted for accurate location of all services.

Natural Ground Contour Note:

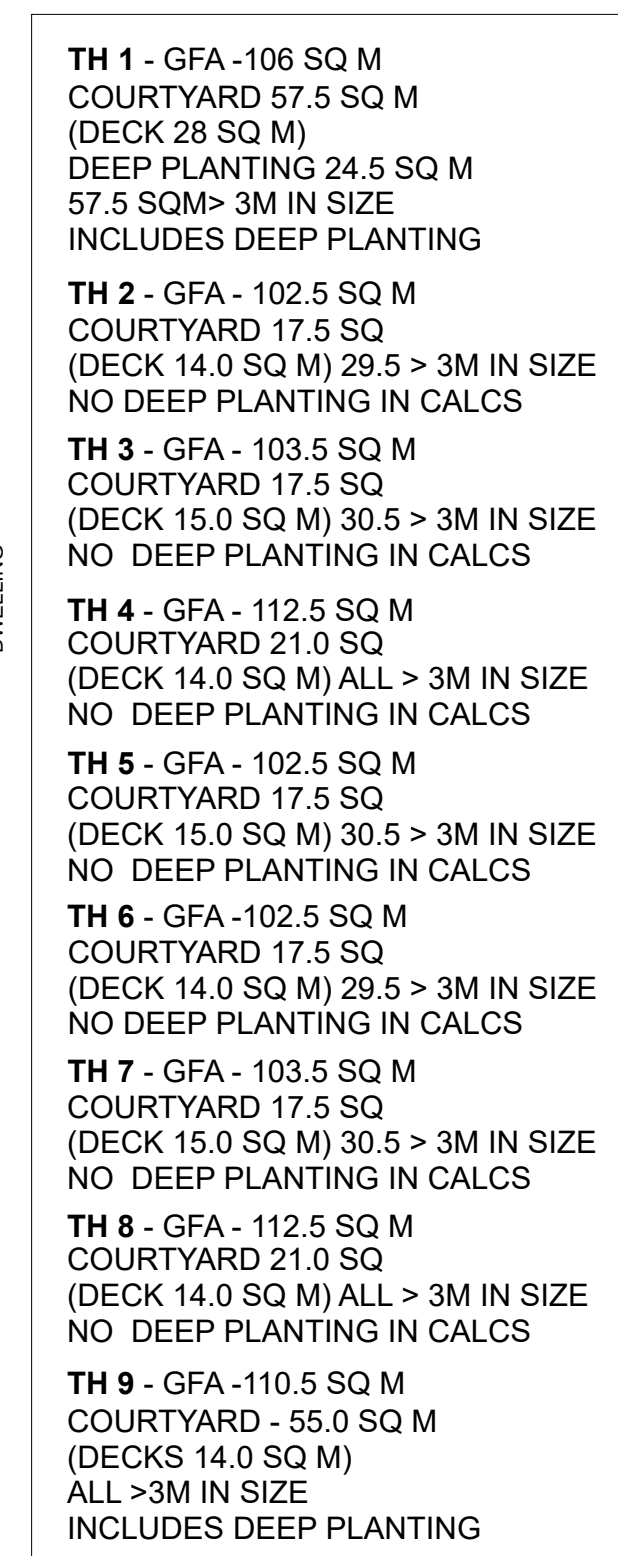
Natural ground contours are at 0.5 metre intervals.

Scale 1:100 - Lengths are in Metres.



REVISIONS		ASSOCIATED CONSULTANTS:	SURVEYOR: MBH DRAWN: PDR DATE: 24/09/2025 CHECKED: MBH	DATUM: LEVEL DATUM: AHD Via CORS (PSM 53945 RL 14.041m) HORIZ DATUM: ARBITRARY COORD ORIGIN: ARBITRARY MERIDIAN: RP 82062	CLIENT: Mr Philip Breene	SITE: 50 Kates Street, Morningside Lot 2 on RP 82062	SCALE: 1:100 (A0) PLAN REF: 25353-D1-A
20/10/25	Original Issue						

APPENDIX B DEVELOPMENT PLANS



**FOR FLOOR LEVELS REFER
TO ELEVATIONS**

TOTAL COMMON LANDSCAPED AREA 211.0 SQ M	
TOTAL DEEP PLANTING AREA 152.5 SQ M	
(INCL DEEP PLANTING IN PRIVATE COURTS OF 66 SQ M)	
TOTAL LANDSCAPED AREA (INCL COURTYARDS AND COMMON AREAS 432 SQ M)	



LIC 15107188		
General Notes The bidder shall check all dimensions and levels on site prior to construction. Notify any errors, discrepancies or omissions to the architect. Drawings shall not be used for construction purposes until issued for construction. Do not scale drawings. All boundaries and contours subject to survey		
Client BREENE		
Project MULTIUNIT DWELLING DEVELOPMENT AT 50 KATES ST MORNINGSIDE (9 DWELLINGS)		
Title SITE PLAN / SURVEY		
Scale: SHOWN	Date: 17/08/2026	Drawn: ..
Job No. BRE01	Drawing No. TP01	Revision No.

APPENDIX C STORMWATER MANAGEMENT PLANS

PROPOSED DEVELOPMENT

50 KATES STREET, MORNINGSIDE

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

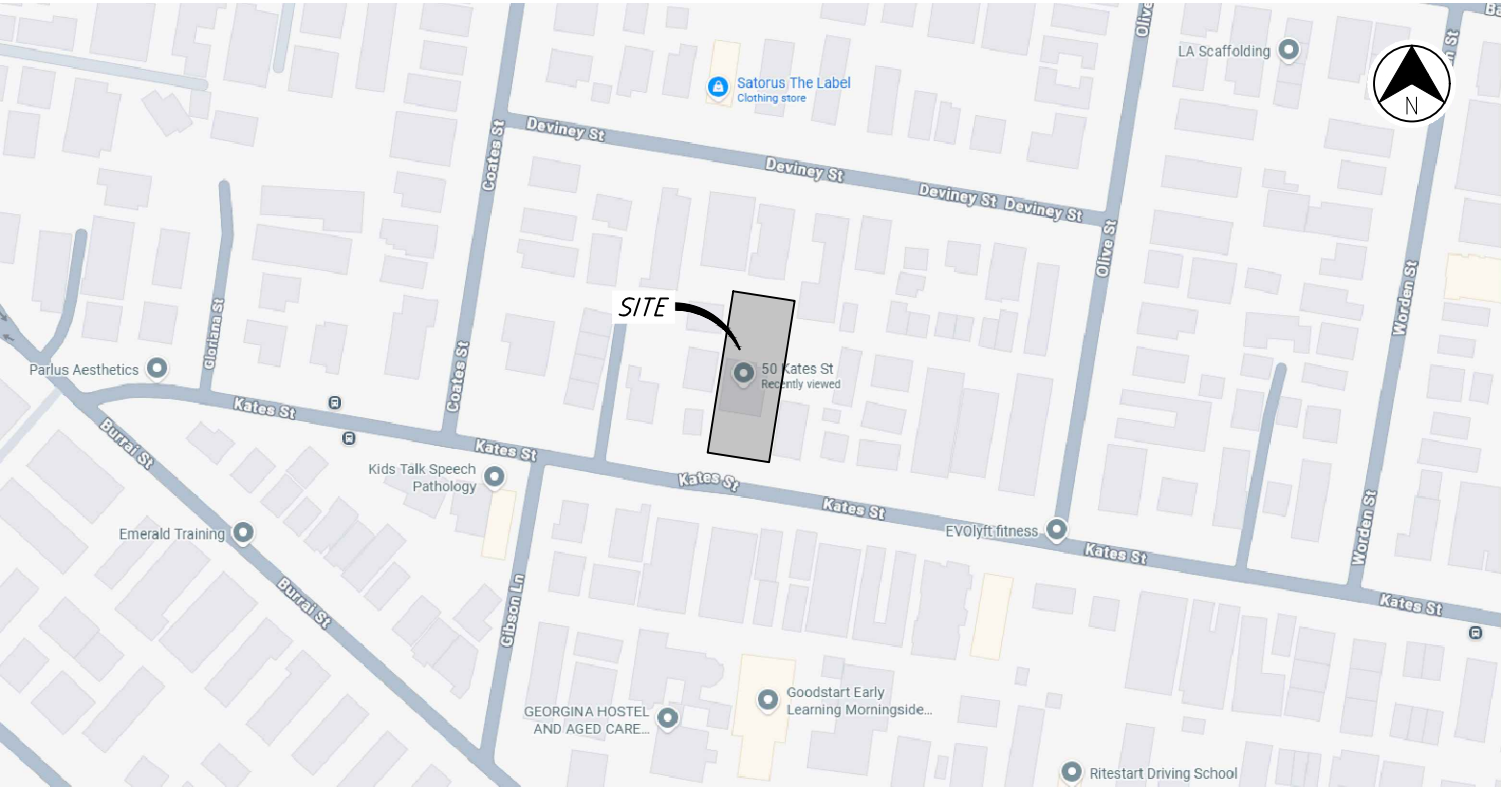
1. CONTRACTORS TO DETERMINE TREE PROTECTIONS ZONE (TPZ) & STRUCTURAL ROOT ZONE (SRZ) & COMPLY WITH AS 4970-2009 PROTECTION OF TREES ON DEVELOPMENT SITES.
2. WHERE POSSIBLE TREE ROOTS SHOULD BE TUNNELED UNDER RATHER THAN SEVERED. IF ROOTS ARE SEVERED THE DAMAGED AREA SHOULD BE TREATED WITH A SUITABLE 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.



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

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.

DISCLAIMER

WHILST EVERY EFFORT HAS BEEN MADE TO ENSURE THAT THE INFORMATION PROVIDED IN THIS DRAWING/DESIGN WAS ACCURATE AT THE TIME IT WAS COMPILED, AS PART OF THE COUNCIL'S 'AS CONSTRUCTED' RECORDS, IT REMAINS THE RESPONSIBILITY OF PROPERTY OWNERS & THEIR CONTRACTORS, SUB-CONTRACTORS EMPLOYEES, SERVANTS & AGENTS AS APPROPRIATE IN THE CIRCUMSTANCES TO MAKE ALL REASONABLE EFFORTS TO ASCERTAIN THE PRECISE LOCATION OF EXISTING INFRASTRUCTURE INCLUDING WATER MAINS, SEWERS & DRAINS BEFORE UNDERTAKING EXCAVATION OR CONSTRUCTION WORK. USERS OF THE INFORMATION SHOULD BE AWARE THAT SINCE THE ORIGINAL RECORDING OF THE DEPTHS IN RELATION TO GROUND LEVELS, CHANGES MAY HAVE OCCURRED AS A RESULT OF SUBSEQUENT WORK OR ACTIVITIES INVOLVING FILLING OR EXCAVATION. CONSEQUENTLY, DRW CONSULTING PTY LTD TAKES NO RESPONSIBILITY FOR ANY APPARENT ERROR OR INACCURACIES THAT ARE SHOWN TO EXIST AS AT THE DATE INFORMATION WAS PROVIDED OR AT A LATER DATE. THE ABOVE ALSO APPLIES TO LOCATION & DEPTH OF OTHER PUBLIC UTILITIES. ANY DAMAGE CAUSED TO EXISTING PUBLIC UTILITIES BY THE CONTRACTOR WILL BE REPAIRED BY THE RELEVANT AUTHORITY AT THE CONTRACTOR'S EXPENSE. ANY PROPOSED EASEMENTS SHOWN ARE INDICATIVE ONLY & IS TO BE CONFIRMED BY CLIENT/ DEVELOPER WITH REGISTERED SURVEYOR. LOCATION SHOWN IS BASED ON COUNCIL & RELEVANT AUTHORITY REQUIREMENTS BUT IS NOT FINAL & SUBJECT TO CHANGE AT ANY POINT PRIOR TO PLAN SEALING.

DO NOT SCALE. CONFIRM ALL DIMENSIONS ON SITE. DIMENSIONS SHOWN ARE IN METRES U.N.O.			
REV.	AMENDMENT	BY	DATE
PA	PRELIMINARY ISSUE	RM	27.01.26
PB	PRELIMINARY ISSUE	NS	04.08.26
PC	PRELIMINARY ISSUE	NS	07.09.26

NOT FOR
CONSTRUCTION

SURVEY INFORMATION

SURVEYOR:
AJS SURVEYS

DRAWING No.:
25353-D1-A

VERTICAL DATUM:

AHD
REAL PROPERTY DESCRIPTION:
LOT 2
ON RP82062

SERVICES ALSO PLOTTED FROM:



PRELIMINARY

PROJECT
PROPOSED DEVELOPMENT
50 KATES STREET,
MORNINGSIDE

CLIENT
PHILIP BREENE

TITLE
LOCALITY PLAN,
DRAWING INDEX &
NOTES

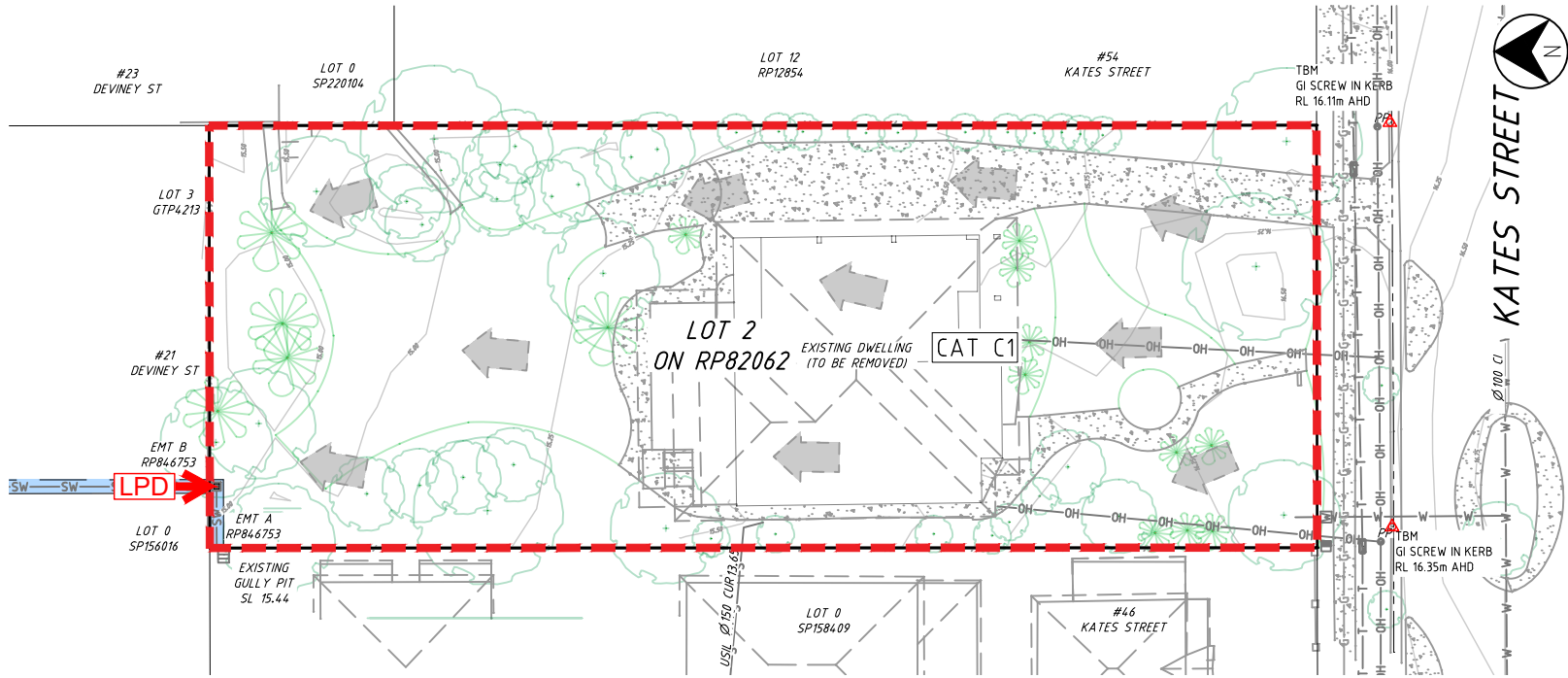


Designed	Drawn	Date
RM	NS	20.11.25
Checked	Final Check	Scale
		AS SHOWN
Drawing No.	Rev.	
5719-SM00	PC	

RATIONAL METHOD CALCULATION TABLE

PRE-DEVELOPMENT - CAT C1

TOTAL SITE AREA (Ha)	0.139
IMPERVIOUS AREA (m ²)	514
FRACTION IMPERVIOUS (fi)	0.37
TIME OF CONCENTRATION, T _c (MIN.)	12.1
RUNOFF COEFFICIENT, C ₁₀	0.70
MINOR STORM PEAK FLOW RATE, Q ₂ (m ³ /s)	0.024
MAJOR STORM PEAK FLOW RATE, Q ₁₀₀ (m ³ /s)	0.072



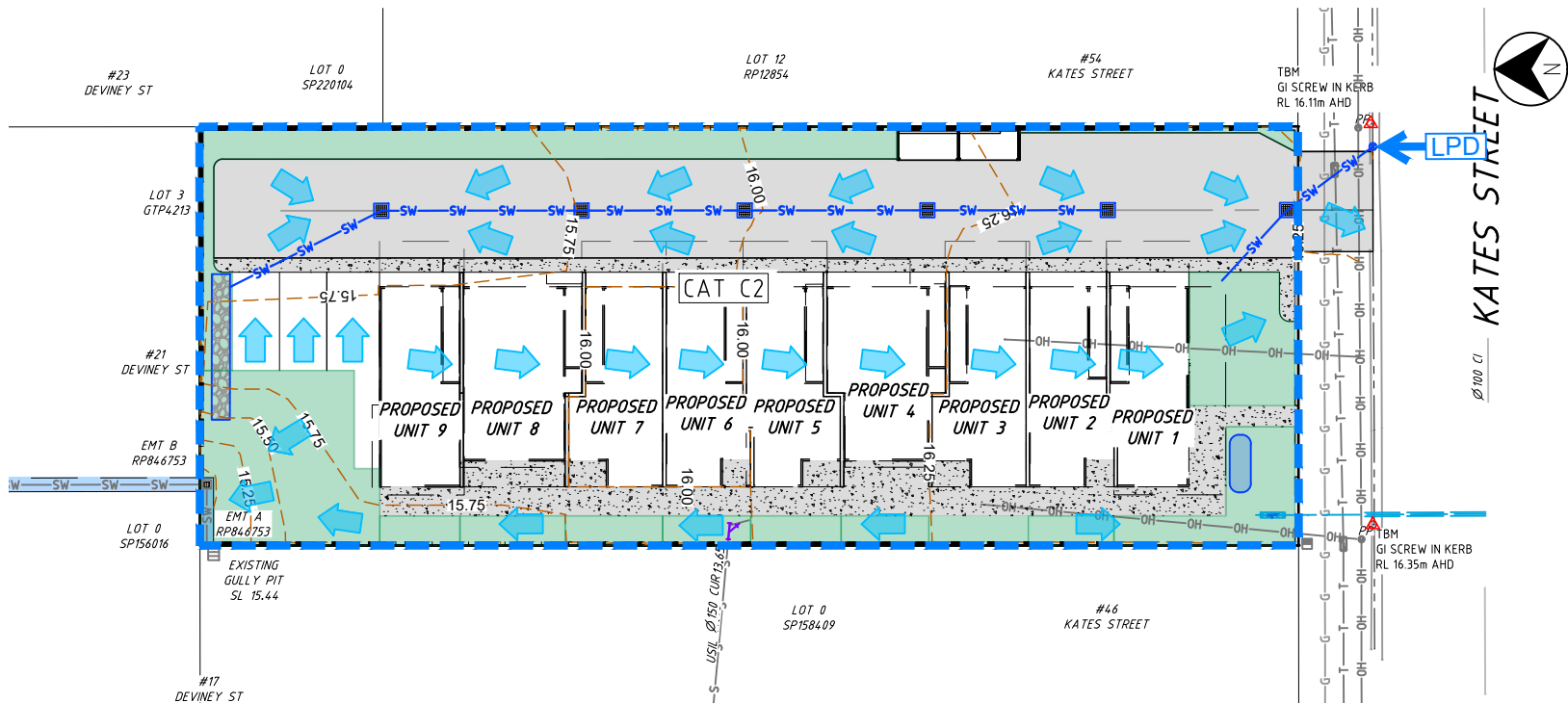
PRE-DEVELOPMENT LAYOUT

SCALE 1:200

RATIONAL METHOD CALCULATION TABLE

POST-DEVELOPMENT - CAT C2

TOTAL SITE AREA (Ha)	0.139
IMPERVIOUS AREA (m ²)	1098
FRACTION IMPERVIOUS (fi)	0.79
TIME OF CONCENTRATION, T _c (MIN.)	6.0
RUNOFF COEFFICIENT, C ₁₀	0.83
MINOR STORM PEAK FLOW RATE, Q ₂ (m ³ /s)	0.036
MAJOR STORM PEAK FLOW RATE, Q ₁₀₀ (m ³ /s)	0.110



POST-DEVELOPMENT LAYOUT

SCALE 1:200

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.

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.



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.

REV.	AMENDMENT	BY	DATE
PA	PRELIMINARY ISSUE	RM	20.01.26
PB	PRELIMINARY ISSUE	NS	04.08.26
PC	PRELIMINARY ISSUE	NS	07.09.26

LEGEND

- EXISTING WATER
- EXISTING STORMWATER
- EXISTING GAS
- EXISTING OH 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)
- EXISTING 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

NOT FOR CONSTRUCTION

DISCLAIMER
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PROJECT
PROPOSED DEVELOPMENT
50 KATES STREET,
MORNINGSIDE
CLIENT
PHILIP BREENE
TITLE
PRE & POST STORMWATER
ASSESSMENT LAYOUT

DRW
CONSULTING PTY LTD
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 RM	Drawn NS	Date 20.11.25
Checked AS SHOWN	Final Check Scale AS SHOWN	Rev.
Drawing No. 5719-SM01		PC

SCALE 1:200 (A1) 0 4 8 12 16 20m

REAL PROPERTY DESCRIPTION
LOT 2 ON RP82062



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.

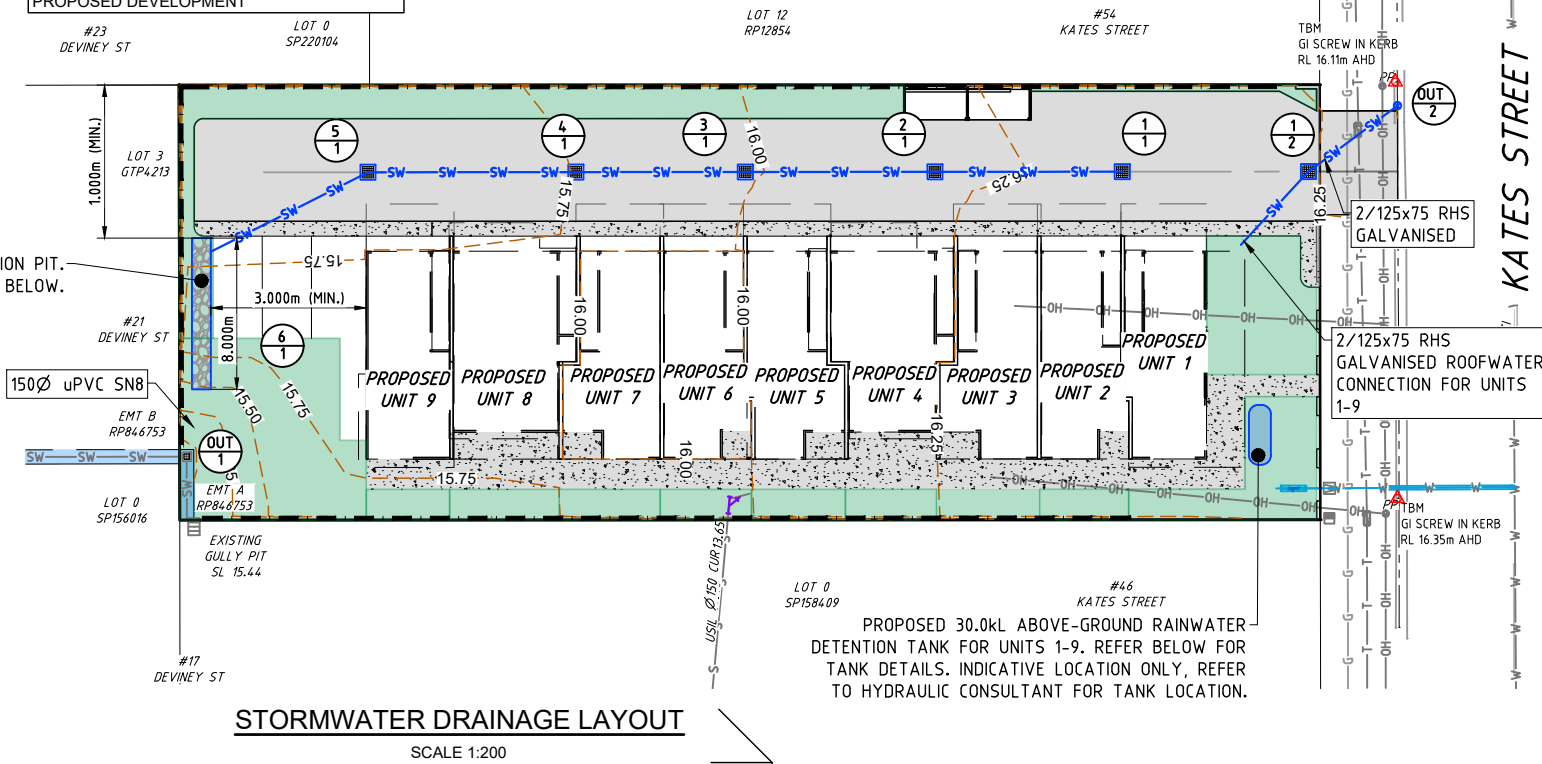
STORMWATER STRUCTURES TABLE		
NAME	SIZE/TYPE	TRAFFICABLE
1/1	600 x 600 GRATED PIT	YES
2/1	600 x 600 GRATED PIT	YES
3/1	600 x 600 GRATED PIT	YES
4/1	600 x 600 GRATED PIT	YES
5/1	600 x 600 GRATED PIT	NO
6/1	1m x 8m GRANULAR INFILTRATION PIT	NO
OUT/1	EXISTING GRATED PIT	NO
1/2	600 x 600 GRATED PIT	YES
OUT/2	2/125x75 RHS	YES

STORMWATER DRAINAGE NOTES

- ALL DRAINAGE EXCAVATION & CONSTRUCTION SHALL BE CARRIED OUT IN ACCORDANCE WITH AS3500 PLUMBING & DRAINAGE CODE & THE APPLICABLE LOCAL AUTHORITY SPECIFICATIONS & STANDARD DETAILS.
- MINIMUM COVER SHALL BE 300MM IN ALL PRIVATE PROPERTY UNO.
- 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.
- PIPES SHALL BE LAID AT MIN. 1% GRADE UNO.
- 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.
- 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
- BENCHING OF PIT STRUCTURES SHALL HAVE A SMOOTH FINISHED SURFACE, & PIPES SHALL NOT PROJECT INSIDE THE SHAFT OF THE PIT.
- WHERE RECTANGULAR PIT STRUCTURES ARE USED, PIPES MUST NOT CONNECT TO THE PIT AT CORNERS.
- 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.
- SWALE DRAINS ARE TO BE TURFED & MAINTAINED UNTIL ESTABLISHED.
- ALL ROOFWATER INSPECTION MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH LOCAL GOVERNMENTS ROOFWATER INSPECTION MANHOLE DRAWINGS OR SIMILAR IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
- 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.
- USE KERB ADAPTORS WHEN DISCHARGING TO KERB & CHANNEL AS PER LOCAL COUNCIL STANDARDS.
- 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). CONSTRUCTION LOADS APPLIED WERE:
 - SCRAPER - CAT621F (53.8T)
 - EXCAVATOR - CAT325B (25.9T)
 - COMPACTOR - CAT815F (20.9T)
 - 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.

NOTE:
THE PROPOSED GUTTERS AND DOWNPIPES ARE TO BE DESIGNED TO CATER FOR STORMWATER EVENTS UP AND INCLUDING 1% AEP TO ENSURE NO WORSENING OF THE PROPOSED DEVELOPMENT

NOTE:
BUILDING HYDRAULICS TO SIZE ROOF DRAINAGE TO CAPTURE AND CONVEY UP TO MAJOR STORM EVENT (Q₁₀₀) FLOWS TO THE PROPOSED RAINWATER DETENTION TANK.



STORMWATER DRAINAGE LAYOUT

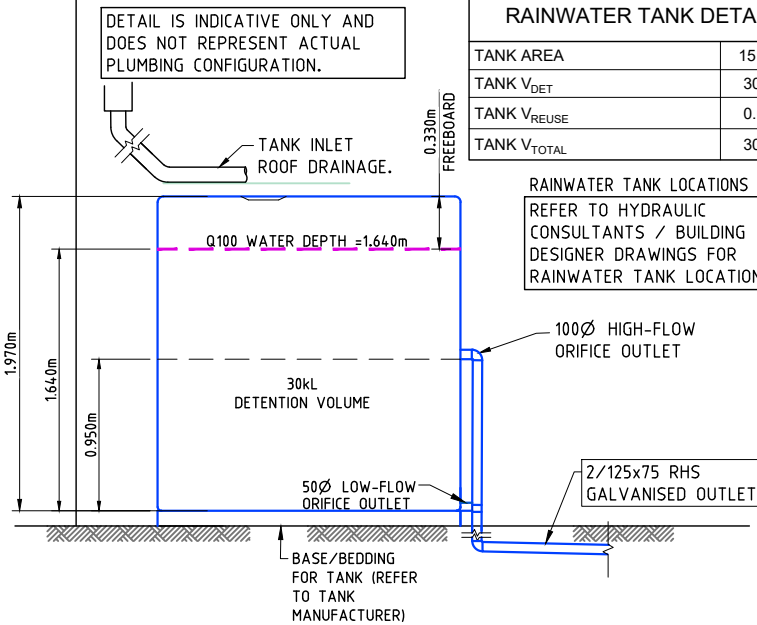
SCALE 1:200

RAINWATER TANK DETAILS

TANK AREA	15.228m ²
TANK V _{DET}	30.00m ³
TANK V _{REUSE}	0.000m ³
TANK V _{TOTAL}	30.00m ³

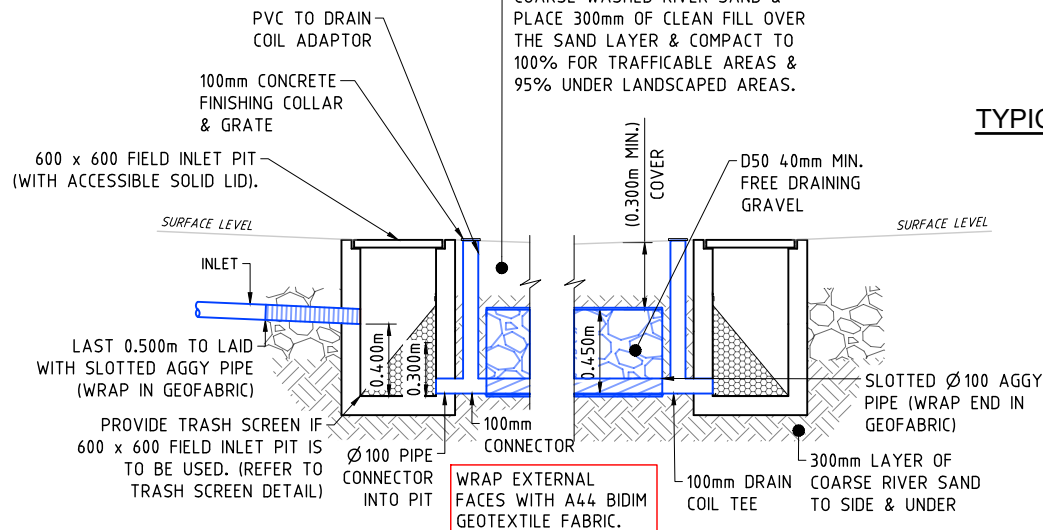
RAINWATER TANK LOCATIONS

REFER TO HYDRAULIC CONSULTANTS / BUILDING DESIGNER DRAWINGS FOR RAINWATER TANK LOCATIONS.



TYPICAL ABOVEGROUND RAINWATER DETENTION TANK (30KL) DETAIL FOR UNITS 1-9

SCALE NTS



GRANULAR INFILTRATION PIT DETAIL

SCALE 1:25

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.

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

PROPRIETARY CONCRETE PITS MAY BE USED IN LIEU OF INSITU CONCRETE PITS. PROVIDED THEY ARE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS (EXCEPT IN TRAFFICABLE SITUATIONS).

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.

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.

DISCLAIMER

WHILST EVERY EFFORT HAS BEEN MADE TO ENSURE THAT THE INFORMATION PROVIDED IN THIS DRAWING/DESIGN WAS ACCURATE AT THE TIME IT WAS COMPILED, AS PART OF THE COUNCIL'S "AS CONSTRUCTED" RECORDS, IT REMAINS THE RESPONSIBILITY OF PROPERTY OWNERS & THEIR CONTRACTORS, SUB-CONTRACTORS EMPLOYEES, SERVANTS & AGENTS AS APPROPRIATE IN THE CIRCUMSTANCES TO MAKE ALL REASONABLE EFFORTS TO ASCERTAIN THE PRECISE LOCATION OF EXISTING INFRASTRUCTURE INCLUDING WATER MAINS, SEWERS & DRAINS BEFORE UNDERTAKING EXCAVATION OR CONSTRUCTION WORK. USERS OF THE INFORMATION SHOULD BE AWARE THAT SINCE THE ORIGINAL RECORDING OF THE DEPTHS IN RELATION TO GROUND LEVELS, CHANGES MAY HAVE OCCURRED AS A RESULT OF SUBSEQUENT WORK OR ACTIVITIES INVOLVING FILLING OR EXCAVATION. CONSEQUENTLY, DRW CONSULTING PTY LTD TAKES NO RESPONSIBILITY FOR ANY APPARENT ERROR OR INACCURACIES THAT ARE SHOWN TO EXIST AS AT THE DATE INFORMATION WAS PROVIDED OR AT A LATER DATE. THE ABOVE ALSO APPLIES TO LOCATION & DEPTH OF OTHER PUBLIC UTILITIES. ANY DAMAGE CAUSED TO EXISTING PUBLIC UTILITIES BY THE CONTRACTOR WILL BE REPAIRED BY THE RELEVANT AUTHORITY AT THE CONTRACTOR'S EXPENSE. ANY PROPOSED EASEMENTS SHOWN ARE INDICATIVE ONLY & IS TO BE CONFIRMED BY CLIENT / DEVELOPER WITH REGISTERED SURVEYOR. LOCATION SHOWN IS BASED ON COUNCIL & RELEVANT AUTHORITY REQUIREMENTS BUT IS NOT FINAL & SUBJECT TO CHANGE AT ANY POINT PRIOR TO PLAN SEALING.

REV.	AMENDMENT	BY	DATE
PA	PRELIMINARY ISSUE	RM	27.01.26
PB	PRELIMINARY ISSUE	NS	04.08.26
PC	PRELIMINARY ISSUE	NS	07.09.26

LEGEND

	EXISTING SEWER LINE & MANHOLE
	EXISTING TELSTRA / OPTIC FIBRE & PIT
	EXISTING WATER
	EXISTING STORMWATER
	EXISTING GAS
	EXISTING OH ELECTRICITY
	EXISTING UG ELECTRICITY
	EXISTING CONCRETE
	EXISTING STORMWATER MANHOLE / PIT
	EXISTING SPOT LEVEL
	EXISTING CONTOURS
	DESIGN CONTOURS
	PROPOSED SWALE DRAIN
	PROPOSED DRIVEWAY
	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)
	EXISTING EASEMENT STORMWATER
	PROPOSED RETAINING WALL
	PROPOSED BUILDING WALL (OTHERS)
	EXISTING OVERLAND FLOW DIRECTION
	PROPOSED OVERLAND FLOW DIRECTION

PRELIMINARY

PROJECT
PROPOSED DEVELOPMENT
50 KATES STREET,
MORNINGSIDE

CLIENT
PHILIP BREENE

TITLE
STORMWATER DRAINAGE
LAYOUT & DETAILS

DRW
CIVIL ENGINEERING DESIGN SERVICES
2/16 Vanessa Blvd Springwood, QLD, 4127.
Phone: (07) 3208 8344 ACN 083 549 053
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Designed RM	Drawn NS	Date 20.11.25
Checked	Final Check	Scale AS SHOWN
Drawing No. 5719-SM02	Rev. PC	