

TECHNICAL MEMORANDUM



Date: 14 June 2018

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To: Costas Alexandrou (PEET) From: Jason Harley (Meinhardt Urban)

Revised Stormwater Infrastructure for Stage 2-5 Flagstone

Meinhardt Urban have been appointed by Peet Flagstone City Pty Ltd to prepare a review of the Stormwater Management Report – Stage 2-5 prepared by Cardno on 14 August 2012. The purpose of the review is to document key changes to the Stormwater Management Report (SMP) to support the Stage 2-5 RFI submission (June 2018).

Introduction

The Stage 2-5 SMP was drafted in accordance with the original framework of the following documents:

- *'Flagstone City – Context Area 1 Stormwater Management Strategy Report'* dated August 2012 (ref 721743/R9V2) for the purpose of stormwater treatment and peak flow management.
- *'Flagstone City - Masterplan - Flooding Assessment'* dated August 2012 (ref 721743/R1V2) for the purpose of flood management.

The Flagstone City Masterplan Flooding Assessment was updated on 5 September 2014, endorsed by EDQ as part of the Stage 1 ROL, and remains generally relevant to the Stage 2-5 ROL development proposal.

The general assumptions and principles of this framework is intended to be maintained except for the following:

- Rainwater tanks are no longer considered a storm water treatment measure due to the discontinuation of raintank compliance requirements from the Queensland Development Code.
- Whilst all basins have been sized to meet AEP 63% detention requirements, the Stage 2 basin (Basin No. 6) has been sized to detain both 63% AEP and 1% AEP to predeveloped peak flows. This is to ensure that the downstream cross drainage culvert in Silverwood Drive meets major storm transverse flow limits as recommended in QUDM.
- The introduction of a Constructed Lake in Stage 5 (Basin No. 8). Whilst this lake will achieve a range of landscape and aesthetic objectives, the operations of the lake will be supported by treatment devices such as a sediments basin and bio-retention basin.
- As part of Condition 35 of EDQ Approval DEV2018/915/2, the future developers of the proposed school will install their own water quality treatment devices to meet water quality objectives.

Apart from the above, the key changes to the Stage 2-5 SMP are restricted to changes in catchment boundaries and basin locations.

The key basin locations are located in Figure 1 below:

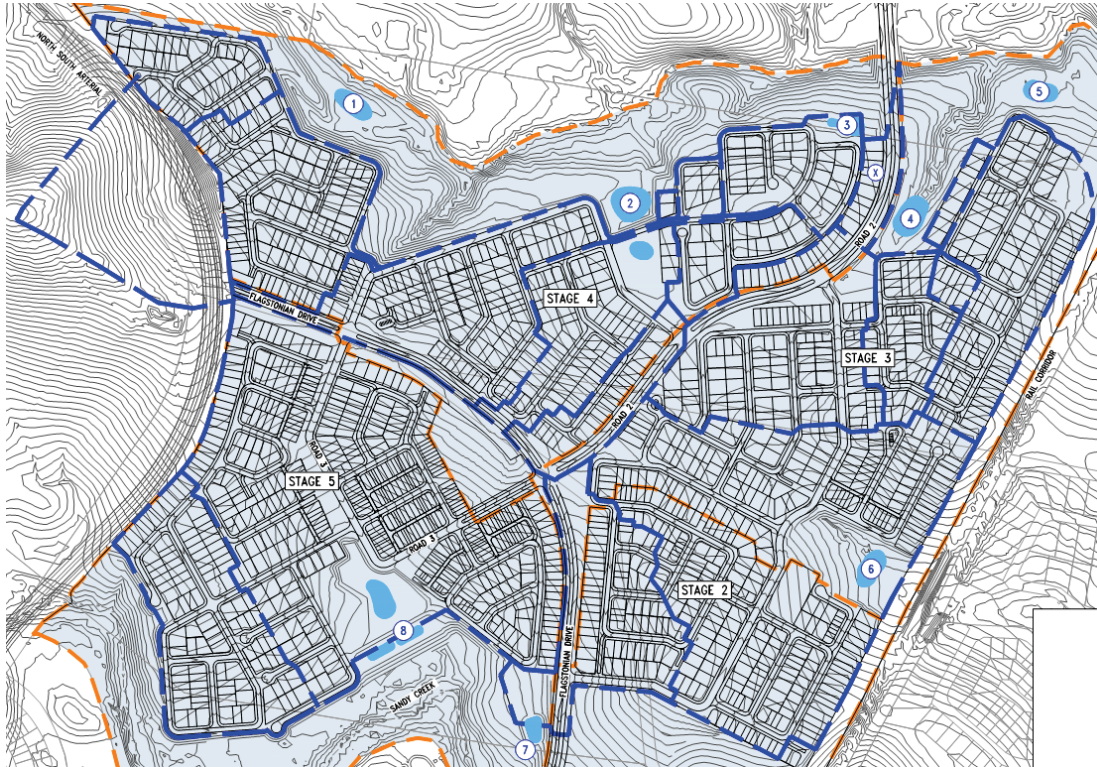


Figure 1 – Revised Catchment and Basin Locations

Detailed revised catchment and basin locations are detailed in the Stage 2-5 Civil Engineering Report.

The proposed sizing of basins are as follows:

Table 1 – Indicative Basin Sizing

Device	Description	Comments
B1	Biofiltration Area = 1226m ² , 63% AEP Detention Storage = 2087m ³	
B2	Biofiltration Area = 1373m ² , 63% AEP Detention Storage = 2323m ³	
B3	Biofiltration Area = 238m ² , 63% AEP Detention Storage = 777m ³	
B4	Biofiltration Area = 831m ² , 63% AEP Detention Storage = 1602m ³	
B5	Biofiltration Area = 831m ² , 63% AEP Detention Storage = 1602m ³	
B6	Biofiltration Area = 1489m ² , 63% AEP Detention Storage = 2427m ³ 1% AEP Detention Storage = 7500m ³	Max Allowable 1% AEP Peak Flow Rate from basin is 6.7 m ³ /s. Detailed Analysis to be conducted for Stage 2 Basin Compliance Assessment submission
B7	Biofiltration Area = 451m ² , 63% AEP Detention Storage = 1100m ³	
B8	Constructed Lake Area = 5550 sqm Biofiltration Area = 2284m ² , Sediment Basin Area = 450m ² 63% AEP Detention Storage = 3277m ³	Biofiltration and Sediment basin will be located offline to the Constructed Lake Detailed Analysis to be conducted for Stage 5 Basin Compliance Assessment submission

Options to incorporate other type of treatment train measures to supplement bio-retention basins will be considered during the detail design phase. These measures may include buffer strips, grass swales and sediment basins and will result in corresponding adjustments to biofiltration areas. Further refinement of the treatment train options as well as the constructed lake water level management strategy will be conducted upon release of the EDQ sponsored Total Water Cycle Management Review, based on analysis of Cedar Grove WWTP releases.

The constructed lake has a contributing catchment of >25 ha.

Conclusion

Meinhardt Urban have reviewed the Storm Water Management Report – Stage 2-5 prepared by Cardno on 14 August 2012 and submitted to ULDA as part of the original Stage 2-5 application. Subject to minor changes detailed in this Technical Memorandum, the Storm-water Management Report – Stage 2-5 and the Master Flood Assessment Report, dated 5 September 2014 is still applicable to the application.

Furthermore, based on current approved treatment train methodologies, the development footprint can contain these treatment options.