RECOR

Stormwater Management Plan

Childcare Development at 241-249 Bridge Street, Newtown

Prepared for Development Holdings PTY LTD
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Executive Summary

RECOR Consulting Engineers have been engaged by Development Holdings Pty Ltd to prepare a Stormwater Management Plan (SWMP) to support a Development Application for a proposed Material Change of Use from existing residential dwellings, two small-scale retail tenancies, to a childcare centre at 241-249 Bridge Street, Newtown.

This SWMP outlines the proposed stormwater management strategy and demonstrates compliance with the Toowoomba Regional Council (TRC) Planning Scheme Policy – Stormwater Management, the Queensland Urban Drainage Manual (QUDM), and relevant Water by Design guidance. The assessment confirms that the development can be constructed and operated in accordance with applicable stormwater quantity and quality objectives.

1.1 Lawful Point of Discharge

Stormwater runoff will be conveyed to the on-site detention (OSD) tank and discharged via a lawful point of discharge to the kerb and channel within Hillview Avenue, to the northwest of the site. The system provides controlled release and integrates with existing infrastructure in accordance with QUDM requirements.

1.2 Stormwater Quantity

A hydrological assessment was undertaken using both the Rational Method and DRAINS modelling to establish pre-development conditions and assess post-development impacts.

The proposed development increases impervious area and runoff potential. To mitigate these impacts, a proposed OSD tank has been incorporated into the design. The detention system captures stormwater runoff from the proposed development and attenuates peak flows prior to discharge.

Modelling confirms that post-development peak discharges are equal to or less than pre-development flows for all assessed storm events up to and including the 1% AEP event. Existing overland flow paths and site grading are maintained, ensuring no adverse impacts to adjoining properties.

1.3 Stormwater Quality

A stormwater quality assessment has been undertaken in accordance with the Urban Stormwater Quality Planning Guidelines (2010), the Water by Design framework, and the State Planning Policy. The assessment demonstrates compliance with applicable pollutant load reduction targets through the incorporation of an engineered treatment solution.

A proprietary cartridge-based filtration system will be integrated within the OSD tank to provide treatment through filtration and pollutant capture. The system is expected to achieve compliant reductions in sediments, nutrients, and gross pollutants, ensuring no adverse impact on downstream receiving environments

1.4 Erosion and Sediment Control

During the construction phase, ESC measures must be implemented in accordance with the applicable requirements.

2 Introduction

2.1 Background and Scope

RECOR has been engaged by Development Holdings Pty Ltd to prepare a Stormwater Management Plan (SWMP) for the proposed Material Change of Use from existing residential dwellings, two small-scale retail tenancies to a childcare centre at 241-249 Bridge Street, Newtown.

This report has been prepared to support the Development Approval Application submission to Toowoomba Regional Council and any nominated referral agencies. The proposed development's property details have been summarised in Table 2-1.

The SWMP addresses potential stormwater impacts resulting from the proposed development and outlines the necessary mitigation measures to meet both quantity and quality requirements of Toowoomba Regional Council.

This report presents the hydrological assessment of the proposed development, including any external catchments that may directly influence peak flows exiting the site. The purpose of the assessment is to ensure that post-development stormwater discharge does not adversely impact existing flooding or stormwater conveyance conditions on surrounding properties and that the stormwater management objectives of the QUDM and Toowoomba Regional Council requirements are achieved.

Additionally, the assessment evaluates the development requirements for stormwater treatment to ensure compliance with Water by Design guidelines, the SPP, and council water quality requirements.

Table 2-1 Property Details

Site Details	Parameters
Site Location	241-249 Bridge Street, Newtown QLD
Lot Number	1 on RP51161, 2 on RP60061, and 1 on RP17060
Intended Land Use	Material Change of Use for Childcare Centre
Development Area	2,730 m^2

2.2 Stormwater Management Objectives and Design Approach

The intent of this report is to document the design considerations and outcomes that satisfy the stormwater management objectives for the proposed development. The strategy has been developed to address the following key aspects and performance objectives:

- Catchment Definition: Identification of all catchments and sub-catchments discharging through or into the site.
- Hydrological Assessment: Determination of existing flow conditions for multiple storm events and assessment of development impacts on surrounding properties.
- Flow Management: Ensuring post-development peak flows do not exceed pre-development flows across all relevant storm events, up to and including the 1% AEP.
- Lawful Point of Discharge: Identification and utilisation of a lawful point of discharge in accordance with QUDM, ensuring no actionable nuisance to downstream properties or infrastructure.

- Site Drainage and Conveyance: Development of a preliminary site drainage layout that ensures safe conveyance of stormwater through the site without adverse impacts on adjacent areas.

- Erosion and Sediment Control: Adoption of construction-phase measures consistent with the International Erosion Control Association (ICEA) – Best Practice Erosion and Sediment Control (2008) guidelines.

Stormwater management for the proposed development has been designed in accordance with the following documents:

- Toowoomba Regional Council Planning Scheme Policy – Stormwater Management

- State Planning Policy (SPP), 2017

- Environmental Protection (Water) Policy, 2009

- Environmental Protection Act 1994

- Queensland Urban Drainage Manual (QUDM) Fourth Edition, 2016

- Water by Design – Construction and Establishment Guidelines: Swales, Bioretention Systems and Wetlands V1.1, 2010

- Australian Rainfall and Runoff Guideline (ARR)

2.3 Supporting Documentation and Reports

The SWMP is supported by technical documentation and reports which provide the basis for the engineering recommendations and support the DA application, including:

- Civil Design Drawings prepared by RECOR, File No: P0345-26-005-01-DA

3 Existing Site

3.1 Site Overview

The site, located at 241–249 Bridge Street, Newtown, is bounded by residential properties to the north, Bridge Street to the south, Brim Street to the east, and Hillview Avenue to the west. The site has four existing access driveways, two from Brim Street and two from Hillview Avenue. Surrounding properties are zoned Low Density Residential.

Topography generally falls to the north with survey ground levels ranging from approximately RL 617.5 m AHD in the south to approximately RL 615.8 m AHD in the north. Drainage across the site primarily occurs as sheet flow towards the north, discharging into the adjacent properties.

No dedicated stormwater infrastructure is currently provided within the site. It is understood that there is no significant upstream catchment contributing to the site, as the kerb and channel within Bridge Street conveys flows away from the site.

Figure 3-1: Subject Site Location

3.2 Flow Calculation Using the Rational Method

The Rational Method was initially applied as a verification tool to cross-check outputs from the DRAINS hydrological model, which was subsequently developed to assess both pre- and post-development flows.

The time of concentration (Tc) of 8 minutes was determined using figure 4.4 – Overland sheet flow times (refer to Figure 3-3) in accordance with Table 4.6.6 of QUDM. This approach provides a reliable estimate of the travel time for runoff from the hydraulically most distant point in the catchment to the outlet.

A maximum flow path length of 45 m was adopted, based on QLD Globe (refer to Figure 3-2), this was confirmed from survey data collected by Minstaff surveyors in 2026.

To refine the analysis, the following factors were incorporated to ensure accuracy and representativeness of the stormwater design:

- Surface roughness and vegetation cover, which influence flow resistance and travel time
- Topographic gradients, confirming alignment between flow velocities and assumed conditions
- Site hydraulic connectivity, including potential depressions or ponding areas, verifying the appropriateness of the adopted Tc.

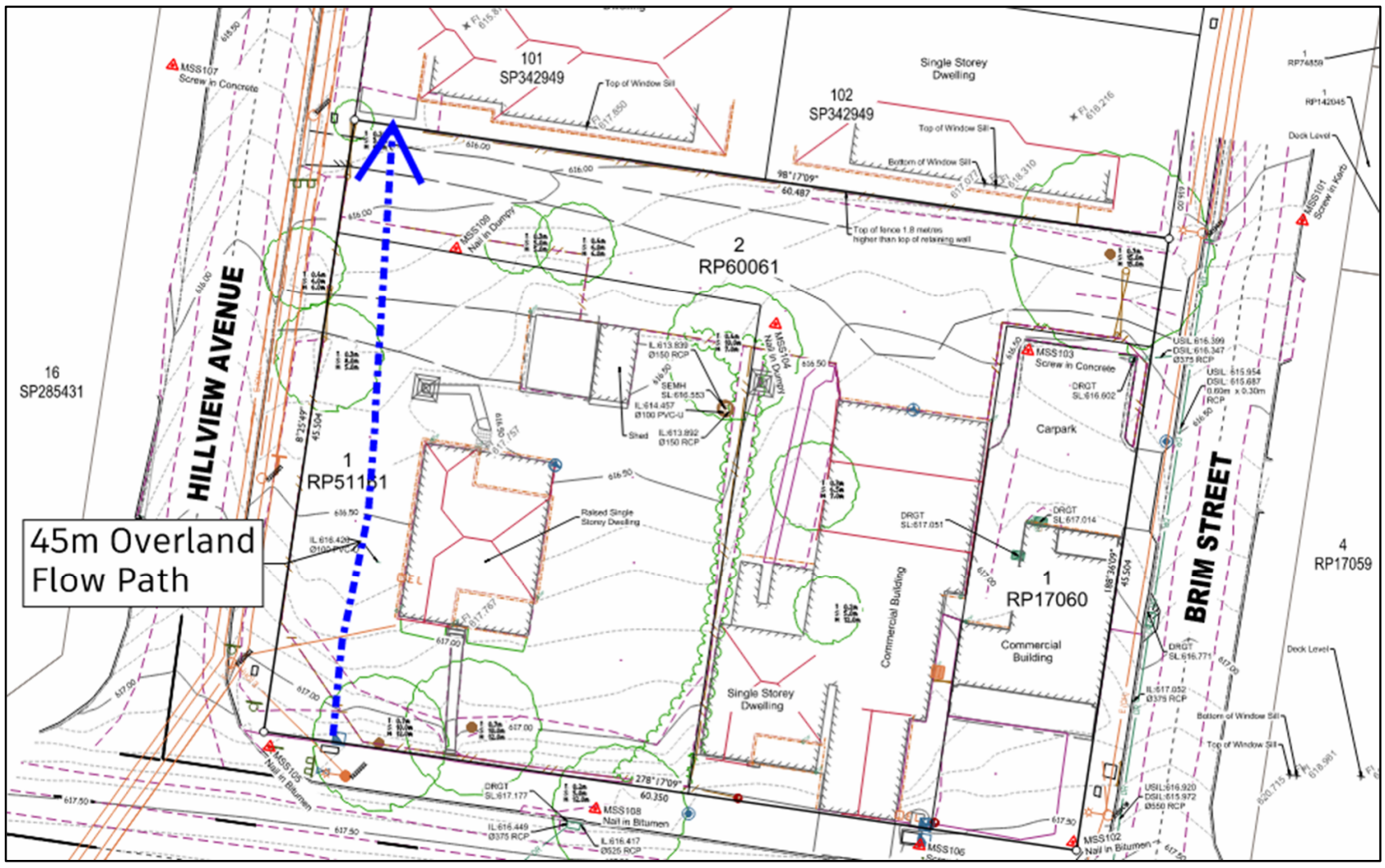


Figure 3-2 Max Overland Flow Path (Minstaff Survey, 2026)

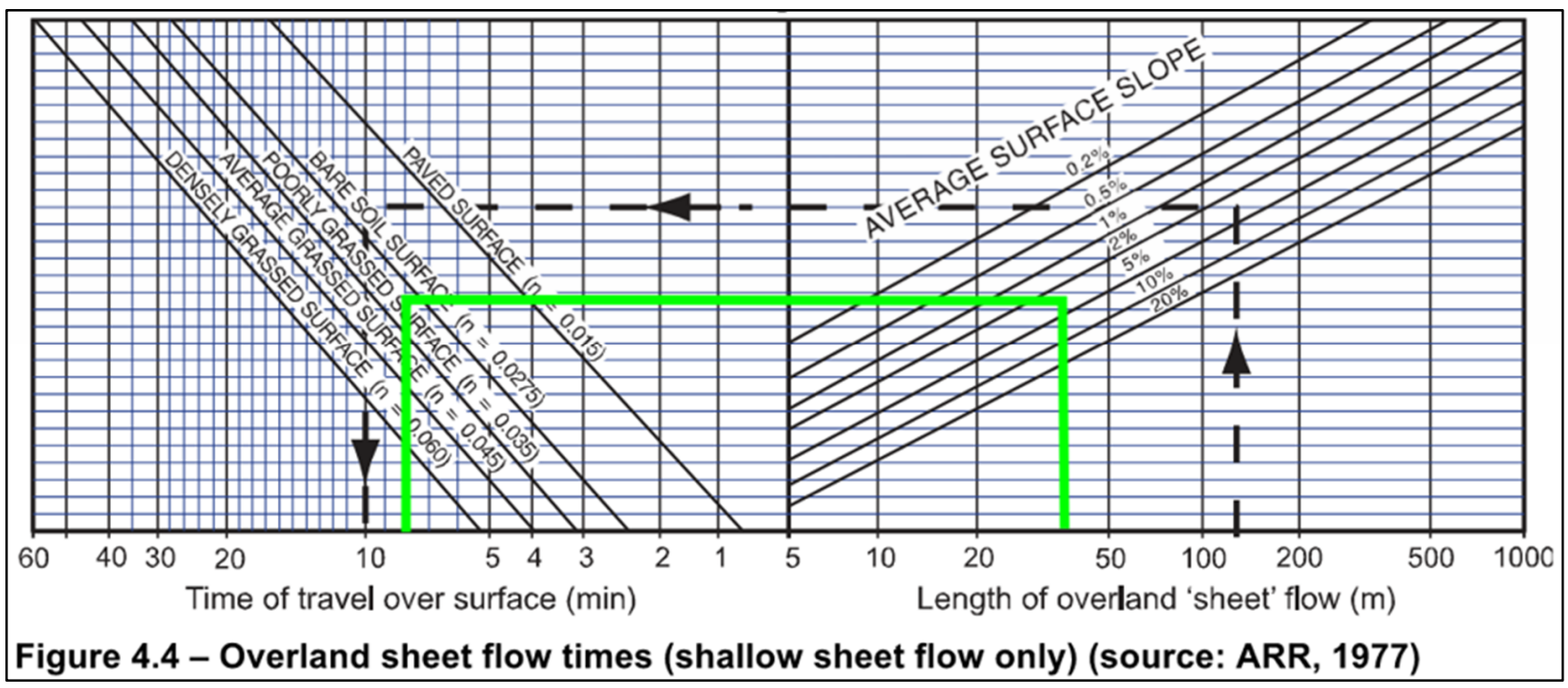


Figure 3-3: Overland Sheet Flow Times (QUDM, 2016)

The impervious fraction for the site was determined to be 49%, based on a manual measurement of the total impervious area to accurately represent existing site conditions in accordance with QUDM methodology. This measured impervious area, including buildings, hardstand areas, and the compacted through driveway and car park, was input directly into the model to ensure realistic simulation of runoff generation.

The compacted through driveway and car park servicing small-scale retail uses has been assessed in accordance with QUDM, which requires the designer to assign appropriate impervious fractions where not explicitly defined. As QUDM does not specify values for gravel surfaces, an effective imperviousness has been adopted based on expected compaction and traffic loading. The surface is assumed to behave as a heavily trafficked, compacted area with minimal infiltration due to sealing by fines and vehicle movements and has therefore been assigned an impervious fraction of 0.9 within the overall site assessment.

Using QUDM Table 4.5.3, the C_{10} was determined based on the 1-hour, 10 % AEP rainfall intensity of 51.9 mm/hr. Applying this methodology, a C_{10} value of 0.68 was derived, as summarised in Table 3-1.

Table 3-1: Rational Method Key Inputs

Catchment	Area (ha)	Tc (min)	Actual Tc (min)	fi	C10
Pre-Development	0.273	8	8	0.49	0.68

To quantify the peak flow rates for various Annual Exceedance Probability (AEP), the Rational Method formula was applied:

$$Q = C \times I \times A$$

where:

- Q = Peak discharge (m^3/s)
- C = Runoff coefficient
- I = Rainfall intensity (mm/hr)
- A = Catchment area (hectares)

The following Table 3-2 presents the calculated pre-development flow rates for each of the assessed storm events:

Table 3-2: Rational Method Flow Calculations

AEP %	50%	20%	10%	5%	2%	1%
Pre-Development Flow (m^3/s)	0.041	0.062	0.078	0.094	0.121	0.141

These calculations establish the hydrological baseline for the site and form the foundation for further stormwater management analysis. The results will be used to assess post-development runoff characteristics and determine the necessary mitigation measures to ensure compliance with the QUDM and Toowoomba Regional Council stormwater management requirements.

3.3 DRAINS Model and Comparison to Rational Method

The DRAINS model was configured using the appropriate Australian Rainfall and Runoff (ARR) parameters specific to the site conditions. Inputs for each catchment were derived from the parameters discussed in previous sections, ensuring consistency with site-specific hydrology and QUDM low residential density development criteria. The general configuration of the DRAINS model is shown in Figure 3-4.

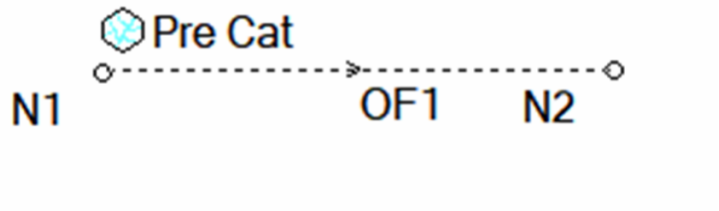


Figure 3-4: DRAINS model for existing catchment

The existing catchment was modelled based on survey data provided by Minstaff Surveyors (refer to Appendix C). This information was used to determine an accurate impervious fraction for the pre-existing site through measurement of existing impervious surfaces. The relevant DRAINS catchment inputs are detailed in Figure 3-5.

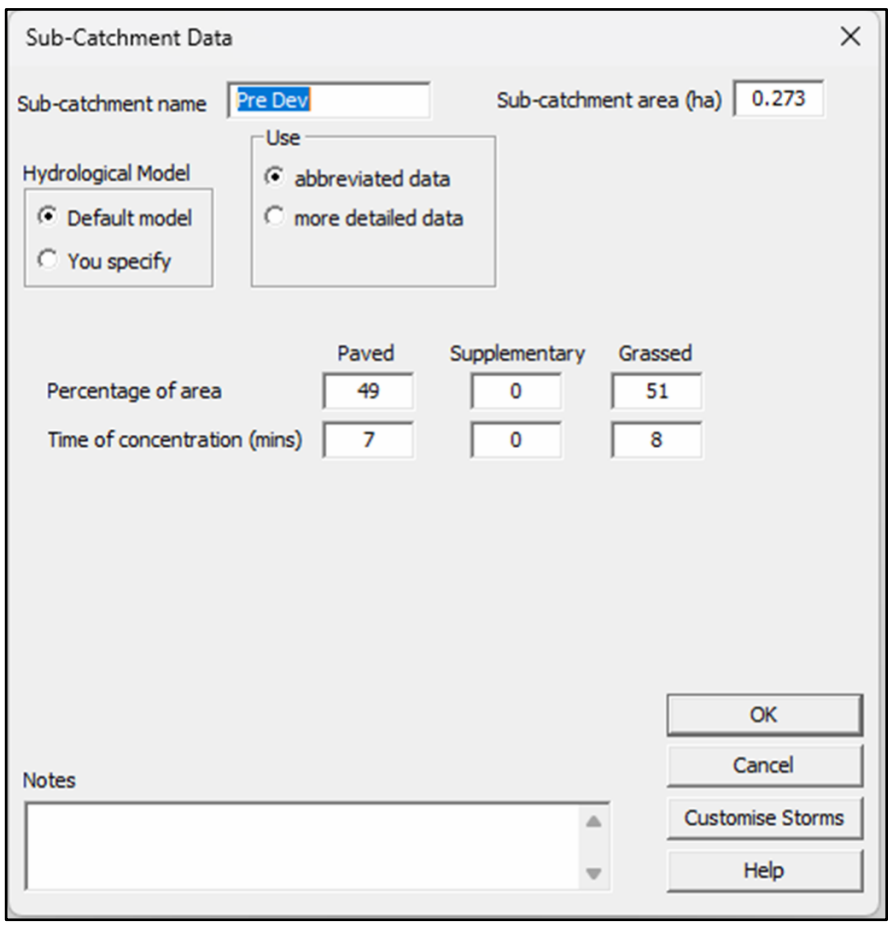


Figure 3-5: DRAINS Catchment Inputs

The pre-development flow rates for various AEP were calculated using DRAINS. The results are summarized in Table 3-3.

Table 3-3: DRAINS Results for Existing Catchment

AEP %	50%	20%	10%	5%	2%	1%
Pre-Development Flow (m^3/s)	0.043	0.070	0.088	0.106	0.129	0.146

A comparative assessment was conducted to evaluate the variance between DRAINS results and the Rational Method calculations. The differences between the two methodologies are presented in Table 3-4.

Table 3-4: Comparison Between DRAINS and the Rational Method

Storm Event (AEP)	Rational Method (m^3/s)	DRAINS (m^3/s)	Difference %
50% (2-Year ARI)	0.041	0.043	6%
20% (5-Year ARI)	0.062	0.070	12%
10% (10-Year ARI)	0.078	0.088	13%
5% (20-Year ARI)	0.094	0.106	12%
2% (50-Year ARI)	0.121	0.129	7%
1% (100-Year ARI)	0.141	0.146	4%

The results obtained from the Rational Method and the DRAINS model show differences that are within acceptable engineering tolerances and align with expectations given the inherent methodological differences between the two approaches.

- The Rational Method is a simplified empirical approach that assumes uniform rainfall intensity across the entire catchment for the duration of the storm event. It does not account for hydraulic routing, storage effects, or time-variant rainfall intensities, which can lead to either under- or over-estimations of peak flows depending on local site characteristics.

- DRAINS, in contrast, is a hydrologic and hydraulic modelling tool that provides a more detailed, event-based assessment incorporating:
    - Rainfall losses (initial and continuing losses)
    - Time-dependent storm profiles.
    - Pipe and channel storage effects
    - Flow routing dynamics.

- The Rational Method remains a valid tool for preliminary estimation and cross-checking of peak flows; however, the DRAINS model, utilising the ILSAX method, provides a more detailed and accurate assessment of catchment behaviour. Therefore, DRAINS model results have been adopted for final design.

- Minor discrepancies, particularly for higher return period events (e.g. 20-year ARI and greater) indicate that the Rational Method provides a reasonable approximation for design verification.

- The largest discrepancies are typically observed in low-frequency events (1 to 5 year), where DRAINS captures additional hydrological complexities such as temporal rainfall variation and surface storage, which are not represented in the Rational Method.

4 Proposed Development Works

4.1 Proposed Site Description

The proposed development will comprise of a childcare centre for 123 places, 37 carparks, which will be accessed via a driveway from Hillview Avenue and supported by a dedicated on-site stormwater management system.

A key feature of the stormwater management strategy is the inclusion of a detention tank located in the northern portion of the carpark. The tank has been designed to capture and attenuate and treat stormwater runoff from the proposed development prior to discharging via the lawful point of discharge into the kerb and channel, located to the west within Hillview Avenue

The proposed grades will continue to convey overland flow towards the north and northwest of the site, and current overland flow paths will be maintained. Runoff from the proposed site will be directed to the tank to prevent any increase in flows to the northern boundary of the site into the adjacent lots.

In addition to mitigating potential downstream impacts, the proposed system has been designed to achieve compliance with the Toowoomba Regional Council Planning Scheme Policy – Stormwater Management, by:

- Consolidating site runoff into a single lawful discharge point
- Attenuating post-development peak flow rates to pre-development levels or better
- Improving stormwater quality prior to discharge, in accordance with QUDM and Council requirements

This approach delivers an effective stormwater solution that mitigates the hydrological impacts of the proposed development. The layout of the proposed development is illustrated in Figure 3-1.

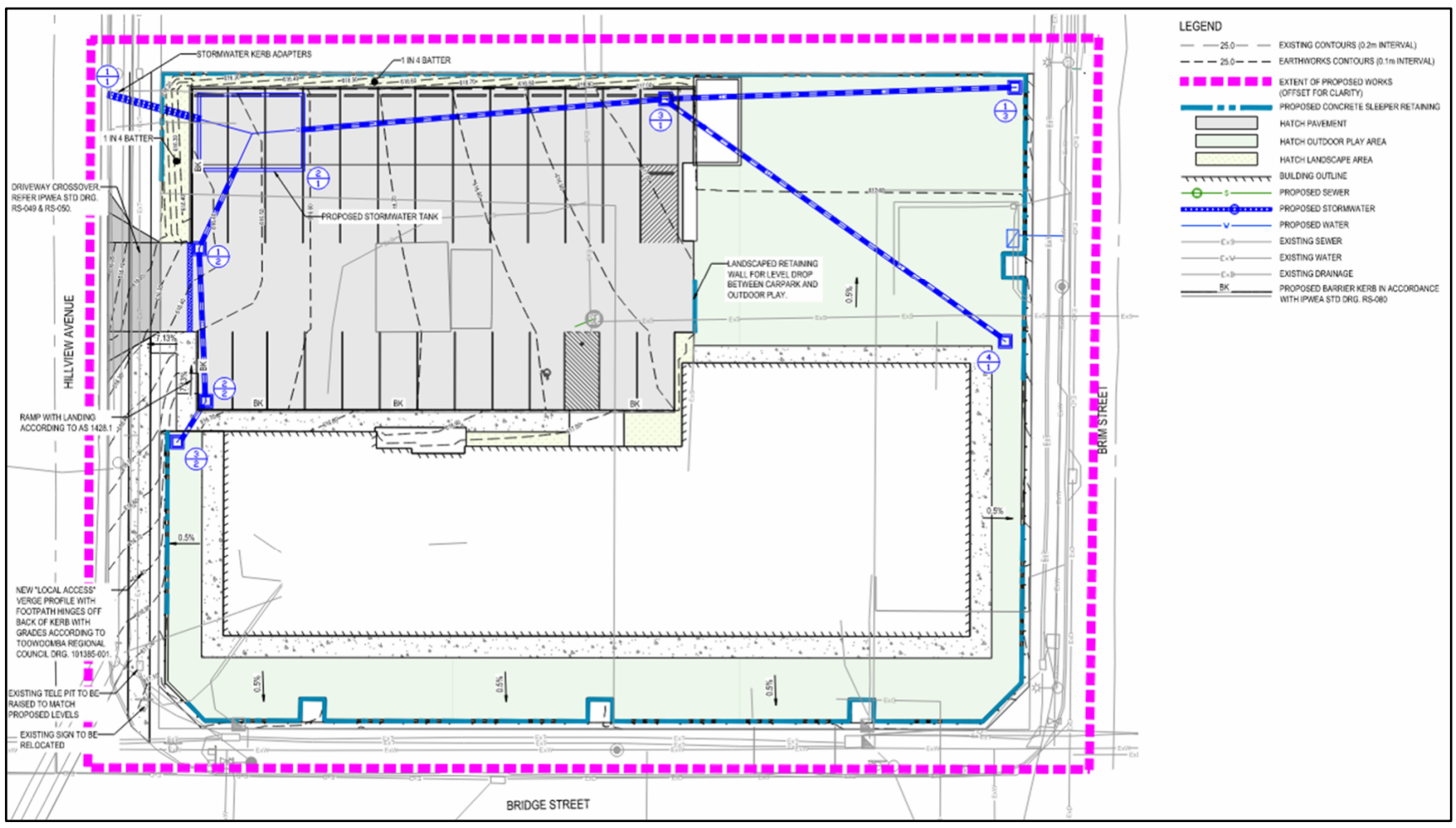


Figure 4-1 Proposed Developed Site

4.2 Time of Concentration Inputs into DRAINS

The time of concentration (Tc) for each catchment has been determined using a combination of:

1. Roof inlet time (time for runoff to travel from impervious surfaces to the drainage system)
2. Pipe flow time (travel time through the underground drainage system)

Each component is broken down below for the catchment, as shown in the provided screenshot.

Total Area:

1. Total site → 2730 m² (0.273 ha)

Catchment: Impervious Areas

- Tc components:
    1. Roof inlet time → 5 minutes
        - Assigned based on standard inlet times from QUDM Table 4.6.2 for urban residential areas.
    2. Time in pipe flow → 1.5 minutes
        - From QUDM Figure 4.5 – Flow Travel Times in Pipes and Channels
    3. Kerb Travel Time → 0.5 minutes
        - Assume minor due to the limited surface flow distance
    4. Total Time of Concentration (Tc): 7 minutes

Catchment: Grassed areas

- Tc components:
    1. Overland sheet flow → 8 minutes
        - Assigned based on QUDM figure 4.4 – Overland Sheet Flow Times, using 45m flow path and 2.22% grade
    2. Total Time of Concentration (Tc): 8 minutes

Calculation Methodology

- Roof inlet travel times were estimated using QUDM guidelines and empirical flow path analysis.
- Pipe flow times were determined using Manning's equation for open channel and pipe flow, referencing the chart provided in the screenshot for additional validation.
- Catchment delineation and flow paths were confirmed using the proposed childcare centre layout and area tool measurements.

Final Considerations

- One catchment has been adopted for the entire development.
- Time of concentration will be used in the hydrological modelling to determine peak flow rates and ensure adequate stormwater infrastructure design.
- All roofwater and driveways, where feasible, from the new development will be conveyed to the tank.

4.3 Hydrological Modelling Results

Analysis of the unmitigated DRAINS model results compared to pre-existing conditions indicates a significant increase in peak flows across a range of AEP storm events, attributable to the transition from a rural setting to a developed urban condition.

Key Observations

1. Increase in Flow Depths and Velocities
    - The developed scenario shows higher water levels across all storm events, particularly at constricted sections of the drainage network.
    - Flow velocities have increased, indicating a higher runoff volume due to reduced permeability.
2. Peak Discharge Variations
    - Peak discharge rates in the developed scenario have increased substantially, particularly for higher return period storms (e.g., 1% AEP).
    - The most significant changes occur at sections with concentrated overland flow paths, suggesting increased runoff from new impervious surfaces.
3. Impact of Increased Impervious Area
    - The development introduces more impervious surfaces (e.g., roads, driveways, rooftops), reducing infiltration and increasing direct runoff.
    - The loss of natural detention and permeability results in quicker times of concentration and higher peak flows.

Table 4-1: Comparison of Pre-Development vs. Unmitigated Post-Development Peak Flows

Storm Event (AEP)	Pre-Development Peak Flow (m^3/s)	Post-Development Peak Flow (m^3/s)	Increase %
50% (2-Year ARI)	0.043	0.048	12%
20% (5-Year ARI)	0.070	0.074	6%
10% (10-Year ARI)	0.088	0.092	5%
5% (20-Year ARI)	0.106	0.109	3%
2% (50-Year ARI)	0.129	0.132	2%
1% (100-Year ARI)	0.146	0.148	1%

4.4 Required Mitigation – Installation of a Detention Tank

Due to the projected increase in post-development peak flows, mitigation measures are required to ensure compliance with Toowoomba Regional Council stormwater management requirements and to prevent potential downstream impacts. The most suitable solution is the use of a detention tank; modelling will ensure the designed tank will achieve the following outcomes:

- Attenuate peak discharge by temporarily storing excess runoff and releasing it at controlled, pre-development rates
- Control flow velocities, thereby reducing the risk of downstream erosion and infrastructure overloading and
- Improve water quality by facilitating the settlement of suspended solids and associated pollutants prior to discharge.

The detention tank will be designed to ensure that post-development peak flows do not exceed pre-development flow conditions for all relevant design storm events. Further hydrological modelling will be undertaken to appropriately size the tank and confirm its effectiveness in mitigating increased flow volumes and velocities.

4.5 Stormwater Detention and Mitigation Strategy

The use of a detention tank is proposed to be utilised for stormwater detention and will be sized to retain all site-generated flows. The tank is located in the northern portion of the development, as shown on the Civil Set of Plans (Drawing No. P0345-26-005-01-DA), for Council's consideration.

The detention tank has been designed to detain and control stormwater flows for all assessed events, up to and including the 1% AEP, ensuring post-development peak discharges do not exceed pre-development levels in accordance with QUDM. Attenuation is provided across all design storm events, with tank sizing and outlet controls configured to achieve compliant discharge rates. Refer to Table 3-2 for tank design parameters.

The site naturally drains towards the north and northwest in accordance with the existing topography. The proposed development is designed so that stormwater from the site, including roof areas and hardstand, will be captured by a detention tank located in the northern portion of the site, maintaining the existing overland flow direction where overflow occurs.

This approach ensures controlled attenuation of the increased peak flows generated by the proposed development's additional impervious surfaces prior to discharge via the lawful point of discharge through new kerb adaptors into Council's kerb and channel within Hillview Avenue. Existing site overland flow paths are maintained, and there is no increase in flows to the northern boundary into the adjacent properties.

Hydrological modelling adopts a consistent catchment framework for both pre- and post-development scenarios, enabling direct comparison and demonstrating compliance with Council's non-worsening drainage requirements.

Table 4-2: Detention Tank Parameters

Parameter	Value
Tank Footprint	35.00 m^2
Internal Tank Height	0.50 m
1% AEP Storage Volume	16.98 m^3
1% AEP Water Depth	0.49 m
Lower Discharge Control	210 mm orifice at 615.76 m AHD
Secondary Discharge Control	250 mm orifice at 615.96 m AHD
Outlet Pipe Size	5 x 150mm dia kerb adaptors
Outlet Pipe Invert Level	615.70 m AHD

4.6 Stormwater Mitigation Results

A detailed analysis of the mitigated peak flows, as summarised in Table 3-3, confirms that the use of the existing detention tank successfully reduces post-development discharges across all assessed storm events, ensuring compliance with QUDM requirements and mitigating potential downstream impacts.

Table 4-3: Mitigated Flow Comparison to Existing

Storm Event (AEP)	Pre-Development Peak Flow (m^3/s)	Post-Mitigation Peak Flow (m^3/s)	Reduction %
50% (2-Year ARI)	0.043	0.042	-2%
20% (5-Year ARI)	0.070	0.070	0%
10% (10-Year ARI)	0.088	0.085	-3%
5% (20-Year ARI)	0.106	0.105	-1%
2% (50-Year ARI)	0.129	0.125	-3%
1% (100-Year ARI)	0.146	0.135	-8%

Key Observations

The results of the hydrological modelling demonstrate that the proposed detention tank provides effective attenuation of post-development peak flows, particularly for the more frequent rainfall events.

As summarised in Table 4-3, the following peak flow reductions were achieved:

- 2 - Year AEP – approximately 8% reduction
- 5 - Year AEP – approximately 3% reduction
- 10 - Year AEP – approximately 1% reduction
- 20 - Year AEP – approximately 3% reduction
- 50 - Year AEP – approximately 0% reduction.
- 100 - Year AEP – approximately 2% reduction.

These results indicate that the tank has been optimised to effectively manage frequent, smaller storm events, which are most critical for protecting downstream properties and infrastructure, while allowing major flood events to pass through the system without increased risk.

This outcome reflects the intent of the stormwater management strategy:

- To provide a significant reduction in nuisance flooding and frequent storm impacts
- To ensure safe conveyance of major flows consistent with pre-development drainage conditions and
- To maintain compliance with both QUDM and Toowoomba Regional Council stormwater management objectives.

5 Stormwater Quality

5.1 Introduction

A stormwater quality assessment has been undertaken for the proposed development in accordance with the Urban Stormwater Quality Planning Guidelines (2010) and the Water by Design framework. The objective of this assessment is to demonstrate compliance with pollutant load reduction targets through the integration of an engineered treatment solution within the stormwater detention infrastructure.

Rather than a conventional bioretention system, the proposed development will adopt a proprietary cartridge-based treatment device, such as the Atlan Filter or a similar approved product, housed within the proposed on-site detention (OSD) tank. This approach provides a compact and highly efficient solution to stormwater pollutant removal, suited to constrained development footprints and high-performance treatment requirements.

5.2 Proposed Treatment System

The proposed stormwater quality solution involves the integration of an integration of a cartridge-based filtration system (e.g. Atlan Filter or similar proprietary system) within the base of the OSD tank. The filter unit will be positioned to intercept and treat stormwater prior to discharge to the lawful point. The Filter unit provides multiple treatment stages including sedimentation, filtration, and nutrient removal within a self-contained cartridge unit, and is designed for high-flow bypass scenarios.

The final configuration, cartridge sizing, and number of filter units will be refined during the Operational Works design phase in consultation with Atlan or an equivalent proprietary system supplier.

5.3 Expected Pollutant Reduction Performance

Based on verified performance data from the Atlan Filter system (refer to https://atlanstormwater.com/au/atlan-filter), the treatment device has been demonstrated to achieve the following pollutant load reductions under typical urban runoff conditions:

Table 5-1 Pollutant Reduction Targets

Parameter	Expected Reduction (%)
Total Suspended Solids (TSS)	≥ 90%
Total Phosphorus (TP)	≥ 65%
Total Nitrogen (TN)	≥ 45%
Gross Pollutants	≥ 99%

These results align with or exceed the Water by Design pollutant reduction targets for Southeast Queensland.

5.4 Compliance and Regulatory Alignment

The cartridge-based system has been selected to ensure compliance with the following regional stormwater quality objectives:

- ≥ 80% reduction in TSS
- ≥ 60% reduction in TP
- ≥ 45% reduction in TN
- ≥ 90% reduction in Gross Pollutants

Proprietary cartridge filtration systems are typically independently tested and verified for pollutant removal efficiency. Their modular design allows for flexibility in sizing and configuration to suit site-specific inflow volumes, hydraulic constraints, and spatial limitations.

5.5 Conclusion and Recommendations

The adoption of a cartridge-based filtration system such as the Atlan Filter or a similar proprietary product within the proposed detention tank offers a space-efficient and high-performance solution for stormwater quality treatment. The design ensures that:

- All regulatory pollutant reduction targets are met or exceeded
- The treatment system is seamlessly integrated within the detention infrastructure
- Maintenance is streamlined through above-ground or vault access to cartridges
- Future refinement during detailed design will optimise treatment area, cartridge count, and bypass capacity.

This approach reflects a commitment to best-practice water-sensitive urban design (WSUD), and ensures the development delivers a sustainable stormwater outcome that protects downstream environments and aligns with local and state planning policies.

6 Erosion and Sediment Control

An Erosion and Sediment Control Plan (ESCP) will be developed and submitted as part of the Operational Works application. The ESCP will outline the specific measures to be implemented during the construction phase to minimise erosion and prevent sediment-laden runoff from leaving the site or impacting downstream water quality.

The ESCP will be prepared in accordance with the IECA – Best Practice Erosion and Sediment Control Manual (2008) and the requirements of the Environmental Protection Act 1994.

Typical ESC measures to be adopted during construction may include:

- Installation of sediment fences along downstream boundaries and around stockpile areas.
- Stabilised construction entry/exit points incorporating shakedown grids.
- Temporary diversion drains and bunds to direct runoff away from exposed areas.
- Sediment barriers at stormwater inlet pits.
- Dust suppression measures, including watering and covering of stockpiles.
- Progressive stabilisation and rehabilitation of batters and disturbed areas.

The principal contractor will be responsible for implementing and maintaining ESC measures in accordance with the approved ESCP, including routine inspections and necessary maintenance throughout the construction period.

7 Conclusion

The Stormwater Management Plan for the proposed childcare centre at 241-249 Bridge Street, Newtown has been prepared to demonstrate compliance with the stormwater management requirements of Toowoomba Regional Council, QUDM and relevant State Planning Policy provisions. The assessment incorporates detailed hydrological modelling, comparison against existing conditions, and the development of an effective stormwater management strategy that mitigates potential impacts arising from the proposed works.

7.1 Hydrological and Hydraulic Considerations

Assessment of the existing site confirms that stormwater runoff generally flows towards the north and north-west in accordance with site topography. Pre-development peak flows were estimated using both the Rational Method and DRAINS modelling to establish a baseline for comparison.

While the Rational Method provided a suitable verification check, the DRAINS model more accurately represents catchment behaviour, including rainfall losses, temporal variation, storage effects, and flow routing. Accordingly, DRAINS modelling has been adopted for the final design and assessment.

7.2 Stormwater Quantity Management

The proposed development increases impervious area and runoff potential. To mitigate these impacts, a proposed OSD tank has been incorporated within the northern portion of the site.

The detention system captures stormwater runoff and attenuates peak flows prior to discharge via the lawful point of discharge into Council's kerb and channel within Hillview Avenue. Existing overland flow paths are maintained, and no increase in discharge to adjoining properties occurs.

Hydrological modelling confirms that post-development peak discharge rates are equal to or less than pre-development flows for all assessed storm events up to and including the 1% AEP event, satisfying Council's non-worsening drainage requirements.

The detention system has been designed with appropriate storage and outlet controls to achieve compliant discharge rates, including:

Storage volume: 17.5 m^3

- **Storage volume**: 16.98 m^3 for the 1% AEP event
- **Maximum water depth**: 0.49 m
- **Lower outlet:** 210 mm orifice
- **Secondary outlet:** 250 mm orifice
- **Outlet pipe**: 5 x 150 mm diameter discharging to the kerb and channel

These design elements ensure safe and effective management of stormwater flows generated by the development.

7.3 Stormwater Quality Management

A stormwater quality assessment has been undertaken in accordance with the Urban Stormwater Quality Planning Guidelines (2010), the Water by Design framework, and the State Planning Policy. The assessment demonstrates compliance with applicable pollutant load reduction targets through the incorporation of an engineered treatment solution.

A proprietary cartridge-based filtration system will be integrated within the OSD tank to provide treatment through filtration and pollutant capture. The system is expected to achieve compliant reductions in sediments, nutrients, and gross pollutants, ensuring no adverse impact on downstream receiving environments

7.4 Erosion and Sediment Control

Erosion and sediment control measures will be implemented during construction in accordance with the IECA Best Practice Guidelines (2008) and the Environmental Protection Act 1994. An ESCP will be prepared as part of the Operational Works stage to manage construction-phase impacts.

7.5 Regulatory Compliance and Sustainable Outcomes

The proposed stormwater management measures comply with the requirements of Toowoomba Regional Council, QUDM and State Planning Policy guidance, ensuring:

- No adverse impact on surrounding properties or downstream drainage systems
- Effective attenuation of peak flows through the proposed detention tank
- Improved stormwater quality outcomes through best-practice measures
- A hydraulically neutral post-development condition

Overall, the stormwater management strategy demonstrates that the development can proceed without adverse stormwater impacts and with appropriate safeguards for downstream water quality and flood behaviour. The SWMP supports the development application by confirming that stormwater has been appropriately assessed and managed in accordance with recognised engineering and environmental standards.

7.6 Final Recommendations

To support the effective implementation and long-term operation of the proposed stormwater management system, the following recommendations are made:

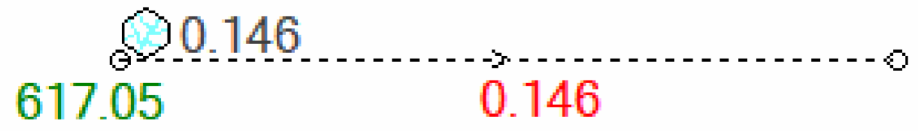
- Final detailed engineering design should verify the detention tank, outlet structure and internal pipe network to ensure compliance with QUDM and Council requirements for all relevant design storm events.
- Routine inspection and maintenance of the detention tank, including removal of sediment build-up, and inspection of the outlet structure, should be undertaken to maintain system performance over time.
- Post-construction review of the stormwater infrastructure should be completed to confirm that as-constructed conditions match the approved design and that the system is performing in accordance with Council standards.

By implementing these recommendations, the development will maintain effective stormwater performance, ensure protection of downstream

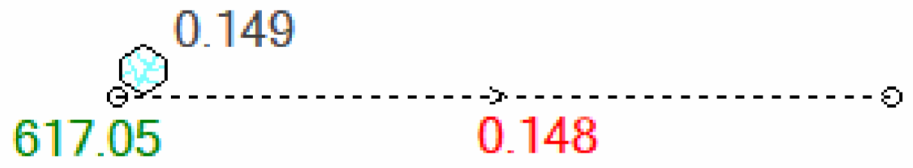
Appendix A – DRAINS Results

Results for median storm in critical 1% AEP ensembles using Full Unsteady hydraulic model.

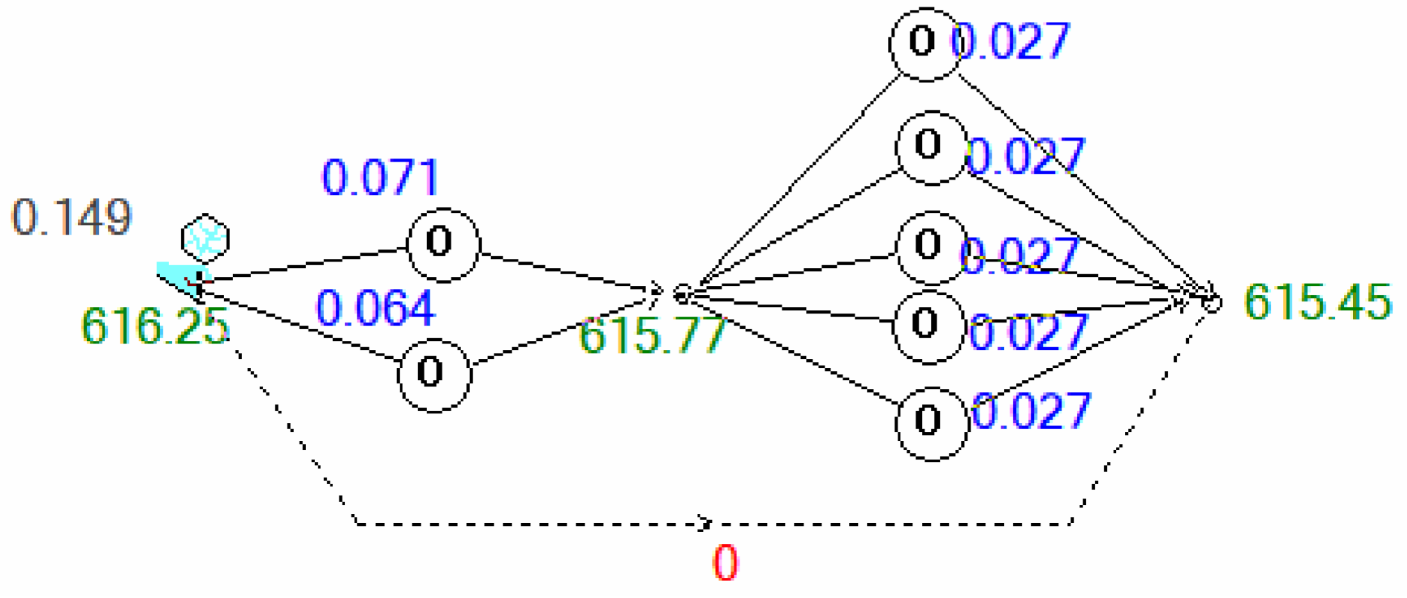
Pre Development



Post Development

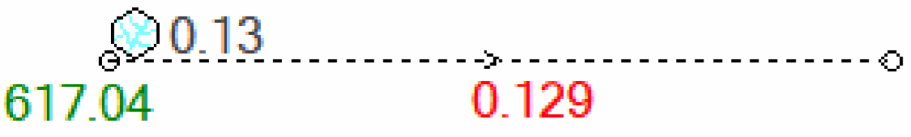


OSD Post Development

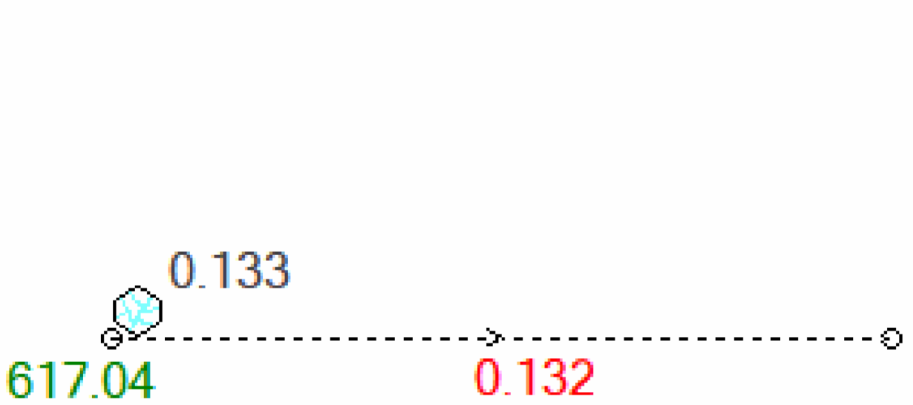


Results for median storm in critical 2% AEP ensembles using Full Unsteady hydraulic model.

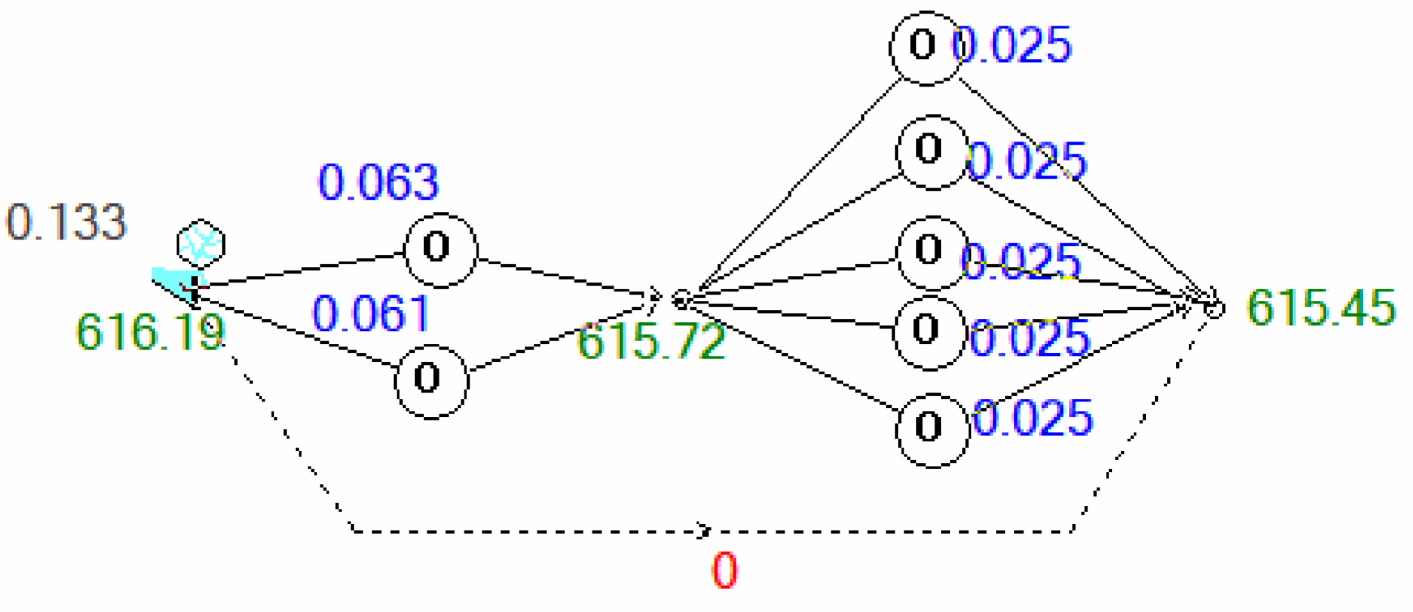
Pre Development



Post Development

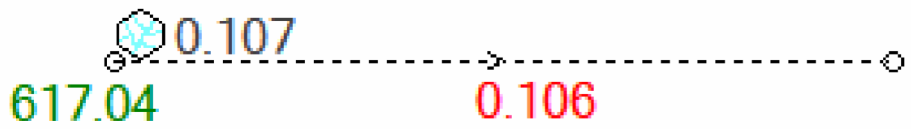


OSD Post Development

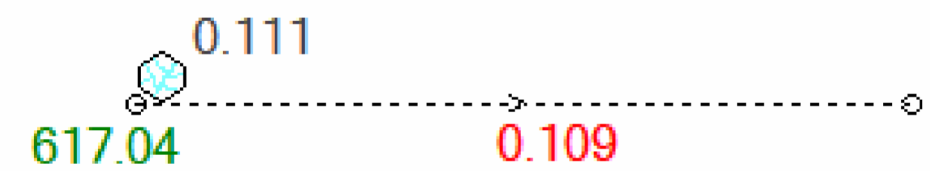


Results for median storm in critical 5% AEP ensembles using Full Unsteady hydraulic model.

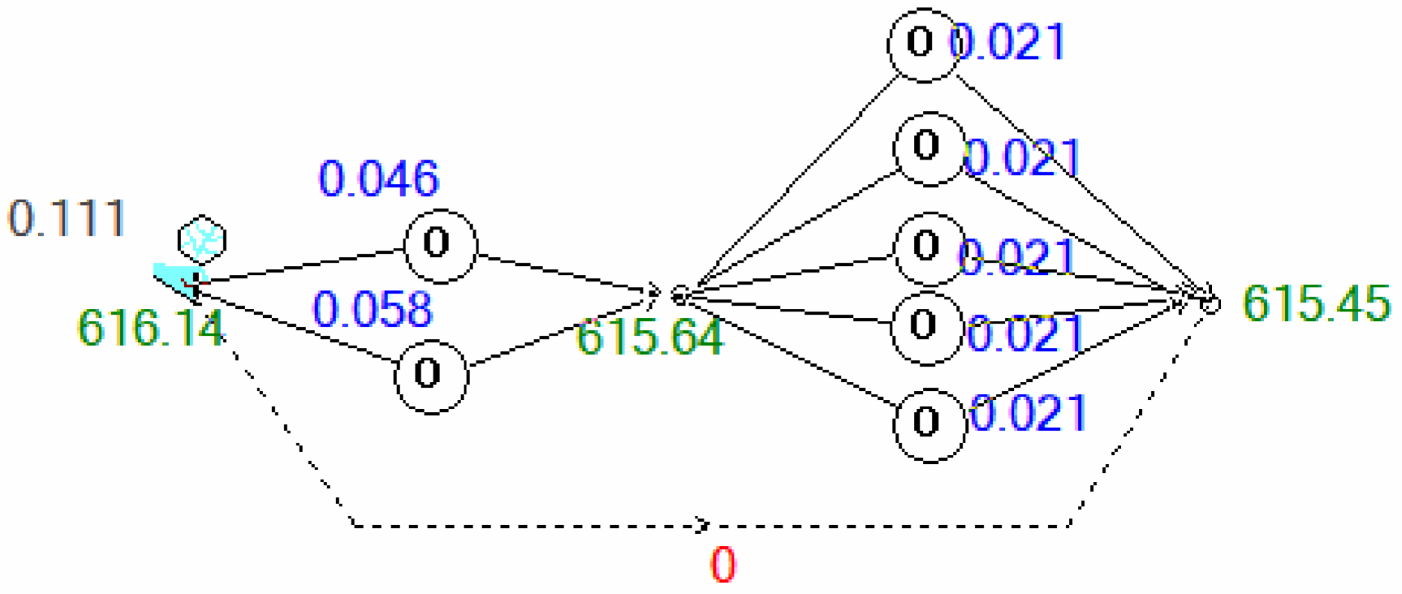
Pre Development



Post Development

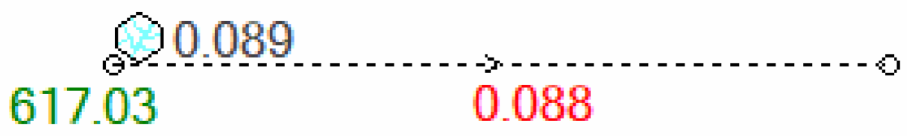


OSD Post Development



Results for median storm in critical 10% AEP ensembles using Full Unsteady hydraulic model.

Pre Development

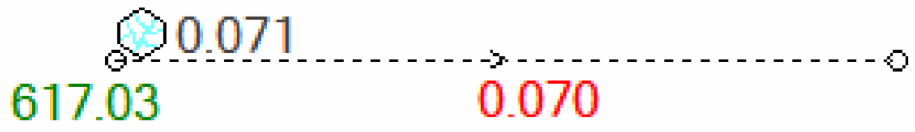


Post Development

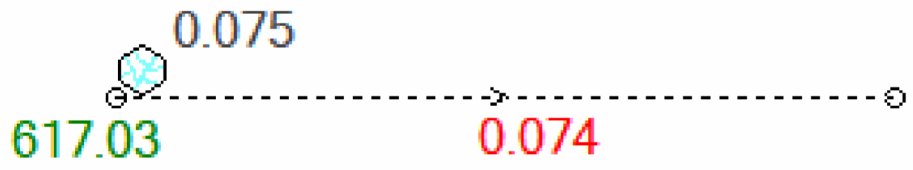
OSD Post Development

Results for median storm in critical 20% AEP ensembles using Full Unsteady hydraulic model.

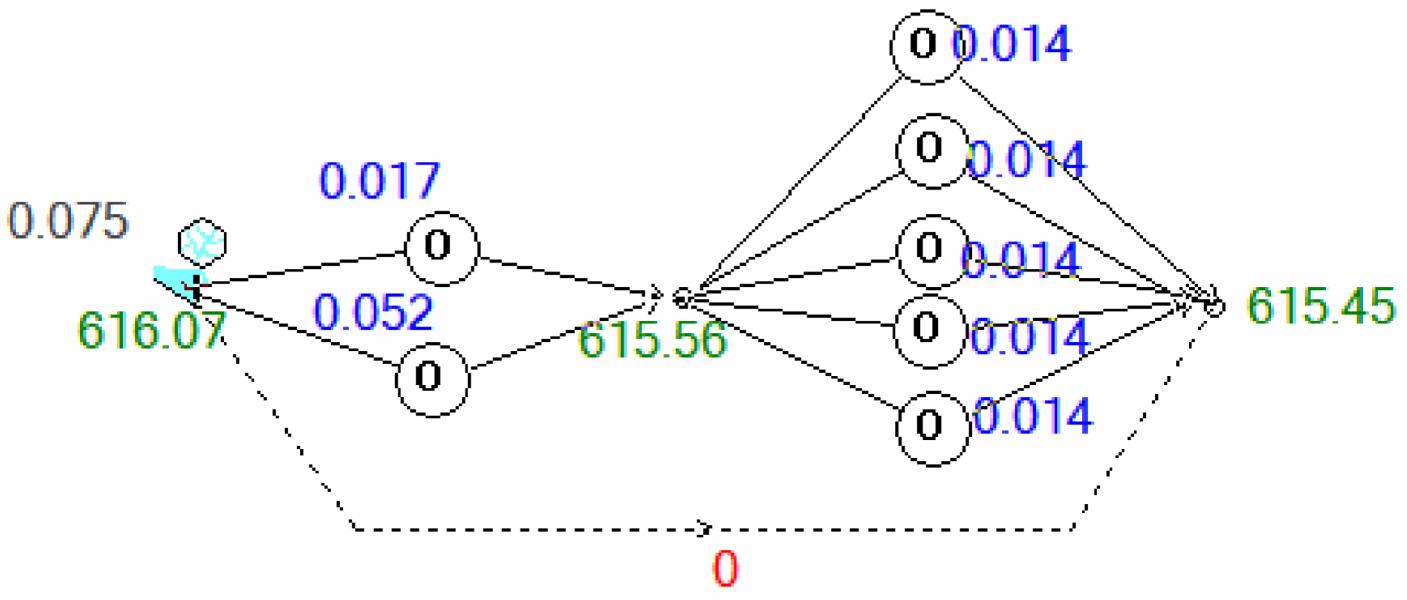
Pre Development



Post Development

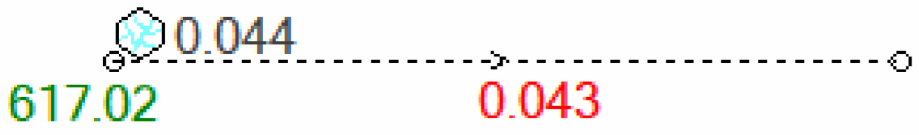


OSD Post Development

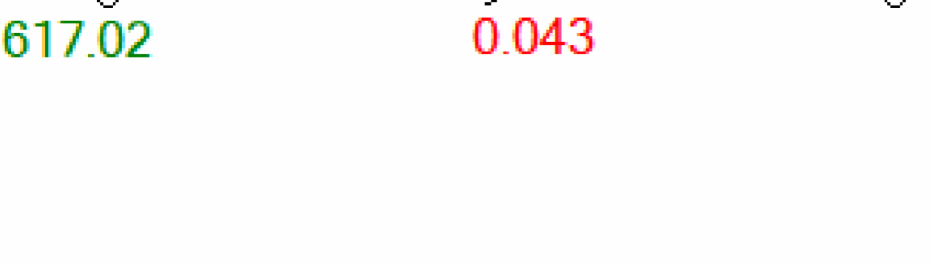


Results for median storm in critical 50% AEP ensembles using Full Unsteady hydraulic model.

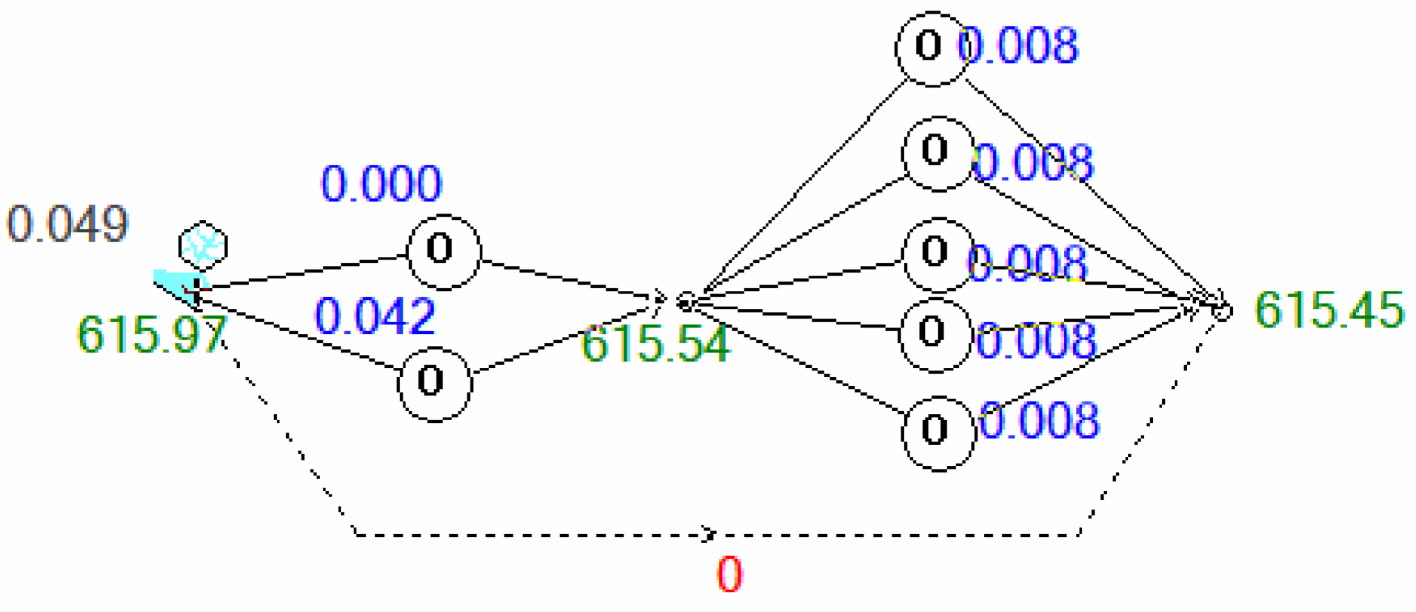
Pre Development



Post Development



OSD Post Development



Appendix B – Rational Method Results

RECOR

Ration Method Results

Catchment	Area (m2)	Tc	Actual Tc	fi	C10
Pre Development	2730	8	8	0.49	0.68
Post Dev 1	2730	7	7	0.60	0.72

AEP %	50%	20%	10%	5%	2%	1%
Pre Development	0.041	0.062	0.078	0.094	0.121	0.141
Post Dev 1	0.045	0.069	0.086	0.105	0.135	0.157

Annual Exceedance Probability (AEP)							
Duration	63.20%	50%#	20%*	10%	5%	2%	1%
1 min	132	149	205	243	281	331	369
2 min	112	127	177	212	248	295	332
3 min	104	118	164	196	228	271	304
4 min	98.5	112	154	184	213	252	283
5 min	93.7	106	146	174	201	237	265
7 min	85.5	96.9	133	158	182	214	239
8 min	81.9	92.9	127	151	174	204	228
10 min	75.6	85.7	118	139	160	188	210
15 min	63.5	72.1	99	117	135	159	177
20 min	55	62.5	85.9	102	117	138	154
25 min	48.7	55.3	76.1	90.3	104	123	137
30 min	43.7	49.7	68.5	81.3	94	111	124
45 min	33.8	38.4	53	63.1	73.1	86.5	96.9
1 hour	27.8	31.6	43.6	51.9	60.2	71.4	80.2
1.5 hour	20.9	23.6	32.5	38.7	45	53.5	60.2
2 hour	16.9	19.1	26.2	31.2	36.2	43.1	48.6
3 hour	12.6	14.1	19.2	22.8	26.5	31.5	35.5
4.5 hour	9.31	10.4	14.1	16.6	19.3	22.9	25.9
6 hour	7.53	8.41	11.3	13.3	15.4	18.3	20.6
9 hour	5.61	6.25	8.35	9.84	11.4	13.5	15.2
12 hour	4.57	5.09	6.78	7.98	9.21	10.9	12.3
18 hour	3.43	3.82	5.1	6.02	6.96	8.24	9.26
24 hour	2.8	3.12	4.2	4.97	5.76	6.82	7.67
30 hour	2.39	2.68	3.62	4.3	4.99	5.93	6.66
36 hour	2.1	2.36	3.21	3.82	4.46	5.29	5.96
48 hour	1.7	1.92	2.65	3.18	3.73	4.44	5.01
72 hour	1.26	1.43	2.01	2.43	2.88	3.45	3.9
96 hour	1.01	1.15	1.62	1.98	2.35	2.83	3.21
120 hour	0.846	0.962	1.36	1.66	1.98	2.39	2.71
144 hour	0.728	0.826	1.16	1.42	1.69	2.04	2.32
168 hour	0.639	0.722	1.01	1.23	1.46	1.76	2

Appendix C – Survey

1
SP356784

1
RP108471

2
RP108471

16
SP285431

1
RP74859

1
RP142045

Single Storey Dwelling

101
SP342949

102
SP342949

Single Storey Dwelling

2
RP60061

1
RP51161

1
RP17060

Commercial Building

Single Storey Dwelling

Raised Single Storey Dwelling

Carpark

4
RP17059

CP
SP135806

56
RP81362

HILLVIEW AVENUE

BRIM STREET

BRIDGE STREET

MSS107 Screw in Concrete

MSS109 Nail in Dumpy

MSS104 Nail in Dumpy

MSS103 Screw in Concrete

MSS101 Screw in Kerb

MSS105 Nail in Bitumen

MSS108 Nail in Bitumen

MSS106 Screw in Concrete

MSS102 Nail in Bitumen

PSM12926 Standard

Top of Window Sill

Bottom of Window Sill

Top of fence 1.8 metres higher than top of retaining wall

Deck Level

98°17'09" 60.487

278°17'09" 60.350

8°25'49" 45.504

188°36'09" 45.504

IL:613.839 Ø150 RCP

SEMH SL:616.553

IL:614.457 Ø100 PVC-U

IL:613.892 Ø150 RCP

Shed

IL:616.426 Ø100 PVC-U

IL:616.174 Ø300 RCP

IL:616.449 Ø375 RCP

IL:616.417 Ø525 RCP

USIL:616.648 DSIL:616.490 Ø375 RCP

USIL:616.399 DSIL:616.347 Ø375 RCP

USIL: 615.954 DSIL: 615.687 0.60m x 0.30m RCP

IL:617.052 Ø375 RCP

USIL:616.920 DSIL:615.972 Ø550 RCP

DRGT SL:616.602

DRGT SL:617.014

DRGT SL:617.051

DRGT SL:616.771

DRGT SL:617.177

DRGT SL:617.355

DRGT

Fl 615.876

Fl 617.850

Fl 616.216

Fl 617.077

Fl 618.310

Fl 617.757

Fl 617.767

Fl 620.715

Fl 618.961

Fl 618.053

E (OH)

DR

Note:

Refer to Sheet 2 for survey disclaimers and additional information.

This plan was prepared as a site contour and detail survey of 241 & 249 Bridge St and 36 Hillside Ave, Newtown, QLD, 4350 and it should not be used for any other purpose.

5 0 5

Scale 1 : 300 - Distances are in Metres

N

ISSUE/REVISION

Rev	Date	Revision Details
A	29/04/26	Issued to Client

Minstaff Survey

CONSULTING CADASTRAL ENGINEERING AND MINING SURVEYORS

ABN 35 609 674 875

admin@minstaffsurvey.com

+61 7 4637 9790

CLIENT

ACCORD

PROJECT

241 & 249 Bridge Street and 36 Hillview Avenue

Lot 1 on RP51161, 2 on RP60061 & 1 on RP17060
241 & 249 Bridge St and 36 Hillside Ave
Newtown, QLD, 4350

DESCRIPTION

Contour & Detail Survey Plan

PROJECT DATUM

Horizontal Datum : MGA2020 z56 (Ground) Vide PSM40888

Level Datum : AHD Vide PSM40888 RL: 629.670m

Local Authority : Toowoomba Regional Council

DRAWING INFORMATION

Surveyed :	EG	Project No :	M6565
Drawn :	EG	Ref No :	3000-DS-1
Checked :	MAW	Date of Survey :	28/04/26

CONTOURS

Major :	0.50m	Scale @ A3 :	1 : 300
Minor :	0.10m	Date:	29/04/26

DRAWING NUMBER

M6565 3000 001

Sheet No. 1 of 7 Revision : A

GENERAL

1. All dimensions shown are in metres unless noted otherwise
2. Dimensions are not to be scaled
3. Trees have been surveyed with trunk sizes larger than 0.3m
   Tree Labels - Trunk (T:), Spread (S:), Height (H:)

BOUNDARY

1. Boundary model names make a clear delineation between boundary reinstatement techniques.

   Boundary COMPILED has been digitised from existing survey plans and is approximate only and should not be relied upon.

   Boundary DCDB is an extract from QSpatial on 29/04/26 and is approximate only and should not be relied upon.

2. Cadastral information contained in this dataset or shown on associated plans has been derived from survey plan/s RP60061 and SP342949 held by the Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development (DoNRMMRRD).

   Survey plan SP342949 rotated clockwise [8°34'09"] to MGA

3. Accurate and defined boundary locations can only be determined by completing a cadastral survey as defined by the Survey and Mapping Infrastructure Act 2003 and Surveyors Act 2003.

   Due to the age and uncertainty of the subject survey plan and surrounding plans, Minstaff Survey recommend a boundary identification survey be completed to accurately reinstate the subject lot. The property boundaries and dimensions shown on this plan must not be entirely relied upon when designing services, buildings or other structures/improvements that are to be constructed relative to lot boundaries.

   Design of services, buildings or structures that require critical boundary offsets will require accurate boundary locations to be determined by completing a cadastral survey.

SURVEY DATUM

1. Horizontal Datum: MGA2020 Zone 56 (Ground) vide PSM40888 PU: 0.015
   Coordinate Origin: PSM12926
   Easting: 395694.762
   Northing: 6952183.112
   RL: 617.459

   Scale Factor: Ground Scaled 1:1

2. Vertical Datum AHD vide PSM40888
   Height: 629.670m

CONTROL COORDINATES - (MGA2020 - Ground)

STN	EASTING	NORTHING	HEIGHT	DESCRIPTION
PSM40888	395405.765	6951599.419	629.670	Standard
PSM1209	394930.682	6951690.310	631.114	Standard
PSM12926	395694.762	6952183.112	617.459	Standard
MSS100	395779.569	6952267.722	615.153	Pin in Ground
MSS101	395784.324	6952239.242	616.231	Screw in Kerb
MSS102	395767.457	6952193.512	617.580	Nail in Bitumen
MSS103	395764.168	6952229.656	616.665	Screw in Concrete
MSS104	395745.607	6952231.593	616.481	Nail in Dumpy
MSS105	395708.406	6952200.520	617.209	Nail in Bitumen
MSS106	395756.182	6952193.291	617.518	Screw in Concrete
MSS107	395701.291	6952250.633	615.703	Screw in Concrete
MSS108	395732.356	6952195.962	617.368	Nail in Bitumen
MSS109	395722.112	6952237.182	616.094	Nail in Dumpy

SURVEY EXPORTS

1. Plan Files:
   M6565 3000 001 A.pdf

2. CAD Files:
   M6565 3000 001 A.12da
   M6565 3000 001 A.dwg

3. Report Files:
   PSL2644 Service Locate Report for 241 Bridge Street Newtown.pdf

LOCATED SERVICES

1. Underground Services shown on the plan and/or in the CAD data are current as date of survey only.

2. A comprehensive search has been made of the works area, however due to age, type and depth of services, and soil/ground conditions, it is recommended that appropriate physical validation is completed prior to any excavation, demolition, or construction.

3. Service information shown on this plan has been surveyed to AS 5488.1:2019 Classification of Subsurface Utility Information standards. Survey models prefixed "survey/Located/".
   Located services have been surveyed at ground level with a depth shown to the service unless potholed.

   QUALITY LEVEL A (QL-A) - Accuracy Hz: 50mm Vt: 50mm
   Consists of the positive identification of the attribute and location of a subsurface utility at a point to an absolute spatial position in three dimensions. Information is collected by direct surveyed measurement on service at time of installation or by non-destructive excavation techniques.
   It is the only quality level that defines a subsurface utility as "validated."

   QUALITY LEVEL B (QL-B) - Accuracy Hz: 300mm Vt: 500mm
   Information provides relative subsurface feature location in three dimensions by tracing or physical measurement that does not satisfy the spatial tolerance of Quality Level A. Typical methods of service location are electromagnetic location, acoustic pulse equipment, sondes to flexitrace or ground penetrating radar. These methods of service location are often affected by soil conditions and interference from electromagnetic fields and generally do not account for multiple conduit banks.
   The minimum requirement for Quality Level B is relative spatial position.

   QUALITY LEVEL C (QL-C) - Accuracy Hz: 300mm
   Quality Level C is described as surface feature correlation or an interpretation of the approximate location and attributes of a subsurface utility asset using a combination of existing records a site survey of visible evidence and/or methods to indicate the existence of an undefined entity. Vertical information if shown is indicative location only and approximates the service position.

   QUALITY LEVEL D (QL-D) - Indicative location only
   The attribute information and metadata of a subsurface utility may be from or a combination of:
   GIS databases, existing records, cursory site inspection, and anecdotal evidence.

4. Refer to String and Point attributes for a list of all attributes including information relevant to material, location position, depth, diameter, number of conduits plus additional comments relevant to the service. Labelling shown:
   D: 1.5m (Invert/Obvert/Unknown) (Depth 1.5m to Invert/Obvert/Unknown)

5. Service location completed by an accredited operator provided by Precision Service Locating Pty Ltd.

LOCATED SERVICES LEGEND

FEATURE	DESCRIPTION
? (QL-A)	Located QL-A
? (QL-B)	Located QL-B
? (QL-C)	Located QL-C
? (QL-D)	Located QL-D
C (QL-?)	Communications
D (QL-?)	Drainage
E (QL-?)	Electrical
LV (QL-?)	Electrical LV
HV (QL-?)	Electrical HV
FC (QL-?)	Fire Communications
FW (QL-?)	Fire Services
G (QL-?)	Gas
OF (QL-?)	Optic Fibre
P (QL-?)	Petroleum
S (QL-?)	Sewer
W (QL-?)	Water
R (QL-?)	Water Recycled
U (QL-?)	Unknown

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Zero Damage - Zero Harm

BRIDGE
- Bridge DECK
- Bridge PARAPET
- Bridge PIER/PILECAP
- Bridge SOFFIT

BUILDING
- Building AWNING POST
- Building CLOTHES HOIST
- Building DOOR
- Building FLOOR LEVEL
- Building WATER TANK
- Building AWNING
- Building BUILDING/SHED LINE
- Building FACIA
- Building GUTTER
- Building RAMP
- Building ROOFLINE
- Building SHADE SAIL

COMMUNICATIONS
- Comm CELL TRANSPONDER
- Communications MARKER
- Communications PIT
- CM
- CM (OH)
- OF
- Communications CONDUIT
- Communications LINE OVERHEAD
- Communications OPTIC FIBRE

CREEK
- Creek GAUGE
- Creek WATER EDGE

DRAINAGE
- Drainage DOWN PIPE
- Drainage GULLY TRAP
- Drainage INSPECTION OUTLET
- Drainage MANHOLE
- Drainage MANHOLE LID
- DR
- SS
- Drainage MARKER
- Drainage PIPE INVERT/OBVERT
- Drainage APRON
- Drainage PIPE
- Drainage SUBSOIL PIPE

ELECTRICAL
- Electrical EARTH
- Electrical LIGHT INGROUND
- Electrical LIGHT POLE
- Electrical MARKER
- Electrical PILLAR/PIT
- E (OH)
- E
- Electrical POWER POLE
- Electrical SWITCHBOARD
- Electrical WIRE OVERHEAD
- Electrical CONDUIT
- Electrical STAYWIRE

FENCE
- Fence BOLLARD
- Fence HAND RAIL
- Fence GATE
- Fence FENCE
- Fence GUARD RAIL
- Fence LOG BARRIER

FIRE SERVICES
- Fire BOOSTER BOX/HOSE
- Fire HYDRANT Fire GENERAL
- FS
- Fire MIMIC PANEL/COMMS PILLAR
- Fire PIPE

GAS
- Gas BEND Gas WELD
- Gas CATHODIC POINT
- Gas MARKER
- GA
- Gas VALVE Gas METER
- Gas TANK
- Gas PIPE

GENERAL
- Boundary LOT
- Boundary ADJACENT
- Contours MAJOR
- Contours MINOR

PARKS
- Park LANDSCAPE FEATURE
- Park BIN/BBQ
- Park SHRUB
- Park TREE
- Park FOLIAGE EDGE
- Park HEDGE

PETROLUEM
- Petrol MARKER
- Petrol BOWSER
- PE
- Petrol PIT
- Petrol PIPE

RAILWAY
- Railway BOOM GATE
- Railway CROSSING SIGNAL
- Railway MANHOLE
- Railway KM POST/SIGN
- Railway BALLAST
- Railway CONDUIT
- Railway LINE
- Railway WIRE OVERHEAD

ROADS
- Road GUIDE POST
- Road CHANGE OF GRADE
- Road DRIVEWAY
- Road KERB
- Road KERB INVERT
- Road ROAD UNSEALED
- Road SEALED
- Road LINEMARKING

SEWER
- Sewer FITTING
- Sewer MANHOLE LID
- Sewer MARKER
- S
- HC
- Sewer PIPE INVERT/OBVERT
- Sewer PIPE
- Sewer HOUSE CONNECTION

SURFACE
- Surface SPOT LEVEL
- Surface BANK BOTTOM
- Surface BANK TOP
- Surface CULTIVATION EDGE
- Surface CHANGE OF GRADE
- Surface CONCRETE
- Surface FOOTPATH
- Surface RETAINING WALL BOTTOM
- Surface RETAINING WALL TOP
- Surface ROCK EDGE

SURVEY
- Survey STATION
- Survey PSM
- Survey TEMP STATION
- Survey QA POINT

TRAFFIC
- Traffic LIGHT
- Traffic METER
- Traffic SIGN
- Traffic CONTROL BOX
- Traffic PIT

WATER
- Water FITTING Water HYDRANT
- Water MARKER
- Water METER
- W
- Water PIT Water Valve
- Water TAP
- Water PIPE

Note:

Refer to Sheet 2 for survey disclaimers and additional information.

This plan was prepared as a site contour and detail survey of 241 & 249 Bridge St and 36 Hillside Ave, Newtown, QLD, 4350 and it should not be used for any other purpose.

ISSUE/REVISION

Rev	Date	Revision Details
A	29/04/26	Issued to Client

Minstaff Survey
CONSULTING CADASTRAL ENGINEERING AND MINING SURVEYORS
ABN 35 609 674 875
admin@minstaffsurvey.com
+61 7 4637 9790

CLIENT

ACCORD

PROJECT

241 & 249 Bridge Street and 36 Hillview Avenue

Lot 1 on RP51161, 2 on RP60061 & 1 on RP17060
241 & 249 Bridge St and 36 Hillside Ave
Newtown, QLD, 4350

DESCRIPTION

Contour & Detail Survey Information & Disclaimers

PROJECT DATUM

Horizontal Datum : MGA2020 z56 (Ground) Vide PSM40888

Level Datum : AHD Vide PSM40888 RL: 629.670m

Local Authority : Toowoomba Regional Council

DRAWING INFORMATION

Surveyed :	EG	Project No :	M6565
Drawn :	EG	Ref No :	3000-DS-2
Checked :	MAW	Date of Survey :	28/04/26

CONTOURS

Major :	N/A	Scale @ A3 :	1 : 1000
Minor :	N/A	Date:	29/04/26

DRAWING NUMBER

M6565 3000 001

Sheet No. 2 of 7 Revision : A

1
SP356784

1
RP108471

2
RP108471

Single Storey
Dwelling

101
SP342949

Manhole not
accessed

Single Storey
Dwelling

102
SP342949

98°17'09"
60.487

Top of fence 1.8 metres
higher than top of retaining wall

1
RP74859

1
RP142045

2
RP60061

HILLVIEW AVENUE

16
SP285431

8°25'49"
45.504

1
RP51161

Shed

Carpark

Raised Single
Storey Dwelling

Manhole not
accessed

4
RP17059

1
RP17060

Commercial Building

Commercial
Building

188°36'09"
45.504

BRIM STREET

Single Storey
Dwelling

278°17'09"
60.350

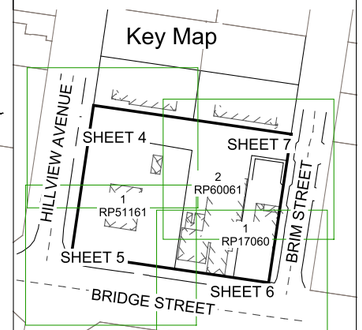
BRIDGE STREET

CP
SP135806

56
RP81362

Note:
Refer to Sheet 2 for Survey Disclaimers and additional information.

Key Map



SCALE 1:1700

5 0 5

Scale 1 : 300 - Distances are in Metres

ISSUE/REVISION

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A	29/04/26	Issued to Client

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Newtown, QLD, 4350

DESCRIPTION

Contour & Detail Survey
Located Services - Overview

PROJECT DATUM

Horizontal Datum : MGA2020 z56 (Ground)
Vide PSM40888

Level Datum : AHD Vide PSM40888
RL: 629.670m

Local Authority : Toowoomba Regional Council

DRAWING INFORMATION

Surveyed :	EG	Project No :	M6565
Drawn :	EG	Ref No :	3000-DS-3
Checked :	MAW	Date of Survey :	28/04/26

CONTOURS

Major :	N/A	Scale @ A3 :	1 : 300
Minor :	N/A	Date:	29/04/26

DRAWING NUMBER

M6565 3000 001

Sheet No. 3 of 7 Revision : A

16
SP285431

HILLVIEW AVENUE

101
SP342949

Single Story
Dwelling

98°17'09"
60.487

2
RP60061

See Sheet 7

1
RP51161

8°25'49"
45.504

8°25'49"
45.504

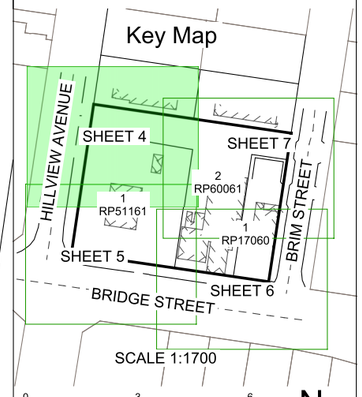
Shed

Raised Single
Storey Dwelling

See Sheet 5

Note:
Refer to Sheet 2 for Survey Disclaimers and additional information.

Key Map



SCALE 1:1700

0 3 6

Scale 1 : 150 - Distances are in Metres

N

ISSUE/REVISION

Rev	Date	Revision Details
A	29/04/26	Issued to Client

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Newtown, QLD, 4350

DESCRIPTION

Contour & Detail Survey
Located Services - Sheet 4

PROJECT DATUM

Horizontal Datum : MGA2020 z56 (Ground)
Vide PSM40888

Level Datum : AHD Vide PSM40888
RL: 629.670m

Local Authority : Toowoomba Regional Council

DRAWING INFORMATION

Surveyed :	EG	Project No :	M6565
Drawn :	EG	Ref No :	3000-DS-4
Checked :	MAW	Date of Survey :	28/04/26

CONTOURS

Major :	N/A	Scale @ A3 :	1 : 150
Minor :	N/A	Date:	29/04/26

DRAWING NUMBER

M6565 3000 001

Sheet No. 4 of 7 Revision : A

HILLVIEW AVENUE

BRIDGE STREET

See Sheet 4

Raised Single Storey Dwelling

8°25'49" 45.504

278°17'09" 60.350

1 RP51161

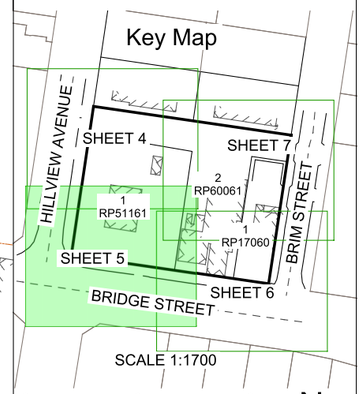
Single Storey Dwelling

2 RP60061

See Sheet 6

Note:
Refer to Sheet 2 for Survey Disclaimers and additional information.

Key Map



SCALE 1:1700

0 3 6

Scale 1 : 150 - Distances are in Metres

N

ISSUE/REVISION

Rev	Date	Revision Details
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Newtown, QLD, 4350

DESCRIPTION

Contour & Detail Survey Located Services - Sheet 5

PROJECT DATUM

Horizontal Datum :	MGA2020 z56 (Ground) Vide PSM40888
Level Datum :	AHD Vide PSM40888 RL: 629.670m
Local Authority :	Toowoomba Regional Council

DRAWING INFORMATION

Surveyed :	EG	Project No :	M6565
Drawn :	EG	Ref No :	3000-DS-5
Checked :	MAW	Date of Survey :	28/04/26
CONTOURS			
Major :	N/A	Scale @ A3 :	1 : 150
Minor :	N/A	Date:	29/04/26

DRAWING NUMBER

M6565 3000 001

Sheet No. 5 of 7 Revision : A

See Sheet 7

1
RP51161

Single Storey
Dwelling

Commercial Building

Commercial
Building

2
RP60061

1
RP17060

4
RP17059

BRIM STREET

188°36'09"
45.504

278°17'09"
60.350

See Sheet 5

BRIDGE STREET

56
RP81362

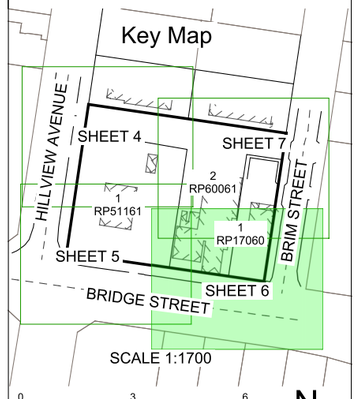
57
RP17055

58
RP17055

59
RP17055

Note:
Refer to Sheet 2 for Survey Disclaimers and additional information.

Key Map



SCALE 1:1700

0 3 6

Scale 1 : 150 - Distances are in Metres

N

ISSUE/REVISION

Rev	Date	Revision Details
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Newtown, QLD, 4350

DESCRIPTION

Contour & Detail Survey
Located Services - Sheet 6

PROJECT DATUM

Horizontal Datum : MGA2020 z56 (Ground)
Vide PSM40888

Level Datum : AHD Vide PSM40888
RL: 629.670m

Local Authority : Toowoomba Regional Council

DRAWING INFORMATION

Surveyed :	EG	Project No :	M6565
Drawn :	EG	Ref No :	3000-DS-6
Checked :	MAW	Date of Survey :	28/04/26

CONTOURS

Major :	N/A	Scale @ A3 :	1 : 150
Minor :	N/A	Date:	29/04/26

DRAWING NUMBER

M6565 3000 001

Sheet No. 6 of 7 Revision : A

Single Story Dwelling

101
SP342949

102
SP342949

Single Story Dwelling

98°17'09"
60.487

98°17'09"
60.487

2
RP60061

S (QL-B)
S (QL-D)

See Sheet 4

Carpark

1
RP17060

S (QL-B)
S (QL-D)

188°36'09"
45.504

W (QL-C)
DR

BRIM STREET

1
RP51161

Single Storey Dwelling

Commercial Building

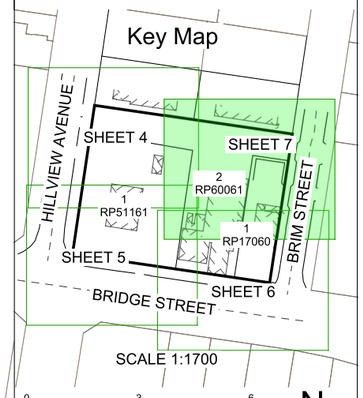
Commercial Building

See Sheet 6

4
RP17059

Note:
Refer to Sheet 2 for Survey Disclaimers and additional information.

Key Map



SCALE 1:1700

0 3 6

N

Scale 1 : 150 - Distances are in Metres

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DESCRIPTION

Contour & Detail Survey
Located Services - Sheet 7

PROJECT DATUM

Horizontal Datum : MGA2020 z56 (Ground)
Vide PSM40888

Level Datum : AHD Vide PSM40888
RL: 629.670m

Local Authority : Toowoomba Regional Council

DRAWING INFORMATION

Surveyed :	EG	Project No :	M6565
Drawn :	EG	Ref No :	3000-DS-7
Checked :	MAW	Date of Survey :	28/04/26

CONTOURS

Major :	N/A	Scale @ A3 :	1 : 150
Minor :	N/A	Date:	29/04/26

DRAWING NUMBER

M6565 3000 001

Sheet No. 7 of 7 Revision : A

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