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Our Reference: RC24111
Contact: Alec Tadman
Date: 11 December 2024

TECHNICAL MEMO – STORMWATER – 25 MARINE PARADE, REDCLIFFE

Introduction

Rigour Engineering has been engaged to provide an assessment of stormwater at the above address to provide an appropriate design intent to support a Development Application to the City of Moreton Bay.

This memo describes the site conditions, proposed site configuration and summarises the analysis undertaken to provide preliminary stormwater advice. It is based on data sourced from the CMB Underground infrastructure portal, site survey, the ARR Data Hub and the Bureau of Meteorology IFD website.

Due to the size of the lot an assessment of stormwater quality is not required.

Existing Site

The existing site is described as Lot 427 SL1339 and is located at 25 Marine Parade, Redcliffe.

The site slopes down from Marine Parade to the west. The house that was located on the site had no discharges to the kerb so all flows from roof were discharged to ground level to combine with surface flows and enter the adjacent property described as CP BUP8825.

Proposed Site

The proposed development consists of a five-storey residential development with an access driveway on the northern part of the block. Refer to the attached drawing C030 for the Stormwater Concept Plan and C031 for the catchment plan.

External areas outside the driveway will fall to the rear of the lot and discharge as per the existing condition. Overflows from the two internal stormwater pits would flow to the rear of the lot.

Discharges are to Marine Parade via a new pipe connected to the existing stormwater network at the driveway and a kerb discharge at the southeastern corner of the lot.

Stormwater Analysis

The existing site discharges all stormwater to the rear of the lot. As the proposal is to discharge all roof water and a portion of the ground level (driveway and paths) to Marine Parade the discharge to the rear of the lot will reduce.

The lawful point of discharge is the existing field inlet pit in Marine Parade and the kerb and channel at the southeastern boundary of the site. As part of the analysis, a catchment area of 1,000m2 was included for the existing field inlet.

The site has been analysed using the 0.5EY, 0.2EY, 5% AEP, 10% AEP, 2% AEP and 1% AEP events using a Drains model configured to calculate pre-development and post development flows. This process allows assessment of roof discharges from the proposed eaves gutters (5% AEP) the lower storms stated above and a check case to see how the stormwater system performs in the 1% AEP event. The 0.5EY event provides information for regular storm flows and normal system capacity. The analysis is based on the ARR 2016 methodology using revised pit loss coefficients from QUDM.

As the site falls away from the receiving pit the analysis has included the external network so that confirmation of expected

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hydraulic grade line conditions could be made. For this analysis the stormwater network has been simplified upstream of the receiving manhole (A00618391). It is proposed to include a non-return valve at the outlet of Pipe 1 to prevent backflow from the external system entering the site.

Figure 1 - Drains Model Configuration

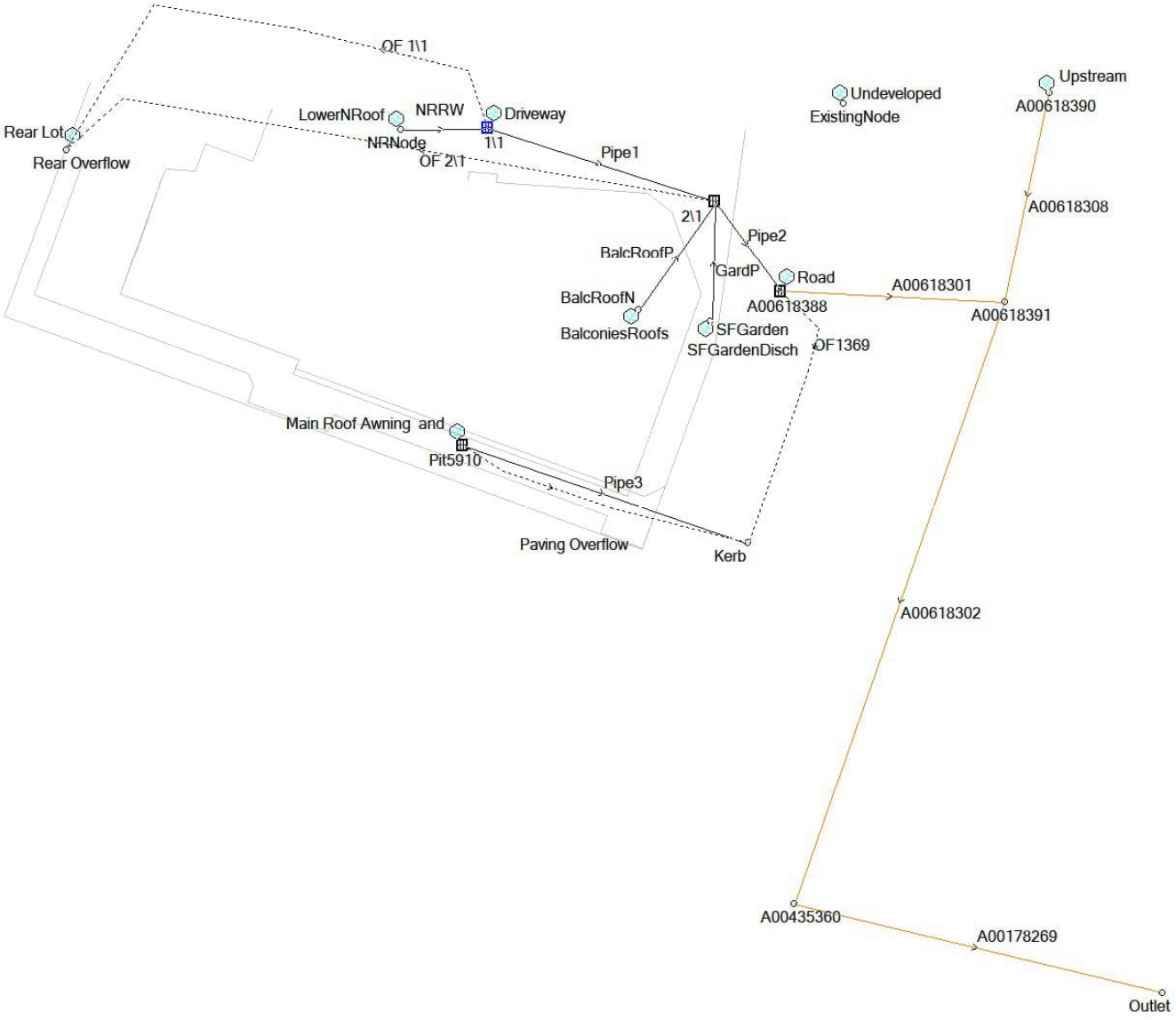

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Table 1 - Flow Summary

Description	Ref	Area m²	0.5EY L/s	0.2EY L/s	10% AEP L/s	5% AEP L/s	2% AEP L/s	1% AEP L/s
Existing Site	A	563	13	18	21	25	31	34
Proposed								
Main Roof/Southern Awning/South Ground Level	B	266	9	12	13	16	18	20
Lower North Roof	C	34	1	2	2	2	3	3
Driveway	D	65	3	3	4	4	5	6
Balcony Roofs	E	60	3	3	4	4	5	5
Street Frontage Garden	F	20	1	1	1	1	1	1
Yard and Pool Area	G	137	4	5	6	7	9	10
Total developed. (sum of B to G)	H	581	21	26	30	34	41	45

Table 2 - Results

Result		0.5EY L/s	0.2EY L/s	10% AEP L/s	5% AEP L/s	2% AEP L/s	1% AEP L/s
Gross Increase	= H - A	8	8	9	9	10	11
Net Decrease to rear	= A - G	9	13	15	18	22	24
Net Increase to Front	= H - E	17	21	24	27	32	35

In the 5% AEP event (eaves gutters) the system generally operates within normal limits indicating the arrangement has capacity to accept the site flows.

In the 1% AEP event the freeboard in all pits is acceptable. Discharge to the kerb (B) is 20L/s and through the field inlet (C+D+E+F) is 15L/s

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Flow Attenuation

Figure 2 and Figure 3 show the hydrograph for the main site discharges. Due to the site being near the lowest end of the catchment with minimal discharge rates and volumes in the 1% AEP event, attenuation is not required.

Figure 2 - Kerb discharge flowrate and Volume

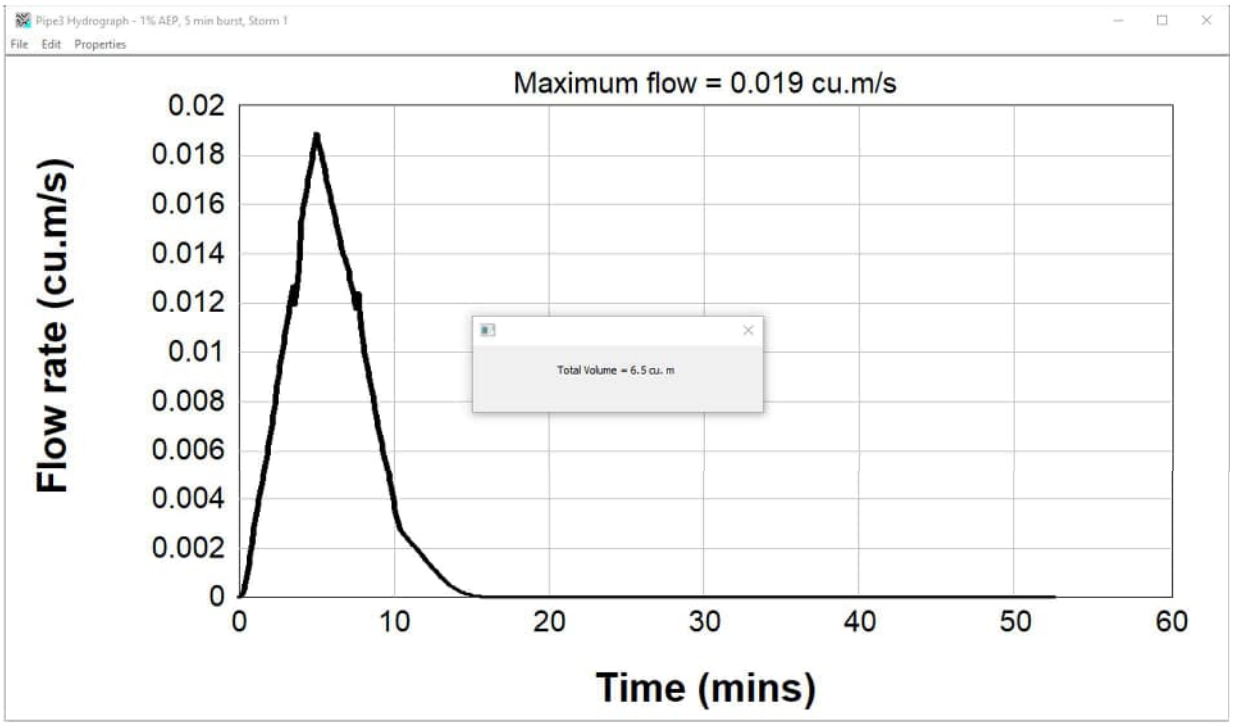
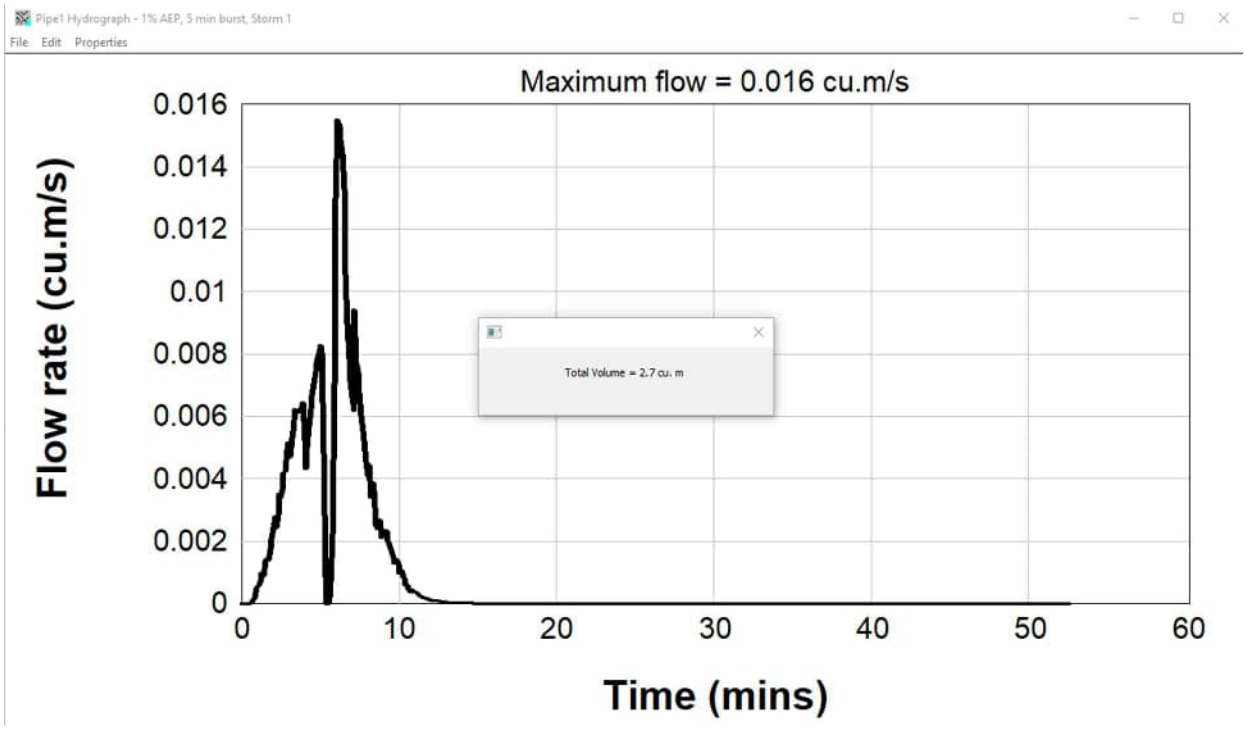


Figure 3 - Pipe discharge to Field Inlet



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Conclusion

The site configuration as proposed in C030 provides an arrangement to provide stormwater drainage to the subject site that will decrease flows to the neighbouring property to the west. As shown by the drains analysis it is expected that any surface flows from the site will remain below the current discharge to the neighbouring property.

At the detailed design phase a full analysis of all storms for the final design can be prepared to demonstrate compliance with the design intent stated in this memo and meet the Stormwater Management Planning Scheme Policy.

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