

1 May 2020

## STORMWATER MANAGEMENT PLAN REPORT

MOLONG COMMUNITY CENTRE  
LOT 2 DP 1082943, LOT B DP 155735, & LOT 432 DP 1070957  
94-98 BANK ST, MOLONG NSW 2866

This Stormwater Management Plan has been prepared in support of a Development Application with respect to Lot 2 DP 1082943, Lot B DP 155735 & Lot 432 DP 1070957 & is based on architectural designs by King & Campbell.

### 1. Objectives

The Stormwater Management Plan provides the relevant information necessary to provide assurance for council that the proposed development achieves the following:

- Meets the requirements of the AS3500.3 specification and the requirements of relevant Australian Standards; and
- Demonstrates how all stormwater and surface water discharging from the proposed development site, buildings and works will be conveyed to the legal point of discharge (sheet flow & proposed heavy duty kerb adapter fronting Bank Street); and
- Provides on-site stormwater detention facilities to ensure that the post-development site stormwater discharge rate does not exceed the pre-development discharge rate for all storm events up to the 1% AEP.

### 2. Key Outcomes

- Allow for 30m<sup>3</sup> of on-site detention with an outlet control to capture all rainwater runoff from the roof of the proposed building (for 100% detention use) in order to provide sufficient detention to mitigate post-development stormwater flows to less than or equal to the pre-development stormwater flows for all relevant storm events, including the 1% AEP median storm event.
- At peak outflow the on-site detention storage discharges to the legal point of discharge at less than or equal to the pre-development stormwater flows for the 1% AEP median storm event.

### 3. Site Context

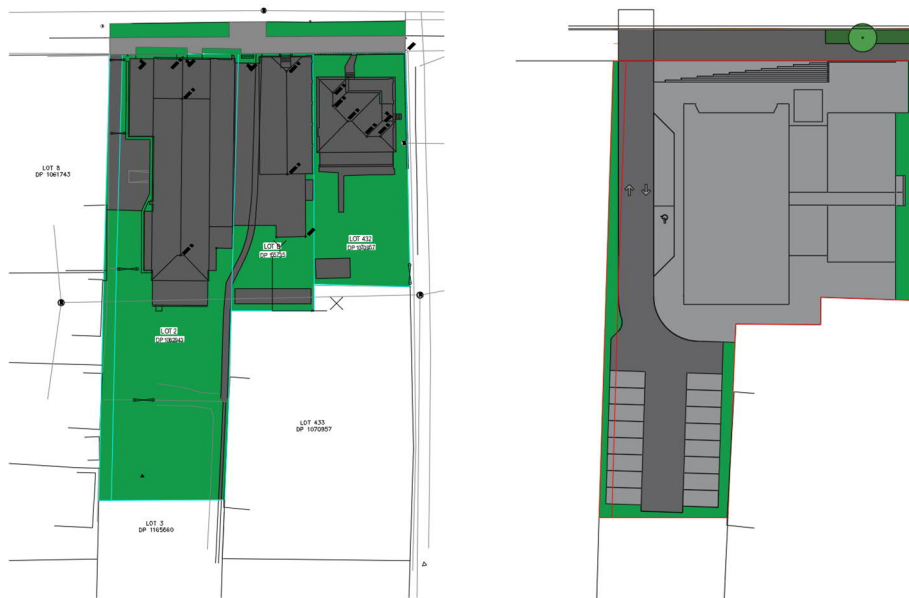
The site of the subject lots are Lot 2 DP 1082943, Lot B DP 155735 & Lot 432 DP 1070957, 94-98 Bank St, Molong. The site falls in a generally North-East direction towards the intersection of Bank Street & Shields Lane.

A plan of the subject lots (indicated in bold) showing site context (cadastre & imagery sourced from SIXMAPS database accessed on 01/01/2020) and elevation contours (information sourced from NSW ELVIS database accessed on 30/04/2020) is included below.



#### 4. Stormwater On-Site Detention

The on-site detention requirements have been assessed in accordance with Cabonne Council requirements for the subject lots, which specify that site in the pre-developed condition is to be considered as brownfield (per email correspondence between Matthew Christensen of Cabonne Council & Craig Campbell of King & Campbell, dated 24/05/2020). The development represents an increase in impervious area from 49% of the site (including council strip) to approximately 90% of the site (including council strip) for the pre-development & post-development cases, respectively. This is shown diagrammatically for the existing site (left) and proposed site (right) below, where green indicates a pervious surface and grey/dark grey indicates an impervious surface.



Stormwater hydrology from the site has been assessed in accordance with ARR2016 methodologies. The following modelling parameters have been adopted for the site:

- Soil Properties: Slow Infiltration (Silty Clay; per Calare Civil report addressed to Cabonne Council dated 31 March, 2016)
- Antecedent Moisture Content: 3.3
- Impervious Area Depression Storage: 1mm
- Supplementary Area Depression Storage: 1mm
- Pervious Area Depression Storage: 5mm
- BOM ARR2016 Modelling Data (temporal pattern & increment files) sourced 22/04/2020.

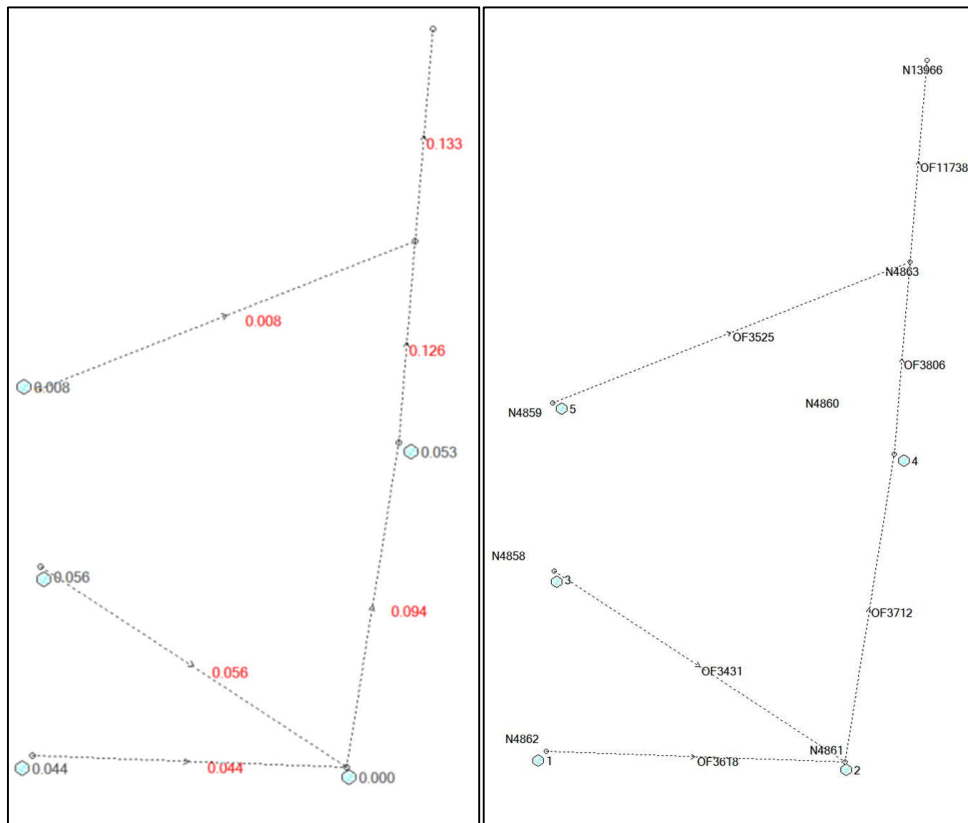
The increased impervious area on the subject site results in an increase in peak flow from the subject lots from 92L/s to 108L/s for the 1% AEP median storm (61L/s to 79L/s for the 5% AEP median storm).

The proposed point of comparison between pre- and post-development flows has been selected as the kerb and gutter at the north-eastern corner of the subject site; this ensures that any change in flow path resulting from the proposed development is adequately captured and included in the DRAINS model results.

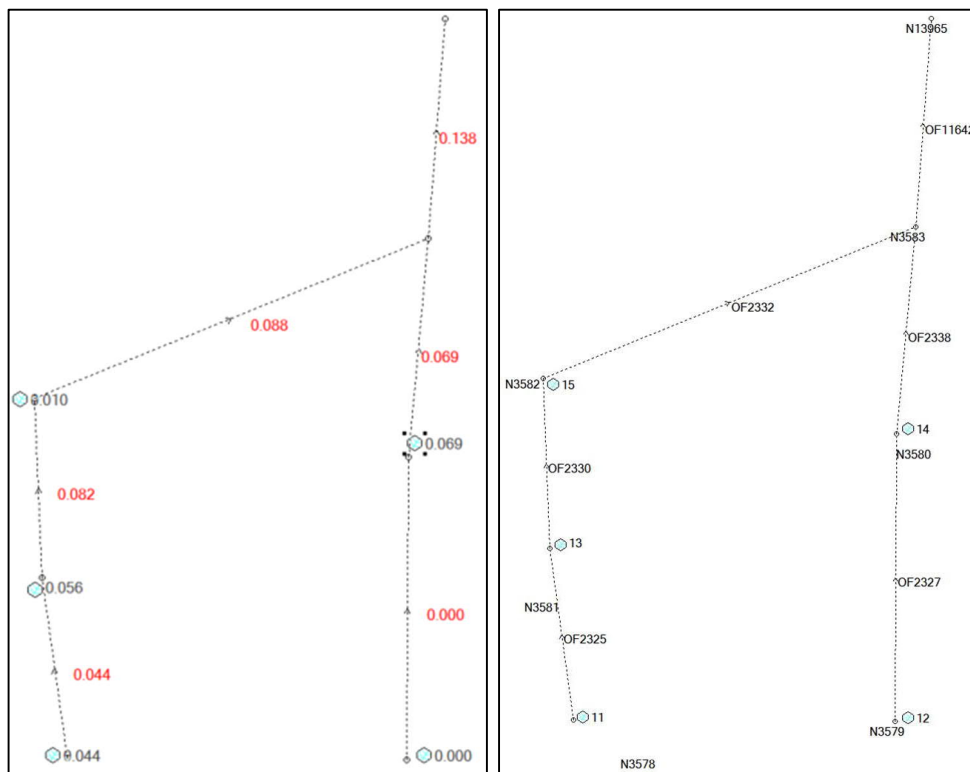
It is noteworthy that the proposed development site to the south of the subject site currently drains stormwater through the subject site, however proposed future development of the adjacent site will result in diversion of stormwater discharge away from the subject site. To

provide a conservative analysis, the pre-development contributions from the southern adjacent site have been omitted from the pre- and post-development DRAINS models for the subject site.

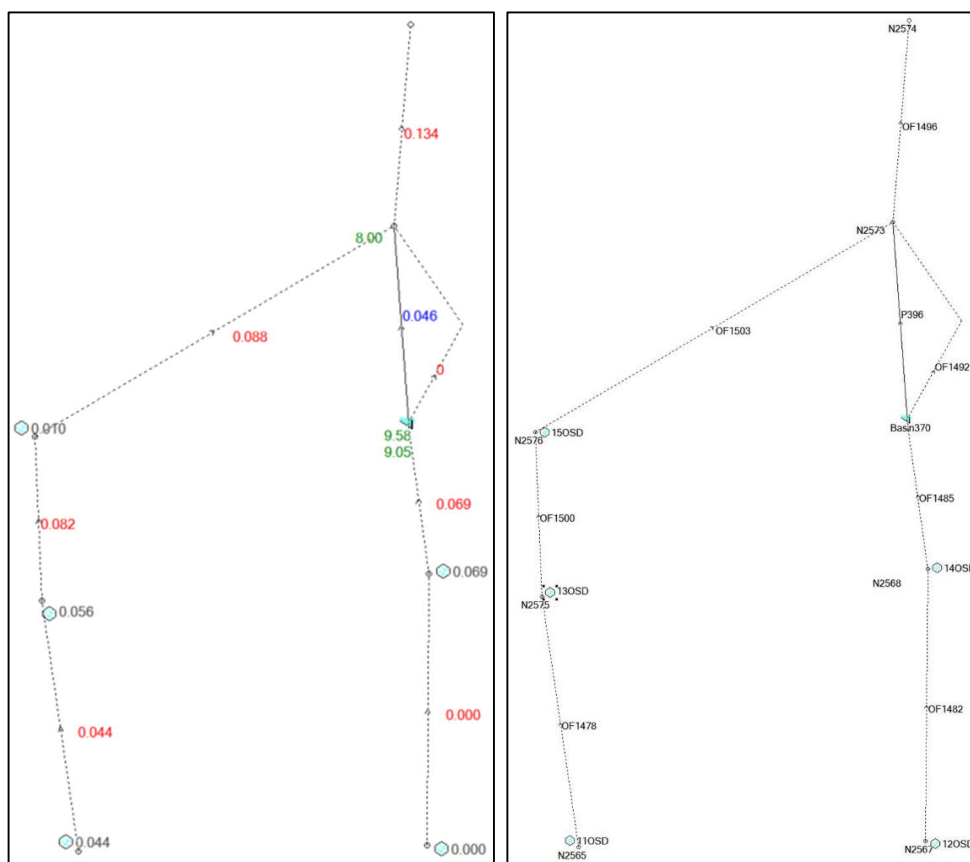
Inclusion of on-site detention storage to capture stormwater runoff from the entire roof area of the proposed building and the proposed 90° angle carpark area has been modelled in DRAINS. A screenshot of the DRAINS model with results for the 1% AEP median storm event for the subject site and related catchments is shown as follows.



Pre-Development

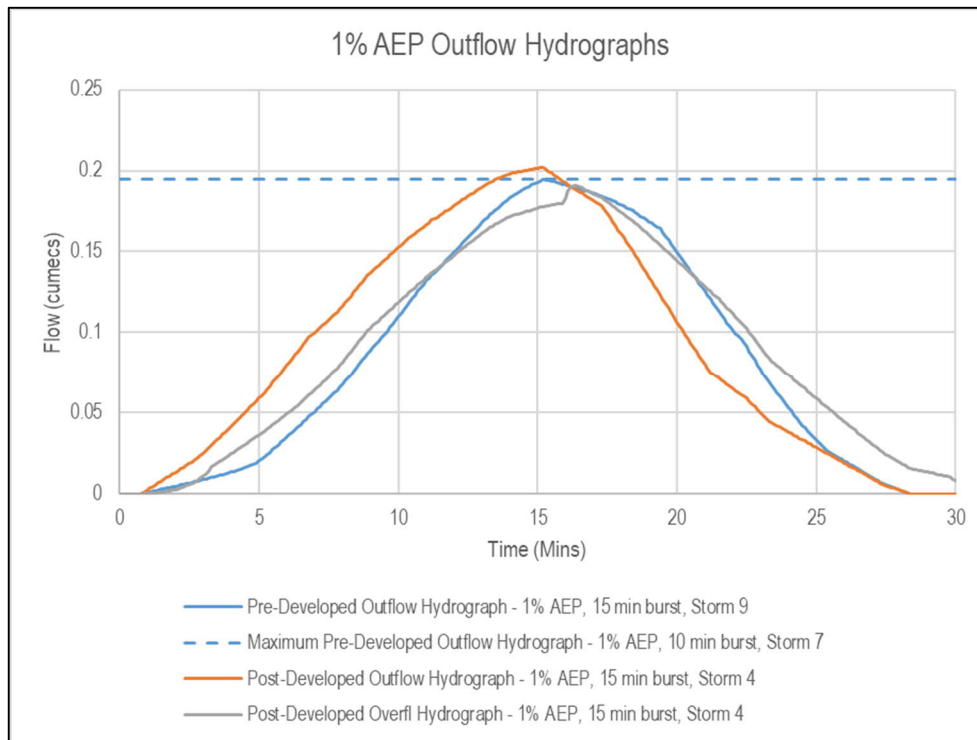


Post-Development

Post-Development with 30m<sup>3</sup> OSD

Results from the DRAINS model analysis indicate that inclusion of a 30m<sup>3</sup> on-site stormwater detention facility with outlet control (for 100% detention use) is sufficient to mitigate the increased stormwater flows resulting from the proposed development to less than or equal to the pre-developed stormwater flows for the 1% AEP median storm event.

The 1% AEP outflow hydrographs for the subject site and related catchments for the pre-developed, post-developed, and post-developed (including on-site detention) is shown as follows for reference.



## 5. Connection to Legal Point of Discharge

Overland flow from the driveway and parallel parking areas (and any related catchments) on the western side of the subject site is proposed to sheet flow overland to the kerb & gutter. Stormwater discharge from the southern adjacent lot (currently vacant; proposed future development site) is proposed to be captured and conveyed to the on-site stormwater detention system via a piped stormwater network within the subject site in the short-medium term (prior to completion of the proposed adjacent development). The on-site stormwater detention system is proposed to discharge to the existing kerb & gutter via construction of a heavy-duty kerb adapter fronting Bank Street at the north-eastern corner of the subject site. This will retain consistency between the pre-developed and post-developed drainage path for the subject lots.

## 6. Conclusion

This Stormwater Management Plan demonstrates how all stormwater and surface water discharging from the proposed development site, buildings and works will be conveyed to the legal point of discharge in accordance with AUS-SPEC and relevant Australian Standards requirements. Specifically, this Stormwater Management Plan details the required on-site detention volume required to ensure that the post-development site stormwater discharge rate does not exceed the pre-development discharge rate for all storm events up to 1% AEP, and details the method of connection from the development site to the legal point of discharge.

Yours sincerely  
King & Campbell Pty Ltd

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