Integrated Water Cycle Management Strategy

Proposed Rezoning – Elambra West

Prepared for

N Campbell

Site address

Lot 2
DP 1168922
48 Campbell Street, Gerringong, NSW 2534

Date

2nd February 2022

allen price & scarratts pty ltd
land and development consultants

Surveying

Town Planning

Civil Engineering

Project Management

Copyright Statement

Nowra Office: 75 Plunkett Street, Nowra NSW 2541 • PO Box 73, Nowra 2541
Kiama Office: 1/28 Bong Bong Street, Kiama NSW 2533 • PO Box 209, Kiama 2533
tel 02 4421 6544 • **fax** 02 4422 1821 • **email** consultants@allenprice.com.au

ABN 62 609 045 972
Liability limited by a scheme approved under Professional Standards Legislation

Integrated Water Cycle Management Study
Proposed Rezoning – Elambra West

Prepared for

N Campbell

Location

Lot 2
DP 1168922
48 Campbell Street, Gerringong, NSW 2534

Prepared by

Allen, Price & Scarratts Pty Ltd
Land and Development Consultants
75 Plunkett Street
NOWRA NSW 2541

Author

.....

Ryan Howes
Senior Civil Engineer
MIEAust, BE Civil (Hons)

Table of Contents

Appendices

Table of Revisions

Rev	Date	Details
0	February 2022	Issued for Application

1.0 Introduction

The proposal is for a Rezoning Application for residential purposes at Lot 2 DP 1168922 – 48 Campbell Street, Gerringong.

Allen Price and Scarratts (APS) has been engaged by the client to assess the proposed general land use and possible layout of the site to determine an approximate area required for water quality and quantity control measures. These are to be consistent with Kiama Municipal Councils (KMC) DCP 2020 and Supporting Document 'Water Sensitive Urban Design Policy' (WSUDP).

With reference to Section 1 – Subdivision Development in the KMC WSUDP; as the proposal would increase developable residential land by far greater than 10 Lots, a subdivision of this scale would be considered a large scale development and an IWCMS is required.

The development is not within the Sydney Water drinking supply catchment area, however there are multiple watercourses / riparian areas around the site (to east, west and south). Extent of flooding is assessed in the Allen Price & Scarratts Flood Assessment.

It is noted the surrounding watercourses are ephemeral, only carrying flows during storm events. As such there are no fish/marine life concerns relating to time/duration of post development discharge.

This report references the following KMC standards and technical advice:

- D5 Engineering Standards document and DCP2020 for storm events from the 20% AEP to 1% AEP for stormwater quantities,
- Supporting document *Water Sensitive Urban Design Policy*

Under the KMC WSUDP Section 1 for Large Scale Development, the following are the pollutant load reduction targets:

Pollutant	post developed average Annual load reduction
Gross Pollutants (commercial and industrial only)	70%
Total suspended solids	80%
Total Phosphorus	45%
Total Nitrogen	45%

2.0 Site & Locality

The subject land is located at the southern extent of Campbell Street, Gerringong and west of the existing Elambra Estate development. Access to the site is via the Campbell Street road reserve, as such it is considered that all water quality measures must occur on public property with future maintenance being the responsibility of KMC.

The site contains 2 existing dwellings as well as numerous smaller outbuildings. Additionally, there is a small access road across the site to these buildings.

For the purpose of stormwater drainage design the existing site is then assumed to be approximately 13.67ha of primarily pervious land. A breakdown of existing catchment details as entered in DRAINS can be seen below.

Figure 1 - Aerial Image (SIXmaps)

Table 1 - Existing Site Details

Catchment Name	Area	Effective Impervious Area	Remaining Impervious Area	Pervious Area
	(ha)	(%)	(%)	(%)
C1 – Access Road	1.3482	0	3.7	96.3
C2 – Access Road	1.0616	2.3	4.7	93
C3 – Access Road	1.3468	1.9	3.7	94.4
C4 – Access Road	0.9102	5.5	5.5	89
C1 – Pastures	2.6012	0	0	100
C2 – Pastures	2.0484	0	0	100
C3 – Pastures	2.5975	0	0	100
C4 – Pastures	1.7554	0	0	100

2.1 Current Proposal

The site is proposed for rezoning and as such there is not a detailed site layout available for assessment, so assumptions must be made to approximate a finished development lad use.

The site is proposed to be split into four major catchment areas, with the major road reserves forming the boundaries between sub catchments – shown in Appendix I.

It is assumed that all road reserves are 15m in width (per access roads KMC DCP 2020) with 70% impervious area (per KMC D5). Additional road reserves are allowed for running east-west to approximate servicing of lots. As the site is generally symmetrical the total area of road reserves is apportioned per sub catchment.

Remaining area after the subtraction of road reserves is then divided by 450 (min lot size) to approximate maximum lot density in each sub catchment. It is considered that individual lots will provide on-site OSD (in the form of rainwater tanks or equivalent). As such the only impervious areas requiring regional stormwater detention facilities are resulting from the road reserves.

The breakdown of post-development catchment areas is seen below.

Table 2 - Post Development Sub Catchments

Catchment Name	Area	Effective Impervious Area	Remaining Impervious Area	Pervious Area
	(ha)	(%)	(%)	(%)
C1 – Road Reserve	1.3482	70	0	30
C2 – Road Reserve	1.0616	70	0	30
C3 – Road Reserve	1.3468	70	0	30
C4 – Road Reserve	0.9102	70	0	30
C1 – Lots	2.6012	0	0	100
C2 – Lots	2.0484	0	0	100
C3 – Lots	2.5975	0	0	100
C4 – Lots	1.7554	0	0	100

Per the above breakdown it is assumed that on-site detention facilities provided with individual dwelling application will effectively mimic the existing conditions.

3.0 Stormwater Hydraulic modelling

Stormwater Hydraulic calculations have been prepared by a qualified practicing engineer using DRAINS version 2021.031.

All sub-catchments are proposed to discharge their stormwater through headwalls and weirs to the existing watercourses bordering the development area.

Storms are assessed in accordance with DCP2020 and the outcomes of these events are summarised below for the Annual Exceedance Probability (AEP) 20%, 10%, 5% & 1%. Results are separated into discharge directions, with C1 and C2 discharging to the western watercourse, while C3 and C4 discharge to the eastern watercourse.

Table 3 - DRAINS Pre-development and Post-development Peak Flows Summary

Discharge Direction	Rainfall event	Pre-development Peak Flow	Post development Peak flow	Percentage Change
		m^3/s	m^3/s	
West	20% AEP	1.123	1.071	-4.6%
	10% AEP	1.496	1.253	-16.2%
	5% AEP	1.902	1.554	-18.3%
	1% AEP	3.020	3.020	0.0%
East	20% AEP	1.150	1.074	-6.6%
	10% AEP	1.496	1.248	-16.6%
	5% AEP	1.991	1.892	-5.0%
	1% AEP	3.030	3.030	0.0%

In summary, the designs indicate that the pre-development and post development peak flows are matched or reduced for all specified storm events from 20% AEP to 1% AEP. Stormwater OSD Pond details are as detailed below.

Table 4 - OSD Pond Details

Pond Name	Area at top of bank	Total Depth	Depth to Weir	Total Volume at top of bank	Outlet Pipe Diameter
	(m^2)	(m)	(m)	(m^3)	
C1	975	1.8	0.5	820.8	1x 675dia
C2	900	1.6	0.5	714.9	2x 375dia
C3	775	1.5	0.5	572.8	1x 675dia
C4	675	1.5	0.5	473.0	1x 525dia

Results and tolerances are discussed further in the following Section 3.1.

3.1 Design Assumptions

To offset the increase in impervious area generated by road reserves it is proposed to provide regional detention basins per Section 3.0. It is assumed that all lot level development will provide at source detention to offset future impervious areas.

Model Hydrology is based on an ARR 2019 Initial Loss – Continuing Loss model (IL-CL). Pervious area Initial and Continuing Losses are set as 10mm and 2mm to correspond with assumption from the Flood Assessment. Impervious areas are assumed to have 1mm initial loss and a continuing loss of 0mm.

Rainfall and pre-burst data is provided by the ARR data hub in accordance with recommended practices. In accordance with the Watercom DRAINS software guidelines the median pre-burst rainfall depth for the 60 minute duration of all storm intensities is adopted for all storms of less than 60min duration.

Retardance coefficients are adopted as per the below table:

Sealed Roads	0.012
Gravel/Unsealed Roads	0.02

Road Reserve pervious areas	0.15
Greenfield Lot Areas	0.3
Existing pasture land	0.3

3.2 Results

The DRAINS design for the development complies with Kiama Municipal Councils DCP2020 and the WSUDP:

Major and Minor peak flows have been considered. The pipes are sized for the Minor flows being the 20% AEP, while the overflow routes have adequate capacity without overtopping/breaking their banks for 1% AEP event. All flows are considered safe for the proposed works during the Major event.

Velocity Depth Ratio are all considered safe and compliant with ARR 2019 Guidelines.

3.2.1 On-Site Detention (OSD)

Images of the overall run models are provided in the appendices. Results were summarised in Table 3.

It can be seen from the above results that the system matches the 1% and 20% AEP events reasonably well, while the 10% and 5% AEP storms between experience around a 15-18% reduction in peak discharge rate. This would indicate that the OSD provided is slightly in excess of requirements, however the low-level controls cannot be reduced (due to the minor storm) and the basin volume cannot be shrunk further due to Climate Change impacts as discussed in Section 3.2.3 below. As the site discharges existing generally dry waterways it is considered that a decrease in peak flow rate for these events has negligible impact on the downstream system. The reductions in peak flow rate are therefore considered acceptable.

This is consistent with Kiama Municipal Councils DCP2020 with regional basins being provided for publicly owned impervious areas (road reserves) and at-source detention intended for the future lot-level developments.

3.2.3 Climate Change Models

Climate change factors were also assessed from the ARR data hub with the below table being produced:

Data

Interim Climate Change Factors

	RCP 4.5	RCP6	RCP 8.5
2030	0.648 (3.2%)	0.687 (3.4%)	0.811 (4.0%)
2040	0.878 (4.4%)	0.827 (4.1%)	1.084 (5.4%)
2050	1.081 (5.4%)	1.013 (5.1%)	1.446 (7.3%)
2060	1.251 (6.3%)	1.229 (6.2%)	1.862 (9.5%)
2070	1.381 (7.0%)	1.460 (7.4%)	2.298 (11.9%)
2080	1.465 (7.4%)	1.691 (8.6%)	2.719 (14.2%)
2090	1.496 (7.6%)	1.906 (9.7%)	3.090 (16.3%)

Layer Info

Time Accessed	31 January 2022 10:59AM
Version	2019_v1
Note	ARR recommends the use of RCP4.5 and RCP 8.5 values. These have been updated to the values that can be found on the climate change in Australia website.

Figure 2 - Interim Climate Change Factors

Previously it has been common practice to adopt RCP6 factors as the best middle ground for predicting future climate impacts on rainfall intensity, however CSIRO have recently updated figures for RCP4.5 and 8.5 and as such ARR recommends their use. It can be seen from the above table that a T_m factor of 3.09 can be adopted as the most conservative climate change estimate for the year 2090. This subtends a climate change multiplying factor of 1.163 (16.3% increased rainfall) which is adopted for use in DRAINS.

Climate change factors are applied to the design storms (AEP 20%, 10%, 5% and 1% respectively). It is found for all design events that the OSD basins continue to function and reduce post development flows to less than predevelopment. The 1% AEP event experiences a very small increase (<1%) in post development flows, which is considered to be within acceptable tolerance and margins of error in the model. It is also found that all overflow routes remain safe with all velocity-depth products remaining <0.3 in accordance with ARR 2019.

It is confirmed then that the worst case RCP8.5 Climate Change multiplier of 16.3% for 2090 does not exceed the capacity of the basins or overland flow safety requirements. Similarly, the post development flows are reduced to match predevelopment peak rates.

4.0 Water Quality Modelling

Water quality modelling has been undertaken using MUSICX version 1.1.0.11687 by a qualified practicing engineer to confirm that the acceptable solutions for water quality objectives as outlined in the introduction are met by use of WSUD measures.

MUSIC modelling was used to predict the average annual pollutant loads for the post-development conditions using the sub-catchments for the proposed development. Area specific daily rainfall data for a time period over 10 years of continuous data and monthy average evapotranspiration was input into the model.

4.1 Data Inputs

Rainfall data was adopted from the Port Kembla BSL Lab (STN068131) as the nearest analogue (in terms of coastal position and total annual rainfall) for the time period from 1999 to 2009 for the basis of this model. Station locations nearer to the site in Gerringong were excluded for a number of reasons, such as:

1. 6-minute time step data was not available (as best practice for MUSIC);

2. Data sampling did not contain a consistent 10 year period; OR
3. The geographic location was further inland and therefore experienced a different climate.

The Port Kembla BSL Lab has 100% data coverage at a 6min time step over a time period of 10 years, providing stability and confidence to the resulting calculations. The monthly average evapo-transpiration data input was adopted from the same location. It is deemed by the software creator that there is no significant change in evapotranspiration figures between Port Kembla and Gerringong. See below for graph showing daily rainfall and evapo-transpiration data

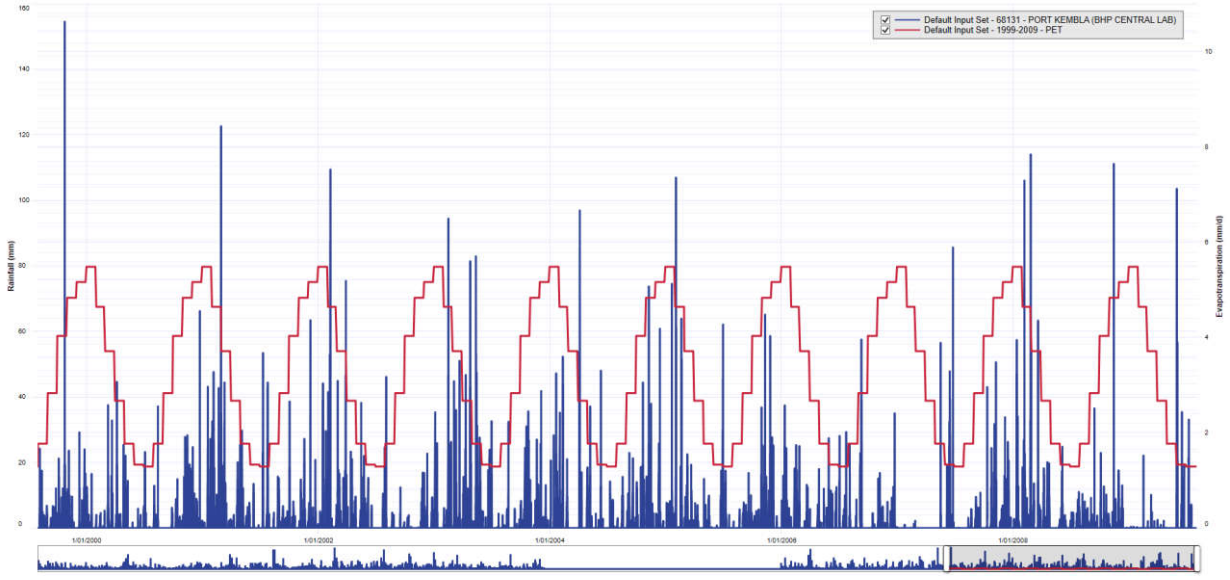


Figure 3 - Rainfall & PET data – 1999-2009 – Port Kembla BSL Lab

The existing site is apportioned between source nodes for the agricultural use land, existing dwellings and existing unsealed access road. The post-development source nodes have been broken into twelve distinct catchments as summarised below.

Table 5 - Source Node Details

	Catchment Name	Source Type	Area (m^2)	Impervious %	Pervious %
Predevelopment	Pastures	Agricultural	133,693	0	100
	Unsealed Road	Urban – Unsealed Road	2,000	100	0
	Ex Dwellings	Urban - Roof	1,000	100	0
Post-Development	C1 – Roof Area	Urban - Roof	11,400	100	0
	C1 – Road Reserves	Urban – Sealed Road	13,482	70	30
	C1 - Lots	Urban – Revegetated Land	14,612	11	89
	C2 – Roof Area	Urban - Roof	9,000	100	0
	C2 – Road Reserves	Urban – Sealed Road	10,616	70	30
	C2 - Lots	Urban – Revegetated Land	11,484	10.8	89.2
	C3 – Roof Area	Urban - Roof	11,400	100	0
	C3 – Road Reserves	Urban – Sealed Road	13,468	70	30
	C3 - Lots	Urban – Revegetated Land	14,575	10.9	89.1
	C4 – Roof Area	Urban - Roof	7,800	100	0
	C4 – Road Reserves	Urban – Sealed Road	9,102	70	30
	C4 - Lots	Urban – Revegetated Land	9,754	10.1	89.9

Road reserve areas are estimated based on 15m wide reserves as shown on the APS Structure Plan (Rev 0), allowing for additional east-west roads to account for approximately 30m lot depths. Remaining area is divided by 450m^2 in each sub-catchment to determine the approximate number of lots. Each lot is assumed to be provided a rainwater tank for BASIX reuse with an assumed connected roof area of 200m^2 per lot.

Roof catchment impervious areas are assumed as 100%, while overall residential lots impervious area is assumed as 50% as per the KMC D5 development code. This enables the calculation of expected remaining impervious area within the lots source nodes once roofs are subtracted. Road Reserves are assumed as 70% impervious also in accordance with the KMC D5 development code.

Upon analysis it is found that the nitrates are the most difficult residual pollutant to control (which is typical of residential development). Providing only 'soft' treatments (bioretention, wetlands etc) would result in massive treatment areas being required. As such, it is proposed to provide a combination of Humes Humegard GPTs and Humeceptor secondary treatment devices for the treatment of all stormwater flows, reducing the required 'soft' treatment areas.

To provide treatment of the roof water, it is proposed that BAIX rainwater tanks be incorporated into all dwellings. Reuse of water in the tanks is calculated based on the Sydney Water estimate of 623L/day/dwelling potable water demand (based on Water Supply Code of Australia). This is reduced to 44% based on the *'NSW Guidelines for Greywater Resuse in sewered, single household residential premises'* March 2007. This results in a reuse demand of 100kL/dwelling/year. It is noted that the KMC DCP requires subdivisions to be designed with a 40% reduction in potable water demand. Provision of 4kL rainwater tanks per dwelling reduces potable water deman by approximately 34%, with the remaining reduction able to be satisfied by other water efficiency BASIX controls at dwelling contruction stage (water saving flow restrictors etc).

The Humegard treatment nodes have been provided by Humes with high-flow bypasses as per their details governing treatment effectiveness. Humeceptor treatment effectiveness has also been provided by Humes, however it is considered that the model of Humeceptor selected/designed will match the treatment flow rate of the upstream Humegard. The MUSIC model includes a high flow bypass from the Humegard directly to the OSD ponds, resulting in no untreatable flow being directed through the Humeceptor units.

In addition to the proprietary treatment products, it is noted that some biofiltration area is still required to satisfy pollutant reduction requirements. A summary of the bioretention basin treatment nodes can be seen below.

Table 6 - Bioretention Basin Inputs

Catchment	Filter Area	Filter Depth	Extended Detention Depth	Underdrain
	(m^2)	(m)	(m)	(Y/N)
C1	600	0.5	0.3	Y
C2	400	0.5	0.3	Y
C3	600	0.5	0.3	Y
C4	400	0.5	0.3	Y

The pre-development situation and post development treatment train can be seen below:

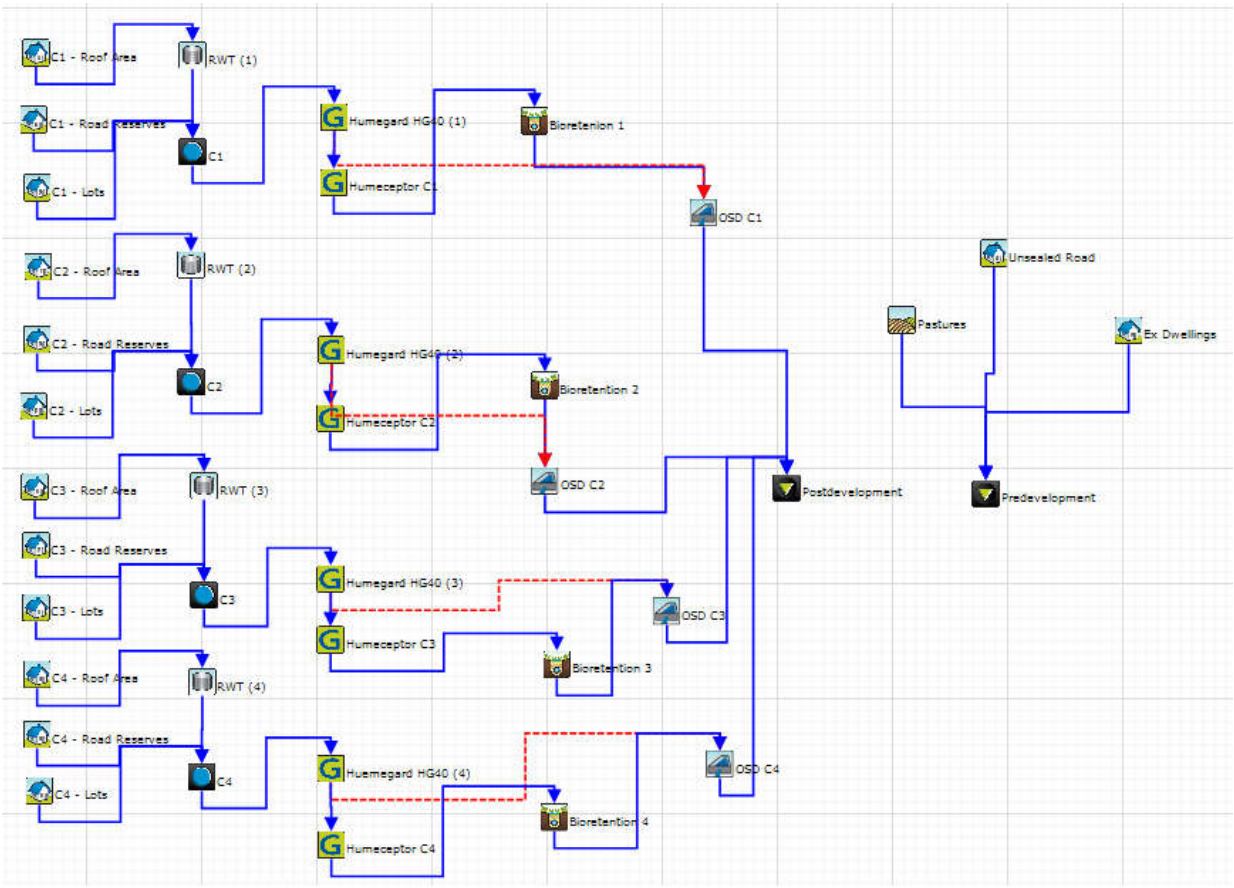


Figure 4 - MUSICX Pre and Post Development Treatment Train

4.2 Water Quality Results

Below is a table showing both the target post development average annual pollutant load reduction and the designed post-development average annual pollutant load reduction. As can be seen, with the proposed treatment train the targets are all met and thus generally satisfy the requirements of the KMC WSUDP.

Table 7 - MUSICX Treatment Train Effectiveness

Pollutant	Sources (kg/yr)		Residual Load (kg/yr)		Annual Load Reduction %	Comment
	Pre	Post	Pre	Post		
Gross Pollutants	161.99	5,557.63	161.99	0	100.00%	Acceptable, meets target & NorBE
Total Suspended Solids	227,626.24	165,956.81	227,626.24	29,940.56	81.96%	Acceptable, meets target & NorBE
Total Phosphorus	570.60	333.26	570.60	151.47	54.55%	Acceptable, meets target & NorBE
Total Nitrogen	3,865.56	2,235.11	3,865.56	1,224.34	45.22%	Acceptable, meets target & NorBE

It can be seen that all pollutants not only meet the reduction targets but almost comply with NorBE as well (not required outside of Sydney Drinking Water Catchment). As expected, TN was the most difficult pollutant to control, justifying the installation of secondary treatment devices.

In summary, all annual pollutant reductions comply with KMC DCP 2020 and Water Sensitive Urban Design Policy.

5.0 Water Treatment Areas

The APS Structure Plan (Rev 0) as part of the rezoning assessment shows water quality treatment areas around the eastern and western perimeters of the site. The total area available is approximately 14,040m^2. It is noted that the summation of all bioretention and detention pond areas per above sections is 5,325m^2. It is noted that the basin areas specified do not include batters and as such will expand their footprint significantly once detail designed. However, as the area available is nearly 3x what is required it is our consideration that there is a possible solution within the proposed footprint.

A more significant concern is the encroachment of flood waters into these areas of the site.

Eastern Flood Impacts

The APS Flood Assessment demonstrates that the 1% AEP event has partial inundation of the indicative principal road footprint (including water treatment areas) at the current levels. Based on a provisional assessment some of these areas would be considered flood fringe/storage, and so may be available to be filled with compensatory excavation. If this is not found to be possible with detailed layouts/assessment at DA stage, then the eastern perimeter road and associated water treatment areas would need to be adjusted out of the influence of flood areas. It is recommended that the water treatment area is included as R2 zoning, with a view that the majority of this perimeter will eventually become dedicated to KMC as road reserve and/or drainage reserve.

Western Flood Impacts

The APS Flood Assessment demonstrates that the 1% AEP event does not encroach on the western roadway, however there is some impact on the water treatment areas (<0.3m depth). As these areas are also identified as flood storage/fringe it is considered reasonable that these areas could be developed for water treatment devices with some minor compensatory excavation works in tandem. It is recommended that the water treatment area is included as R2 zoning, with a view that the majority of this perimeter will eventually become dedicated to KMC as road reserve and/or drainage reserve.

The extent of works would be highly subject to the proposed development layout and final number of lots etc. However, it is considered with relatively minor adjustments to surface levels the proposed western catchment would be suitably treated with the available area free of the impacts of the 1% AEP event. It is likely that the western principal road extent will need to be adjusted with the evolution of a DA for a proposed subdivision. This

6.0 Conclusion

This report provides a 'broad strokes' assessment of the proposed rezoning to approximate the extent of water quality and quantity treatment devices that will be required for an eventual subdivision development.

This assessment concludes that sufficient area had been indicated for water quality/treatment devices around the east/south/west perimeters of the site. However, it is also found that the area to the west is

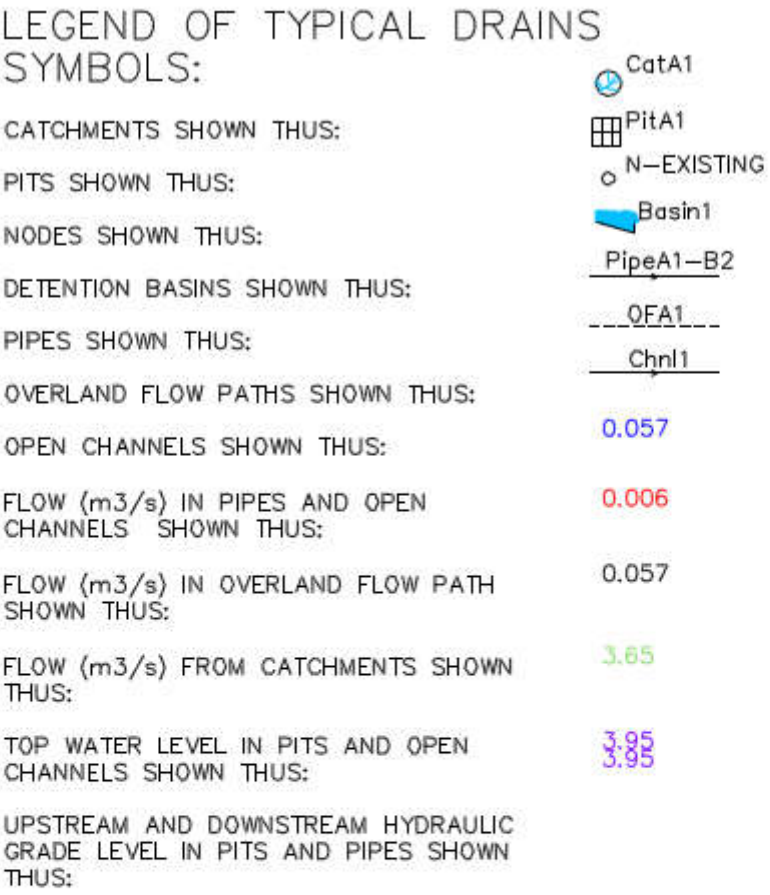
impacted by the 1% AEP event, and as such will require adjustment as a DA evolves for the site. It is recommended that the treatment areas shown in the APS Proposed Structure Plan (Rev 0) be included as part of the R2 zoning for future dedication as Road and/or Drainage Reserve. A Revised (Rev 1) version of the APS Structure Plan is attached in Appendix H as a result of these recommendations.

These conclusions are based upon layout and lot density assumptions as detailed herein.

Targets for the reduction of annual average pollutant loads are achieved with the proposed treatment train to an acceptable level.

Ryan Howes
Senior Civil Engineer
MIEAust, BE (Civil) Hons
Allen, Price & Scarratts Pty Ltd
02 February 2022

APPENDIX A DRAINS LEGEND –



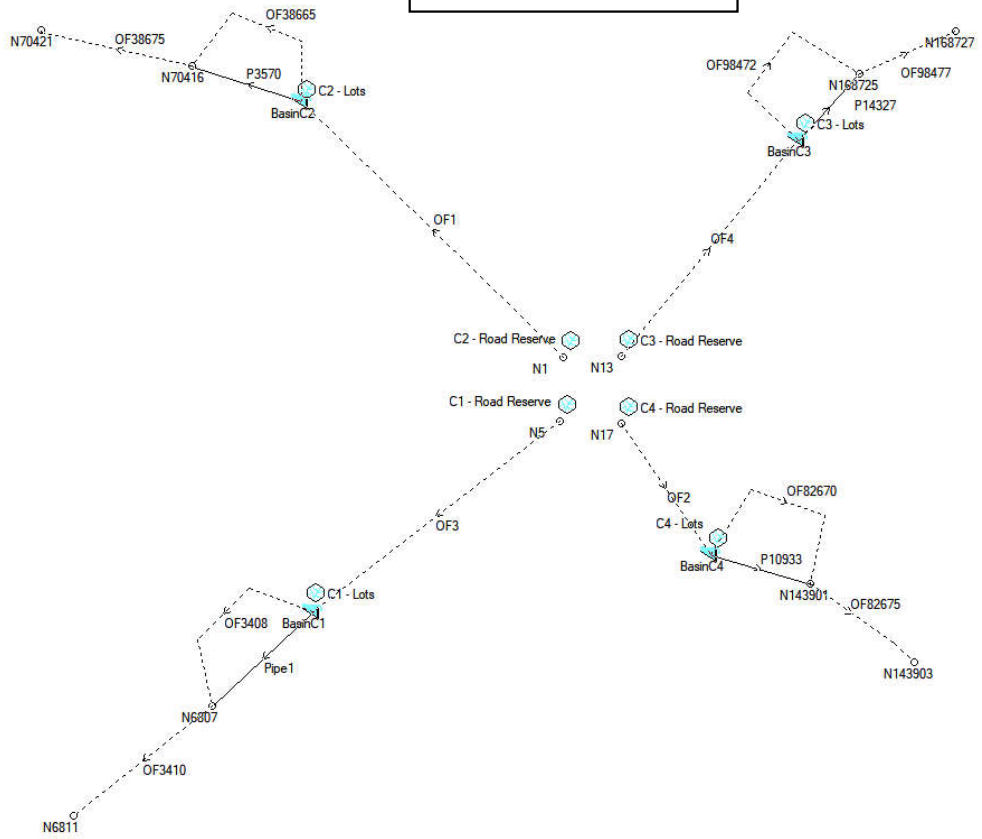
LEGEND FOR THE OUTPUT FROM THE DRAINS PROGRAM

allen price & scarratts
land and development consultants
Head Office: 75 Plunkett Street, Nowra, NSW 2541
Kiama Branch: 5/125 Terralong Street, Kiama, NSW 2533
phone:(02) 4421 6544 fax:(02) 4422 1821
consultants@allenprice.com.au www.allenprice.com.au

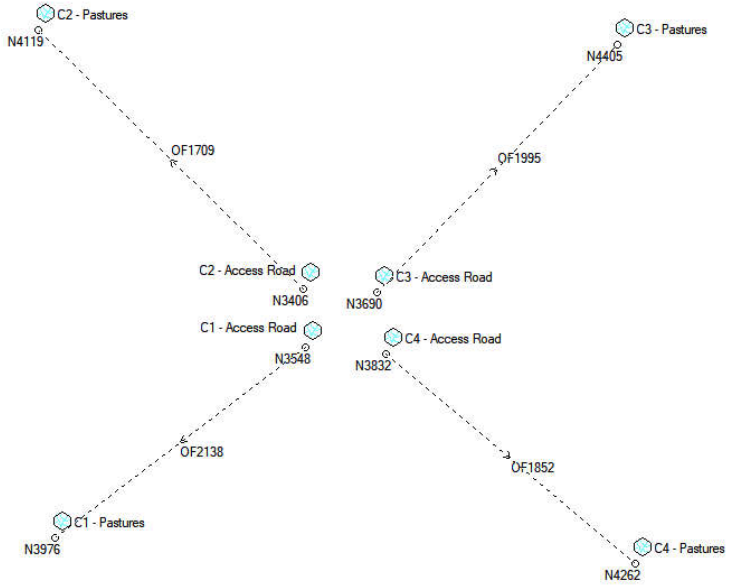
RATIO DATE OCT 2015 REF: DRAINS

APPENDIX B - DRAINS DATA

POSTDEVELOPMENT

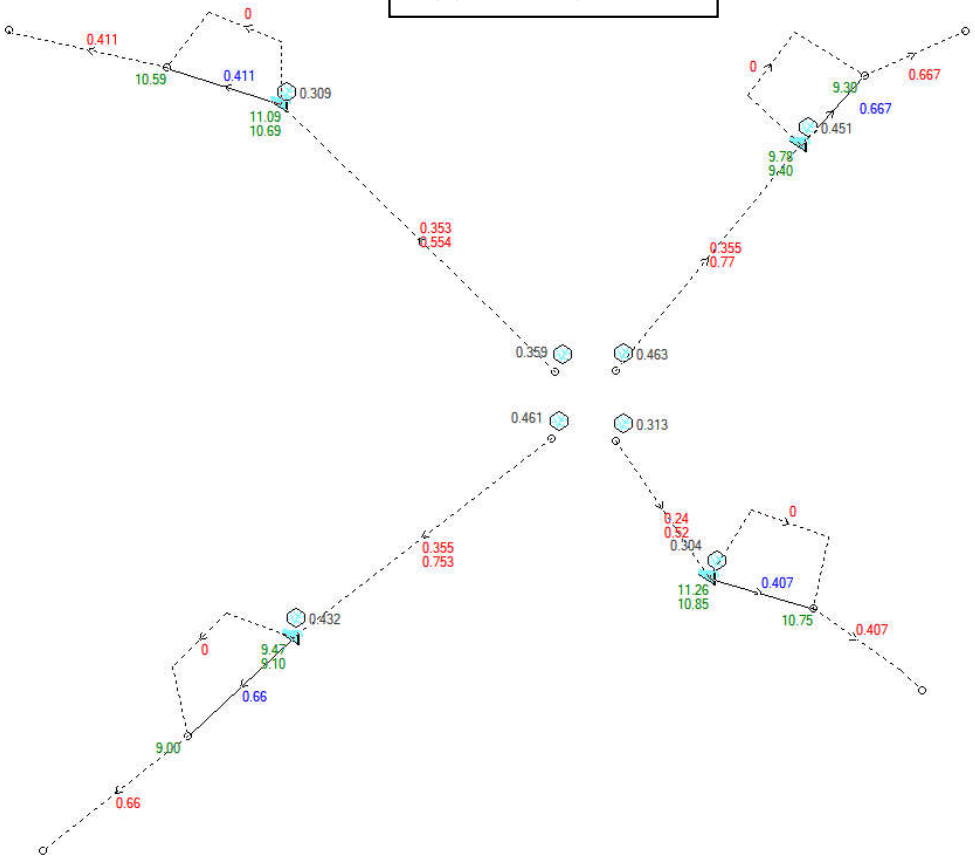


PREDEVELOPMENT

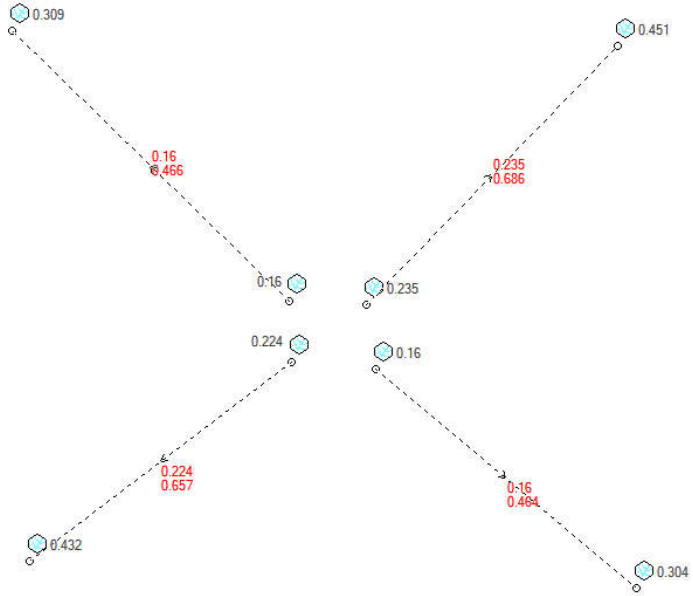


APPENDIX C – 20% RESULTS

POSTDEVELOPMENT

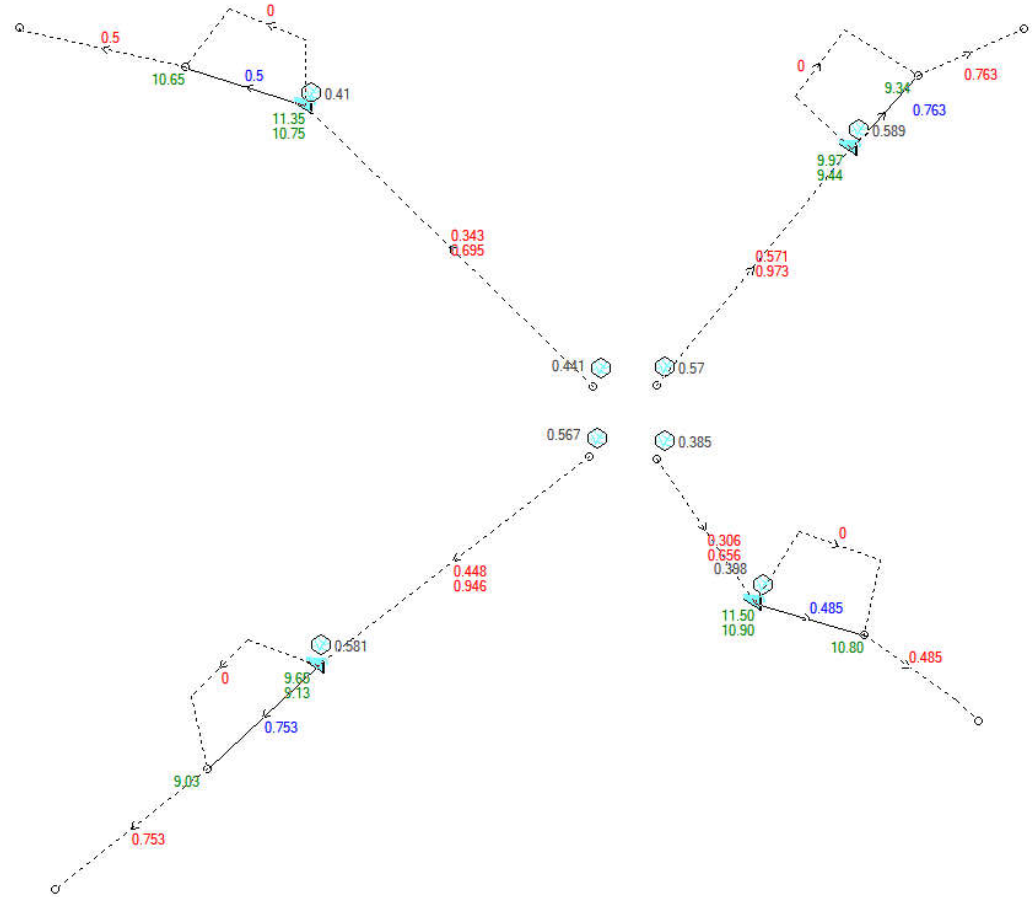


PREDEVELOPMENT

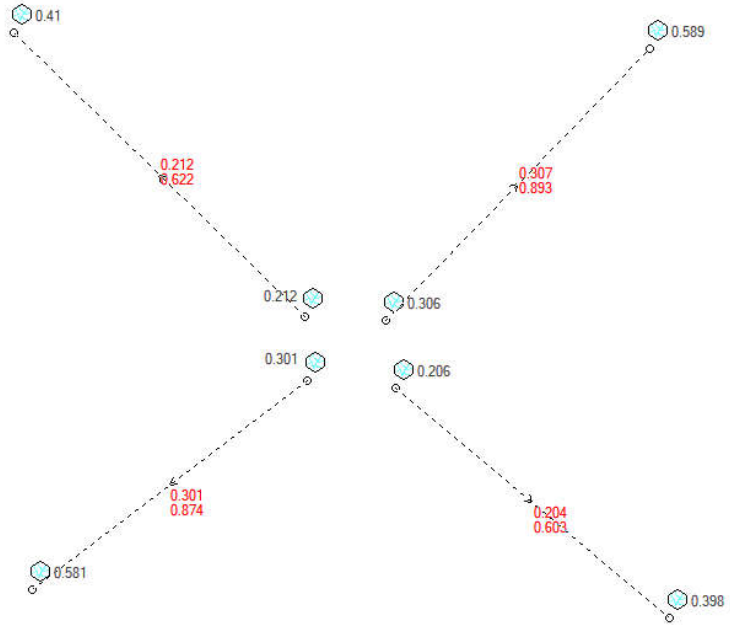


APPENDIX D – 10% AEP RESULTS

POSTDEVELOPMENT

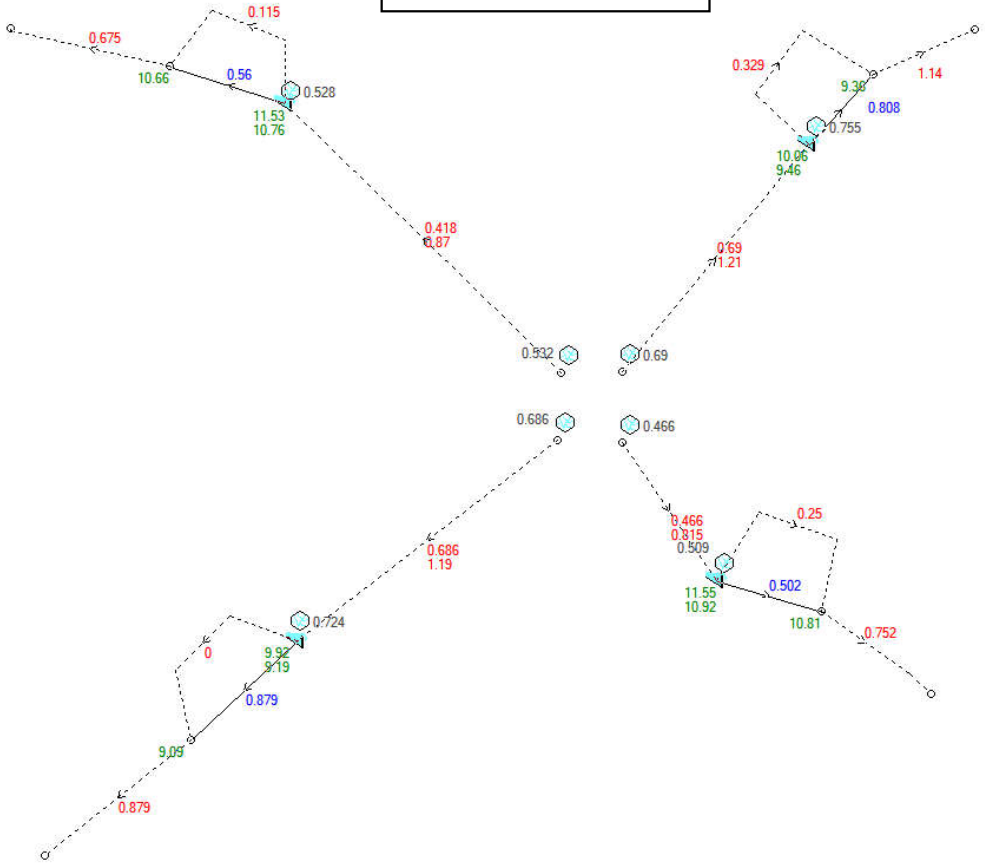


PREDEVELOPMENT

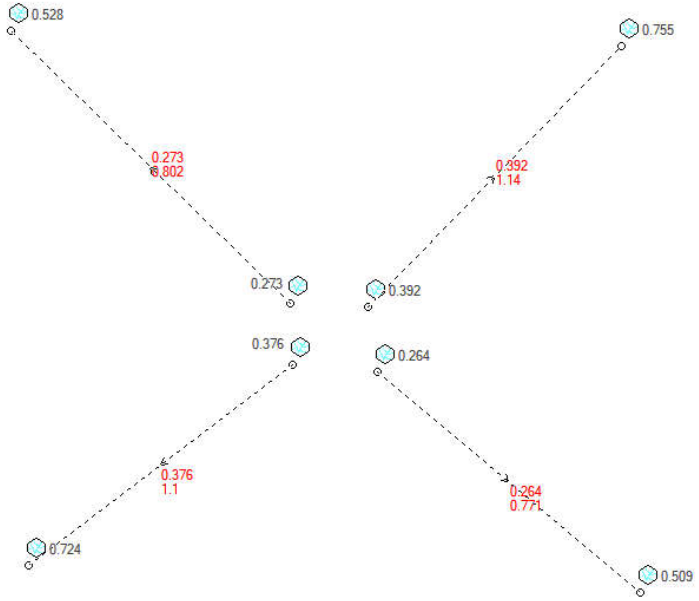


APPENDIX E – 5% AEP RESULTS

POSTDEVELOPMENT

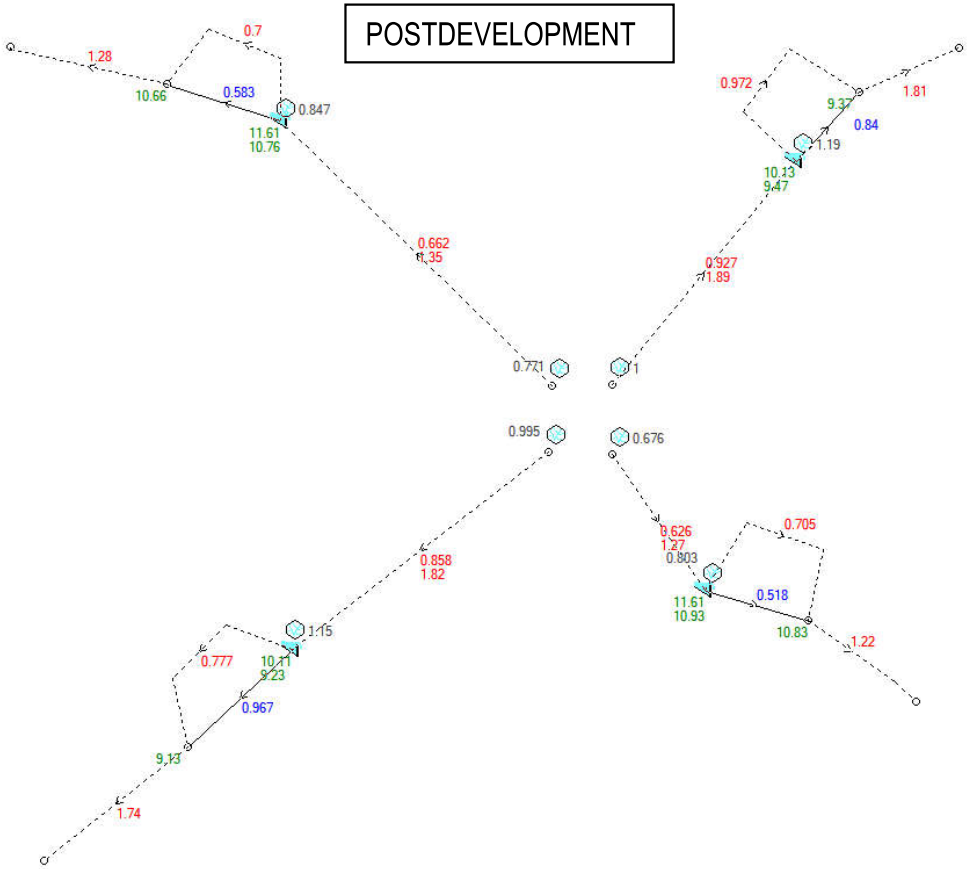


PREDEVELOPMENT

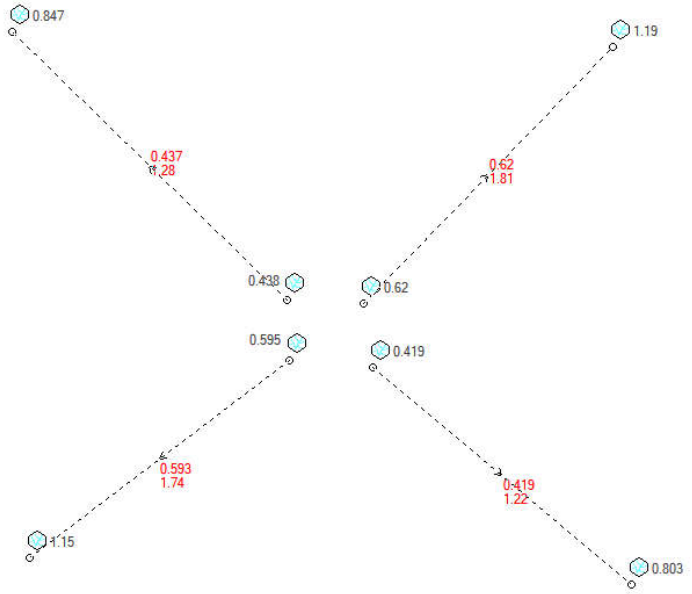


APPENDIX F – 1% AEP RESULTS

POSTDEVELOPMENT



PREDEVELOPMENT



APPENDIX G – PROPOSED STRUCTURE PLAN (Rev 0)

NOTE:

This plan was prepared for the client as an indicative structure plan to accompany a planning application to Kiama Municipal Council.

The information shown on this plan is not suitable for any other purpose.

The property dimensions, contours and other physical features have been compiled from existing information and have not been verified by field survey.

The dimensions, areas etc shown on this plan are subject to field survey and also to the requirements of Council and any other authority which may have requirements under any relevant legislation.

In particular, no reliance should be placed on the information on this plan for detailed subdivision design or for any financial dealings involving the land.

Allen Price & Scarratts Pty Ltd therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying an application to council for planning purposes and which may be subject to alteration for reasons beyond the control of Allen Price & Scarratts Pty Ltd.

Unless stamped by Council, this plan is not a plan of an approved subdivision.

This note is an integral part of this plan.

PROPOSED DEVELOPMENT AREA

LOT 2 DP 1168922 13.833ha

APPROX. YIELD @12 DWELLINGS/ha - 166 DWELLINGS

LEGEND

- EXISTING DWELLING
- PRINCIPAL ROADS
- BIOSWALE/STORMWATER TREATMENT DEVICE AREA
- R2 RESIDENTIAL AREA
- PUBLIC RESERVE
- FIG TREE / PUBLIC RESERVE
- SUBJECT LOT
- INDICATIVE DEVELOPMENT AREA
- WATERCOURSE DERIVED FROM DCDB
- RIPARIAN OFFSET - APPROX 5m CHANNEL +20m EACH SIDE (CAT 2) +10m EACH SIDE (CAT 3)

KIAMA LEP MAPPING

(2) WATERCOURSE CATEGORY

(5) ACID SULFATE SOILS

NOTE:
CADASTRAL INFORMATION HAS BEEN OBTAINED FROM NSW LAND & PROPERTY INFORMATION (LPI) DIGITAL CADASTRAL DATA BASE (DCDB) AND IS SUBJECT TO SURVEY. IT SHOULD BE VIEWED AS APPROXIMATE ONLY.

CONTOURS ARE AT 2m INTERVALS AND HAVE ALSO BEEN DERIVED FROM DCDB MAPPING.

PROFESSIONAL STANDARDS SCHEME
Liability limited by a scheme approved under Professional Standards Legislation

RATIO:	DATUM:	SURVEY	DCDB	REV	DESCRIPTION	BY	DATE
1:2500 (AT A1 ORIGINAL)	AUSTRALIAN HEIGHT DATUM	DESIGN					
	ORIGIN: DCDB	DRAWN	DS				
		CHECK'D	MJP				
	DATE OF PLAN: 26.10.2020						

allen price & scarratts pty ltd
land and development consultants
Nowra Office: 75 Plunkett Street, Nowra NSW 2541
Kiama Office: 1/28 Bong Bong Street, Kiama NSW 2533
phone:(02) 4421 6544
consultants@allenprice.com.au www.allenprice.com.au

PROPOSED STRUCTURE PLAN
OVER LOT 2 DP 1168922
ELAMBRA WEST URA
CAMPBELL ST GERRINGONG
FOR CAMPBELL

DRAWING STATUS
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER	SHEET	REVISION
K128069-07	1 OF 1	0

K:\CAD Drawings - Projects\K128069 Drawings\K128069-07 ELAMBRA WEST - Lot 2 DP1168922 STRUCTURE PLAN.dwg

APPENDIX H – PROPOSED STRUCTURE PLAN (Rev 1)