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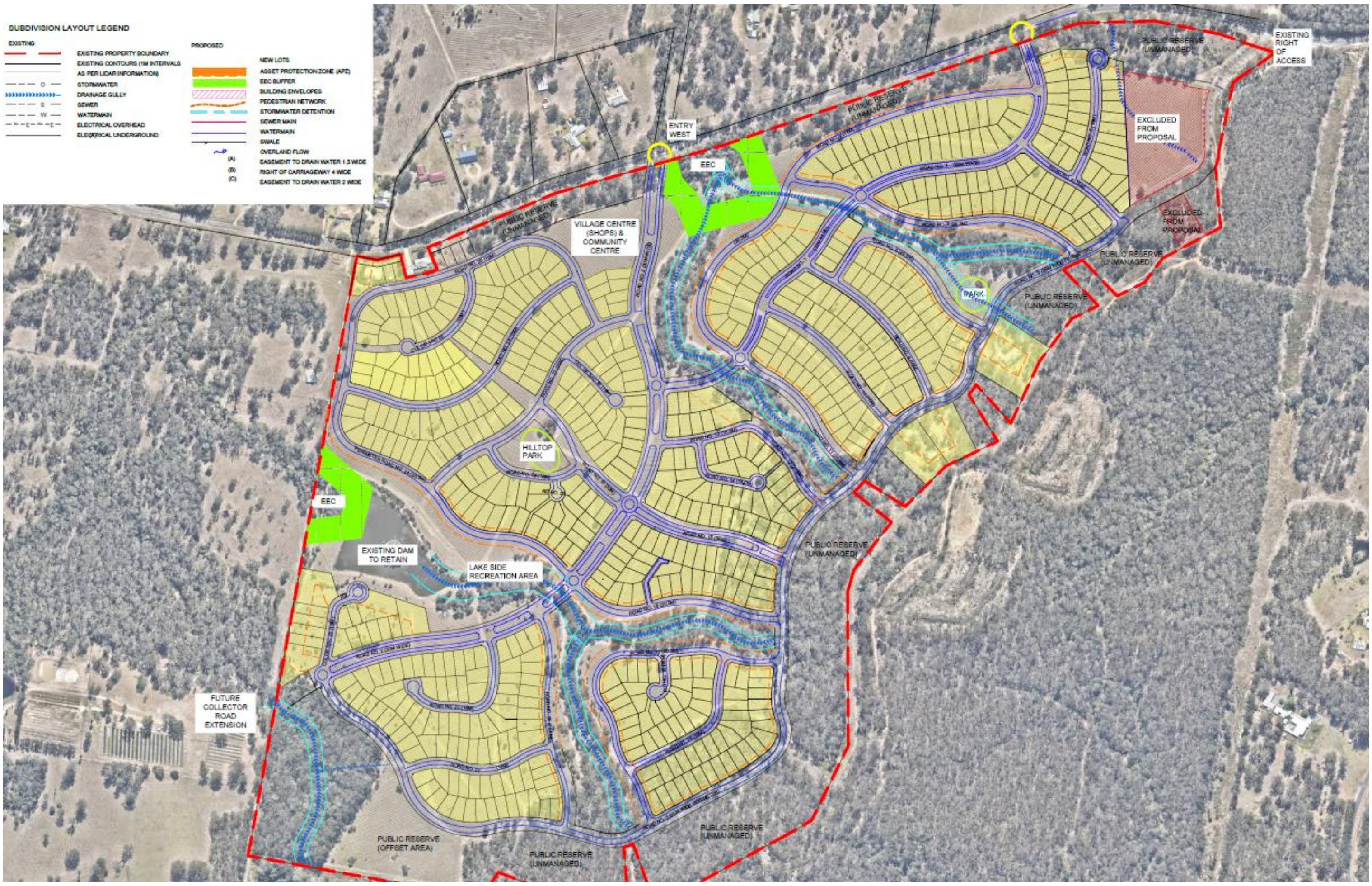

STORMWATER MANAGEMENT PLAN

Le Clos Sancrox – Sancrox Road, Sancrox

On Behalf of

LCS Estates Pty Ltd

Land Dynamics Australia

October 2019

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1.0 EXECUTIVE SUMMARY

Land Dynamics has been engaged by LCS Estate Pty Ltd to prepare a Stormwater Management Plan (SMP) accompany a Planning Proposal to amend the existing land use and a Development Application (DA) for the modified residential subdivision layout on the lots registered in DP776681, Sancrox Road, Sancrox.

This report demonstrates the development will be constructed and operated generally in accordance with the Water Sensitive Urban Design (WSUD), requirements of Port Macquarie-Hastings Council (PMHC) and best management practices.

In this document are assessments for three primary areas:

- Stormwater Quantity (Hydrology & Detention Sizing)
- Flooding
- Stormwater Quality (Water Sensitive Urban Design)

A hydrologic analysis was undertaken to assess rainfall runoff generated within the pre-developed area and the post developed area. Results show that the overall development will increase flows from pre-developed state as elaborated in Section 5.7. The flow difference will be managed by number of stormwater detention basins to maintain peak outflow to the downstream properties.

Proposed detention basins have been sized to mitigate flows for 20%, 5% and 1% AEP storm events. Pre-developed and post-developed flow comparisons are attached in Appendix B.

Stormwater quality assessment was undertaken to design the preliminary treatment train to meet the Water Quality objectives and PMHC quality requirements. Refer to 6.0 for details. The proposed treatment train consists of number of roadside vegetated swales and end-of-line detention/bioretention basins that allow for treated stormwater discharge. Preliminary detention/bioretention basin design details provided in section 6.3.2.

2.0 INTRODUCTION

This Stormwater Management Plan identifies the stormwater quantity and quality management measures required for the proposed residential subdivision lot layout on the landholdings registered in DP776681, Sancrox Road, Sancrox, which is within the jurisdiction of Port Macquarie - Hastings Council.

The preliminary development layout used for the assessment is presented in Appendix C.

3.0 EXISTING SITE CHARACTERISTICS

3.1 Site Description

The subject site is located on the Mid North Coast within the Port Macquarie-Hastings local government area, and forms part of the Greater Sancrox Area, as identified by Council. The subject land comprises a number of landholdings and is collectively known as Le Clos Sancrox. The plan below in Figure 1 details the extent of the boundaries of the properties included.

The site is located on the southern side of Sancrox Road, approximately 1.3km from the Pacific Highway to the east, which links with Brisbane to the north and Sydney to the south. Sancrox Road also links to Port Macquarie to the east and Wauchope to the west. Le Clos Sancrox Road located in the southeast side of the site.

The site is relatively cleared, with vegetation in fingers through the site and around the edges. However, catchment areas located upstream of the Le Clos Sancrox Road (perimeter road) are covered by dense vegetation. Several drainage lines dissect the site falling towards Sancrox Rd.

An aerial photo is provided in Figure 3-1 below.

Figure 3-1 Site Aerial Photo (Source: Six Maps)

3.2 Property Description and Area

The development is proposed to be undertaken within the parcels of land registered in DP776681 known as Le Clos Sancrox, with a total area of approximately 105 hectares.

3.3 Existing Land Use

The site is currently zoned RU1 Primary Production under the LEP 2011. The is currently used primarily as grazing field for cattle with a few rural residential dwellings.

3.4 Existing Topography and Site Drainage

The site generally grades towards the north and crosses the Sancrox Road through existing culvert under. Part of the site slopes towards the west. A number of watercourses traverse the site from the upper areas down towards the dam and northern boundary in the central area of the site. Upstream part of the catchment is steep with an average slope of 10% to 15%. However, lower part of the catchment adjacent to the becomes flatter with an average slope of 1% to 5%.

Stormwater runoff from the site flows towards Haydons Creek in the north and finally connects to the Hastings River adjacent to Lot 9 DP 286585.

4.0 PROPOSED DEVELOPMENT

The proposed development incorporates 683 residential lots and 1 lot for village enter and community facility. Refer to Figure 4 below for the proposed development layout.

Figure 4 Proposed Development Layout

5.0 STORMWATER QUANTITY MANAGEMENT

5.1 Existing Topography and Catchments

A number of watercourses traverse the site from the upper areas down towards the dam and northern boundary in the central area of the site. The site generally grades towards the north and crosses the Sancrox Road via existing culvert. Part of the site slopes towards the west.

See Figure 5-1 below for existing catchment

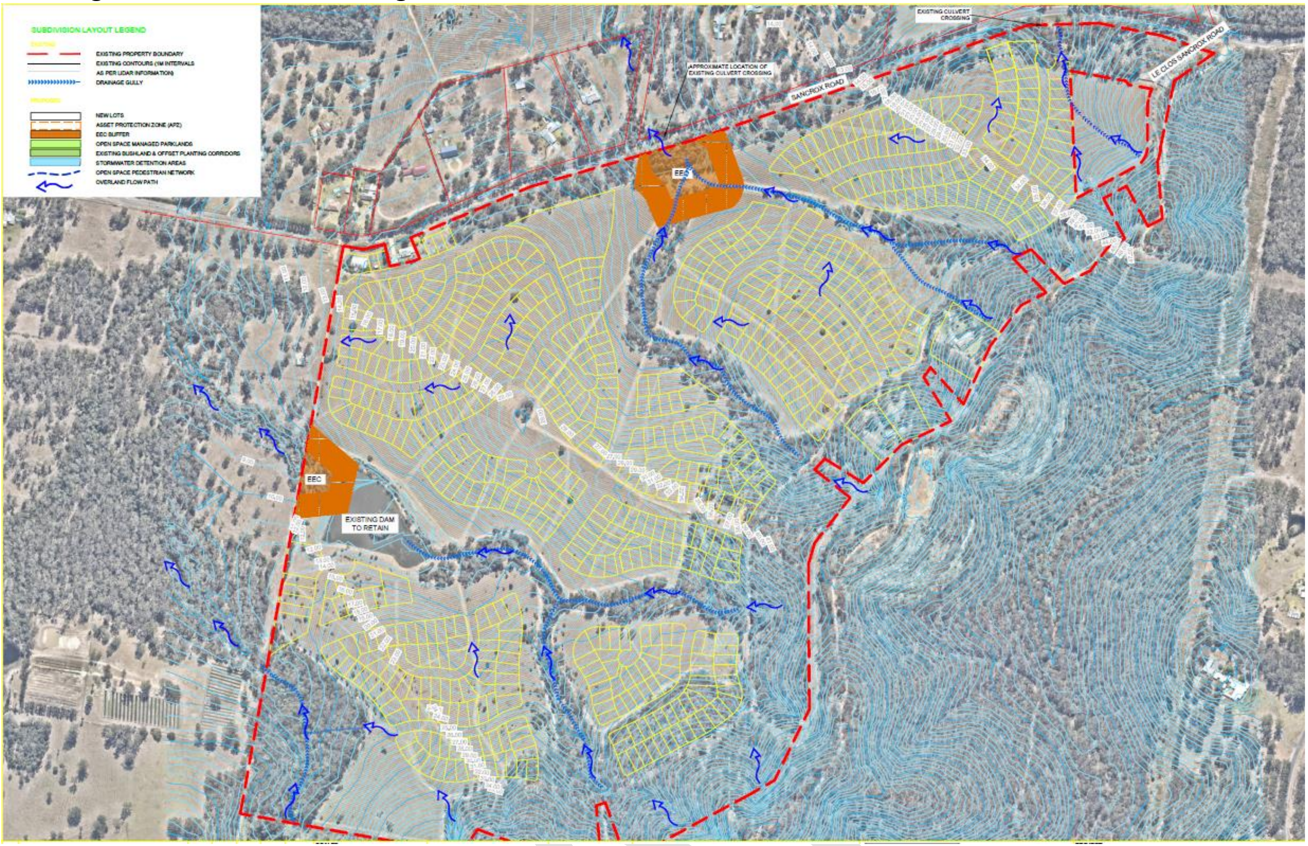


Figure 5-1 Existing Contour and Overland Flow path

5.2 Proposed Discharge Characteristics

For the proposed scenario, the site will retain its existing point of discharge. The flows from upstream catchments will be conveyed through the proposed site in a similar manner to existing via sheet flow through the site with no obstruction from the development. The discharge from the development will be detained and treated prior to release via a detention/bioretention basin to ensure non-worsening of downstream flows to safeguard downstream waterways in terms of both stormwater quantity and meeting quality targets. Refer to proposed catchment boundaries shown in Figure 5-2.

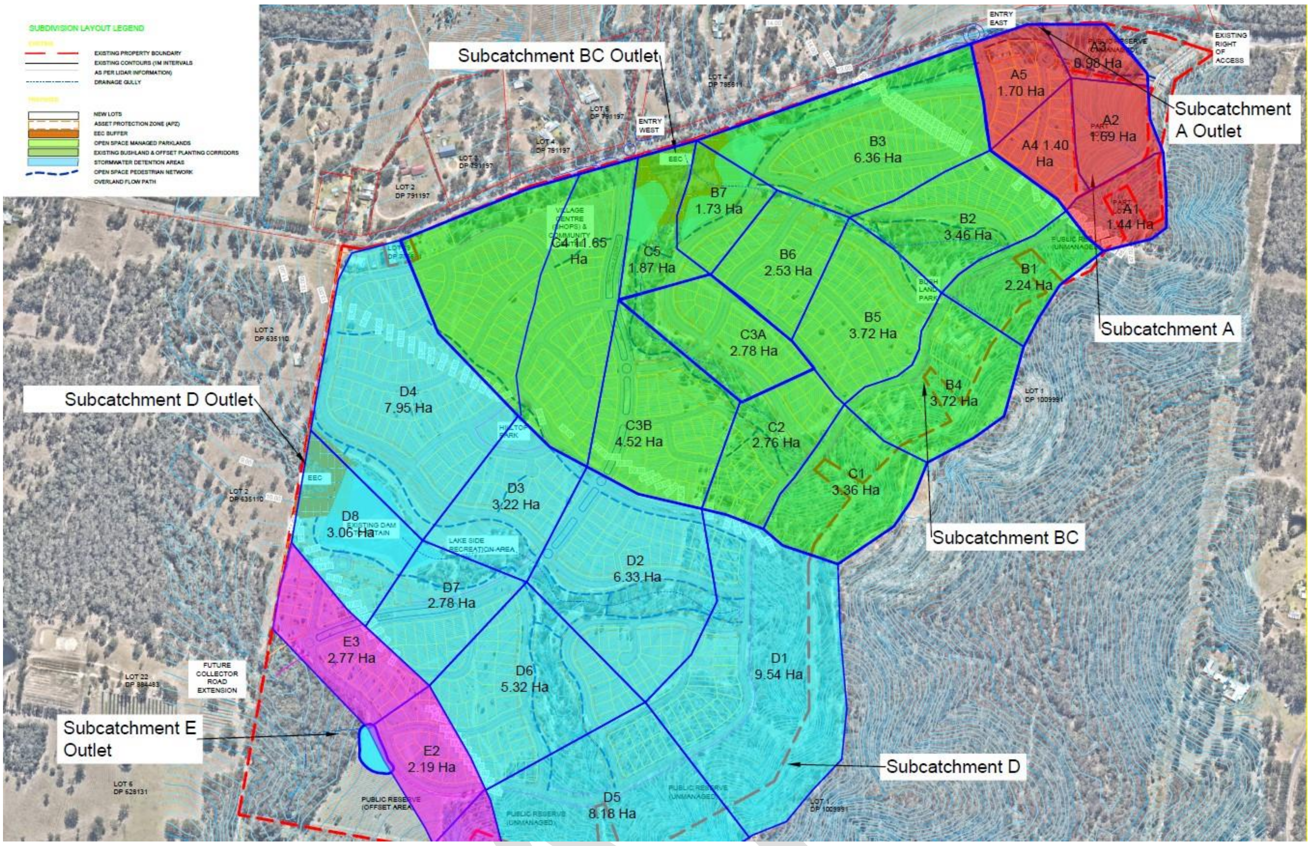


Figure 5-2 Proposed Catchment Boundaries

5.3 Flooding

The proposed site is within the Hastings River catchment. Port Macquarie Hastings Council (PMHC) completed Hastings River Flood Study Update in September 2018. Flood study results shows that this site is not within the flood prone area. The development area is not located within the 1% AEP and PMF flood extent. The Finished Floor Levels are to be confirmed during detailed design with confirmation of flood levels by Council.

Figure 5-3-1 shows 1% Flood Extent (without climate change) and Figure 5-3-2 depicts the flood extent in PMF plus 0.4m Tidal event

The Hastings River flood maps are attached in Appendix A.

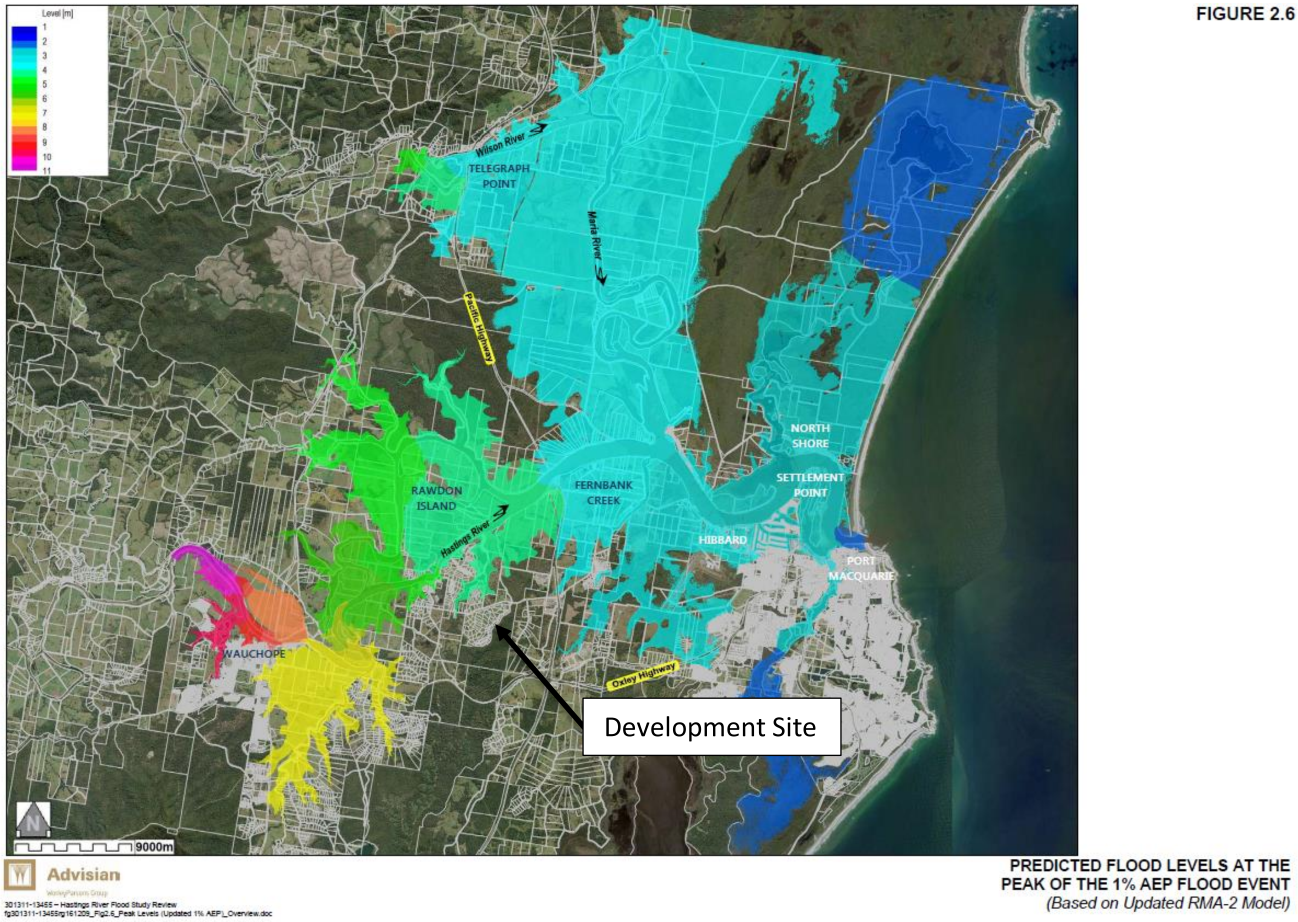


Figure 5-3-1 1% AEP Flood Extent

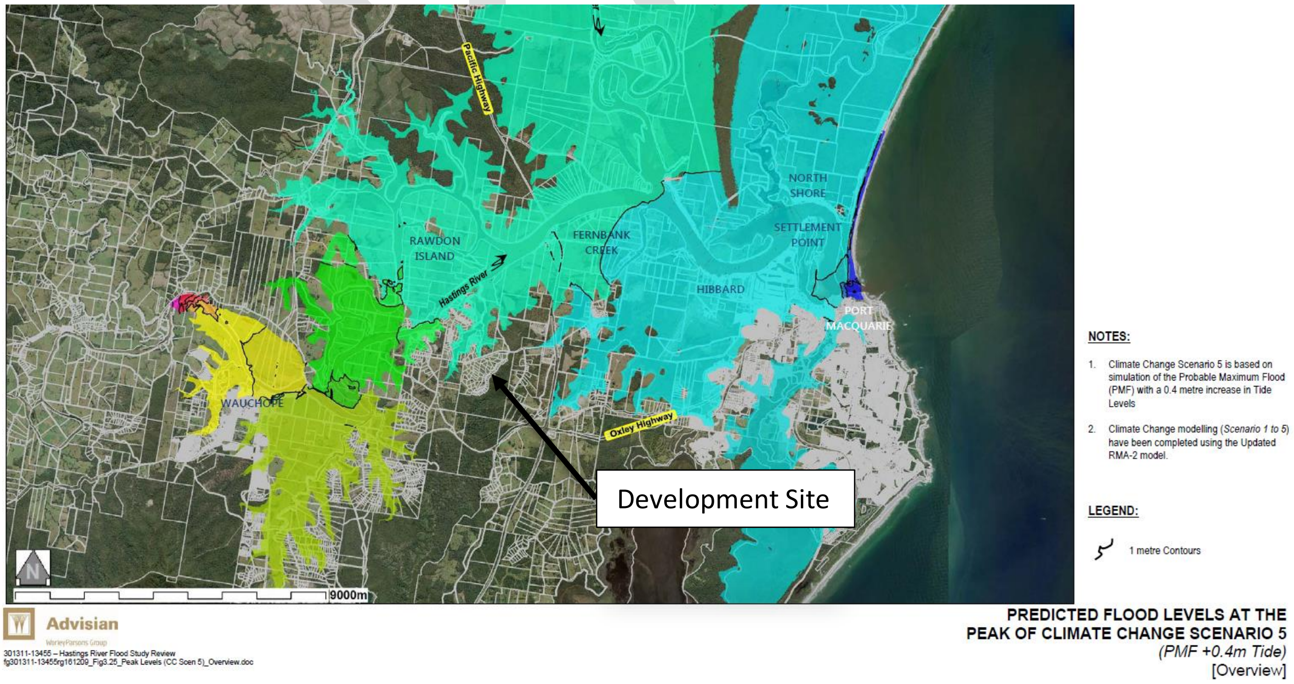


Figure 5-3-2 PMF+0.4m Tide Flood Extent

5.4 Hydrology

A hydrological assessment was undertaken, using Intensity Frequency Duration and rainfall data in accordance with ARR2016 temporal pattern which was derived from ARR Data Hub and from Bureau of Meteorology respectively. ARR2016 data was extracted from data huon 23rd of September 2019.

The site has been assessed under three scenarios:

- Existing Scenario – the site in its current state;
- Developed Unmitigated Scenario – the site is developed excluding stormwater detention;
- Mitigated Scenario – the site is developed including stormwater detention.

5.5 DRAINS Analysis

The DRAINS/RAFTS model has been developed which consists of a three separate model that incorporates nodes representing areas for existing and developed case scenarios. The DRAINS program performs design and analysis calculations for urban stormwater drainage systems and models the flood behaviour of rural and urban catchments. DRAINS displays the components of a drainage system as "objects", and presents information about these and the results of calculations pictorially. DRAINS has many applications, from sizing of single drainage pipes to complex analyses of large, established pipe drainage systems and river basins.

Figure 5-5 below shows the DRAINS/XP-RAFTS model configuration.

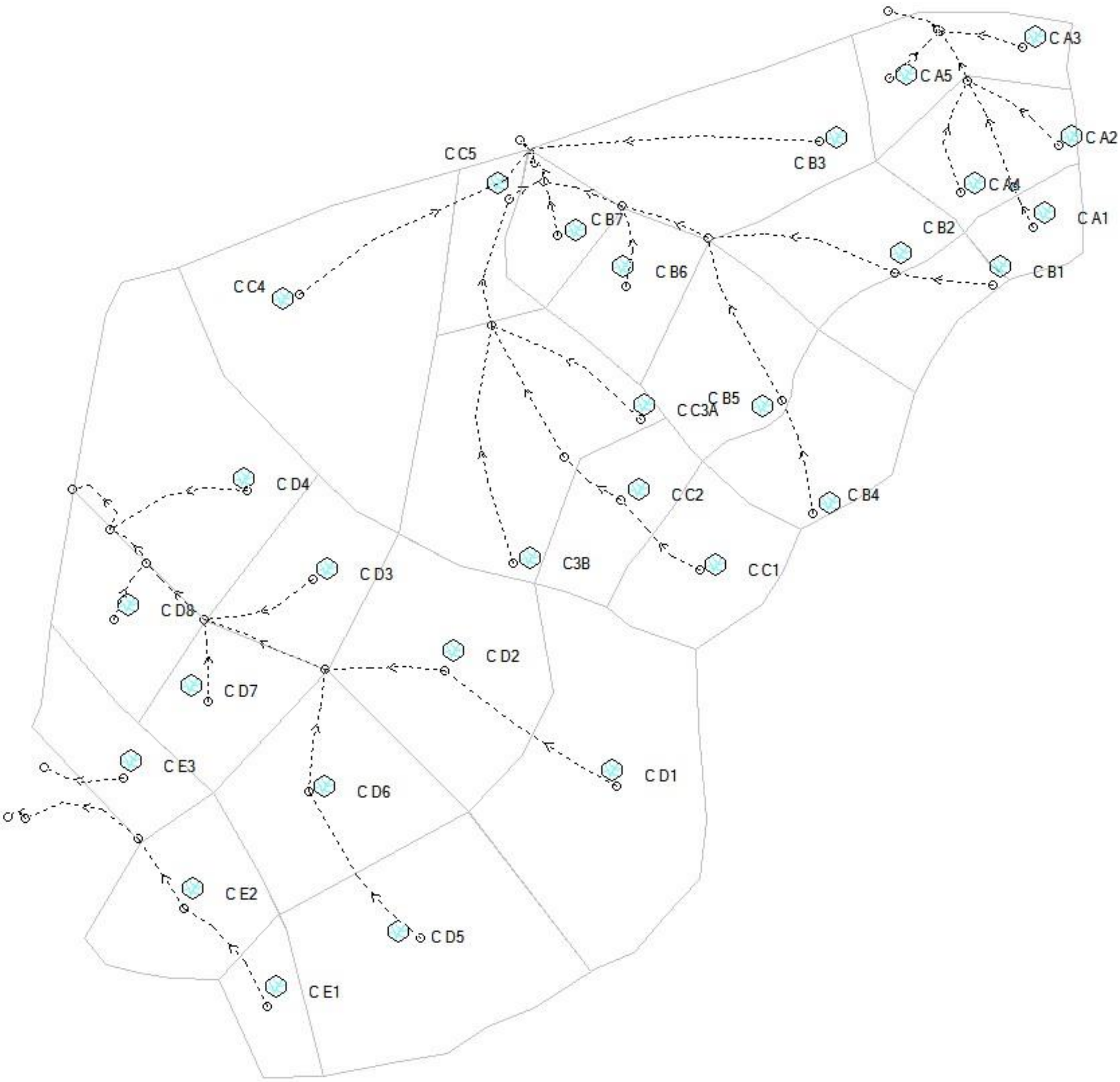


Figure 5-5 DRAINS (RAFTS) Model (Existing and Unmitigated Developed Scenarios)

5.6 RAFTS Methodology

The existing site and developed site was modelled as lumped sub-catchments with the extent catchments. This allows for an accurate representation of Manning's roughness coefficients for each area. The upstream external catchments have been modelled as lump catchments with consideration of the existing characteristics.

PERN values:

The PERN parameter within RAFTS is a unit-less empirical parameter used to describe the roughness value of individual catchment areas, and is considered somewhat similar to the Manning's 'n' value.

The RAFTS PERN values adopted are shown below in table 5-6-1

Table 5-6-1 PERN values

Table B-2 PERN Values Adopted

PERN Value	Description
0.02	Impervious Area
0.035	Urban Pervious Area
0.05	Rural Pastures
0.12	Forested Catchments

The sub-catchments were delineated based on the above regions, and a single PERN value generated based on the relative areas of each of the above within the sub-catchment.

Table 5-6-2 below summarises the existing catchment parameters used to assess the existing stormwater flows generated from each sub-catchment.

Table 5-6-2 Existing Catchment Parameters

Pre developed Scenario					
Catchment	**Area (Ha)**	**% Impervious**	**% Pervious**	**Slope%**	**PERN**
A1	1.44	**0**	100	17.1	0.05
A2	1.69	**0**	100	10.5	0.025
A3	0.98	**0**	100	9.6	0.05
A4	1.4	**0**	100	10.6	0.025
A5	1.7	**0**	100	10.3	0.025
B1	2.24	**0**	100	10.4	0.05
B2	3.46	**0**	100	4.7	0.025
B3	6.36	**0**	100	5.8	0.025
B4	3.72	**0**	100	15.9	0.05
B5	3.72	**0**	100	6	0.025
B6	2.53	**0**	100	8.2	0.025
B7	1.73	**0**	100	4.1	0.025
C1	3.36	**0**	100	15.3	0.05

C2	2.76	**0**	100	4.3	0.05
C3A	7.3	**0**	100	6.7	0.025
C3B	4.52	**0**	100	8.6	0.025
C4	11.65	**0**	100	4.9	0.025
C5	1.87	**0**	100	2.4	0.03
D1	9.54	**0**	100	12.5	0.08
D2	6.33	**0**	100	3.4	0.03
D3	3.22	**0**	100	5.6	0.04
D4	7.95	**0**	100	6.5	0.03
D5	8.18	**0**	100	13.1	0.08
D6	5.32	**0**	100	5.6	0.03
D7	2.78	**0**	100	5.2	0.04
D8	3.06	**0**	100	3.6	0.05
E1	1.83	**0**	100	23.7	0.05
E2	2.19	**0**	100	8.2	0.025
E3	2.77	**0**	100	5.9	0.025

The RAFTS Method was used to determine discharge flow rates of each catchment for standard 5%, 20% and 1% AEP event, from 10-min to 6-hour durations.

5.7 DRAINS Results – Unmitigated Scenario

Table 5-7-1 below summarises the stormwater flows generated from each sub-catchment due to the proposed development.

Table 5-7-1 Existing Catchment Parameters

Post Developed Scenario					
Catchment	**Area (Ha)**	**% Impervious**	**% Pervious**	**Slope%**	**PERN**
A1	1.44	5	95	17.1	0.05
A2	1.69	60	40	10.5	0.015
A3	0.98	0	100	9.6	0.05
A4	1.4	60	40	10.6	0.015
A5	1.7	50	50	10.3	0.015
B1	2.24	10	90	10.4	0.05
B2	3.46	60	40	4.7	0.015
B3	6.36	42	58	5.8	0.02
B4	3.72	10	90	15.9	0.05
B5	3.72	60	40	6	0.015
B6	2.53	60	40	8.2	0.015
B7	1.73	30	70	4.1	0.015
C1	3.36	10	90	15.3	0.05
C2	2.76	40	60	4.3	0.02
C3	7.3	40	60	8.6	0.02

C4	11.65	70	30	4.9	0.015
C5	1.87	10	90	3.2	0.025
D1	9.54	21	79	12.5	0.04
D2	6.33	50	50	3.4	0.02
D3	3.22	50	50	5.6	0.02
D4	7.95	60	40	6.5	0.015
D5	8.18	10	90	13.1	0.07
D6	5.32	50	50	5.6	0.02
D7	2.78	40	60	5.2	0.02
D8	3.06	40	60	3.6	0.03
E1	1.83	0	100	23.7	0.05
E2	2.19	60	40	8.2	0.015
E3	2.77	60	40	5.9	0.015

A summary of the results is provided in Table 5-7-2 below.

Table 5-7-2 Discharge Summary from DRAINS Analysis (Existing site and Unmitigated Developed site)

Catchment	**Scenario**	**Peak Flow Rate for Average Recurrence Interval (m^3/s)**		
		20% AEP	**5% AEP**	**1% AEP**
Sub-catchment A (Outlet)	Existing	1.91	2.82	3.88
	Developed	2.31	3.59	4.79
Sub-catchment BC (Outlet)	Existing	10	14.6	20
	Developed	12.7	17.3	23.9
Sub-catchment D (Outlet)	Existing	7.46	10.8	15.2
	Developed	9.91	13.9	19.1
Sub-catchment E (Outlet)	Existing	1.77	2.55	3.6
	Developed	2.35	3.39	4.67

The results in Table 5-7 shows that the proposed development increases the peak flows from the site, indicating that there is a need for stormwater detention. Hence, to satisfy council requirements, further hydraulic and hydrological assessment is necessary.

5.8 DRAINS Results – Mitigated Scenario

Based on the results for the existing and unmitigated developed scenarios, stormwater detention basins was modelled as part of the mitigated scenario to detain and manage discharge flows from the site to ensure non-worsening of downstream conditions. See mitigated scenario DRAINS model configuration in Figure 5-8 below:

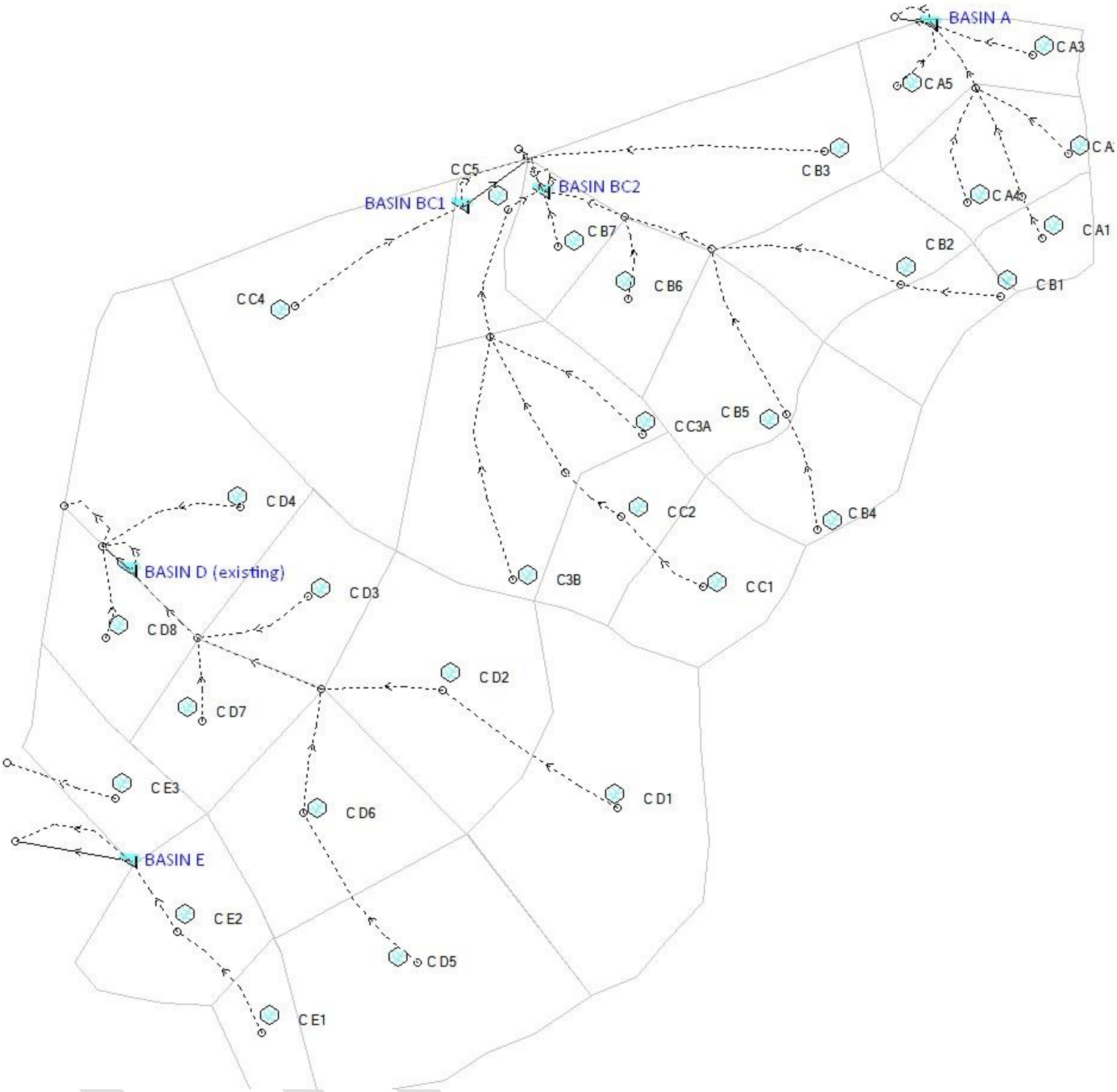


Figure 5-8 DRAINS/RAFTS Model (Mitigated Developed Scenarios)

The results seen in Table 5-8 below are from the DRAINS model which summarizes the peak discharge rates for each identified critical storm across the assessed AEP range at the assessment point for the catchments, in a mitigated scenario. The results show the proposed development can be satisfactorily attenuated to meet non-worsening criteria.

Table 5-8 Discharge Summary from DRAINS Analysis (Existing site and Mitigated Developed site)

Catchment	**Scenario**	**Peak Flow Rate for Average Recurrence Interval (m^3/s)**		
		20% AEP	**5% AEP**	**1% AEP**
Subcatchment A (Outlet)	Existing	1.91	2.82	3.88
	Developed	2.31	3.59	4.79
	Mitigated	1.47	2.12	3.5
Subcatchment BC (Outlet)	Existing	10	14.6	20
	Developed	12.7	17.3	23.9
	Mitigated	4.85	6.31	9.73
Subcatchment D (Outlet)	Existing	7.46	10.8	15.2
	Developed	9.91	13.9	19.1
	Mitigated	4.33	5.88	8.53
Subcatchment E (Outlet)	Existing	1.77	2.55	3.6
	Developed	2.35	3.39	4.67
	Mitigated	1.99	2.67	3.44

5.9 Detention Basin Details

To mitigate increase of the stormwater runoff due to the additional impervious areas, detentions basins proposed for each subcatchments prior to the final discharge. Figure 5-9-1 shows a concept stormwater plan with the preliminary location of the detention basins.

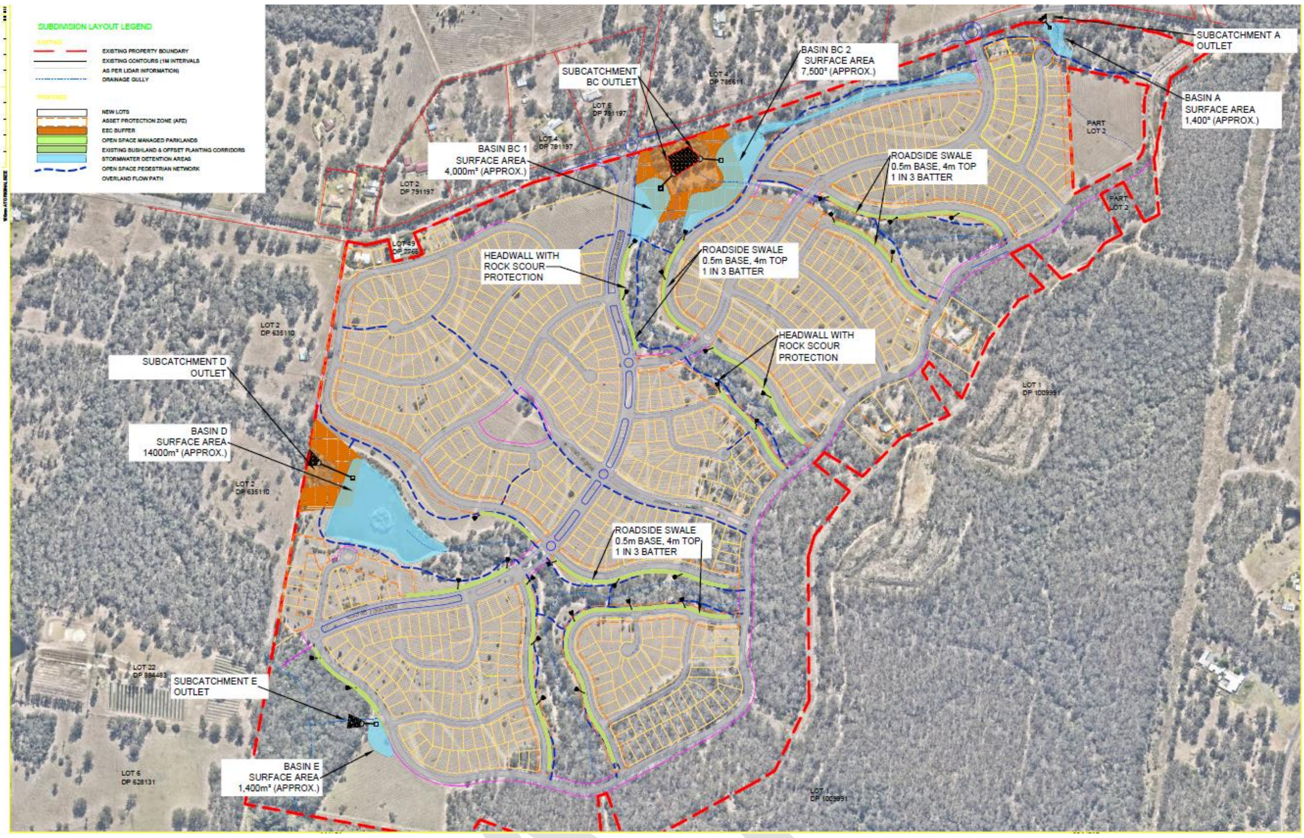


Figure 5-9-1- Concept stormwater plan with detention basin location

The properties of the detention basin are summarized in Table 5-9.

Table 5-9 Stormwater Detention Basin Details

Outlet	EXISTING CONDITION 1%AEP FLOW m3/s	POST DEV - UNMITIGATED 1% AEP FLOW m3/s	POST DEV - MITIGATED 1% AEP FLOW m3/s	DETENTION BASIN Surface Area m2	Maximum Depth, m
A	3.88	4.79	3.5	1400	1.5
BC	20	23.9	9.73	11500	2
D	15.2	19.1	8.53	14000	2
E1	3.6	4.67	3.44	1400	1.5

The hydraulic investigation and runoff-routing exercise has demonstrated that the proposed development increases stormwater discharge off site. The incorporation of a detention basins in the mitigated scenario demonstrates that flows can be controlled and managed to ensure non-worsening of the proposed development.

6.0 STORMWATER QUALITY MANAGEMENT

6.1 Environmental Values and Water Quality Objectives

To prevent degradation of Port Macquarie waterways, ecologically sustainable development principles have been embraced and regulated by PMHC. The core principles of Water Sensitive Urban Design (WSUD) are to:

- Protect natural ecosystems;
- Integrate stormwater treatment into the urban landscape;
- Protect water quality;
- Reduce runoff and peak flows; and
- Add value while minimizing development costs.

With these principles in mind, this stormwater management plan aims to:

1. Identify the water quality and quantity objectives and performance criteria;
2. Estimate the pollutant loads; and
3. Detail within the management plan, strategies aimed at achieving the required objectives.

Water quality objectives during both the construction and operational phases of a development are presented within PMHC guidelines and are detailed in this section of this report.

Water quality parameters and the proposed limits applicable for this development have been selected in accordance with the PMHC Stormwater Management Guidelines Table D7.7 as show in Table 6-1below:

Table 6-1 PMHC Stormwater Treatment Pollutant Reduction Targets

Pollutant	Objective
Suspended Solids (SS)	80% retention of average annual load
Total Phosphorus (TP)	45% retention of average annual load
Total Nitrogen (TN)	45% retention of average annual load
Litter	100% retention of litter greater than 5mm for flows up to 3month ARI peak flow

6.2 Proposed Stormwater Treatment Devices

WSUD aims to minimize the impact of a development on the natural water cycle by reducing the export of pollutants, sediments and nutrients from the site into the natural watercourse. In order to treat the stormwater runoff from the site, various treatment devices can be used throughout the development area; and these concepts can be integrated into the overall design of the road layouts, road cross sections, stormwater layouts and water supply reticulation systems. Stormwater from the development will follow a specially designed stormwater quality treatment train prior to discharge from the site, which will ensure compliance with the water quality objectives.

It is proposed that road side swales and bioretention basins is implemented to provide water quality treatment to the abovementioned standards for the site. Details of the location and preliminary design of the proposed bioretention basin are presented in the Engineering Drawings in Appendix C of this report.

6.2.1 Bioretention System

A bioretention area is a vegetated region where runoff is filtered through a filter media layer (e.g. sandy loam) as it percolates downwards to receiving underlying reticulation. Specific vegetation is to be incorporated into the landscaping of bioretention areas which effectively reduce nutrient loads.

A typical section is also presented in Figure 6-2-1 with further standard details.

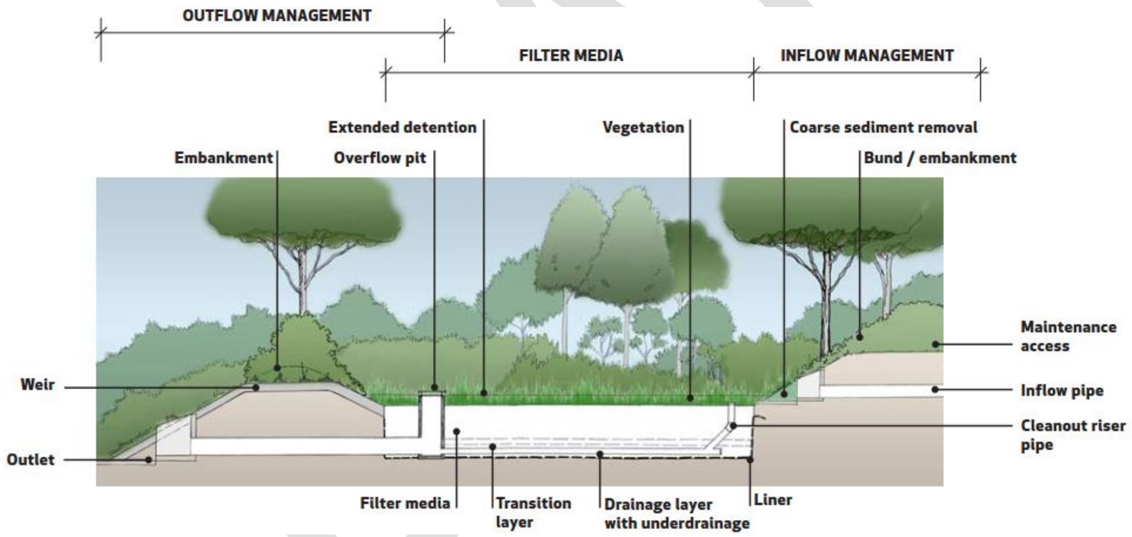


Figure 6-2-1 Example of Urban Bioretention Basin

6.3 Modelling Approach (MUSIC)

Modelling of the site was undertaken using the 'Model for Urban Stormwater Improvement Conceptualization (MUSIC) as promoted by the PMHC. The development was modelled using the split catchment approach. An appropriate type of land use was applied to all surface types within the developed catchments; where individual treatment devices were assigned the relevant modelling treatment parameters. Consequently, a treatment train was established for the site, ensuring that water discharging from the site adheres to the specified Water Quality Objectives.

Meteorological data for link input into MUSIC was obtained from the derived data for PMHC Coastal area. The catchment parameters of the MUSIC modelling are specified within the PMHC Guidelines – D7 Stormwater Management and have been modelled as such.

6.3.1 Source Nodes

The pollutant source node parameter inputs into the MUSIC model were determined using the NSW MUSIC Modelling Guidelines (August 2015), specifically Tables 5-6 and 5-7 for rural and residential surface types.

For the existing catchment, lumped catchment has been used for the areas with dense vegetation and rural agricultural land.

Developed catchment parameters were based on catchment details shown in table 5-7-1

6.3.2 Bioretention Basin Properties

Parameters used for the bioretention basin modelling have been summarized in Table 6-3-2 below:

Figure 6-3-2 Typical Details of Roadside Swale Properties

Table 6-3-2-1 Summary of Proposed Bioretention Basin A:

Parameter	Values
Minimum Filter Area (m^2)	100
Extended Detention Depth (m)	0.2
Minimum Filter Media Depth (m)	0.3
Saturated Hydraulic Conductivity (mm/hour)	100
TN Content of Filter Media (mg/kg)	800
Orthophosphate Content of Filter Media (mg/kg)	50

Table 6-3-2-2 Summary of Proposed Bioretention Basin BC 1:

Parameter	Values
Minimum Filter Area (m^2)	252
Extended Detention Depth (m)	0.3
Minimum Filter Media Depth (m)	0.5
Saturated Hydraulic Conductivity (mm/hour)	100
TN Content of Filter Media (mg/kg)	800
Orthophosphate Content of Filter Media (mg/kg)	55

Table 6-3-2-3 Summary of Proposed Bioretention Basin BC 2:

Parameter	Values
Minimum Filter Area (m^2)	450
Extended Detention Depth (m)	0.2
Minimum Filter Media Depth (m)	0.5
Saturated Hydraulic Conductivity (mm/hour)	100
TN Content of Filter Media (mg/kg)	800
Orthophosphate Content of Filter Media (mg/kg)	55

Table 6-3-2-4 Summary of Proposed Basin D (existing Pond):

Parameter	Values
Surface Area (m^2)	14,000
Extended Detention Depth (m)	1
Permanent Pool Volume	2000
Weir Crest Length (m)	8

Table 6-3-2-5 Summary of Proposed Bioretention Basin E

Parameter	Values
Minimum Filter Area (m²)	100
Extended Detention Depth (m)	0.2
Minimum Filter Media Depth (m)	0.5
Saturated Hydraulic Conductivity (mm/hour)	100
TN Content of Filter Media (mg/kg)	800
Orthophosphate Content of Filter Media (mg/kg)	55

6.3.3 MUSIC Model Layout and Results

The developed site has been modelled in accordance with a detailed sub-catchment regime to ensure the entire site meets pollutant reduction objectives. Refer to Figure 6-3-3 below for the modelled MUSIC layout.

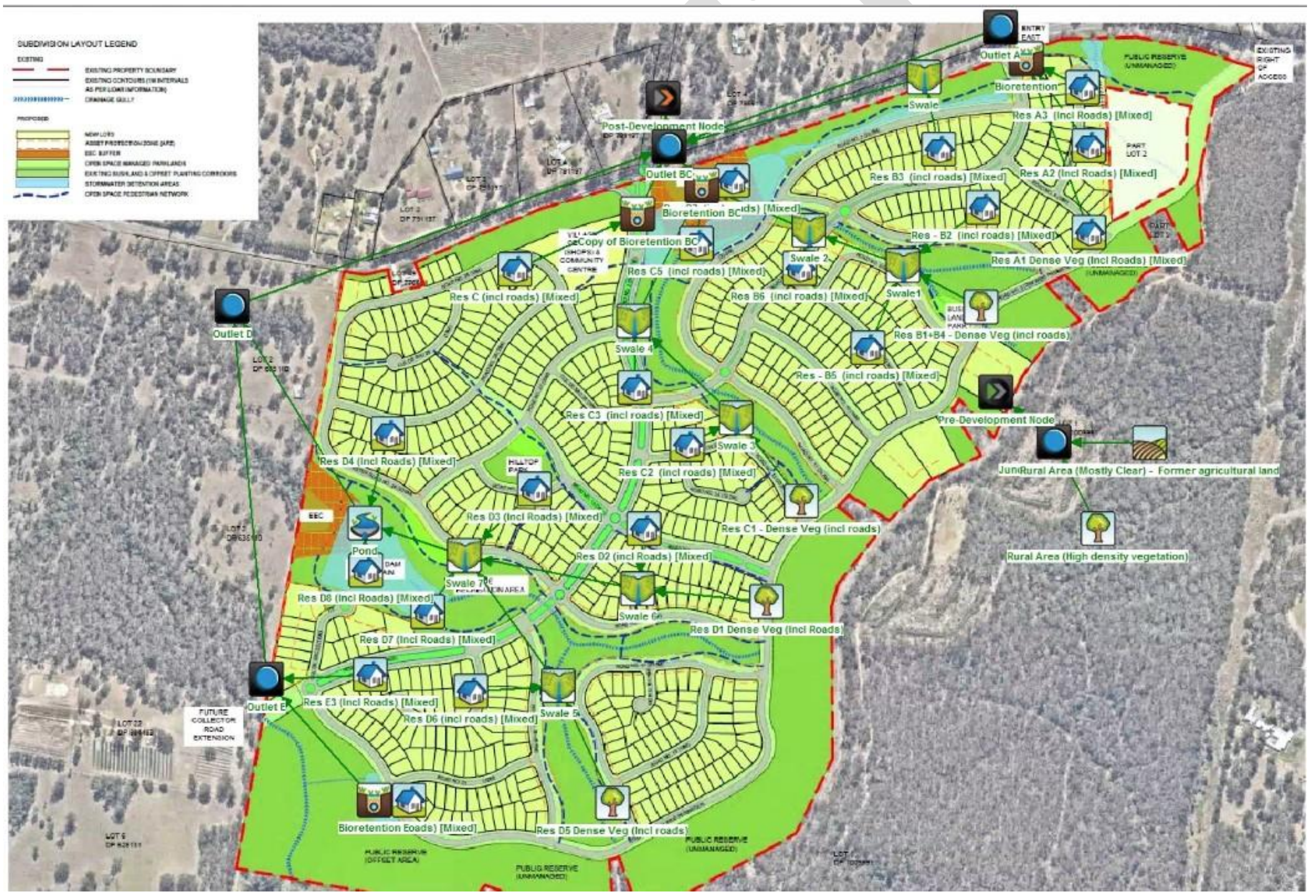


Figure 6-3-3 MUSIC Model Layout

The results in Table 6-3-3 below summarize site pollutant reductions achieved from the mitigated site over the 10-year modelling period, as compared to the nominated load reduction targets. The MUSIC results below show that the proposed stormwater treatment devices will improve the discharging stormwater quality as such the development's runoff meets the nominated load reduction targets set by PMHC. Refer to Appendix B for MUSIC results summary.

Table 6-3-3 Bioretention Pollutant Reduction Results

Treatment Train Effectiveness - Post-Development Node

	Sources		Residual Load		% Reduction	
	Pre	Post	Pre	Post	Pre	Post
Flow (ML/yr)	401	743	401	724	0	2.56
Total Suspended Solids (kg/yr)	57800	130000	57800	12300	0	90.5
Total Phosphorus (kg/yr)	91.9	262	91.9	123	0	53.1
Total Nitrogen (kg/yr)	848	1870	848	951	0	49.1
Gross Pollutants (kg/yr)	2140	20300	2140	618	0	97

☑ Include Pre-Development

7.0 CONCLUSION

This Stormwater Management Plan (SMP) has been prepared to provide a design proposal and guide to the stormwater quantity and quality management techniques for the site.

The three primary objectives of this SMP have been to ensure that:

- Suitable measures are incorporated in the development to ensure that there are no adverse impacts to downstream receiving waterways, property or infrastructure resulting from any increase to peak discharging stormwater flow rates.

- Details of a proposed stormwater quality treatment train are provided to ensure discharge of stormwater from the site is of adequate quality standards to comply with the requirements of PMHC.

The analysis presented in this report shows that the development overall will increase flows from the undeveloped state. However, this increase will be managed by diverting overland runoff into a specifically designed stormwater detention basin. The proposed measures will ensure no adverse impacts to downstream receiving waterways, properties or infrastructure is achieved.

The site will maintain existing major flow paths and its existing north and western boundary point of discharge, which will convey flows towards Haydons Creek.

A stormwater quality assessment is provided which demonstrates that a specially tailored treatment train will be required in order to meet the pollutant removal targets of PMHC during the operational phase of the proposed development.

To achieve the measures necessary for the two objectives, a number of roadside swales and detention/bioretention basins have been designed for the development. See Appendix C for preliminary details of the adopted stormwater mitigation and management measures.

Appendix A – Hastings River Flood Map

Source: Hasting River Flood Study Update – Advisian September 2018

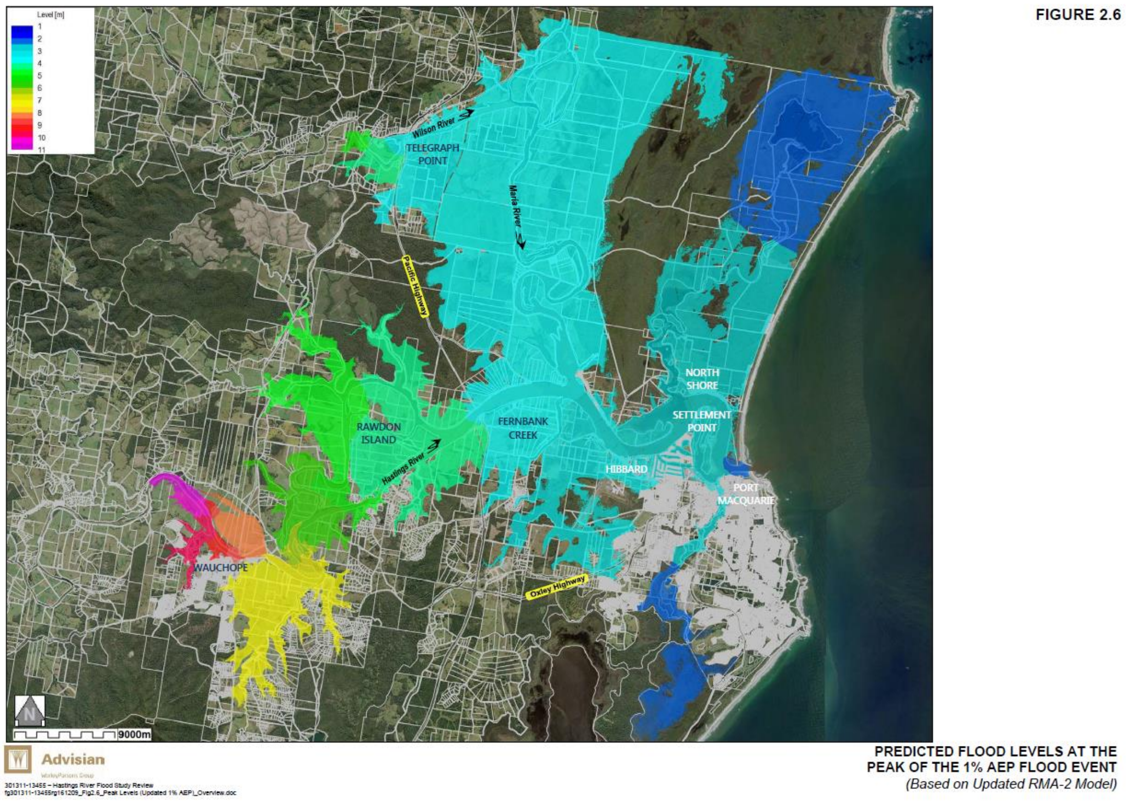


Figure: 1% AEP Flood Level

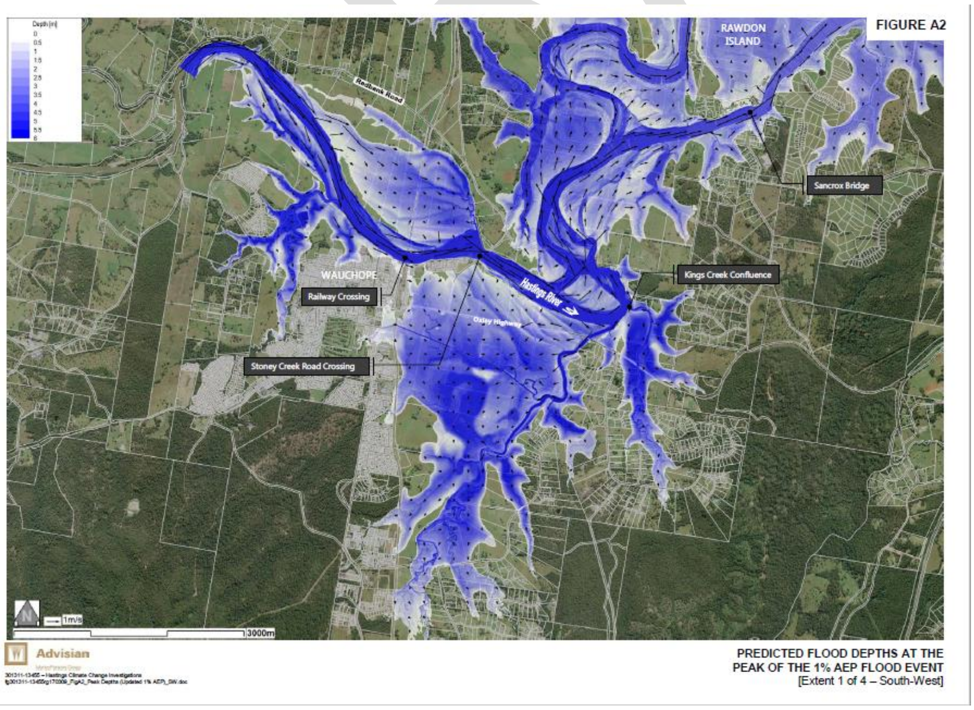


Figure: 1% AEP Flood Depth

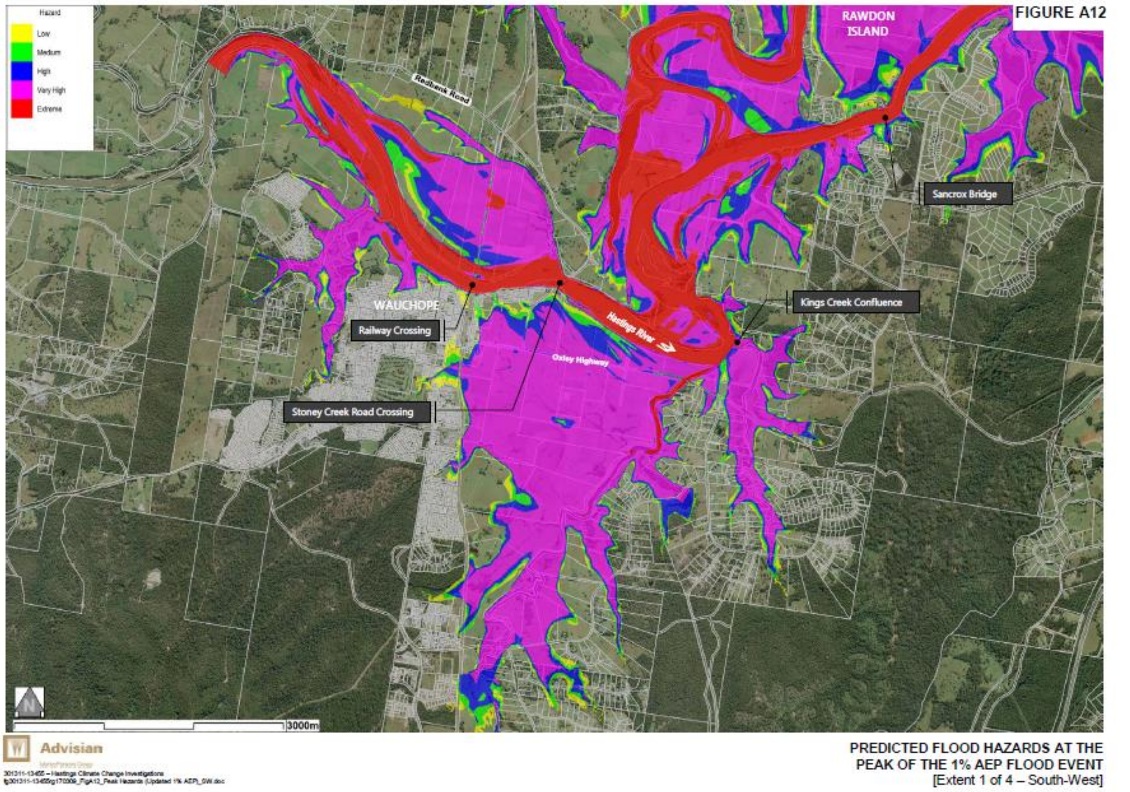


Figure: 1% AEP Flood Hazard

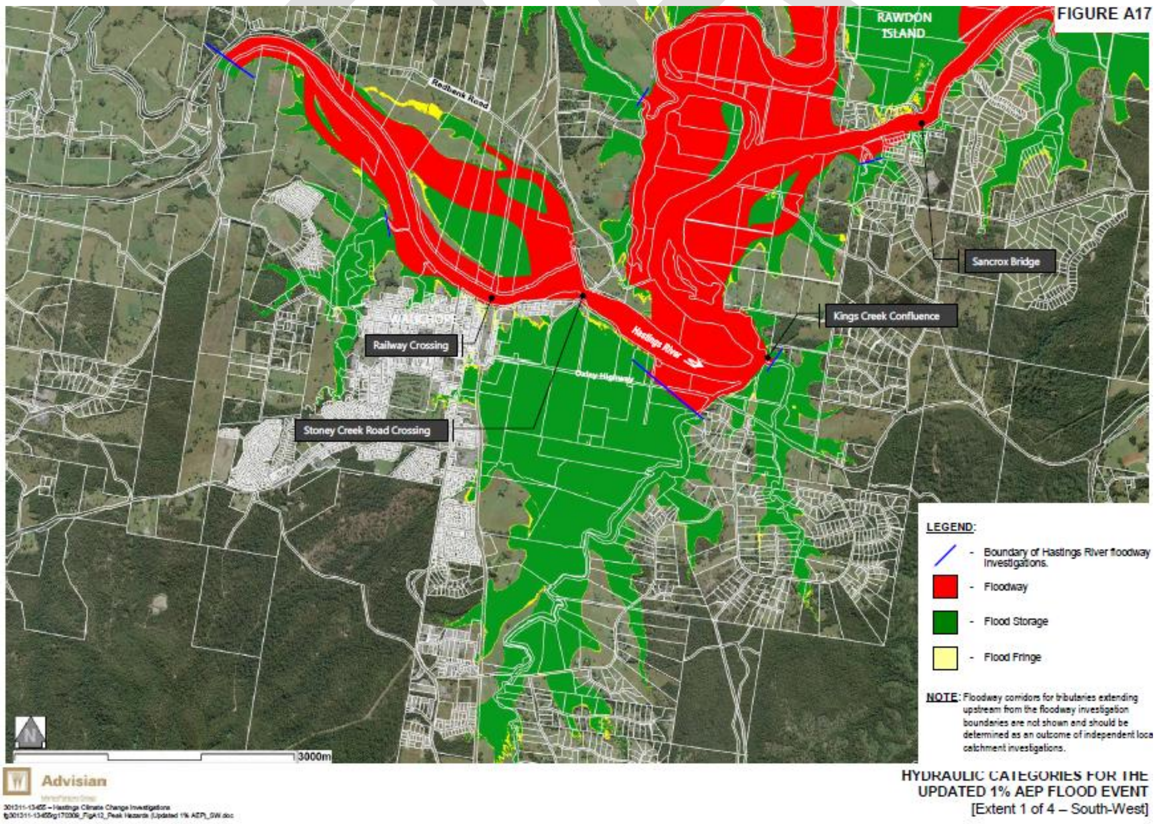


Figure: 1% AEP Flood – Hydraulic Category

Appendix B – Engineering Calculations

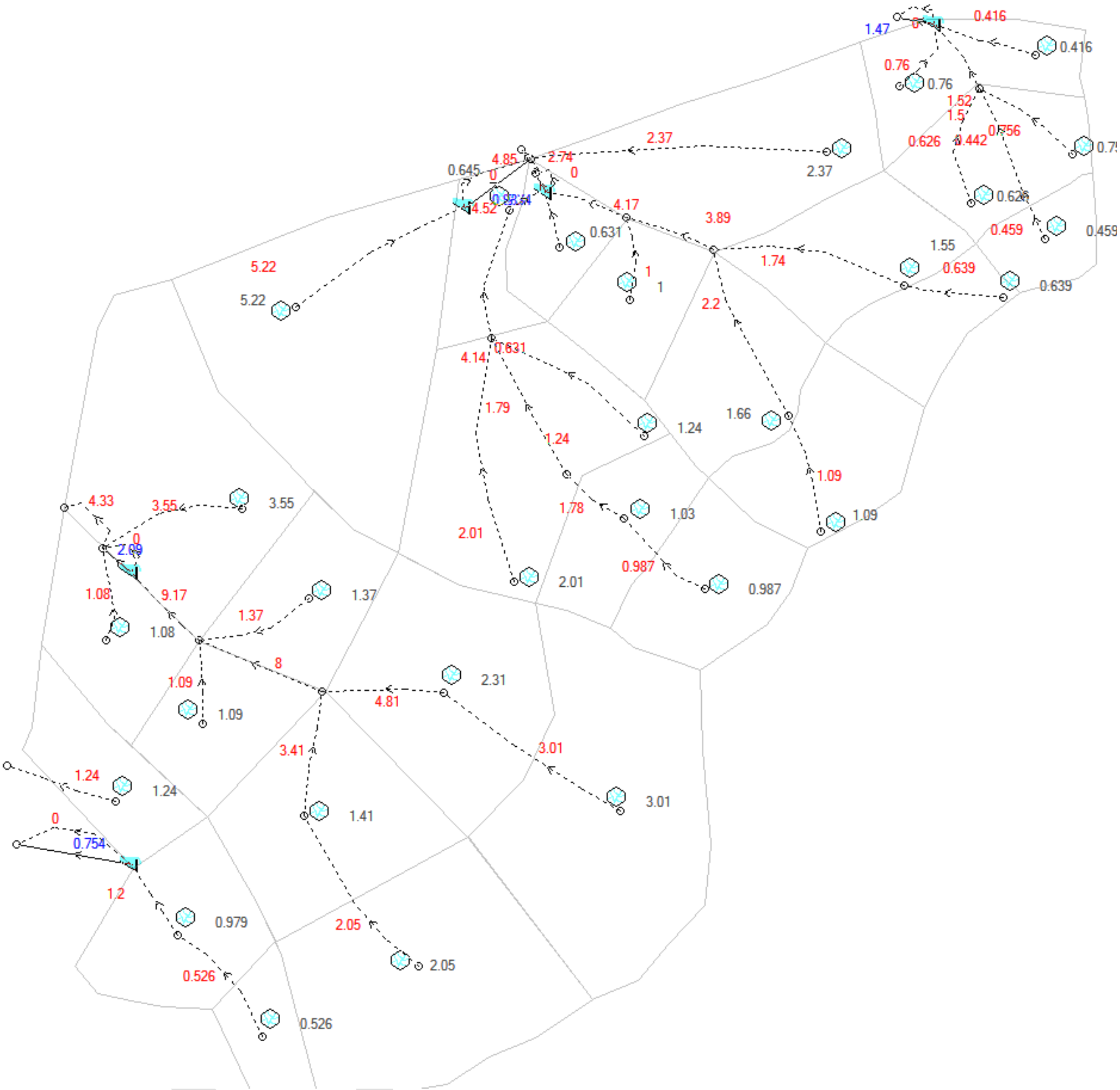


Figure: 20% AEP Mitigated Results – Drains (Rafts)

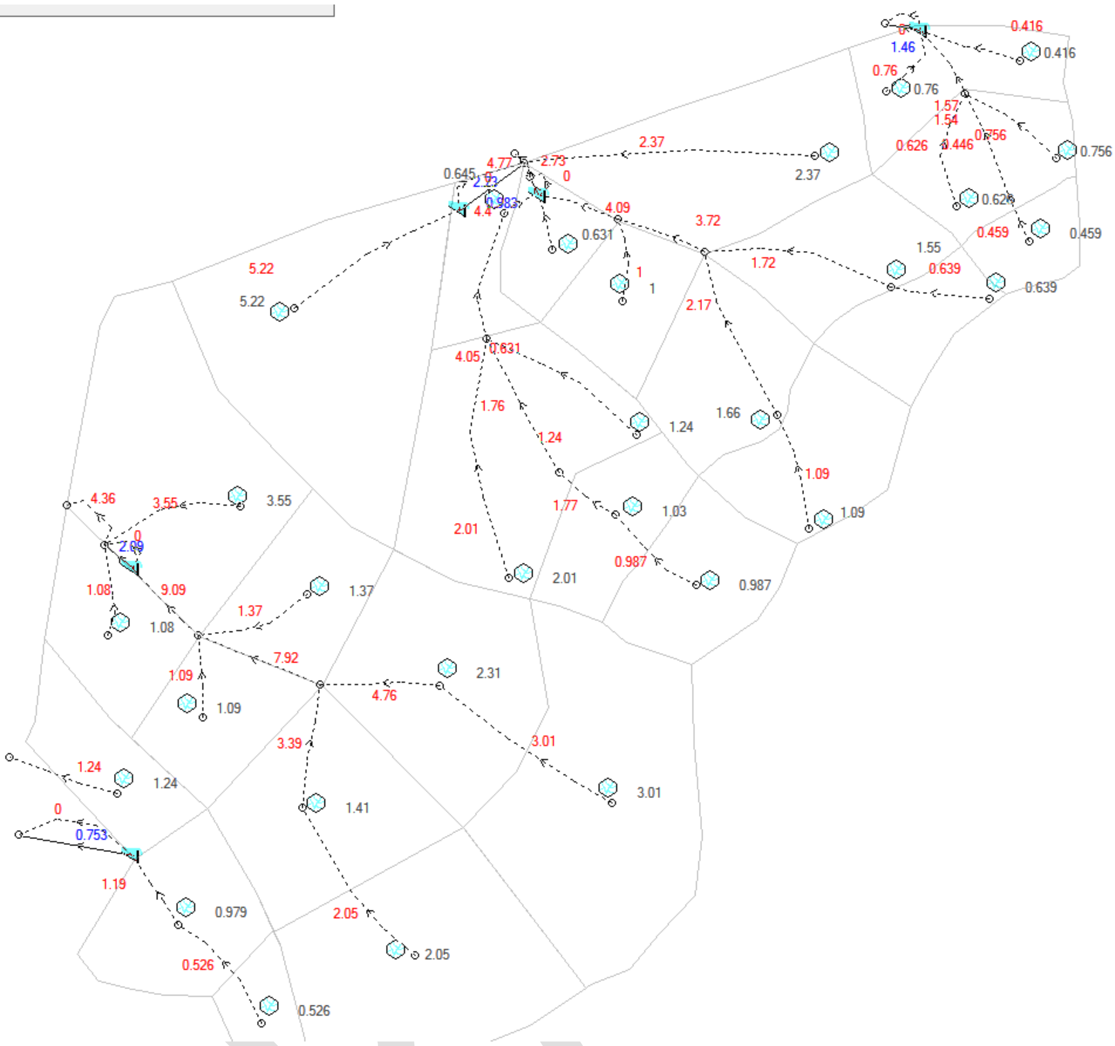


Figure: 5% AEP Mitigated Results – Drains (Rafts)

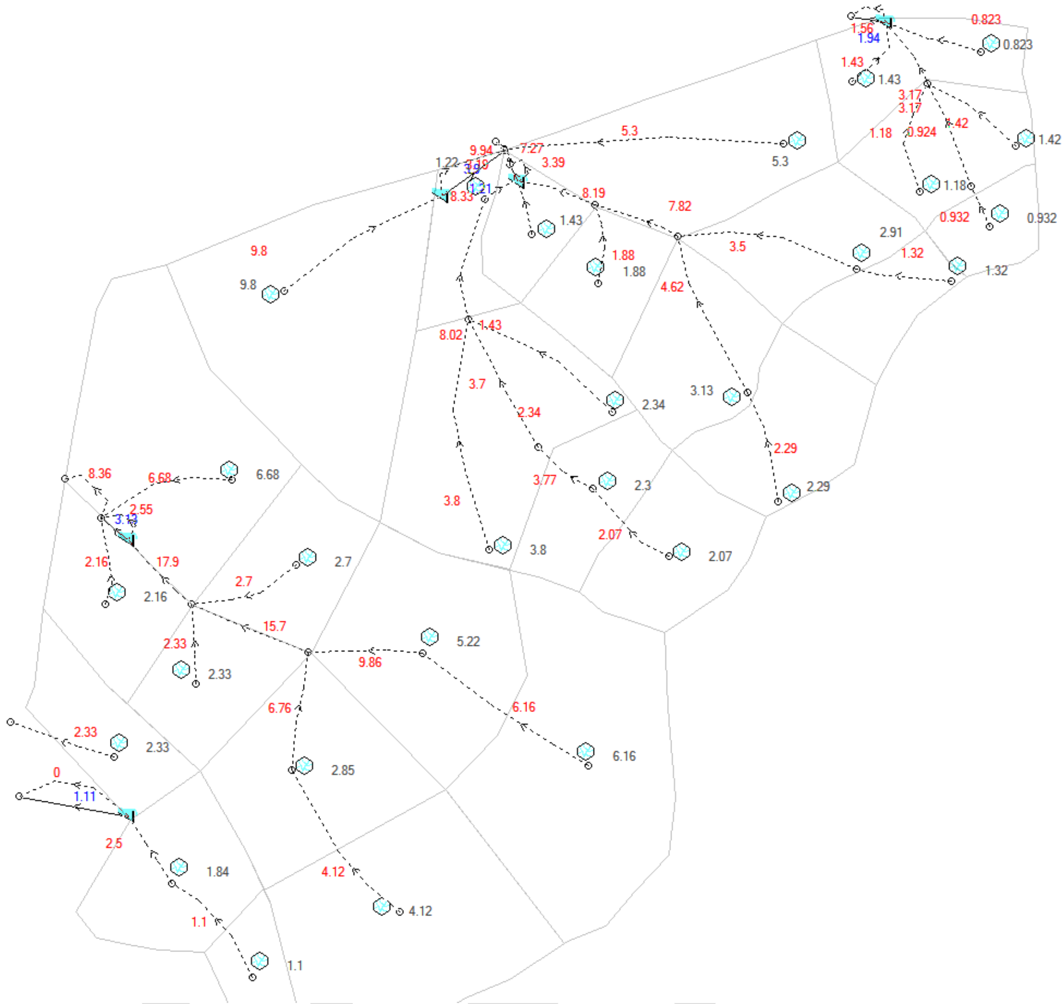


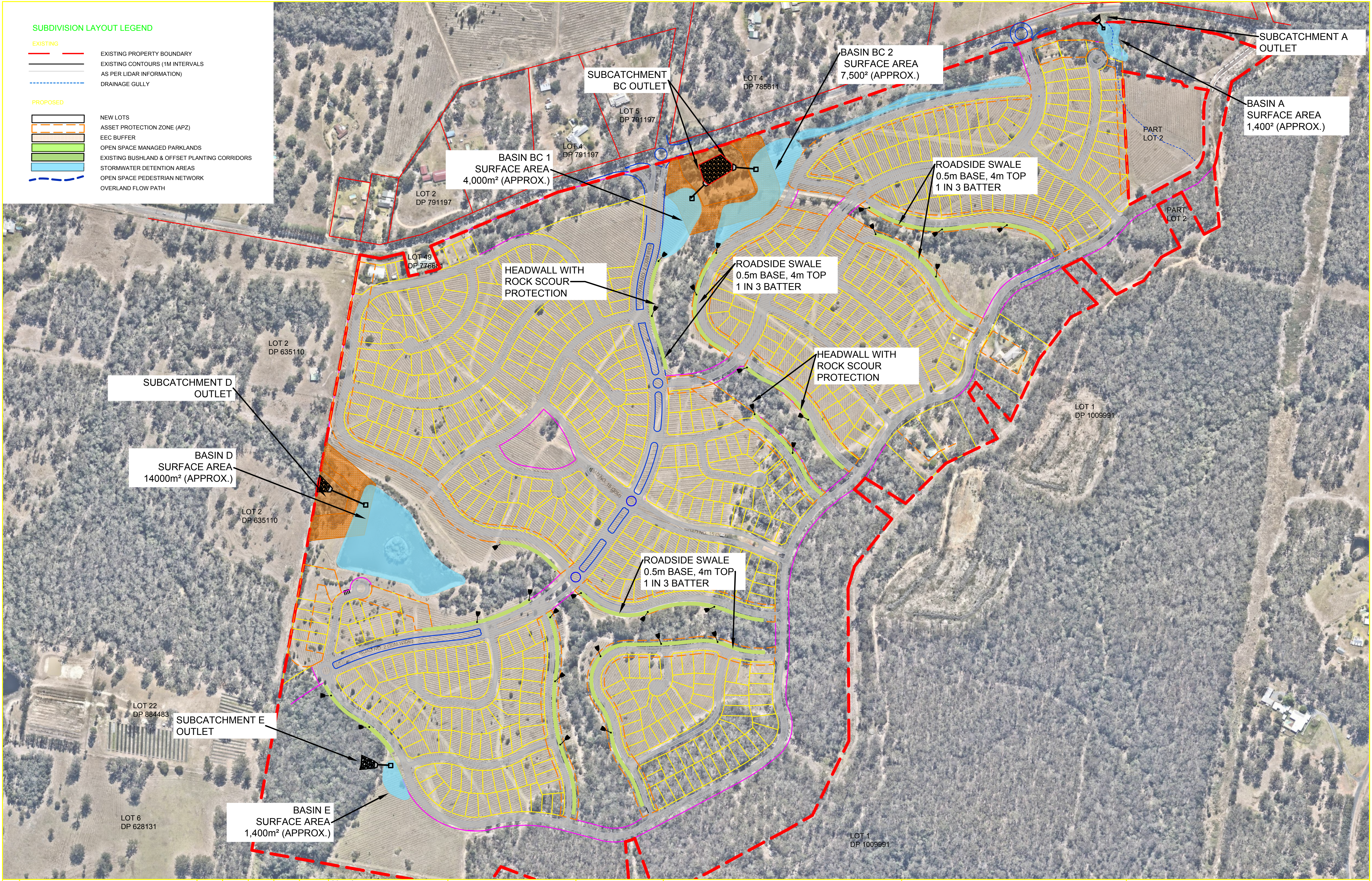
Figure: 1% AEP Mitigated Results – Drains (Rafts)

MUSIC MODEL RESULTS

	Sources	Residual Load	% Reduction
Flow (ML/yr)	743	724	2.5
Total Suspended Solids (kg/yr)	130000	12300	90.5
Total Phosphorus (kg/yr)	262	123	53.1
Total Nitrogen (kg/yr)	1870	951	49.2
Gross Pollutants (kg/yr)	20300	618	97

Figure: Music Results

Appendix C – Engineering Drawings



REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	PRELIMINARY LAYOUT FOR REVIEW	30.08.19	CM	CM		
B	REVISED LAYOUT FOR CONSULTANTS	18.09.19	CM	CM		
C	REVISED LAYOUT FOR CONSULTANTS	13.10.19	CM	CM		
D	PRELODGEMENT	18.10.19	CM	CM	GB	

SCALES:
0 25 50 100 150
Full Size 1:2500 ; Half Size 1:5000
Scale (m)

DO NOT SCALE FROM DRAWING

N

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PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

PROJECT:
LE CLOS - RESIDENTIAL ESTATE
DRAWING TITLE:
CONCEPT STORMWATER PLAN

ORIGINAL SIZE:	LAND DYNAMICS JOB No.:	DRAWING No.:	REV:
A1	5295	S001	D

CAD FILE: W:\5295 - LE CLOS SANCROX\8. ENGINEERING (WIP)\1. CIVIL DESIGN\2. DA & S96\5295_LE CLOS PLANNING PROP SET_21.10.19 (SW).DWG PLOTTED BY: USER.1904 PLOT DATE: 21/10/2019 4:52:30 PM