STORMWATER CONCEPT PLAN
AT 1 STATION LANE,
PENRITH NSW

NOTE RE. SERVICES

APPROXIMATE LOCATIONS OF EXISTING SERVICES SHOWN ON LONGITUDINAL SECTION.
EXACT LOCATIONS & DEPTHS TO BE ACURATELY LOCATED BY BUILDER CONTRACTOR BY CONTACTING THE RELEVANT AUTHORTIES BEFORE COMMENCEMENT OF ANY WORKS

DIAL 1100 BEFORE YOU DIG

GENERAL NOTES

1. ALL LINES ARE TO BE MIN. 100Ø UPVC @ MIN 1.0% GRADE UNLESS NOTED OTHERWISE.
2. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE & LEVEL ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS. ALL DESIGN LEVELS SHOWN ON PLAN SHALL BE VERIFIED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORK.
3. ALL PIPES TO HAVE MIN 200mm COVER IF LOCATED WITHIN PROPERTY.
4. ALL PITS IN DRIVEWAYS BE HEAVY DUTY GRATES. DIRECT SURFACE FLOW TO ALL GRATED SURFACE INLET PITS.
5. ALL WORK DO BE DONE IN ACCORDANCE WITH COUNCIL'S DCP AND TO COUNCIL'S SATISFACTION.
6. LOCATION OF DOWNPIPES & FLOOR WASTES ARE INDICATIVE ONLY. DOWNPIPE & FLOOR WASTE SIZE, LOCATION & QUANTITY TO BE DETERMINED BY BUILDER & IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.
7. THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL, LANDSCAPE AND STRUCTURAL PLANS.
8. ANY DISCREPANCIES OR OMISSIONS SHALL BE REFERRED TO THE DESIGN ENGINEER AND COUNCIL ENGINEER FOR RESOLUTION.
9. ALL PITS OR GRATES IN TRAFFICABLE AREAS TO BE HEAVY DUTY.
10. ALL GUTTERS WILL BE FITTED WITH LEAF GUARDS AND SHOULD BE INSPECTED AND CLEANED TO ENSURE LEAF LITTER CANNOT ENTER THE DOWNPIPES
11. ALL PIT GRATES ON SITE MUST BE HINGED WITH J-BOLT LOCKDOWN SYSTEM.
12. PITS DEEPER THAN 1m REQUIRE STEP IRONS IN A STAGGERED MANNER. THE DEPTH OF ANY PIT IN EXCESS OF 2m SHALL BE STRUCTURALLY DESIGNED AND CERTIFIED BY A STRUCTURAL ENGINEER AND SUBMITTED TO COUNCIL FOR APPROVAL.
13. PROVIDE GRATED DRAIN IN ALL OPEN AREAS TO THE SKY INCLUDING STAIRS AND CONNECT TO NEAREST STORMWATER SYSTEM.
14. PROVIDE EMERGENCY SPITTERS TO ALL BALCONIES.
15. PROVIDE AGG PIPE IN ALL LANDSCAPE AREA AND CONNECT TO THE STORMWATER DRAINAGE SYSTEM.
16. PROVIDE AGG PIPE BEHIND THE RETAINING WALL AND CONNECT TO THE STORMWATER DRAINAGE SYSTEM
17. TOP OF KERB AND INVERT OF GUTTER LEVELS ARE TO BE CHECKED ON SITE PRIOR TO CONSTRUCTION. CONTACT ENGINEER IMMEDIATELY IF LEVEL VARIES FROM DESIGN DRAWINGS.
18. ALL RETAINING WALL FOR ABOVE GROUND OSD/ BIO-RETENTION BASIN TO BE FULLY CONSTRUCTED WITHIN THE PROPERTY BOUNDARY.

DEPTH TO INVERT OF OUTLET		MINIMUM INTERNAL DIMENSIONS (mm)		
		RECTANGULAR		CIRCULAR
		WIDTH	LENGTH	DIAMETER
	≤600	450	450	600
>600	≤900	600	600	900
>900	≤1200	600	900	1000
>1200		900	900	1000

NOTE:
-ALL WALLS FORMING THE BIO-RETENTION BASIN SHALL BE CONSTRUCTED WHOLLY WITHIN THE PROPERTY BOUNDARIES OF THE SITE BEING DEVELOPED.

- LANDSCAPE AREAS WITHIN THE STORAGE AREAS ARE MULCHED WITH DECORATIVE ROCK MULCH. (I.E. NON FLOATABLE)

DRAWING SCHEDULE

DRAWING No.	DRAWING TITLE
DOO	COVER SHEET, LEGEND & DRAWING SCHEDULE
DO1	BASEMENT STORMWATER DRAINAGE PLAN
DO2	BASEMENT STORMWATER DRAINAGE DETAILS
DO3	GROUND FLOOR STORMWATER DRAINAGE PLAN
DO4	GROUND FLOOR STORMWATER DRAINAGE DETAILS
DO5	EROSION AND SEDIMENT CONTROL PLAN AND DETAILS
DO6	MUSIC RESULTS AND DETAILS
DO7	MUSIC LINK REPORT

SYMBOLS

F.F.L.	FINISHED FLOOR LEVEL
T.K.	TOP OF KERB
RL	PIT SURFACE LEVEL
IL	INVERT LEVEL
– – –	STORMWATER DRAINAGE PIPE
—•—	DOWNPIPE TO RAINWATER TANK
•DP	100Ø DOWN PIPE (U.N.O.)
• VD	VERTICAL DROP PIPE
• VR	VERTICAL RISER
• IO	INSPECTION OPENING
	MASONRY RETAINING WALL
⌀ FW	FLOOR WASTE 300Ø
⌀ RWO	RAINWATER OUTLET 150Ø
⌀ DDO	DISH DRAIN OUTLET 100Ø
	GRATED INLET PIT
	GRATED DRAIN
	OVERLAND FLOW PATH
SP	SPREADER
ES	EMERGENCY SPITTER

ABBREVIATIONS

CL	CLEARANCE
DIA	DIAMETER
DDO	DISH DRAIN OUTLET
DP	DOWNPIPE
Ex.	EXISTING
FFL	FINISHED FLOOR LEVEL
GL	GROUND LEVEL
GMS	GALVANISED MILD STEEL
GSIP	GRADED SURFACE INLET PIT
GTD	GRATED TRENCH DRAIN
HL	HIGH LEVEL
IL	INVERT LEVEL
JP	JUNCTION PIT
KIP	KERB INLET PIT
IO	INSPECTION OPENING
LL	LOW LEVEL
O/F	OVERFLOW
PVC	POLYVINYLCHLORIDE
SL	SURFACE LEVEL
STW	STORMWATER
S/S	STAINLESS STELL
U/S	UNDER SIDE

NOTES: DRAINAGE LINES

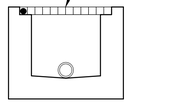
DRAINAGE LINES SHOWN continuous – – – – – –
TO COLLECT SURFACE WATER

DRAINAGE LINES SHOWN DASHED —— RWT ——
TO COLLECT ROOF WATER ONLY TO RAINWATER TANK

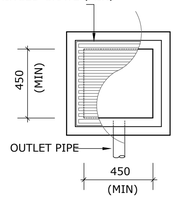
DP : 100Ø DOWN PIPE U.N.O.
– – – – – – – : STORMWATER PIPE @1% MIN. U.N.O.
REFER TO AS.3500 PART 3 TABLE 7.2
P1 : 100Ø UPVC PIPE AT 1.0% MIN. GRADE
P2 : 150Ø UPVC PIPE AT 1.0% MIN. GRADE
P3 : 225Ø UPVC PIPE AT 0.5% MIN. GRADE
P4 : 300Ø UPVC PIPE AT 0.4% MIN. GRADE
P5 : 375Ø UPVC PIPE AT 0.4% MIN. GRADE
P6 : 450Ø RCP PIPE AT 0.4% MIN. GRADE

✳ NEW LEVEL
┼ EXISTING LEVEL

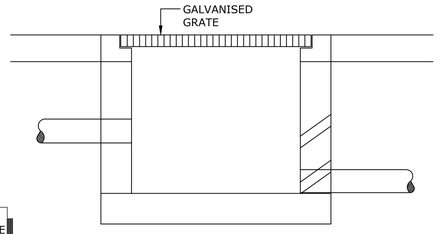
PROVIDE 150mm GAP UNDER THE FENCE AND IF BLOCK WALL PROVIDED, THEN PROVIDE OPENING FOR EMERGENCY OVERFLOW.



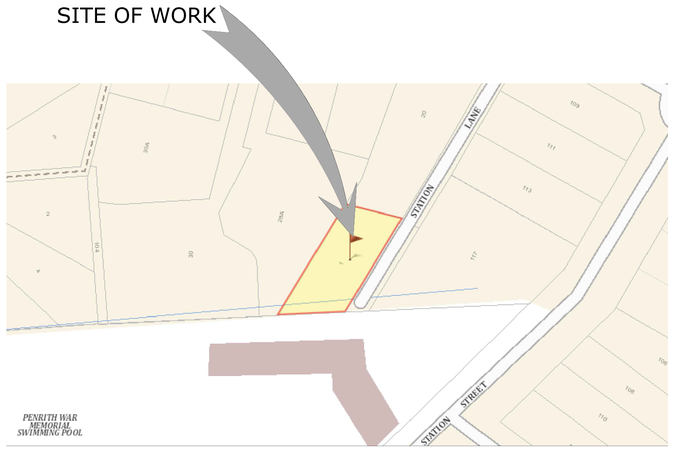
TYPICAL PIT SECTION
N.T.S.



STANDARD PIT
N.T.S.



TYPICAL PIT DETAIL
NTS



N

LOCALITY SKETCH
NOT TO SCALE

NOT FOR CONSTRUCTION

A1 0 1 2 3 4 5 6 7 8 9 10

No	AMENDMENT	ENG	DRAFT	DATE	No	AMENDMENT	ENG	DRAFT	DATE
A	FOR D.A. APPROVAL	N.L.	J.P.	08-08-18					

ARCHITECT
ANTOINE J. SAOUMA
Architect 7412
NSW REGISTRATION INSTITUTE OF ARCHITECTS

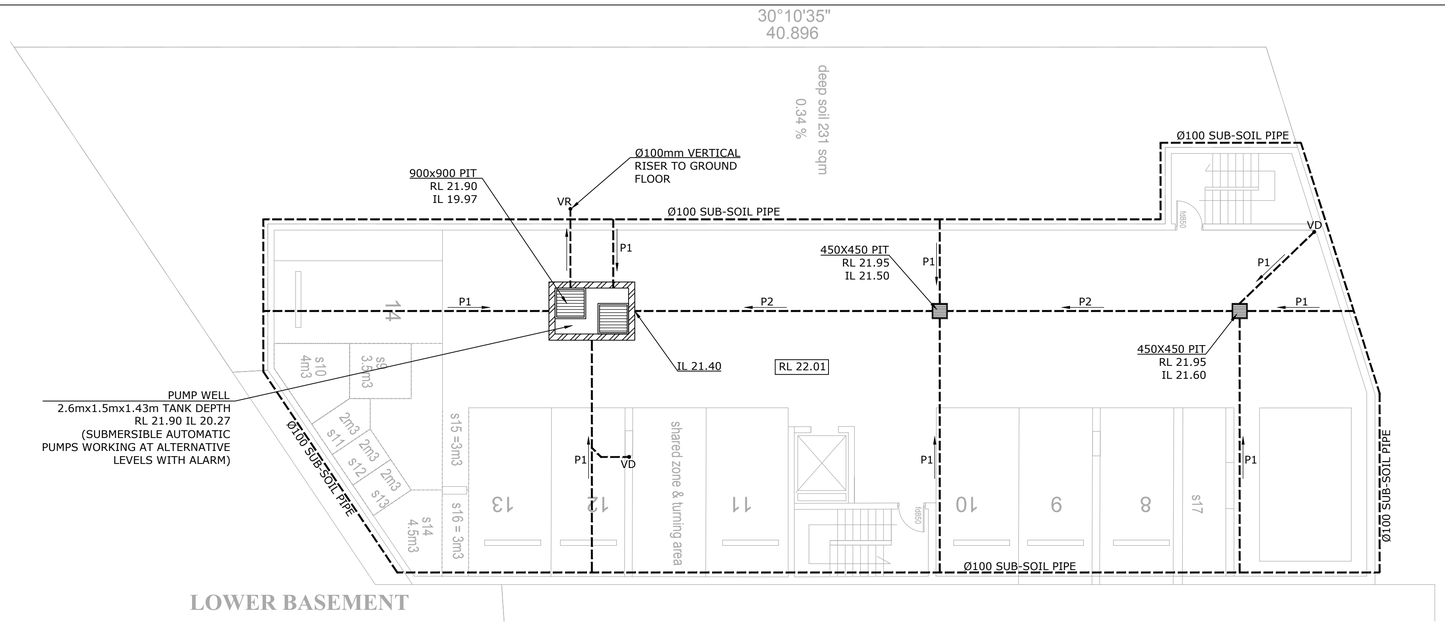
LOKA CONSULTING ENGINEERS.Pty Ltd
LOKA CONSULTING ENGINEERS www.lceng.com.au
14A/8 AVENUE OF AMERICAS, NEWINGTON, NSW
T: +61 2 8065 9689 F: +61 2 8065 9690
MOBILE: 0404 142 063 EMAIL: info@lceng.com.au

PROJECT
PROPOSED RESIDENTIAL DEVELOPMENT
1 STATION LANE,
PENRITH NSW

CONSENT AUTHORITY:
PENRITH CITY COUNCIL

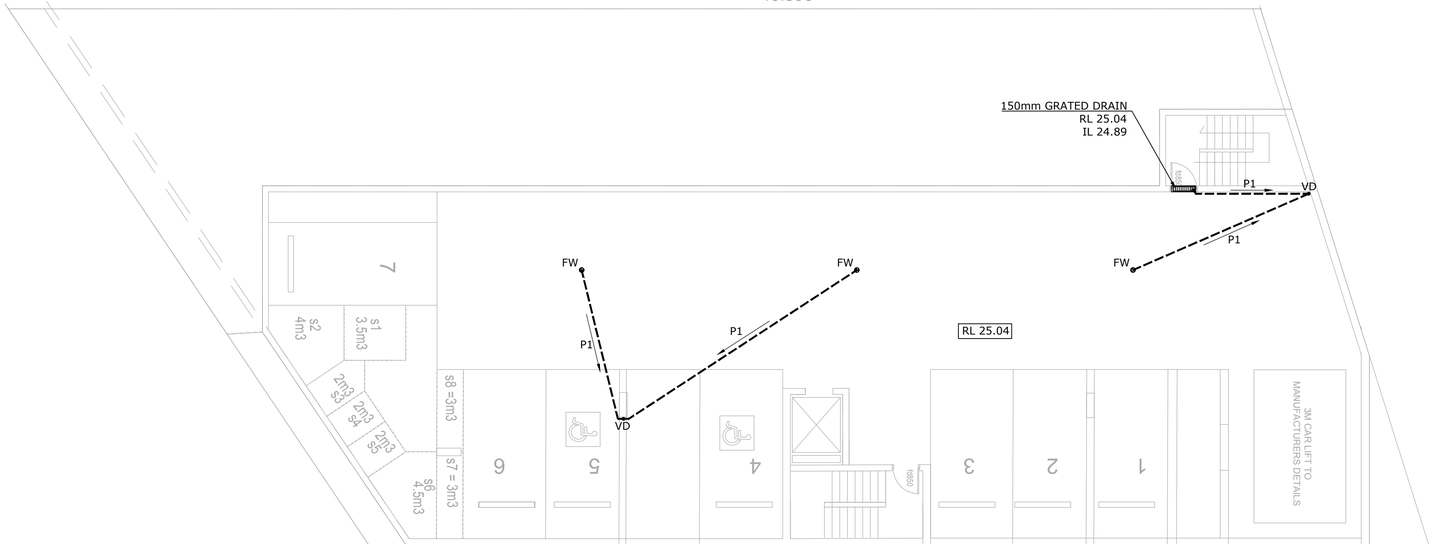
SHEET SUBJECT
COVER SHEET, LEGEND AND DRAWING SCHEDULE

PROJECT 1 STATION LANE, PENRITH NSW			
DATE AUG 18	DRAWN J.P.	DESIGNED N.L.	CHECKED N.L.
SCALE @ A1 N.T.S.		JOB No 18NL148	
AUTHORISED NERMEIN LOKA		DWG No D00	REV A



LOWER BASEMENT STORMWATER DRAINAGE PLAN

SCALE 1:100



UPPER BASEMENT STORMWATER DRAINAGE PLAN

SCALE 1:100

NOTE RE. SERVICES

APPROXIMATE LOCATIONS OF EXISTING SERVICES SHOWN ON LONGITUDINAL SECTION.
EXACT LOCATIONS & DEPTHS TO BE ACCURATELY LOCATED BY BUILDER CONTRACTOR BY CONTACTING THE RELEVANT AUTHORTIES BEFORE COMMENCEMENT OF ANY WORKS

DIAL 1100 BEFORE YOU DIG

NOTES

1. ALL LINES ARE TO BE MIN. 100Ø UPVC @ MIN 1.0% GRADE UNLESS NOTED OTHERWISE.
2. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE & LEVEL ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS. ALL DESIGN LEVELS SHOWN ON PLAN SHALL BE VERIFIED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORK.
3. ALL PIPES TO HAVE MIN 200mm COVER IF LOCATED WITHIN PROPERTY.
4. ALL PITS IN DRIVEWAYS BE HEAVY DUTY GRATES. DIRECT SURFACE FLOW TO ALL GRATED SURFACE INLET PITS.
5. ALL WORK DO BE DONE IN ACCORDANCE WITH AS/NZ 3500.3.2:2003 AND COUNCIL SPECIFICATIONS.
6. LOCATION OF DOWNPIPES & FLOOR WASTES ARE INDICATIVE ONLY. DOWNPIPE & FLOOR WASTE SIZE, LOCATION & QUANTITY TO BE DETERMINED BY BUILDER & IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.
7. THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL, LANDSCAPE AND STRUCTURAL PLANS.
8. ANY DISCREPANCIES OR OMISSIONS SHALL BE REFERRED TO THE DESIGN ENGINEER FOR RESOLUTION.
9. ALL PITS OR GRATES IN TRAFFICABLE AREAS TO BE HEAVY DUTY.
10. ALL GUTTERS WILL BE FITTED WITH LEAF GUARDS AND SHOULD BE INSPECTED AND CLEANED TO ENSURE LEAF LITTER CANNOT ENTER THE DOWNPIPES

SYMBOLS

F.F.L.	FINISHED FLOOR LEVEL
T.K.	TOP OF KERB
RL	PIT SURFACE LEVEL
IL	INVERT LEVEL
----	STORMWATER DRAINAGE PIPE
—•—	DOWNPIPE TO RAINWATER TANK
•DP	100Ø DOWN PIPE (U.N.O.)
• VD	100Ø VERTICAL DROP (U.N.O.)
• VR	VERTICAL RISER
• IO	INSPECTION OPENING
	MASONRY RETAINING WALL
⌀ FW	FLOOR WASTE 300Ø
⌀ DDO	DISH DRAIN OUTLET 100Ø
	GRATED INLET PIT
	GRATED DRAIN
	OVERLAND FLOW PATH
▶SP	SPREADER
⩙ES	EMERGENCY SPITTER

VD : 100Ø VERTICAL DROP (U.N.O.)
▬▬▬▬: STORMWATER PIPE @1% MIN. U.N.O.
REFER TO AS.3500 PART 3 TABLE 7.2
P1 : 100Ø UPVC PIPE AT 1.0% MIN. GRADE
P2 : 150Ø UPVC PIPE AT 1.0% MIN. GRADE
P3 : 225Ø UPVC PIPE AT 0.5% MIN. GRADE

NOTES: DRAINAGE LINES

DRAINAGE LINES SHOWN continuous ▬▬▬▬
TO COLLECT SURFACE WATER

DRAINAGE LINES SHOWN DASHED — RWT —
TO COLLECT ROOF WATER ONLY TO RAINWATER TANK

NOTES: COUNCIL ISSUED FOOTWAY DESIGN LEVELS

COUNCIL'S ISSUED FOOTWAY DESIGN LEVELS TO BE INCORPORATED INTO THE FINISHED LEVELS ONCE ISSUED BY COUNCIL

NOTES: ROAD RESERVE & FOOTWAY DRAINAGE ELEMENTS

ALL STORMWATER DRAINAGE ELEMENTS PROPOSED WITHIN THE ROAD RESERVE AND FOOTWAY SHALL BE CONSTRUCTED UNDER THE SUPERVISION AND TO THE SATISFACTION OF COUNCIL'S ENGINEER.

NOT FOR CONSTRUCTION

A1 0 1 2 3 4 5 6 7 8 9 10

No	AMENDMENT	ENG	DRAFT	DATE
A	FOR D.A. APPROVAL	N.L.	J.P.	08-08-18

ARCHITECT
ANTOINE J. SAOUMA
Architect 7412
MEMBER THE ROYAL AUSTRALIAN INSTITUTE OF ARCHITECTS

LOKA CONSULTING ENGINEERS.Pty Ltd
14A/8 AVENUE OF AMERICAS, NEWINGTON, NSW
T: +61 2 8065 9689 F: +61 2 8065 9690
MOBILE: 0404 142 063 EMAIL: info@lceng.com.au
LOKA CONSULTING ENGINEERS www.lceng.com.au

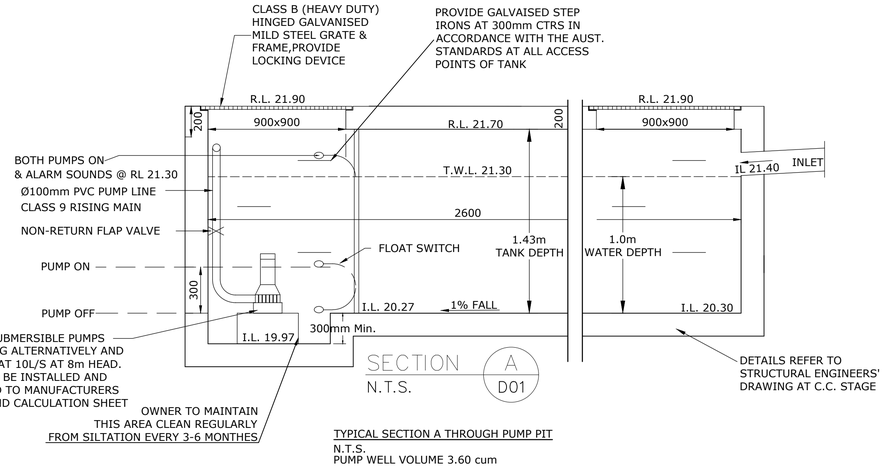
PROJECT
PROPOSED RESIDENTIAL DEVELOPMENT
1 STATION LANE,
PENRITH NSW

CONSENT AUTHORITY:
PENRITH CITY COUNCIL

SHEET SUBJECT
BASEMENT LEVELS
STORMWATER DRAINAGE
PLAN

PROJECT	1 STATION LANE, PENRITH NSW		
DATE	DRAWN	DESIGNED	CHECKED
AUG 18	J.P.	N.L.	N.L.
SCALE @ A1		JOB No	
1:100 U.N.O.		18NL148	
AUTHORISED	DWG No	REV	
NERMEIN LOKA	D01	A	

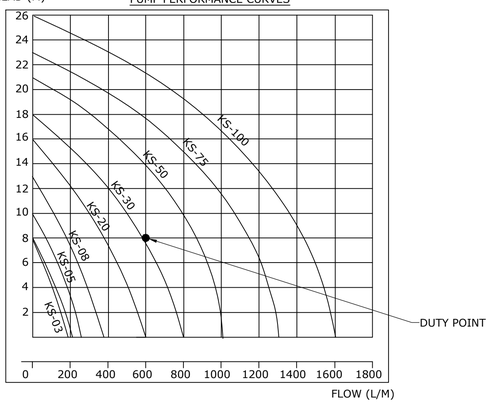
Document Set ID: 8363821
Version: 1, Version Date: 31/08/2018

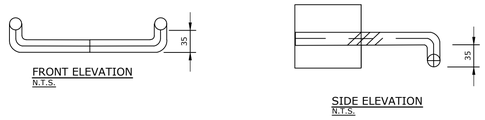


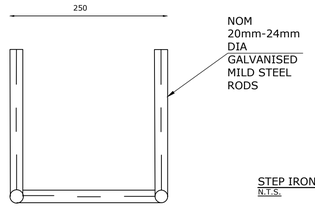
TYPICAL SECTION A THROUGH PUMP PIT
N.T.S.
PUMP WELL VOLUME 3.60 cum

HEAD (M)

PUMP PERFORMANCE CURVES

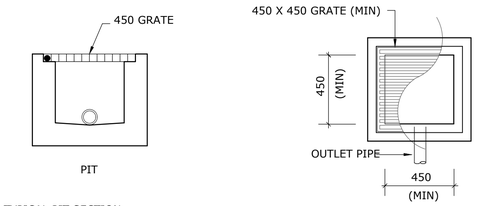






STEP IRON DETAILS
N.T.S.

NOTE: INSTALL WHERE PITS ARE DEEPER THAN 1000mm



TYPICAL PIT SECTION
N.T.S.

STANDARD PIT
N.T.S.

TYPICAL SECTION THROUGH SUBSOIL HARD PIPE
N.T.S.

PUMP SPECIFICATIONS

STANDARD PUMP-OUT NOTES

THE PUMP-OUT SYSTEM IS DESIGNED TO WORK IN THE FOLLOWING MANNER -

1. THE PUMPS SHALL BE PROGRAMMED TO WORK ALTERNATELY SO AS TO ALLOW BOTH PUMPS TO HAVE EQUAL OPERATION LOAD & PUMP LIFE.
2. A LOW LEVEL FLOAT SHALL BE PROVIDED TO ENSURE THAT THE MINIMUM REQUIRED WATER LEVEL IS MAINTAINED WITHIN THE SUMP AREA OF THE BELOW GROUND TANK. IN THIS REGARD THIS FLOAT WILL FUNCTION AS AN OFF SWITCH FOR THE PUMPS.
3. A SECOND FLOAT SHALL BE PROVIDED AT A HIGHER LEVEL, APPROXIMATELY 300mm ABOVE THE MINIMUM WATER LEVEL, WHEREBY ONE OF THE PUMPS WILL OPERATE & DRAIN THE TANK TO THE LEVEL OF THE LOW LEVEL FLOAT.
4. A THIRD FLOAT SHALL BE PROVIDED AT A HIGH LEVEL, WHICH IS APPROXIMATELY THE ROOF LEVEL OF THE BELOW GROUND TANK. THIS FLOAT SHOULD START THE OTHER PUMP THAT IS NOT OPERATING & ACTIVATE THE ALARM.
5. AN ALARM SYSTEM SHALL BE PROVIDED WITH A FLASHING STROBE LIGHT & A PUMP FAILURE WARNING SIGN WHICH ARE TO BE LOCATED AT THE DRIVEWAY ENTRANCE TO THE BASEMENT LEVEL. THE ALARM SYSTEM SHALL BE PROVIDED WITH A BATTERY BACK-UP IN CASE OF POWER FAILURE.

PUMP WELL DETAILS

SUMP SIZE AND PUMP SIZE BASE ON 100 YEAR 2 HR STORM
INTENSITY IS 44.40 mm/hr, AREA DRAINING TOWARDS SUMP IS 0 m2
MINIMUM STORAGE TO BE PROVIDED = 2400x1500x1000 = 3,600 L
USE KS 30 OR EQUIVALENT DUAL PUMPS TO BE INSTALLED IN SUMP AND CONNECTED TO CONTROL PANEL WHICH WILL ALLOW FOR THE PUMPS TO ACT ALTERNATIVELY AT 10L/s AT 8m HEAD

RECOMMENDED PUMP

Type	Output		Outlet		Rated		Maximum		Weigh	Dimension		
					Head Capacity		Head	Capacity				
	HP	kW	mm	Inch	M	LPM	M	LPM	Kg	L(mm)	W(mm)	H(mm)
KS-03	1/3	0.25	40	1 1/2"	3	130	8	180	9	188	141	305
KS-04	1/2	0.4	50	2"	5	150	8	220	11	208	140	359
KS-05	1/2	0.4	50	2"	5	160	10	260	14	230	156	375
KS-08	1	0.75	50	2"	6	240	13	380	21	290	180	425
KS-20	2	1.5	80	3"	10	300	16	600	31	278	182	475
KS-30	3	2.2	80	3"	10	500	18	800	42	390	250	450
KS-50	5	3.7	100	4"	10	800	21	1100	48	450	240	530
KS-75	7 1/2	5.6	100	4"	15	800	23	1300	60	550	310	590
KS-100	10	7.5	150	6"	18	900	25	1600	70	550	310	610

NOTE RE. SERVICES

APPROXIMATE LOCATIONS OF EXISTING SERVICES SHOWN ON LONGITUDINAL SECTION. EXACT LOCATIONS & DEPTHS TO BE ACCURATELY LOCATED BY BUILDER CONTRACTOR BY CONTACTING THE RELEVANT AUTHORTIES BEFORE COMMENCEMENT OF ANY WORKS

DIAL 1100 BEFORE YOU DIG

NOTES

1. ALL LINES ARE TO BE MIN. 100Ø UPVC @ MIN 1.0% GRADE UNLESS NOTED OTHERWISE.
2. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE & LEVEL ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS. ALL DESIGN LEVELS SHOWN ON PLAN SHALL BE VERIFIED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORK.
3. ALL PIPES TO HAVE MIN 200mm COVER IF LOCATED WITHIN PROPERTY.
4. ALL PITS IN DRIVEWAYS BE HEAVY DUTY GRATES. DIRECT SURFACE FLOW TO ALL GRATED SURFACE INLET PITS.
5. ALL WORK DO BE DONE IN ACCORDANCE WITH AS/NZ 3500.3.2:1998 AND COUNCIL SPECIFICATIONS.
6. LOCATION OF DOWNPIPES & FLOOR WASTES ARE INDICATIVE ONLY. DOWNPIPE & FLOOR WASTE SIZE, LOCATION & QUANTITY TO BE DETERMINED BY BUILDER & IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.
7. THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL, LANDSCAPE AND STRUCTURAL PLANS.
8. ANY DISCREPANCIES OR OMISSIONS SHALL BE REFERRED TO THE DESIGN ENGINEER FOR RESOLUTION.
9. ALL PITS OR GRATES IN TRAFFICABLE AREAS TO BE HEAVY DUTY.
10. ALL GUTTERS WILL BE FITTED WITH LEAF GUARDS AND SHOULD BE INSPECTED AND CLEANED TO ENSURE LEAF LITTER CANNOT ENTER THE DOWNPIPES

HEIGHT 150mm

WIDTH 200mm

COLOURS:

"DANGER" AND BACKGROUND	WHITE
ELLIPTICAL AREA	RED
RECTANGLE CONTAINING ELIPSE	BLACK
OTHER LETTERING AND BORDER	BLACK

MATERIALS POLYPROPYLENE

CONFINED SPACE WARNING SIGN
N.T.S.

WARNING

PUMP OUT SYSTEM FAILURE IN BASEMENT WHEN LIGHT IS FLASHING AND SIREN SOUNDING

BASEMENT PUMP OUT FAILURE WARNING SIGN

NOTE:-

1- SIGN SHALL BE PLACED IN A CLEAR AND VISIBLE LOCATION WHERE VEHICLES ENTER THE BASEMENT.

COLOURS :; -

WARNING - RED
BORDER AND OTHER COLOURING - BLACK

NOTE: A SUITABLE ALARM SYSTEM POSITIONED AT ENTRANCE OF BASEMENT CARPARK TO PROVIDE A FLOOD WARNING IN CASE OF PUMP FAILURE (TO COUNCILS SPEC). AS SHOWN ABOVE.

NOT FOR CONSTRUCTION

A1 0 1 2 3 4 5 6 7 8 9 10

No	AMENDMENT	ENG	DRAFT	DATE	No	AMENDMENT	ENG	DRAFT	DATE
A	FOR D.A. APPROVAL	N.L.	J.P.	08-08-18					

ARCHITECT
ANTOINE J. SAOUMA
Architect 7412
NSW REGISTERED ARCHITECTS INSTITUTE OF ARCHITECTS

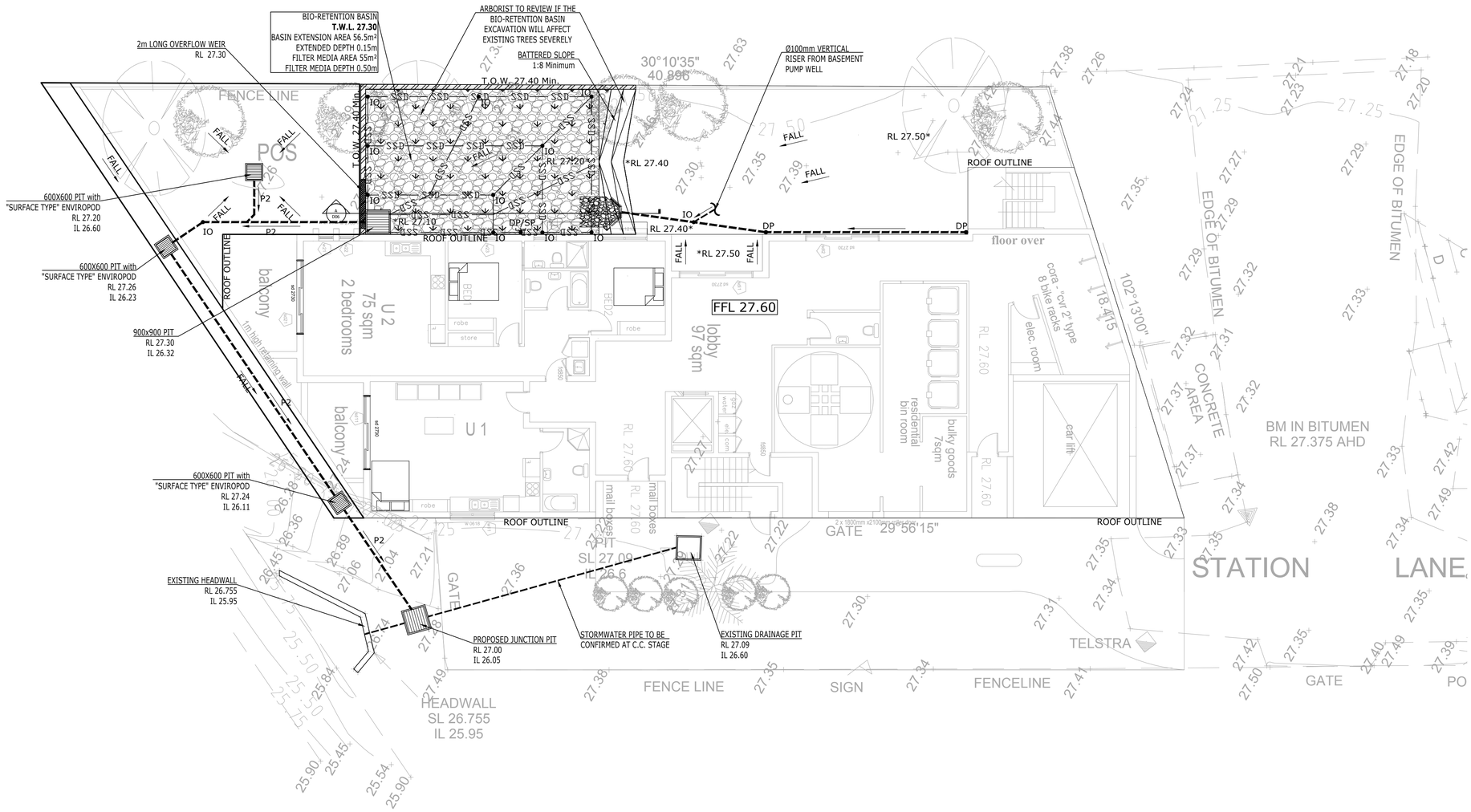
LOKA CONSULTING ENGINEERS.Pty Ltd
14A/8 AVENUE OF AMERICAS, NEWINGTON, NSW
T: +61 2 8065 9689 F: +61 2 8065 9690
MOBILE: 0404 142 063 EMAIL: info@lceng.com.au
www.lceng.com.au

PROJECT
PROPOSED RESIDENTIAL DEVELOPMENT
1 STATION LANE,
PENRITH NSW

CONSENT AUTHORITY:
PENRITH CITY COUNCIL

SHEET SUBJECT
BASEMENT STORMWATER DRAINAGE DETAILS

PROJECT	1 STATION LANE, PENRITH NSW		
DATE AUG 17	DRAWN J.P.	DESIGNED N.L.	CHECKED N.L.
SCALE @ A1 N.T.S.		JOB No 18NL148	
AUTHORISED NERMEIN LOKA		DWG No D02	REV A



NOTE RE. SERVICES

APPROXIMATE LOCATIONS OF EXISTING SERVICES SHOWN ON LONGITUDINAL SECTION.
EXACT LOCATIONS & DEPTHS TO BE ACCURATELY LOCATED BY BUILDER CONTRACTOR BY CONTACTING THE RELEVANT AUTHORTIES BEFORE COMMENCEMENT OF ANY WORKS

DIAL 1100 BEFORE YOU DIG

NOTES

1. ALL LINES ARE TO BE MIN. 100Ø UPVC @ MIN 1.0% GRADE UNLESS NOTED OTHERWISE.
2. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE & LEVEL ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS. ALL DESIGN LEVELS SHOWN ON PLAN SHALL BE VERIFIED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORK.
3. ALL PIPES TO HAVE MIN 200mm COVER IF LOCATED WITHIN PROPERTY.
4. ALL PITS IN DRIVEWAYS BE HEAVY DUTY GRATES. DIRECT SURFACE FLOW TO ALL GRATED SURFACE INLET PITS.
5. ALL WORK DO BE DONE IN ACCORDANCE WITH AS/NZ 3500.3.2:2003 AND COUNCIL SPECIFICATIONS.
6. LOCATION OF DOWNPIPES & FLOOR WASTES ARE INDICATIVE ONLY. DOWNPIPE & FLOOR WASTE SIZE, LOCATION & QUANTITY TO BE DETERMINED BY BUILDER & IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.
7. THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL, LANDSCAPE AND STRUCTURAL PLANS.
8. ANY DISCREPANCIES OR OMISSIONS SHALL BE REFERRED TO THE DESIGN ENGINEER FOR RESOLUTION.
9. ALL PITS OR GRATES IN TRAFFICABLE AREAS TO BE HEAVY DUTY.
10. ALL GUTTERS WILL BE FITTED WITH LEAF GUARDS AND SHOULD BE INSPECTED AND CLEANED TO ENSURE LEAF LITTER CANNOT ENTER THE DOWNPIPES

SYMBOLS

F.F.L.	FINISHED FLOOR LEVEL
T.K.	TOP OF KERB
RL	PIT SURFACE LEVEL
IL	INVERT LEVEL
----	STORMWATER DRAINAGE PIPE
—·—	DOWNPIPE TO RAINWATER TANK
•DP	100Ø DOWN PIPE (U.N.O.)
• VD	VERTICAL DROP PIPE
• VR	VERTICAL RISER
• IO	INSPECTION OPENING
	MASONRY RETAINING WALL
⊗ FW	FLOOR WASTE 150Ø
⊗ DDO	DISH DRAIN OUTLET 100Ø
	GRATED INLET PIT
	GRATED DRAIN
	OVERLAND FLOW PATH
▶SP	SPREADER
⋈ES	EMERGENCY SPITTER

GROUND FLOOR/SITE STORMWATER DRAINAGE PLAN

SCALE 1:100

DESIGN SUMMARY:

THE SITE IS SITUATED ADJACENT TO A FLOODWAY/CHANNEL. THE PEAK 1% AEP FLOOD LEVEL AND FLOOD PLANNING LEVEL (FPL) FOR THE SITE IS 27.10m AHD AND 27.6m AHD, RESPECTIVELY. THE FINISHED FLOOR LEVEL FOR GROUND LEVEL IS RL 27.60m AHD WHICH SATISFIED THE FLOOD PLANNING LEVEL.

NOTE:

ARBORIST TO REVIEW IF THE BIO-RETENTION BASIN EXCAVATION WILL AFFECT EXISTING TREES SEVERELY. EXISTING TREES IN CONFLICT WITH THE BIO-RETENTION BASIN MAY REQUIRED TO BE REMOVED.

DP : 100Ø DOWN PIPE U.N.O.
▬▬▬▬ : STORMWATER PIPE @1% MIN. U.N.O.
REFER TO AS.3500 PART 3 TABLE 7.2
P1 : 100Ø UPVC PIPE AT 1.0% MIN. GRADE
P2 : 150Ø UPVC PIPE AT 1.0% MIN. GRADE
P3 : 225Ø UPVC PIPE AT 0.5% MIN. GRADE

NOTES: DRAINAGE LINES

DRAINAGE LINES SHOWN continuous ▬▬▬▬
TO COLLECT SURFACE WATER

DRAINAGE LINES SHOWN DASHED —— RWT ——
TO COLLECT ROOF WATER ONLY TO RAINWATER TANK

NOTES: COUNCIL ISSUED FOOTWAY DESIGN LEVELS

COUNCIL'S ISSUED FOOTWAY DESIGN LEVELS TO BE INCORPORATED INTO THE FINISHED LEVELS ONCE ISSUED BY COUNCIL

NOTES: ROAD RESERVE & FOOTWAY DRAINAGE ELEMENTS

ALL STORMWATER DRAINAGE ELEMENTS PROPOSED WITHIN THE ROAD RESERVE AND FOOTWAY SHALL BE CONSTRUCTED UNDER THE SUPERVISION AND TO THE SATISFACTION OF COUNCIL'S ENGINEER.

NOT FOR CONSTRUCTION

A1 0 1 2 3 4 5 6 7 8 9 10

No	AMENDMENT	ENG	DRAFT	DATE
A	FOR D.A. APPROVAL	N.L.	J.P.	08-08-18

ARCHITECT
ANTOINE J. SAOUMA
Architect 7412
MEMBER THE ROYAL AUSTRALIAN INSTITUTE OF ARCHITECTS

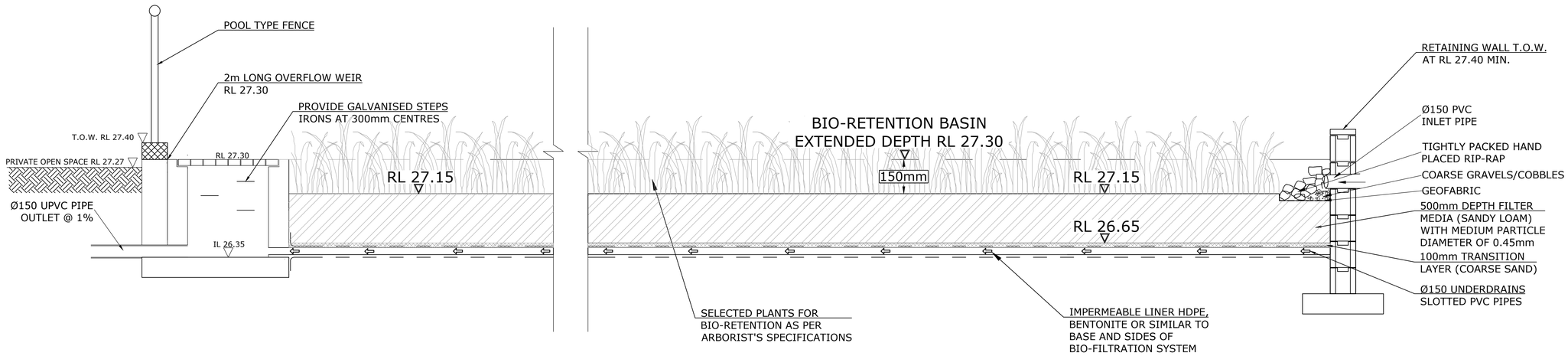
LOKA CONSULTING ENGINEERS
www.loka.com.au
LOKA CONSULTING ENGINEERS.Pty Ltd
14A/8 AVENUE OF AMERICAS, NEWINGTON, NSW
T. +61 2 8065 9689 F. +61 2 8065 9690
MOBILE 0404 142 063 EMAIL. info@loeng.com.au

PROJECT
PROPOSED RESIDENTIAL DEVELOPMENT
1 STATION LANE,
PENRITH NSW

CONSENT AUTHORITY:
PENRITH CITY COUNCIL

SHEET SUBJECT
GROUND FLOOR / SITE STORMWATER DRAINAGE PLAN

PROJECT	1 STATION LANE, PENRITH NSW
DATE	AUG 17
DRAWN	J.P.
DESIGNED	N.L.
CHECKED	N.L.
SCALE @ A1	1:100 U.N.O.
JOB No	18NL148
AUTHORISED	NERMEIN LOKA
DWG No	D03
REV	A

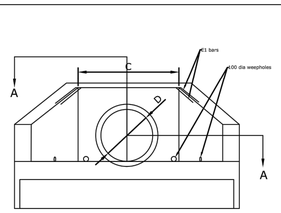


TYPICAL SECTION THROUGH BIO-RETENTION/FITLER MEDIA

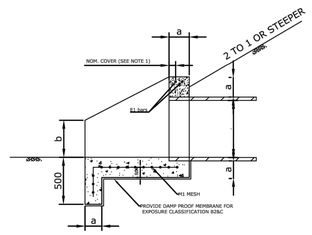
NOTE RE. SERVICES

APPROXIMATE LOCATIONS OF EXISTING SERVICES SHOWN ON LONGITUDINAL SECTION. EXACT LOCATIONS & DEPTHS TO BE ACCURATELY LOCATED BY BUILDER CONTRACTOR BY CONTACTING THE RELEVANT AUTHORTIES BEFORE COMMENCEMENT OF ANY WORKS

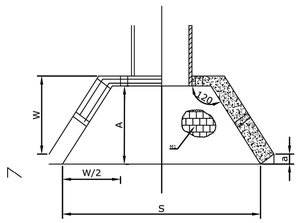
DIAL 1100 BEFORE YOU DIG



ELEVATION



LONGITUDINAL SECTION



PLAN SECTION A-A

DIMENSIONS	D	Nominal pipe diameter		(mm)	300	375	450	525	600	750	900
	A	Apron depth		(mm)	270	415	590	735	900	1210	1540
	C	Headwall length		(mm)	770	850	940	1020	1100		1450
	S	Apron width		(mm)	1080	1330	1620	1870	2140	2670	3230
	W	Wingwall length		(mm)	310	480	680	850	1040	1400	1780
	a			(mm)	150	150	150	150	150	150	150
	b			(mm)	300	300	300	300	400	400	400
QUANTITIES IN 2 HEADWALLS	E1 BAR 12mm dia		L1	(mm)	885	965	1055	1135	1215	1385	1565
			L2	(mm)	200	200	200	200	600	600	600
	M1 MESH		NO. req		4	4	4	4	4	4	4
			Length	(mm)	5140	5460	5820	6140	9660	10340	11060
			Mark	(mm)	F81	F81	F81	F81	F81	F81	F81
			L1	(mm)	1260	1510	1800	2050	2320	2850	3410
			L2	(mm)	610	755	930	1075	1240	1550	1880
			L3	(mm)	175	260	360	445	540	720	910
			NO. Req		2	2	2	2	2	2	2
	Steel Reinforcement			(kg)	16.1	21.3	28.5	35.4	46.7	65.9	89.9
	Wingwall length			(m3)	0.53	0.71	0.94	1.18	1.49	2.12	2.89

NOTES:
1. Concrete strength grades shown are for exposure classification A2. Refer to AS3600-1994, section 4 for concrete strength grade and cover to reinforcement for other exposure classification.
2. WEEPHOLES are to be provided at 1800 ctrs max.out let only.
3. STEEL : All bars to be Grade 400 Y to AS1302-1991
4. MESH : Laps shall be made so that the two outer most wires of one fabric over lap the two outer most wires of the sheet being lapped.

REFERENCED DOCUMENTS:
AS 1302-1991 Steel Reinforcing Bars for Concrete.
AS 1304-1991 Welded Wire Reinforcing Fabric for Concrete.
AS 3600-1994 Concrete Structures
RTA ZA Model Specification Part R11 - Stormwater Drainage.

All dimension are in millimeters unless otherwise stated. [First Issued: June 1998]

AMENDMENT DETAILS	DATE
Notes : R5 changed to R11	sEPT 2000

Roads and Traffic Authority NSW

CONCRETE HEADWALLS SINGLE CELL 300 mm TO 900 mm DIA. WITH CONCRETE ARON (2 TO 1 OR STEEPER

SCALE	NO. OF SHEETS	SHEET NO.
N.T.S.	1	1

MD.R11.A02.A.1

NOTE:
MAINTENANCE SERVICE MUST BE CARRIED OUT BY THE DEVELOPMENT OWNER FOR THE BIO-RETENTION BASIN EVERY 3 MONTHS OR AFTER ANY MAJOR STORM EVENT.

HEIGHT 400mm

WIDTH 300mm

ABOVE GROUND OSD BASIN WARNING SIGN

NTS

COLOURS:

TRIANGLE AND "WARNING"	RED
WATER	BLUE
FIGURE AND OTHER LETTERING	BLACK
MATERIALS	POLYPROPYLENE

PROVIDE OSD SIGN ADJACENT TO THE ON-SITE DETENTION SYSTEM IN A CLEAR AND VISIBLE POSITION IN ACCORDANCE WITH THE UPPER PARRAMATTA RIVER CATCHMENT TRUST REQUIREMENTS

NOT FOR CONSTRUCTION

A1 0 1 2 3 4 5 6 7 8 9 10

No	AMENDMENT	ENG	DRAFT	DATE
A	FOR D.A. APPROVAL	N.L.	J.P.	08-08-18

ARCHITECT
ANTOINE J. SAOUMA
Architect 7412
MEMBER THE ROYAL AUSTRALIAN INSTITUTE OF ARCHITECTS

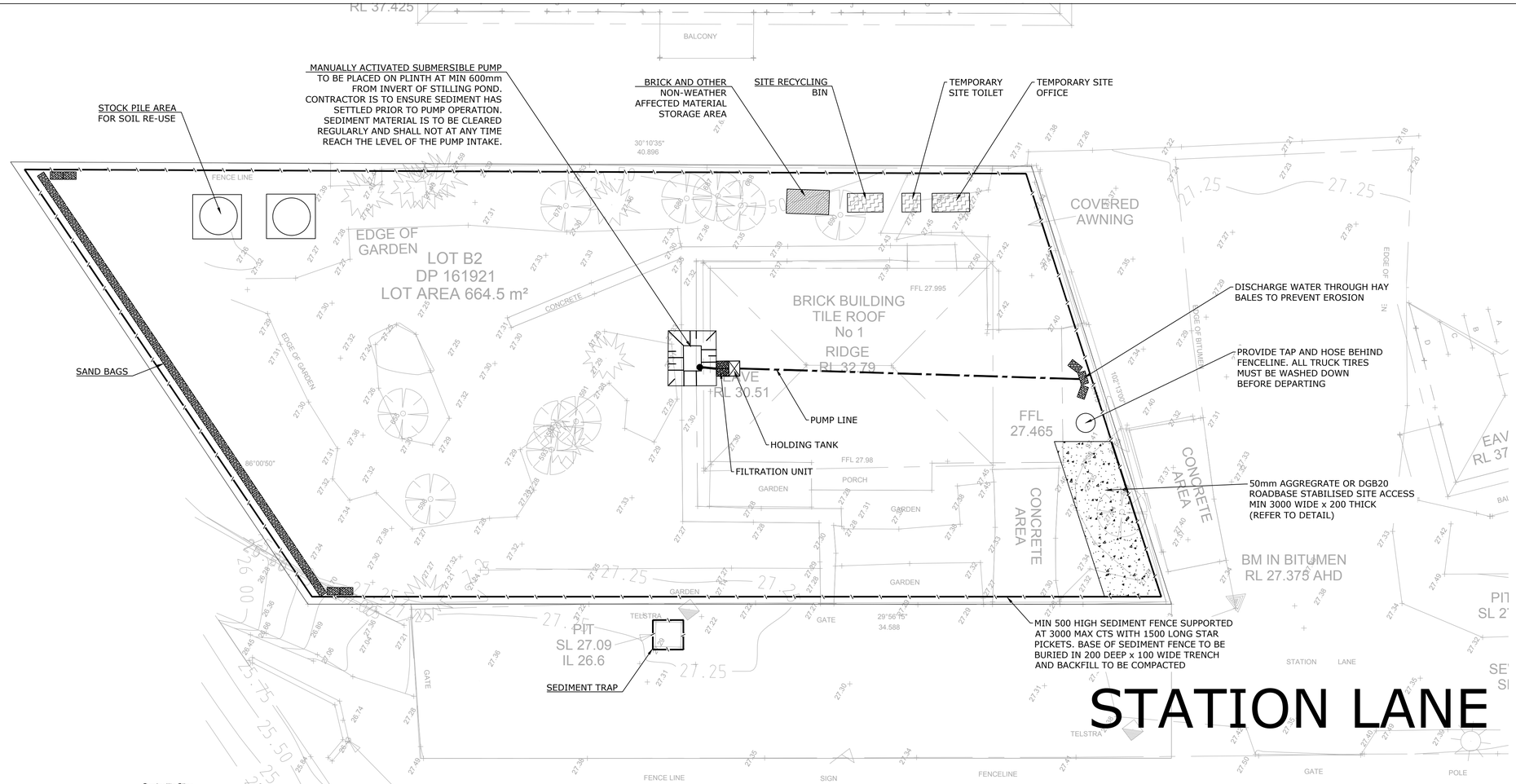
LOKA CONSULTING ENGINEERS Pty Ltd
14A/8 AVENUE OF AMERICAS, NEWINGTON, NSW
T: +61 2 8065 9689 F: +61 2 8065 9690
MOBILE: 0404 142 063 EMAIL: info@lceng.com.au
LOKA CONSULTING ENGINEERS www.lceng.com.au

PROJECT
PROPOSED RESIDENTIAL DEVELOPMENT
1 STATION LANE,
PENRITH NSW

CONSENT AUTHORITY:
PENRITH CITY COUNCIL

SHEET SUBJECT
SITE STORMWATER DRAINAGE DETAILS

PROJECT	1 STATION LANE, PENRITH NSW		
DATE	DRAWN	DESIGNED	CHECKED
AUG 18	J.P.	N.L.	N.L.
SCALE @ A1		JOB No	
N.T.S.		18NL148	
AUTHORISED	DWG No		REV
NERMEIN LOKA	D04		A



EROSION CONTROL NOTES

1. ALL EROSION & SEDIMENT CONTROL MEASURES ARE TO BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH 'MANAGING URBAN STORMWATER, 3RD EDITION' PRODUCED BY THE NSW DEPARTMENT OF HOUSING.
2. ALL EROSION AND SILTATION CONTROL DEVICES ARE TO BE PLACED PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION WORKS, AND ALL SILT TRAPS ARE TO HAVE DEPOSITED SILT REMOVED REGULARLY DURING CONSTRUCTION.
3. ALL TRESS ARE TO BE PRESERVED UNLESS INDICATED OTHERWISE ON THE ARCHITECT'S OR LANDSCAPE ARCHITECT'S DRAWINGS. EXISTING GRASS COVER SHALL BE MAINTAINED EXPECT IN AREAS CLEARED FOR BUILDINGS, PAVEMENTS, ETC.
4. STABILISE/REVEGATATE ALL DISTURBED AREAS PROGRESSIVELY WHERE PRACTICAL.
5. INSTALL TEMPORARY SEDIMENT BARRIERS TO ALL INLET PITS LIKELY TO COLLECT SILT LADEN WATER.
6. ADDITIONAL VEHICLES MUST PARK ON ROAD AND NOT FOOTPATH. PUBLIC FOOTPATH ADJACENT TO SITE MUST NOT BE OBSTRUCTED AND MUST BE SAFE FOR PEDESTRIAN ACCESS.
14. ENSURE FENCE IS KEYED AT BOTH ENDS INTO GROUND, WITH BASE TURNED UPSLOPE.
15. WHERE SEDIMENT FENCE IS NEAR STREET, ERECT FENCE WITHIN DEVELOPMENT SIDE OF TURF FILTER STRIPS AND PROPERTY BOUNDARY.
16. SEDIMENT FENCE FILTER CLOTH TO BE FASTENED SECURELY TO WIRE FENCE WITH TIES SPACED EVERY 600MM.OVERLAP ADJOINING FILTER CLOTH BY 150MM AND FOLDING OVER.
17. DIVERT UPSLOPE WATER AROUND WORK SITE AND STABILISE CHANNELS.
18. LAY KERB-SIDE TURF FILTER STRIP TO TRAP EXCESS SEDIMENT.
19. CONTAMINATED WATER WITH SEDIMENT FROM A SEDIMENT BASIN OR EXCAVATION PIT IS TO BE FLOCCULATED/ FILTERED TO LOWER SUSPENDED SOIL LOAD TO LESS THAN 50 MILLIGRAMS PER LITRE.
20. SOIL, SAND AND GRAVEL ARE NOT TO BE STOCKPILED ON ROADWAYS OR IN DRAINAGE AREAS.
21. WASH AREA MUST BE SLIGHTLY DEPRESSED TO COLLECT WASTE MATERIAL.
22. APPLY DUST CONTROL MEASURES TO REDUCE SURFACE AND AIRBORNE MOVEMENT OF SEDIMENT
23. NOT WITHSTANDING DETAILS SHOWN, IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO ENSURE THAT ALL SITE ACTIVITIES COMPLY WITH THE REQUIREMENTS OF THE CLEAN WATERS ACT.

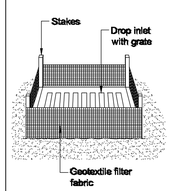
SYMBOLS

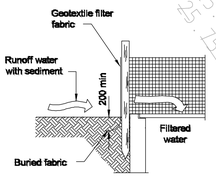
- EXISTING CONTOURS
- SILT FENCE
- WIRE MESH FENCE
- STABILISED SITE ACCESS
- Ø50 PUMP LINE

NOTES: SOIL & WATER MANAGEMENT

1. ALL EROSION AND SEDIMENT CONTROL MEASURES TO BE INSPECTED, MAINTAINED AND LOGGED DAILY BY SITE MANAGER.
2. MINIMISE DISTURBED AREAS.
3. ALL STOCKPILES TO BE CLEAR FROM DRAINS, GUTTERS AND FOOTPATHS.
4. NO MATERIAL TO BE STORED ON FOOTPATH.
5. STOCKPILE LASTING LONGER THAN 40 DAYS MUST BE COVERED.
6. DRAINAGE IS TO BE CONNECTED TO STORMWATER SYSTEM AS SOON AS POSSIBLE.
7. ROADS AND FOOTPATH TO BE SWEPT DAILY.
8. ENSURE NEIGHBOURING PROPERTY IS NOT FLOODED.
9. IF YOU DO NOT COMPLY, YOU MAY BE LIABLE TO A $1500 FINE.

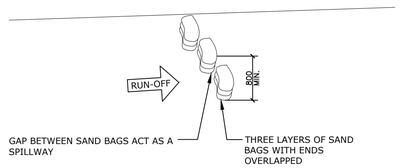
NOTE:
ALL EXISTING BUILDINGS TO BE DEMOLISHED ON SITE.
ALL EXISTING PITS TO BE COVERED DURING DEMOLITION



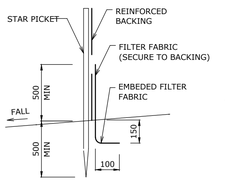


Sediment Trap for Drop Inlet (Geotextile Filter Fabric)
NTS

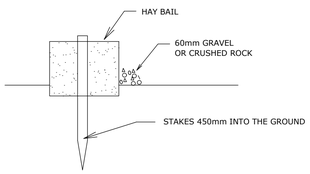
EROSION AND SEDIMENT CONTROL PLAN
SCALE 1:100



SANDBAG TRAP
NTS

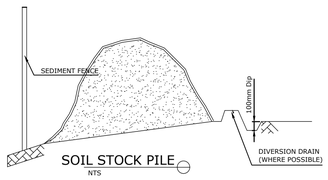


SILT FENCE DETAIL

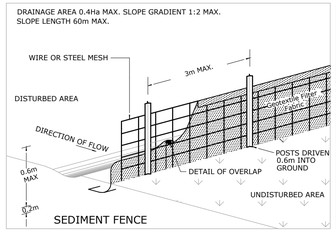


HAY BAIL DETAIL

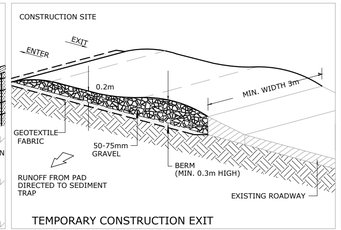
TO BE USED AS REQUIRED



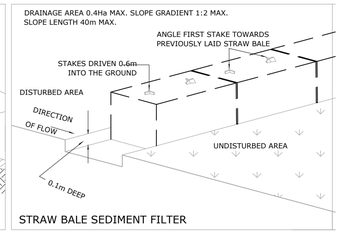
SOIL STOCK PILE
NTS



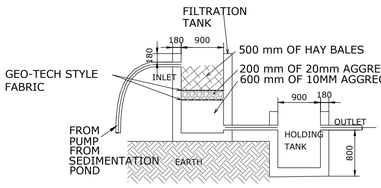
SEDIMENT FENCE



TEMPORARY CONSTRUCTION EXIT



STRAW BALE SEDIMENT FILTER



TYPICAL DETAIL OF FILTRATION UNIT
NTS

NOTE: HAY TO BE CHANGED EVERY DAY
GEO-TECH, SAND, AND BLUE METAL, TO BE CHANGED WEEKLY

NOT FOR CONSTRUCTION

A1 0 1 2 3 4 5 6 7 8 9 10

No	AMENDMENT	ENG	DRAFT	DATE
A	FOR D.A. APPROVAL	N.L.	J.P.	08-08-18

ARCHITECT
ANTOINE J. SAOUMA
Architect 7412
NSW
THE ROYAL AUSTRALIAN INSTITUTE OF ARCHITECTS

LOKA CONSULTING ENGINEERS
www.lceng.com.au
LOKA CONSULTING ENGINEERS Pty Ltd
14A/8 AVENUE OF AMERICAS, NEWINGTON, NSW
T: +61 2 8065 9689 F: +61 2 8065 9690
MOBILE: 0404 142 063 EMAIL: info@lceng.com.au

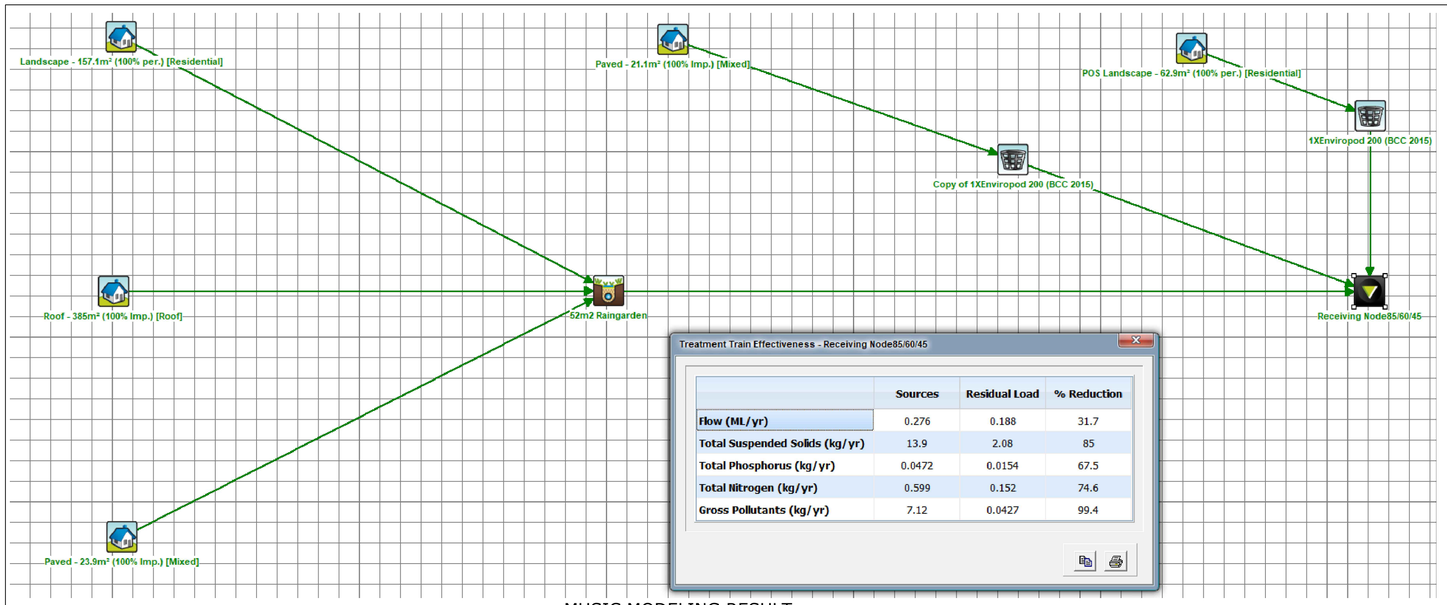
PROJECT
PROPOSED RESIDENTIAL DEVELOPMENT
1 STATION LANE,
PENRITH NSW

CONSENT AUTHORITY:
PENRITH CITY COUNCIL

N

SHEET SUBJECT
EROSION AND SEDIMENT CONTROL PLAN AND DETAILS

PROJECT	1 STATION LANE, PENRITH NSW		
DATE: AUG 18	DRAWN: J.P.	DESIGNED: N.L.	CHECKED: N.L.
SCALE @ A1: AS SHOWN		JOB No: 18NL148	
AUTHORISED: NERMEIN LOKA		DWG No: D05	REV: A



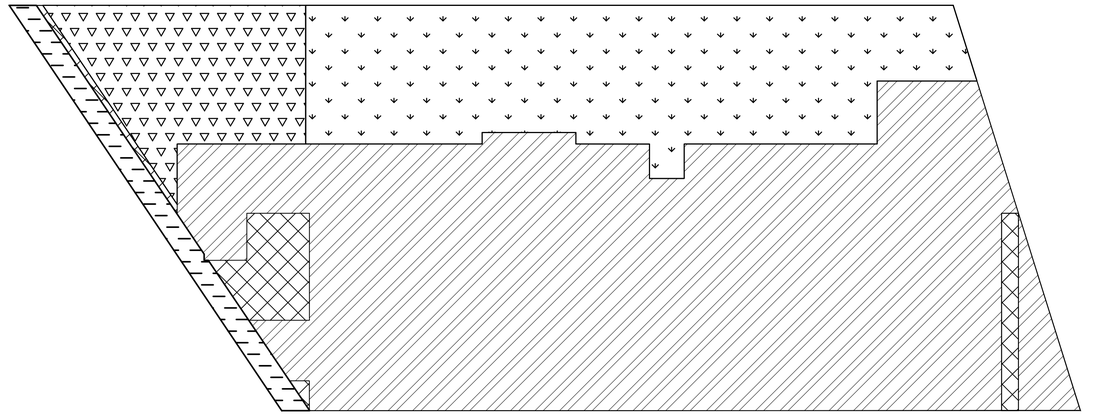
Treatment Train Effectiveness - Receiving Node85/60/45

	Sources	Residual Load	% Reduction
Flow (ML/yr)	0.276	0.188	31.7
Total Suspended Solids (kg/yr)	13.9	2.08	85
Total Phosphorus (kg/yr)	0.0472	0.0154	67.5
Total Nitrogen (kg/yr)	0.599	0.152	74.6
Gross Pollutants (kg/yr)	7.12	0.0427	99.4

MUSIC MODELING RESULT

SUMMARY:

THE PROPOSED STORMWATER QUALITY TREATMENT SYSTEM COMPRISES OF 56m² BIO-RETENTION BASIN AREA, 55m² FILTER MEDIA AREA 500mm THICKNESS AND THREE ENVIROPODS SERIES 200 FILTERS TO REMOVE DIFFERENT SOURCE POLLUTANTS. IT IS OUR OPINION THAT IF THESE MEASURES ARE IMPLEMENTED, THE PROPOSED DEVELOPMENT WILL COMPLY WITH THE INTENT OF PENRITH CITY COUNCIL REQUIREMENT. IN ADDITION, THE PROPOSED STORMWATER QUALITY TREATMENT TRAIN SHALL BE MAINTAINED AND SERVICES BY THE OWNERS OF THE PROPOSED DEVELOPMENT AT NO COST TO COUNCIL.



STORMWATER TREATMENT SUMMARY
SITE AREA = 662m²

"MUSIC" HAS BEEN USED FOR WATER QUALITY TREATMENT ANALYSIS IS PROVIDED STORMWATER360'S TREATMENT DESIGN FOR THE ABOVE MENTIONED SITE. THE CATCHMENT IN MUSIC IS MODELLED IN ACCORDANCE WITH THE FOLLOWING GUIDELINES & PARAMETERS:

- MUSIC VERSION 6.3.0
- "PENRITH CITY COUNCIL WSUD TECHNICAL GUIDELINES", VERSION 1 (DEC 2013)
- SF CHAMBER NODE MODELED WITH 'K' VALUES SET TO 1
- RAINFALL STATION 67113 PENRITH LAKES AWS, 6 MINUTES TIME STEP FROM 1999 TO 2008
- PENRITH CITY COUNCIL SOURCE NODE(S) ULTILIZING MODIFIED % IMPERVIOUS AREA, RAINFALL THRESHOLD, SOIL PROPERTIES & POLLUTANT CONCENTRATIONS
- NO DRAINAGE ROUTING BETWEEN NODES.

THE SYSTEM HAS BEEN MODELED TO MEET THE PENRITH CITY COUNCIL WSUD TECHNICAL GUIDELINE TARGET

TSS: 85% REDUCTION
TP: 60% REDUCTION
TN: 45% REDUCTION

TREATMENT DEVICES:
1. 56m² BIO-RETENTION BASIN AREA.
2. 55m² MEDIA FILTER 500mm THICKNESS.
3. 3 x No. ENVIROPOD SERIES 200 FILTERS

PAVED AREA TO BIO-RETENTION AREA 23.90 m²

ROOF AREA TO BIO-RETENTION AREA 385 m²

LANDSCAPE AREA TO BIO-RETENTION AREA 157.10 m²

PAVED AREA BYPASS BIO-RETENTION CHAMBER 21.10 m²

LANDSCAPE ARE BYPASS BIO-RETENTION AREA 62.90 m²

NOT FOR CONSTRUCTION

A1 0 1 2 3 4 5 6 7 8 9 10

No	AMENDMENT	ENG	DRAFT	DATE	No	AMENDMENT	ENG	DRAFT	DATE
A	FOR D.A. APPROVAL	N.L.	J.P.	08-08-18					

ARCHITECT
ANTOINE J. SAOUMA
Architect 7412
REGISTERED ARCHITECT NSW INSTITUTE OF ARCHITECTS

LOKA CONSULTING ENGINEERS
LOKA CONSULTING ENGINEERS.Pty Ltd
14A/8 AVENUE OF AMERICAS, NEWINGTON, NSW
www.lceng.com.au T: +61 2 8065 9689 F: +61 2 8065 9690
MOBILE: 0404 142 063 EMAIL: info@lceng.com.au

PROJECT
PROPOSED RESIDENTIAL DEVELOPMENT
1 STATION LANE,
PENRITH NSW

CONSENT AUTHORITY:
PENRITH CITY COUNCIL

SHEET SUBJECT
MUSIC RESULT AND DETIALS

PROJECT	1 STATION LANE, PENRITH NSW		
DATE	DRAWN	DESIGNED	CHECKED
AUG 18	J.P.	N.L.	N.L.
SCALE @ A1		JOB No	
NTS		18NL148	
AUTHORISED		DWG No	REV
NERMEIN LOKA		D06	A

PENRITH CITY COUNCIL

music*link*

MUSIC-*link* Report

Project Details		Company Details	
Project:	1 STATION LANE, PENRITH	**Company:**	LOKA CONSULTING ENGINEERS
Report Export Date:	08/08/2018	**Contact:**	LESLEY YE
Catchment Name:	1 Station Lane Penrith	**Address:**	14A/8 AVE OF THE AMERICAS, NEWINGTON, NSW, 2127
Catchment Area:	0.065ha	**Phone:**	02 8065 9689
Impervious Area*:	66.15%	**Email:**	CIVIL3@LCENG.COM.AU
Rainfall Station:	67113 PENRITH		
Modelling Time-step:	6 Mnutes		
Modelling Period:	1/01/1999 - 31/12/2008 11:54:00 PM		
Mean Annual Rainfall:	691mm		
Evapotranspiration:	1158mm		
MUSIC Version:	6.3.0		
MUSIC-link data Version:	6.31		
Study Area:	Penrith		
Scenario:	Penrith Development		

* takes into account area from all source nodes that link to the chosen reporting node, excluding Import Data Nodes

Treatment Train Effectiveness		Treatment Nodes		Source Nodes	
Node: Receiving Node85/60/45	**Reduction**	**Node Type**	**Number**	**Node Type**	**Number**
flow	31.7%	Bio Retention Node	1	Urban Source Node	5
TSS	85.4%	GPT Node	2		
TP	67.8%				
TN	74.6%				
GP	99.4%				

Comments

Bio-retention/Raingarden with 55m2 minimum surface area and filter media (500mm depth) to be provided.

2 no. Stormwater360 Enviropods are applied.

PENRITH CITY COUNCIL

music*link*

Passing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Bio	52m2 Raingarden	Hi-flow bypass rate (cum/sec)	None	99	0.009
Bio	52m2 Raingarden	PET Scaling Factor	2.1	2.1	2.1
GPT	1XEnviropod 200 (BCC 2015)	Hi-flow bypass rate (cum/sec)	None	99	0.02
GPT	Copy of 1XEnviropod 200 (BCC 2015)	Hi-flow bypass rate (cum/sec)	None	99	0.02
Receiving	Receiving Node85/60/45	% Load Reduction	None	None	31.7
Receiving	Receiving Node85/60/45	GP % Load Reduction	90	None	99.4
Receiving	Receiving Node85/60/45	TN % Load Reduction	45	None	74.6
Receiving	Receiving Node85/60/45	TP % Load Reduction	60	None	67.8
Receiving	Receiving Node85/60/45	TSS % Load Reduction	85	None	85.4
Urban	Landscape - 157.1m² (100% per.)	Area Impervious (ha)	None	None	0
Urban	Landscape - 157.1m² (100% per.)	Area Pervious (ha)	None	None	0.016
Urban	Landscape - 157.1m² (100% per.)	Total Area (ha)	None	None	0.016
Urban	Paved - 21.1m² (100% Imp.)	Area Impervious (ha)	None	None	0.002
Urban	Paved - 21.1m² (100% Imp.)	Area Pervious (ha)	None	None	0
Urban	Paved - 21.1m² (100% Imp.)	Total Area (ha)	None	None	0.002
Urban	Paved - 23.9m² (100% Imp.)	Area Impervious (ha)	None	None	0.002
Urban	Paved - 23.9m² (100% Imp.)	Area Pervious (ha)	None	None	0
Urban	Paved - 23.9m² (100% Imp.)	Total Area (ha)	None	None	0.002
Urban	POS Landscape - 62.9m² (100% per.)	Area Impervious (ha)	None	None	0
Urban	POS Landscape - 62.9m² (100% per.)	Area Pervious (ha)	None	None	0.006
Urban	POS Landscape - 62.9m² (100% per.)	Total Area (ha)	None	None	0.006
Urban	Roof - 385m² (100% Imp.)	Area Impervious (ha)	None	None	0.039
Urban	Roof - 385m² (100% Imp.)	Area Pervious (ha)	None	None	0
Urban	Roof - 385m² (100% Imp.)	Total Area (ha)	None	None	0.039

Only certain parameters are reported when they pass validation

NOTE: A successful self-validation check of your model does not constitute an approved model by Penrith City Council
MUSIC-*link* now in MUSIC by eWater – leading software for modelling stormwater solutions

PENRITH CITY COUNCIL

music*link*

NOTE: A successful self-validation check of your model does not constitute an approved model by Penrith City Council
MUSIC-*link* now in MUSIC by eWater – leading software for modelling stormwater solutions

NOT FOR CONSTRUCTION

A1 0 1 2 3 4 5 6 7 8 9 10

No	AMENDMENT	ENG	DRAFT	DATE
A	FOR D.A. APPROVAL	N.L.	J.P.	08-08-18

ARCHITECT
ANTOINE J. SAOUMA
Architect 7412
REGISTERED ARCHITECT NSW INSTITUTE OF ARCHITECTS

LOKA CONSULTING ENGINEERS.Pty Ltd
14A/8 AVENUE OF AMERICAS, NEWINGTON, NSW
T: +61 2 8065 9689 F: +61 2 8065 9690
MOBILE: 0404 142 063 EMAIL: info@lceng.com.au

PROJECT
PROPOSED RESIDENTIAL DEVELOPMENT
1 STATION LANE,
PENRITH NSW

CONSENT AUTHORITY:
PENRITH CITY COUNCIL

SHEET SUBJECT
MUSIC LINK REPORT

PROJECT	1 STATION LANE, PENRITH NSW		
DATE: AUG 18	DRAWN: J.P.	DESIGNED: N.L.	CHECKED: N.L.
SCALE @ A1: NTS		JOB No: 18NL148	
AUTHORISED: NERMEIN LOKA		DWG No: D07	REV: A