# Water Cycle Management Study

## Moss Vale Project

82018221-01

Prepared for
Aoyuan Pty Ltd

31 January 2019

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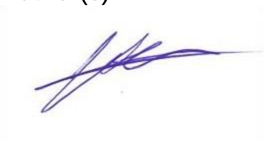

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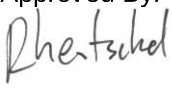

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# 1 Introduction

## 1.1 Background

Aoyuan Pty Ltd (Aoyuan) have engaged Cardno (NSW/ACT) Pty Ltd (Cardno) to assist Arterra Design Pty Ltd (Arterra) with developing a masterplan water cycle management strategy for a proposed residential subdivision (Moss Vale Project) and to undertake a comprehensive water cycle management study (WCMS) to demonstrate that the proposed masterplan is in accordance with the environmental controls of floodplain management, stormwater management and water sensitive urban design as required by Wingecarribee Shire Council (WSC) and other relevant agencies.

## 1.2 Study Area

The proposed Moss Vale Project site and the surrounding area is presented in **Figure 1-1**. The site is located in the Wingecarribee Local Government Area (LGA) at Lot 3 DP 706194 and Lot 12 DP 866036 in Moss Vale, 2577 and constitutes the Chelsea Gardens/Coomungie Urban Release Area (URA). It covers a total area of approximately 125.7 ha and is mostly undeveloped. The land has been mostly zoned for residential use (R2 and R5) with some areas zoned for Public Recreation (RE1) and a neighbourhood centre (B1) in an Amendment to WSC Local Environment Plan (LEP) on 27th October 2017.

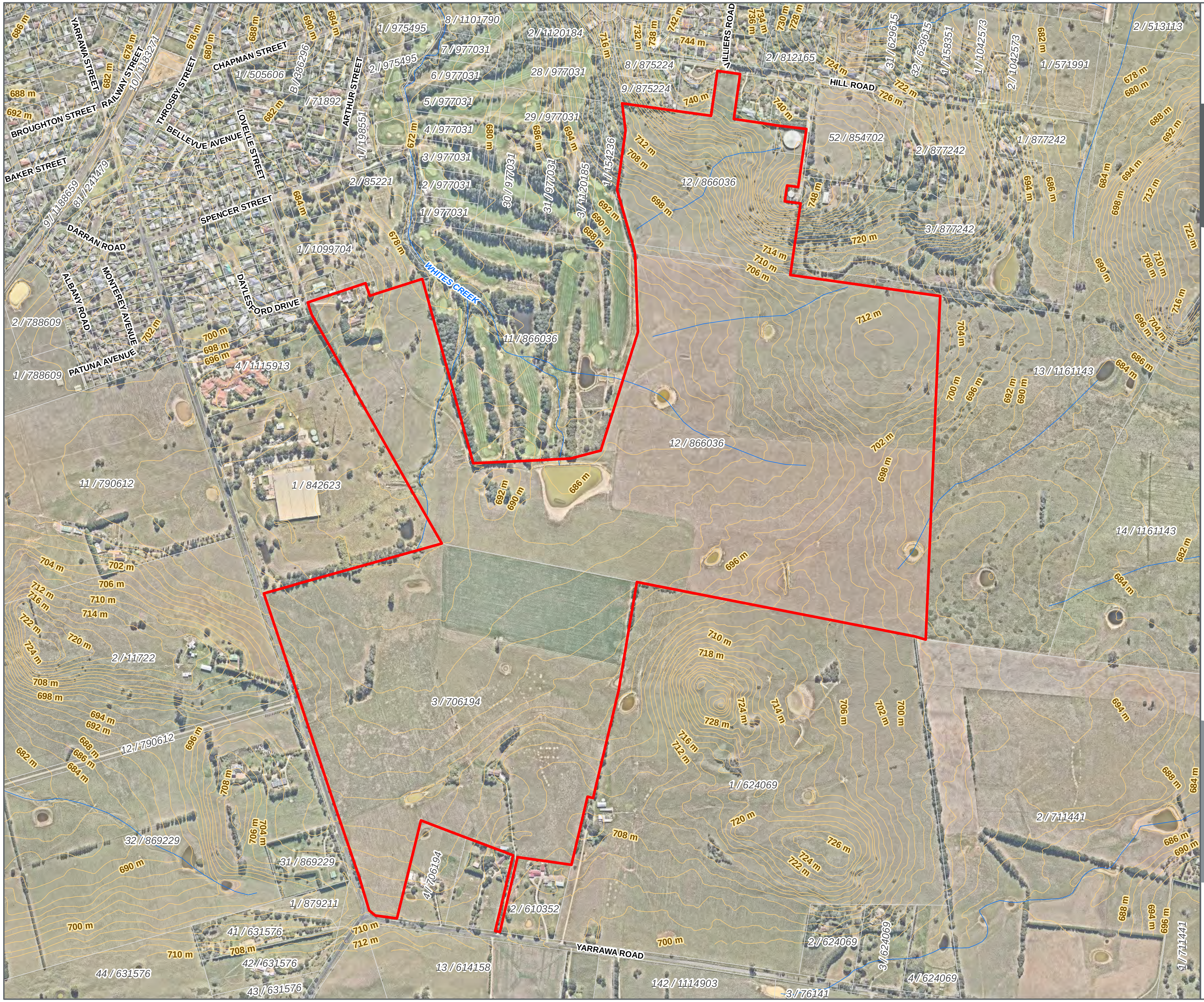
The site is located approximately 1.5km south of Moss Vale town centre and is currently used as farmland. It is bordered by Yarrawa Road, Harper Entertainment Distribution Services and Harbison Aged Care to the West, farmland and Yarrawa Road to the South, Seymour Park and Moss Vale Golf Club to the North and farmland to the East. Main access to the site is currently from Lovelle Street on the northern boundary.

A large portion of the site has gentle grades (less than 10%) draining generally towards two main low points adjacent to the golf club. Much steeper grades occur along the ridgeline occurring on the north eastern portion of the site. The steepest slopes (>20%) occur with in the northern portion of the site and are associated with a prominent basaltic topographic feature. Preliminary soil testing indicates that the majority of the soil on site can be classified as Silty Clay and as such can be expected to have low permeability. Geotechnical advice (refer **Section 2.3.3**) also indicates that the soil on site presents a high erosion hazard when subjected to both concentrated and non-concentrated flows.

The majority of the site falls within the Whites Creek catchment with a small portion of the site falling within the Kellys Creek catchment. Several intermittent first order streams cross the site, the main one being Whites Creek. Whites Creek enters the site from the Harper Entertainment Distribution Services property (Lot 1 DP 842623) and leaves the site approximately 240m downstream onto the Moss Vale Golf Club. The remaining drainage lines do not exhibit a defined channel or stream function and are not considered to be waterfront land as defined by the Water Management Act (2000) (refer **Section 2.3.2**).

Water from the site entering Whites Creek contributes to downstream flooding in Moss Vale. Moss Vale is known to flood in relatively frequent storm events (e.g. 5 year ARI) and as such downstream flooding should be a consideration for any development on this site. The site also falls with Sydney's drinking water catchment and as such is subject to WaterNSW requirements on development in the drinking water catchment.

There are several existing farm dams onsite, the largest of which is immediately adjacent to the Golf Course. The majority of the site is mostly free from significant vegetation, with a few small areas of existing trees. Whites Creek has little existing vegetation and the current condition of the channel is poor with areas of channel scour evident.




Aoyuan

*building a healthy lifestyle*

## Site Plan

**MOSS VALE PROJECT PS**
**NEW SOUTH WALES**

### Legend

- Site Boundary (125 ha)
- 2m Contours (LPI)
- Watercourses (LPI)
- Cadastre (DFSI-SS, 2017)

1:8,000 Scale at A3

m
0 100 200 300 400

Cardno

Map Produced by Cardno NSW/ACT (WOL)
Date: 2018-06-29 | Project: 82018221-01
Coordinate System: GDA 1994 MGA Zone 56
Map: 82018221-01-GS-002_SitePlan.mxd 01
Aerial imagery supplied by Near Map (April, 2018)

## 1.3 Moss Vale Masterplan

The Moss Vale Project is a master-planned residential community that aims to provide diversity in housing options and to be developed in harmony with the landscape and character of the Southern Highlands. The proposal consists of a mix of residential densities, a community centre and a significant area of parkland and open space. The proposal also includes a full revegetation of the portion of Whites Creek that passes through the site. The area of each area type is shown in **Table 1-1**. Refer to the landscape plans for further details of the masterplan layout.

Table 1-1 Masterplan Land Use

| Land Use | Area (ha) |
|---|---|
| Low Density Residential (minimum lot size 600 $m^2$) | 47.2 |
| Medium Density Residential (minimum lot size 450 $m^2$) | 13.7 |
| Rural Density Residential (minimum lot size 2000 $m^2$) | 14.7 |
| Community Centre/Commercial Use | 0.4 |
| Road Reserve | 34.6 |
| Park and Open Space | 11.2 |
| WSUD Assets/Water Bodies | 2.8 |
| Revegetation of Whites Creek | 0.9 |

The key design principles relevant to stormwater management and WSUD for this project are:

- Building a healthy lifestyle – Aoyuan's brand philosophy and guiding principle that focuses on providing quality outdoor space with plentiful greenery, opportunities for recreation (both passive and active), connectivity and purpose.
- Feng Shui – The Chinese philosophy of harmony and balance which encourages the designer to work with the natural landform, show respect for nature, water and the natural flow of the site, and utilise curvilinear shapes rather than hard edges to maximise the flow of positive energy (Qi). Qi is collected by water and as such water bodies at low points in the landform are a desirable design feature.
- Environmental Protection and Sustainability

These key principles will guide design decisions for the stormwater design including which WSUD assets are selected, the layout and configuration of these assets and how they are integrated with parklands and public space.

## 1.4 Purpose of this Report

The objective of this study is to establish a water cycle management strategy for the Moss Vale Project and demonstrate compliance with all relevant flooding and stormwater management controls as described in WSC's Moss Vale DCP (2017), the Natural Resources Access Regulator's (NRAR) Guidelines for Controlled Activities on Waterfront Lands (2018) and WaterNSW's Neutral or Beneficial Effect on Water Quality Assessment Guideline (2015). Specifically this WCMS aims to:

- Determine the flood behaviour on the development site for a range of design events.
- Ensure that no detrimental offsite impacts are created as a result of the proposed development.
- Ensure no increase in flood hazard and risk to life and property as a result of this development.
- Ensure that all lots and roads to be outside of the Fringe-Low Flood Risk Precinct (FRP) where practical and therefore not subject to flood related planning controls. Flood planning controls are to be provided for any lots within the Fringe-Low FRP.
- Outline a concept stormwater management plan for this development to provide guidance for later development application and detailed design phases of the Moss Vale Project.
- Ensure that peak flow rates do not exceed existing peak flow rates in the 100 year ARI storm event as a result of this development by provision of On-Site Detention (OSD).
- Ensure that a water sensitive urban design (WSUD) strategy for stormwater management to achieve a Neutral or Beneficial Effect (NorBE) on the quality of stormwater leaving the site.
- Propose a riparian management strategy consistent with the Guidelines for Controlled Activities on Waterfront Lands (2018) for Whites Creek.

# 2 Available Data

## 2.1 Topographic Data

### 2.1.1 Ground Survey

Detailed ground survey was undertaken by Cardno on the 1st of August 2018. This survey included all land within the development including Whites Creek and the farm dams and the portions of Yarrawa Rd adjacent to the site.

### 2.1.2 Unmanned Aerial Vehicle Survey

A Unmanned Aerial Vehicle (UAV) survey was conducted by Cardno on the 26th of July 2018 and included the whole site and portions of the adjacent golf course and farmland, as well as some of the Harper Entertainment Distribution Services and Harbison Aged Care sites. Yarrawa Rd was also included in this survey.

### 2.1.3 Airborne Laser Scanning

Cardno obtained Airborne Laser Scanning (ALS) from Land and Property Information (LPI, now NSW Land Registry Services) for the subject site. The data was captured on the 22nd of May 2014 and formatted as a 1m Digital Elevation Model (DEM). The ALS captured covers the northern portion of the site and downstream areas of the Whites Creek Catchment.

### 2.1.4 NSW 2m contours

2m contours were obtained from LPI for use in areas outside of the coverage of the above datasets. This data was mostly used for the upper extents of the Whites Creek Catchment.

### 2.1.5 Site Inspection

A site inspection was conducted by Cardno on the 30th July 2018 to inspect the condition of drainage lines and existing farm dams as well as to take measurements of key structures in the vicinity of the site.

### 2.1.6 Aerial Photography

Aerial photography was obtained from NearMap for use on the subject site and surrounding areas.

## 2.2 Other Studies

### 2.2.1 Whites Creek Flood Study (URS 2008)

The Whites Creek Flood Study (WCFS) was prepared for Council by URS Australia Pty Ltd (URS) in 2008. This study utilised the RAFTS hydrological model and a 1D hydraulic model. The flood study assessed various potential floods in the study area and was the first step towards a comprehensive Floodplain Risk Management Study & Plan in accordance with the NSW Floodplain Management Manual. The flood study was completed in 2008 and adopted by Council. The catchment and flood maps are available on WSC's website however the full report is not.

### 2.2.2 Whites Creek Floodplain Risk Management Study and Plan (URS 2012)

A Floodplain Risk Management Study and Plan (FRMS&P) is being developed by URS. A draft of the FRMS&P dated December 2012 was placed on public exhibition in 2013 and was available on Councils website. It is anticipated that Council would likely adopt this draft in the near future and, as such, the draft informs this report.

### 2.2.3 Stormwater Management Strategy Chelsea Gardens and Coomungie Lands (Calibre Consulting 2015)

The following key points relating to stormwater and flooding can be taken from a review of the Stormwater Management Strategy Chelsea Gardens and Coomungie Lands prepared by Calibre Consulting (2015):

- Based upon the latest maps provided by the Department of Land and Property it is understood that six small watercourses are present on the subject site, all classified as first order watercourses based upon the findings of the Stormwater Management Strategy Report prepared by Calibre Consulting (2015). Five of these watercourses were found to be tributaries of Whites Creek, while the remaining watercourse was noted as a tributary of the Wingecarribee River. This report included a riparian strategy which proposed the removal of three of the existing watercourses on site due to their low habitat and fluvial value.

- It is noted within the report (Appendix C) that the NSW Office of Water (NOW, now NRAR) agreed with the proposed riparian strategy in principle commenting that "there are a number of first order streams within the development site that do not exhibit a defined channel or stream functions [and t]hese mapped blue lines are not considered to be waterfront land as defined by the Water Management Act 2000." The NOW correspondence in Appendix C also notes that the offsetting of riparian land on streams not defined as waterfront land is not required.
- The existing watercourses within the site were noted as being characteristically broad, shallow and poorly defined. Preliminary flood modelling conducted by Calibre Consulting (2015) found the 100 year flood extents would likely exceed the width of the existing riparian corridor areas present on site. It was noted that riparian corridors and adjacent road corridors could be capable of being designed to contain the anticipated 100 year flow extents.
- Stormwater detention basins were proposed throughout the site to attenuate post development flows from the development as part of the stormwater quantity management strategy. Hydrologic modelling was conducted using XPRAFTS (Version 2013) software to calculate external and post development peak flow rates as well as detention basin volumes. Indicative detention basin volumes and configurations were provided as part of the report prepared by Calibre Consulting (2015), noting that further investigation will be required to accurately reflect the housing product, location of open spaces and site constraints.
- Stormwater quality for the proposed development was addressed within the report prepared by Calibre Consulting (2015) with preliminary MUSIC modelling considering a typical stormwater treatment train consisting of:
    - Rainwater storage tanks for each dwelling
    - Gross pollutant traps (GPTs)
    - Bio retention basins

### 2.2.4 Report on Preliminary Geotechnical Investigation (Douglas Partners 2018)

The following points relate to the findings and recommendations provided within the Report on Preliminary Geotechnical Investigation prepared by Douglas Partners (2018):

- The residual soil type present throughout the site was found to consist of stiff to hard clay, silty clay and sandy clay which grades into extremely weathered siltstone, sandstone and dolerite.
- The clay subsoils present within the soil landscape were identified as being sheet erosion and gully erosion hazards. It is expected that an extreme erosion hazard exists for non-concentrated flows and a moderate to very high hazard for concentrated flows on site. Soil loss on similar landscapes was noted to be up to 300 tonnes/ha for topsoil on steeper slopes and up to 170 tonnes/ha for exposed subsoils.
- Section 9.9 of the report provides guidance on Soil and Water Management Plans.
- Section 9.12 of the report provides guidance on the construction of sedimentation basins.

# 3 Flood Hydrology

## 3.1 Hydrological Model Selection

The computer model Watershed Bounded Network Model (WBNM; 2012) was used for hydrological modelling of the study area. WBNM is an advanced storage-routing model that allows simulation of catchment behaviour and key structures within a catchment and is a recognised network model in Australian Rainfall and Runoff (ARR, 1987). This particular model was considered appropriate for the task of modelling the study area, given its ability to model a wide range of catchment characteristics and its local development. The model allowed peak flows to be established at various locations throughout the subject site.

## 3.2 Model Input

Full hydrological model set-up can be found in **Appendix A**.

### 3.2.1 Sub-Catchment Topology

Details of the sub-catchment delineation used in the hydrologic model is presented **Figure 3-1**.

The sub-catchment topology for the constructed model reflects input from:

- Detailed Survey
- UAV Survey
- 1m ALS DEM
- 2m LPI contours
- Cardno's GIS database for cadastral information
- Aerial photography from NearMap for the establishment of impervious areas

There is general parity between the mapped catchments and those presented in the WCFS in the area around Moss Vale and the golf course. Minor alterations to catchment shape have been made so that they are suitable for the WBNM model and to areas within the site boundary to better reflect the detailed data obtained through survey. Refer to **Figure 3-2** for a comparison of Cardno's catchment delineation with those from the WCFS (2008).

### 3.2.2 Impervious Area Mapping

Impervious area was mapped from aerial photography and cadastral information. Mapped impervious area is presented in **Figure 3-3**. Factors were applied to derive final impervious areas for each catchment. The applied factors are presented in **Table 3-1**.

Table 3-1 Impervious Area Factors

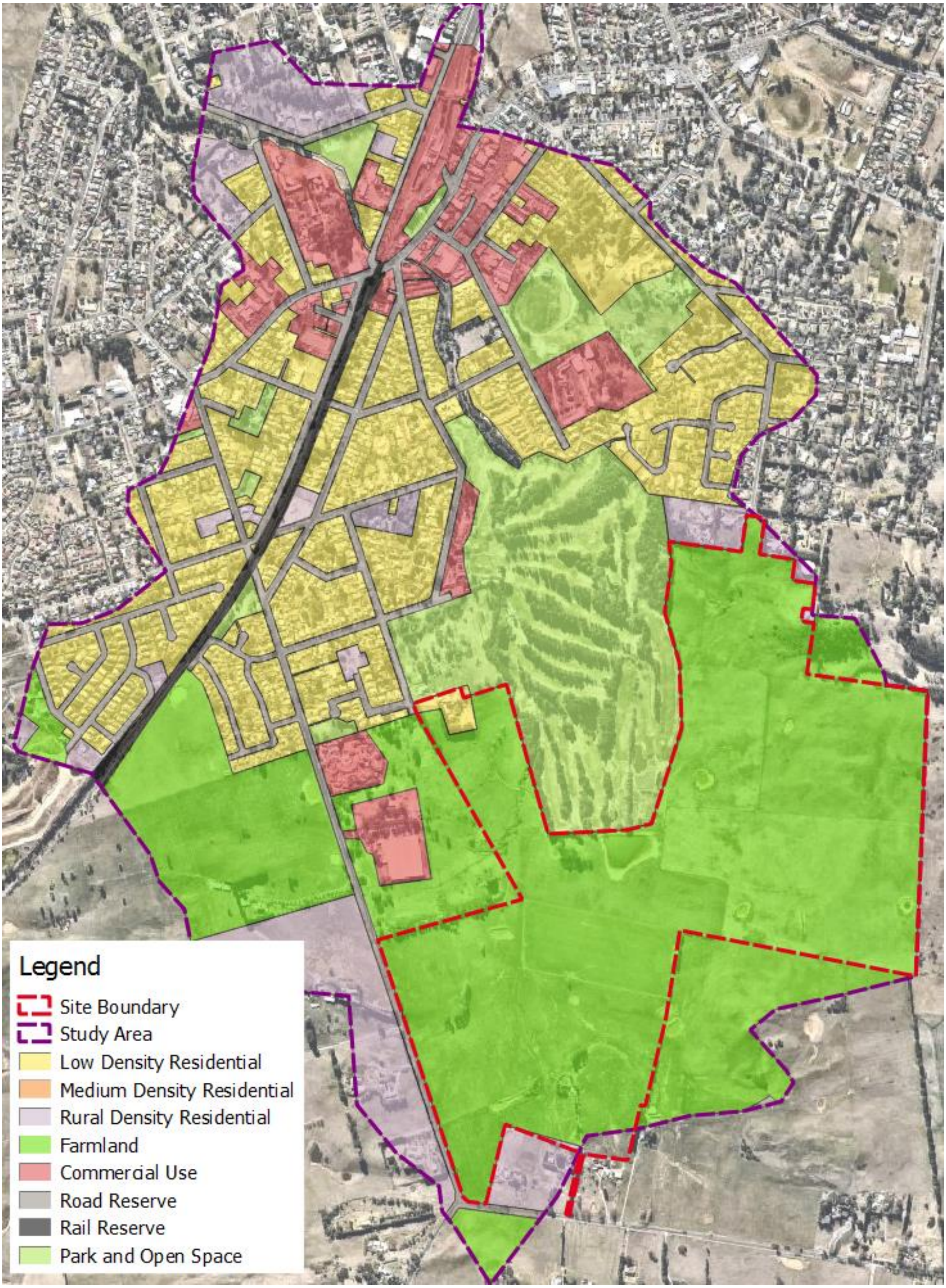
| Land Use | Factor |
|---|---|
| Low Density Residential (minimum lot size 600 $m^2$) | 0.6 |
| Medium Density Residential (minimum lot size 450 $m^2$) | 0.8 |
| Rural Density Residential (minimum lot size 2000 $m^2$) | 0.2 |
| Farmland | 0.05 |
| Commercial Use* | 1.0 |
| Road Reserve | 0.65 |
| Rail Reserve | 0.95 |
| Park and Open Space | 0.25 |

*Also used for areas observed to have extremely high impervious area coverage

Figure 3-1 Sub-catchment Delineation (2m contours)

Figure 3-2 Comparison of Cardno Sub-catchment Delineation and WCFS (2008)

Figure 3-3 Impervious Area Mapping



### 3.2.3 Hydrological Parameters

Hydrological parameters adopted for the WBNM model are provided in **Table 3-2**.

Table 3-2 WBNM Hydrological Parameters

| Parameter | Value | Comment |
|---|---|---|
| Initial loss (pervious surface) | 0 mm | For storms critical for this catchment, antecedent rainfall is likely, therefore initial loss assumed to be zero. This represents a conservative assumption for Flood Hydrology |
| Initial loss (impervious surface) | 0 mm | For storms critical for this catchment, antecedent rainfall is likely, therefore initial loss assumed to be zero. This represents a conservative assumption for Flood Hydrology |
| Continuing loss (pervious surface) | 2.5 mm/hr | Adopted from the WCFS (2008) XP-RAFTS model |
| C (Lag parameter) | 1.6 | Recommended value for ungauged catchments on the east coast of Australia |
| Stream routing factor | 1 | Accepted value for natural streams |

### 3.2.4 Rainfall Data

ARR87 design rainfall data for the site was sourced from the Bureau of Meteorology (BOM). The data used to generate the design storm bursts in the WBNM model is presented in **Table 3-3**.

Table 3-3 Rainfall Data

| Parameter | Value |
|---|---|
| 2 Year 1 Hour Intensity | 31.7 mm/hr |
| 2 Year 12 Hour Intensity | 7.0 mm/hr |
| 2 Year 72 Hour Intensity | 2.4 mm/hr |
| 50 Year 1 Hour Intensity | 63.6 mm/hr |
| 50 Year 12 Hour Intensity | 14.5 mm/hr |
| 50 Year 72 Hour Intensity | 4.6 mm/hr |
| F2 Geographic Factor | 4.28 |
| F50 Geographic Factor | 15.74 |
| Location Skew Coefficient | 0.0 |

## 3.3 Results

The WBNM hydrological model was run with a spectrum of storm durations to allow determination of the critical design storm duration for the catchment and the derivation of hydrographs at key locations for use in the hydraulic model. It was established that the critical duration was 120 minutes for Whites Creek and 90 minutes for Kellys Creek. Refer to **Appendix A** for detailed modelling results.

# 4 Flood Hydraulics

## 4.1 Selection of Hydraulic Model

The TUFLOW 2D model was used in the hydraulic assessment of the study area. A 2D model was selected to model the floodplain in order to better represent the complex hydraulics associated with floodplain areas, and ensure that all 'break out' flows are included in the modelling.

## 4.2 Model Set-up

### 4.2.1 Model Geometry and Boundary Conditions

The TUFLOW model was established over a 2m grid with elevations extracted from the topographic data outlined in **Section 2.1**. The model starts upstream of the site at Yarrawa Rd near Harper Entertainment Distribution Services and extends to approximately 600m downstream of Argyle Street in order to understand the effects of the proposed development on the golf course and Moss Vale.

Significant buildings within the floodplain have been excluded from the model to more accurately model any potential interaction with floodwater. The minor drainage lines within the site boundary have been excluded from the flood modelling as they do exhibit a defined channel or stream function and are not considered to be waterfront land as defined by the Water Management Act (2000) (refer **Section 2.3.2**) and will be raised above the floodplain in the proposed scenario. These drainage lines have been accounted for in the existing scenario in the hydrological model and all onsite stormwater in the proposed scenario will be managed through the site stormwater drainage network (refer **Section 6.1**).

Hydrographs were extracted from the hydrological model (refer **Section 3**) at key locations for the critical duration and applied to the hydraulic model to simulate design events.

Final elevations and inflow boundaries are shown in **Figure 4-1**.

### 4.2.2 Material Mapping and Roughness Coefficients

Existing roughness conditions were mapped from a combination of aerial photography and observation during a site visit. Material coverage mapping for is presented in **Figure 4-2**. Manning's values adopted for each material coverage are presented in **Table 4-1**.

Table 4-1 Manning's 'n' Roughness Values

| Land Use Type | Manning's 'n' Value | Description |
|---|---|---|
| Pasture/Long Grass (model default) | 0.040 | Typically mixed areas of slashed or grazed grassland with some shrubs and/or taller grass clumps |
| Trees | 0.075 | Moderate density trees with little underbrush. Relatively easy to walk through |
| Creek (Moderate_n) | 0.050 | Variable bed grade/cross section and moderate instream vegetation |
| Creek (High_n) | 0.085 | Variable bed grade/cross section and substantial instream vegetation |
| Wetland | 0.030 | Shallow permanent water body with some reeds but relatively free of plants with rigid stems |
| Residential (Moderate_n)* | 0.100 | Average density residential some solid fences |
| Residential (High_n)* | 0.200 | Typically smaller blocks with large dwelling footprint small yards and frequent solid fences. Also represents commercial use land zoning |
| Solid Building | 10.000 | Used for solid standalone buildings assumed to have low permeability |
| Sealed Road/Path | 0.020 | Roads/parking areas with some parked vehicles. Pathways |
| Rail Reserve | 0.040 | Well maintained rail reserve |

Figure 4-1 Model Geometry and Boundary Conditions

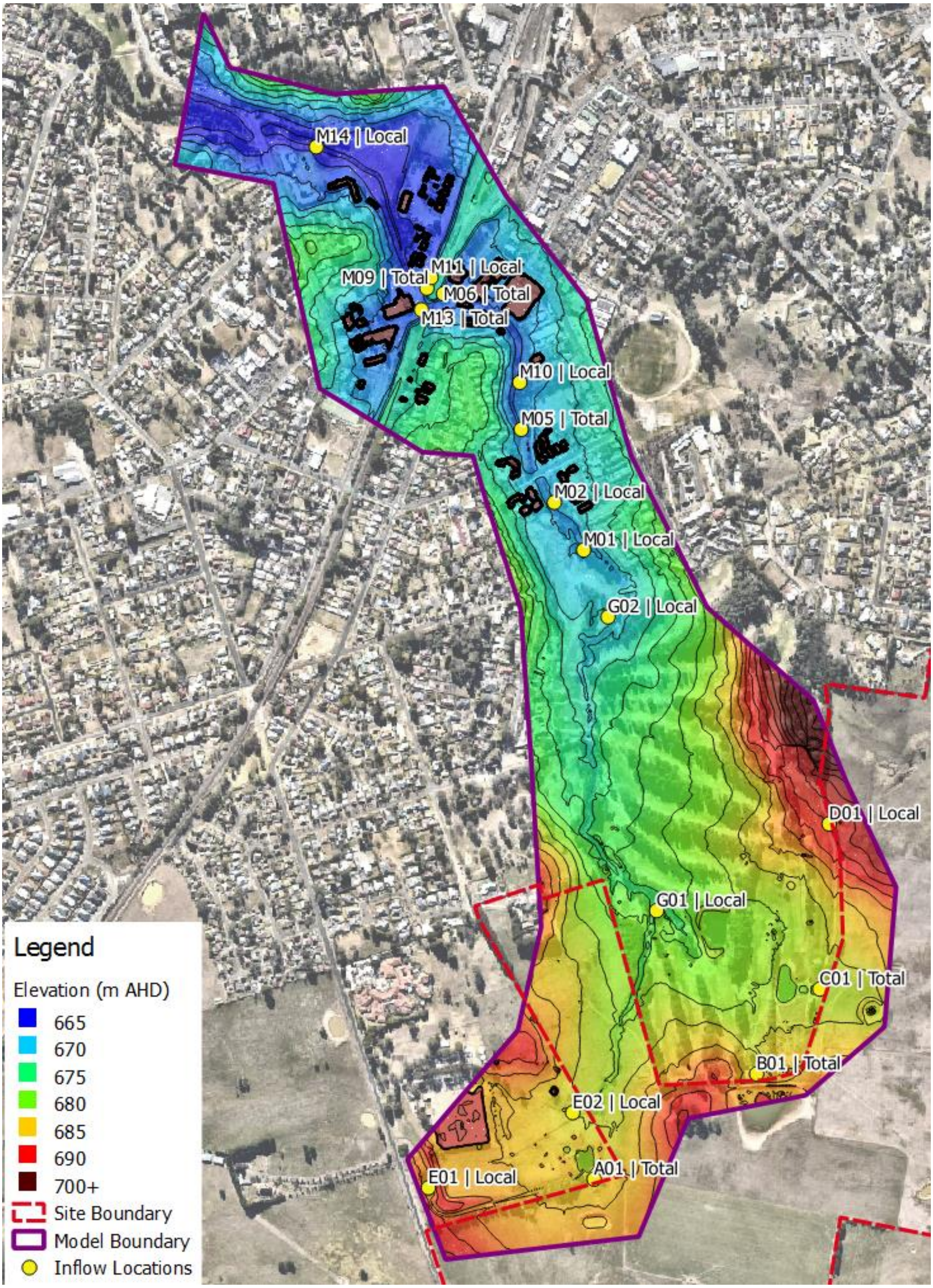
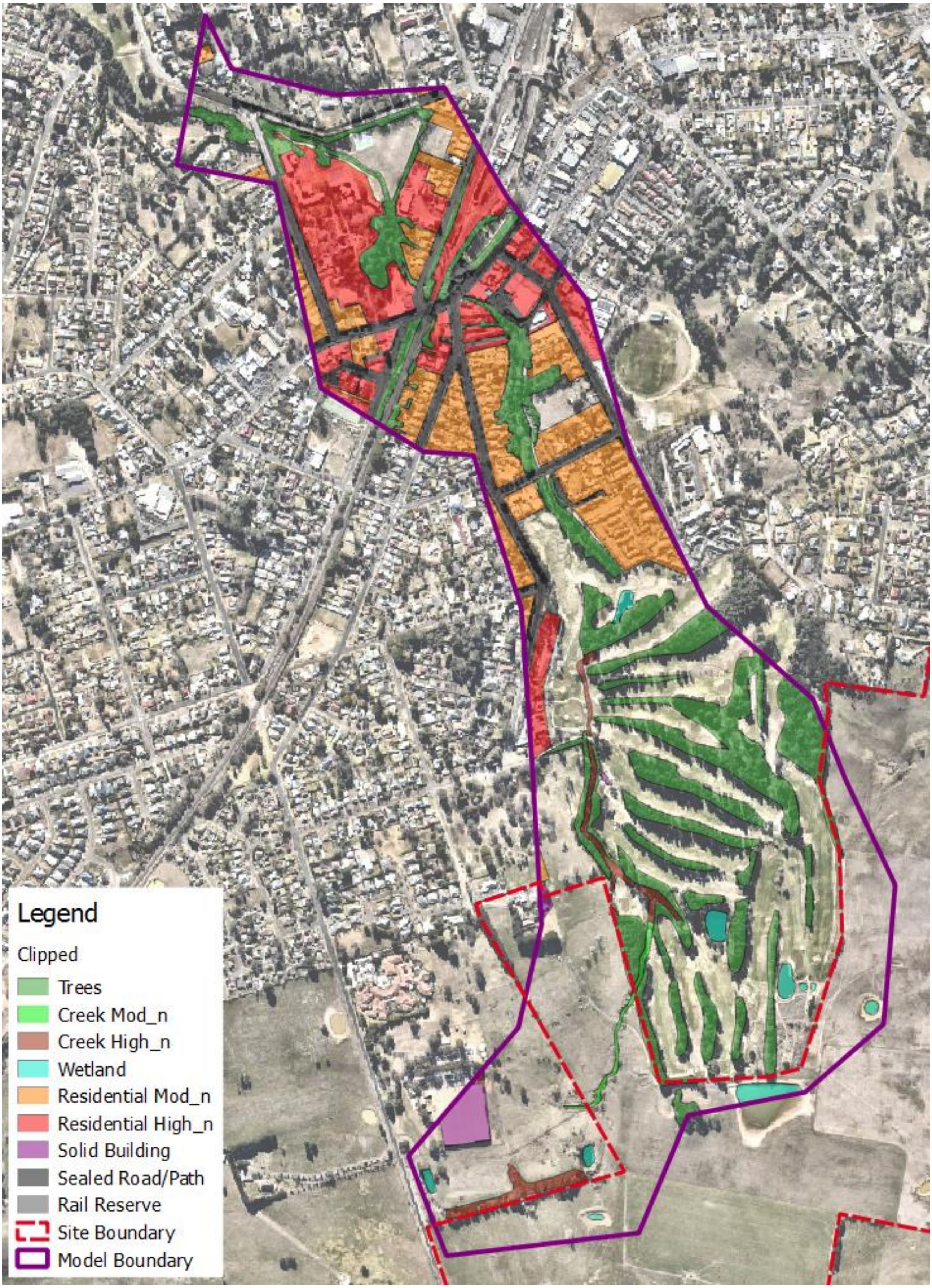


Figure 4-2 Materials Mapping



### 4.2.3 Hydraulic Structures

Hydraulic structures both upstream and downstream of the site have been incorporated into the hydraulic model to establish accurate flooding conditions at the site. Major structures incorporated into the model as 1D elements in the hydraulic model are shown in **Table 4-2**.

Table 4-2 Major Hydraulic Structures

| Description | Details | Source of Data |
|---|---|---|
| Mack Street Crossing | 8.1m wide x 1.5m high | WSC FPRMS&P |
| Argyle Street Culvert | 3.4m wide x 2.05m high | WSC FPRMS&P |
| Railway Culverts | Average 2.4m diameter (x2) | WSC FPRMS&P |
| Lackey Rd Bridge | 7.6m wide x 2.6m high | WSC FPRMS&P |
| Waite St Crossing | 9.15m wide x 2.1m high | WSC FPRMS&P |
| Golf Course Culvert | 1050mm RCP (x3) | Site Visit |
| Watercourse Crossing on Lot 12 DP 866036 | 6m wide x 1.4m high | Site Visit |

### 4.2.4 Model Calibration

Tailwater conditions were set and adjusted to calibrate this model to the results presented in the FPRMS&P. Comparison between water levels at the downstream end of the golf course and at Argyle St in both the FPRMS&P's MIKE11 model and Cardno's TUFLOW model are presented in **Table 4-3**. There is general parity between the results at the outlet of the golf course, however some minor difference in water level is observed at Argyle St. This difference is likely due to the different capabilities between the 1D MIKE11 model and 2D TUFLOW model at representing floodplain hydraulics with TUFLOW being able to more accurately model floodplain storage in the adjacent areas. Discrepancies may also be due to difference in elevation data used.

Table 4-3 Model Calibration

<table>
<tr><th colspan="2" rowspan="2">Location</th><th colspan="2">Water Level (m AHD)</th></tr>
<tr><th>10 year ARI (Approx 10% AEP)</th><th>100 year ARI (Approx 1% AEP)</th></tr>
<tr><td rowspan="2">Golf Course Outflow</td><td>FS MIKE11 ch1203m</td><td>670.57</td><td>670.82</td></tr>
<tr><td>TUFLOW</td><td>670.613</td><td>670.807</td></tr>
<tr><td colspan="2">Difference (m)</td><td>0.043</td><td>-0.013</td></tr>
<tr><td rowspan="2">Argyle St</td><td>FS MIKE11 ch1903m</td><td>667.58</td><td>667.93</td></tr>
<tr><td>TUFLOW</td><td>667.946</td><td>668.402</td></tr>
<tr><td colspan="2">Difference (m)</td><td>0.366</td><td>0.472</td></tr>
</table>

### 4.2.5 Proposed Scenario

The proposed scenario was set up based on the existing scenario and incorporating the following updates:

- Preliminary Design Levels with lots and roads raised to be outside of the Fringe-Low FRP where practical. Preliminary bulk earthworks levels have been calculated in the 12D version 12 model and incorporated into TUFLOW.
- Reshaping and Revegetation works in Whites Creek (refer **Section 5.1**)
- Incorporation of OSD and increases in impervious area coverage into the flood hydrology (refer to **Section 7.2** for details)

## 4.3 Simulation Results

### 4.3.1 Existing Scenario

The existing scenario model was run for the 10 year ARI and 100 year ARI events. Maps of the existing flood depths, extents and velocities are presented within **Appendix B**. In the existing scenario a relatively small amount of the site is flooded in the 10 year ARI event with the maximum depth of flooding on site approximately 1.5m. Significant sheet flow is expected on the golf course site located downstream of the site. Existing flood velocities in the 10 year ARI event are under 2.0 m/s on the subject site.

Only a small portion of the subject site is inundated in the 100 year ARI event with the majority of the floodwater contained within the Whites Creek floodplain. The maximum depth of flooding was found to be approximately 2.0m with velocities under 2.0 m/s on the subject site. The depth and extent of sheet flow on the golf course site is expected to increase in the 100 year ARI event.

Mack Street, located approximately 1.0 km downstream (north) of the subject site was found to be flood affected in both the 10 year ARI and 100 year ARI events. Mack Street is classified as H2 (untrafficable for small vehicles) in the 10 year ARI event in accordance with the depth – velocity relationship as presented in the Australian Emergency Management Handbook Series and in ARR 2016 book 6, section 7.2.7 and classified as H4 (unsafe for all people and vehicles) in the 100 year ARI event. Both Argyle Street and Lackey Road located further downstream of the subject site were determined to be untrafficable for all people and vehicles in both the 10 year ARI and 100 year ARI events.

Existing buildings within Moss Vale, downstream of the subject site were found to fall within both the 10 year ARI and 100 year ARI flood extents for the existing scenario.

### 4.3.2 Proposed Scenario

The proposed scenario model was run for the 10 year ARI and 100 year ARI events. Maps of the proposed scenario flood depths, extents and velocities are presented within **Appendix B**. In the proposed scenario 10 year ARI event, the reshaped pool and riffle creek system contains all floodwaters on site with the maximum depth of flooding within the site being approximately 1.2m. A maximum velocity of 2.0 m/s is expected within the riffles which will be managed through minor scour protection measures. A maximum velocity of approximately 1.0 m/s is expected within the pool areas. The extent of sheet flows over the golf course site has been reduced in comparison with the existing scenario during the 10 year ARI event through the stormwater management measures employed.

In the proposed scenario 100 year ARI event, the reshaped pool and riffle creek system is still capable of containing all floodwaters on site with a maximum depth of flooding within the site being approximately 1.5m. A maximum velocity of 2.5 m/s is expected within the riffles which will be managed through the application of minor scour protection measures. A maximum velocity of approximately 1.0 m/s is expected within the pool areas. The extent of sheet flows over the golf course site downstream of the proposed development has also been reduced in the 100 year ARI event when compared to the existing scenario. This is due to the stormwater management measures employed as part of the proposed development.

The stormwater management measures provided as part of the proposed development were found to improve flooding within the Moss Vale Township, downstream of the subject site when compared to the existing scenario for both the 10 year ARI and 100 year ARI events. These improvements include:

- Mack Street now considered flood free in the 10 year ARI event.
- Mack Street 100 year ARI trafficability now downgraded from Category H4 (unsafe for all people and vehicles) to Category H2 (unsafe for small vehicles).
- Reduction in flood level and hazard extents along Argyle Street.

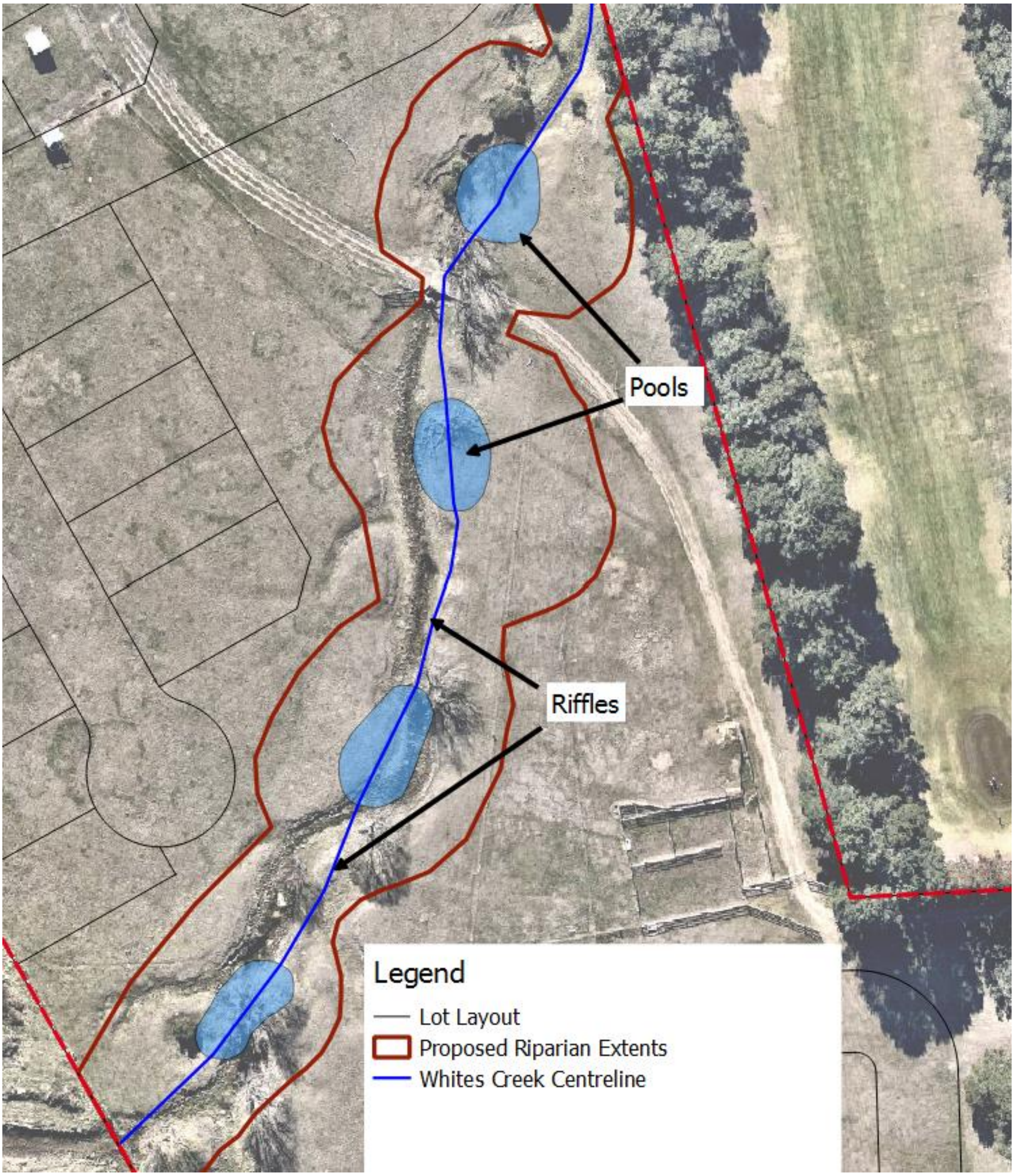
# 5 Floodplain Management

## 5.1 Reshaping and Revegetation Works in Whites Creek

The existing Whites Creek watercourse is proposed to be reshaped and revegetated as part of the proposed development in order to improve flooding behaviour both within the subject site and downstream of the site within the Moss Vale Township and enhance the ecological appeal of the area. The proposed riparian corridor works within the Whites Creek area are pictured within **Figure 5-1** and include the adoption of a pool and riffle system, designed to provide passive floodplain storage and contain floodwaters within the subject site, making use of the defined watercourse. The design of the pool and riffle system will allow for a range of ecological niches to develop due to the variety of hydrological conditions provided.

Works within the Whites Creek watercourse are considerate of the existing inlet and outlet points as well as the associated impacts on neighbouring properties. The riparian corridor will be revegetated to 10m from the top of bank as per the Guidelines for Controlled Activities on Waterfront Lands (2018).

Figure 5-1 Proposed Riparian Corridor



## 5.2 Flooding Impacts

In this proposal, all lots are to be raised above the flood planning level (100 year ARI + 500mm freeboard) where possible and earthworks will be required within the floodplain to achieve this. Additionally, channel works in Whites Creek are proposed (refer **Section 5.1**). Flood impacts mapping has been conducted to demonstrate that there are no detrimental offsite impacts as a result of this development. Impacts maps are presented in **Appendix C**.

Impacts mapping for the 10 year ARI and 100 year ARI events demonstrate that no offsite water level increases are expected as a result of this development. During the 10 year ARI event, flood level decreases of between 50mm and 210mm are expected on the golf course, around 200mm at Mack St and 160mm immediately upstream of the Argyle St culvert. During the 100 year ARI event, similar water level decreases can be observed on the golf course while even larger flood level decreases are expected in Moss Vale Township. As a result, the impact of this development can be considered to be non-detrimental to downstream flooding conditions.

These water levels decreases can be attributed to the proposed OSD design (refer **Section 7.2**) as well as the additional floodplain storage provided by the pool and riffle design of the Whites Creek rehabilitation. These can be optimised at a later stage in the design development.

## 5.3 Hazard Mapping (Floodplain Development Manual)

Provisional hazards have been calculated according to the criteria provided in the NSW Floodplain Development Manual (FDM 2005, NSW Government) Figure L2, shown in **Figure 5-2**.

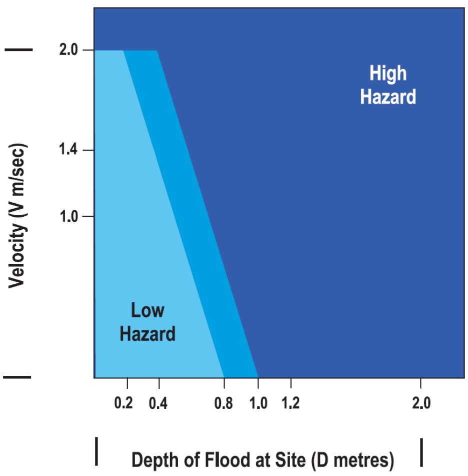
High hazard is defined as representing:

- Possible danger to personal safety
- Evacuation by trucks difficult
- Able-bodied adults would have difficulty wading to safety
- Potential for significant structural damage to buildings

Low hazard is defined as representing:

- Trucks can evacuate people and possessions if necessary
- Able-bodied adults would have little difficulty wading to safety

Figure 5-2 NSW State Government Floodplain Hazard Categorisation




Hazards are mapped according to these criteria for flood waters across the site. Maps of provisional hazard have been prepared for the existing and proposed scenarios and are included in **Appendix C**.

During the pre-development scenario the site exhibits a range of hazard categories from low to high. Areas of high hazard category are mostly contained within the Whites Creek channel for both the existing and proposed scenarios. High hazard areas were also found to be present in the Moss Vale Township.

Results maps demonstrate that there is no net increase in flood hazard extent as a result of the proposed development on the subject site. All hazard areas present on the subject site in the post development scenario are contained within the Whites Creek channel. Downstream there will be a reduction in the high hazard extents within the Moss Vale Township, particularly along Lackey Road and at the intersection of Argyle Street and Railway Street when compared to the existing scenario. It can therefore be concluded that the proposed development will not increase risk to life and property.

## 5.4 Flood Risk Precincts

WSC Moss Vale DCP (2017) states that flood prone land should be divided into four flood risk areas (**Table 5-2**).

Table 5-1 WSC Moss Vale DCP (2017) Flood Risk Precincts

| Risk Precinct | Definition |
|---|---|
| High | Land below the 100 year flood that is either subject to a high hydraulic hazard or where there are significant evacuation difficulties. The high FRP is where high flood damages, potential risk to life and evacuation problems would be anticipated or development would significantly and adversely affect flood behavior. Most development should be restricted in this precinct. In this precinct there would be a significant risk of flood damages without compliance with flood related building and planning controls |
| Medium | This precinct contains land that is below the 100 year flood that is not subject to a high hydraulic hazard and where there are no significant evacuation difficulties, In this precinct there would still be a significant risk of flood damage, but these damages can be minimized by the application of appropriate development controls |
| Fringe-Low | This precinct contains the land between the extents of the 100 year flood and the 100 year flood plus 500mm freeboard. In this precinct there would still be a significant risk of flood damage, but these damages can be minimized by the application of appropriate development controls |
| Low | This precinct contains land that is within the floodplain (i.e. within the extent of the probable maximum flood) but not identified within any of the above FRPs. The low flood risk precinct is where the risk of damages is low for most land uses and most land uses would be unrestricted in this precinct |

A flood risk precinct plan has been developed for both existing and proposed scenarios across the site in accordance with the guidelines set out in WSC Moss Vale DCP (2017). Refer to **Appendix C** for flood risk precinct maps for the site. All lots and roads are proposed to be raised above the 100 year ARI flood level plus 500mm freeboard and are therefore within the Low FRP or outside of the floodplain entirely.

## 5.5 Development Controls

Comparison is made to WSC Moss Vale DCP's (2017) prescriptive controls matrix to determine development control requirements for the Moss Vale Project.

### 5.5.1 Finished Floor Levels (Flood Planning Levels)

All proposed lots and roads are either within the Low FRP or outside of the floodplain entirely and therefore flood planning levels/finished floor levels are not required.

### 5.5.2 Flood Compatible Building Materials and Structural Soundness

All proposed lots and roads are either within the Low FRP or outside of the floodplain entirely for which the prescriptive controls set out in WSC Moss Vale DCP (2017) do not apply.

### 5.5.3 Flood Affectation (No Adverse Impact on Adjoining Properties)

As discussed in **Section 5.2**, downstream water levels do not increase as a result of this development and are as such not considered to be detrimental. Therefore this development has no adverse impacts on adjoining properties.

### 5.5.4 Evacuation and Safe Access

All proposed lots and roads are either within the Low FRP or outside of the floodplain entirely for which the prescriptive controls set out in WSC Moss Vale DCP (2017) do not apply. In consideration of the majority of the site being outside of the floodplain and the relatively short time to peak of the catchment for critical storm events (under 2 hours) it is recommended that a stay in place strategy is adopted for this development during flood events.

### 5.5.5 Management and Design

All proposed lots and roads are either within the Low FRP or outside of the floodplain entirely for which the prescriptive controls set out in WSC Moss Vale DCP (2017) do not apply.

# 6 Stormwater Management Strategy

## 6.1 Overview

Stormwater generated within the proposed development site and collected upstream will be managed through drainage infrastructure, adequately sized to capture and convey both the minor and major storm events. OSD and WSUD assets will be included as part of the stormwater management system to ensure flows from the subject site are restricted to pre-development rates and improve the water quality leaving the site, compared to the pre-development site. Four main stormwater discharge points have been considered for the proposed development as follows:

- Whites Creek (Discharge A)
- South side of the golf course (Discharge B)
- East side of the golf course (Discharge C)
- Eastern boundary into Kellys Creek (Discharge F)

The following design criteria was considered when developing the stormwater management strategy:

- Providing OSD to restrict the 100 year ARI event flow rates from the subject site to at or below pre-development flow rates.
- Including WSUD assets, designed to meet NorBE 10% improvement to TSS, TP and TN loads when compared with pre-existing levels. Concentration curves (flow based sub-sample) for TP and TN in the proposed scenario must be below existing, between the 55th and 98th percentiles.
- Minor stormwater drainage to be designed for the 5 year ARI event in accordance with Chapter D5 (Stormwater Drainage Design) of the WSC Development Design Specifications.
- Major stormwater drainage to be safe during the 100 year ARI event in accordance with Chapter D5 (Stormwater Drainage Design) of the WSC Development Design Specifications.

Preliminary design levels for the proposed stormwater management system have been estimated using QGIS, AutoCAD and 12D software and are based on the surveyed level of discharge points and preliminary bulk earthworks design for the subdivision. These levels will be updated at DA concept design and CC detailed design stages.

Significant collaboration between Arterra and Cardno was undertaken with the aim of making all stormwater management assets integrate well with public space and perform a useful function for recreation as well as water management. Refer to landscape plans for further details on proposed planting locations and other landscaping details.

OSD basins were oversized in order to reduce the flood peak flow discharging off the site to below existing levels. It is understood that flooding is a significant concern within the Moss Vale Township. The oversized OSD basins were therefore included as a way of attempting to improve the flooding situation in Moss Vale downstream. This has the potential to be optimised at later design stages when the proposed roads and bulk earthworks have been designed in detail and development constraints are better understood.

The following sections of the report provide details of the concept modelling and design of the stormwater management systems for the proposed development. **Section 7** of the report outlines the OSD modelling and concept design considerations, while **Section 8** of the report outlines the water quality modelling and concept design considerations.

Design of the on-site stormwater system (pits, pipes and overflow paths) will be conducted at later design stages as these cannot be designed until final earthworks and road levels are known. For an overview of the preliminary stormwater concept refer to **Section 6.2**.

## 6.2 Stormwater Concept Design

Stormwater on site is proposed to be directed towards the four stormwater discharge points outlined in **Section 6.1** where it will be managed in a series of integrated OSD and WSUD assets. The on-site stormwater system will consist of adequately sized pits, pipes and overflow paths conveying stormwater flows to these discharge points in both the minor and major storm events.

The minor drainage catchments are displayed in **Figure 6-1**. These catchments have been delineated using site survey and preliminary bulk earthworks designs. The minor drainage catchments are intended to be as close to the natural site catchments as possible in order to minimise earthworks requirements and meet a key design objective of showing respect for the land. It is noted however that some modifications to the landform will be necessary to make roads, lot grading and site flood immunity meet the required engineering standards. It is expected that these catchments will need to be revised later as part of more detailed design phases.

There are a significant number of upstream catchment areas that contribute to flow through the site. These catchments are proposed to be collected by vegetated boundary swales that direct flows to the on-site stormwater network. Indicative locations of these boundary swales are presented in **Figure 6-2**. These upstream catchments and boundary swales will be included in the hydrologic/hydraulic design in later stages of the project (i.e. DA concept design and CC detailed design), but will be excluded from the water quality modelling as per the recommendations in WaterNSW's Using MUSIC in Sydney's Drinking Water Catchment (2012) guidelines.

An indicative concept stormwater network plan is presented in **Figure 6-3** highlighting the location of minor drainage infrastructure. Minor drainage in this network will be designed for the 5 year ARI storm event, while overflow paths will be designed to safely convey the 100 year ARI event to designated discharge points.

Figure 6-1 Preliminary Minor Drainage Catchments

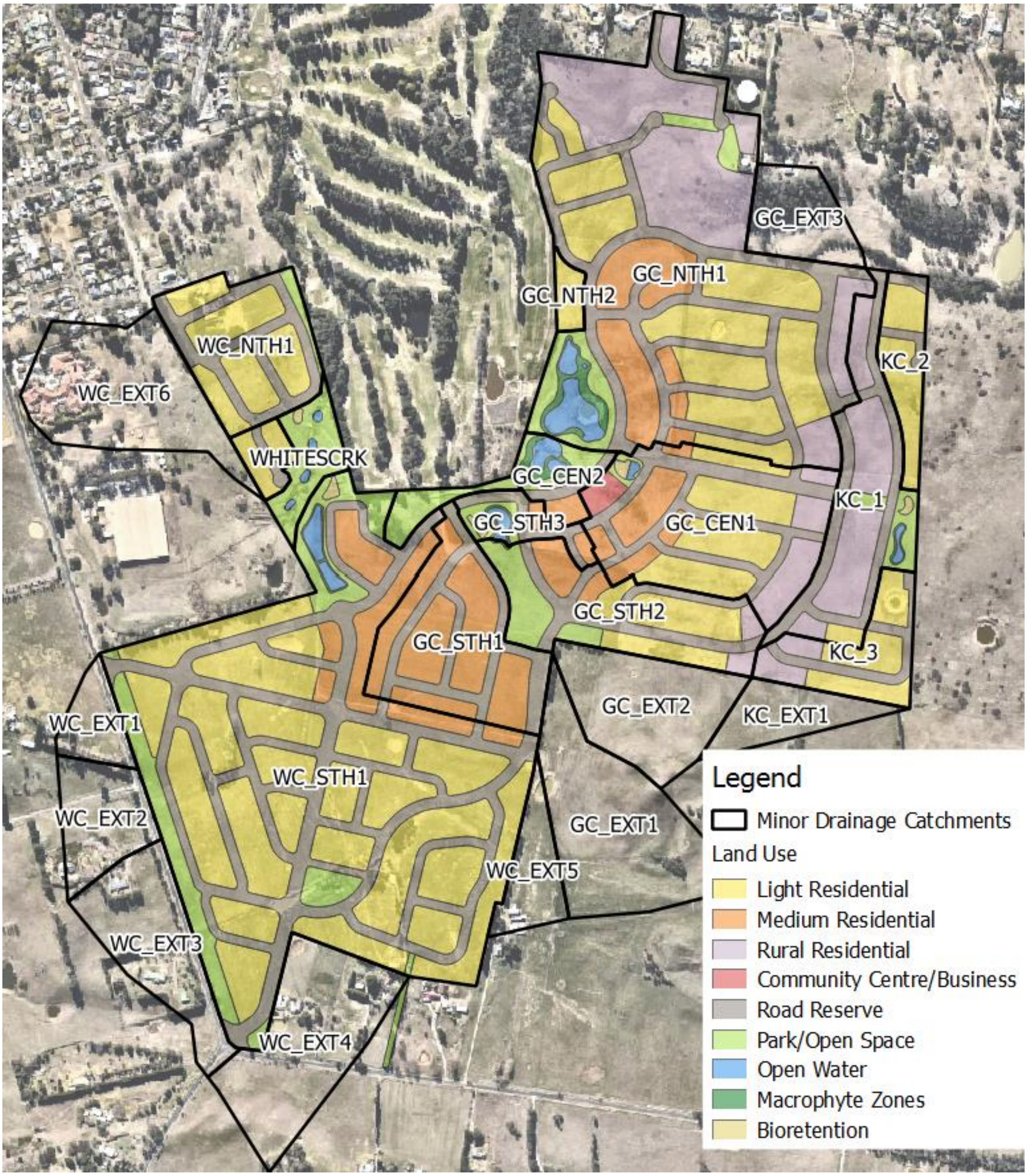


Figure 6-2 Proposed Boundary Swale Locations

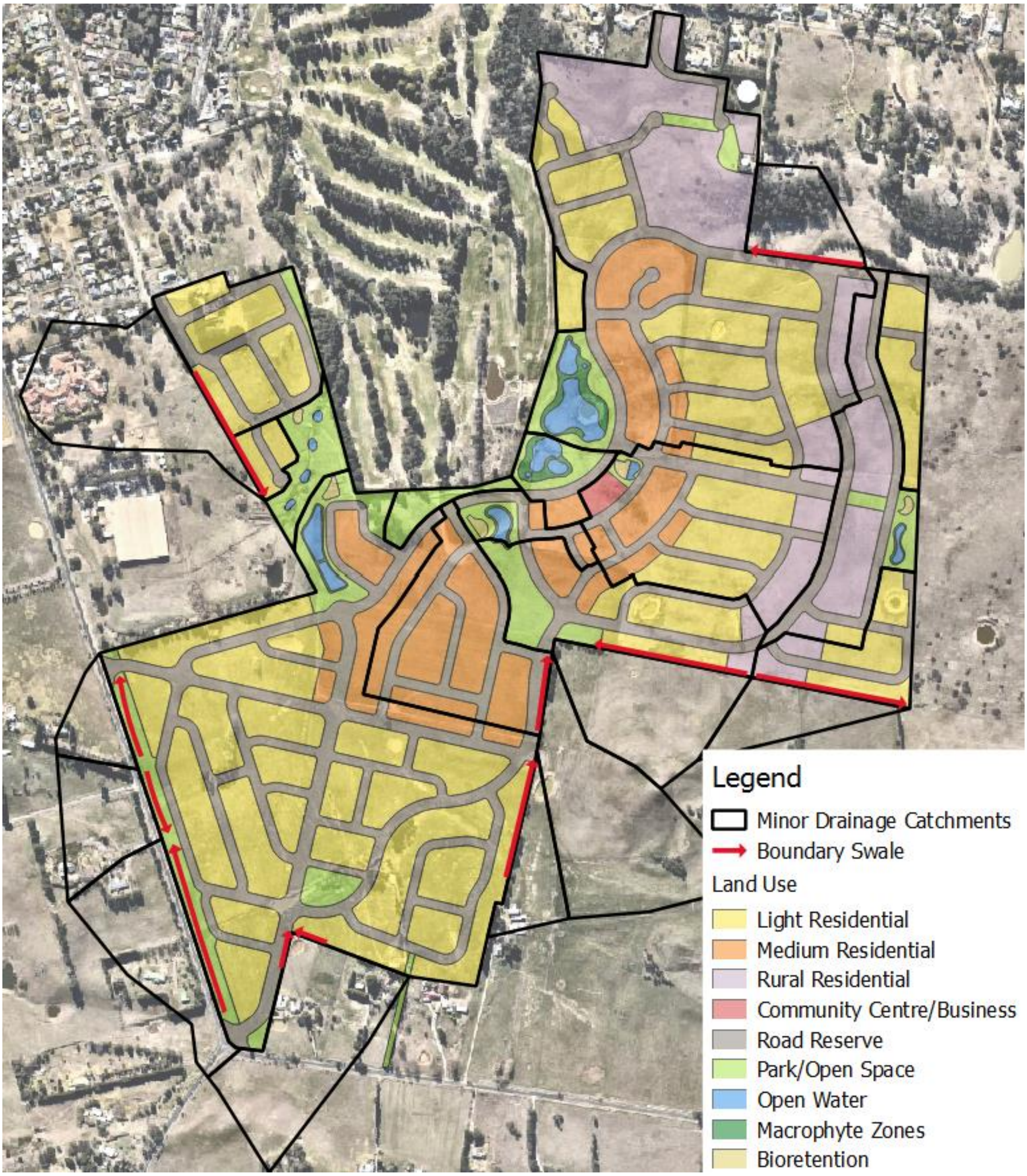
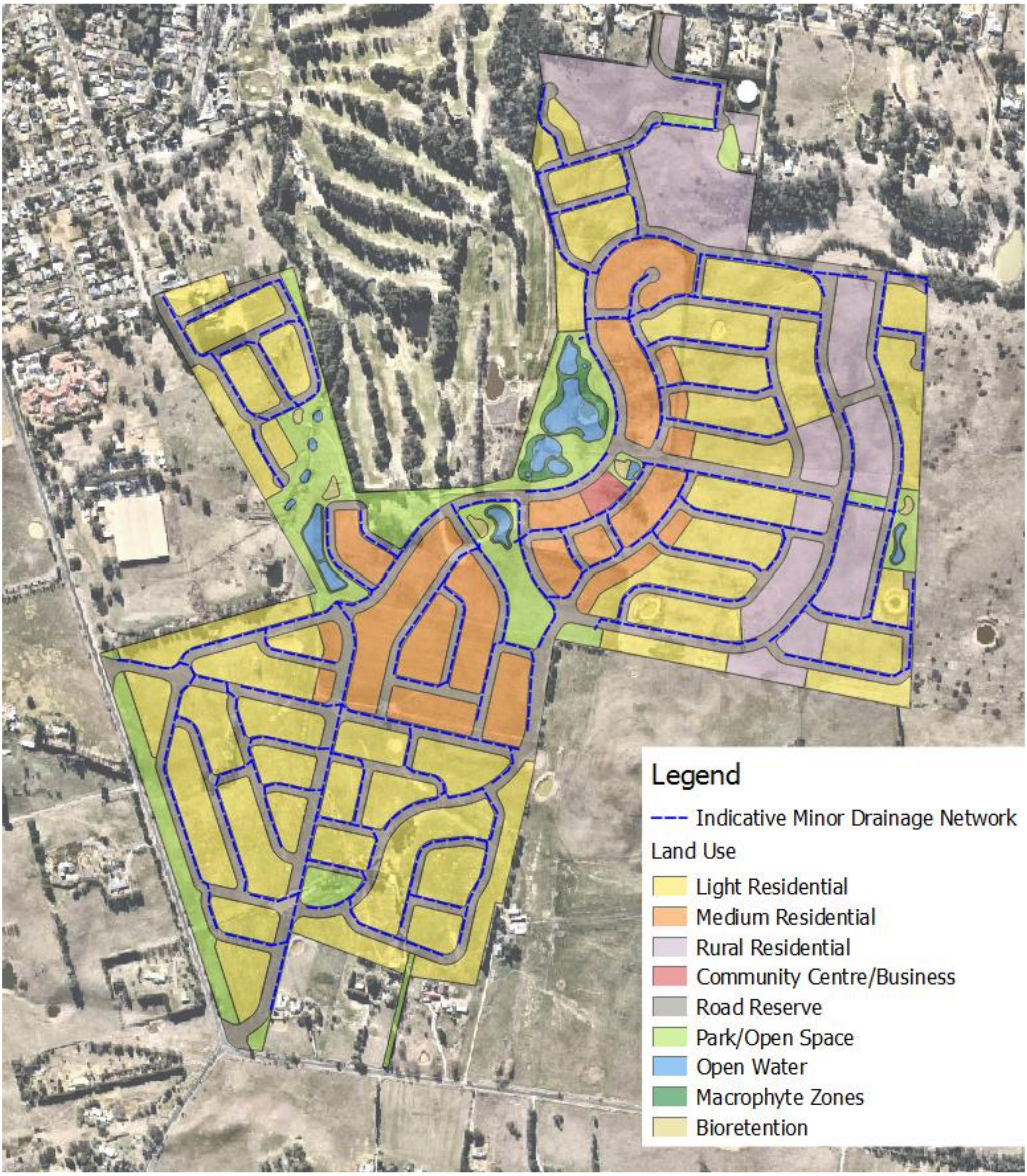


Figure 6-3 Indicative Minor Drainage Network



# 7 On-site Detention

## 7.1 On-Site Detention Strategy

A total of four large OSD basins are proposed for the development (one at each point of discharge within the network) to prevent increases in peak flow rates as a result of the increased impervious area coverage. These OSD basins will be located on top of the proposed WSUD assets to improve the efficiency of the overall stormwater management system. This strategy allows for the OSD basin to serve a dual use as flood-able parkland given that OSD is only required to be in use during rare events and for relatively short durations. Locating the OSD basin above the WSUD asset allows the OSD level to draw back down to the WSUD asset after a storm event.

OSD storage extents, locations and the associated outlet structures and discharge locations are shown as follows for each of the proposed OSD basin areas:

- Whites Creek (Discharge A) – **Figure 7-1** – OSD storage provided above landscaped open areas and WSUD assets including a proposed lake and bioretention basin.
- South side of the golf course (Discharge B) – **Figure 7-2** – OSD storage provided above landscaped open areas and WSUD assets including a proposed lake and bioretention basin.
- East side of the golf course (Discharge C) – **Figure 7-3** – OSD storage provided above landscaped open areas and WSUD assets including proposed lakes and wetland areas.
- Eastern boundary into Kellys Creek (Discharge F) – **Figure 7-4** – OSD storage provided above landscaped open areas and WSUD assets including a proposed lake.

The proposed OSD volumes were calculated with consideration of the preliminary bulk earthworks design surface for the development using 12D software.

Figure 7-1 OSD Layout at Discharge A

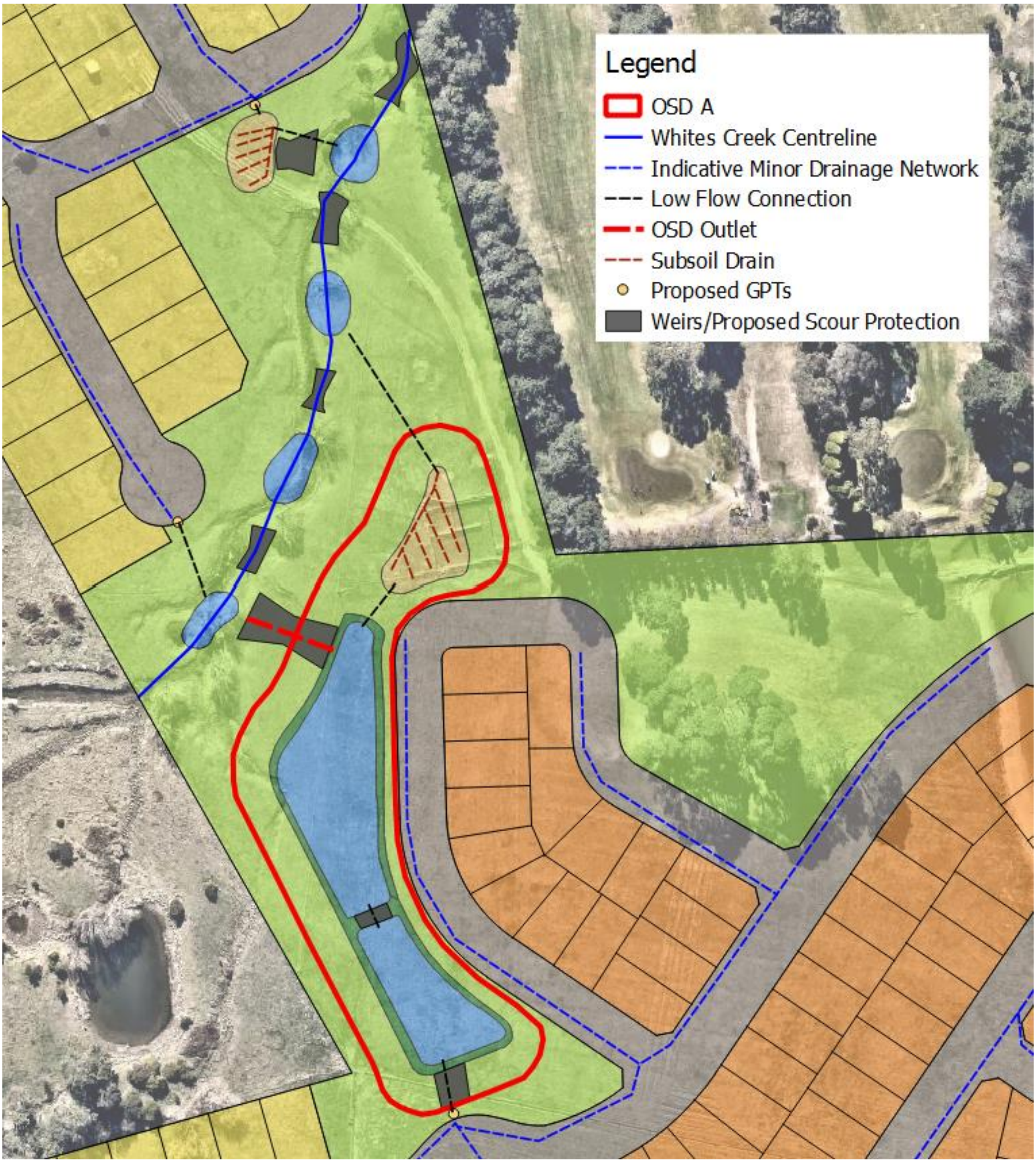


Figure 7-2 OSD Layout at Discharge B

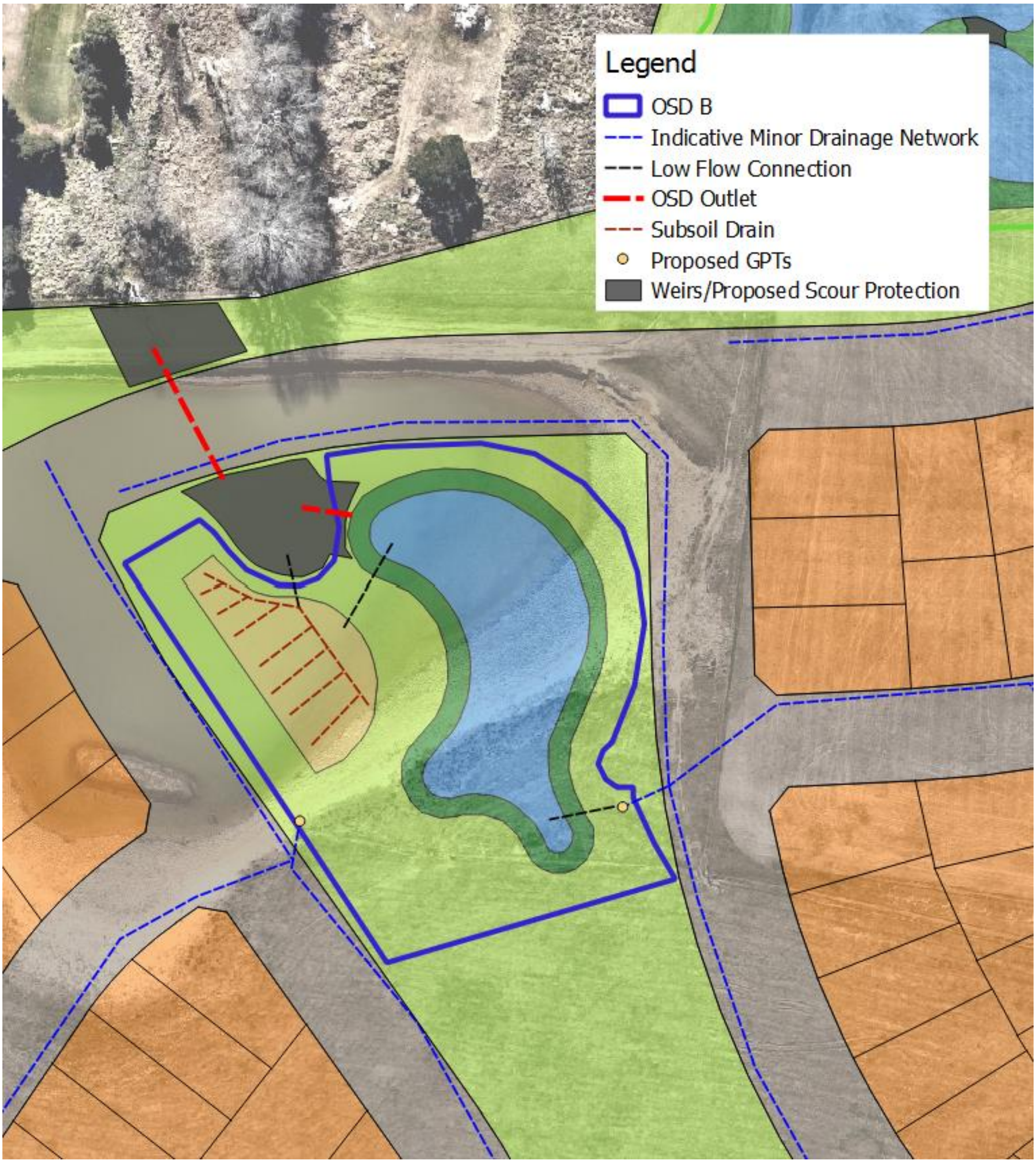


Figure 7-3 OSD Layout at Discharge C

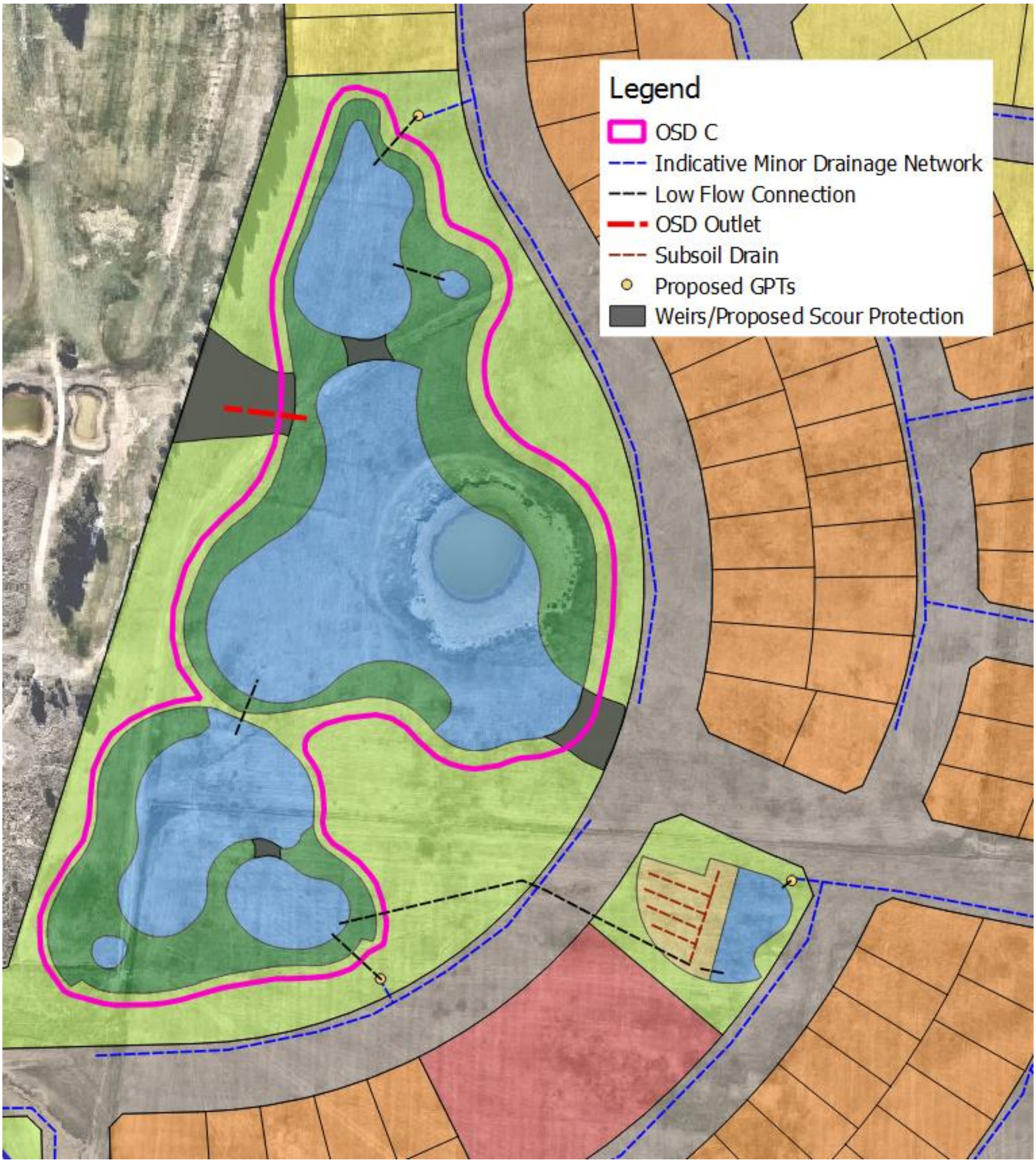


Figure 7-4 OSD Layout at Discharge F

## 7.2 Proposed Case Model-Inputs

OSD volume requirements and outlet sizing was calculated using the hydrological modelling software WBNM. This model was considered appropriate to calculate runoff peak flow rates for existing and proposed catchments and model the OSD basin to confirm required volume and outlet structures. Full hydrological model outputs for both existing and proposed scenario including setup and results are presented in **Appendix D**.

### 7.2.1 Catchments

OSD hydrological catchments were delineated from survey and preliminary site bulk earthworks. Proposed OSD catchments are presented in **Figure 7-5**.

### 7.2.2 Impervious Area

Proposed case impervious area was calculated using the design plans and with the factors applied matching the existing case model. Refer **Section 3.3.2** for further details.

### 7.2.3 Rainfall Data and Hydrological Parameters

Adopted rainfall data and hydrological parameters are identical to those adopted for the flood hydrological model and a described in detail in **Section 3.2.3** and **Section 3.2.4**. The critical duration was 90 minutes for the Kellys Creek Catchment and 120 minutes for the Whites Creek Catchment.

## 7.3 Comparison Between Existing and Proposed Scenario Peak Flow Rates

A comparison between existing scenario and proposed scenario flow rates is provided in:

- Discharge A (catchment E02) – **Table 7-1**
- Discharge B (catchment B_OUT) – **Table 7-2**
- Discharge C (catchment C01) – **Table 7-3**
- Discharge F(catchment F_OUT) – **Table 7-4**

The results demonstrate reductions in peak flow rate for the 5, 20 and 100 year ARI events.

Table 7-1 Comparison of Existing and Proposed Scenario Peak Flow Rates at Discharge A (E02) ($m^3/s$)

| Case | 5 year ARI | 20 year ARI | 100 year ARI |
|---|---|---|---|
| Existing | 9.832 | 13.937 | 18.709 |
| Proposed | 8.684 | 12.242 | 17.476 |
| Difference | -1.148 | -1.695 | -1.233 |

Table 7-2 Comparison of Existing and Proposed Scenario Peak Flow Rates at Discharge B (B_OUT) ($m^3/s$)

| Case | 5 year ARI | 20 year ARI | 100 year ARI |
|---|---|---|---|
| Existing | 3.644 | 5.097 | 6.753 |
| Proposed | 2.584 | 3.882 | 6.440 |
| Difference | -1.060 | -1.215 | -0.313 |

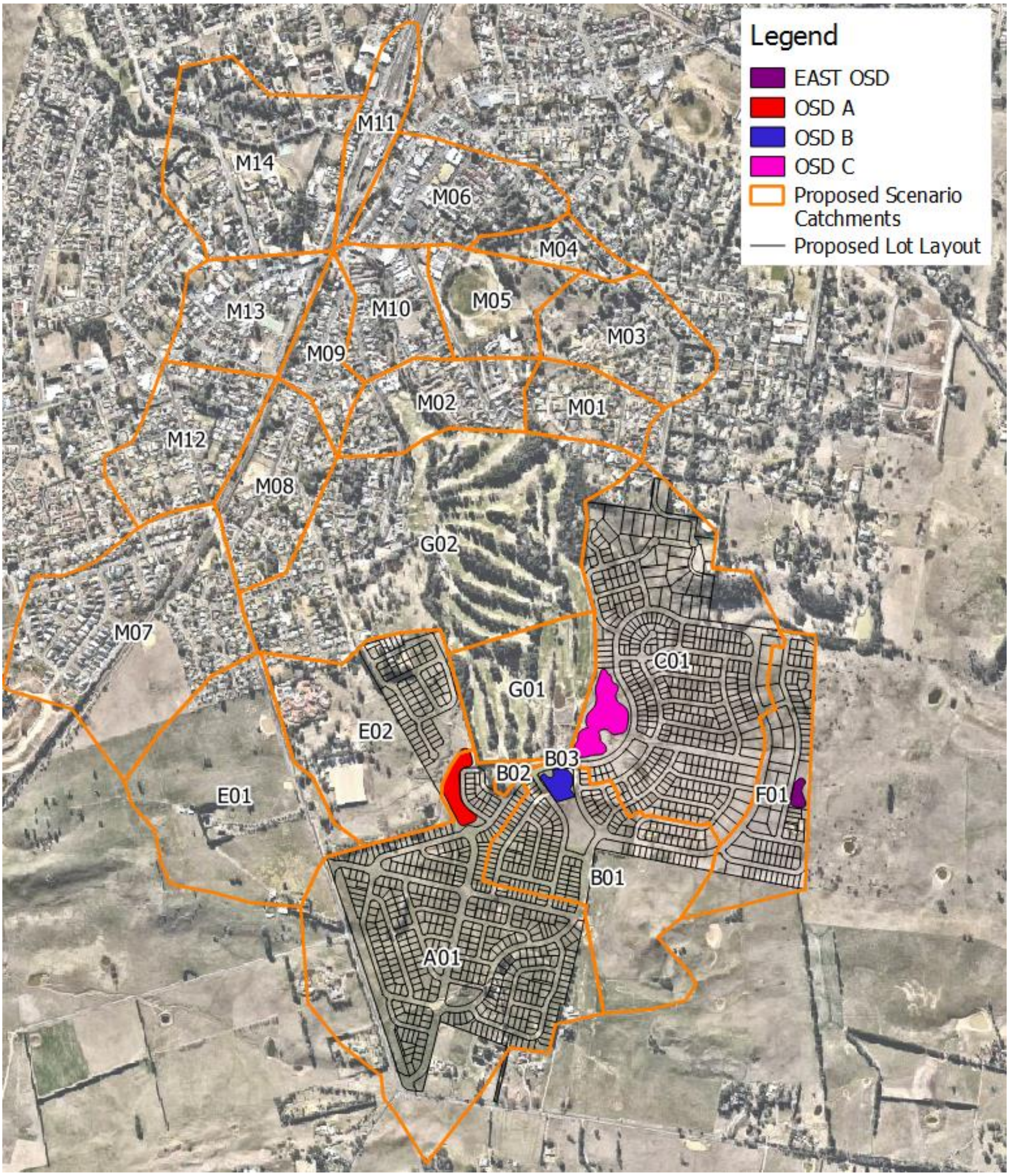
Table 7-3 Comparison of Existing and Proposed Scenario Peak Flow Rates at Discharge C (C01) ($m^3/s$)

| Case | 5 year ARI | 20 year ARI | 100 year ARI |
|---|---|---|---|
| Existing | 2.959 | 4.132 | 5.459 |
| Proposed | 0.916 | 2.442 | 4.520 |
| Difference | -2.043 | -1.690 | -0.939 |

Table 7-4 Comparison of Existing and Proposed Scenario Peak Flow Rates at Discharge F (F_OUT) ($m^3/s$)

| Case | 5 year ARI | 20 year ARI | 100 year ARI |
|---|---|---|---|
| Existing | 2.209 | 3.059 | 3.967 |
| Proposed | 1.830 | 2.765 | 3.907 |
| Difference | -0.379 | -0.294 | -0.060 |

Figure 7-5 Proposed Scenario OSD Catchments



# 8 Water Quality Management

## 8.1 Stormwater Quality Improvement Strategy

The stormwater quality strategy for the proposed development includes WSUD assets which have been adequately sized to meet NorBE improvement targets which include 10% improvement to TSS, TP and TN loads when compared with pre-existing levels. Concentration curves (flow based sub-sample) for TP and TN in the proposed scenario are required to be below existing between the 55th and 98th percentiles.

WSUD assets have been sized using the MUSIC modelling software. MUSIC modelling must be as per recommendations in WaterNSW's Using MUSIC in Sydney's Drinking Water Catchment (2012) guidelines for the proposed development.

The proposed stormwater quality strategy relies on a treatment train for each of the four discharge points that is a combination of a primary treatment (GPT, swale, inlet zone) and downstream water quality pond, wetland and/or bioretention. The preliminary concept designs for these assets have been prepared using the MUSIC model and following the recommendations in Water by Design's Wetland Technical Design Guidelines (2017) and Bioretention Technical Design Guidelines (2014). The expected function of these components is summarised in **Table 8-1**.

The proposed location and configuration of water quality assets are demonstrated within the following figures for each of the site discharge locations:

- Whites Creek (Discharge A) – **Figure 8-1** – Combination of GPT's, sedimentation (inlet) pond and bioretention basins.
- South side of the golf course (Discharge B) – **Figure 8-2** – Combination of GPT's, vegetated swales and a bioretention basin.
- East side of the golf course (Discharge C) – **Figure 8-3** – Combination of GPT's, vegetated swales, sedimentation (inlet) ponds, constructed wetlands and a bioretention basin.
- Western boundary into Kellys Creek (Discharge F) – **Figure 8-4** – Combination of GPT's, vegetated swales and a bioretention basin.

Table 8-1 Proposed Treatment Measures

| Treatment Measures | Purpose | Comment |
|---|---|---|
| Rainwater Tank | Reduction of runoff and associated pollutants | Provided for all lots to achieve BASIX targets, and form part of the treatment train in reducing runoff and associated pollutants. |
| Gross Pollutant Trap | Removal of coarse pollutants and litter | Decrease loadings of coarse particulates and improve the amenity of the bioretention basins, wetlands and ponds. |
| Vegetated Swale | Conveyance and reduction of runoff and associated pollutants | Provided to offer stormwater conveyance and treatment as an alternative to underground piped systems through the central parkland. |
| Sedimentation (Inlet) Pond | Removal of coarse to medium sized sediments. | Promotes the settlement of sediments and also reducing flow velocities, helping to protect and minimise maintenance of downstream assets. |
| Bioretention Basin | Removal of fine suspended solids and associated contaminants, as well as some soluble contaminants. | End of line component of the WSUD treatment train to reduce TSS, TN and TP loads. Consists of vegetated sand filter with a basin. |
| Constructed Wetland | Removal of fine suspended solids and associated contaminants, as well as soluble contaminants. | End of line component of WSUD treatment train to reduce TSS, TN and TP loads. |

Figure 8-1 Discharge A WSUD Layout

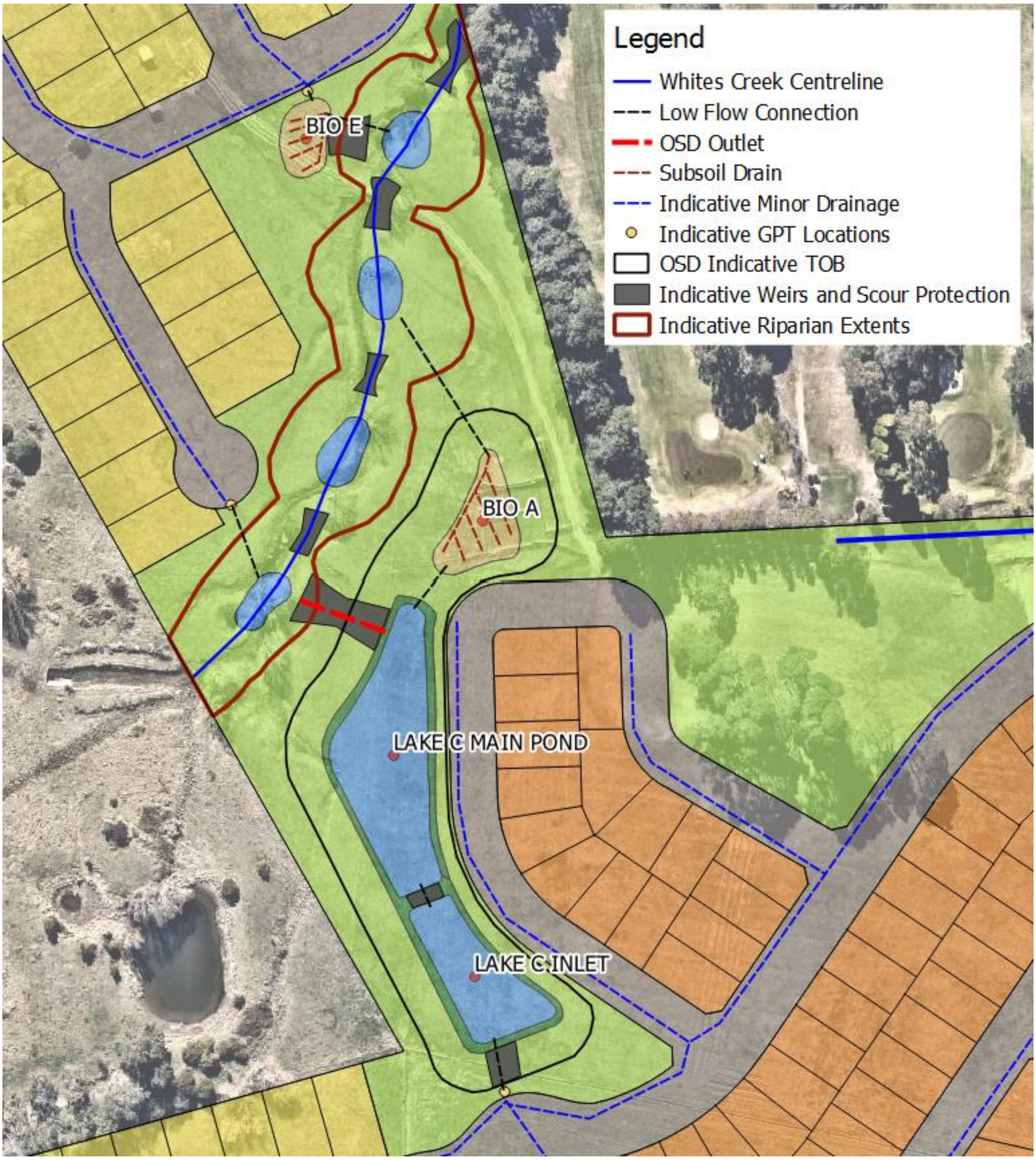


Figure 8-2 Discharge B WSUD Layout

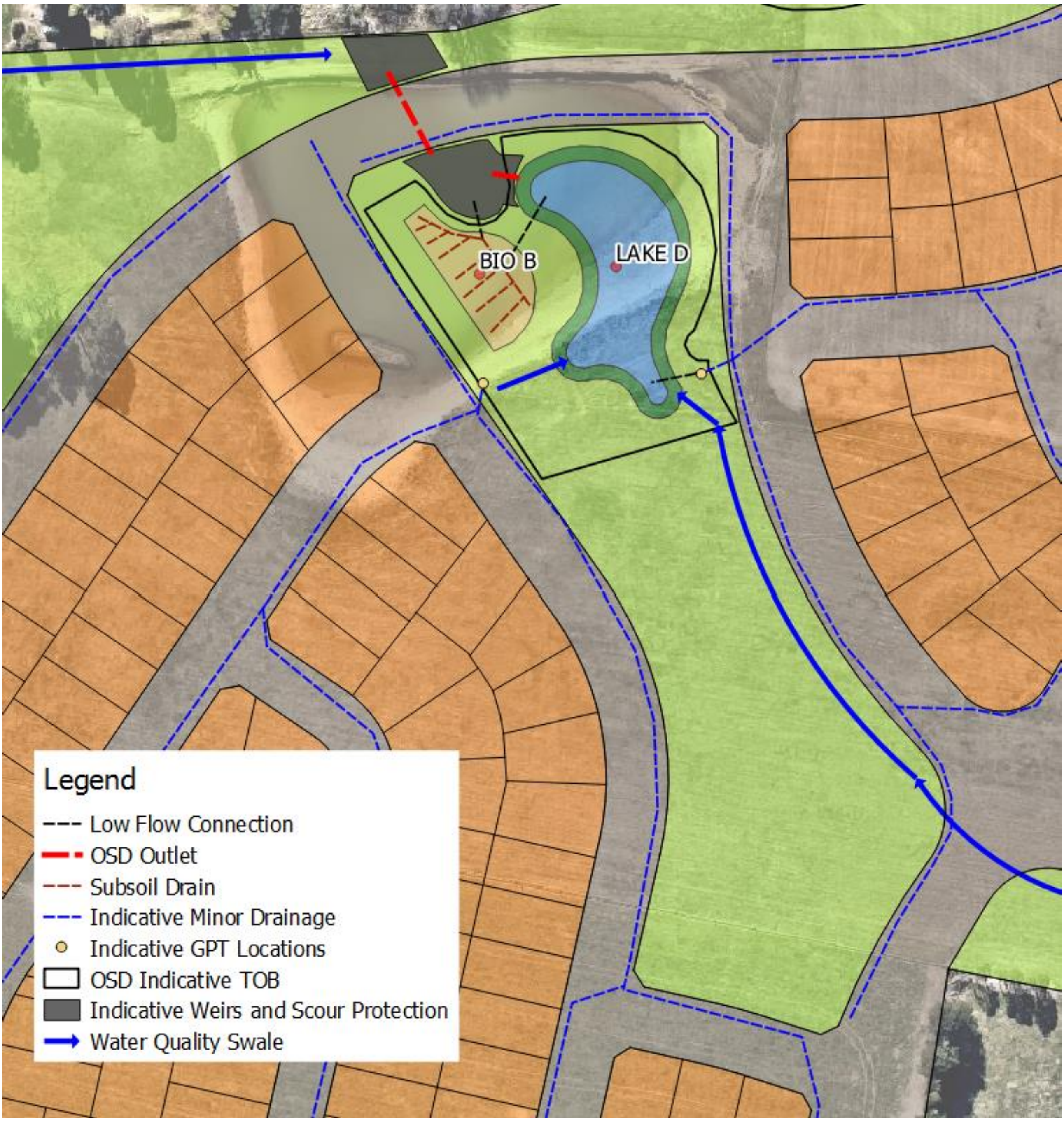


Figure 8-3 Discharge C WSUD Layout

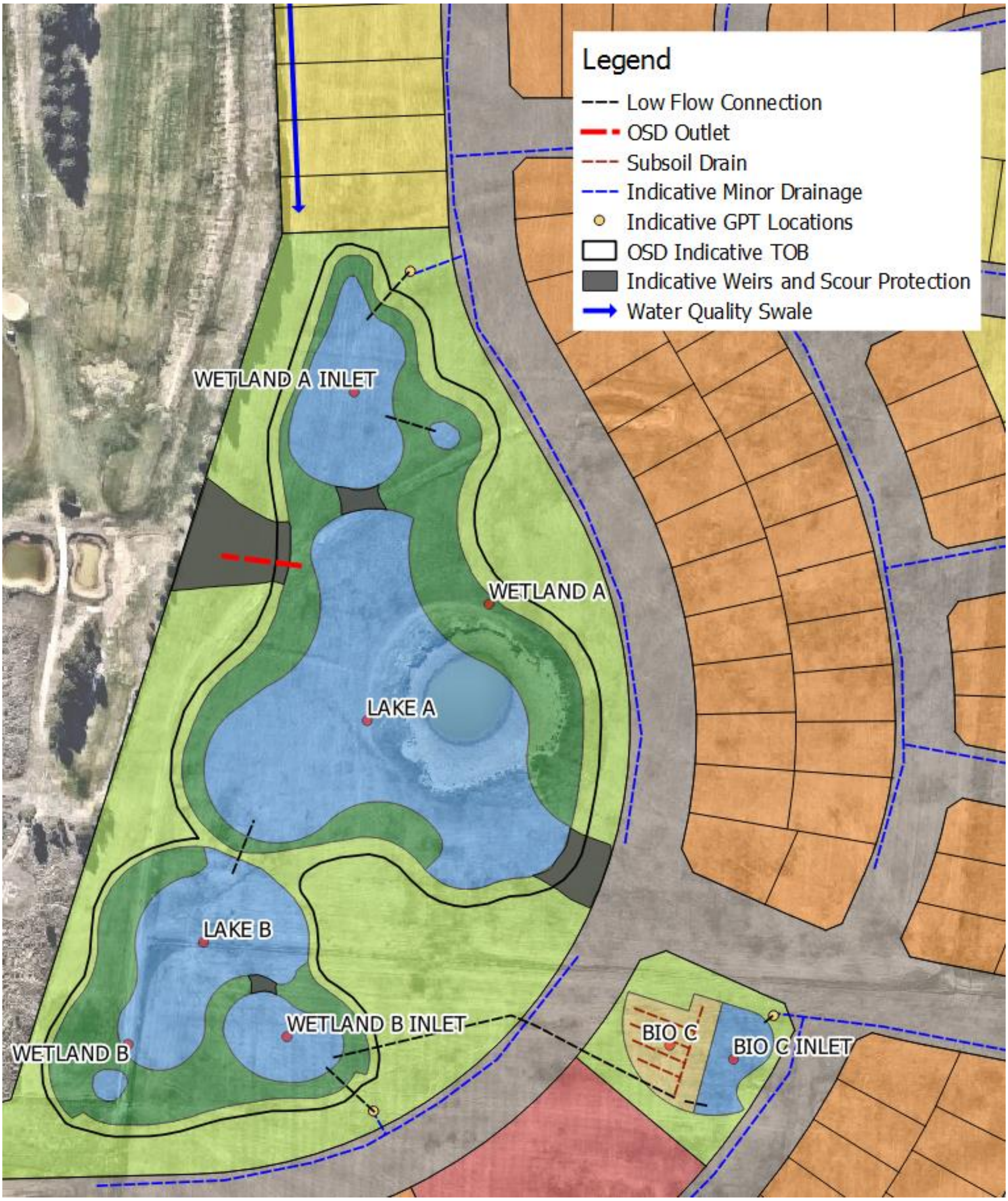
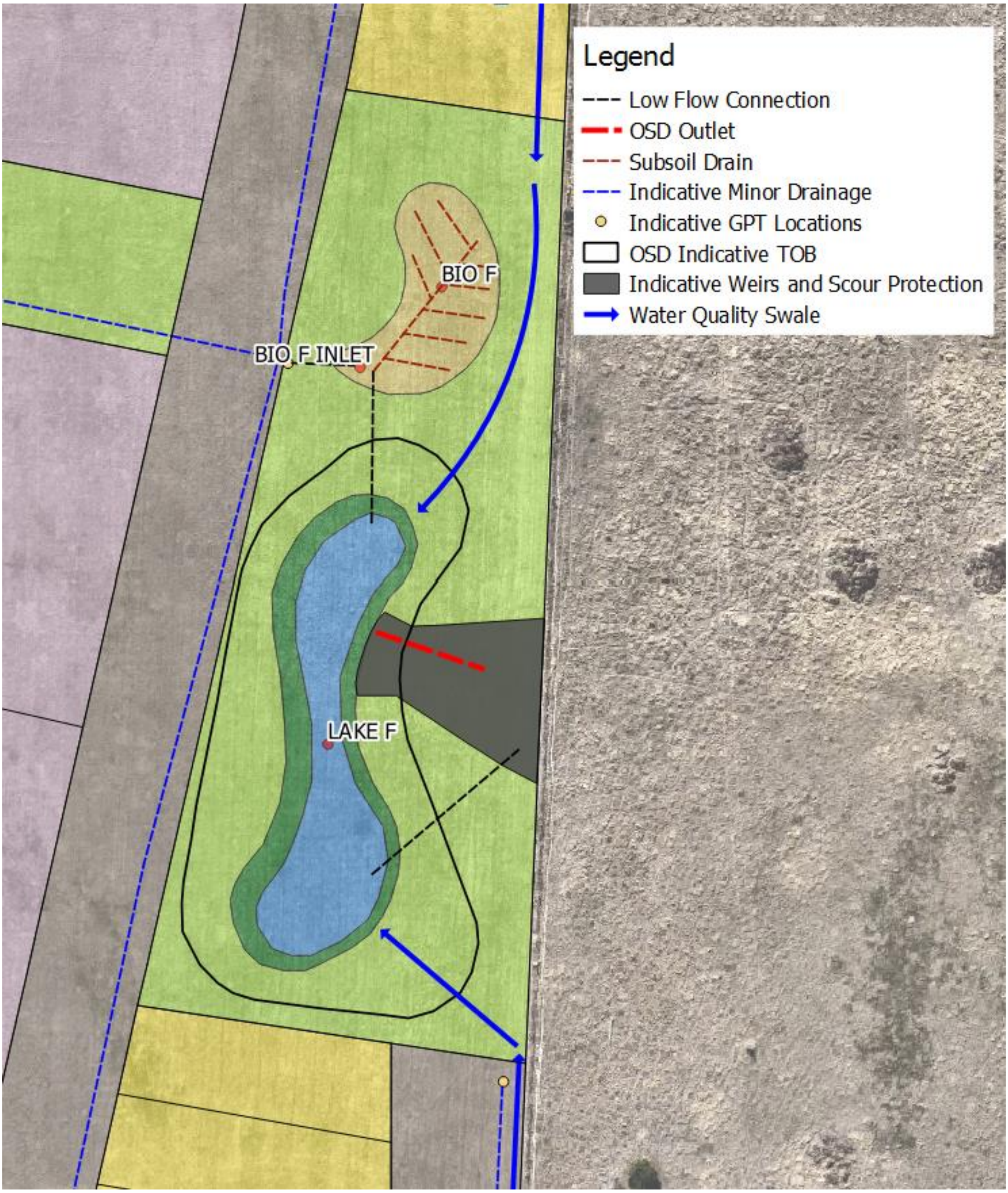


Figure 8-4 Discharge F WSUD Layout



## 8.2 Modelling Approach

The water quality software package MUSIC v6.2.0 (Model for Urban Stormwater Improvement Conceptualisation) was used to optimise the configuration of the various WSUD measures identified above and to ensure water quality objectives are met.

MUSIC was used to predict pollutant loads under the existing and proposed conditions and estimate the reduction in pollution resulting from the proposed treatment train. This estimation is based on a range of project-specific input data including daily rainfall, monthly evapotranspiration rates, and sub-catchment characteristics. The MUSIC WSUD treatment train proposed for the development area is illustrated in **Figure 8-5**.

## 8.3 Modelling Input Data and Parameters

### 8.3.1 Rainfall and Evapotranspiration

Meteorological data used in this study was provided by the Sydney Catchment Authority (SCA) in 2015 for use in Sydney's Drinking Water Catchment. Data for zone 3 was adopted as suitable for the Moss Vale area.

### 8.3.2 Catchment Delineation

Minor drainage catchments were delineated as described in **Section 6.2** (refer **Figure 6-1)**. A summary of catchment area is provided in **Table 8-2**.

### 8.3.3 Catchment Land Use Characteristics

The impervious area for each sub-catchment was assessed based on land use. Land use was defined based on concept plan for the proposed development. Total impervious area for each land use type was assumed based on the factors described in **Table 8-3**. The residential area representing lots was further divided into roof area and yard area. The roofs were assigned an area (refer **Table 8-4**), and were modelled as 100% impervious. The roof area was subtracted from the total residential urban area, with the remaining impervious area used to estimate the impervious cover of the yard area. The roof area was then split with 75% being directed to the proposed rainwater tanks and 25% bypassing the tanks accounting for the difficulty in directing 100% of roof area to above ground tanks.

A factor for effective impervious area was applied to the total impervious area as per the recommendations in the Using MUSIC in Sydney's Drinking Water Catchment (2012) guidelines. Final effective impervious area is provided in **Table 8-2**.

### 8.3.4 Stochastically Generated Pollutant Concentrations

The adopted parameters to stochastically generate pollutant concentrations in the MUSIC modelling are summarised in **Table 8-5** and have been adopted from the Using MUSIC in Sydney's Drinking Water Catchment (2012) guidelines.

### 8.3.5 Runoff Generation

Infiltration and soil moisture storage parameters are required by MUSIC in the generation of runoff volumes from the various sub-catchments (and for water seepage losses in wetlands and swales due to infiltration of water through the base material). Soil parameters were adopted from the Using MUSIC in Sydney's Drinking Water Catchment (2012) guidelines for silty clay based on the sampling conducted by Douglass Partners (refer **Section 2.2.4**).

### 8.3.6 Rainwater Tanks

Considering the NSW Government BASIX requirements, a 4,000L rainwater tank has been adopted for all allotments. A surface area of 2.4m² was adopted for each tank. The tank overflow was assumed to be 100mm diameter. Surface areas and volumes were collated into a single rainwater tank treatment node. High flow bypass was modelled as 0.005$m^3$/s multiplied by the number of tanks. Reuse rates were set to 470 L/day/lot to represent water reuse for toilet and laundry for a household of 4.

Figure 8-5 MUSIC WSUD treatment train

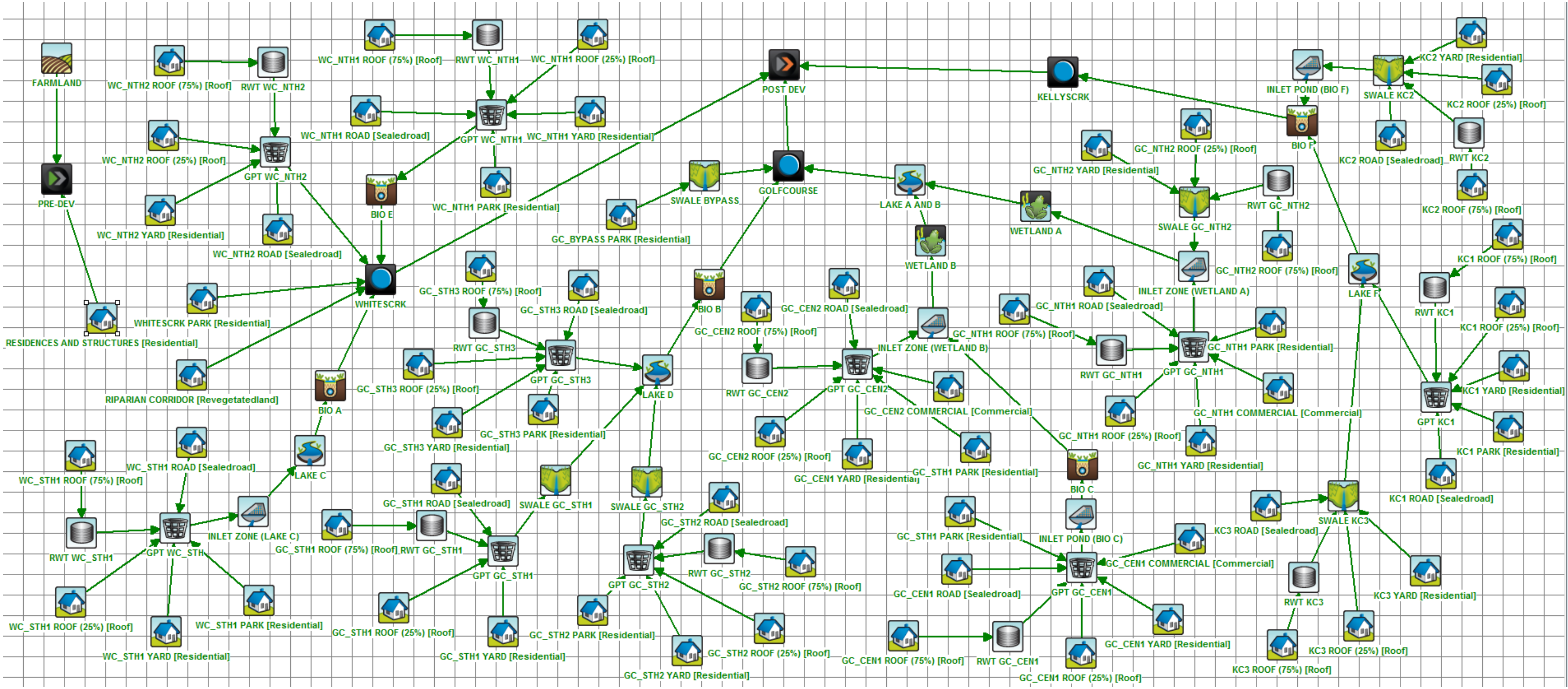


Table 8-2 MUSIC Catchment Area and Impervious Fractions

| Land Use [Music Node] | Imp % | Effective Imp % | Area (ha) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Existing | WC_STH1 | WC_NTH1 | WC_NTH2 | WHITES CRK | GC_STH1 | GC_STH2 | GC_STH3 | GC_BYPASS | GC_CEN1 | GC_CEN2 | GC_NTH1 | GC_NTH2 | KC1 | KC2 | KC3 |
| Farmland [Agricultural] | 0 | 0 | 124.37 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Road* [Sealedroad] | 65 | 65 | | 12.48 | 2.14 | 0.21 | | 2.54 | 1.82 | 0.68 | | 2.78 | 0.36 | 7.50 | | 2.46 | 0.40 | 0.88 |
| **Residential** | | | | | | | | | | | | | | | | | | |
| Medium | 80 | ** | - | 3.14 | - | - | - | 4.96 | 0.83 | 0.31 | - | 1.77 | 0.38 | 3.57 | - | - | - | - |
| *Number of lots* | - | - | - | 66 | - | - | - | 103 | 17 | 3 | - | 35 | 8 | 69 | - | - | - | - |
| Low | 60 | ** | 1.1 | 21.94 | 3.48 | 0.76 | - | - | 2.31 | - | - | 3.66 | - | 9.03 | 0.62 | 0.26 | 1.90 | 2 |
| *Number of lots* | - | - | - | 341 | 54 | 12 | - | - | 36 | - | - | 58 | - | 139 | 7 | 4 | 28 | 31 |
| Rural | 20 | ** | - | - | - | - | - | - | 0.40 | - | - | 1.59 | - | 8.90 | - | 3.51 | - | 0.68 |
| *Number of lots* | - | - | - | - | - | - | - | - | 2 | - | - | 8 | - | 33 | - | 16 | - | 3 |
| Roof (75%) [Roof] | 100 | 100 | 0.00 | 7.51 | 1.01 | 0.23 | - | 1.74 | 1.01 | 0.05 | - | 1.89 | 0.14 | 4.64 | 0.13 | 0.50 | 0.53 | 0.66 |
| Roof (25%) [Roof] | 100 | 100 | 0.00 | 2.50 | 0.34 | 0.08 | - | 0.58 | 0.34 | 0.02 | - | 0.63 | 0.05 | 1.55 | 0.04 | 0.17 | 0.18 | 0.22 |
| Yard [Residential] | Variable ** | | 1.1 | 15.07 | 2.13 | 0.46 | - | 2.64 | 2.19 | 0.24 | - | 4.50 | 0.2 | 15.32 | 0.45 | 3.11 | 1.2 | 1.8 |
| *Yard Effective Imp%* | | | 33% | 12% | 12% | 11% | - | 18% | 12% | 32% | - | 11% | 18% | 10% | 17% | 3% | 13% | 9% |
| *Number of RWTs* | | | 0*** | 407 | 54 | 12 | 0 | 103 | 55 | 3 | 0 | 101 | 8 | 241 | 7 | 20 | 28 | 34 |
| *Reuse Rate (kL/day)* | | | 0 | 156.7 | 20.8 | 4.62 | 0 | 39.7 | 21.2 | 1.2 | 0 | 38.9 | 3.1 | 92.8 | 2.7 | 7.7 | 10.8 | 13.1 |
| Commercial [Commercial] | 100 | 80 | - | - | - | - | - | - | - | - | - | 0.38 | 0.03 | 0.06 | - | - | - | - |
| Park [Residential] | 25 | 1.25 | - | 4.06 | 0.27 | - | 0.92 | - | 1.49 | 0.41 | 0.92 | 0.12 | 0.64 | 1.49 | - | 0.74 | - | - |
| Revegetated Land | 0 | 0 | - | - | - | - | 0.9 | - | - | - | - | - | - | - | - | - | - | - |
| Bioretention | | | | 0.08 | | | 0.05 | | | 0.09 | | 0.073 | | | | 0.05 | | |
| Wetland | | | | | | | | | | | | | 0.2 | 0.45 | | | | |
| Pond | | | | 0.44 | | | | | | 0.16 | | 0.05 | 0.27 | 0.81 | | 0.07 | | |
| **Total Area** | | | 125.47 | 42.14 | 5.88 | 0.97 | 1.87 | 7.50 | 6.85 | 1.65 | 0.92 | 10.42 | 1.88 | 31.81 | 0.62 | 7.09 | 2.30 | 3.56 |

*Roads have been modelled as road reserve (i.e. including shoulders and verges). Urban roads have been modelled with no baseflow as per the guidelines.

**Calculated based on lot composition

***Assumed 0 in existing

Table 8-3 MUSIC Total Impervious Area Assumptions

| Land Use | Factor |
|---|---|
| Low Density Residential (minimum lot size 600 $m^2$) | 0.6 |
| Medium Density Residential (minimum lot size 450 $m^2$) | 0.8 |
| Rural Density Residential (minimum lot size 2000 $m^2$) | 0.2 |
| Farmland | 0.05 |
| Commercial Use* | 1.0 |
| Road Reserve | 0.65 |
| Rail Reserve | 0.95 |
| Park and Open Space | 0.25 |

*Also used for areas observed to have extremely high impervious area coverage

Table 8-4 Roof Area Assumptions

| Lot Type | Roof Size ($m^2$) |
|---|---|
| Medium Residential | 225 |
| Light Residential | 250 |
| Rural Residential | 350 |

Adopted Pollutant Model Parameters (BMT WBM, 2010)

| Land Use | Flow Conditions | TSS Mean (log mg/L) | TSS SD (log mg/L) | TP Mean (log mg/L) | TP SD (log mg/L) | TN Mean (log mg/L) | TN SD (log mg/L) |
|---|---|---|---|---|---|---|---|
| Commercial | Base flow | 1.20 | 0.17 | -0.85 | 0.19 | 0.11 | 0.12 |
| | Storm flow | 2.15 | 0.32 | -0.6 | 0.25 | 0.30 | 0.19 |
| Residential (incl. Parks) | Base flow | 1.20 | 0.17 | -0.85 | 0.19 | 0.11 | 0.12 |
| | Storm flow | 2.15 | 0.32 | -0.6 | 0.25 | 0.30 | 0.19 |
| Roof | Base flow | 0 | 0 | 0 | 0 | 0 | 0 |
| | Storm flow | 1.30 | 0.32 | -0.89 | 0.25 | 0.30 | 0.19 |
| Sealed Road | Base flow | 1.20 | 0.17 | -0.85 | 0.19 | 0.11 | 0.12 |
| | Storm flow | 2.43 | 0.32 | -0.30 | 0.25 | 0.34 | 0.19 |
| Revegetation | Base flow | 1.15 | 0.17 | -1.22 | 0.19 | -0.05 | 0.12 |
| | Storm flow | 1.95 | 0.32 | -0.66 | 0.25 | 0.30 | 0.19 |
| Farmland (agricultural) | Base flow | 1.30 | 0.13 | -1.05 | 0.13 | 0.04 | 0.13 |
| | Storm flow | 2.15 | 0.31 | -0.22 | 0.30 | 0.48 | 0.26 |

Table 8-5 MUSIC Rainfall-Runoff Parameters

| Impervious Area Parameters | |
|---|---|
| Rainfall Threshold (roofs, mm) | 0.3 |
| Rainfall Threshold (road pavement, mm) | 1.5 |
| Rainfall Threshold (mixed urban surfaces, mm) | 1 |
| **Pervious Area Parameters** | |
| Soil Storage Capacity (mm) | 54 |
| Initial Storage (% of capacity) | 25 |
| Field Capacity (mm) | 51 |
| Infiltration Capacity Coefficient – a | 180 |
| Infiltration Capacity Exponent – b | 3 |
| **Groundwater Properties** | |
| Initial Depth (mm) | 10 |
| Daily Recharge Rate (%) | 25 |
| Daily Baseflow Rate (%) | 25 |
| Daily Deep Seepage Rate (%) | 0 |

### 8.3.7 GPTs

GPTs have been modelled in MUSIC using the settings recommended in the Using MUSIC in Sydney's Drinking Water Catchment (2012) guidelines (Refer **Table 8-6**). High flow bypass was calculated as 50% of the 1 year ARI storm event.

Table 8-6 GPT Performance Inputs

| Parameter | Input (mg/L) | Output (mg/L) |
|---|---|---|
| TSS | 0 | 0 |
| | 75 | 75 |
| | 1000 | 350 |
| TP | 0.00 | 0.00 |
| | 0.50 | 0.50 |
| | 1.0 | 0.85 |
| TN | 0.0 | 0.0 |
| | 0.5 | 0.5 |
| | 5.0 | 4.3 |
| GP | 0 | 0 |
| | 15 | 1.5 |

### 8.3.8 Swales

Water quality swales were modelled with length and slope estimated using survey and preliminary bulk earthworks. Channel profile was sized using the manning's calculation for a 1 year ARI flow. These profiles will be updated once detailed hydraulic design is conducted at later stages. A vegetation height of 250mm and exfiltration rate of 0 mm/hr were adopted.

### 8.3.9 Inlet Zones

Inlet zones to the proposed WSUD assets were modelled as sedimentation basins will an extended detention depth on 0.5m, a permanent pool depth of 1.5m and a detention time of around 8 hours. Adopted k and C* values were left as MUSIC defaults. The inlet zone footprints were sized using MUSIC v6's automatic sizing tool. The inlet zones were sized to remove 90% of incoming 125µm particles and store up to 10 years sediment assuming a post development sediment loading of 0.6m$^3$/ha/yr. The high flow bypass was calculated as 50% of the 1 year ARI storm event. The inlet zones are proposed to be lined to prevent interaction with groundwater.

### 8.3.10 Constructed Wetlands

Constructed wetlands were modelled with the wetland node with an extended detention depth of 0.3m and a target detention time of 72hrs. The high flow bypass was calculated as 50% of the 1 year ARI storm event. Inlet zone volume was excluded as inlet zones have been modelled separately. Adopted k and C* values were left as MUSIC defaults. The constructed wetlands are proposed to be lined to prevent interaction with groundwater.

### 8.3.11 Lakes A, B C, D and F

Lakes A, B, C, D and F were modelled with the pond node with an extended detention depth of 0.3m and a target detention time of 72hrs. The high flow bypass was calculated as 50% of the 1 year ARI storm event. Inlet zone volume was excluded as inlet zones have been modelled separately. Adopted k and C* values were left as MUSIC defaults. The lakes are proposed to be lined to prevent interaction with groundwater.

### 8.3.12 Bio-retention Basins

Bio-retention basins were modelled using the bioretention node with an extended detention depth 0.3m and a filter depth of 0.5m. The filter was modelled to have a saturated hydraulic conductivity of 180mm/hr representing a sandy loam media and was modelled with a TN content of 400mg/kg and an orthophosphate content of 40 mg/kg. The high flow bypass was calculated as 50% of the 1 year ARI storm event. The bio-retention basins are proposed to be lined to prevent interaction with groundwater.

## 8.4 Modelling Results

MUSIC modelling results are presented in Table 2-2, Table 2-3 and Table 2-4 to directly address the NorBE requirements stipulated in Section 8.1.

Table 8-7 Pollutant Load Reductions

| Pollutant | Pollutant Load for Existing Conditions – (Target), kg/yr | Resultant Pollutant Load for Proposed Conditions (Treated), kg/yr | Compliant with NorBE requirements? |
|---|---|---|---|
| TSS | 57,600 | 11,800 | Yes |
| TP | 250 | 59.4 | Yes |
| TN | 1,180 | 586 | Yes |
| GP | 114 | 18.3 | Yes |

Table 8-8 Cumulative Frequency Pollutant Concentrations (mg/L)

| Pollutant | 50th Percentile Existing Conditions (mg/L) | 98th Percentile Existing Conditions (mg/L) | 50th Percentile Proposed Conditions (mg/L) | 98th Percentile Proposed Conditions (mg/L) | Compliant with NorBE Requirements? |
|---|---|---|---|---|---|
| TP | 0.105 | 1.100 | 0.073 | 0.125 | Yes |
| TN | 1.230 | 5.3 | 0.860 | 1.3 | Yes |

In addition to **Table 8-8**, post-development pollutant concentrations (mg/L) for TP and TN are plotted against comparative cumulative frequencies (refer **Figure 8-6** and **Figure 8-7**) in accordance with NorBE requirements.

Results demonstrate that the proposed treatment train will reduce post-development pollutant loads well below the existing pollutant loads to achieve a NorBE outcome.

Figure 8-6 TP Cumulative Frequency (%) vs Pollutant Concentration (mg/L)

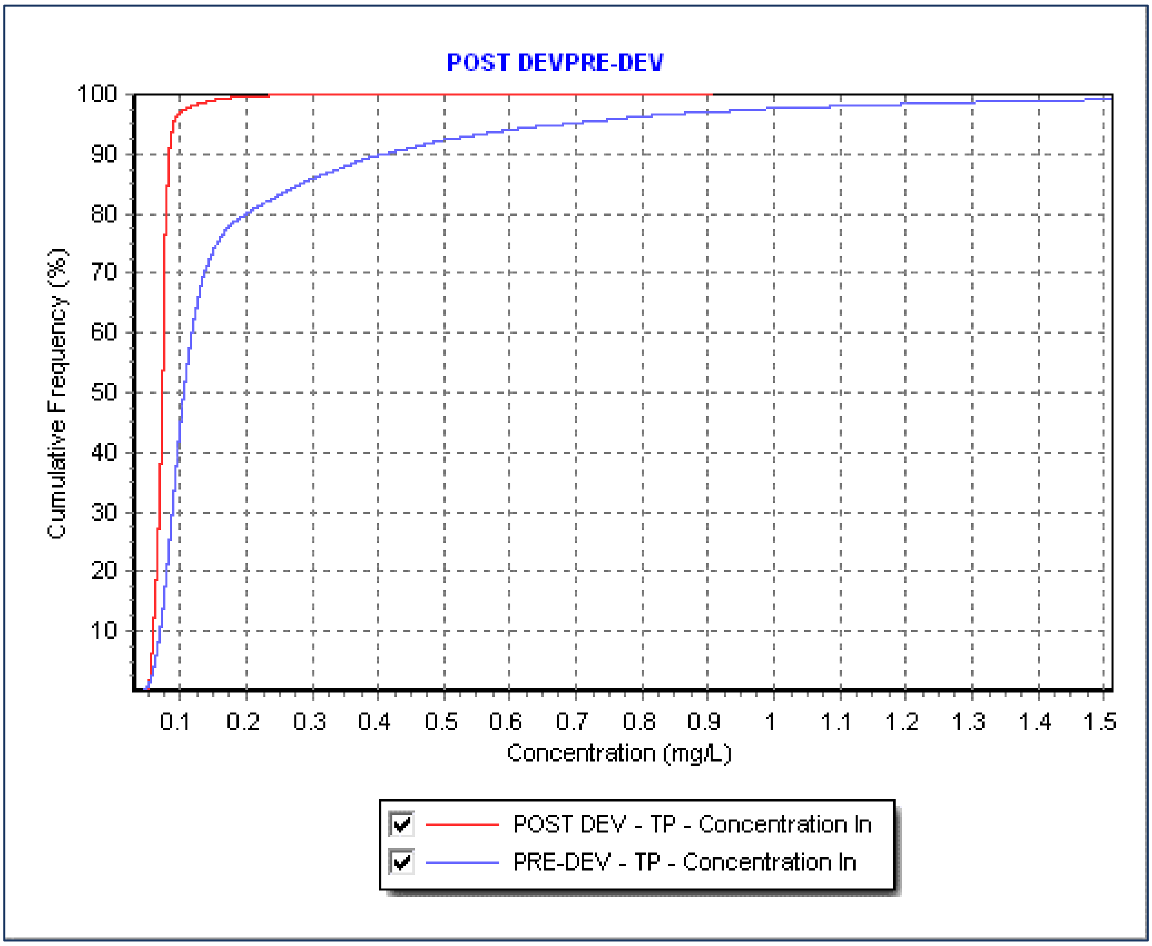
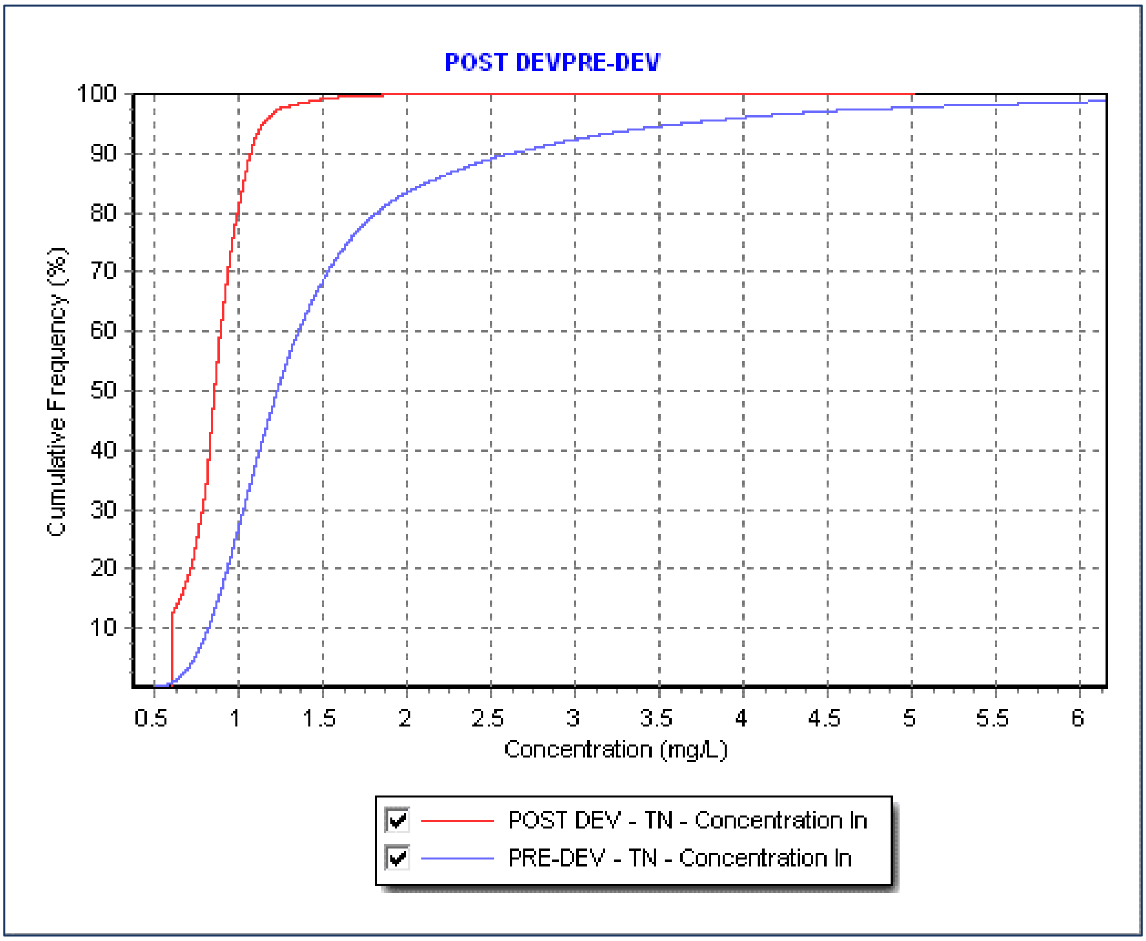


Figure 8-7 TN Cumulative Frequency (%) vs Pollutant Concentration (mg/L)



# 9 Conclusions and Recommendations

The following can be concluded from the preparation of the Water Cycle Management Study for the proposed development:

- Only a small portion of the subject site is inundated with floodwaters in both the existing and proposed scenarios in events up to and including the 100 year ARI event. The majority of floodwaters are contained within the Whites Creek floodplain.
- Existing buildings within Moss Vale, downstream of the subject site were found to fall within both the 10 year ARI and 100 year ARI flood extents for the existing scenario.
- The proposed pool and riffle system within Whites Creek is capable of containing all floodwaters within the subject site in storm events up to and including the 100 year ARI event.
- The extent of sheet flows over the golf course site downstream of the proposed development has been reduced in the 100 year ARI event when compared to the existing scenario.
- The stormwater management measures for the proposed development were found to improve flooding within the Moss Vale Township, downstream of the subject site when compared to the existing scenario for both the 10 year ARI and 100 year ARI events. These improvements include:
  - Mack Street now considered flood free in the 10 year ARI event.
  - Mack Street 100 year ARI trafficability now downgraded from Category H4 (unsafe for all people and vehicles) to Category H2 (unsafe for small vehicles).
  - Reduction in flood level and hazard extents along Argyle Street.
- There is no net increase in flood hazard extent as a result of the proposed development on the subject site.
- Downstream there will be a reduction in the high hazard extents within the Moss Vale Township, particularly along Lackey Road and at the intersection of Argyle Street and Railway Street when compared to the existing scenario.
- The proposed development will not increase risk to life and property.
- The proposed development has no adverse impacts on adjoining properties.
- All proposed lots and roads are either within the Low FRP or outside of the floodplain entirely for which the prescriptive controls set out in WSC Moss Vale DCP (2017) do not apply.
- It is recommended that a stay in place strategy is adopted for this development during flood events due to the majority of the site being outside of the floodplain and the relatively short time to peak of the catchment for critical storm events.
- Four main stormwater discharge points have been considered for the proposed development, discharging flows to the following locations:
  - Whites Creek
  - South side of the golf course
  - East side of the golf course
  - Eastern boundary into Kellys Creek
- OSD is required for the proposed development and will be provided in the form of four large OSD basins. These OSD basins will be located on top of the proposed WSUD assets to improve the efficiency of the overall stormwater management system.
- The provision of stormwater quality assets including RWTs, GPTs, vegetated swales, sedimentation (inlet) ponds, bioretention basins and constructed wetlands will ensure the NorBE improvement targets to TSS, TP and TN loads are acheived. Concentration curves for TP and TN in the proposed scenario were determined to be below existing between the 55th and 98th percentiles.

It is recommended that this report is submitted to Council in support of the proposed Moss Vale Project Masterplan and subsequent Development Applications.

# APPENDIX

# A

## HYDROLOGICAL MODEL

# 2. Catchment Details

Steps 2.1 to 2.4: Enter Data for each Subarea in the Model, including Topology, Surface and Flowpath Blocks and Loss Details

**Catchment Statistics**

| | |
|---|---|
| Total Area [ha] | 483.2 |
| Total Impervious Percent [%] | 37.6 |
| No. of Subareas | 24 |
| No. of Subareas with WC Factor | 24 |

2.1 **Catchment Details** — Routing Options | Sort Subareas | Import Mid/Mif

2.2 **Lag Parameters** — Populate — 1.6 | 0.1

2.3 **Flowpaths** — Populate — R | 1

2.4 **Rainfall Losses** — Continuing Loss Rate | Populate — 0 | 2.5 | 0 | 0

| Subarea Name | D/S Subarea | Area | CG Coords (MGA) | | Outlet Coords (MGA) | | Imp Fraction | C | Imp Lag | Type | Value | IL | CLR | Imp IL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ha | E | N | E | N | % | | | | | mm | mm/hr | mm |
| A01 | E02 | 55.8741 | 0 | 0 | 0 | 0 | 16.03 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| B01 | G01 | 32.9785 | 0 | 0 | 0 | 0 | 4.99 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| C01 | G01 | 37.1371 | 0 | 0 | 0 | 0 | 4.92 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| D01 | G02 | 11.6093 | 0 | 0 | 0 | 0 | 12.48 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| E01 | E02 | 31.3525 | 0 | 0 | 0 | 0 | 23.66 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| E02 | G01 | 31.0162 | 0 | 0 | 0 | 0 | 26.94 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| F01 | F_OUT | 13.5182 | 0 | 0 | 0 | 0 | 5 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| F02 | F_OUT | 1.2989 | 0 | 0 | 0 | 0 | 4.14 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| G01 | G02 | 15.0163 | 0 | 0 | 0 | 0 | 24.92 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| G02 | M02 | 55.997 | 0 | 0 | 0 | 0 | 40.61 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M01 | M02 | 8.0763 | 0 | 0 | 0 | 0 | 65.8 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M02 | M10 | 12.655 | 0 | 0 | 0 | 0 | 60.07 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M03 | M05 | 14.338 | 0 | 0 | 0 | 0 | 59.23 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M04 | M05 | 4.627 | 0 | 0 | 0 | 0 | 60.35 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M05 | M10 | 10.7737 | 0 | 0 | 0 | 0 | 53.13 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M06 | M10 | 15.7654 | 0 | 0 | 0 | 0 | 80.98 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M07 | M08 | 36.0991 | 0 | 0 | 0 | 0 | 50.79 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M08 | M09 | 13.958 | 0 | 0 | 0 | 0 | 68.17 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M09 | M14 | 7.5324 | 0 | 0 | 0 | 0 | 72.07 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M10 | M14 | 10.3045 | 0 | 0 | 0 | 0 | 59.68 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M11 | M14 | 7.4559 | 0 | 0 | 0 | 0 | 79.69 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M12 | M13 | 15.3554 | 0 | 0 | 0 | 0 | 63.28 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M13 | M14 | 13.2062 | 0 | 0 | 0 | 0 | 80.99 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M14 | SINK | 27.2516 | 0 | 0 | 0 | 0 | 59.94 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |

## 4. Rainfall & Storm Data

Steps 4.1 to 4.4: Enter Data for each Storm in the Model (recorded, design and embedded design) and recorded/imported hydrographs

**Rainfall & Storm Statistics**

| | |
|---|---|
| No. of Gauges | 1 |
| No. Design Storms | 8 |
| No. Recorded Storms | 0 |
| No. of Imported Hydrographs | 0 |

Populate

### 4.1 Rainfall Data

Select Location of IFD Data

External IFD File  Browse...

**Location:**

Internal Database (see IFD Sheet)  Refresh

Go C601

Select Rainfall Gauges  **HINT**

| Gauge | Gauge Name |
|---|---|
| 1 | MOSSVALE |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |

Set Areal Reduction Factor for Design Storms

AUTO Generate based on Storm Duration and Catchment Area

Default 1.00 for Small Catchments (less than 1 km2)

User Defined

### 4.2 Storm Data - Design

| | Design Burst | | Design Envelope | | Calc. Step | Out Step |
|---|---|---|---|---|---|---|
| **DES** Storm No. | **ARI** | **Duration** | **ARI** | **Duration** | mins | mins |
| 1 | 1 | 120 | | | 1 | 1 |
| 2 | 2 | 120 | | | 1 | 1 |
| 3 | 5 | 120 | | | 1 | 1 |
| 4 | 10 | 120 | | | 1 | 1 |
| 5 | 20 | 120 | | | 1 | 1 |
| 6 | 50 | 120 | | | 1 | 1 |
| 7 | 100 | 120 | | | 1 | 1 |
| 8 | PMF | 60 | | | 1 | 1 |
| 9 | | | | | | |
| 10 | | | | | | |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | | | | | |
| 14 | | | | | | |
| 15 | | | | | | |
| 16 | | | | | | |
| 17 | | | | | | |
| 18 | | | | | | |
| 19 | | | | | | |
| 20 | | | | | | |

### 4.3 Storm Data - Recorded

| Event Data | Date | Time | Time Step | Type | Calc. Step | Out Step |
|---|---|---|---|---|---|---|
| **REC** Event No. | | | mins | | mins | mins |
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |
| 6 | | | | | | |

**Gauge Data**

| | | | | | | |
|---|---|---|---|---|---|---|
| Event No. | | | | | | |
| Gauge Name | | | | | | |
| Gauge E | | | | | | |
| Gauge N | | | | | | |
| Raintotal [mm] | | | | | | |
| **Rain Data** | Rain 1 | Rain 2 | Rain 3 | Rain 4 | Rain 5 | Rain 6 |

Show 10 Lines

Show 50 Lines

Show 2500 Lines

GOTO Hydrographs

## 6. Results-Tables

View Results in Tabular Format

**Results for Runfile:** U:\FY18\221_Aoyuan Moss Vale Project PS\Des-An\Hydrology\WBNM\EXISTING_Meta.out

### 6.1 Results

**View Results at Location:** OUTLET Outflow | Flowrates | Volumes | Time to Peaks | Structures

| Storm No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ARI** | **1** | **2** | **5** | **10** | **20** | **50** | **100** | **PMF** | | | | | | | |
| **Duration** | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 60 | | | | | | | |
| Catchment Area | 483.2 | 483.2 | 483.2 | 483.2 | 483.2 | 483.2 | 483.2 | 483.2 | | | | | | | |
| Impervious percent (%) | 37.59 | 37.59 | 37.59 | 37.59 | 37.59 | 37.59 | 37.59 | 37.59 | | | | | | | |
| Rainfall Depth (mm) | 32.34 | 41.85 | 54.62 | 62.12 | 71.93 | 84.84 | 94.7 | 334.48 | | | | | | | |
| Excess Rainfall (mm) | 29.22 | 38.73 | 51.49 | 59 | 68.81 | 81.72 | 91.58 | 332.92 | | | | | | | |
| Runoff Depth (mm) | 23.72 | 32.11 | 43.57 | 50.38 | 59.31 | 70.94 | 80.02 | 314.37 | | | | | | | |
| Time to Rain Peak (mins) | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 10 | | | | | | | |
| **VOLUMES at Outlet [m3]** | | | | | | | | | | | | | | | |
| A01 | 14459 | 19533 | 26406 | 30464 | 35785 | 42752 | 48126 | 183279 | | | | | | | |
| B01 | 8473 | 11499 | 15594 | 18013 | 21178 | 25317 | 28515 | 108531 | | | | | | | |
| C01 | 9474 | 12862 | 17454 | 20168 | 23726 | 28367 | 31960 | 122031 | | | | | | | |
| D01 | 3172 | 4263 | 5734 | 6600 | 7733 | 9217 | 10358 | 38509 | | | | | | | |
| E01 | 8561 | 11480 | 15415 | 17736 | 20775 | 24751 | 27815 | 103704 | | | | | | | |
| E02 | 30408 | 41091 | 55576 | 64143 | 75360 | 90041 | 101393 | 387538 | | | | | | | |
| F01 | 3614 | 4881 | 6584 | 7589 | 8905 | 10629 | 11955 | 44762 | | | | | | | |
| F02 | 355 | 479 | 645 | 743 | 871 | 1038 | 1166 | 4315 | | | | | | | |
| G01 | 51160 | 69425 | 94231 | 108917 | 128156 | 153288 | 172767 | 665485 | | | | | | | |
| G02 | 65502 | 89228 | 121587 | 140788 | 166007 | 198835 | 224429 | 880827 | | | | | | | |
| M01 | 2468 | 3235 | 4266 | 4871 | 5663 | 6705 | 7502 | 26947 | | | | | | | |
| M02 | 69411 | 94683 | 129221 | 149711 | 176659 | 211701 | 239093 | 945456 | | | | | | | |
| M03 | 4319 | 5679 | 7506 | 8581 | 9986 | 11832 | 13245 | 47797 | | | | | | | |
| M04 | 1402 | 1842 | 2433 | 2780 | 3234 | 3830 | 4287 | 15433 | | | | | | | |
| M05 | 8875 | 11688 | 15471 | 17697 | 20607 | 24427 | 27356 | 99102 | | | | | | | |
| M06 | 4942 | 6440 | 8452 | 9635 | 11181 | 13215 | 14770 | 52658 | | | | | | | |
| M07 | 10569 | 13967 | 18541 | 21234 | 24752 | 29368 | 32912 | 120011 | | | | | | | |
| M08 | 14653 | 19345 | 25666 | 29391 | 34259 | 40639 | 45540 | 166339 | | | | | | | |
| M09 | 16793 | 22166 | 29416 | 33690 | 39278 | 46597 | 52225 | 191262 | | | | | | | |
| M10 | 100659 | 136159 | 184564 | 213235 | 250920 | 299980 | 338222 | 1318175 | | | | | | | |
| M11 | 2334 | 3043 | 3994 | 4554 | 5285 | 6247 | 6983 | 24902 | | | | | | | |
| M12 | 4661 | 6117 | 8075 | 9226 | 10731 | 12708 | 14222 | 51206 | | | | | | | |
| M13 | 8731 | 11433 | 15067 | 17204 | 19998 | 23669 | 26480 | 95268 | | | | | | | |
| M14 | 114600 | 155147 | 210540 | 243418 | 286584 | 342758 | 386646 | 1519035 | | | | | | | |
| **PEAK FLOWRATES [m3/s]** | | | | | | | | | | | | | | | |
| **PEAK Stream Top** | | | | | | | | | | | | | | | |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| E02 | 5.832 | 7.921 | 10.827 | 12.582 | 14.919 | 17.175 | 19.497 | 80.916 | | | | | | | |
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| G01 | 9.016 | 12.538 | 17.519 | 20.557 | 24.625 | 28.659 | 32.757 | 168.779 | | | | | | | |
| G02 | 9.461 | 13.048 | 18.132 | 21.309 | 25.595 | 30.109 | 34.489 | 190.186 | | | | | | | |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| M02 | 10.061 | 14.038 | 19.554 | 22.933 | 27.706 | 33.098 | 37.99 | 221.905 | | | | | | | |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| M05 | 2.261 | 2.976 | 3.948 | 4.525 | 5.283 | 5.927 | 6.65 | 22.609 | | | | | | | |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| M08 | 3.594 | 4.756 | 6.345 | 7.291 | 8.538 | 9.688 | 10.902 | 38.706 | | | | | | | |
| M09 | 3.854 | 5.188 | 7.04 | 8.155 | 9.635 | 11.055 | 12.518 | 51.805 | | | | | | | |
| M10 | 14.532 | 20.08 | 28.075 | 32.957 | 39.495 | 47.024 | 53.739 | 318.357 | | | | | | | |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| M13 | 1.817 | 2.388 | 3.162 | 3.62 | 4.221 | 4.766 | 5.347 | 18.141 | | | | | | | |
| M14 | 16.3 | 22.471 | 31.228 | 36.576 | 43.745 | 51.974 | 59.354 | 351.913 | | | | | | | |
| **PEAK Stream Bottom** | | | | | | | | | | | | | | | |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| E02 | 3.758 | 5.192 | 7.238 | 8.515 | 10.229 | 12.029 | 13.781 | 76.13 | | | | | | | |
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| G01 | 8.178 | 11.327 | 15.747 | 18.478 | 22.174 | 26.095 | 29.891 | 165.662 | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| G02 | 7.948 | 11.123 | 15.6 | 18.328 | 21.996 | 26.198 | 29.975 | 174.094 |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M02 | 9.739 | 13.676 | 19.217 | 22.579 | 27.057 | 32.364 | 36.978 | 218.727 |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M05 | 1.586 | 2.14 | 2.909 | 3.371 | 3.984 | 4.558 | 5.164 | 20.973 |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M08 | 2.504 | 3.4 | 4.652 | 5.407 | 6.41 | 7.368 | 8.361 | 36.849 |
| M09 | 3.267 | 4.455 | 6.118 | 7.125 | 8.47 | 9.781 | 11.109 | 51.029 |
| M10 | 14.13 | 19.652 | 27.524 | 32.336 | 38.796 | 46.232 | 52.881 | 314.142 |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M13 | 1.193 | 1.614 | 2.197 | 2.549 | 3.016 | 3.46 | 3.919 | 16.57 |
| M14 | 15.558 | 21.542 | 30.064 | 35.305 | 42.345 | 50.462 | 57.718 | 342.284 |
| **PEAK Local Perv** | | | | | | | | |
| A01 | 2.223 | 3.1 | 4.333 | 5.083 | 6.104 | 7.134 | 8.173 | 41.068 |
| B01 | 1.667 | 2.326 | 3.261 | 3.831 | 4.593 | 5.352 | 6.122 | 28.852 |
| C01 | 1.817 | 2.526 | 3.546 | 4.168 | 5.002 | 5.833 | 6.675 | 32.07 |
| D01 | 0.748 | 1.033 | 1.43 | 1.67 | 1.989 | 2.296 | 2.612 | 10.541 |
| E01 | 1.383 | 1.926 | 2.692 | 3.159 | 3.783 | 4.398 | 5.025 | 22.832 |
| E02 | 1.332 | 1.855 | 2.591 | 3.039 | 3.638 | 4.228 | 4.829 | 21.783 |
| F01 | 0.889 | 1.23 | 1.707 | 1.996 | 2.382 | 2.755 | 3.138 | 13.077 |
| F02 | 0.139 | 0.187 | 0.252 | 0.291 | 0.342 | 0.388 | 0.437 | 1.53 |
| G01 | 0.808 | 1.117 | 1.548 | 1.809 | 2.156 | 2.491 | 2.836 | 11.601 |
| G02 | 1.74 | 2.424 | 3.4 | 3.996 | 4.793 | 5.588 | 6.393 | 30.421 |
| M01 | 0.272 | 0.369 | 0.503 | 0.583 | 0.688 | 0.785 | 0.887 | 3.216 |
| M02 | 0.44 | 0.602 | 0.827 | 0.961 | 1.139 | 1.307 | 1.482 | 5.607 |
| M03 | 0.494 | 0.676 | 0.93 | 1.082 | 1.285 | 1.475 | 1.674 | 6.4 |
| M04 | 0.194 | 0.261 | 0.354 | 0.409 | 0.482 | 0.548 | 0.618 | 2.189 |
| M05 | 0.441 | 0.603 | 0.827 | 0.962 | 1.14 | 1.308 | 1.483 | 5.611 |
| M06 | 0.291 | 0.395 | 0.538 | 0.624 | 0.737 | 0.842 | 0.952 | 3.47 |
| M07 | 1.122 | 1.558 | 2.17 | 2.542 | 3.039 | 3.525 | 4.022 | 17.541 |
| M08 | 0.398 | 0.544 | 0.745 | 0.865 | 1.025 | 1.174 | 1.33 | 4.988 |
| M09 | 0.217 | 0.294 | 0.399 | 0.461 | 0.543 | 0.619 | 0.699 | 2.482 |
| M10 | 0.378 | 0.515 | 0.705 | 0.819 | 0.97 | 1.11 | 1.258 | 4.694 |
| M11 | 0.165 | 0.222 | 0.3 | 0.346 | 0.407 | 0.462 | 0.521 | 1.836 |
| M12 | 0.479 | 0.657 | 0.903 | 1.05 | 1.246 | 1.431 | 1.623 | 6.19 |
| M13 | 0.251 | 0.341 | 0.464 | 0.537 | 0.634 | 0.722 | 0.816 | 2.938 |
| M14 | 0.79 | 1.091 | 1.512 | 1.766 | 2.105 | 2.431 | 2.767 | 11.268 |
| **PEAK Local Imp** | | | | | | | | |
| A01 | 1.294 | 1.674 | 2.185 | 2.485 | 2.878 | 3.181 | 3.551 | 11.306 |
| B01 | 0.27 | 0.35 | 0.457 | 0.519 | 0.601 | 0.662 | 0.739 | 2.137 |
| C01 | 0.296 | 0.384 | 0.501 | 0.569 | 0.659 | 0.726 | 0.81 | 2.357 |
| D01 | 0.24 | 0.31 | 0.405 | 0.461 | 0.534 | 0.587 | 0.655 | 1.882 |
| E01 | 1.092 | 1.413 | 1.844 | 2.097 | 2.428 | 2.683 | 2.995 | 9.441 |
| E02 | 1.214 | 1.571 | 2.051 | 2.333 | 2.701 | 2.985 | 3.332 | 10.571 |
| F01 | 0.117 | 0.151 | 0.198 | 0.225 | 0.26 | 0.286 | 0.319 | 0.879 |
| F02 | 0.01 | 0.013 | 0.017 | 0.019 | 0.023 | 0.025 | 0.028 | 0.072 |
| G01 | 0.579 | 0.749 | 0.978 | 1.112 | 1.288 | 1.42 | 1.585 | 4.81 |
| G02 | 3.038 | 3.931 | 5.13 | 5.835 | 6.757 | 7.574 | 8.455 | 27.82 |
| M01 | 0.802 | 1.037 | 1.354 | 1.54 | 1.783 | 1.968 | 2.197 | 6.798 |
| M02 | 1.115 | 1.443 | 1.884 | 2.142 | 2.481 | 2.741 | 3.06 | 9.658 |
| M03 | 1.234 | 1.596 | 2.083 | 2.37 | 2.744 | 3.033 | 3.385 | 10.75 |
| M04 | 0.442 | 0.572 | 0.747 | 0.849 | 0.983 | 1.083 | 1.209 | 3.607 |
| M05 | 0.858 | 1.11 | 1.449 | 1.648 | 1.908 | 2.107 | 2.352 | 7.309 |
| M06 | 1.794 | 2.322 | 3.03 | 3.446 | 3.991 | 4.416 | 4.929 | 15.981 |
| M07 | 2.497 | 3.231 | 4.217 | 4.796 | 5.554 | 6.163 | 6.88 | 22.647 |
| M08 | 1.371 | 1.774 | 2.315 | 2.633 | 3.049 | 3.371 | 3.763 | 12.019 |
| M09 | 0.818 | 1.058 | 1.381 | 1.571 | 1.819 | 2.008 | 2.241 | 6.945 |
| M10 | 0.918 | 1.187 | 1.549 | 1.762 | 2.041 | 2.253 | 2.515 | 7.848 |
| M11 | 0.889 | 1.15 | 1.501 | 1.707 | 1.977 | 2.182 | 2.436 | 7.586 |
| M12 | 1.397 | 1.808 | 2.359 | 2.684 | 3.108 | 3.436 | 3.836 | 12.265 |
| M13 | 1.526 | 1.974 | 2.576 | 2.93 | 3.393 | 3.752 | 4.189 | 13.461 |
| M14 | 2.246 | 2.906 | 3.792 | 4.313 | 4.994 | 5.531 | 6.174 | 20.252 |
| **PEAK Directed to Btm** | | | | | | | | |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| M08 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M09 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **PEAK OUTLET Inflow** | | | | | | | | |
| A01 | 3.42 | 4.662 | 6.396 | 7.446 | 8.846 | 10.209 | 11.606 | 50.108 |
| B01 | 1.898 | 2.626 | 3.652 | 4.276 | 5.109 | 5.932 | 6.769 | 30.581 |
| C01 | 2.063 | 2.857 | 3.978 | 4.66 | 5.572 | 6.472 | 7.388 | 33.847 |
| D01 | 0.953 | 1.297 | 1.775 | 2.062 | 2.443 | 2.806 | 3.181 | 12.148 |
| E01 | 2.412 | 3.259 | 4.431 | 5.136 | 6.073 | 6.966 | 7.891 | 30.808 |
| E02 | 5.258 | 7.345 | 10.318 | 12.142 | 14.593 | 17.06 | 19.55 | 104.593 |
| F01 | 0.983 | 1.352 | 1.867 | 2.178 | 2.592 | 2.991 | 3.402 | 13.787 |
| F02 | 0.146 | 0.196 | 0.264 | 0.305 | 0.358 | 0.406 | 0.457 | 1.599 |
| G01 | 8.893 | 12.289 | 17.067 | 20.018 | 24.034 | 28.287 | 32.397 | 179.425 |
| G02 | 9.796 | 13.692 | 19.101 | 22.34 | 26.866 | 32.104 | 36.879 | 216.049 |
| M01 | 1.038 | 1.362 | 1.801 | 2.061 | 2.402 | 2.674 | 2.999 | 9.969 |
| M02 | 10.066 | 14.133 | 19.883 | 23.375 | 28.013 | 33.524 | 38.23 | 226.994 |
| M03 | 1.666 | 2.193 | 2.91 | 3.334 | 3.892 | 4.399 | 4.937 | 16.812 |
| M04 | 0.614 | 0.807 | 1.07 | 1.225 | 1.429 | 1.589 | 1.783 | 5.797 |
| M05 | 2.676 | 3.596 | 4.868 | 5.631 | 6.641 | 7.589 | 8.58 | 33.001 |
| M06 | 2.045 | 2.667 | 3.506 | 4.002 | 4.651 | 5.188 | 5.804 | 19.388 |
| M07 | 3.594 | 4.756 | 6.345 | 7.291 | 8.538 | 9.688 | 10.902 | 38.706 |
| M08 | 3.854 | 5.188 | 7.04 | 8.155 | 9.635 | 11.055 | 12.518 | 51.805 |
| M09 | 3.752 | 5.124 | 7.044 | 8.206 | 9.753 | 11.256 | 12.793 | 58.783 |
| M10 | 14.507 | 20.147 | 28.184 | 33.102 | 39.708 | 47.301 | 54.104 | 321.696 |
| M11 | 1.037 | 1.352 | 1.777 | 2.029 | 2.358 | 2.614 | 2.926 | 9.422 |
| M12 | 1.817 | 2.388 | 3.162 | 3.62 | 4.221 | 4.766 | 5.347 | 18.141 |
| M13 | 2.764 | 3.67 | 4.913 | 5.655 | 6.634 | 7.548 | 8.504 | 31.418 |
| M14 | 16.48 | 22.767 | 31.667 | 37.187 | 44.608 | 53.135 | 60.783 | 360.801 |
| **PEAK OUTLET Outflow** | | | | | | | | |
| A01 | 3.42 | 4.662 | 6.396 | 7.446 | 8.846 | 10.209 | 11.606 | 50.108 |
| B01 | 1.898 | 2.626 | 3.652 | 4.276 | 5.109 | 5.932 | 6.769 | 30.581 |
| C01 | 2.063 | 2.857 | 3.978 | 4.66 | 5.572 | 6.472 | 7.388 | 33.847 |
| D01 | 0.953 | 1.297 | 1.775 | 2.062 | 2.443 | 2.806 | 3.181 | 12.148 |
| E01 | 2.412 | 3.259 | 4.431 | 5.136 | 6.073 | 6.966 | 7.891 | 30.808 |
| E02 | 5.258 | 7.345 | 10.318 | 12.142 | 14.593 | 17.06 | 19.55 | 104.593 |
| F01 | 0.983 | 1.352 | 1.867 | 2.178 | 2.592 | 2.991 | 3.402 | 13.787 |
| F02 | 0.146 | 0.196 | 0.264 | 0.305 | 0.358 | 0.406 | 0.457 | 1.599 |
| G01 | 8.893 | 12.289 | 17.067 | 20.018 | 24.034 | 28.287 | 32.397 | 179.425 |
| G02 | 9.796 | 13.692 | 19.101 | 22.34 | 26.866 | 32.104 | 36.879 | 216.049 |
| M01 | 1.038 | 1.362 | 1.801 | 2.061 | 2.402 | 2.674 | 2.999 | 9.969 |
| M02 | 10.066 | 14.133 | 19.883 | 23.375 | 28.013 | 33.524 | 38.23 | 226.994 |
| M03 | 1.666 | 2.193 | 2.91 | 3.334 | 3.892 | 4.399 | 4.937 | 16.812 |
| M04 | 0.614 | 0.807 | 1.07 | 1.225 | 1.429 | 1.589 | 1.783 | 5.797 |
| M05 | 2.676 | 3.596 | 4.868 | 5.631 | 6.641 | 7.589 | 8.58 | 33.001 |
| M06 | 2.045 | 2.667 | 3.506 | 4.002 | 4.651 | 5.188 | 5.804 | 19.388 |
| M07 | 3.594 | 4.756 | 6.345 | 7.291 | 8.538 | 9.688 | 10.902 | 38.706 |
| M08 | 3.854 | 5.188 | 7.04 | 8.155 | 9.635 | 11.055 | 12.518 | 51.805 |
| M09 | 3.752 | 5.124 | 7.044 | 8.206 | 9.753 | 11.256 | 12.793 | 58.783 |
| M10 | 14.507 | 20.147 | 28.184 | 33.102 | 39.708 | 47.301 | 54.104 | 321.696 |
| M11 | 1.037 | 1.352 | 1.777 | 2.029 | 2.358 | 2.614 | 2.926 | 9.422 |
| M12 | 1.817 | 2.388 | 3.162 | 3.62 | 4.221 | 4.766 | 5.347 | 18.141 |
| M13 | 2.764 | 3.67 | 4.913 | 5.655 | 6.634 | 7.548 | 8.504 | 31.418 |
| M14 | 16.48 | 22.767 | 31.667 | 37.187 | 44.608 | 53.135 | 60.783 | 360.801 |
| | | | | | | | | |
| **TIME to Peaks [mins]** | | | | | | | | |
| **TIME Stream Top** | | | | | | | | |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G01 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 40 |
| G02 | 65 | 63 | 57 | 53 | 52 | 52 | 51 | 44 |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M02 | 80 | 80 | 80 | 65 | 65 | 65 | 65 | 48 |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M05 | 35 | 35 | 35 | 35 | 35 | 40 | 40 | 20 |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M08 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 |
| M09 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| M10 | 45 | 65 | 65 | 65 | 65 | 65 | 65 | 45 |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M13 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 |

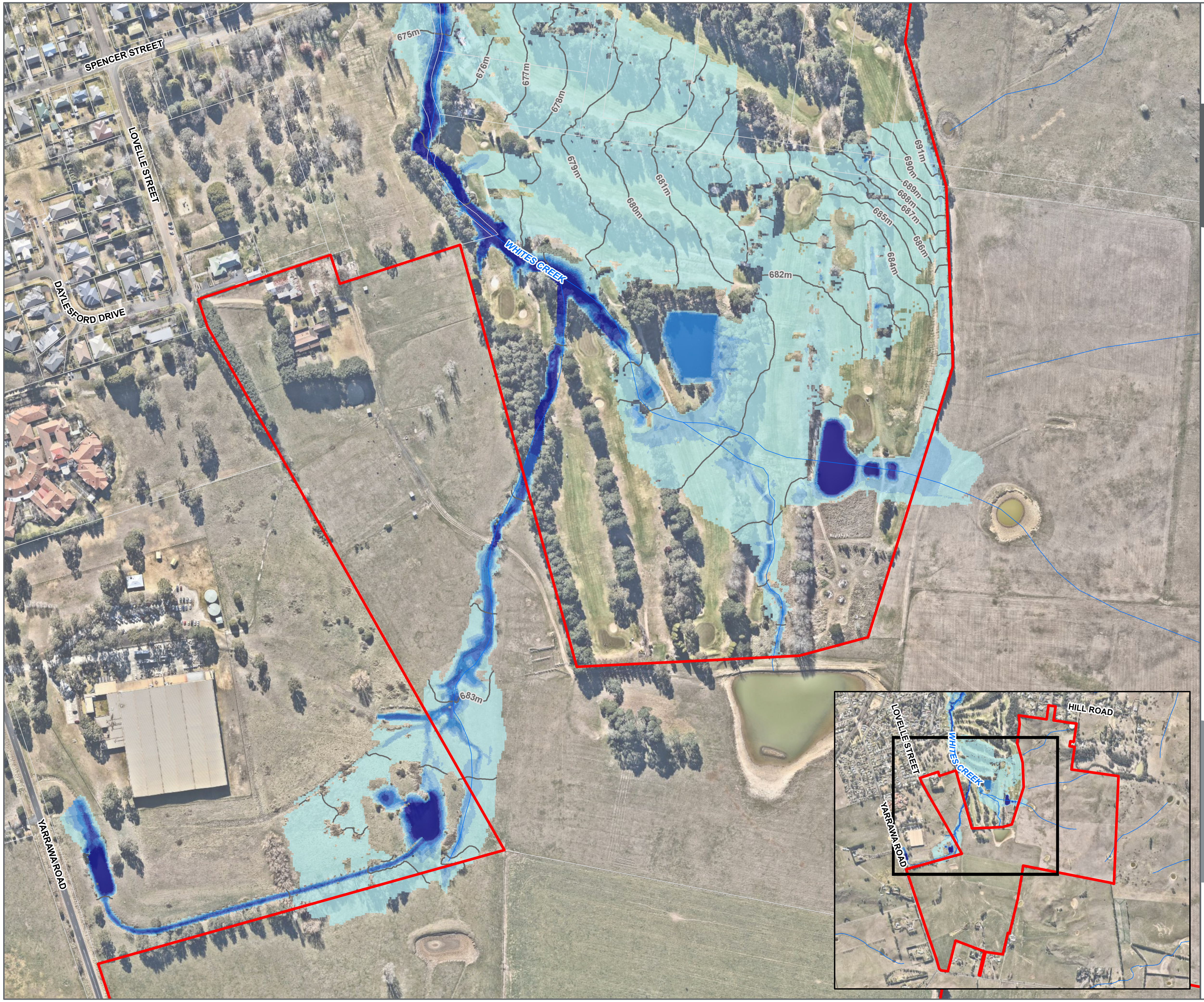
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| M14 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 47 |
| **TIME Stream Bottom** | | | | | | | | |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E02 | 66 | 65 | 55 | 54 | 53 | 53 | 52 | 45 |
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G01 | 66 | 65 | 60 | 58 | 55 | 55 | 54 | 45 |
| G02 | 87 | 84 | 81 | 79 | 76 | 76 | 74 | 53 |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M02 | 87 | 85 | 83 | 82 | 81 | 80 | 75 | 52 |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M05 | 45 | 45 | 44 | 44 | 44 | 43 | 43 | 31 |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M08 | 47 | 46 | 46 | 46 | 46 | 46 | 45 | 36 |
| M09 | 50 | 49 | 49 | 48 | 48 | 48 | 48 | 38 |
| M10 | 70 | 70 | 69 | 69 | 68 | 69 | 68 | 49 |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M13 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 34 |
| M14 | 82 | 81 | 74 | 73 | 72 | 73 | 72 | 53 |
| **TIME Local Perv** | | | | | | | | |
| A01 | 45 | 45 | 45 | 45 | 40 | 40 | 40 | 40 |
| B01 | 45 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| C01 | 45 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| D01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 |
| E01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| E02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| F01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| F02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 |
| G01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| G02 | 45 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| M01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 |
| M02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 |
| M03 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 |
| M04 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 |
| M05 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 |
| M06 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 |
| M07 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| M08 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 |
| M09 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 |
| M10 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 |
| M11 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 |
| M12 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 |
| M13 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 |
| M14 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| **TIME Local Imp** | | | | | | | | |
| A01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| B01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| C01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| D01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| E01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| E02 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| F01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| F02 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 10 |
| G01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| G02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 |
| M01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M02 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M03 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M04 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M05 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M06 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M07 | 35 | 35 | 35 | 35 | 35 | 40 | 40 | 20 |
| M08 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M09 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M10 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M11 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M12 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M13 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M14 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| **TIME Directed to Btm** | | | | | | | | |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M08 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M09 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TIME OUTLET Inflow** | | | | | | | | |
| A01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| B01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| C01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| D01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 |
| E01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| E02 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 41 |
| F01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| F02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 |
| G01 | 65 | 65 | 59 | 56 | 53 | 53 | 52 | 45 |
| G02 | 80 | 80 | 80 | 80 | 65 | 65 | 65 | 50 |
| M01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M02 | 85 | 83 | 81 | 80 | 80 | 80 | 79 | 51 |
| M03 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 |
| M04 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M05 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 28 |
| M06 | 35 | 35 | 35 | 35 | 35 | 40 | 40 | 20 |
| M07 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 |
| M08 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| M09 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 36 |
| M10 | 68 | 68 | 68 | 67 | 67 | 68 | 67 | 49 |
| M11 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M12 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 |
| M13 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 27 |
| M14 | 80 | 80 | 71 | 69 | 68 | 70 | 69 | 51 |
| **TIME OUTLET Outflow** | | | | | | | | |
| A01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| B01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| C01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| D01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 |
| E01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| E02 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 41 |
| F01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| F02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 |
| G01 | 65 | 65 | 59 | 56 | 53 | 53 | 52 | 45 |
| G02 | 80 | 80 | 80 | 80 | 65 | 65 | 65 | 50 |
| M01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M02 | 85 | 83 | 81 | 80 | 80 | 80 | 79 | 51 |
| M03 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 |
| M04 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M05 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 28 |
| M06 | 35 | 35 | 35 | 35 | 35 | 40 | 40 | 20 |
| M07 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 |
| M08 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 |
| M09 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 36 |
| M10 | 68 | 68 | 68 | 67 | 67 | 68 | 67 | 49 |
| M11 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 |
| M12 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 |
| M13 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 27 |
| M14 | 80 | 80 | 71 | 69 | 68 | 70 | 69 | 51 |

APPENDIX

# B

FLOOD MAPS

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# Flood Extent 10 Year ARI (Pre Development)

MOSS VALE PROJECT PS
NEW SOUTH WALES

**Legend**

- Site Boundary
- Watercourses (LPI)
- 1m Flood Height Contour (mAHD)
- Cadastre (DFSI-SS, 2018)

**Flood Depth (m)**

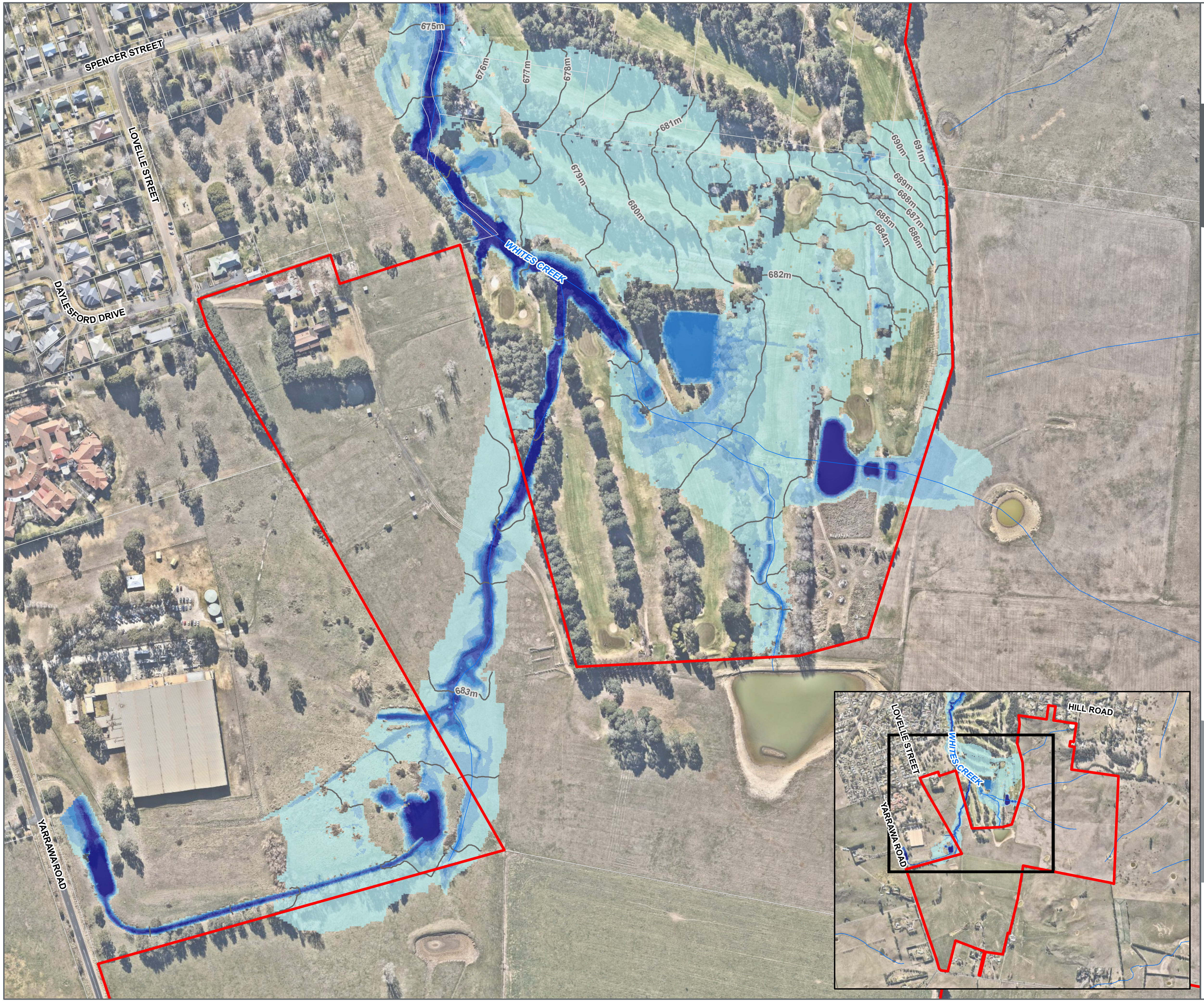
- 0 - 0.25
- 0.25 - 0.5
- 0.5 - 0.75
- 0.75 - 1.00
- 1.00 - 1.25
- 1.25 - 1.50
- > 1.50

1:3,500 Scale at A3

m
0 25 50 75 100

Cardno

Map Produced by Cardno NSW/ACT (WOL)
Date: 2018-12-13 | Project: 82018221-01
Coordinate System: GDA 1994 MGA Zone 56
Map: 82018221-01-GS-009_FloodExtents_10yrARI_PreDev.mxd 01
Aerial imagery supplied by Near Map (July, 2018)

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# Flood Extent 100 Year ARI (Pre Development)

MOSS VALE PROJECT PS
NEW SOUTH WALES

**Legend**

- Site Boundary
- Watercourses (LPI)
- 1m Flood Height Contour (mAHD)
- Cadastre (DFSI-SS, 2018)

**Flood Depth (m)**

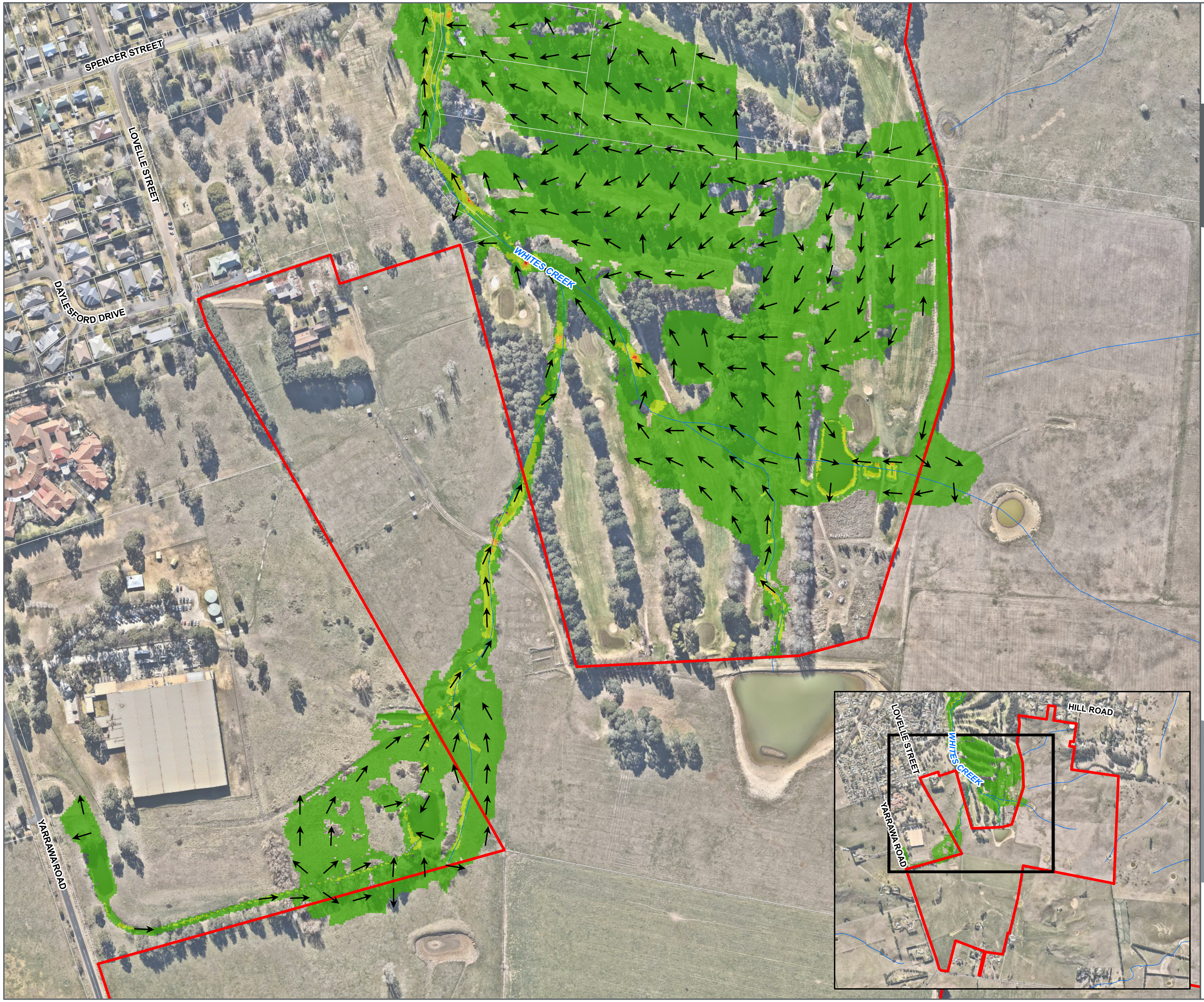
- 0 - 0.25
- 0.25 - 0.5
- 0.5 - 0.75
- 0.75 - 1.00
- 1.00 - 1.25
- 1.25 - 1.50
- > 1.50

1:3,500 Scale at A3

m
0 25 50 75 100

Cardno

Map Produced by Cardno NSW/ACT (WOL)
Date: 2018-12-13 | Project: 82018221-01
Coordinate System: GDA 1994 MGA Zone 56
Map: 82018221-01-GS-010_FloodExtents_100yr_PreDev.mxd 01
Aerial imagery supplied by Near Map (July, 2018)

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# Flood Velocity
# 10 Year ARI
# (Pre Development)

**MOSS VALE PROJECT PS**
**NEW SOUTH WALES**

**Legend**

- Site Boundary
- Velocity Vector
- Watercourses (LPI)
- Cadastre (DFSI-SS, 2018)

**Flood Velocity (m/s)**

- 0 - 1
- 1 - 2
- 2 - 3
- > 3

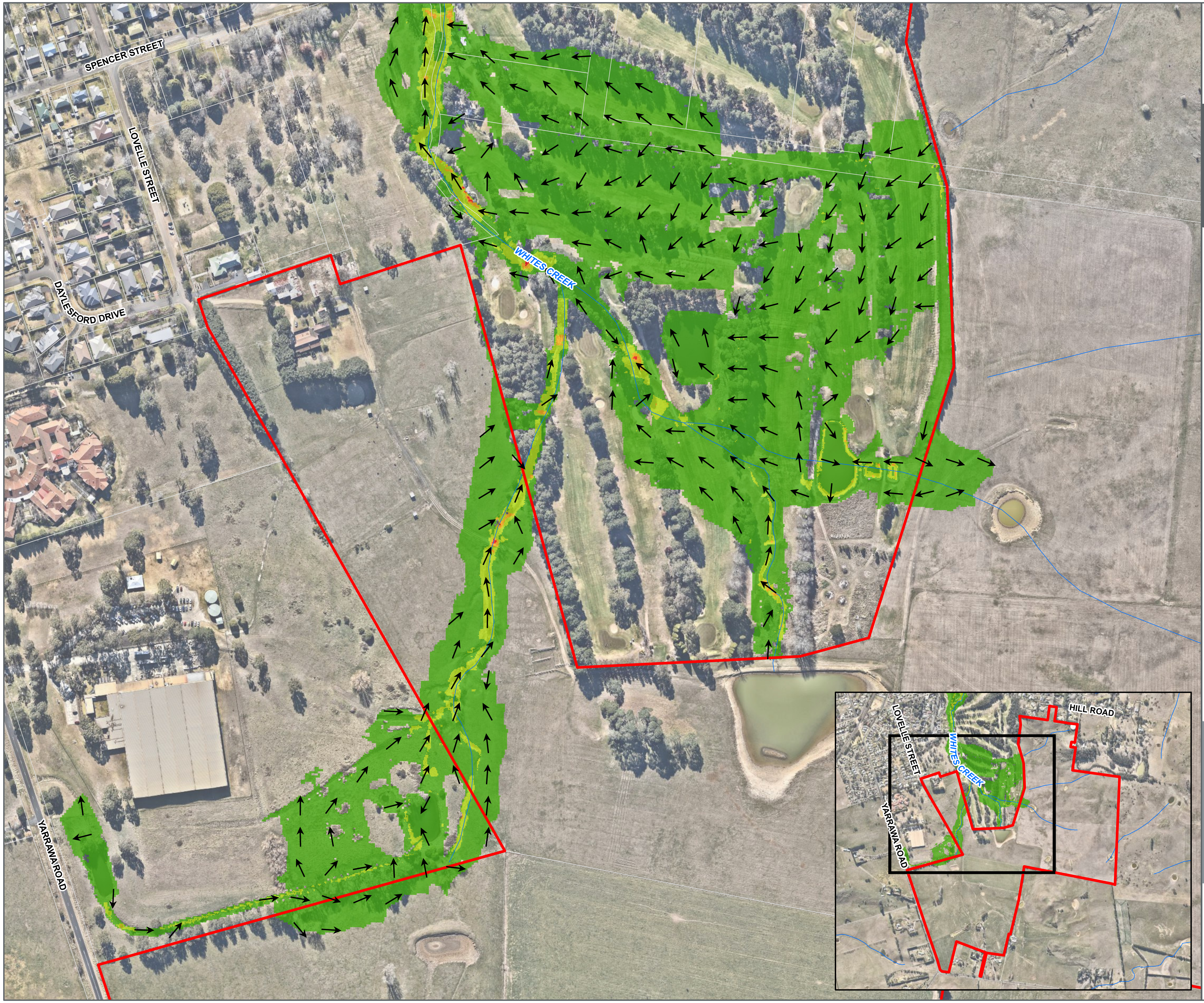
**1:3,500 Scale at A3**

m
0 25 50 75 100

N

Cardno

Map Produced by Cardno NSW/ACT (WOL)
Date: 2018-12-13 | Project: 82018221-01
Coordinate System: GDA 1994 MGA Zone 56
Map: 82018221-01-GS-011_Velocity_10yrARI_PreDev.mxd 01
Aerial imagery supplied by Near Map (July, 2018)

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# Flood Velocity 100 Year ARI (Pre Development)

MOSS VALE PROJECT PS
NEW SOUTH WALES

**Legend**

- Site Boundary
- Velocity Vector
- Watercourses (LPI)
- Cadastre (DFSI-SS, 2018)

**Flood Velocity (m/s)**

- 0 - 1
- 1 - 2
- 2 - 3
- > 3

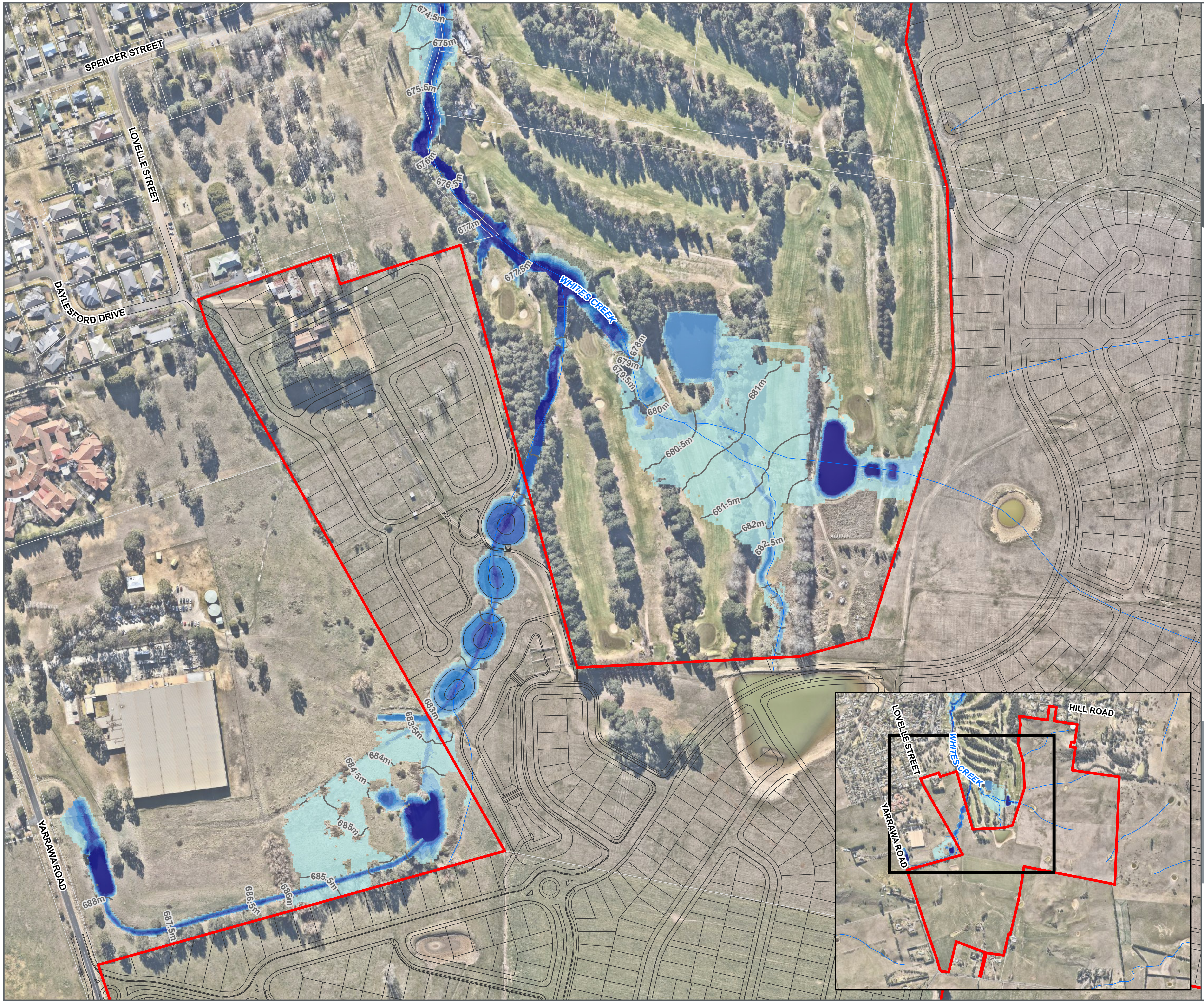
1:3,500 Scale at A3

m
0 25 50 75 100

N

Cardno

Map Produced by Cardno NSW/ACT (WOL)
Date: 2018-12-13 | Project: 82018221-01
Coordinate System: GDA 1994 MGA Zone 56
Map: 82018221-01-GS-012_Velocity_100yr_PreDev.mxd 01
Aerial imagery supplied by Near Map (July, 2018)

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# Flood Extent 10 Year ARI (Post Development)

MOSS VALE PROJECT PS
NEW SOUTH WALES

**Legend**

- Site Boundary
- Watercourses (LPI)
- Proposed Lot Layout
- 0.5m Flood Height Contour (mAHD)
- Cadastre (DFSI-SS, 2018)

**Flood Depth (m)**

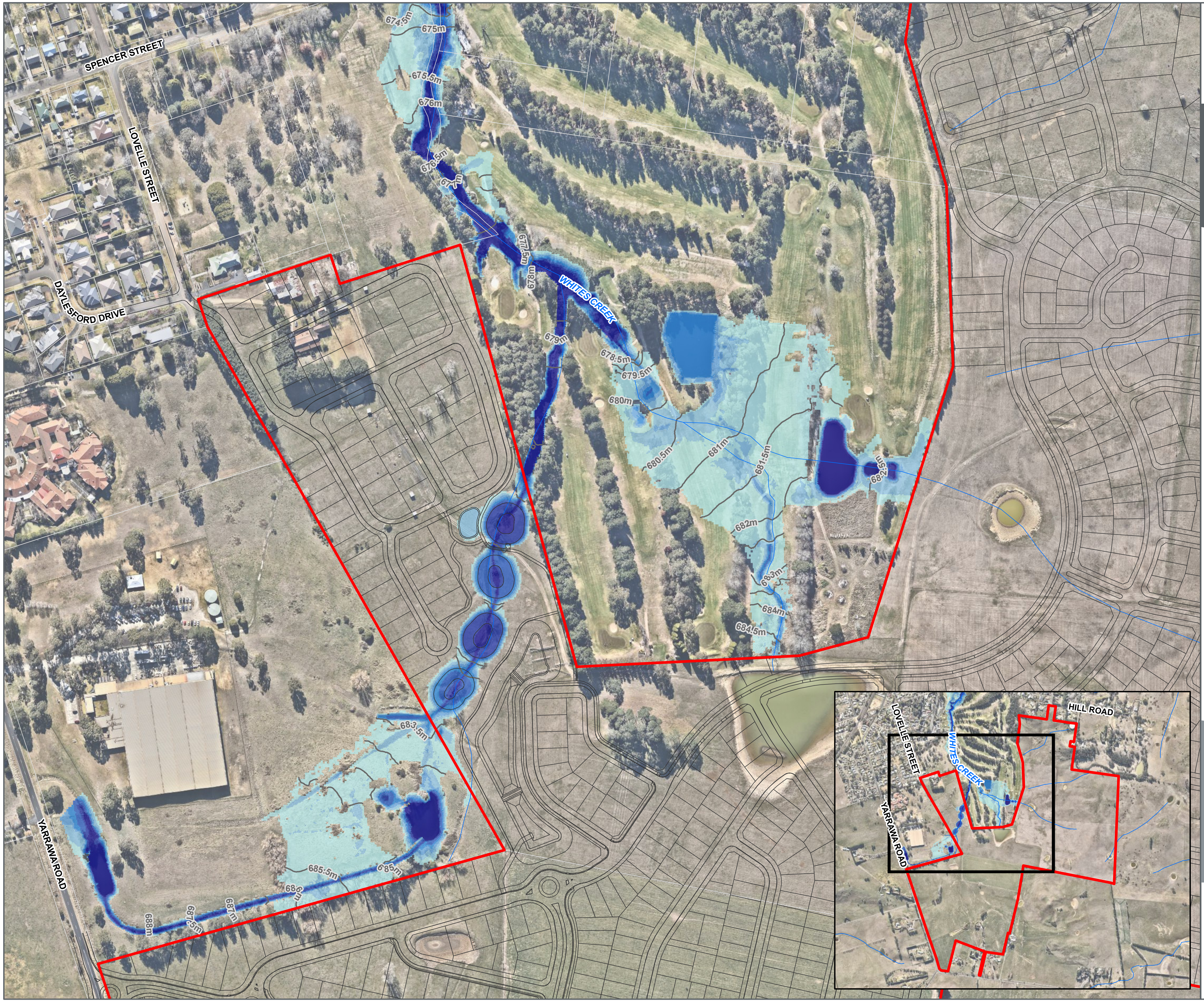
- 0 - 0.25
- 0.25 - 0.5
- 0.5 - 0.75
- 0.75 - 1.00
- 1.00 - 1.25
- 1.25 - 1.50
- > 1.50

1:3,500 Scale at A3

m
0 25 50 75 100

Cardno

Map Produced by Cardno NSW/ACT (WOL)
Date: 2018-12-13 | Project: 82018221-01
Coordinate System: GDA 1994 MGA Zone 56
Map: 82018221-01-GS-015_FloodExtents_10yrARI_PostDev.mxd 01
Aerial imagery supplied by Near Map (July, 2018)

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# Flood Extent 100 Year ARI (Post Development)

## MOSS VALE PROJECT PS NEW SOUTH WALES

**Legend**

- Site Boundary
- Watercourses (LPI)
- Proposed Lot Layout
- 0.5m Flood Height Contour (mAHD)
- Cadastre (DFSI-SS, 2018)

**Flood Depth (m)**

- 0 - 0.25
- 0.25 - 0.5
- 0.5 - 0.75
- 0.75 - 1.00
- 1.00 - 1.25
- 1.25 - 1.50
- > 1.50

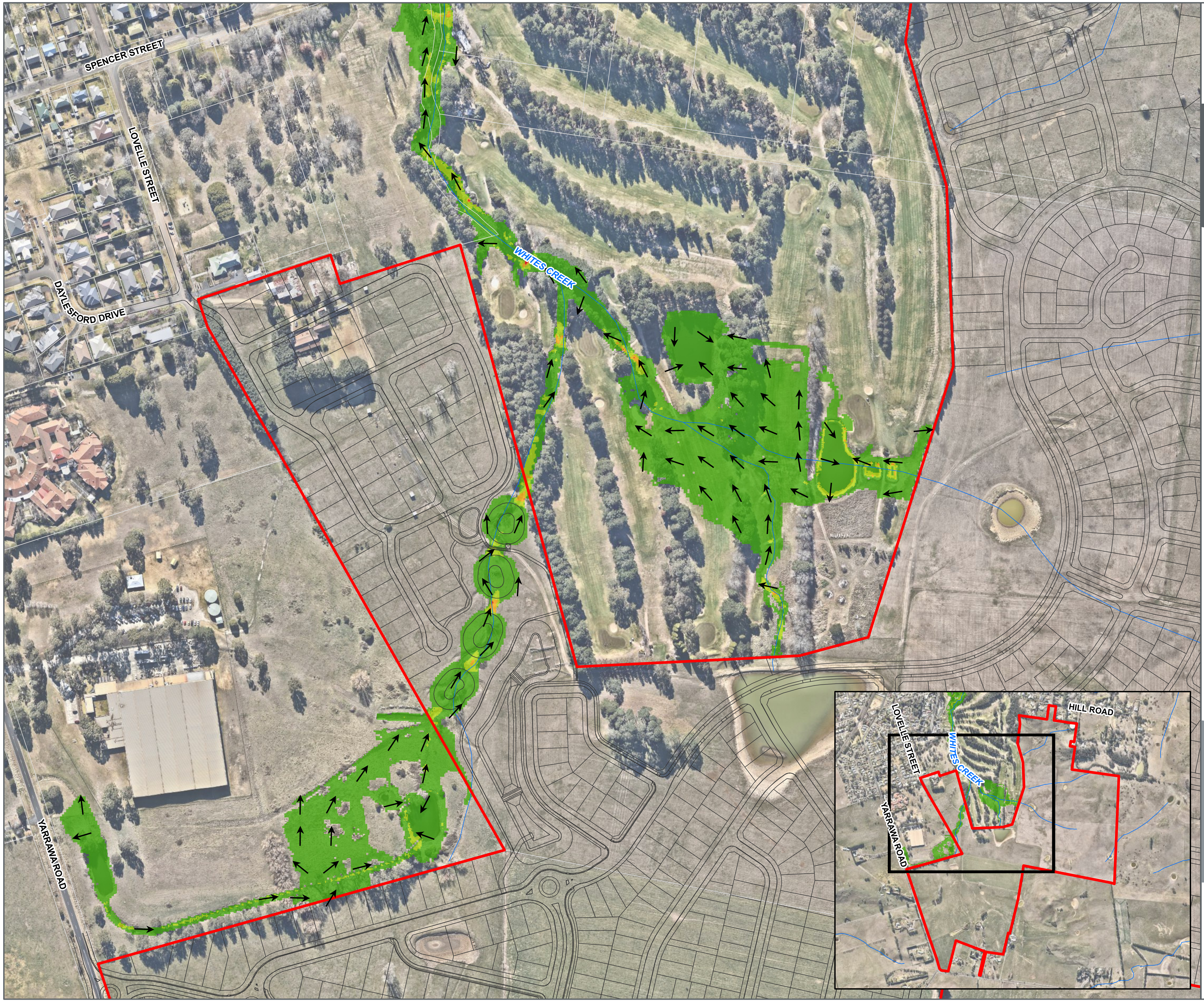
1:3,500 Scale at A3

m
0 25 50 75 100

N

Cardno

Map Produced by Cardno NSW/ACT (WOL)
Date: 2018-12-13 | Project: 82018221-01
Coordinate System: GDA 1994 MGA Zone 56
Map: 82018221-01-GS-016_FloodExtents_100yr_PostDev.mxd 01
Aerial imagery supplied by Near Map (July, 2018)

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## Flood Velocity 10 Year ARI (Post Development)

**MOSS VALE PROJECT PS**
**NEW SOUTH WALES**

### Legend

- Site Boundary
- Velocity Vector
- Watercourses (LPI)
- Proposed Lot Layout
- Cadastre (DFSI-SS, 2018)

**Flood Velocity (m/s)**

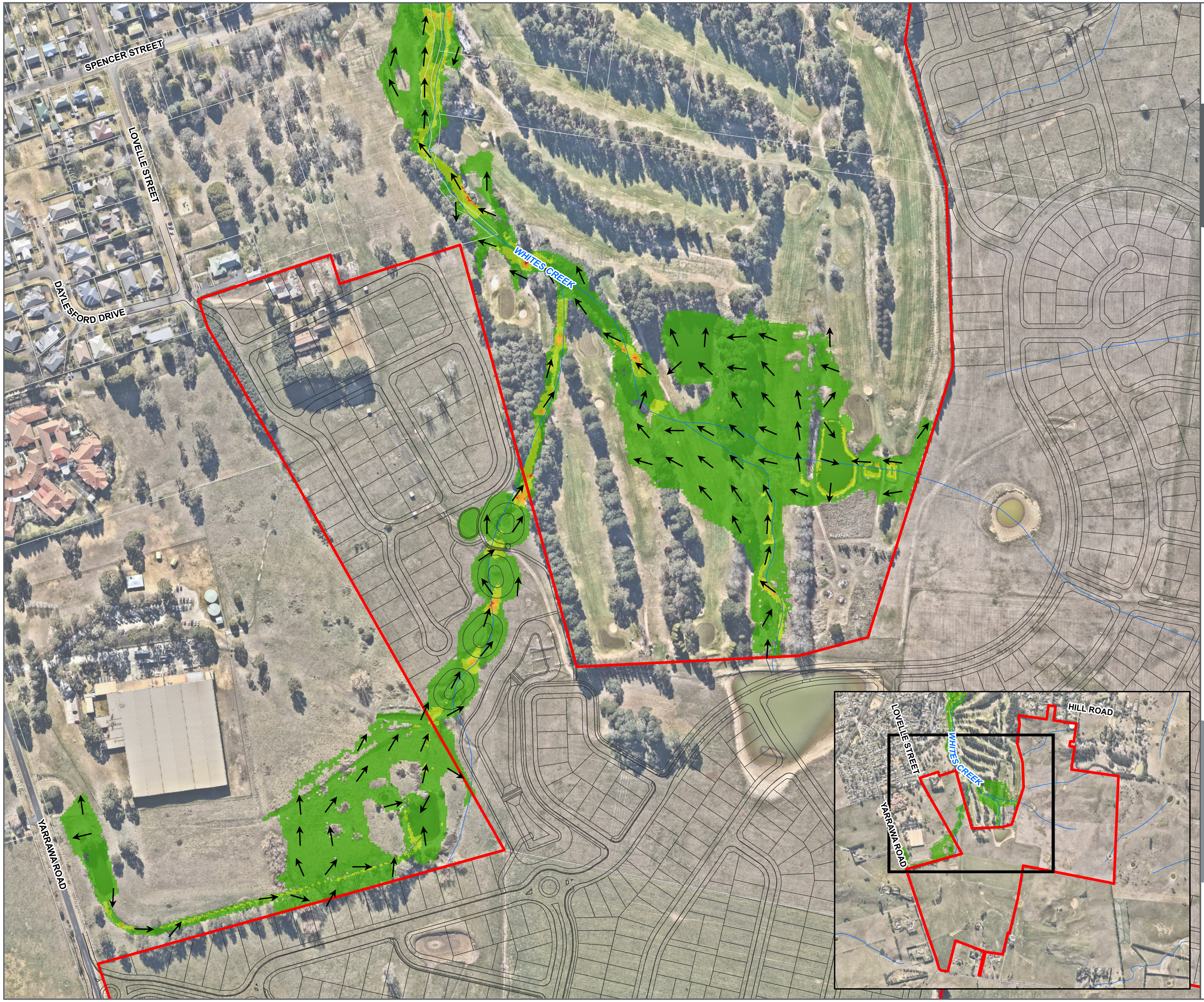
- 0 - 1
- 1 - 2
- 2 - 3
- > 3

**1:3,500 Scale at A3**

m
0 25 50 75 100

Cardno

Map Produced by Cardno NSW/ACT (WOL)
Date: 2018-12-13 | Project: 82018221-01
Coordinate System: GDA 1994 MGA Zone 56
Map: 82018221-01-GS-017_Velocity_10yrARI_PostDev.mxd 01
Aerial imagery supplied by Near Map (July, 2018)

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# Flood Velocity 100 Year ARI (Post Development)

**MOSS VALE PROJECT PS**
**NEW SOUTH WALES**

**Legend**

- Site Boundary
- Velocity Vector
- Watercourses (LPI)
- Proposed Lot Layout
- Cadastre (DFSI-SS, 2018)

**Flood Velocity (m/s)**

- 0 - 1
- 1 - 2
- 2 - 3
- > 3

**1:3,500 Scale at A3**

m
0 25 50 75 100

N

Cardno

Map Produced by Cardno NSW/ACT (WOL)
Date: 2018-12-13 | Project: 82018221-01
Coordinate System: GDA 1994 MGA Zone 56
Map: 82018221-01-GS-018_Velocity_100yr_PostDev.mxd 01
Aerial imagery supplied by Near Map (July, 2018)

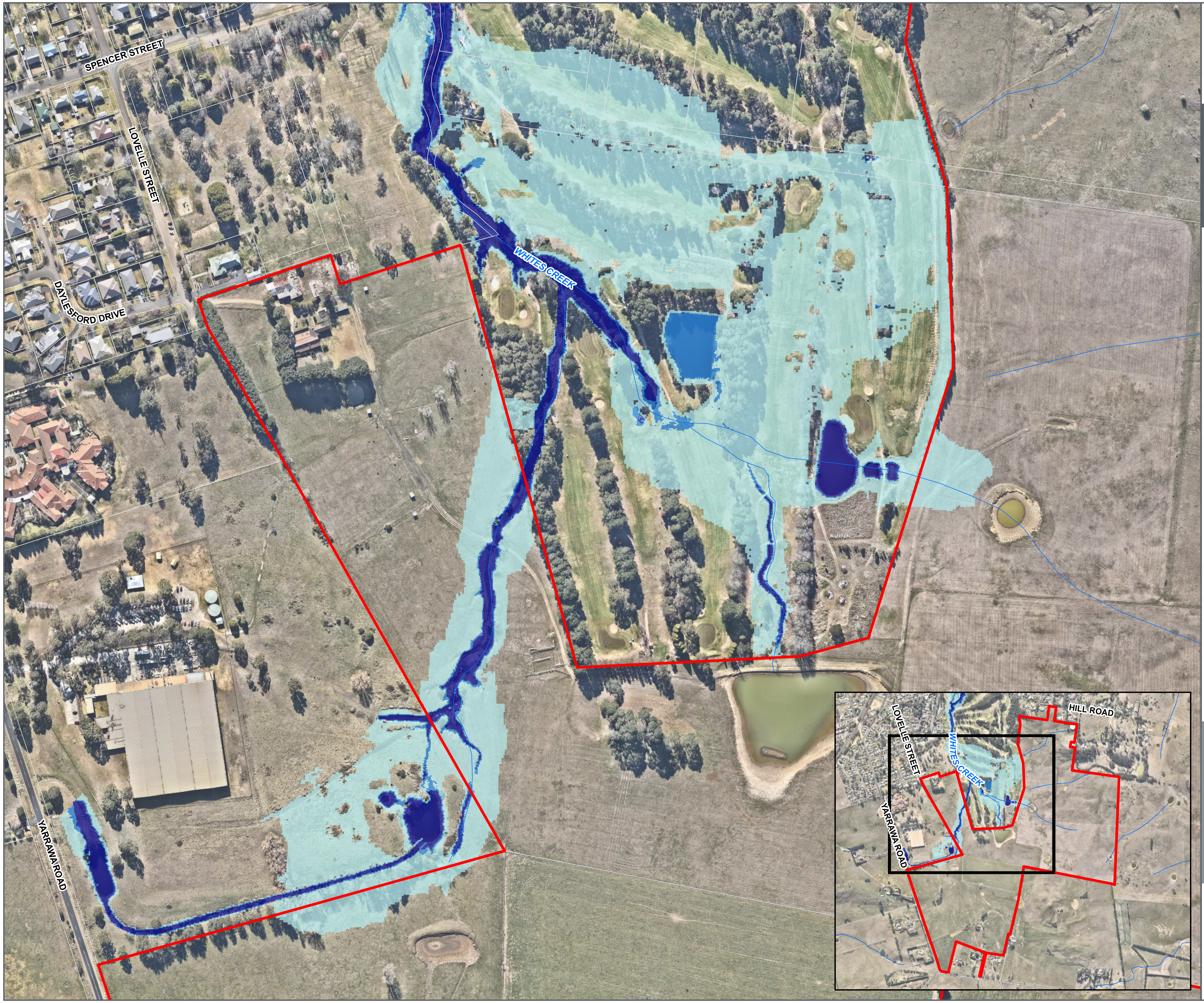
APPENDIX

# C

FLOOD PLANNING MAPS

# Flood Hazard (Pre Development)

MOSS VALE PROJECT PS
NEW SOUTH WALES




**Legend**

- Site Boundary
- Watercourses (LPI)
- Cadastre (DFSI-SS, 2018)

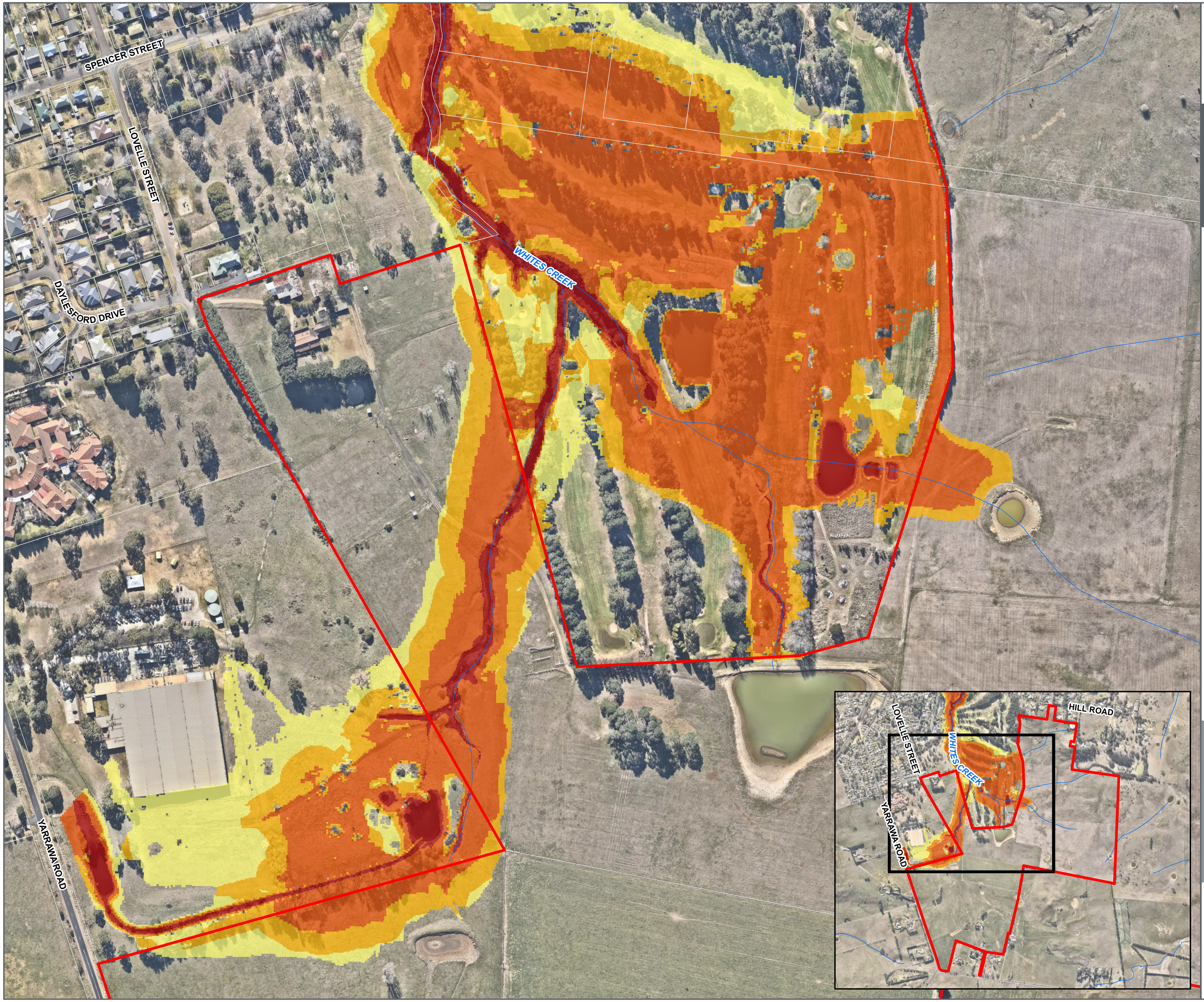
**Flood Hazard**

- Low
- Medium
- High

1:3,500 Scale at A3

m
0 25 50 75 100

Map Produced by Cardno NSW/ACT (WOL)
Date: 2018-12-13 | Project: 82018221-01
Coordinate System: GDA 1994 MGA Zone 56
Map: 82018221-01-GS-013_FloodHazard_PreDev.mxd 01
Aerial imagery supplied by Near Map (July, 2018)

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# Flood Risk Precinct (Pre Development)

MOSS VALE PROJECT PS
NEW SOUTH WALES

**Legend**

- Site Boundary
- Watercourses (LPI)
- Cadastre (DFSI-SS, 2018)

**Flood Risk Precincts**

- High
- Medium
- Fringe Low
- Low

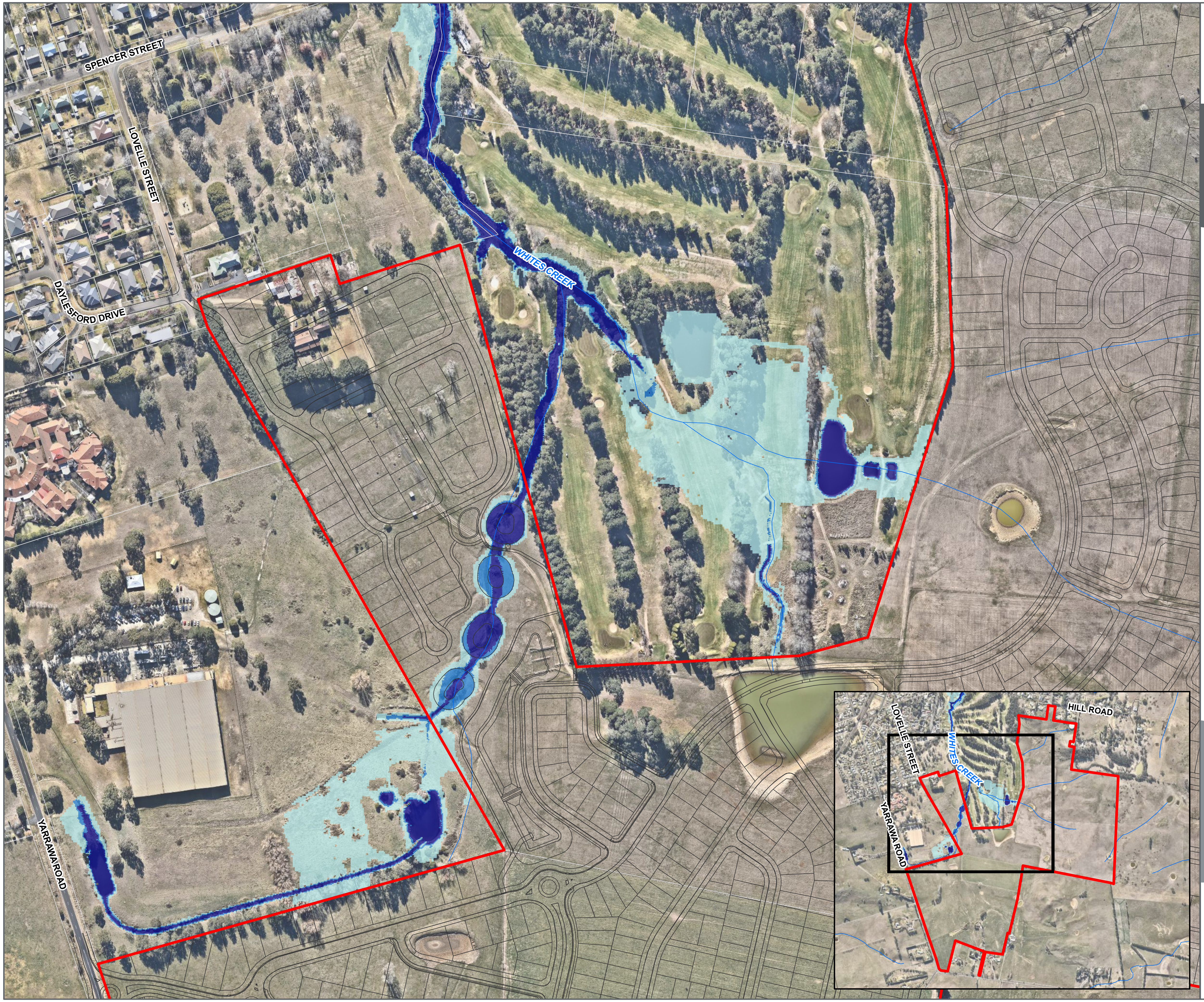
1:3,500 Scale at A3

m
0 25 50 75 100

N

Cardno

Map Produced by Cardno NSW/ACT (WOL)
Date: 2018-12-13 | Project: 82018221-01
Coordinate System: GDA 1994 MGA Zone 56
Map: 82018221-01-GS-014_FloodRiskPrecinct_PreDev.mxd 01
Aerial imagery supplied by Near Map (July, 2018)

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# Flood Hazard (Post Development)

**MOSS VALE PROJECT PS**
**NEW SOUTH WALES**

**Legend**

- Site Boundary
- Watercourses (LPI)
- Proposed Lot Layout
- Cadastre (DFSI-SS, 2018)

**Flood Hazard**

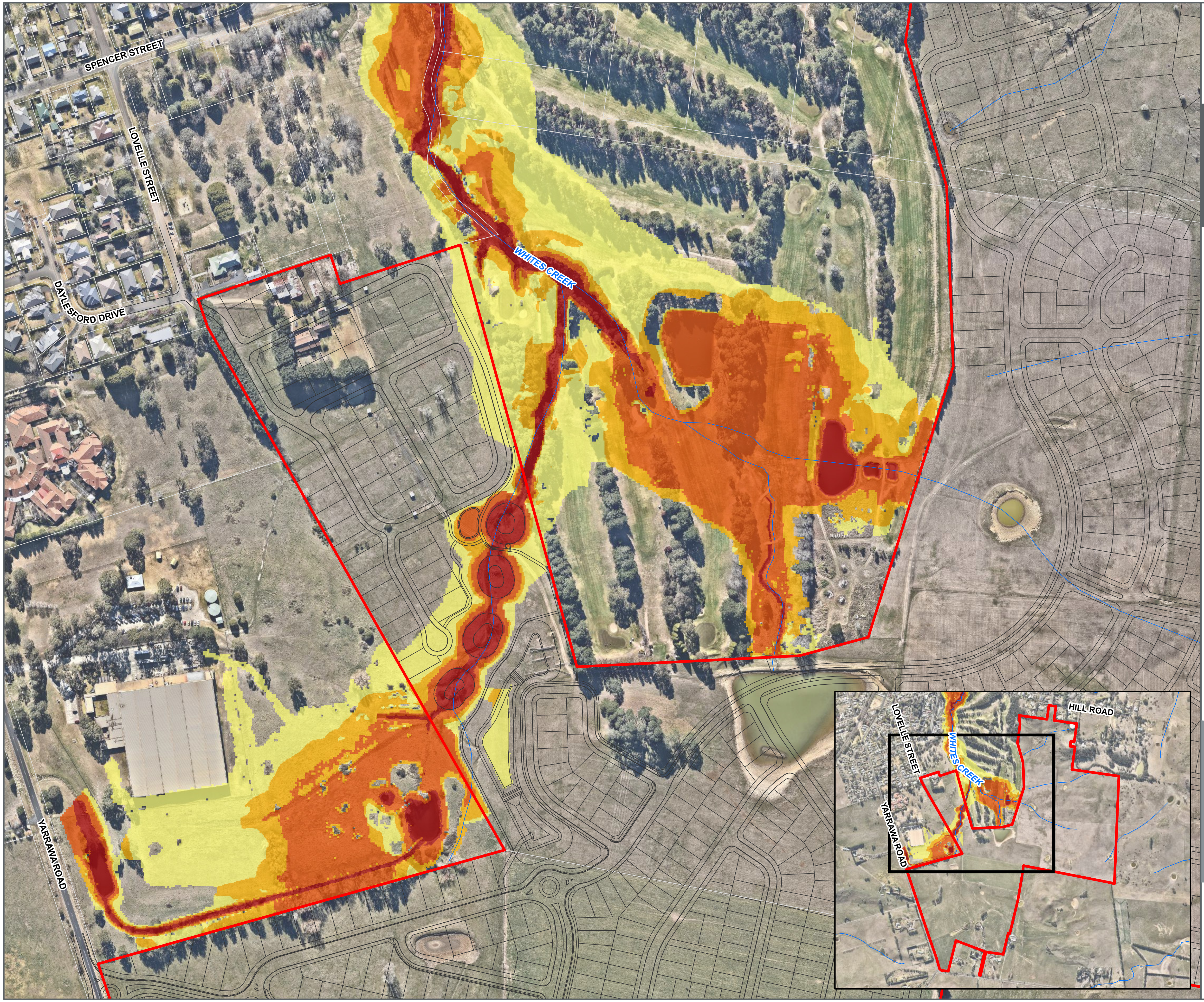
- Low
- Medium
- High

**1:3,500 Scale at A3**

m
0 25 50 75 100

Cardno

Map Produced by Cardno NSW/ACT (WOL)
Date: 2018-12-13 | Project: 82018221-01
Coordinate System: GDA 1994 MGA Zone 56
Map: 82018221-01-GS-019_FloodHazard_PostDev.mxd 01
Aerial imagery supplied by Near Map (July, 2018)

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# Flood Risk Precinct (Post Development)

MOSS VALE PROJECT PS
NEW SOUTH WALES

## Legend

- Site Boundary
- Watercourses (LPI)
- Proposed Lot Layout
- Cadastre (DFSI-SS, 2018)

**Flood Risk Precincts**

- High
- Medium
- Fringe Low
- Low

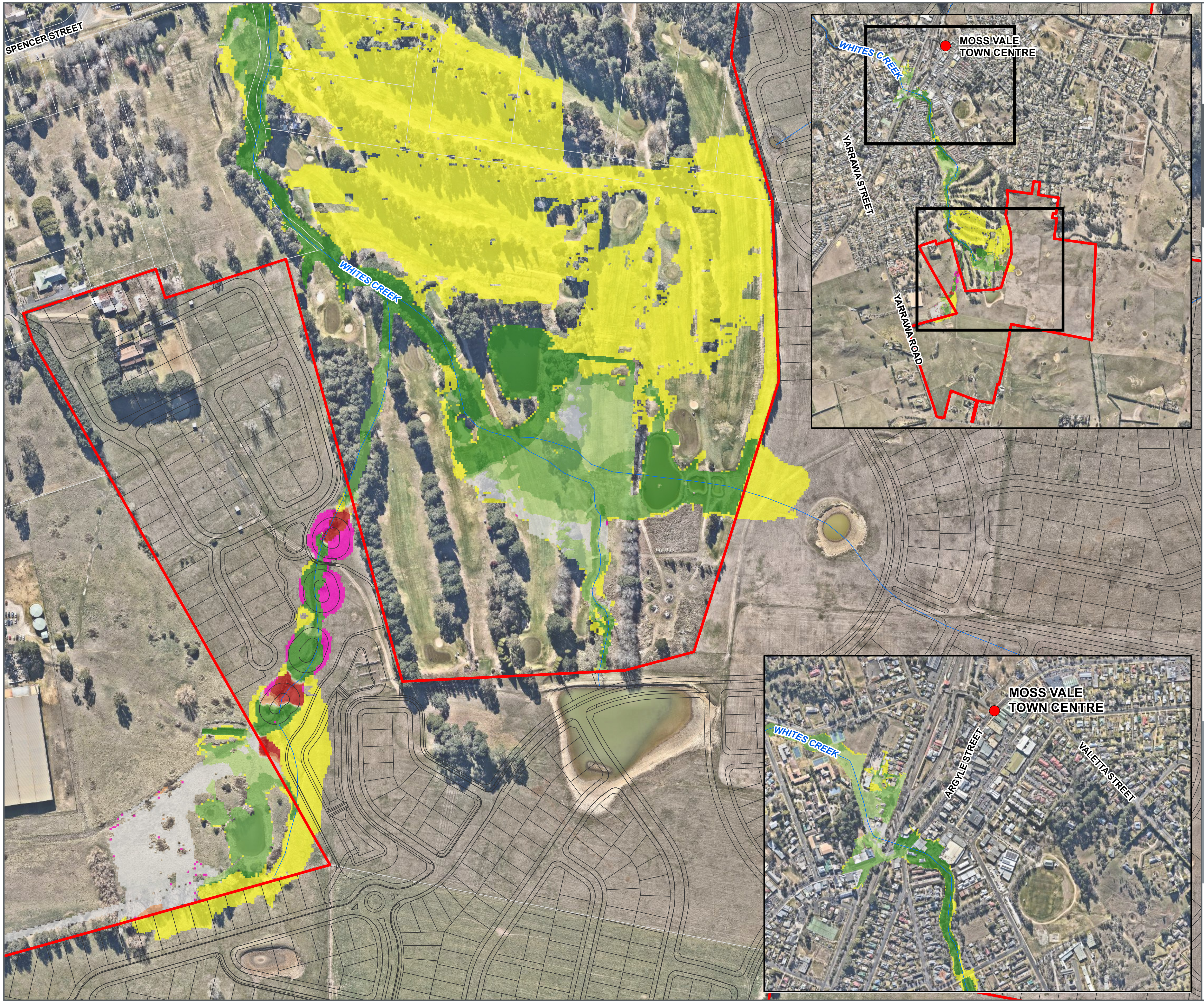
1:3,500 Scale at A3

m
0 25 50 75 100

N

Cardno

Map Produced by Cardno NSW/ACT (WOL)
Date: 2018-12-13 | Project: 82018221-01
Coordinate System: GDA 1994 MGA Zone 56
Map: 82018221-01-GS-020_FloodRiskPrecinct_PostDev.mxd 01
Aerial imagery supplied by Near Map (July, 2018)

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# Flood Impact
# 10 Year ARI
# (Post Development)

**MOSS VALE PROJECT PS**
**NEW SOUTH WALES**

**Legend**

- Site Boundary
- Major NSW Towns (LPI)
- Watercourses (LPI)
- Proposed Lot Layout
- Cadastre (DFSI-SS, 2018)

**Change in Flood Levels (m)**

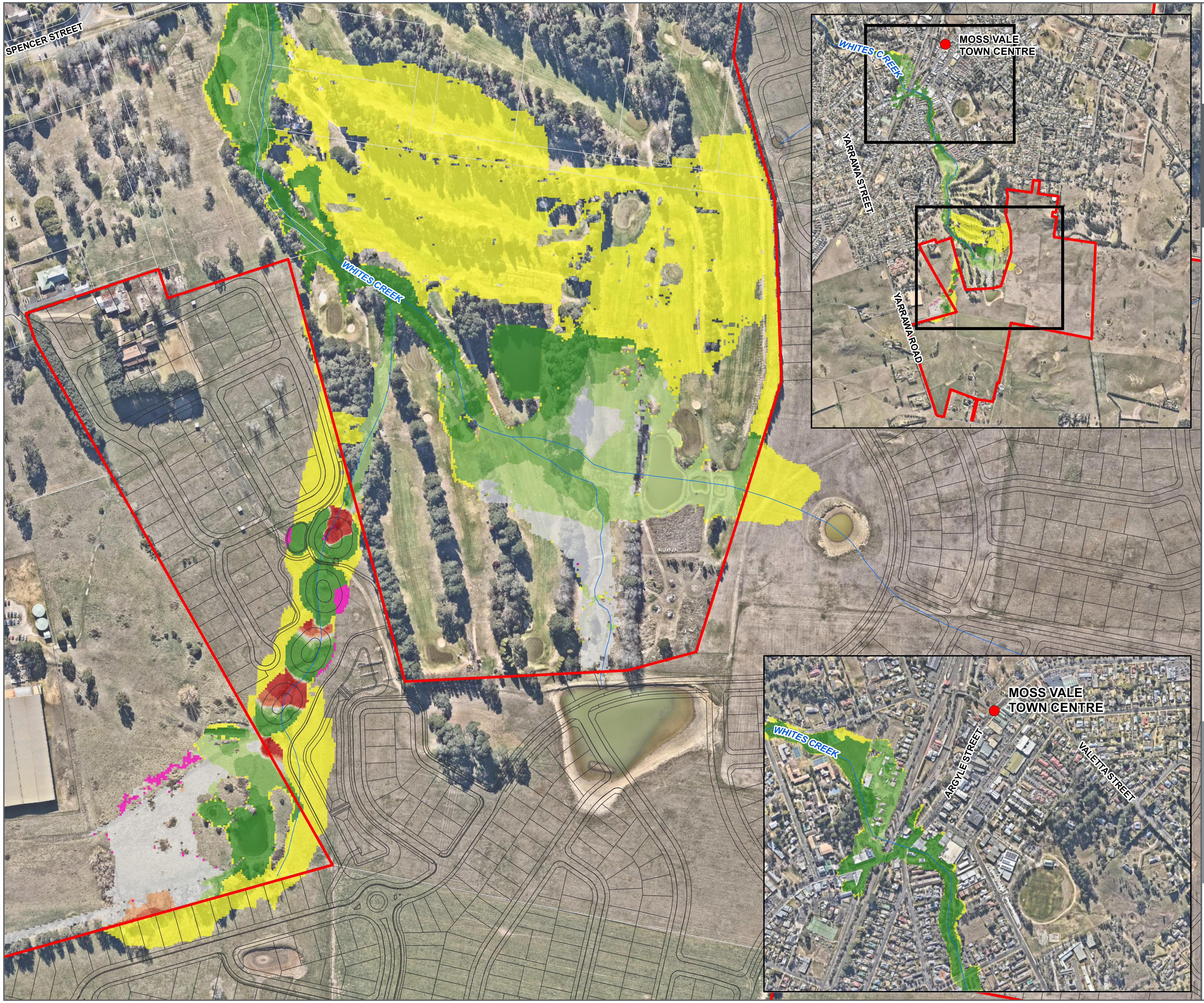
- Was Wet Now Dry
- < -0.1
- -0.1 to -0.05
- -0.05 to -0.02
- -0.02 to 0.02
- 0.02 to 0.05
- 0.05 to 0.1
- > 0.1
- Was Dry Now Wet

1:3,500 Scale at A3

m
0 25 50 75 100

Cardno

Map Produced by Cardno NSW/ACT (WOL)
Date: 2018-12-13 | Project: 82018221-01
Coordinate System: GDA 1994 MGA Zone 56
Map: 82018221-01-GS-021_FloodImpact_10yrARI_PostDev.mxd 01
Aerial imagery supplied by Near Map (July, 2018)

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# Flood Impact 100 Year ARI (Post Development)

**MOSS VALE PROJECT PS**
**NEW SOUTH WALES**

**Legend**

- Site Boundary
- Major NSW Towns (LPI)
- Watercourses (LPI)
- Proposed Lot Layout
- Cadastre (DFSI-SS, 2018)

**Change in Flood Levels (m)**

- Was Wet Now Dry
- < -0.1
- -0.1 to -0.05
- -0.05 to -0.02
- -0.02 to 0.02
- 0.02 to 0.05
- 0.05 to 0.1
- > 0.1
- Was Dry Now Wet

**1:3,500 Scale at A3**

m
0 25 50 75 100

N

Cardno

Map Produced by Cardno NSW/ACT (WOL)
Date: 2018-12-13 | Project: 82018221-01
Coordinate System: GDA 1994 MGA Zone 56
Map: 82018221-01-GS-022_FloodImpact_100yr_PostDev.mxd 01
Aerial imagery supplied by Near Map (July, 2018)

APPENDIX

# D

OSD MODEL

# Existing Scenario

## 2. Catchment Details

Steps 2.1 to 2.4: Enter Data for each Subarea in the Model, including Topology, Surface and Flowpath Blocks and Loss Details

**Catchment Statistics**

| | |
|---|---|
| Total Area [ha] | **482.8** |
| Total Impervious Percent [%] | **34.2** |
| No. of Subareas | **27** |
| No. of Subareas with WC Factor | **27** |

2.1 **Catchment Details** | 2.2 **Lag Parameters** | 2.3 **Flowpaths** | 2.4 **Rainfall Losses**

Routing Options | Sort Subareas | Import Mid/Mif | Populate | Populate | Continuing Loss Rate | Populate

| Subarea Name | D/S Subarea | Area | CG Coords (MGA) | | Outlet Coords (MGA) | | Imp Fraction | C | Imp Lag | Type | Value | IL | CLR | Imp IL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **1.6** | **0.1** | **R** | **1** | **0** | **2.5** | **0** | **0** |
| | | ha | E | N | E | N | % | | | | | mm | mm/hr | mm | |
| A01 | E02 | 55.6325 | 0 | 0 | 0 | 0 | 10.34 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| B01 | G01 | 32.8746 | 0 | 0 | 0 | 0 | 4.98 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| C01 | G01 | 24.8221 | 0 | 0 | 0 | 0 | 5 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| C02 | G01 | 1.5845 | 0 | 0 | 0 | 0 | 5.15 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| C03 | G01 | 10.9164 | 0 | 0 | 0 | 0 | 5.11 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| D01 | G02 | 11.563 | 0 | 0 | 0 | 0 | 8.38 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| E01 | E02 | 31.3525 | 0 | 0 | 0 | 0 | 15.87 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| E02 | G01 | 30.9993 | 0 | 0 | 0 | 0 | 35.85 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| F01 | F_OUT | 13.3581 | 0 | 0 | 0 | 0 | 5 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| F02 | F_OUT | 1.2855 | 0 | 0 | 0 | 0 | 5 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| F_OUT | SINK | 0 | 0 | 0 | 0 | 0 | 0 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| G01 | G02 | 15.0087 | 0 | 0 | 0 | 0 | 24.99 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| G02 | M02 | 56.053 | 0 | 0 | 0 | 0 | 36.81 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| M01 | M02 | 8.0763 | 0 | 0 | 0 | 0 | 61.63 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| M02 | M10 | 12.655 | 0 | 0 | 0 | 0 | 57.21 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| M03 | M05 | 14.338 | 0 | 0 | 0 | 0 | 55.05 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| M04 | M05 | 4.627 | 0 | 0 | 0 | 0 | 56.76 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| M05 | M10 | 10.7737 | 0 | 0 | 0 | 0 | 52.06 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| M06 | M10 | 15.7654 | 0 | 0 | 0 | 0 | 75.71 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| M07 | M08 | 36.0991 | 0 | 0 | 0 | 0 | 45.24 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| M08 | M09 | 13.958 | 0 | 0 | 0 | 0 | 61 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| M09 | M10 | 7.5324 | 0 | 0 | 0 | 0 | 66.45 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| M10 | M14 | 10.3045 | 0 | 0 | 0 | 0 | 55.03 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| M11 | M14 | 7.4559 | 0 | 0 | 0 | 0 | 76.12 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| M12 | M13 | 15.3554 | 0 | 0 | 0 | 0 | 57.39 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| M13 | M14 | 13.2062 | 0 | 0 | 0 | 0 | 74.69 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |
| M14 | SINK | 27.2516 | 0 | 0 | 0 | 0 | 49.73 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 | |

## 3. Local & Outlet Structures

Steps 3.1 to 3.3: Enter Data for each Structure in the Model (both outlet structures and local structures)

**Structure Statistics**

| | |
|---|---|
| No. of Structures | 0 |
| No. of Outlet Structures | 0 |
| No. Local Structures | 0 |

Populate after steps 3.2 & 3.3 (optional)

Update Sub List | Show 5 | Show 10 | Show 20 | Show 50 | GOTO Fuse | Populate Directed Subs

| | Structure Summary | | | | | Local | | | Fuse | Basin Details | | | Directed Subareas | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.1 | Lock | ID | Subarea | Type | Description of Structure | Local / Out | %Per to LS | %Imp to LS | Fuse Plug | IWL | Surf_Area | Stor_Fac | 1 | 2 | 3 | 4 | 5 |
| GOTO | TRUE | 1 | | | | | | | | | | | | | | | |
| GOTO | TRUE | 2 | | | | | | | | | | | | | | | |
| GOTO | TRUE | 3 | | | | | | | | | | | | | | | |
| GOTO | TRUE | 4 | | | | | | | | | | | | | | | |
| GOTO | TRUE | 5 | | | | | | | | | | | | | | | |
| GOTO | TRUE | 6 | | | | | | | | | | | | | | | |
| GOTO | TRUE | 7 | | | | | | | | | | | | | | | |
| GOTO | TRUE | 8 | | | | | | | | | | | | | | | |
| GOTO | TRUE | 9 | | | | | | | | | | | | | | | |
| GOTO | TRUE | 10 | | | | | | | | | | | | | | | |

Lock/Unlock ALL

31

**DO NOT EDIT LISTS**

| List | Sublist |
|---|---|
| TOP | A01 |
| BOTTOM | B01 |
| HS | C01 |
| HS-TWF | C02 |
| HS-TWC | C03 |
| HS-TWR | D01 |
| HSQ | E01 |
| | E02 |
| LOCAL | F01 |
| OUTLET | F02 |
| | F_OUT |
| YES | G01 |

### Structure Templates

**3.2 Build Structure Templates From Structure Summary**

Build ALL | Build Unlocked | Delete Unlocked

**3.3 Edit Individual Structure Templates**

TOP

| ID 1 | OUTLET | | | | | |
|---|---|---|---|---|---|---|
| Weir | 1 | 2 | 3 | 4 | 5 | 6 |
| Subarea | | | | | | |
| Crest Elev. | | | | | | |
| Length [m] | | | | | | |
| Weir Coeff. | | | | | | |
| Disch_Fac | | | | | | |
| Blck_Time | | | | | | |
| Directed to | | | | | | |
| Delay [mins] | | | | | | |
| Pipe/Box | 1 | 2 | 3 | 4 | 5 | 6 |
| Subarea | | | | | | |
| Invert | | | | | | |
| No. | | | | | | |
| Ent. Type | | | | | | |
| Dia / Width | | | | | | |
| Height | | | | | | |
| Disch_Fac | | | | | | |
| Blck_Time | | | | | | |
| Directed to | | | | | | |
| Delay [mins] | | | | | | |
| Ent. Coeff | | | | | | |
| Length [m] | | | | | | |
| Out Invert | | | | | | |
| n | | | | | | |
| HSQ | | 1 | 2 | 3 | 4 | 5 |
| Sub | | | | | | |
| DFactor | | | | | | |
| Btime | | | | | | |
| T/B | | | | | | |
| Delay | | | | | | |
| H | S | Tailwater Details | | | | |
| m | m3 | | | | | |

| ID 2 | OUTLET | | | | | |
|---|---|---|---|---|---|---|
| Weir | 1 | 2 | 3 | 4 | 5 | 6 |
| Subarea | | | | | | |
| Crest Elev. | | | | | | |
| Length [m] | | | | | | |
| Weir Coeff. | | | | | | |
| Disch_Fac | | | | | | |
| Blck_Time | | | | | | |
| Directed to | | | | | | |
| Delay [mins] | | | | | | |
| Pipe/Box | 1 | 2 | 3 | 4 | 5 | 6 |
| Subarea | | | | | | |
| Invert | | | | | | |
| No. | | | | | | |
| Ent. Type | | | | | | |
| Dia / Width | | | | | | |
| Height | | | | | | |
| Disch_Fac | | | | | | |
| Blck_Time | | | | | | |
| Directed to | | | | | | |
| Delay [mins] | | | | | | |
| Ent. Coeff | | | | | | |
| Length [m] | | | | | | |
| Out Invert | | | | | | |
| n | | | | | | |
| HSQ | | 1 | 2 | 3 | 4 | 5 |
| Sub | | | | | | |
| DFactor | | | | | | |
| Btime | | | | | | |
| T/B | | | | | | |
| Delay | | | | | | |
| H | S | | | | | |
| m | m3 | | | | | |

| ID 3 | OUTLET | | | | | |
|---|---|---|---|---|---|---|
| Weir | 1 | 2 | 3 | 4 | 5 | 6 |
| Subarea | | | | | | |
| Crest Elev. | | | | | | |
| Length [m] | | | | | | |
| Weir Coeff. | | | | | | |
| Disch_Fac | | | | | | |
| Blck_Time | | | | | | |
| Directed to | | | | | | |
| Delay [mins] | | | | | | |
| Pipe/Box | 1 | 2 | 3 | 4 | 5 | 6 |
| Subarea | | | | | | |
| Invert | | | | | | |
| No. | | | | | | |
| Ent. Type | | | | | | |
| Dia / Width | | | | | | |
| Height | | | | | | |
| Disch_Fac | | | | | | |
| Blck_Time | | | | | | |
| Directed to | | | | | | |
| Delay [mins] | | | | | | |
| Ent. Coeff | | | | | | |
| Length [m] | | | | | | |
| Out Invert | | | | | | |
| n | | | | | | |
| HSQ | | 1 | 2 | 3 | 4 | 5 |
| Sub | | | | | | |
| DFactor | | | | | | |
| Btime | | | | | | |
| T/B | | | | | | |
| Delay | | | | | | |
| H | S | | | | | |
| m | m3 | | | | | |

# 4. Rainfall & Storm Data

Steps 4.1 to 4.4: Enter Data for each Storm in the Model (recorded, design and embedded design) and recorded/imported hydrographs

**Rainfall & Storm Statistics**

| | |
|---|---|
| No. of Gauges | 1 |
| No. Design Storms | 16 |
| No. Recorded Storms | 0 |
| No. of Imported Hydrographs | 0 |

Populate

## 4.1 Rainfall Data

Select Location of IFD Data

External IFD File — Browse...

**Location:**

Internal Database (see IFD Sheet) — Refresh

Go C601

Select Rainfall Gauges — **HINT**

| Gauge | Gauge Name |
|---|---|
| 1 | MOSSVALE |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |

Set Areal Reduction Factor for Design Storms

AUTO Generate based on Storm Duration and Catchment Area

Default 1.00 for Small Catchments (less than 1 km2)

User Defined

## 4.2 Storm Data - Design

| | Design Burst | | Design Envelope | | Calc. Step | Out Step |
|---|---|---|---|---|---|---|
| **DES** Storm No. | **ARI** | **Duration** | **ARI** | **Duration** | mins | mins |
| 1 | 1 | 120 | | | 1 | 1 |
| 2 | 2 | 120 | | | 1 | 1 |
| 3 | 5 | 120 | | | 1 | 1 |
| 4 | 10 | 120 | | | 1 | 1 |
| 5 | 20 | 120 | | | 1 | 1 |
| 6 | 50 | 120 | | | 1 | 1 |
| 7 | 100 | 120 | | | 1 | 1 |
| 8 | PMF | 60 | | | 1 | 1 |
| 9 | 1 | 90 | | | 1 | 1 |
| 10 | 2 | 90 | | | 1 | 1 |
| 11 | 5 | 90 | | | 1 | 1 |
| 12 | 10 | 90 | | | 1 | 1 |
| 13 | 20 | 90 | | | 1 | 1 |
| 14 | 50 | 90 | | | 1 | 1 |
| 15 | 100 | 90 | | | 1 | 1 |
| 16 | PMF | 30 | | | 1 | 1 |
| 17 | | | | | | |
| 18 | | | | | | |
| 19 | | | | | | |
| 20 | | | | | | |

## 4.3 Storm Data - Recorded

| Event Data | Date | Time | Time Step | Type | Calc. Step | Out Step |
|---|---|---|---|---|---|---|
| **REC** Event No. | | | mins | | mins | mins |
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |
| 6 | | | | | | |

**Gauge Data**

| | | | | | | |
|---|---|---|---|---|---|---|
| Event No. | | | | | | |
| Gauge Name | | | | | | |
| Gauge E | | | | | | |
| Gauge N | | | | | | |
| Raintotal [mm] | | | | | | |
| **Rain Data** | Rain 1 | Rain 2 | Rain 3 | Rain 4 | Rain 5 | Rain 6 |

Show 10 Lines

Show 50 Lines

Show 2500 Lines

GOTO Hydrographs

## 6. Results-Tables

View Results in Tabular Format

DO NOT EDIT
Stream Top
Stream Bottom
411

**Results for Runfile:** U:\FY18\221_Aoyuan Moss Vale Project PS\Des-An\Hydrology\WBNM\EXISTING_Meta.out

### 6.1 Results

**View Results at Location:** OUTLET Outflow | Flowrates | Volumes | Time to Peaks | Structures

| Storm No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ARI** | 1 | 2 | 5 | 10 | 20 | 50 | 100 | PMF | 1 | 2 | 5 | 10 | 20 | 50 | 100 | PMF |
| **Duration** | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 60 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 30 |
| Catchment Area | 482.85 | 482.85 | 482.85 | 482.85 | 482.85 | 482.85 | 482.85 | 482.85 | 482.85 | 482.85 | 482.85 | 482.85 | 482.85 | 482.85 | 482.85 | 482.85 |
| Impervious percent (%) | 34.2 | 34.2 | 34.2 | 34.2 | 34.2 | 34.2 | 34.2 | 34.2 | 34.2 | 34.2 | 34.2 | 34.2 | 34.2 | 34.2 | 34.2 | 34.2 |
| Rainfall Depth (mm) | 32.34 | 41.85 | 54.62 | 62.12 | 71.93 | 84.84 | 94.7 | 334.49 | 28.86 | 37.32 | 48.63 | 55.27 | 63.96 | 75.37 | 84.1 | 226.4 |
| Excess Rainfall (mm) | 29.05 | 38.56 | 51.33 | 58.83 | 68.64 | 81.55 | 91.41 | 332.84 | 26.39 | 34.86 | 46.17 | 52.8 | 61.49 | 72.91 | 81.63 | 225.58 |
| Runoff Depth (mm) | 23.54 | 31.93 | 43.39 | 50.19 | 59.13 | 70.75 | 79.83 | 314.39 | 21.9 | 29.55 | 39.91 | 46.04 | 54.11 | 64.63 | 72.8 | 213.26 |
| Time to Rain Peak (mins) | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 10 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| **VOLUMES at Outlet [m3]** | | | | | | | | | | | | | | | | |
| A01 | 14091 | 19120 | 25926 | 29954 | 35231 | 42137 | 47471 | 182073 | 13071 | 17597 | 23708 | 27314 | 32045 | 38213 | 42987 | 123565 |
| B01 | 8448 | 11465 | 15547 | 17958 | 21114 | 25240 | 28429 | 108197 | 7847 | 10564 | 14219 | 16368 | 19181 | 22870 | 25705 | 73425 |
| C01 | 6476 | 8776 | 11879 | 13711 | 16111 | 19246 | 21666 | 81891 | 6006 | 8071 | 10843 | 12474 | 14604 | 17403 | 19550 | 55580 |
| C02 | 435 | 587 | 789 | 908 | 1063 | 1267 | 1424 | 5266 | 399 | 534 | 713 | 818 | 956 | 1137 | 1275 | 3570 |
| C03 | 2935 | 3960 | 5341 | 6155 | 7219 | 8614 | 9686 | 36182 | 2706 | 3624 | 4853 | 5575 | 6521 | 7760 | 8711 | 24537 |
| D01 | 3130 | 4215 | 5678 | 6541 | 7668 | 9145 | 10281 | 38335 | 2881 | 3854 | 5156 | 5921 | 6923 | 8235 | 9242 | 25996 |
| E01 | 8363 | 11268 | 15188 | 17502 | 20532 | 24493 | 27549 | 103530 | 7719 | 10331 | 13824 | 15886 | 18586 | 22116 | 24833 | 70230 |
| E02 | 29976 | 40588 | 54978 | 63498 | 74676 | 89251 | 100556 | 386089 | 27801 | 37387 | 50305 | 57931 | 67932 | 81014 | 91100 | 262009 |
| F01 | 3573 | 4825 | 6508 | 7501 | 8801 | 10506 | 11815 | 44235 | 3295 | 4415 | 5917 | 6800 | 7956 | 9470 | 10631 | 30014 |
| F02 | 352 | 475 | 640 | 736 | 862 | 1028 | 1155 | 4272 | 323 | 433 | 578 | 663 | 775 | 922 | 1035 | 2895 |
| F_OUT | 3924 | 5300 | 7148 | 8237 | 9664 | 11534 | 12970 | 48507 | 3618 | 4848 | 6495 | 7463 | 8731 | 10393 | 11665 | 32909 |
| G01 | 51100 | 69377 | 94179 | 108861 | 128110 | 153226 | 172704 | 665046 | 47522 | 64048 | 86309 | 99445 | 116672 | 139209 | 156597 | 451372 |
| G02 | 65291 | 89014 | 121358 | 140554 | 165791 | 198582 | 224181 | 880307 | 60988 | 82579 | 111781 | 129049 | 151726 | 181344 | 204287 | 597456 |
| M01 | 2450 | 3217 | 4247 | 4853 | 5644 | 6686 | 7482 | 26938 | 2211 | 2894 | 3807 | 4344 | 5045 | 5967 | 6671 | 18241 |
| M02 | 69181 | 94451 | 128966 | 149460 | 176422 | 211434 | 238826 | 944958 | 64715 | 87757 | 118972 | 137453 | 161742 | 193433 | 218036 | 641295 |
| M03 | 4285 | 5643 | 7470 | 8544 | 9949 | 11793 | 13207 | 47782 | 3877 | 5088 | 6708 | 7659 | 8905 | 10539 | 11789 | 32358 |
| M04 | 1394 | 1833 | 2423 | 2771 | 3225 | 3821 | 4278 | 15430 | 1259 | 1650 | 2174 | 2481 | 2883 | 3411 | 3815 | 10450 |
| M05 | 8820 | 11632 | 15413 | 17639 | 20547 | 24366 | 27292 | 99069 | 8000 | 10512 | 13871 | 15844 | 18425 | 21813 | 24405 | 67088 |
| M06 | 4896 | 6394 | 8405 | 9588 | 11134 | 13166 | 14721 | 52635 | 4400 | 5734 | 7517 | 8563 | 9933 | 11731 | 13107 | 35635 |
| M07 | 10418 | 13807 | 18372 | 21061 | 24578 | 29187 | 32723 | 119874 | 9481 | 12514 | 16567 | 18947 | 22064 | 26165 | 29301 | 81268 |
| M08 | 14426 | 19104 | 25409 | 29125 | 33988 | 40356 | 45252 | 166134 | 13134 | 17328 | 22939 | 26235 | 30553 | 36227 | 40571 | 112595 |
| M09 | 16525 | 21889 | 29112 | 33374 | 38955 | 46258 | 51880 | 191031 | 15059 | 19870 | 26313 | 30099 | 35062 | 41575 | 46568 | 129452 |
| M10 | 100027 | 135511 | 183856 | 212509 | 250207 | 299218 | 337458 | 1317386 | 92953 | 125210 | 168841 | 194651 | 228550 | 272800 | 307088 | 893650 |
| M11 | 2320 | 3029 | 3980 | 4540 | 5271 | 6233 | 6968 | 24897 | 2083 | 2714 | 3558 | 4053 | 4701 | 5552 | 6202 | 16858 |
| M12 | 4607 | 6063 | 8019 | 9169 | 10673 | 12649 | 14163 | 51180 | 4165 | 5463 | 7198 | 8217 | 9550 | 11301 | 12640 | 34660 |
| M13 | 8625 | 11324 | 14955 | 17091 | 19883 | 23549 | 26360 | 95206 | 7797 | 10208 | 13433 | 15327 | 17805 | 21058 | 23548 | 64463 |
| M14 | 113656 | 154159 | 209486 | 242321 | 285495 | 341598 | 385475 | 1518044 | 105764 | 142661 | 192684 | 222316 | 261264 | 312044 | 351491 | 1029722 |
| **PEAK FLOWRATES [m3/s]** | | | | | | | | | | | | | | | | |
| **PEAK Stream Top** | | | | | | | | | | | | | | | | |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E02 | 5.252 | 7.192 | 9.909 | 11.553 | 13.75 | 15.897 | 18.092 | 78.92 | 5.476 | 7.47 | 10.25 | 11.935 | 14.187 | 16.215 | 18.444 | 79.622 |
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 1.12 | 1.535 | 2.112 | 2.46 | 2.923 | 3.366 | 3.823 | 15.03 | 1.173 | 1.606 | 2.209 | 2.573 | 3.059 | 3.49 | 3.967 | 16.572 |
| G01 | 9.314 | 12.897 | 17.972 | 21.072 | 25.232 | 29.413 | 33.625 | 168.703 | 9.336 | 12.863 | 17.836 | 20.871 | 24.948 | 28.787 | 32.887 | 160.748 |
| G02 | 9.431 | 13.021 | 18.26 | 21.488 | 25.83 | 30.36 | 34.788 | 190.159 | 9.258 | 12.915 | 18.079 | 21.22 | 25.412 | 29.932 | 34.196 | 173.54 |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M02 | 10.088 | 14.065 | 19.572 | 23.105 | 27.896 | 33.283 | 38.18 | 222.698 | 9.528 | 13.353 | 18.906 | 22.283 | 26.798 | 32.269 | 36.928 | 174.032 |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M05 | 2.202 | 2.903 | 3.856 | 4.423 | 5.169 | 5.835 | 6.552 | 22.356 | 2.505 | 3.298 | 4.372 | 5.009 | 5.847 | 6.519 | 7.319 | 26.111 |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M08 | 3.42 | 4.541 | 6.078 | 6.995 | 8.205 | 9.329 | 10.51 | 37.798 | 3.728 | 4.938 | 6.59 | 7.574 | 8.873 | 9.968 | 11.223 | 42.496 |
| M09 | 3.651 | 4.934 | 6.72 | 7.797 | 9.23 | 10.616 | 12.037 | 51.042 | 3.651 | 4.92 | 6.679 | 7.739 | 9.15 | 10.457 | 11.852 | 53.423 |
| M10 | 14.488 | 20.17 | 28.221 | 33.141 | 39.729 | 47.287 | 54.023 | 319.211 | 13.877 | 19.285 | 26.885 | 31.501 | 37.729 | 45.393 | 51.87 | 259.373 |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M13 | 1.754 | 2.312 | 3.07 | 3.52 | 4.111 | 4.649 | 5.22 | 17.809 | 1.972 | 2.595 | 3.44 | 3.94 | 4.599 | 5.132 | 5.762 | 20.701 |
| M14 | 16.232 | 22.461 | 31.291 | 36.687 | 43.922 | 52.2 | 59.638 | 352.849 | 15.639 | 21.579 | 30.007 | 35.172 | 42.137 | 50.331 | 57.476 | 289.449 |
| **PEAK Stream Bottom** | | | | | | | | | | | | | | | | |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E02 | 3.571 | 4.971 | 6.922 | 8.101 | 9.688 | 11.428 | 13.065 | 74.378 | 3.482 | 4.84 | 6.749 | 7.926 | 9.521 | 11.272 | 12.899 | 65.476 |
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 1.12 | 1.535 | 2.112 | 2.46 | 2.923 | 3.366 | 3.823 | 15.03 | 1.173 | 1.606 | 2.209 | 2.573 | 3.059 | 3.49 | 3.967 | 16.572 |
| G01 | 8.144 | 11.275 | 15.725 | 18.499 | 22.239 | 26.164 | 29.976 | 165.547 | 7.973 | 11.096 | 15.539 | 18.247 | 21.883 | 25.811 | 29.513 | 149.609 |
| G02 | 7.938 | 11.113 | 15.588 | 18.321 | 22.004 | 26.202 | 29.977 | 174.269 | 7.658 | 10.732 | 15.07 | 17.713 | 21.264 | 25.509 | 29.175 | 139.144 |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M02 | 9.779 | 13.729 | 19.285 | 22.656 | 27.143 | 32.452 | 37.147 | 219.516 | 9.338 | 13.119 | 18.444 | 21.7 | 26.082 | 31.479 | 36.055 | 167.269 |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M05 | 1.544 | 2.09 | 2.845 | 3.302 | 3.906 | 4.476 | 5.069 | 20.81 | 1.514 | 2.05 | 2.795 | 3.243 | 3.837 | 4.402 | 4.987 | 22.792 |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M08 | 2.371 | 3.234 | 4.439 | 5.169 | 6.142 | 7.081 | 8.043 | 36.195 | 2.318 | 3.155 | 4.32 | 5.023 | 5.964 | 6.891 | 7.831 | 37.305 |
| M09 | 3.107 | 4.253 | 5.863 | 6.836 | 8.137 | 9.422 | 10.723 | 50.207 | 3.068 | 4.184 | 5.741 | 6.683 | 7.945 | 9.219 | 10.479 | 50.767 |
| M10 | 14.13 | 19.706 | 27.627 | 32.48 | 38.983 | 46.465 | 53.145 | 315.008 | 13.683 | 19.042 | 26.622 | 31.244 | 37.458 | 45.026 | 51.478 | 253.081 |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M13 | 1.144 | 1.554 | 2.124 | 2.467 | 2.924 | 3.361 | 3.812 | 16.391 | 1.118 | 1.516 | 2.071 | 2.405 | 2.851 | 3.284 | 3.727 | 17.394 |
| M14 | 15.536 | 21.561 | 30.074 | 35.33 | 42.405 | 50.581 | 57.869 | 343.106 | 14.948 | 20.768 | 29.01 | 34.053 | 40.838 | 49.065 | 56.117 | 268.4 |
| **PEAK Local Perv** | | | | | | | | | | | | | | | | |
| A01 | 2.321 | 3.238 | 4.53 | 5.315 | 6.368 | 7.446 | 8.533 | 43.292 | 2.231 | 3.122 | 4.391 | 5.168 | 6.215 | 7.214 | 8.271 | 41.105 |
| B01 | 1.663 | 2.321 | 3.253 | 3.822 | 4.583 | 5.34 | 6.108 | 28.772 | 1.64 | 2.29 | 3.208 | 3.769 | 4.522 | 5.232 | 5.989 | 28.341 |
| C01 | 1.369 | 1.907 | 2.665 | 3.126 | 3.744 | 4.352 | 4.972 | 22.548 | 1.359 | 1.893 | 2.645 | 3.104 | 3.72 | 4.294 | 4.91 | 22.743 |
| C02 | 0.164 | 0.22 | 0.298 | 0.344 | 0.404 | 0.459 | 0.518 | 1.823 | 0.176 | 0.238 | 0.324 | 0.375 | 0.442 | 0.498 | 0.563 | 2.138 |
| C03 | 0.759 | 1.048 | 1.451 | 1.695 | 2.019 | 2.331 | 2.653 | 10.729 | 0.769 | 1.062 | 1.473 | 1.721 | 2.054 | 2.356 | 2.684 | 11.75 |
| D01 | 0.772 | 1.066 | 1.476 | 1.724 | 2.054 | 2.372 | 2.699 | 10.946 | 0.781 | 1.079 | 1.497 | 1.75 | 2.088 | 2.395 | 2.73 | 11.969 |
| E01 | 1.479 | 2.063 | 2.886 | 3.387 | 4.059 | 4.723 | 5.398 | 24.862 | 1.465 | 2.043 | 2.857 | 3.354 | 4.022 | 4.647 | 5.315 | 24.783 |
| E02 | 1.214 | 1.688 | 2.355 | 2.761 | 3.303 | 3.834 | 4.377 | 19.384 | 1.21 | 1.683 | 2.348 | 2.753 | 3.296 | 3.801 | 4.343 | 19.904 |
| F01 | 0.881 | 1.219 | 1.692 | 1.978 | 2.36 | 2.729 | 3.109 | 12.935 | 0.887 | 1.229 | 1.707 | 1.997 | 2.386 | 2.741 | 3.126 | 13.891 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F02 | 0.137 | 0.184 | 0.248 | 0.286 | 0.336 | 0.381 | 0.429 | 1.502 | 0.149 | 0.201 | 0.272 | 0.314 | 0.371 | 0.417 | 0.471 | 1.771 |
| F_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G01 | 0.807 | 1.115 | 1.546 | 1.806 | 2.153 | 2.487 | 2.832 | 11.582 | 0.815 | 1.128 | 1.565 | 1.83 | 2.184 | 2.507 | 2.858 | 12.588 |
| G02 | 1.821 | 2.531 | 3.553 | 4.177 | 5.013 | 5.845 | 6.689 | 32.157 | 1.783 | 2.491 | 3.493 | 4.106 | 4.932 | 5.708 | 6.537 | 31.372 |
| M01 | 0.299 | 0.406 | 0.554 | 0.642 | 0.759 | 0.867 | 0.981 | 3.585 | 0.314 | 0.428 | 0.585 | 0.68 | 0.805 | 0.914 | 1.036 | 4.073 |
| M02 | 0.465 | 0.637 | 0.875 | 1.017 | 1.207 | 1.385 | 1.571 | 5.972 | 0.479 | 0.658 | 0.906 | 1.055 | 1.254 | 1.43 | 1.625 | 6.729 |
| M03 | 0.531 | 0.729 | 1.003 | 1.169 | 1.388 | 1.595 | 1.811 | 6.971 | 0.545 | 0.749 | 1.033 | 1.205 | 1.433 | 1.637 | 1.862 | 7.832 |
| M04 | 0.208 | 0.281 | 0.382 | 0.441 | 0.52 | 0.592 | 0.668 | 2.37 | 0.222 | 0.301 | 0.41 | 0.475 | 0.562 | 0.634 | 0.718 | 2.759 |
| M05 | 0.448 | 0.613 | 0.841 | 0.978 | 1.16 | 1.331 | 1.509 | 5.718 | 0.462 | 0.634 | 0.873 | 1.016 | 1.208 | 1.376 | 1.564 | 6.447 |
| M06 | 0.354 | 0.483 | 0.66 | 0.766 | 0.907 | 1.037 | 1.175 | 4.36 | 0.369 | 0.505 | 0.692 | 0.805 | 0.954 | 1.085 | 1.231 | 4.939 |
| M07 | 1.211 | 1.683 | 2.348 | 2.752 | 3.292 | 3.821 | 4.362 | 19.308 | 1.207 | 1.677 | 2.341 | 2.745 | 3.286 | 3.789 | 4.329 | 19.834 |
| M08 | 0.467 | 0.639 | 0.878 | 1.022 | 1.212 | 1.391 | 1.577 | 5.999 | 0.481 | 0.66 | 0.909 | 1.059 | 1.259 | 1.435 | 1.631 | 6.759 |
| M09 | 0.253 | 0.342 | 0.466 | 0.539 | 0.637 | 0.726 | 0.82 | 2.954 | 0.267 | 0.363 | 0.496 | 0.575 | 0.681 | 0.771 | 0.873 | 3.382 |
| M10 | 0.412 | 0.563 | 0.772 | 0.897 | 1.062 | 1.218 | 1.38 | 5.19 | 0.427 | 0.584 | 0.803 | 0.935 | 1.111 | 1.264 | 1.436 | 5.864 |
| M11 | 0.189 | 0.255 | 0.346 | 0.399 | 0.47 | 0.535 | 0.603 | 2.134 | 0.202 | 0.274 | 0.373 | 0.432 | 0.51 | 0.576 | 0.651 | 2.492 |
| M12 | 0.538 | 0.738 | 1.016 | 1.183 | 1.406 | 1.616 | 1.835 | 7.07 | 0.551 | 0.758 | 1.046 | 1.219 | 1.451 | 1.657 | 1.885 | 7.941 |
| M13 | 0.317 | 0.432 | 0.589 | 0.684 | 0.808 | 0.924 | 1.046 | 3.842 | 0.332 | 0.454 | 0.621 | 0.722 | 0.855 | 0.971 | 1.101 | 4.361 |
| M14 | 0.932 | 1.29 | 1.793 | 2.097 | 2.503 | 2.896 | 3.3 | 13.881 | 0.937 | 1.298 | 1.804 | 2.112 | 2.524 | 2.901 | 3.31 | 14.795 |
| **PEAK Local Imp** | | | | | | | | | | | | | | | | |
| A01 | 0.859 | 1.112 | 1.451 | 1.651 | 1.911 | 2.11 | 2.355 | 7.321 | 0.949 | 1.228 | 1.6 | 1.818 | 2.104 | 2.32 | 2.588 | 8.729 |
| B01 | 0.27 | 0.349 | 0.455 | 0.518 | 0.6 | 0.66 | 0.737 | 2.131 | 0.292 | 0.378 | 0.493 | 0.56 | 0.648 | 0.712 | 0.795 | 2.674 |
| C01 | 0.207 | 0.268 | 0.35 | 0.398 | 0.461 | 0.507 | 0.566 | 1.611 | 0.224 | 0.289 | 0.377 | 0.429 | 0.496 | 0.545 | 0.608 | 2.045 |
| C02 | 0.016 | 0.02 | 0.026 | 0.03 | 0.035 | 0.038 | 0.042 | 0.112 | 0.016 | 0.021 | 0.027 | 0.031 | 0.036 | 0.04 | 0.044 | 0.144 |
| C03 | 0.097 | 0.126 | 0.164 | 0.187 | 0.217 | 0.238 | 0.265 | 0.724 | 0.104 | 0.135 | 0.175 | 0.199 | 0.231 | 0.253 | 0.282 | 0.944 |
| D01 | 0.165 | 0.213 | 0.278 | 0.316 | 0.366 | 0.402 | 0.449 | 1.262 | 0.177 | 0.229 | 0.299 | 0.339 | 0.393 | 0.431 | 0.481 | 1.617 |
| E01 | 0.756 | 0.978 | 1.276 | 1.452 | 1.681 | 1.855 | 2.07 | 6.385 | 0.833 | 1.077 | 1.404 | 1.595 | 1.846 | 2.035 | 2.27 | 7.623 |
| E02 | 1.582 | 2.047 | 2.671 | 3.038 | 3.518 | 3.892 | 4.344 | 13.988 | 1.766 | 2.284 | 2.976 | 3.382 | 3.914 | 4.323 | 4.823 | 16.551 |
| F01 | 0.116 | 0.15 | 0.195 | 0.222 | 0.257 | 0.283 | 0.315 | 0.868 | 0.124 | 0.16 | 0.209 | 0.237 | 0.275 | 0.301 | 0.336 | 1.126 |
| F02 | 0.012 | 0.016 | 0.021 | 0.023 | 0.027 | 0.03 | 0.033 | 0.087 | 0.013 | 0.017 | 0.022 | 0.024 | 0.028 | 0.031 | 0.035 | 0.113 |
| F_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G01 | 0.581 | 0.752 | 0.981 | 1.116 | 1.292 | 1.425 | 1.591 | 4.827 | 0.638 | 0.825 | 1.074 | 1.221 | 1.413 | 1.556 | 1.737 | 5.815 |
| G02 | 2.779 | 3.597 | 4.694 | 5.339 | 6.182 | 6.9 | 7.703 | 25.351 | 3.134 | 4.053 | 5.281 | 6.002 | 6.945 | 7.685 | 8.574 | 29.712 |
| M01 | 0.754 | 0.976 | 1.274 | 1.449 | 1.678 | 1.851 | 2.066 | 6.372 | 0.831 | 1.075 | 1.401 | 1.592 | 1.842 | 2.031 | 2.266 | 7.608 |
| M02 | 1.066 | 1.379 | 1.8 | 2.047 | 2.37 | 2.618 | 2.923 | 9.203 | 1.182 | 1.528 | 1.991 | 2.263 | 2.619 | 2.889 | 3.223 | 10.947 |
| M03 | 1.155 | 1.495 | 1.951 | 2.219 | 2.569 | 2.839 | 3.169 | 10.023 | 1.282 | 1.658 | 2.161 | 2.456 | 2.842 | 3.136 | 3.499 | 11.911 |
| M04 | 0.418 | 0.54 | 0.705 | 0.802 | 0.929 | 1.023 | 1.142 | 3.395 | 0.456 | 0.589 | 0.768 | 0.873 | 1.01 | 1.112 | 1.24 | 4.167 |
| M05 | 0.843 | 1.091 | 1.424 | 1.62 | 1.875 | 2.07 | 2.311 | 7.174 | 0.931 | 1.204 | 1.569 | 1.783 | 2.063 | 2.275 | 2.538 | 8.556 |
| M06 | 1.686 | 2.182 | 2.848 | 3.239 | 3.751 | 4.15 | 4.632 | 14.968 | 1.885 | 2.438 | 3.176 | 3.61 | 4.177 | 4.615 | 5.149 | 17.693 |
| M07 | 2.245 | 2.904 | 3.791 | 4.312 | 4.992 | 5.529 | 6.172 | 20.244 | 2.522 | 3.261 | 4.249 | 4.829 | 5.588 | 6.179 | 6.894 | 23.817 |
| M08 | 1.237 | 1.601 | 2.089 | 2.377 | 2.752 | 3.041 | 3.395 | 10.782 | 1.375 | 1.779 | 2.318 | 2.634 | 3.048 | 3.364 | 3.754 | 12.802 |
| M09 | 0.759 | 0.982 | 1.282 | 1.458 | 1.688 | 1.863 | 2.079 | 6.415 | 0.837 | 1.082 | 1.41 | 1.602 | 1.854 | 2.044 | 2.28 | 7.658 |
| M10 | 0.851 | 1.101 | 1.437 | 1.634 | 1.892 | 2.089 | 2.332 | 7.242 | 0.94 | 1.215 | 1.583 | 1.799 | 2.082 | 2.296 | 2.561 | 8.637 |
| M11 | 0.852 | 1.102 | 1.438 | 1.636 | 1.894 | 2.091 | 2.334 | 7.25 | 0.941 | 1.216 | 1.585 | 1.801 | 2.084 | 2.298 | 2.564 | 8.646 |
| M12 | 1.277 | 1.653 | 2.157 | 2.453 | 2.841 | 3.14 | 3.505 | 11.151 | 1.421 | 1.837 | 2.394 | 2.721 | 3.148 | 3.475 | 3.877 | 13.234 |
| M13 | 1.416 | 1.833 | 2.392 | 2.721 | 3.15 | 3.483 | 3.888 | 12.443 | 1.578 | 2.041 | 2.659 | 3.022 | 3.497 | 3.862 | 4.309 | 14.747 |
| M14 | 1.893 | 2.45 | 3.197 | 3.637 | 4.211 | 4.661 | 5.203 | 16.917 | 2.121 | 2.742 | 3.573 | 4.061 | 4.699 | 5.194 | 5.795 | 19.96 |
| **PEAK Directed to Btm** | | | | | | | | | | | | | | | | |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M08 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M09 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **PEAK OUTLET Inflow** | | | | | | | | | | | | | | | | |
| A01 | 3.077 | 4.229 | 5.848 | 6.829 | 8.143 | 9.437 | 10.755 | 48.894 | 3.178 | 4.35 | 5.99 | 6.986 | 8.319 | 9.533 | 10.859 | 47.869 |
| B01 | 1.893 | 2.62 | 3.644 | 4.266 | 5.097 | 5.918 | 6.753 | 30.499 | 1.933 | 2.668 | 3.701 | 4.329 | 5.169 | 5.944 | 6.783 | 30.46 |
| C01 | 1.543 | 2.133 | 2.959 | 3.461 | 4.132 | 4.788 | 5.459 | 23.856 | 1.583 | 2.183 | 3.022 | 3.533 | 4.216 | 4.839 | 5.518 | 24.456 |
| C02 | 0.175 | 0.235 | 0.317 | 0.365 | 0.429 | 0.487 | 0.549 | 1.931 | 0.193 | 0.26 | 0.351 | 0.406 | 0.478 | 0.537 | 0.607 | 2.265 |
| C03 | 0.837 | 1.149 | 1.583 | 1.844 | 2.192 | 2.526 | 2.87 | 11.339 | 0.873 | 1.197 | 1.648 | 1.921 | 2.284 | 2.609 | 2.967 | 12.51 |
| D01 | 0.908 | 1.242 | 1.706 | 1.986 | 2.358 | 2.713 | 3.08 | 12.015 | 0.958 | 1.309 | 1.796 | 2.089 | 2.481 | 2.827 | 3.211 | 13.305 |
| E01 | 2.175 | 2.963 | 4.061 | 4.724 | 5.607 | 6.46 | 7.337 | 30.188 | 2.298 | 3.12 | 4.26 | 4.949 | 5.868 | 6.681 | 7.585 | 31.753 |
| E02 | 5.008 | 6.987 | 9.832 | 11.581 | 13.937 | 16.314 | 18.709 | 102.581 | 4.905 | 6.831 | 9.533 | 11.185 | 13.42 | 15.821 | 18.107 | 93.634 |
| F01 | 0.974 | 1.34 | 1.85 | 2.158 | 2.568 | 2.963 | 3.37 | 13.636 | 1.011 | 1.389 | 1.916 | 2.235 | 2.661 | 3.042 | 3.462 | 14.805 |
| F02 | 0.146 | 0.195 | 0.263 | 0.303 | 0.355 | 0.403 | 0.453 | 1.586 | 0.162 | 0.217 | 0.294 | 0.339 | 0.399 | 0.448 | 0.505 | 1.87 |
| F_OUT | 1.12 | 1.535 | 2.112 | 2.46 | 2.923 | 3.366 | 3.823 | 15.03 | 1.173 | 1.606 | 2.209 | 2.573 | 3.059 | 3.49 | 3.967 | 16.572 |
| G01 | 8.865 | 12.242 | 17.094 | 20.117 | 24.183 | 28.44 | 32.591 | 179.312 | 8.664 | 12.076 | 16.908 | 19.855 | 23.813 | 28.066 | 32.09 | 162.672 |
| G02 | 9.822 | 13.718 | 19.116 | 22.383 | 27.049 | 32.282 | 37.063 | 216.72 | 9.318 | 13.052 | 18.392 | 21.699 | 26.122 | 31.437 | 36 | 168.656 |
| M01 | 1.012 | 1.331 | 1.763 | 2.02 | 2.356 | 2.627 | 2.948 | 9.885 | 1.145 | 1.503 | 1.986 | 2.272 | 2.648 | 2.944 | 3.301 | 11.644 |
| M02 | 10.116 | 14.202 | 19.972 | 23.473 | 28.111 | 33.617 | 38.407 | 227.897 | 9.635 | 13.531 | 19.024 | 22.382 | 26.902 | 32.517 | 37.254 | 171.573 |
| M03 | 1.624 | 2.143 | 2.849 | 3.268 | 3.819 | 4.321 | 4.854 | 16.601 | 1.827 | 2.407 | 3.194 | 3.66 | 4.275 | 4.773 | 5.361 | 19.283 |
| M04 | 0.602 | 0.792 | 1.051 | 1.205 | 1.407 | 1.567 | 1.759 | 5.765 | 0.678 | 0.891 | 1.178 | 1.348 | 1.572 | 1.746 | 1.958 | 6.828 |
| M05 | 2.623 | 3.531 | 4.787 | 5.541 | 6.54 | 7.482 | 8.461 | 32.776 | 2.66 | 3.575 | 4.837 | 5.594 | 6.599 | 7.506 | 8.491 | 36.629 |
| M06 | 1.989 | 2.599 | 3.424 | 3.912 | 4.552 | 5.109 | 5.719 | 19.195 | 2.254 | 2.942 | 3.868 | 4.414 | 5.131 | 5.7 | 6.38 | 22.516 |
| M07 | 3.42 | 4.541 | 6.078 | 6.995 | 8.205 | 9.329 | 10.51 | 37.798 | 3.728 | 4.938 | 6.59 | 7.574 | 8.873 | 9.968 | 11.223 | 42.496 |
| M08 | 3.651 | 4.934 | 6.72 | 7.797 | 9.23 | 10.616 | 12.037 | 51.042 | 3.651 | 4.92 | 6.679 | 7.739 | 9.15 | 10.457 | 11.852 | 53.423 |
| M09 | 3.57 | 4.892 | 6.751 | 7.879 | 9.385 | 10.855 | 12.355 | 57.85 | 3.518 | 4.799 | 6.577 | 7.654 | 9.093 | 10.558 | 12.004 | 58.707 |
| M10 | 14.49 | 20.189 | 28.285 | 33.243 | 39.896 | 47.542 | 54.379 | 322.617 | 14.034 | 19.508 | 27.254 | 31.984 | 38.333 | 46.074 | 52.671 | 259.368 |
| M11 | 1.02 | 1.332 | 1.754 | 2.003 | 2.33 | 2.585 | 2.895 | 9.384 | 1.143 | 1.491 | 1.958 | 2.233 | 2.595 | 2.874 | 3.215 | 11.138 |
| M12 | 1.754 | 2.312 | 3.07 | 3.52 | 4.111 | 4.649 | 5.22 | 17.809 | 1.972 | 2.595 | 3.44 | 3.94 | 4.599 | 5.132 | 5.762 | 20.701 |
| M13 | 2.667 | 3.552 | 4.769 | 5.497 | 6.459 | 7.36 | 8.301 | 31.062 | 2.801 | 3.721 | 4.981 | 5.733 | 6.728 | 7.599 | 8.566 | 34.694 |
| M14 | 16.449 | 22.802 | 31.726 | 37.206 | 44.653 | 53.276 | 60.957 | 361.821 | 15.763 | 21.881 | 30.565 | 35.889 | 43.056 | 51.696 | 59.142 | 281.417 |
| **PEAK OUTLET Outflow** | | | | | | | | | | | | | | | | |
| A01 | 3.077 | 4.229 | 5.848 | 6.829 | 8.143 | 9.437 | 10.755 | 48.894 | 3.178 | 4.35 | 5.99 | 6.986 | 8.319 | 9.533 | 10.859 | 47.869 |
| B01 | 1.893 | 2.62 | 3.644 | 4.266 | 5.097 | 5.918 | 6.753 | 30.499 | 1.933 | 2.668 | 3.701 | 4.329 | 5.169 | 5.944 | 6.783 | 30.46 |
| C01 | 1.543 | 2.133 | 2.959 | 3.461 | 4.132 | 4.788 | 5.459 | 23.856 | 1.583 | 2.183 | 3.022 | 3.533 | 4.216 | 4.839 | 5.518 | 24.456 |
| C02 | 0.175 | 0.235 | 0.317 | 0.365 | 0.429 | 0.487 | 0.549 | 1.931 | 0.193 | 0.26 | 0.351 | 0.406 | 0.478 | 0.537 | 0.607 | 2.265 |
| C03 | 0.837 | 1.149 | 1.583 | 1.844 | 2.192 | 2.526 | 2.87 | 11.339 | 0.873 | 1.197 | 1.648 | 1.921 | 2.284 | 2.609 | 2.967 | 12.51 |
| D01 | 0.908 | 1.242 | 1.706 | 1.986 | 2.358 | 2.713 | 3.08 | 12.015 | 0.958 | 1.309 | 1.796 | 2.089 | 2.481 | 2.827 | 3.211 | 13.305 |
| E01 | 2.175 | 2.963 | 4.061 | 4.724 | 5.607 | 6.46 | 7.337 | 30.188 | 2.298 | 3.12 | 4.26 | 4.949 | 5.868 | 6.681 | 7.585 | 31.753 |
| E02 | 5.008 | 6.987 | 9.832 | 11.581 | 13.937 | 16.314 | 18.709 | 102.581 | 4.905 | 6.831 | 9.533 | 11.185 | 13.42 | 15.821 | 18.107 | 93.634 |
| F01 | 0.974 | 1.34 | 1.85 | 2.158 | 2.568 | 2.963 | 3.37 | 13.636 | 1.011 | 1.389 | 1.916 | 2.235 | 2.661 | 3.042 | 3.462 | 14.805 |
| F02 | 0.146 | 0.195 | 0.263 | 0.303 | 0.355 | 0.403 | 0.453 | 1.586 | 0.162 | 0.217 | 0.294 | 0.339 | 0.399 | 0.448 | 0.505 | 1.87 |
| F_OUT | 1.12 | 1.535 | 2.112 | 2.46 | 2.923 | 3.366 | 3.823 | 15.03 | 1.173 | 1.606 | 2.209 | 2.573 | 3.059 | 3.49 | 3.967 | 16.572 |
| G01 | 8.865 | 12.242 | 17.094 | 20.117 | 24.183 | 28.44 | 32.591 | 179.312 | 8.664 | 12.076 | 16.908 | 19.855 | 23.813 | 28.066 | 32.09 | 162.672 |
| G02 | 9.822 | 13.718 | 19.116 | 22.383 | 27.049 | 32.282 | 37.063 | 216.72 | 9.318 | 13.052 | 18.392 | 21.699 | 26.122 | 31.437 | 36 | 168.656 |
| M01 | 1.012 | 1.331 | 1.763 | 2.02 | 2.356 | 2.627 | 2.948 | 9.885 | 1.145 | 1.503 | 1.986 | 2.272 | 2.648 | 2.944 | 3.301 | 11.644 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M02 | 10.116 | 14.202 | 19.972 | 23.473 | 28.111 | 33.617 | 38.407 | 227.897 | 9.635 | 13.531 | 19.024 | 22.382 | 26.902 | 32.517 | 37.254 | 171.573 |
| M03 | 1.624 | 2.143 | 2.849 | 3.268 | 3.819 | 4.321 | 4.854 | 16.601 | 1.827 | 2.407 | 3.194 | 3.66 | 4.275 | 4.773 | 5.361 | 19.283 |
| M04 | 0.602 | 0.792 | 1.051 | 1.205 | 1.407 | 1.567 | 1.759 | 5.765 | 0.678 | 0.891 | 1.178 | 1.348 | 1.572 | 1.746 | 1.958 | 6.828 |
| M05 | 2.623 | 3.531 | 4.787 | 5.541 | 6.54 | 7.482 | 8.461 | 32.776 | 2.66 | 3.575 | 4.837 | 5.594 | 6.599 | 7.506 | 8.491 | 36.629 |
| M06 | 1.989 | 2.599 | 3.424 | 3.912 | 4.552 | 5.109 | 5.719 | 19.195 | 2.254 | 2.942 | 3.868 | 4.414 | 5.131 | 5.7 | 6.38 | 22.516 |
| M07 | 3.42 | 4.541 | 6.078 | 6.995 | 8.205 | 9.329 | 10.51 | 37.798 | 3.728 | 4.938 | 6.59 | 7.574 | 8.873 | 9.968 | 11.223 | 42.496 |
| M08 | 3.651 | 4.934 | 6.72 | 7.797 | 9.23 | 10.616 | 12.037 | 51.042 | 3.651 | 4.92 | 6.679 | 7.739 | 9.15 | 10.457 | 11.852 | 53.423 |
| M09 | 3.57 | 4.892 | 6.751 | 7.879 | 9.385 | 10.855 | 12.355 | 57.85 | 3.518 | 4.799 | 6.577 | 7.654 | 9.093 | 10.558 | 12.004 | 58.707 |
| M10 | 14.49 | 20.189 | 28.285 | 33.243 | 39.896 | 47.542 | 54.379 | 322.617 | 14.034 | 19.508 | 27.254 | 31.984 | 38.333 | 46.074 | 52.671 | 259.368 |
| M11 | 1.02 | 1.332 | 1.754 | 2.003 | 2.33 | 2.585 | 2.895 | 9.384 | 1.143 | 1.491 | 1.958 | 2.233 | 2.595 | 2.874 | 3.215 | 11.138 |
| M12 | 1.754 | 2.312 | 3.07 | 3.52 | 4.111 | 4.649 | 5.22 | 17.809 | 1.972 | 2.595 | 3.44 | 3.94 | 4.599 | 5.132 | 5.762 | 20.701 |
| M13 | 2.667 | 3.552 | 4.769 | 5.497 | 6.459 | 7.36 | 8.301 | 31.062 | 2.801 | 3.721 | 4.981 | 5.733 | 6.728 | 7.599 | 8.566 | 34.694 |
| M14 | 16.449 | 22.802 | 31.726 | 37.206 | 44.653 | 53.276 | 60.957 | 361.821 | 15.763 | 21.881 | 30.565 | 35.889 | 43.056 | 51.696 | 59.142 | 281.417 |
| **TIME to Peaks [mins]** | | | | | | | | | | | | | | | | |
| **TIME Stream Top** | | | | | | | | | | | | | | | | |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| G01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 25 |
| G02 | 65 | 59 | 52 | 51 | 50 | 50 | 49 | 43 | 47 | 46 | 45 | 45 | 45 | 45 | 44 | 27 |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M02 | 80 | 80 | 80 | 65 | 65 | 65 | 65 | 47 | 70 | 60 | 60 | 60 | 60 | 60 | 60 | 30 |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M05 | 40 | 40 | 35 | 35 | 35 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M08 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M09 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 22 |
| M10 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 45 | 60 | 60 | 60 | 59 | 56 | 58 | 56 | 30 |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M13 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M14 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 47 | 45 | 45 | 45 | 45 | 45 | 58 | 56 | 30 |
| **TIME Stream Bottom** | | | | | | | | | | | | | | | | |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E02 | 67 | 66 | 65 | 65 | 60 | 60 | 57 | 46 | 59 | 57 | 53 | 50 | 49 | 49 | 49 | 30 |
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| G01 | 66 | 65 | 57 | 54 | 53 | 53 | 52 | 45 | 55 | 50 | 48 | 47 | 47 | 47 | 46 | 29 |
| G02 | 86 | 83 | 80 | 78 | 75 | 75 | 74 | 53 | 76 | 73 | 70 | 68 | 67 | 67 | 65 | 37 |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M02 | 86 | 85 | 82 | 81 | 80 | 79 | 74 | 52 | 77 | 75 | 72 | 70 | 68 | 68 | 66 | 36 |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M05 | 45 | 45 | 44 | 44 | 44 | 44 | 43 | 31 | 36 | 36 | 35 | 35 | 35 | 35 | 34 | 22 |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M08 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 37 | 39 | 39 | 38 | 38 | 37 | 37 | 37 | 25 |
| M09 | 51 | 50 | 49 | 49 | 48 | 48 | 48 | 39 | 44 | 43 | 42 | 41 | 41 | 41 | 40 | 26 |
| M10 | 71 | 71 | 70 | 69 | 69 | 69 | 68 | 49 | 63 | 63 | 62 | 61 | 61 | 61 | 61 | 32 |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M13 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 35 | 38 | 37 | 37 | 37 | 36 | 36 | 36 | 24 |
| M14 | 84 | 82 | 77 | 74 | 73 | 74 | 73 | 53 | 71 | 69 | 67 | 66 | 65 | 66 | 65 | 35 |
| **TIME Local Perv** | | | | | | | | | | | | | | | | |
| A01 | 45 | 45 | 45 | 45 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 25 |
| B01 | 45 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 25 |
| C01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| C02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| C03 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| D01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| E01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| E02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| F01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| F02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| F_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| G02 | 45 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 25 |
| M01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M03 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M04 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M05 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M06 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M07 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M08 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M09 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M10 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M11 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M12 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M13 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M14 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| **TIME Local Imp** | | | | | | | | | | | | | | | | |
| A01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| B01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| C01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| C02 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 10 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| C03 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| D01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| E01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| E02 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| F01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| F02 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 10 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| F_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| G02 | 35 | 35 | 35 | 35 | 35 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M02 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M03 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M04 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M05 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M06 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M07 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M08 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M09 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M10 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M11 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M12 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M13 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M14 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| **TIME Directed to Btm** | | | | | | | | | | | | | | | | |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M08 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M09 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TIME OUTLET Inflow** | | | | | | | | | | | | | | | | |
| A01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| B01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| C01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| C02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| C03 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| D01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| E01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| E02 | 65 | 45 | 45 | 45 | 45 | 45 | 45 | 43 | 45 | 45 | 44 | 43 | 40 | 42 | 40 | 25 |
| F01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| F02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| F_OUT | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| G01 | 65 | 63 | 53 | 53 | 52 | 51 | 51 | 44 | 53 | 47 | 46 | 45 | 45 | 45 | 45 | 28 |
| G02 | 80 | 80 | 80 | 67 | 65 | 65 | 65 | 49 | 70 | 68 | 60 | 60 | 60 | 60 | 60 | 32 |
| M01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M02 | 85 | 83 | 80 | 80 | 80 | 80 | 72 | 51 | 75 | 74 | 70 | 69 | 67 | 66 | 64 | 35 |
| M03 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M04 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M05 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 28 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M06 | 35 | 35 | 35 | 35 | 35 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M07 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M08 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 22 |
| M09 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 37 | 40 | 40 | 40 | 39 | 38 | 38 | 38 | 25 |
| M10 | 69 | 69 | 68 | 68 | 67 | 68 | 67 | 49 | 61 | 61 | 60 | 60 | 60 | 60 | 60 | 31 |
| M11 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M12 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M13 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M14 | 80 | 80 | 80 | 72 | 70 | 71 | 70 | 51 | 68 | 66 | 63 | 62 | 61 | 62 | 61 | 34 |
| **TIME OUTLET Outflow** | | | | | | | | | | | | | | | | |
| A01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| B01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| C01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| C02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| C03 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| D01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| E01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| E02 | 65 | 45 | 45 | 45 | 45 | 45 | 45 | 43 | 45 | 45 | 44 | 43 | 40 | 42 | 40 | 25 |
| F01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| F02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| F_OUT | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| G01 | 65 | 63 | 53 | 53 | 52 | 51 | 51 | 44 | 53 | 47 | 46 | 45 | 45 | 45 | 45 | 28 |
| G02 | 80 | 80 | 80 | 67 | 65 | 65 | 65 | 49 | 70 | 68 | 60 | 60 | 60 | 60 | 60 | 32 |
| M01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M02 | 85 | 83 | 80 | 80 | 80 | 80 | 72 | 51 | 75 | 74 | 70 | 69 | 67 | 66 | 64 | 35 |
| M03 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M04 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M05 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 28 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M06 | 35 | 35 | 35 | 35 | 35 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M07 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M08 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 22 |
| M09 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 37 | 40 | 40 | 40 | 39 | 38 | 38 | 38 | 25 |
| M10 | 69 | 69 | 68 | 68 | 67 | 68 | 67 | 49 | 61 | 61 | 60 | 60 | 60 | 60 | 60 | 31 |
| M11 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M12 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M13 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M14 | 80 | 80 | 80 | 72 | 70 | 71 | 70 | 51 | 68 | 66 | 63 | 62 | 61 | 62 | 61 | 34 |

# Proposed Scenario

## 2. Catchment Details

Steps 2.1 to 2.4: Enter Data for each Subarea in the Model, including Topology, Surface and Flowpath Blocks and Loss Details

**Catchment Statistics**

| | |
|---|---|
| Total Area [ha] | **483.9** |
| Total Impervious Percent [%] | **46.8** |
| No. of Subareas | **28** |
| No. of Subareas with WC Factor | **28** |

2.1 **Catchment Details** — Routing Options | Sort Subareas | Import Mid/Mif

2.2 **Lag Parameters** — Populate — **1.6** **0.1**

2.3 **Flowpaths** — Populate — **R** **1**

2.4 **Rainfall Losses** — Continuing Loss Rate — Populate — **0** **2.5** **0** **0**

| Subarea Name | D/S Subarea | Area | CG Coords (MGA) | | Outlet Coords (MGA) | | Imp Fraction | C | Imp Lag | Type | Value | IL | CLR | Imp IL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ha | E | N | E | N | % | | | | | mm | mm/hr | mm |
| A01 | E02 | 60.8027 | 0 | 0 | 0 | 0 | 47.2 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| B01 | B_OUT | 29.135 | 0 | 0 | 0 | 0 | 36.9 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| B02 | B_OUT | 0.7884 | 0 | 0 | 0 | 0 | 25 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| B03 | B_OUT | 0.1396 | 0 | 0 | 0 | 0 | 25 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| B_OUT | G01 | 0 | 0 | 0 | 0 | 0 | 0 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| D01 | C01 | 0 | 0 | 0 | 0 | 0 | 0 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| C01 | G01 | 49.8643 | 0 | 0 | 0 | 0 | 46.6 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| E01 | E02 | 31.3551 | 0 | 0 | 0 | 0 | 15.86 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| E02 | G01 | 28.0303 | 0 | 0 | 0 | 0 | 51.75 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| F01 | F_OUT | 15.4131 | 0 | 0 | 0 | 0 | 39.49 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| F02 | F_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| F_OUT | SINK | 0 | 0 | 0 | 0 | 0 | 0 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| G01 | G02 | 14.9583 | 0 | 0 | 0 | 0 | 25 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| G02 | M02 | 56.02 | 0 | 0 | 0 | 0 | 36.82 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M01 | M02 | 8.0763 | 0 | 0 | 0 | 0 | 61.63 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M02 | M10 | 12.655 | 0 | 0 | 0 | 0 | 57.21 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M03 | M05 | 14.338 | 0 | 0 | 0 | 0 | 55.05 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M04 | M05 | 4.627 | 0 | 0 | 0 | 0 | 56.76 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M05 | M10 | 10.7737 | 0 | 0 | 0 | 0 | 52.06 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M06 | M10 | 15.7654 | 0 | 0 | 0 | 0 | 75.71 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M07 | M08 | 36.0991 | 0 | 0 | 0 | 0 | 45.24 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M08 | M09 | 13.958 | 0 | 0 | 0 | 0 | 61 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M09 | M10 | 7.5324 | 0 | 0 | 0 | 0 | 66.45 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M10 | M14 | 10.3045 | 0 | 0 | 0 | 0 | 55.03 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M11 | M14 | 7.4559 | 0 | 0 | 0 | 0 | 76.12 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M12 | M13 | 15.3554 | 0 | 0 | 0 | 0 | 57.39 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M13 | M14 | 13.2062 | 0 | 0 | 0 | 0 | 74.69 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |
| M14 | SINK | 27.2516 | 0 | 0 | 0 | 0 | 49.73 | 1.6 | 0.1 | R | 1 | 0 | 2.5 | 0 |

## 3. Local & Outlet Structures

Steps 3.1 to 3.3: Enter Data for each Structure in the Model (both outlet structures and local structures)

**Structure Statistics**

| | |
|---|---|
| No. of Structures | 4 |
| No. of Outlet Structures | 4 |
| No. Local Structures | 0 |

Populate after steps 3.2 & 3.3 (optional)

Update Sub List | Show 5 | Show 10 | Show 20 | Show 50 | GOTO Fuse | Populate Directed Subs

**Structure Summary**

3.1

| | Lock | ID | Subarea | Type | Description of Structure | Local / Out | Local %Per to LS | %Imp to LS | Fuse Plug | Basin Details IWL | Surf_Area | Stor_Fac | Directed Subareas 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GOTO | TRUE | 1 | A01 | HS | CAT A OFFLINE | OUTLET | | | | 681.2 | 0 | 1 | E02 | | | | |
| GOTO | TRUE | 2 | B01 | HS | CAT B OSD | OUTLET | | | | 685.5 | 0 | 1 | G01 | | | | |
| GOTO | TRUE | 3 | C01 | HS | CAT C OSD | OUTLET | | | | 682.7 | 0 | 1 | G01 | | | | |
| GOTO | TRUE | 4 | F01 | HS | CAT F OSD | OUTLET | | | | 690.4 | 0 | 1 | F_OUT | | | | |
| GOTO | TRUE | 5 | | | | | | | | | | | | | | | |
| GOTO | TRUE | 6 | | | | | | | | | | | | | | | |
| GOTO | TRUE | 7 | | | | | | | | | | | | | | | |
| GOTO | TRUE | 8 | | | | | | | | | | | | | | | |
| GOTO | TRUE | 9 | | | | | | | | | | | | | | | |
| GOTO | TRUE | 10 | | | | | | | | | | | | | | | |

Lock/Unlock ALL

**Structure Templates**

**3.2 Build Structure Templates From Structure Summary**

Build ALL | Build Unlocked | Delete Unlocked

**3.3 Edit Individual Structure Templates**

TOP | ID 1 | A01 | OUTLET

| Weir | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Subarea | E02 | E02 | | | | |
| Crest Elev. | 684.1 | 684.6 | | | | |
| Length [m] | 10 | 140 | | | | |
| Weir Coeff. | 1.7 | 1.7 | | | | |
| Disch_Fac | 1 | 1 | | | | |
| Blck_Time | 0 | 0 | | | | |
| Directed to | TOP | TOP | | | | |
| Delay [mins] | 0 | 0 | | | | |

| Pipe/Box | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Subarea | E02 | E02 | | | | |
| Invert | 681.2 | 682.5 | | | | |
| No. | 1 | 1 | | | | |
| Ent. Type | 1 | 1 | | | | |
| Dia / Width | 375 | 1500 | | | | |
| Height | | 1200 | | | | |
| Disch_Fac | 1 | 1 | | | | |
| Blck_Time | 0 | 0 | | | | |
| Directed to | TOP | TOP | | | | |
| Delay [mins] | 0 | 0 | | | | |
| Ent. Coeff | | | | | | |
| Length [m] | | | | | | |
| Out Invert | | | | | | |
| n | | | | | | |

| HSQ | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Sub | | | | | |
| DFactor | | | | | |
| Btime | | | | | |
| T/B | | | | | |
| Delay | | | | | |

| H | S | | |
|---|---|---|---|
| m | m3 | | |
| 681.2 | 0 | | riser pit |
| 682.5 | 4 | 0 | |
| 682.6 | 558.006 | 0.1 | OSD |
| 682.8 | 1734.313 | 0.3 | |
| 683 | 2991.915 | 0.5 | |
| 683.2 | 4332.707 | 0.7 | |
| 683.4 | 5796.206 | 0.9 | |
| 683.6 | 7394.483 | 1.1 | |
| 683.8 | 9081.502 | 1.3 | |
| 684 | 10859.11 | 1.5 | |
| 684.2 | 12728.62 | 1.7 | |
| 684.4 | 14709.29 | 1.9 | |
| 684.6 | 16796.05 | 2.1 | |
| 684.8 | 18923.15 | 2.3 | |

ID 2 | B01 | OUTLET

| Weir | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Subarea | B_OUT | B_OUT | | | | |
| Crest Elev. | 687.5 | 687.78 | | | | |
| Length [m] | 20 | 40 | | | | |
| Weir Coeff. | 1.7 | 1.7 | | | | |
| Disch_Fac | 1 | 1 | | | | |
| Blck_Time | 0 | 0 | | | | |
| Directed to | TOP | TOP | | | | |
| Delay [mins] | 0 | 0 | | | | |

| Pipe/Box | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Subarea | B_OUT | B_OUT | | | | |
| Invert | 685.5 | 686.7 | | | | |
| No. | 1 | 1 | | | | |
| Ent. Type | 1 | 1 | | | | |
| Dia / Width | 700 | 1800 | | | | |
| Height | | 450 | | | | |
| Disch_Fac | 1 | 1 | | | | |
| Blck_Time | 0 | 0 | | | | |
| Directed to | TOP | TOP | | | | |
| Delay [mins] | 0 | 0 | | | | |
| Ent. Coeff | | | | | | |
| Length [m] | | | | | | |
| Out Invert | | | | | | |
| n | | | | | | |

| HSQ | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Sub | | | | | |
| DFactor | | | | | |
| Btime | | | | | |
| T/B | | | | | |
| Delay | | | | | |

| H | S | | |
|---|---|---|---|
| m | m3 | | |
| 685.5 | 0.0 | | Bioretention pit |
| 686.7 | 4.0 | 0 | |
| 686.8 | 403.6 | 0.1 | OSD |
| 687 | 1334.6 | 0.3 | |
| 687.2 | 2361.5 | 0.5 | |
| 687.4 | 3433.1 | 0.7 | |
| 687.6 | 4541.7 | 0.9 | |
| 687.8 | 5708.8 | 1.1 | |
| 688 | 6932.8 | 1.3 | |
| 688.1 | 7566.9 | 1.4 | |

ID 3 | C01 | OUTLET

| Weir | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Subarea | G01 | G01 | | | | |
| Crest Elev. | 685.1 | 685.7 | | | | |
| Length [m] | 10 | 160 | | | | |
| Weir Coeff. | 1.7 | 1.7 | | | | |
| Disch_Fac | 1 | 1 | | | | |
| Blck_Time | 0 | 0 | | | | |
| Directed to | TOP | TOP | | | | |
| Delay [mins] | 0 | 0 | | | | |

| Pipe/Box | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Subarea | G01 | | | | | |
| Invert | 682.7 | | | | | |
| No. | 1 | | | | | |
| Ent. Type | 1 | | | | | |
| Dia / Width | 375 | | | | | |
| Height | | | | | | |
| Disch_Fac | 1 | | | | | |
| Blck_Time | 0 | | | | | |
| Directed to | TOP | | | | | |
| Delay [mins] | 0 | | | | | |
| Ent. Coeff | | | | | | |
| Length [m] | | | | | | |
| Out Invert | | | | | | |
| n | | | | | | |

| HSQ | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Sub | | | | | |
| DFactor | | | | | |
| Btime | | | | | |
| T/B | | | | | |
| Delay | | | | | |

| H | S | | |
|---|---|---|---|
| m | m3 | | |
| 682.7 | 0 | | riser pit |
| 684.2 | 4 | 0 | |
| 684.4 | 3773.442 | 0.2 | OSD |
| 684.6 | 7706.529 | 0.4 | |
| 684.8 | 11787.33 | 0.6 | |
| 685 | 16000.38 | 0.8 | |
| 685.2 | 20347.49 | 1 | |
| 685.4 | 24829.63 | 1.2 | |
| 685.6 | 29750.9 | 1.4 | |
| 685.8 | 35271.98 | 1.6 | |

TOP | ID 4 | F01 | OUTLET

ID 5 | OUTLET

ID 6 | OUTLET

| Weir | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Subarea | F_OUT | F_OUT | | | | |
| Crest Elev. | 692.8 | 693.2 | | | | |
| Length [m] | 4 | 80 | | | | |
| Weir Coeff. | 1.7 | 1.7 | | | | |
| Disch_Fac | 1 | 1 | | | | |
| Blck_Time | 0 | 0 | | | | |
| Directed to | TOP | TOP | | | | |
| Delay [mins] | 0 | 0 | | | | |

| Pipe/Box | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Subarea | F_OUT | F_OUT | | | | |
| Invert | 690.4 | 691.9 | | | | |
| No. | 1 | 1 | | | | |
| Ent. Type | 1 | 1 | | | | |
| Dia / Width | 375 | 1200 | | | | |
| Height | | 600 | | | | |
| Disch_Fac | 1 | 1 | | | | |
| Blck_Time | 0 | 0 | | | | |
| Directed to | TOP | TOP | | | | |
| Delay [mins] | 0 | 0 | | | | |
| Ent. Coeff | | | | | | |
| Length [m] | | | | | | |
| Out Invert | | | | | | |
| n | | | | | | |

| HSQ | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Sub | | | | | |
| DFactor | | | | | |
| Btime | | | | | |
| T/B | | | | | |
| Delay | | | | | |

| H | S | | |
|---|---|---|---|
| m | m3 | | |
| 690.4 | 0 | | riser pit |
| 691.9 | 4 | 0 | |
| 692 | 130 | 0.1 | OSD |
| 692.2 | 404 | 0.3 | |
| 692.4 | 709 | 0.5 | |
| 692.6 | 1046 | 0.7 | |
| 692.8 | 1413 | 0.9 | |
| 693 | 1812 | 1.1 | |
| 693.1 | 2023 | 1.2 | |
| 693.2 | 2235 | 1.3 | |
| 693.3 | 2446 | 1.4 | |

| Weir | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Subarea | | | | | | |
| Crest Elev. | | | | | | |
| Length [m] | | | | | | |
| Weir Coeff. | | | | | | |
| Disch_Fac | | | | | | |
| Blck_Time | | | | | | |
| Directed to | | | | | | |
| Delay [mins] | | | | | | |

| Pipe/Box | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Subarea | | | | | | |
| Invert | | | | | | |
| No. | | | | | | |
| Ent. Type | | | | | | |
| Dia / Width | | | | | | |
| Height | | | | | | |
| Disch_Fac | | | | | | |
| Blck_Time | | | | | | |
| Directed to | | | | | | |
| Delay [mins] | | | | | | |
| Ent. Coeff | | | | | | |
| Length [m] | | | | | | |
| Out Invert | | | | | | |
| n | | | | | | |

| HSQ | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Sub | | | | | |
| DFactor | | | | | |
| Btime | | | | | |
| T/B | | | | | |
| Delay | | | | | |

| H | S |
|---|---|
| m | m3 |

| Weir | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Subarea | | | | | | |
| Crest Elev. | | | | | | |
| Length [m] | | | | | | |
| Weir Coeff. | | | | | | |
| Disch_Fac | | | | | | |
| Blck_Time | | | | | | |
| Directed to | | | | | | |
| Delay [mins] | | | | | | |

| Pipe/Box | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Subarea | | | | | | |
| Invert | | | | | | |
| No. | | | | | | |
| Ent. Type | | | | | | |
| Dia / Width | | | | | | |
| Height | | | | | | |
| Disch_Fac | | | | | | |
| Blck_Time | | | | | | |
| Directed to | | | | | | |
| Delay [mins] | | | | | | |
| Ent. Coeff | | | | | | |
| Length [m] | | | | | | |
| Out Invert | | | | | | |
| n | | | | | | |

| HSQ | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Sub | | | | | |
| DFactor | | | | | |
| Btime | | | | | |
| T/B | | | | | |
| Delay | | | | | |

| H | S |
|---|---|
| m | m3 |

# 4. Rainfall & Storm Data

Steps 4.1 to 4.4: Enter Data for each Storm in the Model (recorded, design and embedded design) and recorded/imported hydrographs

**Rainfall & Storm Statistics**

| | |
|---|---|
| No. of Gauges | 1 |
| No. Design Storms | 16 |
| No. Recorded Storms | 0 |
| No. of Imported Hydrographs | 0 |

Populate

## 4.1 Rainfall Data

Select Location of IFD Data

External IFD File — Browse...

**Location:**

Internal Database (see IFD Sheet) — Refresh

Go C601

Select Rainfall Gauges — **HINT**

| Gauge | Gauge Name |
|---|---|
| 1 | MOSSVALE |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |

Set Areal Reduction Factor for Design Storms

AUTO Generate based on Storm Duration and Catchment Area

Default 1.00 for Small Catchments (less than 1 km2)

User Defined

## 4.2 Storm Data - Design

| | Design Burst | | Design Envelope | | Calc. Step | Out Step |
|---|---|---|---|---|---|---|
| **DES** Storm No. | **ARI** | **Duration** | **ARI** | **Duration** | mins | mins |
| 1 | 1 | 120 | | | 1 | 1 |
| 2 | 2 | 120 | | | 1 | 1 |
| 3 | 5 | 120 | | | 1 | 1 |
| 4 | 10 | 120 | | | 1 | 1 |
| 5 | 20 | 120 | | | 1 | 1 |
| 6 | 50 | 120 | | | 1 | 1 |
| 7 | 100 | 120 | | | 1 | 1 |
| 8 | PMF | 60 | | | 1 | 1 |
| 9 | 1 | 90 | | | 1 | 1 |
| 10 | 2 | 90 | | | 1 | 1 |
| 11 | 5 | 90 | | | 1 | 1 |
| 12 | 10 | 90 | | | 1 | 1 |
| 13 | 20 | 90 | | | 1 | 1 |
| 14 | 50 | 90 | | | 1 | 1 |
| 15 | 100 | 90 | | | 1 | 1 |
| 16 | PMF | 30 | | | 1 | 1 |
| 17 | | | | | | |
| 18 | | | | | | |
| 19 | | | | | | |
| 20 | | | | | | |

## 4.3 Storm Data - Recorded

| Event Data | Date | Time | Time Step | Type | Calc. Step | Out Step |
|---|---|---|---|---|---|---|
| **REC** Event No. | | | mins | | mins | mins |
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |
| 6 | | | | | | |

| Gauge Data | | | | | | |
|---|---|---|---|---|---|---|
| Event No. | | | | | | |
| Gauge Name | | | | | | |
| Gauge E | | | | | | |
| Gauge N | | | | | | |
| Raintotal [mm] | | | | | | |
| **Rain Data** | Rain 1 | Rain 2 | Rain 3 | Rain 4 | Rain 5 | Rain 6 |

Show 10 Lines

Show 50 Lines

Show 2500 Lines

GOTO Hydrographs

# 6. Results-Tables

View Results in Tabular Format

**Results for Runfile:** U:\FY18\221_Aoyuan Moss Vale Project PS\Des-An\Hydrology\WBNM\PROPOSED_Meta.out

## 6.1 Results

**View Results at Location:** OUTLET Outflow

Flowrates | Volumes | Time to Peaks | Structures

| Storm No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ARI** | 1 | 2 | 5 | 10 | 20 | 50 | 100 | PMF | 1 | 2 | 5 | 10 | 20 | 50 | 100 | PMF |
| **Duration** | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 60 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 30 |
| Catchment Area | 483.9 | 483.9 | 483.9 | 483.9 | 483.9 | 483.9 | 483.9 | 483.9 | 483.9 | 483.9 | 483.9 | 483.9 | 483.9 | 483.9 | 483.9 | 483.9 |
| Impervious percent (%) | 46.82 | 46.82 | 46.82 | 46.82 | 46.82 | 46.82 | 46.82 | 46.82 | 46.82 | 46.82 | 46.82 | 46.82 | 46.82 | 46.82 | 46.82 | 46.82 |
| Rainfall Depth (mm) | 32.34 | 41.85 | 54.61 | 62.12 | 71.93 | 84.84 | 94.7 | 334.46 | 28.86 | 37.32 | 48.63 | 55.27 | 63.96 | 75.37 | 84.09 | 226.37 |
| Excess Rainfall (mm) | 29.68 | 39.19 | 51.96 | 59.46 | 69.27 | 82.18 | 92.04 | 333.13 | 26.87 | 35.33 | 46.64 | 53.28 | 61.96 | 73.38 | 82.1 | 225.71 |
| Runoff Depth (mm) | 21.84 | 29.25 | 39.48 | 45.84 | 54.47 | 65.73 | 74.67 | 309.22 | 20.31 | 27.07 | 36.22 | 41.91 | 49.69 | 59.94 | 67.99 | 208.37 |
| Time to Rain Peak (mins) | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 10 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| **VOLUMES at Outlet [m3]** | | | | | | | | | | | | | | | | |
| A01 | 16413 | 21709 | 28906 | 33144 | 38760 | 46086 | 51816 | 198791 | 15270 | 20074 | 26554 | 30367 | 35405 | 42040 | 47186 | 134905 |
| B01 | 8267 | 10999 | 14681 | 16849 | 19685 | 23400 | 26250 | 96663 | 7548 | 9994 | 13265 | 15180 | 17697 | 21007 | 23540 | 65540 |
| B02 | 224 | 299 | 399 | 459 | 536 | 638 | 715 | 2620 | 204 | 271 | 360 | 412 | 481 | 571 | 639 | 1775 |
| B03 | 36 | 52 | 69 | 80 | 94 | 113 | 127 | 465 | 35 | 47 | 63 | 72 | 85 | 101 | 113 | 315 |
| B_OUT | 8527 | 11350 | 15150 | 17388 | 20316 | 24151 | 27092 | 99749 | 7787 | 10311 | 13688 | 15665 | 18262 | 21679 | 24293 | 67631 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 4555 | 4792 | 6759 | 9923 | 14415 | 20353 | 25042 | 145512 | 4560 | 4789 | 5290 | 7813 | 11769 | 17067 | 21228 | 93110 |
| E01 | 8363 | 11269 | 15189 | 17503 | 20533 | 24495 | 27551 | 103527 | 7719 | 10331 | 13825 | 15887 | 18586 | 22117 | 24835 | 70232 |
| E02 | 31467 | 42054 | 56381 | 64818 | 76019 | 90554 | 101930 | 392949 | 29187 | 38773 | 51676 | 59273 | 69317 | 82447 | 92677 | 266599 |
| F01 | 4453 | 5909 | 7867 | 9019 | 10526 | 12503 | 14019 | 51261 | 4053 | 5353 | 7091 | 8113 | 9449 | 11203 | 12547 | 34736 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 4453 | 5909 | 7867 | 9019 | 10526 | 12503 | 14019 | 51261 | 4053 | 5353 | 7091 | 8113 | 9449 | 11203 | 12547 | 34736 |
| G01 | 46978 | 61799 | 83367 | 98027 | 117859 | 143735 | 164037 | 684940 | 43878 | 57290 | 75540 | 88438 | 106125 | 129433 | 147649 | 458994 |
| G02 | 57530 | 76676 | 103886 | 121745 | 146116 | 177901 | 203044 | 860512 | 53870 | 71330 | 95079 | 110949 | 132806 | 161665 | 184336 | 577851 |
| M01 | 2450 | 3217 | 4247 | 4853 | 5644 | 6686 | 7482 | 26935 | 2211 | 2894 | 3807 | 4344 | 5045 | 5967 | 6671 | 18239 |
| M02 | 61256 | 81925 | 111099 | 130055 | 155981 | 189806 | 216685 | 924596 | 57393 | 76285 | 101981 | 118882 | 142202 | 173032 | 197308 | 621123 |
| M03 | 4284 | 5643 | 7470 | 8544 | 9948 | 11793 | 13207 | 47778 | 3876 | 5088 | 6708 | 7659 | 8904 | 10539 | 11789 | 32354 |
| M04 | 1394 | 1833 | 2423 | 2771 | 3225 | 3821 | 4278 | 15428 | 1259 | 1650 | 2174 | 2481 | 2883 | 3411 | 3815 | 10449 |
| M05 | 8820 | 11632 | 15413 | 17638 | 20547 | 24366 | 27292 | 99061 | 8000 | 10511 | 13871 | 15843 | 18424 | 21812 | 24405 | 67080 |
| M06 | 4896 | 6394 | 8405 | 9588 | 11133 | 13166 | 14721 | 52630 | 4400 | 5734 | 7517 | 8563 | 9932 | 11731 | 13107 | 35631 |
| M07 | 10418 | 13807 | 18372 | 21061 | 24578 | 29186 | 32723 | 119864 | 9481 | 12514 | 16567 | 18947 | 22064 | 26165 | 29300 | 81259 |
| M08 | 14425 | 19104 | 25409 | 29125 | 33988 | 40356 | 45252 | 166120 | 13134 | 17328 | 22939 | 26234 | 30552 | 36226 | 40570 | 112582 |
| M09 | 16524 | 21889 | 29112 | 33374 | 38955 | 46257 | 51880 | 191014 | 15059 | 19870 | 26312 | 30099 | 35062 | 41575 | 46567 | 129437 |
| M10 | 92036 | 122911 | 165731 | 192688 | 229212 | 276882 | 314572 | 1296518 | 85524 | 113620 | 151665 | 175716 | 208531 | 251808 | 285733 | 873018 |
| M11 | 2320 | 3028 | 3980 | 4540 | 5271 | 6233 | 6968 | 24895 | 2083 | 2714 | 3558 | 4053 | 4700 | 5552 | 6202 | 16856 |
| M12 | 4607 | 6063 | 8018 | 9169 | 10673 | 12649 | 14163 | 51175 | 4165 | 5463 | 7198 | 8217 | 9550 | 11301 | 12640 | 34656 |
| M13 | 8625 | 11324 | 14954 | 17090 | 19883 | 23549 | 26360 | 95197 | 7797 | 10207 | 13433 | 15326 | 17805 | 21058 | 23548 | 64455 |
| M14 | 105681 | 141563 | 191033 | 221811 | 263576 | 318088 | 361344 | 1496319 | 98258 | 130969 | 175274 | 202822 | 240452 | 290045 | 329019 | 1008301 |
| **PEAK FLOWRATES [m3/s]** | | | | | | | | | | | | | | | | |
| **PEAK Stream Top** | | | | | | | | | | | | | | | | |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B_OUT | 1.567 | 2.012 | 2.584 | 2.915 | 3.882 | 5.19 | 6.44 | 31.009 | 1.589 | 2.047 | 2.609 | 2.923 | 3.889 | 5.072 | 6.188 | 34.679 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E02 | 3.996 | 5.462 | 7.404 | 8.464 | 10.182 | 12.767 | 15.412 | 90.882 | 3.966 | 5.379 | 7.186 | 8.161 | 9.931 | 12.663 | 15.101 | 98.936 |
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 1.077 | 1.433 | 1.856 | 2.299 | 2.84 | 3.411 | 3.98 | 17.005 | 1.075 | 1.42 | 1.83 | 2.229 | 2.765 | 3.337 | 3.907 | 19.235 |
| G01 | 6.621 | 8.831 | 11.7 | 13.324 | 16.53 | 21.158 | 25.158 | 191.395 | 6.401 | 8.526 | 11.289 | 12.843 | 15.543 | 20.255 | 23.987 | 185.758 |
| G02 | 6.887 | 9.223 | 12.344 | 14.146 | 17.292 | 21.953 | 26.091 | 201.268 | 6.752 | 9.024 | 12.031 | 13.742 | 16.609 | 21.136 | 25.132 | 181.615 |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M02 | 7.952 | 10.785 | 14.64 | 16.905 | 20.627 | 25.781 | 30.379 | 227.445 | 7.477 | 10.124 | 13.694 | 15.77 | 19.116 | 24.321 | 28.603 | 166.051 |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M05 | 2.202 | 2.903 | 3.856 | 4.423 | 5.169 | 5.835 | 6.551 | 22.354 | 2.505 | 3.298 | 4.372 | 5.009 | 5.847 | 6.519 | 7.319 | 26.108 |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M08 | 3.42 | 4.541 | 6.078 | 6.995 | 8.205 | 9.329 | 10.51 | 37.795 | 3.728 | 4.938 | 6.59 | 7.574 | 8.873 | 9.968 | 11.223 | 42.491 |
| M09 | 3.651 | 4.934 | 6.719 | 7.797 | 9.23 | 10.616 | 12.037 | 51.037 | 3.651 | 4.92 | 6.679 | 7.739 | 9.15 | 10.457 | 11.852 | 53.416 |
| M10 | 13.833 | 18.799 | 25.748 | 29.954 | 35.567 | 41.105 | 46.758 | 316.765 | 13.431 | 18.159 | 24.748 | 28.742 | 34.106 | 39.319 | 44.714 | 239.222 |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M13 | 1.754 | 2.312 | 3.07 | 3.519 | 4.11 | 4.648 | 5.22 | 17.807 | 1.972 | 2.595 | 3.44 | 3.94 | 4.599 | 5.132 | 5.762 | 20.699 |
| M14 | 15.451 | 21.172 | 29.221 | 34.118 | 40.668 | 47.207 | 53.804 | 348.283 | 15.122 | 20.611 | 28.316 | 32.978 | 39.221 | 45.718 | 52.03 | 268.41 |
| **PEAK Stream Bottom** | | | | | | | | | | | | | | | | |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B_OUT | 1.567 | 2.012 | 2.584 | 2.915 | 3.882 | 5.19 | 6.44 | 31.009 | 1.589 | 2.047 | 2.609 | 2.923 | 3.889 | 5.072 | 6.188 | 34.679 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E02 | 3.569 | 4.877 | 6.54 | 7.477 | 9.357 | 11.524 | 13.463 | 85.569 | 3.476 | 4.754 | 6.376 | 7.275 | 8.982 | 11.198 | 13.084 | 79.592 |
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 1.077 | 1.433 | 1.856 | 2.299 | 2.84 | 3.411 | 3.98 | 17.005 | 1.075 | 1.42 | 1.83 | 2.229 | 2.765 | 3.337 | 3.907 | 19.235 |
| G01 | 6.316 | 8.443 | 11.247 | 12.851 | 16.042 | 20.411 | 24.287 | 187.292 | 6.189 | 8.257 | 10.981 | 12.522 | 15.224 | 19.634 | 23.364 | 169.648 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| G02 | 6.135 | 8.25 | 11.102 | 12.887 | 16.071 | 20.251 | 23.936 | 180.658 | 5.904 | 7.932 | 10.665 | 12.287 | 15.128 | 19.254 | 22.758 | 140.358 |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M02 | 7.706 | 10.474 | 14.26 | 16.504 | 20.163 | 25.322 | 29.84 | 223.259 | 7.312 | 9.926 | 13.504 | 15.604 | 18.896 | 23.916 | 28.168 | 161.434 |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M05 | 1.544 | 2.09 | 2.845 | 3.302 | 3.906 | 4.476 | 5.069 | 20.808 | 1.514 | 2.05 | 2.795 | 3.243 | 3.837 | 4.402 | 4.987 | 22.789 |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M08 | 2.371 | 3.234 | 4.439 | 5.169 | 6.142 | 7.08 | 8.043 | 36.192 | 2.318 | 3.155 | 4.319 | 5.023 | 5.964 | 6.891 | 7.831 | 37.3 |
| M09 | 3.107 | 4.253 | 5.863 | 6.836 | 8.137 | 9.422 | 10.723 | 50.202 | 3.068 | 4.184 | 5.74 | 6.683 | 7.944 | 9.218 | 10.478 | 50.761 |
| M10 | 12.664 | 17.296 | 23.852 | 27.845 | 33.19 | 38.687 | 44.139 | 313.324 | 12.414 | 16.921 | 23.229 | 27.052 | 32.172 | 37.64 | 42.908 | 233.141 |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M13 | 1.144 | 1.554 | 2.124 | 2.467 | 2.924 | 3.36 | 3.812 | 16.39 | 1.118 | 1.516 | 2.071 | 2.405 | 2.851 | 3.284 | 3.727 | 17.392 |
| M14 | 14.206 | 19.367 | 26.583 | 30.945 | 36.794 | 43.413 | 49.606 | 338.431 | 13.733 | 18.717 | 25.672 | 29.883 | 35.567 | 42.174 | 48.155 | 250.616 |
| **PEAK Local Perv** | | | | | | | | | | | | | | | | |
| A01 | 1.696 | 2.365 | 3.317 | 3.897 | 4.674 | 5.447 | 6.231 | 29.481 | 1.67 | 2.332 | 3.269 | 3.841 | 4.608 | 5.333 | 6.105 | 28.978 |
| B01 | 1.15 | 1.597 | 2.226 | 2.608 | 3.118 | 3.618 | 4.128 | 18.089 | 1.148 | 1.594 | 2.223 | 2.606 | 3.119 | 3.594 | 4.106 | 18.714 |
| B02 | 0.072 | 0.096 | 0.128 | 0.147 | 0.173 | 0.195 | 0.22 | 0.75 | 0.081 | 0.108 | 0.145 | 0.168 | 0.197 | 0.22 | 0.248 | 0.895 |
| B03 | 0.016 | 0.021 | 0.028 | 0.032 | 0.038 | 0.042 | 0.047 | 0.136 | 0.017 | 0.023 | 0.031 | 0.035 | 0.041 | 0.045 | 0.051 | 0.179 |
| B_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 1.489 | 2.077 | 2.906 | 3.411 | 4.088 | 4.757 | 5.437 | 25.071 | 1.475 | 2.056 | 2.876 | 3.376 | 4.049 | 4.68 | 5.352 | 24.966 |
| E01 | 1.479 | 2.063 | 2.886 | 3.387 | 4.059 | 4.724 | 5.399 | 24.861 | 1.465 | 2.043 | 2.857 | 3.354 | 4.022 | 4.647 | 5.315 | 24.781 |
| E02 | 0.922 | 1.276 | 1.773 | 2.074 | 2.475 | 2.864 | 3.263 | 13.698 | 0.927 | 1.285 | 1.786 | 2.09 | 2.498 | 2.871 | 3.275 | 14.62 |
| F01 | 0.702 | 0.968 | 1.339 | 1.563 | 1.861 | 2.146 | 2.441 | 9.757 | 0.713 | 0.984 | 1.363 | 1.592 | 1.899 | 2.176 | 2.478 | 10.759 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G01 | 0.805 | 1.112 | 1.542 | 1.802 | 2.148 | 2.481 | 2.824 | 11.545 | 0.813 | 1.125 | 1.561 | 1.825 | 2.179 | 2.501 | 2.851 | 12.551 |
| G02 | 1.82 | 2.53 | 3.552 | 4.175 | 5.011 | 5.843 | 6.686 | 32.137 | 1.782 | 2.49 | 3.492 | 4.105 | 4.929 | 5.706 | 6.535 | 31.353 |
| M01 | 0.299 | 0.406 | 0.554 | 0.642 | 0.759 | 0.867 | 0.981 | 3.584 | 0.314 | 0.428 | 0.585 | 0.68 | 0.805 | 0.914 | 1.036 | 4.072 |
| M02 | 0.465 | 0.637 | 0.875 | 1.017 | 1.207 | 1.385 | 1.571 | 5.972 | 0.479 | 0.658 | 0.906 | 1.055 | 1.254 | 1.43 | 1.625 | 6.729 |
| M03 | 0.531 | 0.729 | 1.003 | 1.169 | 1.388 | 1.595 | 1.811 | 6.971 | 0.545 | 0.749 | 1.033 | 1.204 | 1.433 | 1.637 | 1.862 | 7.831 |
| M04 | 0.208 | 0.281 | 0.382 | 0.441 | 0.52 | 0.592 | 0.668 | 2.37 | 0.222 | 0.301 | 0.41 | 0.475 | 0.562 | 0.634 | 0.718 | 2.758 |
| M05 | 0.448 | 0.613 | 0.841 | 0.978 | 1.16 | 1.331 | 1.509 | 5.718 | 0.462 | 0.634 | 0.873 | 1.016 | 1.208 | 1.376 | 1.563 | 6.446 |
| M06 | 0.354 | 0.483 | 0.66 | 0.766 | 0.907 | 1.037 | 1.175 | 4.359 | 0.369 | 0.505 | 0.692 | 0.805 | 0.954 | 1.085 | 1.231 | 4.938 |
| M07 | 1.211 | 1.683 | 2.348 | 2.752 | 3.292 | 3.821 | 4.362 | 19.306 | 1.207 | 1.677 | 2.341 | 2.745 | 3.286 | 3.789 | 4.329 | 19.832 |
| M08 | 0.467 | 0.639 | 0.878 | 1.021 | 1.212 | 1.391 | 1.577 | 5.999 | 0.481 | 0.66 | 0.909 | 1.059 | 1.259 | 1.435 | 1.631 | 6.758 |
| M09 | 0.253 | 0.342 | 0.466 | 0.539 | 0.637 | 0.726 | 0.82 | 2.953 | 0.267 | 0.363 | 0.496 | 0.575 | 0.681 | 0.771 | 0.873 | 3.381 |
| M10 | 0.412 | 0.563 | 0.772 | 0.897 | 1.062 | 1.217 | 1.38 | 5.19 | 0.427 | 0.584 | 0.803 | 0.935 | 1.111 | 1.264 | 1.436 | 5.863 |
| M11 | 0.189 | 0.255 | 0.346 | 0.399 | 0.47 | 0.535 | 0.603 | 2.134 | 0.202 | 0.274 | 0.373 | 0.432 | 0.51 | 0.576 | 0.651 | 2.491 |
| M12 | 0.538 | 0.738 | 1.016 | 1.183 | 1.406 | 1.616 | 1.835 | 7.07 | 0.551 | 0.758 | 1.046 | 1.219 | 1.451 | 1.657 | 1.885 | 7.94 |
| M13 | 0.317 | 0.432 | 0.589 | 0.684 | 0.808 | 0.924 | 1.046 | 3.841 | 0.332 | 0.454 | 0.621 | 0.722 | 0.855 | 0.971 | 1.101 | 4.36 |
| M14 | 0.932 | 1.29 | 1.793 | 2.097 | 2.503 | 2.896 | 3.3 | 13.88 | 0.937 | 1.298 | 1.804 | 2.112 | 2.524 | 2.901 | 3.31 | 14.793 |
| **PEAK Local Imp** | | | | | | | | | | | | | | | | |
| A01 | 3.795 | 4.911 | 6.409 | 7.29 | 8.441 | 9.463 | 10.564 | 34.728 | 4.253 | 5.5 | 7.167 | 8.145 | 9.425 | 10.439 | 11.647 | 40.468 |
| B01 | 1.533 | 1.983 | 2.588 | 2.944 | 3.409 | 3.77 | 4.208 | 13.526 | 1.71 | 2.211 | 2.881 | 3.275 | 3.789 | 4.185 | 4.67 | 16.011 |
| B02 | 0.036 | 0.047 | 0.061 | 0.069 | 0.08 | 0.088 | 0.098 | 0.262 | 0.038 | 0.049 | 0.064 | 0.073 | 0.085 | 0.093 | 0.103 | 0.341 |
| B03 | 0.007 | 0.009 | 0.011 | 0.013 | 0.015 | 0.016 | 0.018 | 0.048 | 0.007 | 0.009 | 0.012 | 0.013 | 0.016 | 0.017 | 0.019 | 0.061 |
| B_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 3.102 | 4.014 | 5.239 | 5.959 | 6.9 | 7.734 | 8.634 | 28.404 | 3.499 | 4.525 | 5.897 | 6.702 | 7.755 | 8.584 | 9.577 | 33.223 |
| E01 | 0.756 | 0.978 | 1.276 | 1.452 | 1.681 | 1.855 | 2.07 | 6.385 | 0.833 | 1.077 | 1.404 | 1.595 | 1.846 | 2.035 | 2.27 | 7.622 |
| E02 | 2.018 | 2.611 | 3.407 | 3.876 | 4.488 | 4.968 | 5.546 | 18.09 | 2.262 | 2.926 | 3.812 | 4.333 | 5.013 | 5.542 | 6.183 | 21.321 |
| F01 | 0.909 | 1.176 | 1.535 | 1.745 | 2.021 | 2.232 | 2.491 | 7.768 | 1.005 | 1.299 | 1.693 | 1.924 | 2.227 | 2.455 | 2.74 | 9.257 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G01 | 0.579 | 0.749 | 0.978 | 1.113 | 1.288 | 1.42 | 1.586 | 4.81 | 0.636 | 0.822 | 1.071 | 1.217 | 1.409 | 1.551 | 1.731 | 5.795 |
| G02 | 2.778 | 3.595 | 4.691 | 5.336 | 6.179 | 6.896 | 7.698 | 25.334 | 3.132 | 4.051 | 5.278 | 5.999 | 6.941 | 7.681 | 8.57 | 29.692 |
| M01 | 0.754 | 0.976 | 1.274 | 1.449 | 1.678 | 1.851 | 2.066 | 6.371 | 0.831 | 1.075 | 1.401 | 1.592 | 1.842 | 2.031 | 2.266 | 7.607 |
| M02 | 1.066 | 1.379 | 1.8 | 2.047 | 2.37 | 2.618 | 2.923 | 9.202 | 1.182 | 1.528 | 1.991 | 2.263 | 2.619 | 2.889 | 3.223 | 10.946 |
| M03 | 1.155 | 1.495 | 1.95 | 2.219 | 2.569 | 2.839 | 3.169 | 10.022 | 1.282 | 1.658 | 2.161 | 2.456 | 2.842 | 3.136 | 3.499 | 11.91 |
| M04 | 0.418 | 0.54 | 0.705 | 0.802 | 0.929 | 1.023 | 1.142 | 3.394 | 0.456 | 0.589 | 0.768 | 0.873 | 1.01 | 1.112 | 1.24 | 4.166 |
| M05 | 0.843 | 1.091 | 1.424 | 1.62 | 1.875 | 2.07 | 2.311 | 7.173 | 0.931 | 1.204 | 1.569 | 1.783 | 2.063 | 2.275 | 2.538 | 8.555 |
| M06 | 1.686 | 2.182 | 2.848 | 3.239 | 3.751 | 4.15 | 4.632 | 14.967 | 1.885 | 2.438 | 3.176 | 3.61 | 4.177 | 4.615 | 5.149 | 17.691 |
| M07 | 2.245 | 2.904 | 3.79 | 4.312 | 4.992 | 5.529 | 6.172 | 20.242 | 2.522 | 3.261 | 4.249 | 4.829 | 5.588 | 6.179 | 6.894 | 23.815 |
| M08 | 1.237 | 1.601 | 2.089 | 2.377 | 2.752 | 3.041 | 3.395 | 10.781 | 1.375 | 1.779 | 2.318 | 2.634 | 3.048 | 3.364 | 3.754 | 12.8 |
| M09 | 0.759 | 0.982 | 1.282 | 1.458 | 1.688 | 1.863 | 2.079 | 6.414 | 0.837 | 1.082 | 1.41 | 1.602 | 1.854 | 2.044 | 2.28 | 7.657 |
| M10 | 0.851 | 1.101 | 1.437 | 1.634 | 1.892 | 2.089 | 2.332 | 7.242 | 0.94 | 1.215 | 1.583 | 1.799 | 2.082 | 2.296 | 2.561 | 8.636 |
| M11 | 0.852 | 1.102 | 1.438 | 1.636 | 1.894 | 2.091 | 2.334 | 7.25 | 0.941 | 1.216 | 1.585 | 1.801 | 2.084 | 2.298 | 2.564 | 8.645 |
| M12 | 1.277 | 1.653 | 2.157 | 2.453 | 2.841 | 3.14 | 3.505 | 11.15 | 1.421 | 1.837 | 2.394 | 2.72 | 3.148 | 3.475 | 3.877 | 13.233 |
| M13 | 1.416 | 1.833 | 2.392 | 2.721 | 3.15 | 3.483 | 3.888 | 12.442 | 1.578 | 2.041 | 2.659 | 3.022 | 3.497 | 3.862 | 4.309 | 14.745 |
| M14 | 1.893 | 2.45 | 3.197 | 3.637 | 4.211 | 4.661 | 5.203 | 16.916 | 2.121 | 2.742 | 3.573 | 4.061 | 4.699 | 5.194 | 5.795 | 19.958 |
| **PEAK Directed to Btm** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M08 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M09 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **PEAK OUTLET Inflow** | | | | | | | | | | | | | | | | |
| A01 | 5.489 | 7.276 | 9.726 | 11.187 | 13.115 | 14.91 | 16.794 | 60.947 | 5.924 | 7.833 | 10.435 | 11.986 | 14.033 | 15.772 | 17.752 | 68.113 |
| B01 | 2.625 | 3.506 | 4.717 | 5.442 | 6.4 | 7.297 | 8.235 | 30.07 | 2.858 | 3.806 | 5.105 | 5.881 | 6.908 | 7.78 | 8.776 | 33.72 |
| B02 | 0.105 | 0.14 | 0.188 | 0.216 | 0.253 | 0.282 | 0.318 | 1.006 | 0.119 | 0.157 | 0.21 | 0.241 | 0.282 | 0.313 | 0.352 | 1.221 |
| B03 | 0.022 | 0.03 | 0.039 | 0.045 | 0.053 | 0.058 | 0.065 | 0.182 | 0.024 | 0.032 | 0.042 | 0.049 | 0.057 | 0.062 | 0.07 | 0.24 |
| B_OUT | 1.567 | 2.012 | 2.584 | 2.915 | 3.882 | 5.19 | 6.44 | 31.009 | 1.589 | 2.047 | 2.609 | 2.923 | 3.889 | 5.072 | 6.188 | 34.679 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 4.591 | 6.091 | 8.144 | 9.37 | 10.988 | 12.491 | 14.071 | 50.821 | 4.974 | 6.582 | 8.772 | 10.078 | 11.804 | 13.264 | 14.929 | 57.002 |
| E01 | 2.175 | 2.963 | 4.061 | 4.724 | 5.607 | 6.46 | 7.337 | 30.187 | 2.298 | 3.12 | 4.26 | 4.949 | 5.868 | 6.682 | 7.585 | 31.75 |
| E02 | 4.701 | 6.436 | 8.684 | 9.956 | 12.242 | 15.01 | 17.476 | 112.678 | 4.506 | 6.149 | 8.286 | 9.503 | 11.566 | 14.401 | 16.843 | 105.829 |
| F01 | 1.549 | 2.064 | 2.769 | 3.19 | 3.745 | 4.259 | 4.799 | 17.062 | 1.718 | 2.284 | 3.056 | 3.516 | 4.125 | 4.631 | 5.218 | 19.273 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 1.077 | 1.433 | 1.856 | 2.299 | 2.84 | 3.411 | 3.98 | 17.005 | 1.075 | 1.42 | 1.83 | 2.229 | 2.765 | 3.337 | 3.907 | 19.235 |
| G01 | 6.887 | 9.223 | 12.344 | 14.146 | 17.292 | 21.953 | 26.091 | 201.268 | 6.752 | 9.024 | 12.031 | 13.742 | 16.609 | 21.136 | 25.132 | 181.615 |
| G02 | 7.686 | 10.438 | 14.184 | 16.386 | 20.025 | 25.142 | 29.586 | 221.832 | 7.287 | 9.876 | 13.37 | 15.396 | 18.689 | 23.756 | 27.973 | 163.896 |
| M01 | 1.012 | 1.331 | 1.763 | 2.02 | 2.356 | 2.627 | 2.948 | 9.885 | 1.145 | 1.503 | 1.986 | 2.272 | 2.648 | 2.944 | 3.301 | 11.643 |
| M02 | 8.002 | 10.889 | 14.839 | 17.171 | 20.915 | 26.25 | 30.908 | 230.887 | 7.552 | 10.275 | 14.008 | 16.197 | 19.567 | 24.713 | 29.087 | 163.949 |
| M03 | 1.624 | 2.143 | 2.849 | 3.268 | 3.819 | 4.321 | 4.854 | 16.6 | 1.827 | 2.407 | 3.194 | 3.66 | 4.275 | 4.773 | 5.361 | 19.281 |
| M04 | 0.602 | 0.792 | 1.051 | 1.205 | 1.407 | 1.567 | 1.759 | 5.764 | 0.678 | 0.891 | 1.178 | 1.348 | 1.572 | 1.746 | 1.958 | 6.827 |
| M05 | 2.623 | 3.531 | 4.787 | 5.541 | 6.54 | 7.482 | 8.461 | 32.773 | 2.66 | 3.575 | 4.837 | 5.594 | 6.599 | 7.506 | 8.491 | 36.625 |
| M06 | 1.989 | 2.599 | 3.424 | 3.912 | 4.552 | 5.108 | 5.719 | 19.193 | 2.254 | 2.942 | 3.868 | 4.414 | 5.131 | 5.699 | 6.379 | 22.514 |
| M07 | 3.42 | 4.541 | 6.078 | 6.995 | 8.205 | 9.329 | 10.51 | 37.795 | 3.728 | 4.938 | 6.59 | 7.574 | 8.873 | 9.968 | 11.223 | 42.491 |
| M08 | 3.651 | 4.934 | 6.719 | 7.797 | 9.23 | 10.616 | 12.037 | 51.037 | 3.651 | 4.92 | 6.679 | 7.739 | 9.15 | 10.457 | 11.852 | 53.416 |
| M09 | 3.57 | 4.892 | 6.751 | 7.879 | 9.385 | 10.855 | 12.355 | 57.845 | 3.518 | 4.799 | 6.577 | 7.654 | 9.093 | 10.557 | 12.004 | 58.699 |
| M10 | 13.162 | 18.008 | 24.839 | 29.002 | 34.573 | 40.275 | 45.944 | 320.226 | 12.933 | 17.638 | 24.205 | 28.183 | 33.519 | 39.182 | 44.637 | 238.683 |
| M11 | 1.02 | 1.332 | 1.754 | 2.003 | 2.33 | 2.585 | 2.895 | 9.383 | 1.143 | 1.491 | 1.958 | 2.233 | 2.595 | 2.874 | 3.215 | 11.136 |
| M12 | 1.754 | 2.312 | 3.07 | 3.519 | 4.11 | 4.648 | 5.22 | 17.807 | 1.972 | 2.595 | 3.44 | 3.94 | 4.599 | 5.132 | 5.762 | 20.699 |
| M13 | 2.667 | 3.552 | 4.769 | 5.497 | 6.459 | 7.36 | 8.301 | 31.059 | 2.801 | 3.721 | 4.981 | 5.733 | 6.728 | 7.599 | 8.566 | 34.69 |
| M14 | 15.243 | 20.875 | 28.732 | 33.46 | 39.765 | 46.865 | 53.457 | 355.503 | 14.766 | 20.141 | 27.655 | 32.226 | 38.347 | 45.472 | 51.86 | 263.344 |
| **PEAK OUTLET Outflow** | | | | | | | | | | | | | | | | |
| A01 | 2.549 | 3.439 | 4.465 | 5.053 | 6.603 | 8.249 | 10.043 | 60.868 | 2.496 | 3.365 | 4.375 | 4.908 | 6.334 | 8.152 | 9.85 | 67.245 |
| B01 | 1.522 | 1.957 | 2.516 | 2.837 | 3.781 | 5.049 | 6.251 | 29.947 | 1.541 | 1.988 | 2.538 | 2.847 | 3.784 | 4.929 | 6.004 | 33.406 |
| B02 | 0.105 | 0.14 | 0.188 | 0.216 | 0.253 | 0.282 | 0.318 | 1.006 | 0.119 | 0.157 | 0.21 | 0.241 | 0.282 | 0.313 | 0.352 | 1.221 |
| B03 | 0.022 | 0.03 | 0.039 | 0.045 | 0.053 | 0.058 | 0.065 | 0.182 | 0.024 | 0.032 | 0.042 | 0.049 | 0.057 | 0.062 | 0.07 | 0.24 |
| B_OUT | 1.567 | 2.012 | 2.584 | 2.915 | 3.882 | 5.19 | 6.44 | 31.009 | 1.589 | 2.047 | 2.609 | 2.923 | 3.889 | 5.072 | 6.188 | 34.679 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 0.42 | 0.447 | 0.916 | 1.609 | 2.442 | 3.557 | 4.52 | 49.375 | 0.414 | 0.438 | 0.561 | 1.136 | 2.094 | 3.176 | 4.098 | 48.491 |
| E01 | 2.175 | 2.963 | 4.061 | 4.724 | 5.607 | 6.46 | 7.337 | 30.187 | 2.298 | 3.12 | 4.26 | 4.949 | 5.868 | 6.682 | 7.585 | 31.75 |
| E02 | 4.701 | 6.436 | 8.684 | 9.956 | 12.242 | 15.01 | 17.476 | 112.678 | 4.506 | 6.149 | 8.286 | 9.503 | 11.566 | 14.401 | 16.843 | 105.829 |
| F01 | 1.077 | 1.433 | 1.856 | 2.299 | 2.84 | 3.411 | 3.98 | 17.005 | 1.075 | 1.42 | 1.83 | 2.229 | 2.765 | 3.337 | 3.907 | 19.235 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 1.077 | 1.433 | 1.856 | 2.299 | 2.84 | 3.411 | 3.98 | 17.005 | 1.075 | 1.42 | 1.83 | 2.229 | 2.765 | 3.337 | 3.907 | 19.235 |
| G01 | 6.887 | 9.223 | 12.344 | 14.146 | 17.292 | 21.953 | 26.091 | 201.268 | 6.752 | 9.024 | 12.031 | 13.742 | 16.609 | 21.136 | 25.132 | 181.615 |
| G02 | 7.686 | 10.438 | 14.184 | 16.386 | 20.025 | 25.142 | 29.586 | 221.832 | 7.287 | 9.876 | 13.37 | 15.396 | 18.689 | 23.756 | 27.973 | 163.896 |
| M01 | 1.012 | 1.331 | 1.763 | 2.02 | 2.356 | 2.627 | 2.948 | 9.885 | 1.145 | 1.503 | 1.986 | 2.272 | 2.648 | 2.944 | 3.301 | 11.643 |
| M02 | 8.002 | 10.889 | 14.839 | 17.171 | 20.915 | 26.25 | 30.908 | 230.887 | 7.552 | 10.275 | 14.008 | 16.197 | 19.567 | 24.713 | 29.087 | 163.949 |
| M03 | 1.624 | 2.143 | 2.849 | 3.268 | 3.819 | 4.321 | 4.854 | 16.6 | 1.827 | 2.407 | 3.194 | 3.66 | 4.275 | 4.773 | 5.361 | 19.281 |
| M04 | 0.602 | 0.792 | 1.051 | 1.205 | 1.407 | 1.567 | 1.759 | 5.764 | 0.678 | 0.891 | 1.178 | 1.348 | 1.572 | 1.746 | 1.958 | 6.827 |
| M05 | 2.623 | 3.531 | 4.787 | 5.541 | 6.54 | 7.482 | 8.461 | 32.773 | 2.66 | 3.575 | 4.837 | 5.594 | 6.599 | 7.506 | 8.491 | 36.625 |
| M06 | 1.989 | 2.599 | 3.424 | 3.912 | 4.552 | 5.108 | 5.719 | 19.193 | 2.254 | 2.942 | 3.868 | 4.414 | 5.131 | 5.699 | 6.379 | 22.514 |
| M07 | 3.42 | 4.541 | 6.078 | 6.995 | 8.205 | 9.329 | 10.51 | 37.795 | 3.728 | 4.938 | 6.59 | 7.574 | 8.873 | 9.968 | 11.223 | 42.491 |
| M08 | 3.651 | 4.934 | 6.719 | 7.797 | 9.23 | 10.616 | 12.037 | 51.037 | 3.651 | 4.92 | 6.679 | 7.739 | 9.15 | 10.457 | 11.852 | 53.416 |
| M09 | 3.57 | 4.892 | 6.751 | 7.879 | 9.385 | 10.855 | 12.355 | 57.845 | 3.518 | 4.799 | 6.577 | 7.654 | 9.093 | 10.557 | 12.004 | 58.699 |
| M10 | 13.162 | 18.008 | 24.839 | 29.002 | 34.573 | 40.275 | 45.944 | 320.226 | 12.933 | 17.638 | 24.205 | 28.183 | 33.519 | 39.182 | 44.637 | 238.683 |
| M11 | 1.02 | 1.332 | 1.754 | 2.003 | 2.33 | 2.585 | 2.895 | 9.383 | 1.143 | 1.491 | 1.958 | 2.233 | 2.595 | 2.874 | 3.215 | 11.136 |
| M12 | 1.754 | 2.312 | 3.07 | 3.519 | 4.11 | 4.648 | 5.22 | 17.807 | 1.972 | 2.595 | 3.44 | 3.94 | 4.599 | 5.132 | 5.762 | 20.699 |
| M13 | 2.667 | 3.552 | 4.769 | 5.497 | 6.459 | 7.36 | 8.301 | 31.059 | 2.801 | 3.721 | 4.981 | 5.733 | 6.728 | 7.599 | 8.566 | 34.69 |
| M14 | 15.243 | 20.875 | 28.732 | 33.46 | 39.765 | 46.865 | 53.457 | 355.503 | 14.766 | 20.141 | 27.655 | 32.226 | 38.347 | 45.472 | 51.86 | 263.344 |
| | | | | | | | | | | | | | | | | |
| **TIME to Peaks [mins]** | | | | | | | | | | | | | | | | |
| **TIME Stream Top** | | | | | | | | | | | | | | | | |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B_OUT | 51 | 52 | 57 | 61 | 51 | 48 | 46 | 27 | 44 | 45 | 45 | 46 | 44 | 41 | 38 | 20 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E02 | 45 | 45 | 45 | 45 | 61 | 51 | 49 | 35 | 45 | 45 | 40 | 40 | 46 | 45 | 44 | 20 |
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 47 | 47 | 47 | 46 | 45 | 44 | 43 | 25 | 38 | 38 | 39 | 37 | 36 | 35 | 34 | 20 |
| G01 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 38 | 55 | 55 | 55 | 55 | 59 | 60 | 59 | 25 |
| G02 | 68 | 68 | 66 | 65 | 68 | 72 | 70 | 43 | 60 | 60 | 60 | 60 | 60 | 63 | 61 | 30 |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M02 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 50 | 75 | 75 | 75 | 72 | 75 | 75 | 75 | 36 |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M05 | 40 | 40 | 35 | 35 | 35 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M08 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M09 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 22 |
| M10 | 45 | 45 | 45 | 45 | 45 | 44 | 44 | 48 | 30 | 30 | 30 | 31 | 31 | 33 | 33 | 30 |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M13 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M14 | 48 | 47 | 46 | 46 | 46 | 46 | 46 | 50 | 43 | 41 | 40 | 40 | 40 | 40 | 40 | 30 |
| **TIME Stream Bottom** | | | | | | | | | | | | | | | | |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B_OUT | 51 | 52 | 57 | 61 | 51 | 48 | 46 | 27 | 44 | 45 | 45 | 46 | 44 | 41 | 38 | 20 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E02 | 80 | 76 | 73 | 72 | 71 | 69 | 67 | 43 | 69 | 67 | 65 | 64 | 62 | 62 | 59 | 29 |
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 47 | 47 | 47 | 46 | 45 | 44 | 43 | 25 | 38 | 38 | 39 | 37 | 36 | 35 | 34 | 20 |
| G01 | 74 | 73 | 71 | 70 | 82 | 74 | 72 | 44 | 65 | 64 | 63 | 62 | 64 | 66 | 64 | 30 |
| G02 | 98 | 95 | 92 | 94 | 94 | 92 | 90 | 53 | 89 | 86 | 83 | 84 | 84 | 83 | 80 | 39 |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M02 | 90 | 88 | 87 | 86 | 87 | 88 | 87 | 54 | 84 | 80 | 78 | 77 | 77 | 79 | 78 | 40 |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M05 | 45 | 45 | 44 | 44 | 44 | 44 | 43 | 31 | 36 | 36 | 35 | 35 | 35 | 35 | 34 | 22 |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M08 | 47 | 47 | 46 | 46 | 46 | 46 | 46 | 37 | 39 | 39 | 38 | 38 | 37 | 37 | 37 | 25 |
| M09 | 51 | 50 | 49 | 49 | 48 | 48 | 48 | 39 | 44 | 43 | 42 | 41 | 41 | 41 | 40 | 26 |
| M10 | 66 | 53 | 52 | 51 | 51 | 51 | 51 | 51 | 47 | 46 | 46 | 45 | 45 | 45 | 45 | 33 |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M13 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 35 | 38 | 37 | 37 | 37 | 36 | 36 | 36 | 24 |
| M14 | 72 | 70 | 68 | 67 | 66 | 67 | 68 | 55 | 63 | 61 | 59 | 58 | 56 | 58 | 58 | 36 |
| **TIME Local Perv** | | | | | | | | | | | | | | | | |
| A01 | 45 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 25 |
| B01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| B02 | 40 | 40 | 40 | 40 | 35 | 40 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| B03 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| B_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| E01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| E02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| F01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| G02 | 45 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 25 |
| M01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M02 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M03 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M04 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M05 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M06 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M07 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M08 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M09 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M10 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M11 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M12 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M13 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M14 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| **TIME Local Imp** | | | | | | | | | | | | | | | | |
| A01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| B01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| B02 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 10 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| B03 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 10 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| B_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| E01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| E02 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| F01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| G02 | 35 | 35 | 35 | 35 | 35 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M02 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M03 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M04 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| M05 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M06 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M07 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M08 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M09 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M10 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M11 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M12 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M13 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M14 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| **TIME Directed to Btm** | | | | | | | | | | | | | | | | |
| A01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| B_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M08 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M09 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TIME OUTLET Inflow** | | | | | | | | | | | | | | | | |
| A01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| B01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| B02 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| B03 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 10 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| B_OUT | 51 | 52 | 57 | 61 | 51 | 48 | 46 | 27 | 44 | 45 | 45 | 46 | 44 | 41 | 38 | 20 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| E01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| E02 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 40 | 60 | 60 | 55 | 55 | 55 | 55 | 55 | 25 |
| F01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 47 | 47 | 47 | 46 | 45 | 44 | 43 | 25 | 38 | 38 | 39 | 37 | 36 | 35 | 34 | 20 |
| G01 | 68 | 68 | 66 | 65 | 68 | 72 | 70 | 43 | 60 | 60 | 60 | 60 | 60 | 63 | 61 | 30 |
| G02 | 80 | 80 | 80 | 80 | 80 | 85 | 83 | 50 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 36 |
| M01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M02 | 85 | 85 | 85 | 84 | 85 | 85 | 85 | 53 | 78 | 76 | 75 | 75 | 75 | 77 | 76 | 39 |
| M03 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M04 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M05 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 28 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M06 | 35 | 35 | 35 | 35 | 35 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M07 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M08 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 22 |
| M09 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 37 | 40 | 40 | 40 | 39 | 38 | 38 | 38 | 25 |
| M10 | 53 | 52 | 50 | 50 | 49 | 50 | 49 | 51 | 46 | 45 | 45 | 44 | 43 | 44 | 44 | 31 |
| M11 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M12 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M13 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M14 | 67 | 65 | 65 | 65 | 65 | 65 | 65 | 54 | 60 | 60 | 56 | 55 | 55 | 55 | 55 | 34 |
| **TIME OUTLET Outflow** | | | | | | | | | | | | | | | | |
| A01 | 67 | 67 | 68 | 68 | 65 | 55 | 52 | 31 | 58 | 57 | 58 | 60 | 53 | 48 | 46 | 21 |
| B01 | 52 | 54 | 57 | 60 | 51 | 48 | 46 | 27 | 45 | 46 | 47 | 48 | 45 | 41 | 38 | 20 |
| B02 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| B03 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 10 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 10 |
| B_OUT | 51 | 52 | 57 | 61 | 51 | 48 | 46 | 27 | 44 | 45 | 45 | 46 | 44 | 41 | 38 | 20 |
| D01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C01 | 132 | 138 | 127 | 120 | 102 | 91 | 87 | 37 | 110 | 117 | 117 | 100 | 91 | 84 | 79 | 26 |
| E01 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| E02 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 40 | 60 | 60 | 55 | 55 | 55 | 55 | 55 | 25 |
| F01 | 47 | 47 | 47 | 46 | 45 | 44 | 43 | 25 | 38 | 38 | 39 | 37 | 36 | 35 | 34 | 20 |
| F02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F_OUT | 47 | 47 | 47 | 46 | 45 | 44 | 43 | 25 | 38 | 38 | 39 | 37 | 36 | 35 | 34 | 20 |
| G01 | 68 | 68 | 66 | 65 | 68 | 72 | 70 | 43 | 60 | 60 | 60 | 60 | 60 | 63 | 61 | 30 |
| G02 | 80 | 80 | 80 | 80 | 80 | 85 | 83 | 50 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 36 |
| M01 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M02 | 85 | 85 | 85 | 84 | 85 | 85 | 85 | 53 | 78 | 76 | 75 | 75 | 75 | 77 | 76 | 39 |
| M03 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M04 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M05 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 28 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M06 | 35 | 35 | 35 | 35 | 35 | 40 | 40 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M07 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M08 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 35 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 22 |
| M09 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 37 | 40 | 40 | 40 | 39 | 38 | 38 | 38 | 25 |
| M10 | 53 | 52 | 50 | 50 | 49 | 50 | 49 | 51 | 46 | 45 | 45 | 44 | 43 | 44 | 44 | 31 |
| M11 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M12 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |
| M13 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 |
| M14 | 67 | 65 | 65 | 65 | 65 | 65 | 65 | 54 | 60 | 60 | 56 | 55 | 55 | 55 | 55 | 34 |
| **OUTLET Results** | | | | | | | | | | | | | | | | |
| **OUTLET Strc on: A01** | | | | | | | | | | | | | | | | |
| Inflow Peak (m3/s) | 5.489 | 7.276 | 9.726 | 11.187 | 13.115 | 14.91 | 16.794 | 60.947 | 5.924 | 7.833 | 10.435 | 11.986 | 14.033 | 15.772 | 17.752 | 68.113 |
| Outflow Peak (m3/s) | 2.549 | 3.439 | 4.465 | 5.053 | 6.603 | 8.249 | 10.043 | 60.868 | 2.496 | 3.365 | 4.375 | 4.908 | 6.334 | 8.152 | 9.85 | 67.245 |
| Inflow Volume (m3) | 17397 | 23059 | 30698 | 35201 | 41091 | 48811 | 54750 | 201494 | 15844 | 20919 | 27724 | 31727 | 36959 | 43834 | 49102 | 136580 |
| Max Vol. Stored (m3) | 5643 | 7451 | 10131 | 11860 | 13274 | 14422 | 15469 | 20785 | 5534 | 7294 | 9855 | 11516 | 13086 | 14354 | 15363 | 21310 |
| Max Water Elevation (m) | 683.379 | 683.607 | 683.918 | 684.107 | 684.255 | 684.371 | 684.473 | 684.975 | 683.364 | 683.587 | 683.887 | 684.07 | 684.236 | 684.364 | 684.463 | 685.024 |
| **OUTLET Strc on: B01** | | | | | | | | | | | | | | | | |
| Inflow Peak (m3/s) | 2.625 | 3.506 | 4.717 | 5.442 | 6.4 | 7.297 | 8.235 | 30.07 | 2.858 | 3.806 | 5.105 | 5.881 | 6.908 | 7.78 | 8.776 | 33.72 |
| Outflow Peak (m3/s) | 1.522 | 1.957 | 2.516 | 2.837 | 3.781 | 5.049 | 6.251 | 29.947 | 1.541 | 1.988 | 2.538 | 2.847 | 3.784 | 4.929 | 6.004 | 33.406 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inflow Volume (m3) | 8267 | 10999 | 14680 | 16849 | 19685 | 23395 | 26249 | 96663 | 7548 | 9993 | 13260 | 15180 | 17697 | 21003 | 23535 | 65537 |
| Max Vol. Stored (m3) | 1160 | 1904 | 2974 | 3675 | 4331 | 4733 | 5030 | 7421 | 1196 | 1956 | 3023 | 3697 | 4332 | 4704 | 4969 | 7659 |
| Max Water Elevation (m) | 686.962 | 687.111 | 687.314 | 687.444 | 687.562 | 687.633 | 687.684 | 688.077 | 686.97 | 687.121 | 687.323 | 687.448 | 687.562 | 687.628 | 687.673 | 688.115 |
| **OUTLET Strc on: C01** | | | | | | | | | | | | | | | | |
| Inflow Peak (m3/s) | 4.591 | 6.091 | 8.144 | 9.37 | 10.988 | 12.491 | 14.071 | 50.821 | 4.974 | 6.582 | 8.772 | 10.078 | 11.804 | 13.264 | 14.929 | 57.002 |
| Outflow Peak (m3/s) | 0.42 | 0.447 | 0.916 | 1.609 | 2.442 | 3.557 | 4.52 | 49.375 | 0.414 | 0.438 | 0.561 | 1.136 | 2.094 | 3.176 | 4.098 | 48.491 |
| Inflow Volume (m3) | 14321 | 18983 | 25263 | 28964 | 33808 | 40155 | 45035 | 165395 | 13040 | 17216 | 22803 | 26091 | 30399 | 36040 | 40368 | 112108 |
| Max Vol. Stored (m3) | 10512 | 14833 | 19952 | 21514 | 23150 | 25226 | 26690 | 43106 | 9578 | 13426 | 18551 | 20582 | 22467 | 24595 | 26049 | 42877 |
| Max Water Elevation (m) | 684.737 | 684.945 | 685.182 | 685.252 | 685.325 | 685.416 | 685.476 | 686.084 | 684.692 | 684.878 | 685.117 | 685.211 | 685.295 | 685.39 | 685.45 | 686.076 |
| **OUTLET Strc on: F01** | | | | | | | | | | | | | | | | |
| Inflow Peak (m3/s) | 1.549 | 2.064 | 2.769 | 3.19 | 3.745 | 4.259 | 4.799 | 17.062 | 1.718 | 2.284 | 3.056 | 3.516 | 4.125 | 4.631 | 5.218 | 19.273 |
| Outflow Peak (m3/s) | 1.077 | 1.433 | 1.856 | 2.299 | 2.84 | 3.411 | 3.98 | 17.005 | 1.075 | 1.42 | 1.83 | 2.229 | 2.765 | 3.337 | 3.907 | 19.235 |
| Inflow Volume (m3) | 4453 | 5909 | 7867 | 9019 | 10526 | 12503 | 14019 | 51261 | 4053 | 5353 | 7091 | 8113 | 9449 | 11203 | 12547 | 34736 |
| Max Vol. Stored (m3) | 664 | 952 | 1379 | 1586 | 1813 | 1997 | 2169 | 2766 | 662 | 941 | 1351 | 1557 | 1782 | 1973 | 2148 | 2859 |
| Max Water Elevation (m) | 692.371 | 692.544 | 692.781 | 692.887 | 693.001 | 693.088 | 693.169 | 693.452 | 692.369 | 692.538 | 692.766 | 692.872 | 692.985 | 693.076 | 693.159 | 693.496 |