ALL AREAS AND DIMENSIONS ARE APPROXIMATE AND ARE SUBJECT TO A FINAL SURVEY AND ARE SUBJECT TO COUNCIL APPROVAL

DIRECTION OF NATURAL SURFACE

PROPOSED DRAINAGE

PROPOSED LOTS
- FRONTAGE (AVERAGE 15m)
- MINIMUM 450m² LOTS
- 16m WIDE ROADS
- AREA ABUTTING TRANSMISSION LINES LEFT AS RIPARIAN CORRIDOR

(A) EASEMENT FOR WATER SUPPLY 1.525 & 1.095 WIDE (L343711)
(B) EASEMENT FOR WATER SUPPLY 6.095 WIDE (No.326 BK1855)
(C) EASEMENT FOR PIPELINE (8352310)
(D) EASEMENT FOR TRANSMISSION LINES (J983241)
(E) EASEMENT FOR WATER SERVICE 1 WIDE (V636425)

DESIGN NOTES:

BASIN HAS BEEN SIZED WITH TO REDUCE THE POST DEVELOPMENT PEAK FLOW TO EXISTING CONDITION AT THE CATCHMENT OUTLET.

THE HYDROLOGICAL MODEL INCLUDES ALL THE CATCHMENTS THAT FLOW TO THE CATCHMENT OUTLET TO DETERMINE THE IMPACT FROM THE PROPOSED DEVELOPMENT.

ARR2016 IS USED TO CALCULATE THE PRELIMINARY SIZE

THE BASIN OUTLET CAN BE OPTIMISED WITH A MULTI-STAGED OUTLET STRUCTURE. THIS CAN BE MODELLED IN THE FUTURE WHEN OTHER INFORMATION BECOMES AVAILABLE SUCH AS:
1. SURVEY DATA
2. FUTURE PIT AND PIPE NETWORK (E.G. INVERTS LEVELS), ETC.

LEGEND

DESCRIPTION	EXISTING
ELECTRICITY (AERIAL), POWER POLE, POWER POLE & LIGHT, LIGHT POLE ELECTRICITY (UNDERGROUND), PILLAR, PIT	
TELECOMMUNICATION CABLE (UNDERGROUND), PIT, ACCESS PIT, PILLAR, EQUIPMENT HOUSING TELECOMMUNICATION CABLE (AERIAL), POLE	Tu Tu T TEL
SHARED TELECOMMUNICATION/ELECTRICITY	
WATER MAIN, METER, HYDRANT, STOP VALVE	
GAS MAIN, METER, MARKER, VALVE	G
SEWER MAIN, ACCESS CHAMBER, INSPECTION POINT, LAMP HOLE	S
DRAINAGE PIPE KERB INLET PIT, SEALED PIT, GRATED PIT, DOWN PIPE, GUTTER OVERFLOW	PIT GOP
SIGN (GENERAL), TRAFFIC LIGHT, TRAFFIC LIGHT CONTROL BOX	SIGN
FENCE	
WATERCOURSE/TABLE DRAIN	
EMBANKMENT/BATTER	
CONTOURS	
LEVELS, TOP OF KERB LEVEL	+RL95 +TKRL95

ST. ANDREWS ROAD
CAMPBELLTOWN CAMDEN COUNCIL
EXISTING HOUSE NOT CONSIDERED IN LAYOUT
AQUEDUCT
PROPOSED ROAD [16 WIDE]
NODE 1
NODE 2
NODE 3
NODE 5
NODE 6
225 uPVC
375
525
600
(SUBJECT TO EASEMENTS) 1.493ha
RIPARIAN CORRIDOR
ECOSOL GPT 4900 TREAT 50% OF Q1 ARI
ORIFICE OUTLET
97.45 INV UP
2 x600 RCP CL2
10M LONG
1% GRADE
97.35 INV DOWN
STORMWATER OUTLET & SPILLWAY
ROCK DISSIPATER - ENERGY
AS PER STD DWG SD 9-9 - AS REQUIRED
LANDCOM - SOILS AND CONSTRUCTION
VOLUME 1 - MANAGING URBAN STORMWATER
RESHAPE AND GRASS
1%AEP FLOW
3 x 0.525 @ 1%
1 IN 6
96.45
97.45
98.45
SYDNEY WATER CANAL
LAYOUT
ADJOINING
RIGHT OF CARRIAGEWAY
RETAINING WALLS
NO

Possible basin location within transmission easement (approx footprint). Prelim size 5300m3

Existing Willowdale WSUD basin installed within transmission easement

CATCHMENT OUTLET - PEAK FLOW MEASURES AT THIS POINT

Cardno
ABN 95 001 145 035

Date: 3/10/2018	Drawn: PL	Scale:
Project: VARROVILLE BASIN DESIGN		
Project No:	Drawing No: SK-BASIN-001	
Revision:	Status: FOR INFORMATION	
Title: PRELIMINARY BASIN DESIGN		

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D	RESHAPING AND RELOCATION OF OSD AND POND	22/1/18	AMH
C	LOT LAYOUT AMENDED	12/12/17	AMH
B	LOT LAYOUT AMENDED	24/10/17	AMH
A	ISSUE TO COUNCIL AND CLIENT FOR REZONING	12/10/17	AMH
	AMENDMENT	DATE	APP'D

TABLE OF mm

L.G.A: CAMPBELLTOWN		SCALE 1:1000	A1
LOCALITY: DENHAM COURT		PROPERTY DESCRIPTION: LOT 71 IN DP706546	
SURVEY NA	DRAWN BG	DATUM & ORIGIN OF LEVELS AHD CONTOURS SCALED FROM ORTHOPHOTO MAPS	
DESIGN KB	APPROVED AMH		

CONCEPT DRAINAGE & ON SITE DETENTION/WSUD

DATE	SHEET	DRAWING NUMBER	AMEND	FILE: No:
OCT 2017	2 of 4	59904PP54-DR	D	59904

NETWORK NO 1

AR&R 1987 - CHAPTER 14 ANALYSIS - CHECK ONLY

NODE TYPE	CATCHMENT Ha's	% IMPER	C -PERV.	C -IMP PERV.	Q 5 ARI cumsecs	Q 100ARI cumsecs	GAP FLOW cumsecs	Q5 P/WORK	COMMENT	
1 - Q5 P	0.29		0.44		0.029					
1 - Q5 IMP	1.15	80		0.9	0.369					
1 - Q5 TOT	1.44	80			0.400			525 @ 1%	OK	
1 - Q100 P	0.29		0.56			0.061				
1 - Q100 IMP	1.15	80		1.0		0.673				
1 - Q100 TOT	1.44	80				0.734	0.450	525 @ 1%	OK	
2 - Q5 P	0.412		0.04		0.064					
2 - Q5 IMP	1.618	80		0.90	0.528					
2 - Q5 TOT	2.06	80			0.567			600 @ 1%	OK	
2 - Q100 P	0.412		0.56			0.087				
2 - Q100 IMP	1.618	80		1.0		0.962				
2 - Q100 TOT	2.06	80				1.049				
SUMMARY SUB					0.967	1.783	1.106	2 X600 RCP	OK	OVERFLOW TO ROAD LOW POINT
3 - Q5 P	0.246		0.44		0.024					
3 - Q5 IMP	1.00	80		0.90	0.320					
3 - Q5 TOT	3.272	80			0.344					
3 - Q100 P	0.654		0.56			0.052				
3 - Q100 IMP	0.246	80		1.0		0.584				
3 - Q100 TOT	1.246	80				0.636				
SUMMARY SUB					1.311	2.419	1.301	2 X 675	OK	OVERFLOW TO ROAD LOW POINT
4 - Q5 P	0.47		0.44		0.046					
4 - Q5 IMP	1.90	80		0.90	0.608					
4 - Q5 TOT	2.370	80			0.655					
4 - Q100 P	0.47		0.56			0.100				
4 - Q100 IMP	1.900	80		1.0		1.109				
4- Q100 TOT	2.370	80				1.210				
SUMMARY SUB					1.966	3.629	2.253	3 X 675	OK	OVERFLOW TO ROAD LOW POINT
5 - Q5 P	0.122		0.44		0.013					
5 - Q5 IMP	0.488	80		0.90	0.165					
5 - Q5 TOT	0.610	80			0.180			375 @ 1%	NIL	
5 - Q100 P	0.122		0.56			0.027			BYPASS	
5 - Q100 IMP	0.488	80		1.0		0.292			BYPASS	
5- Q100 TOT	0.610	80				0.320			BYPASS	
SUMMARY SUB					0.180	BYPASS		375 @ 1%	BYPASS	OVERFLOW BYPASS TO OSD POND- LOW POINT
N1 TO N4					1.966	3.629				
6 - Q5 TOT	0.610	80			0.180				NIL	
SUMMARY SUB					2.146	3.629		3 X675		OVERFLOW TO ROAD LOW POINT

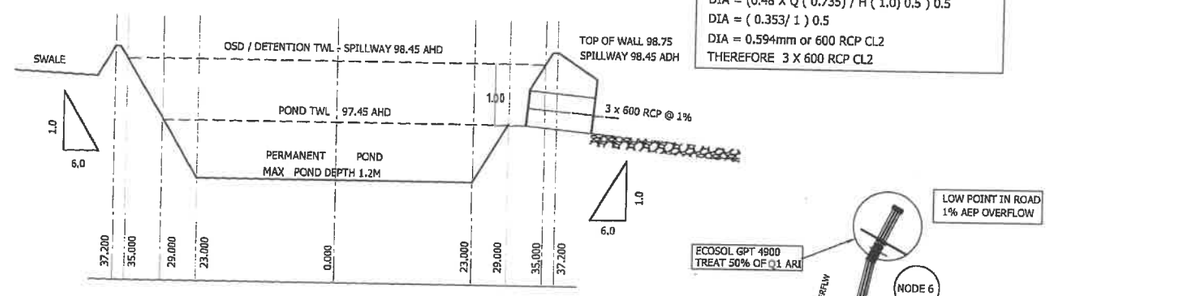
OSD MODELLING

OSD - ILSAXS - STORAGE TO OUTFLOW AMALYSIS						
NO	RL - AHD	DEPTH	STORAGE	LOW FLOW	HIGH FLOW	TOTAL
1	97.4500	0.0000	0.0000	0.0000	0	0
2	97.8500	0.4000	1013	0.8820	0	0.8820
3	98.0500	0.6000	1519	1.3240	0	1.3240
4	98.1500	0.7000	1772	1.5430	0	1.5430
5	98.2500	0.8000	2026	1.7630	0	1.7630
6	98.3500	0.9000	2279	1.9840	0	1.9840
7	98.4500	1.0000	2532	2.2040	0	2.2040
8	98.5500	1.1000	2750	2.2300	4.0000	6.2300

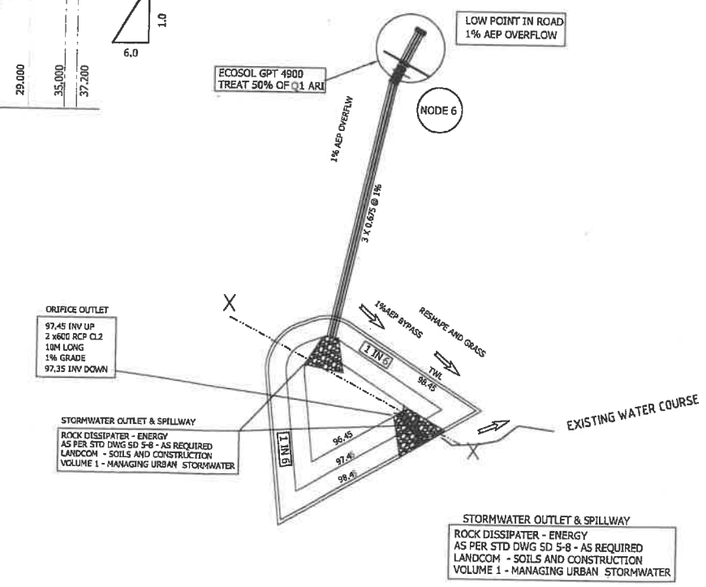
OUTFLOW 2.075 CUMSECS 1% AEP
PRE TO POST
DEPTH IN BASIN 0.95M
VOLUME : 2405.5 CUBIC METRES

OUTLET ORIFACE

2.204 / 3 (TWIN PIPES) = 0.735 CUMSECS PER PIPE
DIA = (0.48 X Q (0.735) / H (1.0) 0.5) 0.5
DIA = (0.353/ 1) 0.5
DIA = 0.594mm or 600 RCP CL2
THEREFORE 3 X 600 RCP CL2



SECTION X ---- X



ADOPTED FOR OSD MODELLING

SRORMWATER SUMMARY TO OSD POND -ILSAX'S HYDROLOGY				
SITE ZONE	DESCRIPTON	CATCHMENT	PRE 1% AEP	POST 1% AEP
NODE 1 TO 2	URBAN	3.489 Ha		
NODE 3	URBAN	1.246 Ha		
NODE 4 -5	URBAN	2.98 Hap		
TO POND	POND ONLY	0.5000		
TOTAL		8.825 Ha	2.2040	3.387 cumsecs

OVERALL IMPERRVIOUS AREA ADOPTED 72.5%
1% AEP PERMISSIBLE SITE DISCHARGE 2.204 CUMSECS
1% AEP CATCHMENT SET AS WET PRIOR TO THE STORM EVENT

GENERAL NOTES

THIS DESIGN MASTER PLAN IS BASED ON AR & R 1987 - CHAPTER 14 ANALYSIS
AND IFD INTENSITIES SOURCED FROM CAMPBELLTOWN CITY COUNCIL

ALL EXISTING STORMWATER UPSTREAM OF ST ANDREWS ROAD SHALL BE DESIGNED
TO BY PASS THE PROPOSED OSD BASIN FOR THE SITE - THIS INCLUDES THE EXISTING ST ANDREWS ROAD CATCHMENT .

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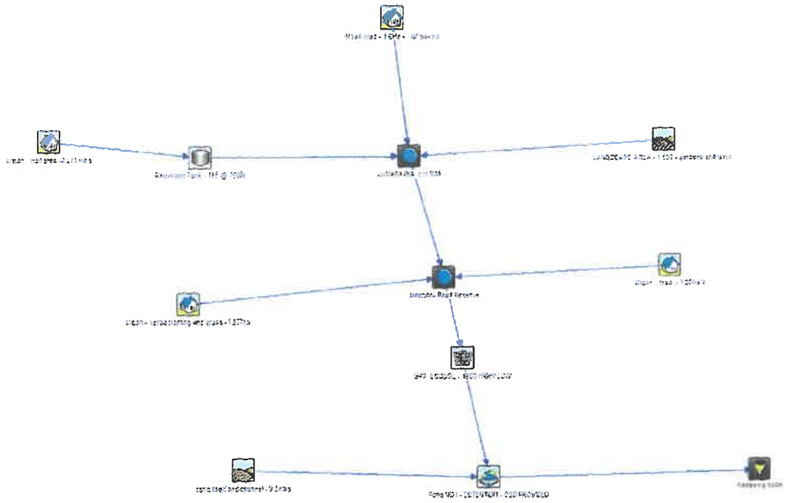
	AMENDMENT	DATE	APPR'D
B	RESHAPING AND RELOCATION OF OSD AND POND	22/1/18	AMH
A	ISSUE TO COUNCIL AND CLIENT FOR REZONING	12/10/17	AMH

L.G.A: CAMPBELLTOWN
LOCALITY: DENHAM COURT
SURVEY NA DRAWN BG
DESIGN KB APPROVED AMH
SCALE 1:1000 A1
PROPERTY DESCRIPTION: LOT 71 IN DP706546
DATUM & ORIGIN OF LEVELS AHD CONTOURS SCALED FROM ORTHOPHOTO MAPS

DRAINAGE NETWORK 1 & 2 CALCULATIONS & SUMMARY

DATE OCT 2017 | SHEET 4 of 4 | DRAWING NUMBER 59904OSD | AMEND B | FILE: No: 59904

59904_DA_REZONING



ECOSOL™ GPT - MUSIC Modelling Guidelines

Pollutant	Removal Rate (%)	Entered Input Value	Entered Output Value
Total Suspended Solids (20 – 2000µm)	55	**1000**	450
Total Phosphorus	40	1000	600
Total Nitrogen	40	1000	600
Gross Pollutants (>2000µm)	99	1000	10
Heavy Metals	25	n/a	n/a
Total Petroleum/ Hydrocarbon (dry weather spill situation)	99	n/a	n/o

Table 1 - Ecosol™ Gross Pollutant Trap - High Flow, input and output values

Pollutant	Removal Rate (%)	Entered Input Value	Entered Output Value
Total Suspended Solids (20 – 2000µm)	80	1000	200
Total Phosphorus	45	1000	550
Total Nitrogen	45	1000	550
Gross Pollutants (>2000µm)	99	1000	10
Heavy Metals	25	n/a	n/a
Total Petroleum/ Hydrocarbon (dry weather spill situation)	99	n/a	n/a

Table 2 - Ecosol™ Gross Pollutant Trap – Low Flow, input and output values

Ecosol GPT Model	Dimensions Length x Width (mm)	Low Flow Treatable Flow Rate (L/s)	High Flow Treatable Flow Rate (L/s)
Ecosol GPT 4200	2,200 x 900	15	**51**
Ecosol **GPT 4300**	2,700 x 1,150	36	120
Ecosol **GPT 4450**	3,600 x 1,450	78	260
Ecosol GPT 4600	4,500 x 1,850	141	470
Ecosol GPT 4750	5,600 x 2,200	219	730
Ecosol GPT 4800	6,500 x 2,600	315	1,050
Ecosol GPT 41050	7,450 x 2,950	429	1,430
Ecosol GPT 41200	8,630 x 3,300	561	1,870
Ecosol GPT 41350	9,700 x 3,700	674	2,370
Ecosol GPT 41500	10,880 x 4,000	803	2,930
Ecosol GPT 41800	12,730 x 4,700	1,076	4,210

Table 3 - Ecosol™ Gross Pollutant Trap – Dimensions and Treatable Flow Rates

Once the transfer functions have been defined for each of the pollutants the node has been fully defined. When completed the properties window can be closed by clicking the "Finish" button.

ECOSOL GPT DESIGN AND DOCUMENTATION

MUSIC - POST DEVELOPMENT TREATMENT TRAIN MODELLING

POST DEVELOPMENT - TOTAL SITE CATCH INPUTS			
CA TYPE	IMPERVIOUS	PERVIOUS	TOTAL CA
BLOCKS			
ROOF ZONES	2.875 Ha		
SITE IMPERVIOUS	1.00 Ha		
GARDENS		1.537Ha	5.412 Ha
ROAD RESERVE			
PAVEMENT	1.39 Ha		
VERGE GRASS		0.923Ha	2.313 Ha
BYPASS			
TO POND	0.5Ha		0.50Ha
	5.7650	2.46 Ha	8.225 Ha

OVERALL % IMPERVIOUS = 70%

POST DEVELOPMENT - TARGETS		
POLLUTANT	TARGET	OUTPUT
OILS /GREASE	90	90%
TSS	80	93.40%
TP	45%	70.90%
TN	45%	59%
GROSS LITTER	90%	99%

Receiving Node

TREATMENT TRAIN MUSIC OUTCOME

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NO	AMENDMENT	DATE	APPRD
A	ISSUE TO COUNCIL AND CLIENT FOR REZONING	12/10/17	AMH

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SCALE 1:1000 A1
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WATER QUALITY MUSIC MODELLING CALCULATIONS

DATE OCT 2017 | SHEET 3 of 4 | DRAWING NUMBER 59904WSUD | AMEND A | FILE: No: 59904