PROPOSED DEVELOPMENT
(No.87-89) IRIS STREET, BEACON HILL
STORMWATER MANAGEMENT PLANS

LEGEND

- DENOTES ON-SITE DETENTION TANK
- DENOTES ON-SITE RETENTION TANK
- DENOTES DWELLING FOOTPRINT
- SW — DENOTES 100mm DIA. STORMWATER/SURFACE WATER SYSTEM PIPE AT 1% MIN. GRADE U.N.O.
- RW — DENOTES 100mm DIA. FULLY SEALED RAINWATER SYSTEM PIPE U.N.O.
- 150 RW — DENOTES RAINWATER PIPE AND DIA. WHEN PIPE EXCEEDS 100mm DIA.
- 150 SW — DENOTES STORMWATER/SURFACE WATER PIPE AND DIA. WHEN PIPE EXCEEDS 100mm DIA.
- 65 W/RM — DENOTES RISING MAIN AND PIPE DIA. U.N.O.
- 100 SS — DENOTES SUBSOIL DRAINAGE LINE AND DIA. WRAPPED IN GEOFABRIC U.N.O.
- DP — DENOTES DOWNPIPE
- IO — DENOTES INSPECTION OPENING WITH SCREW DOWN LID AT FINISHED SURFACE LEVEL
- CO — DENOTES INSPECTION OPENING WITH SCREW DOWN LID AT FINISHED SURFACE LEVEL FOR SYSTEM FLUSHING PURPOSES
- STORMWATER PIT - SOLID COVER
- STORMWATER PIT - GRATED INLET
- DENOTES GRATED DRAIN
- DENOTES ABSORPTION TRENCH
- NON RETURN VALVE
- PUMP
- STOP VALVE (ISOLATION VALVE)
- ¥ — 240v REQUIRED
- IL23.31 — DENOTES LEVEL OF INLET /OUTLET OF STORMWATER PIPE. NOTE: UNLESS NOTED OTHERWISE, THE BASE OF THE PIT IS THE SAME AS THE PIPE INLET/OUTLET.

DIAL BEFORE YOU DIG

DIAL BEFORE YOU DIG www.1100.com.au

IMPORTANT: THE CONTRACTOR IS TO MAINTAIN A CURRENT SET OF "DIAL BEFORE YOU DIG" DRAWINGS ON SITE AT ALL TIMES.

GENERAL NOTES

1. THESE PLANS SHALL BE READ IN CONJUNCTION WITH OTHER RELEVANT CONSULTANTS' PLANS, SPECIFICATIONS, CONDITIONS OF DEVELOPMENT CONSENT AND CONSTRUCTION CERTIFICATE REQUIREMENTS. WHERE DISCREPANCIES ARE FOUND ACOR CONSULTANTS (CC) MUST BE CONTACTED IMMEDIATELY FOR VERIFICATION
2. WHERE THESE PLANS ARE NOTED FOR DEVELOPMENT APPLICATION PURPOSES ONLY, THEY SHALL NOT BE USED FOR OBTAINING A CONSTRUCTION CERTIFICATE NOR USED FOR CONSTRUCTION PURPOSES
3. SUBSOIL DRAINAGE SHALL BE DESIGNED AND DETAILED BY THE STRUCTURAL ENGINEER. SUBSOIL DRAINAGE SHALL NOT BE CONNECTED INTO THE STORMWATER SYSTEM IDENTIFIED ON THESE PLANS UNLESS APPROVED BY ACOR CONSULTANTS (CC)

STORMWATER CONSTRUCTION NOTES

1. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH AS/NZS 3500 (CURRENT EDITION) AND THE REQUIREMENTS OF THE LOCAL COUNCIL'S POLICIES AND CODES
2. THE MINIMUM SIZES OF THE STORMWATER DRAINS SHALL NOT BE LESS THAN DN90 FOR CLASS 1 BUILDINGS AND DN100 FOR OTHER CLASSES OF BUILDING OR AS REQUIRED BY THE REGULATORY AUTHORITY
3. THE MINIMUM GRADIENT OF STORMWATER DRAINS SHALL BE 1%, UNLESS NOTED OTHERWISE
4. COUNCIL'S TREE PRESERVATION ORDER IS TO BE STRICTLY ADHERED TO. NO TREES SHALL BE REMOVED UNTIL PERMIT IS OBTAINED
5. PUBLIC UTILITY SERVICES ARE TO BE ADJUSTED AS NECESSARY AT THE CLIENT'S EXPENSE
6. ALL PITS TO BE BENCHED AND STREAMLINED. PROVIDE STEP IRONS FOR ALL PITS OVER 1.2m DEEP
7. MAKE SMOOTH JUNCTION WITH ALL EXISTING WORK
8. VEHICULAR ACCESS AND ALL SERVICES TO BE MAINTAINED AT ALL TIMES TO ADJOINING PROPERTIES AFFECTED BY CONSTRUCTION
9. SERVICES SHOWN ON THESE PLANS HAVE BEEN LOCATED FROM INFORMATION SUPPLIED BY THE RELEVANT AUTHORITIES AND FIELD INVESTIGATIONS AND ARE NOT GUARANTEED COMPLETE NOR CORRECT. IT IS THE CLIENT & CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL PRIOR TO CONSTRUCTION
10. ANY VARIATION TO THE WORKS AS SHOWN ON THE APPROVED DRAWINGS ARE TO BE CONFIRMED BY ACOR CONSULTANTS (CC) PRIOR TO THEIR COMMENCEMENT

RAINWATER RE-USE SYSTEM NOTES

1. RAINWATER SUPPLY PLUMBING TO BE CONNECTED TO OUTLETS WHERE REQUIRED BY BASIX CERTIFICATE (BY OTHERS)
2. TOWN WATER CONNECTION TO RAINWATER TANK TO BE TO THE SATISFACTION OF THE REGULATORY AUTHORITY. THIS MAY REQUIRE PROVISION OF:
   2.1. PERMANENT AIR GAP
   2.2. BACKFLOW PREVENTION DEVICE
3. NO DIRECT CONNECTION BETWEEN TOWN WATER SUPPLY AND THE RAIN WATER SUPPLY
4. AN APPROVED STOP VALVE AND/OR PRESSURE LIMITING VALVE AT THE RAINWATER TANK
5. PROVIDE APPROPRIATE FLOAT VALVES AND/OR SOLENOID VALVES TO CONTROL TOWN WATER SUPPLY INLET TO TANK IN ORDER TO ACHIEVE THE TOP-UP INDICATED ON THE TYPICAL DETAIL
6. ALL PLUMBING WORKS ARE TO BE CARRIED OUT BY LICENSED PLUMBERS IN ACCORDANCE WITH AS/NZS3500.1 NATIONAL PLUMBING AND DRAINAGE CODE
7. PRESSURE PUMP ELECTRICAL CONNECTION TO BE CARRIED OUT BY A LICENSED ELECTRICIAN
8. ONLY ROOF RUN-OFF IS TO BE DIRECTED TO THE RAINWATER TANK . SURFACE WATER INLETS ARE NOT TO BE CONNECTED
9. PIPE MATERIALS FOR RAINWATER SUPPLY PLUMBING ARE TO BE APPROVED MATERIALS TO AS/NZS3500 PART 1 SECTION 2 AND TO BE CLEARLY AND PERMANENTLY IDENTIFIED AS 'RAINWATER'. THIS MAY BE ACHIEVED FOR BELOW GROUND PIPES USING IDENTIFICATION TAPE (MADE IN ACCORDANCE WITH AS2648) OR FOR ABOVE GROUND PIPES BY USING ADHESIVE PIPE MARKERS (MADE IN ACCORDANCE WITH AS1345)
10. EVERY RAINWATER SUPPLY OUTLET POINT AND THE RAINWATER TANK ARE TO BE LABELED 'RAINWATER' ON A METALLIC SIGN IN ACCORDANCE WITH AS1319
11. ALL INLETS AND OUTLETS TO THE RAINWATER TANK ARE TO HAVE SUITABLE MEASURES PROVIDED TO PREVENT MOSQUITO AND VERMIN ENTRY

SHEET INDEX

NORTHERN BEACHES COUNCIL (WARRINGAH COUNCIL REQUIREMENTS)

SITE AREA (m) 2180
PRE DEVELOPED IMPERVIOUS AREA (m²) 905 (41%)
POST DEVELOPED IMPERVIOUS AREA % 1537 (70%)

1. FULL COMPUTATION METHOD ADOPTED USING DRAINS PROGRAM. REFER TO DRAINS MODEL GO190048.drn
2. DRAINS SUMMARY

SITE AREA (m²).....2180
IMPERVIOUS PREDEVELOPED FOR CALCULATIONS.....100%

PRE-DEVELOPED DISCHARGE FLOW RATES

5 year ARI	100 year ARI
68 L/S	100 L/S

POST DEVELOPED SUMMARY
ROOF AREA (m²).....1123
DRIVEWAY AREA + PATH + MISC. IMP AREA(m²)..... 414
+ 15% ADDITIONAL (m²)..... 327
TOTAL IMPERVIOUS AREA (m²).....1864

FOR CALCULATION

OSD CATCHMENT = 1123m² (roof area 100% impervious)
OSD BYPASS = 200m² (driveway, paths, landscape 25% impervious)

STORAGE VOLUME REQUIRED = 25 m³

MAXIMUM HEADWATER = 1.35m
THEREFORE: ADOPT = 167mm ORIFICE
TOP STORED WSL - RL 135.35
INVERT OF OUTLET - IL 133.85
CENTRE LINE OF ORIFICE - RL 134.00

DESIGN PREPARED IN ACCORDANCE WITH WARRINGAH COUNCIL "ON SITE STORMWATER DETENTION TECHNICAL SPECIFICATION" AR&R & AS/NZS 3500.

DEVELOPMENT APPLICATION ISSUE
NOT FOR CONSTRUCTION

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Issue	Description	Date	Drawn	Approved
D	ISSUED FOR DEVELOPMENT APPROVAL	02.12.20	NB	BK
C	ISSUED FOR DEVELOPMENT APPROVAL	13.05.20	SSD	BK
B	ISSUED FOR DEVELOPMENT APPROVAL	27.03.20	RH	BK
A	ISSUED FOR CLIENT REVIEW	11.02.20	RH	BK

North

1 0 1cm at full size 10cm

Client: PLAYOUST CHURCHER ARCHITECTS (NEWMAN)

Architect:

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ENGINEERS | MANAGERS | INFRASTRUCTURE PLANNERS | DEVELOPMENT CONSULTANTS

Project: PROPOSED RESIDENTIAL DEVELOPMENT
No. 87-89
IRIS STREET
BEACON HILL

Drawing Title: COVER SHEET & NOTES

Drawn	Date	Scale A1	Q.A. Check	Date
SSD	MAY 13	AS NOTED	-	-

Designed	Project No.	Dwg. No.	Issue
BK	CC190048	C1	D

NOTE: ALL PITS TO BE CONSTRUCTED COMPLETE WITH STORMSACK INSERT

PIT P5
450 SQUARE PIT WITH LIGHT DUTY GRATED INLET
TOP OF GRATE - 138.90 nom

PIT P6
450 SQUARE PIT WITH LIGHT DUTY GRATED INLET
TOP OF GRATE - 136.50 nom

PIT P7
450 SQUARE PIT WITH LIGHT DUTY GRATED INLET
TOP OF GRATE - 136.00 nom
+ STORMSACK

WARNING
LOCATION AND DEPTH OF ALL UNDERGROUND SERVICES TO BE INVESTIGATED WITH THE RELEVANT AUTHORITIES PRIOR TO COMMENCING WORK

BM ON TOP OF KERB R.L. 135.23(A.H.D)

PIT P9
450 SQUARE PIT WITH LIGHT DUTY GRATED INLET
TOP OF GRATE - 135.30 nom
+ STORMSACK

CROSSOVER AND DRIVEWAY TO BE IN ACCORDANCE WITH COUNCIL REQUIREMENTS. THE LEVELS AND DESIGN OF THE CROSSOVER AND DRIVEWAY SHALL BE BY OTHERS.

BOUNDARY PIT
900 SQUARE PIT WITH LIGHT DUTY GRATED INLET
TOP OF GRATE - 135.08 nom
INVERT OF OUTLET- IL133.70 nom
+ STORMSACK

PIT P2 - KERB INLET PIT
TOP OF GRATE - 134.65 nom
INVERT OF OUTLET - IL 133.65 nom

ROCLA GTP (CDC NIPPER) OR APPROVED EQUIVALENT

NEW 375 DIA STORMWATER PIPE

EXISTING KIP RL 134.54 NOM. T.B.C
EXISTING 375 DIA SW PIPE ASSUMED INVERT IL 133.55 T.B.C

ON-SITE RETENTION TANK
PROVIDE ON-SITE RETENTION TANK WITH INTERNAL DIMENSIONS
3.7m LONG x 3.8m WIDE x 1.5m HIGH
TOP STORED WATER LEVEL: 135.55
STORAGE VOLUME: 21m³
REFER TO SHEET C5 FOR DETAILS

ON-SITE DETENTION TANK
PROVIDE ON-SITE DETENTION TANK WITH INTERNAL DIMENSIONS
4.3m LONG x 3.8m WIDE x 1.5m HIGH
TOP STORED WATER LEVEL: 135.35
INVERT OF OUTLET - IL 133.85
STORAGE VOLUME: 25m³
REFER TO SHEET C5 FOR DETAILS
+ STORMSACK

PIT P8
450 SQUARE PIT WITH LIGHT DUTY GRATED INLET
TOP OF GRATE - 135.90 nom
+ STORMSACK

CONSTRUCT 200 WIDE GRATED BOX DRAIN MIN 150 DEEP. GRADE FROM INVERT TO OUTLET AT A MINIMUM GRADE OF 2%
TOP OF GRATE RL135.10
LEVEL TO BE CONFIRMED FROM CROSS OVER LEVELS PROVIDED BY COUNCIL

BASEMENT
FFL RL.135.90

UNIT 1
RL 136.100

GARBAGE ROOM

NEW DRIVEWAY
1 in 20

IRIS STREET

NOTE:
NO EASEMENTS BENEFIT OR ARE AFFECTING THE SUBJECT LOTS, BUT TITLE SHOWS A REGISTERED COVENANT H400357 AFFECTING LOT B. DETAILS OF THIS COVENANT HAVE NOT BEEN INVESTIGATED.

STORMWATER MANAGEMENT PLAN
SCALE - 1:100/A1, 1:200/A3
0 1 2 4 6 8

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1cm at full size 10cm

North

Client
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(NEWMAN)

Architect

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Project
PROPOSED RESIDENTIAL DEVELOPMENT
No. 87-89
IRIS STREET
BEACON HILL

Drawing Title
STORMWATER MANAGEMENT PLAN - BASEMENT PLAN

Drawn	Date	Scale A1	Q.A. Check	Date
SSD	MAY 13	AS NOTED	-	-
Designed	Project No.	Dwg. No.	Issue	
BK	CC190048	C2	D	

DENOTES SEALED SOLVENT WELDED AERIAL LINE @ 1% GRADE. SUPPORT PIPE THRU BASEMENT AT HIGH LEVEL IN ACC. WITH AS/NZS 3500.3. CONNECT ALL ROOF WATER DOWNPIPES TO AERIAL DRAINAGE SYSTEM UNDER SOFFIT OF GROUND FLOOR SLAB. FINAL PIPE ALIGNMENTS AND CONNECTIONS TO BE DETERMINED AT CC STAGE.

ALLOW TO PROVIDE SURFACE WATER OUTLETS & / STAINLESS STEEL GRATED DRAINS WITH HEELPROOF GRATE ALONG PATHWAY AS REQUIRED. TYP. ALLOW TO CONNECT TO SURFACE STORWMATER LINE PROVIDED

DENOTES SEALED SOLVENT WELDED AERIAL LINE @ 1% GRADE. SUPPORT PIPE THRU BASEMENT AT HIGH LEVEL IN ACC. WITH AS/NZS 3500.3. CONNECT ALL SURFACE WATER OUTLETS TO AERIAL DRAINAGE SYSTEM UNDER SOFFIT OF GROUND FLOOR SLAB. FINAL PIPE ALIGNMENTS AND CONNECTIONS TO BE DETERMINED AT CC STAGE.

PIT P3
450 SQUARE PIT WITH LIGHT DUTY GRATED INLET
TOP OF GRATE - 139.00 nom
+ STORMSACK

WARNING
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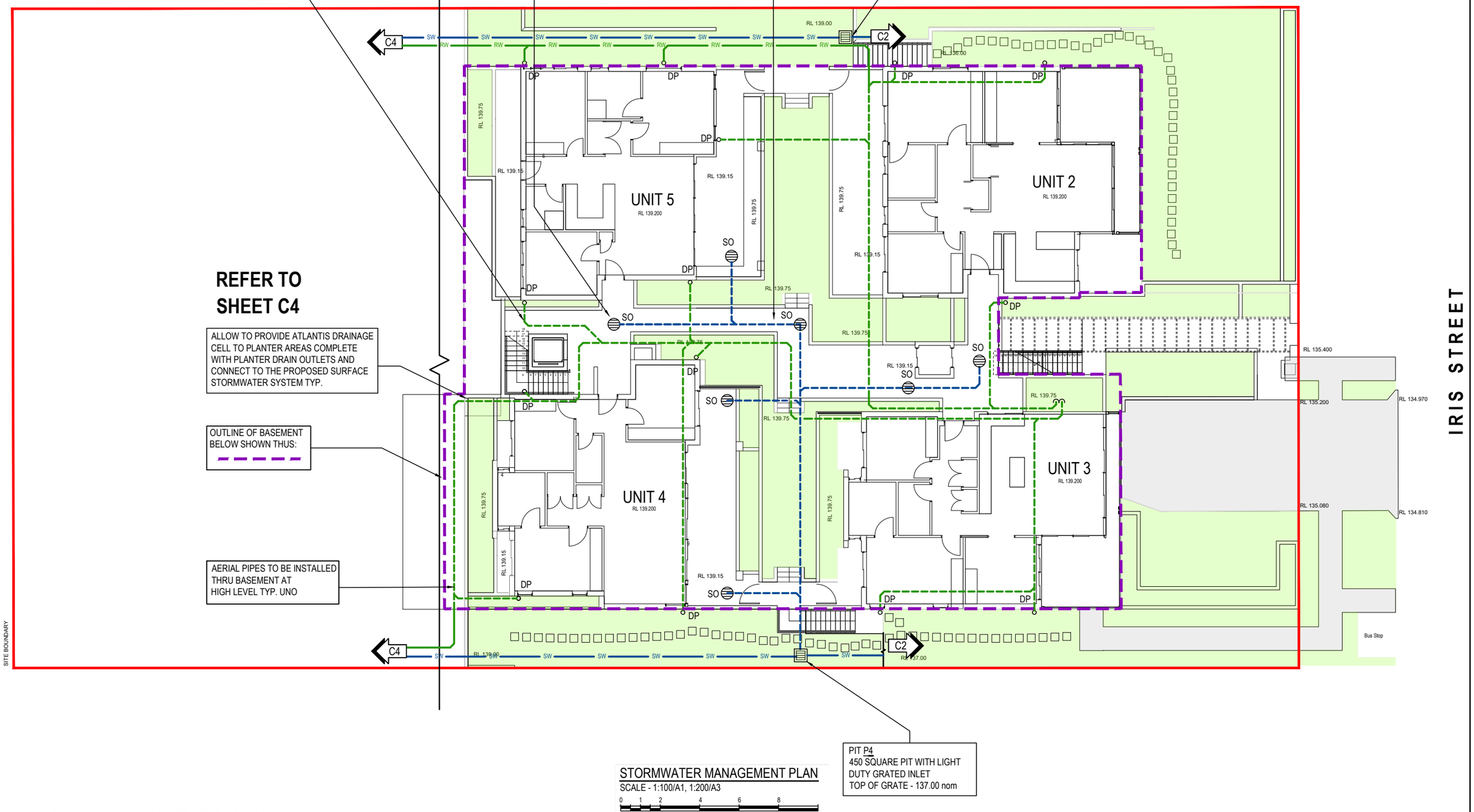
REFER TO SHEET C4

ALLOW TO PROVIDE ATLANTIS DRAINAGE CELL TO PLANTER AREAS COMPLETE WITH PLANTER DRAIN OUTLETS AND CONNECT TO THE PROPOSED SURFACE STORMWATER SYSTEM TYP.

OUTLINE OF BASEMENT BELOW SHOWN THUS:

AERIAL PIPES TO BE INSTALLED THRU BASEMENT AT HIGH LEVEL TYP. UNO



PIT P4
450 SQUARE PIT WITH LIGHT DUTY GRATED INLET
TOP OF GRATE - 137.00 nom

STORMWATER MANAGEMENT PLAN
SCALE - 1:100/A1, 1:200/A3
0 1 2 4 6 8

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1cm at full size

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No. 87-89
IRIS STREET
BEACON HILL

Drawing Title
STORMWATER MANAGEMENT PLAN - GROUND FLOOR

Drawn	Date	Scale A1	Q.A. Check	Date
SSD	MAY 13	AS NOTED	-	-

Designed	Project No.	Dwg. No.	Issue
BK	CC190048	C3	D

FULLY SEALED ROOF DRAINAGE SYSTEM

SHOWN THUS: —— RW —— OR - - - - - - -

DRAINAGE SYSTEM TO BE FULLY SEALED FROM ROOF GUTTER LEVEL TO TOP OF RAINWATER TANK. SEAL ALL PIPEWORK FROM RE-USE TANK TO EAVE LINE USING SOLVENT WELDED JOINTS. RAINWATER SYSTEM SHALL COLLECT ROOF WATER ONLY. NO ADDITIONAL PITS FOR COLLECTION OF SURFACE WATER WILL BE PERMITTED FOR THE ROOF WATER SYSTEM. PROVIDE FOLLOWING STANDARD FITTINGS TO CONNECTED DOWNPIPES: LEAF/MOSQUITO SCREEN HEADS AND FIRST FLUSH DIVERTER.

PROVIDE IO AT LOW POINTS IN SYSTEM FOR CLEANOUT, IO'S TO BE CAPPED AT FINISHED SURFACE LEVEL WITH 100mm MIN. COVER IN NON-TRAFFICABLE LOCATIONS, TYP.

PIT P1
450 SQUARE PIT WITH LIGHT DUTY GRATED INLET
TOP OF GRATE - 142.35 nom

WARNING
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UNIT 10
RL 142.600

UNIT 9
RL 142.200

UNIT 8
RL 142.200

UNIT 7

UNIT 6

UNIT 2

UNIT 3

REFER TO SHEET C3

BRICK COTTAGE No. 85

APPROX. TOP OF RIDGE R.L. 146.7

ENTRY F.L. R.L.142.28

(GARAGE BELOW)

VERANDAH

U/SIDE OF EAVES R.L. 144.69

TWO STOREY BRICK HOUSE TILE ROOF No. 91

WINDOW SILL R.L. 138.15

ENTRY F.L. R.L. 137.12

WINDOW SILL R.L. 140.7

WINDOW SILL R.L. 141.1

APPROX. TOP OF RIDGE R.L. 144.2

U/SIDE OF EAVE R.L. 142.10

MANHOLE S.L. 135.32

HYDRANT

POWER POLE

BM ON TOP OF KERB R.L. 135.23(A.H.D)

LIQUID AMBER Ø350

CONCRETE KERB & GUTTER 0.15 High

135.09 KERB

134.93 GUTTER

VEHICULAR CROSSING

135.05 KERB

134.97 KERB

134.81 KERB

VEHICULAR CROSSING

134.77 KERB

BUS STOP

134.81 KERB

IRIS STREET

PIT P2
450 SQUARE PIT WITH LIGHT DUTY GRATED INLET
TOP OF GRATE - 141.75 nom

NOTE:
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STORMWATER MANAGEMENT PLAN

SCALE - 1:100/A1, 1:200/A3

0 1 2 4 6 8

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Drawing Title
STORMWATER MANAGEMENT PLAN - FIRST FLOOR

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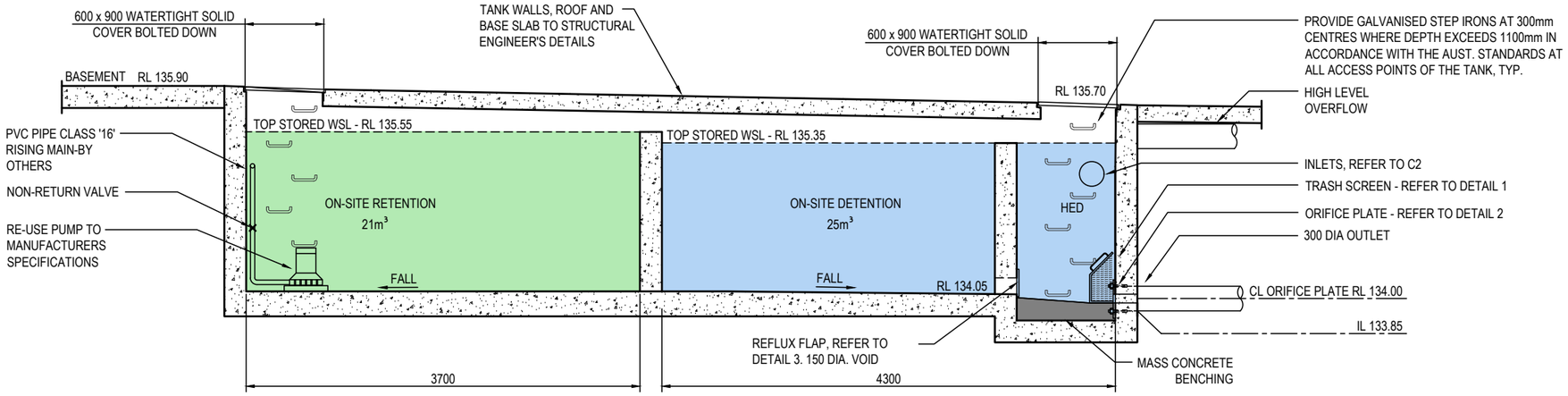
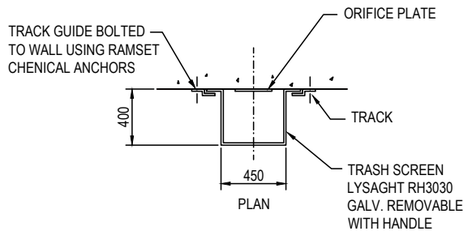
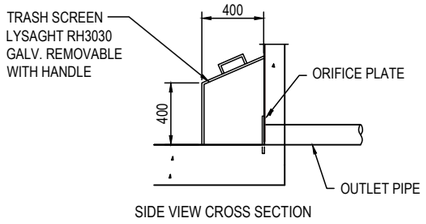
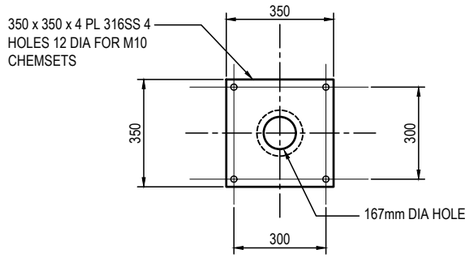


OSR / OSD TANK SECTION
SCALE 1:25

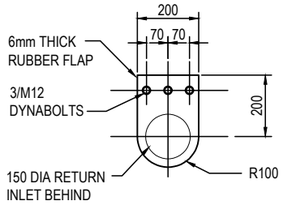




DETAIL 1 - TRASH SCREEN DETAIL
NTS



DETAIL 2 - ORIFICE PLATE
NTS



DETAIL 3 - REFLUX FLAP
NTS

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A	NIL ISSUE	-	-	-

1 0 1cm at full size 10cm

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Project
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No. 87-89
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BEACON HILL

Drawing Title
STORMWATER MANAGEMENT DETAIL SHEET

Drawn	Date	Scale A1	Q.A. Check	Date
SSD	MAY 13	AS NOTED	-	-

Designed	Project No.	Dwg. No.	Issue
BK	CC190048	C5	D

STORMWATER QUALITY REPORT

1 INTRODUCTION

A CATCHMENT BASED WATER QUALITY MODEL WAS DEVELOPED TO ASSESS THE STORMWATER RUNOFF QUALITY IN ACCORDANCE WITH THE REQUIREMENTS OF WARRINGAH COUNCIL PL 850 WATER - WATER MANAGEMENT POLICY PART 8.1 'STORMWATER QUALITY'. IN THIS REGARD WE REFER TO THE PRESCRIBED TARGETS TABLED FOLLOWING:

TABLE 1 - STORMWATER POLUTANT REDUCTION TARGETS (MUSIC v6)

STORMWATER POLLUTANT	REDUCTION TARGETS
GROSS POLLUTANT	90%
TOTAL SUSPENDED SOLIDS (TSS)	85%
TOTAL PHOSPHORUS (TP)	65%
TOTAL NITROGEN (TN)	45%

2 STUDY METHODOLOGY

THE OBJECTIVES OF THIS REPORT ARE TO:

- ASSESS THE RUNOFF QUALITY FOR THE UNTREATED POST DEVELOPED SCENARIO AND IDENTIFY STORMWATER QUALITY CONTROLS LIKELY TO IMPACT ON RUNOFF QUALITY.
- ASSESS THE STORMWATER QUALITY FOR THE POST DEVELOPED SCENARIO INCLUDING THE MEASURES PROPOSED TO MEET THE POLLUTANT REMOVAL TARGETS .

THE REPORT IS BASED ON THE APPLICATION OF MUSIC SOFTWARE (MODEL FOR URBAN STORMWATER IMPROVEMENT CONCEPTUALISATION). IN THIS REGARD THE MODEL IS DEFINED AS FOLLOWS:

- A STORMWATER QUALITY MODEL TO CONVERT RAINFALL AND EVAPOTRANSPIRATION INTO RUNOFF.
- ESTIMATION OF STORMWATER FLOW AND POLLUTION GENERATION BY SIMULATING THE PERFORMANCE OF STORMWATER TREATMENT DEVICES INDIVIDUALLY AND AS PART OF A TREATMENT TRAIN.

THE MODEL DEFINES WATER QUALITY PROFILES TREATED SCENARIOS. THE TREATED POST DEVELOPED MODEL INCLUDES PARAMETERS WHICH REPRESENT THE WATER QUALITY MEASURES.

3 STORMWATER QUALITY MODELLING

3.1 GENERAL

THE FOLLOWING PARAMETERS WERE ASSESSED FOR THE HYDROLOGICAL MODELLING ASSOCIATED WITH THE CATCHMENT.

- RAINFALL/RUNOFF AND EVAPOTRANSPIRATION.
- SUB CATCHMENT DIVERSIONS.
- LAND USE (PERVIOUS AND IMPERVIOUS)

3.2 RAINFALL/RUNOFF AND EVAPOTRANSPIRATION

NORTHERN BEACHES COUNCIL'S WSUD & MUSIC MODELING GUIDELINES WERE UTILISED IN THIS STUDY. THEREFORE DAILY RAINFALL DATA WAS OBTAINED FROM THE SYDNEY OBSERVATORY HILL RAINFALL STATION WITH 6 min TIMESTEP, STATION NO. 066062. THE COUNCIL'S DEFAULT MONTHLY AVERAGE POTENTIAL EVAPOTRANSPIRATION DATA WAS ALSO UTILISED IN THIS STUDY.
THE DETAILS ARE SUMMARISED IN TABLE 3.1 AND 3.2

TABLE 3.1 - DETAILS OF DAILY RAINFALL DATA			
STATION	NAME	PERIOD	TIMESTEP
066062	SYDNEY OBSERVATORY HILL	01/01/1981-31/08/1985	6 min

TABLE 3.2 - SUMMARY OF POTENTIAL EVAPOTRANSPIRATION (PET)					
JAN	FEB	MAR	APR	MAY	JUN
180	135	128	85	58	43
JUL	AUG	SEP	OCT	NOV	DEC
43	58	88	127	152	163

3.3 CATCHMENT DEFINITION

THE POST DEVELOPED CATCHMENT CHARACTERISTICS ARE IDENTIFIED IN TABLE 3.3.

TABLE 3.3 - POST DEVELOPMENT SUB CATCHMENT DETAILS			
SUB CATCHMENT ID	SUB CATCHMENT AREA (ha)	% IMPERVIOUS AREA	% PERVIOUS AREA
ROOF	0.099	100	0
NORTHERN LANDSCAPED AREA	0.021	2	98
SOUTHERN LANDSCAPED AREA	0.026	2	98
PATHS AND PLANTERS TO OSD	0.034	47	53
LANDSCAPE AND PATH BYPASSING OSD	0.031	16	84
DRIVEWAY BYPASSING OSD	0.005	100	0

4 MUSIC MODEL

THE MUSIC MODEL IS BASED ON A 6 min RAINFALL-RUNOFF MODEL IN CONJUNCTION WITH REPRESENTATIVE BASEFLOW AND STORMFLOW EVENT MEAN CONCENTRATIONS (EMCs).

4.1 WATER QUALITY PARAMETERS

THE ADOPTED VALUES OF VARIOUS MUSIC RAINFALL AND RUNOFF PARAMETERS ARE SUMMARISED IN TABLE 4.1 AS PER THE DEFAULT VALUES WHEN ADOPTING THE NORTHERN BEACHES COUNCIL'S WSUD & MUSIC MODELING GUIDELINES .

TABLE 4.1 - ADOPTED MUSIC RAINFALL/RUNOFF PARAMETERS	
PARAMETER	VALUE
IMPERVIOUS AREA PROPERTIES	
RAINFALL THRESHOLD (mm/DAY)	0.3 (roof) else 1.5
PERVIOUS AREA PROPERTIES (SANDY CLAY LOAM)	
SOIL STORAGE CAPACITY (mm)	108
SOIL INITIAL STORAGE (% OF CAPACITY)	30
FIELD CAPACITY (mm)	73
INFILTRATION CAPACITY COEFFICIENT - a	250
INFILTRATION CAPACITY EXPONENT - b	1.3
GROUNDWATER PROPERTIES	
INITIAL DEPTH (mm)	10
DAILY RECHARGE RATE (%)	60
DAILY BASEFLOW RATE (%)	45
DAILY DEEP SEEPAGE RATE (%)	0

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Issue	Description	Date	Drawn	Approved
D	ISSUED FOR DEVELOPMENT APPROVAL	02.12.20	NB	BK
C	ISSUED FOR DEVELOPMENT APPROVAL	13.05.20	SSD	BK
B	ISSUED FOR DEVELOPMENT APPROVAL	27.03.20	RH	BK
A	NIL ISSUE	-	-	-

0 1cm at full size 10cm

North

Client: PLAYOUST CHURCHER ARCHITECTS (NEWMAN)

Architect:

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Project: PROPOSED RESIDENTIAL DEVELOPMENT
No. 87-89
IRIS STREET
BEACON HILL

Drawing Title: STORMWATER QUALITY REPORT SHEET 1 OF 2

Drawn	Date	Scale A1	Q.A. Check	Date
SSD	MAY 13	AS NOTED	-	-
Designed	Project No.	Dwg. No.	Issue	
BK	CC190048	C6	D	

4.1 WATER QUALITY PARAMETERS CONT.

STORMWATER QUALITY IS CHARACTERISED USING EVENT MEAN CONCENTRATION (EMCs) UNDER STORM AND BASE FLOW CONDITIONS. THE VALUE OF WATER QUALITY PARAMETERS ADOPTED IN THIS STUDY IS SUMMARISED IN TABLE 4.2

TABLE 4.2 - ADOPTED MUSIC WATER QUALITY PARAMETERS

LAND-USE CATEGORY		Log_{10}TSS (mg/L)		Log_{10}TP (mg/L)		Log_{10}TN (mg/L)	
		STORM FLOW	BASE FLOW	STORM FLOW	BASE FLOW	STORM FLOW	BASE FLOW
RESIDENTIAL	MEAN	2.15	1.20	-0.60	-0.85	0.30	0.11
	STD DEV	0.32	0.17	0.25	0.19	0.19	0.12
SEALED ROADS	MEAN	2.43	1.20	-0.3	-0.85	0.34	0.11
	STD DEV	0.32	0.17	0.25	0.19	0.19	0.12
ROOFS	MEAN	1.30	1.10	-0.89	-0.82	0.30	0.32
	STD DEV	0.32	0.17	0.25	0.19	0.19	0.12

4.2 STORMWATER TREATMENT MEASURES

THE PROPOSED STORMWATER TREATMENT MEASURES INCLUDED IN THE POST DEVELOPED MODEL ARE AS FOLLOWS:

- 21,000 LITRE OSR TANK
- 25,000 LITRE OSD TANK
- 5 x STORMSACK
- GTP (NIPPPER)

THE SCHEMATIC LAYOUT FOR THE POST DEVELOPED MUSIC MODEL IS DEPICTED IN FOLLOWING FIGURE 1

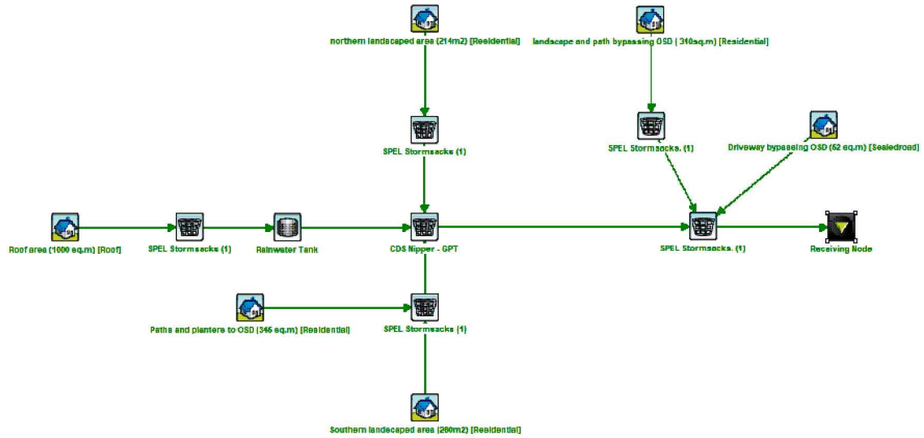
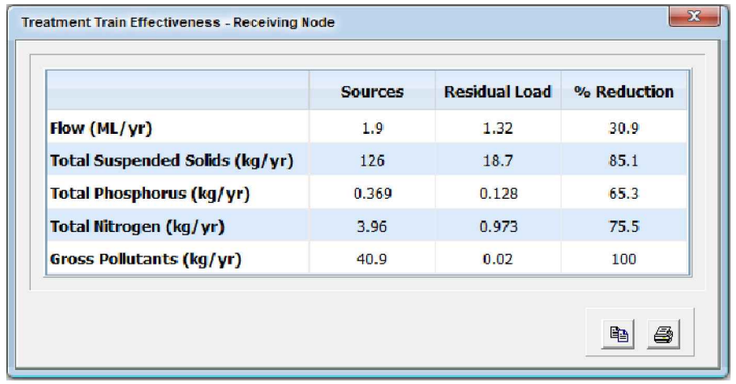


FIGURE 1 - MUSIC MODEL SCHEMATIC

5 RESULTS & CONCLUSION

BASED ON THE FOREGOING THE PROPOSED STORMWATER QUALITY TREATMENT MEASURES MEET THE REQUIRED TARGETS OF WARRINGAH COUNCIL'S PL 850 WATER - WATER MANAGEMENT POLICY PART 8.1 'STORMWATER QUALITY'.

TABLE 5.1 - TREATMENT TRAIN EFFECTIVENESS



	Sources	Residual Load	% Reduction
Flow (ML/yr)	1.9	1.32	30.9
Total Suspended Solids (kg/yr)	126	18.7	85.1
Total Phosphorus (kg/yr)	0.369	0.128	65.3
Total Nitrogen (kg/yr)	3.96	0.973	75.5
Gross Pollutants (kg/yr)	40.9	0.02	100

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1cm at full size

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No. 87-89
IRIS STREET
BEACON HILL

Drawing Title: STORMWATER QUALITY REPORT SHEET 2 OF 2

Drawn	Date	Scale A1	Q.A. Check	Date
SSD	MAY 13	AS NOTED	-	-

Designed	Project No.	Dwg. No.	Issue
BK	CC190048	C7	D