

# STORMWATER CONCEPT PLAN

## AT 54 BARDO ROAD, NEWPORT, 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 AUTHORITIES BEFORE COMMENCEMENT OF ANY WORKS



### GENERAL NOTES

- ALL LINES ARE TO BE MIN. 1000 UPVC @ MIN 1.0% GRADE UNLESS NOTED OTHERWISE.
- 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.
- ALL PIPES TO HAVE MIN 200mm COVER IF LOCATED WITHIN PROPERTY.
- ALL PITS IN DRIVEWAYS BE HEAVY DUTY GRATES. DIRECT SURFACE FLOW TO ALL GRATED SURFACE INLET PITS.
- ALL WORK DO BE DONE IN ACCORDANCE WITH COUNCIL'S DCP AND TO COUNCIL'S SATISFACTION.
- 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.
- THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL, LANDSCAPE AND STRUCTURAL PLANS.
- ANY DISCREPANCIES OR OMISSIONS SHALL BE REFERRED TO THE DESIGN ENGINEER AND COUNCIL ENGINEER FOR RESOLUTION.
- ALL PITS OR GRATES IN TRAFFICABLE AREAS TO BE HEAVY DUTY.
- ALL GUTTERS WILL BE FITTED WITH LEAF GUARDS AND SHOULD BE INSPECTED AND CLEANED TO ENSURE LEAF LITTER CANNOT ENTER THE DOWNPIPES
- ALL PIT GRATES ON SITE MUST BE HINGED WITH J-BOLT LOCKDOWN SYSTEM.
- 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.
- PROVIDE GRATED DRAIN IN ALL OPEN AREAS TO THE SKY INCLUDING STAIRS AND CONNECT TO NEAREST STORMWATER SYSTEM.
- PROVIDE EMERGENCY SPITTERS TO ALL BALCONIES.
- PROVIDE AGG PIPE IN ALL LANDSCAPE AREA AND CONNECT TO THE STORMWATER DRAINAGE SYSTEM.
- PROVIDE AGG PIPE BEHIND THE RETAINING WALL AND CONNECT TO THE STORMWATER DRAINAGE SYSTEM.
- TOP OF KERB AND INVERT OF GUTTER LEVELS & SERVICES ARE TO BE CHECKED ON SITE PRIOR ANY SITE WORK. INCLUDING CONSTRUCTION OF INTERNAL DRAINAGE SYSTEM. CONTACT ENGINEER IMMEDIATELY IF LEVEL VARIES FROM DESIGN DRAWING.
- ALL RETAINING WALL FOR ABOVE GROUND OSD/BIORETENTION BASIN TO BE FULLY CONSTRUCTED WITHIN THE PROPERTY BOUNDARY.

SURFACE INLET PIT DIMENSION				
DEPTH TO INVERT OF OUTLET	MINIMUM INTERNAL DIMENSIONS (mm)			
	RECTANGULAR		CIRCULAR	
	WIDTH	LENGTH	DIAMETER	
≤450	350	350	-	
>450 ≤600	450	450	600	
>600 ≤900	600	600	900	
>900 ≤1200	600	900	1000	
>1200	900	900	1000	

**ON-SITE DETENTION NOTE:**  
 THE OSD BASIN/TANK IS TO BE BUILT TO THE CORRECT LEVEL & SIZE AS PER THIS DESIGN. ANY VARIATIONS ARE TO BE DONE UNDER CONSULTATION FROM OUR OFFICE ONLY. ANY AMENDMENTS WITHOUT OUR APPROVAL WOULD RESULT IN ADDITIONAL FEES FOR REDESIGN AT OC STAGE OR IF A SOLUTION CANNOT BE FOUND, RECONSTRUCTION IS REQUIRED UNDER THE CONTRACTOR'S EXPENSES.

### 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 1000 DOWN PIPE (U.N.O.)
- VD VERTICAL DROP PIPE
- VR VERTICAL RISER
- IO INSPECTION OPENING
- //// MASONRY RETAINING WALL
- FW FLOOR WASTE 3000
- RWO RAINWATER OUTLET 1500
- DDO DISH DRAIN OUTLET 1000
- ▣ GRATED INLET PIT
- ▣ GRATED DRAIN
- ➔ OVERLAND FLOW PATH
- ➔SP SPREADER
- ⊗ES EMERGENCY SPITTER

### ABBREVIATIONS

- CL CENTRELINE LEVEL
- CONV. PIPE CONVERTER
- D/S DOWNSTREAM
- DDO DISH DRAIN OUTLET
- DN DIAMETER
- DP DOWNPIPE
- EX. EXISTING
- FFL FINISHED FLOOR LEVEL
- GL GROUND LEVEL
- GMS GALVANISED MILD STEEL
- GSIP GROUND SURFACE INLET PIT
- GTD GRATED TRENCH DRAIN
- H.H HEADHEIGHT
- HL HIGH LEVEL
- IL INVERT LEVEL
- IO INSPECTING OPENING
- JP JUNCTION PIT
- KIP KERB INLET PIT
- LL LOW LEVEL
- O/F OVERFLOW
- OB OBVERT LEVEL
- OSD ON-SITE DETENTION
- PROP. PROPOSED
- PVC POLYVINYLCHLORIDE
- RL REDUCE LEVEL
- RW RETAINING WALL
- RWT RAINWATER TANK
- S/S STAINLESS STEEL
- SL SURFACE LEVEL
- STW STORMWATER
- TK TOP OF KERB
- U/S UPSTREAM

### DRAWING SCHEDULE

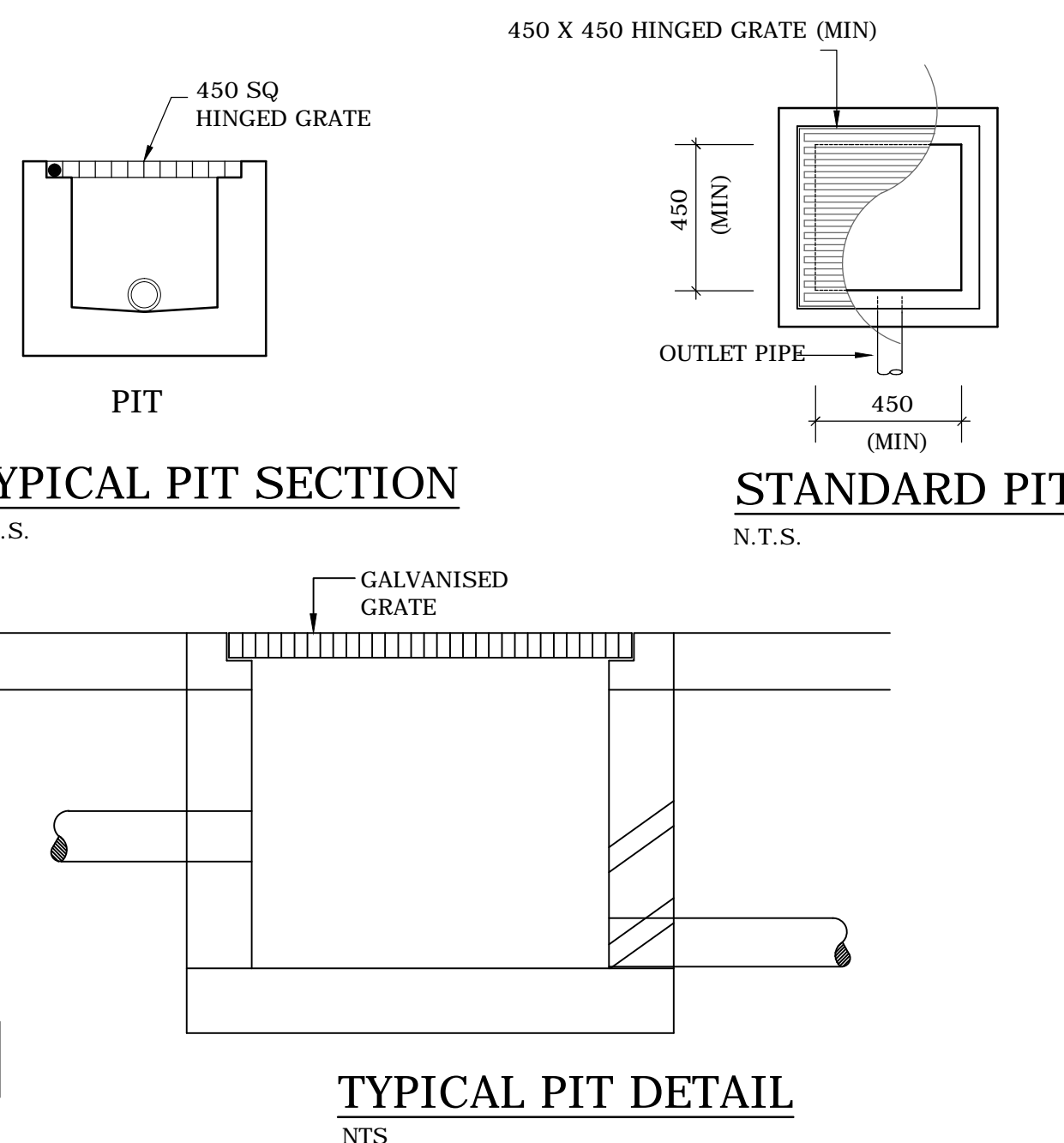
DRAWING No.	DRAWING TITLE
DO0	COVER SHEET, LEGEND & DRAWING SCHEDULE
DO1	BASEMENT STORMWATER DRAINAGE PLAN
DO2	BASEMENT STORMWATER DRAINAGE DETAILS
DO3	GROUND FLOOR/SITE STORMWATER DRAINAGE PLAN
DO4	GROUND FLOOR/SITE STORMWATER DRAINAGE DETAILS
DO5	EROSION AND SEDIMENT CONTROL PLAN AND DETAILS

**NOTES: DRAINAGE LINES**  
 DRAINAGE LINES SHOWN TO COLLECT SURFACE WATER  
 DRAINAGE LINES SHOWN TO COLLECT ROOF WATER ONLY TO RAINWATER TANK

DP : 1000 DOWN PIPE U.N.O.  
 --- : STORMWATER PIPE @1% MIN. U.N.O.  
 REFER TO AS.3500 PART 3 TABLE 7.2  
 P1 : 1000 UPVC PIPE AT 1.0% MIN. GRADE  
 P2 : 1500 UPVC PIPE AT 1.0% MIN. GRADE  
 P3 : 2250 UPVC PIPE AT 0.5% MIN. GRADE  
 P4 : 3000 UPVC PIPE AT 0.4% MIN. GRADE  
 P5 : 3750 UPVC PIPE AT 0.4% MIN. GRADE  
 P6 : 4500 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.



### SITE OF WORK



LOCALITY SKETCH  
 NOT TO SCALE



1:100@A1

NOT FOR CONSTRUCTION

<p>THIS DRAWING IS THE PROPERTY OF LOKA CONSULTING ENGINEERS AND MUST NOT BE RETAINED, COPIED OR USED WITHOUT THE WRITTEN CONSENT OF THE COMPANY</p>				<p>ARCHITECT  <b>GILES TRIBE</b>                  Level 1, 1 Chandos Street                  ST LEONARDS NSW 2066                  P 61 2 9244 5005                  E gtr@gilestribe.com.au                  Giles Tribe Pty Ltd ABN 50 001259 507</p>		<p><b>LOKA CONSULTING ENGINEERS</b> Pty Ltd                  11/1/8 AVENUE OF THE AMERICAS, NEWINGTON NSW 2127                  T +61 2 9748 8742/8065 9689 M 0404 142 063                  F +61 2 9748 1290/8065 9690                  EMAIL: info@lcoeng.com.au www.lcoeng.com.au</p>		<p>PROJECT                  PROPOSED SENIOR LIVING                  54 BARDO ROAD,                  NEWPORT, NSW</p>		<p>SHEET SUBJECT                  COVER SHEET, LEGEND AND                  DRAWING SCHEDULE</p>		<p>PROJECT 54 BARDO ROAD, NEWPORT</p> <table border="1"> <tr> <td>DATE AUG 21</td> <td>DRAWN L.L.</td> <td>DESIGNED L.Y.</td> <td>CHECKED N.L.</td> </tr> <tr> <td colspan="2">SCALE @ A1 N.T.S.</td> <td colspan="2">JOB No 20NL103</td> </tr> <tr> <td colspan="2">AUTHORISED NERMEIN LOKA</td> <td>DWG No D00</td> <td>REV B</td> </tr> </table>				DATE AUG 21	DRAWN L.L.	DESIGNED L.Y.	CHECKED N.L.	SCALE @ A1 N.T.S.		JOB No 20NL103		AUTHORISED NERMEIN LOKA		DWG No D00	REV B
DATE AUG 21	DRAWN L.L.	DESIGNED L.Y.	CHECKED N.L.																								
SCALE @ A1 N.T.S.		JOB No 20NL103																									
AUTHORISED NERMEIN LOKA		DWG No D00	REV B																								
<p>FOR S4.55 L.Y. L.L. 20-08-21</p>		<p>FOR D.A. APPROVAL L.Y. L.Y. 20-08-20</p>																									
No	AMENDMENT	ENG	DRAFT	DATE	No	AMENDMENT	ENG	DRAFT	DATE																		



**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 AUTHORITIES BEFORE COMMENCEMENT OF ANY WORKS



**NOTES**

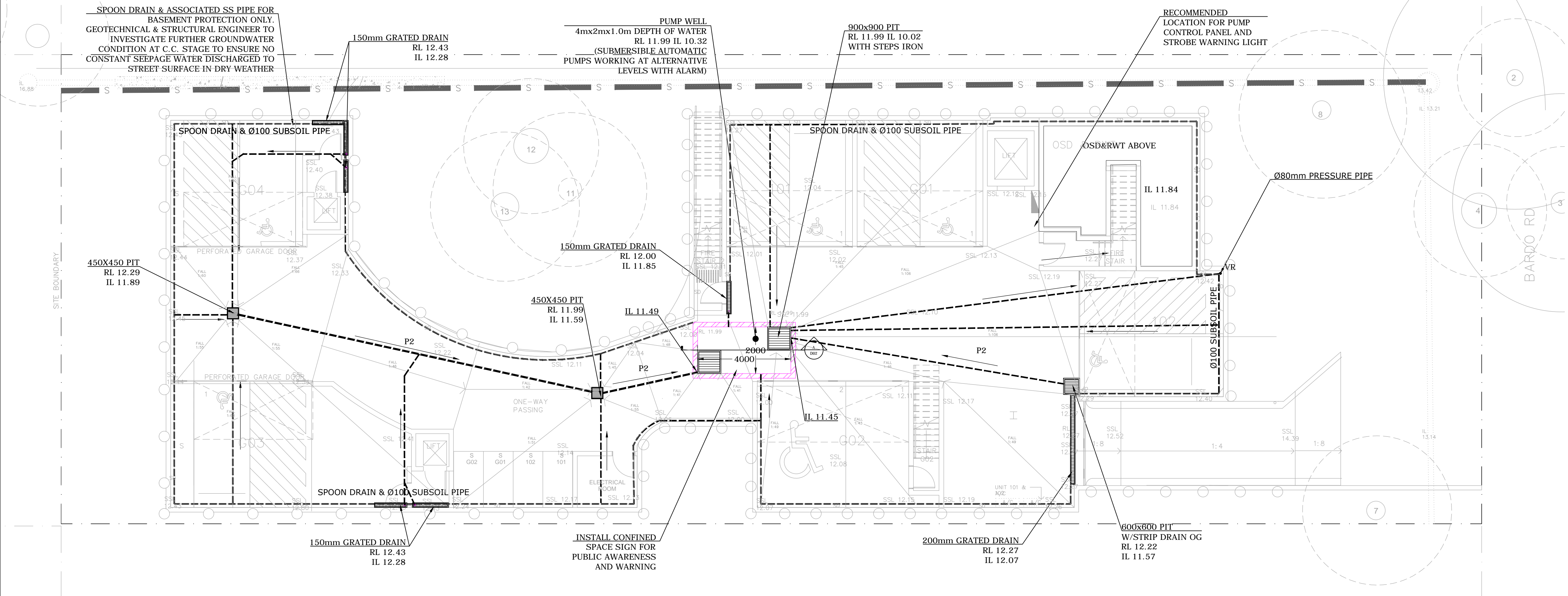
1. ALL LINES ARE TO BE MIN. 1000 UPVC @ MIN 1.0% GRADE UNLESS NOTED OTHERWISE.
2. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE & LEVEL ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS. ALL DESIGN LEVELS SHOWN ON PLAN SHALL BE VERIFIED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORK.
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
- SSD SUBSOIL DRAINAGE PIPE
- STORMWATER DRAINAGE PIPE
- DOWNPIPE TO RAINWATER TANK
- DP 1000 DOWN PIPE (U.N.O.)
- VD 1000 VERTICAL DROP (U.N.O.)
- VR VERTICAL RISER
- IO INSPECTION OPENING
- MASONRY RETAINING WALL
- FW FLOOR WASTE 3000
- DDO DISH DRAIN OUTLET 1000
- GRATED INLET PIT
- GRATED DRAIN
- OVERLAND FLOW PATH
- SP SPREADER
- ES EMERGENCY SPITTER

VD : 1000 VERTICAL DROP (U.N.O.)  
 STORMWATER PIPE @1% MIN. U.N.O.  
 REFER TO AS 3500 PART 3 TABLE 7.2  
 P1 : 1000 UPVC PIPE AT 1.0% MIN. GRADE  
 P2 : 1500 UPVC PIPE AT 1.0% MIN. GRADE  
 P3 : 2250 UPVC PIPE AT 0.5% MIN. GRADE

**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.



**BASEMENT STORMWATER DRAINAGE PLAN**

1:100@A1  
**NOT FOR CONSTRUCTION**

No	AMENDMENT	ENG	DRAFT	DATE	No	AMENDMENT	ENG	DRAFT	DATE
F	FOR S4.55	L.Y.	L.L.	10-08-21					
E	FOR S4.55	L.Y.	L.L.	03-08-21					
D	FOR D.A. APPROVAL/ARCH UPDATES	L.Y.	L.Y.	06-04-21					
C	FOR D.A. APPROVAL/ARCH UPDATES	L.Y.	L.Y.	17-03-21					
B	FOR D.A. APPROVAL	L.Y.	L.Y.	01-09-20	H	FOR S4.55	L.Y.	L.L.	08-10-21
A	FOR D.A. APPROVAL	L.Y.	L.Y.	26-08-20	G	FOR S4.55	L.Y.	L.L.	12-08-21

THIS DRAWING IS THE PROPERTY OF LOKA CONSULTING ENGINEERS AND MUST NOT BE RETAINED, COPIED OR USED WITHOUT THE WRITTEN CONSENT OF THE COMPANY

**GILES TRIBE**  
 ARCHITECT  
 Copyright Loka Consulting Engineers as date of issue  
 Level 1, 1 Chandos Street  
 ST LEONARDS NSW 2065  
 P 61 2 9264 5005  
 E gtr@gilestribe.com.au  
 Giles Tribe Pty Ltd ABN 50 001259 507

**LOKA CONSULTING ENGINEERS** Pty Ltd  
 14/8 AVENUE OF THE AMERICAS, NEWINGTON NSW 2127  
 T +61 2 9748 8742/8065 9689 M 0404 162 063  
 F +61 2 9748 8290/8065 9690  
 E MAIL: info@lcaeng.com.au www.Lcaeng.com.au  
 COPYRIGHT: THIS DESIGN AND PLANS ARE NOT TO BE USED OR REPRODUCED WHOLLY OR IN PART WITHOUT WRITTEN PERMISSION OF LOKA CONSULTING ENGINEERS.

PROJECT PROPOSED SENIOR LIVING  
 54 BARDO ROAD, NEWPORT, NSW  
 CONSENT AUTHORITY: NORTHERN BEACHES-FORMER PITWATER

SHEET SUBJECT  
**BASEMENT STORMWATER DRAINAGE PLAN**

PROJECT 54 BARDO ROAD, NEWPORT			
DATE	DRAWN	DESIGNED	CHECKED
OCT 21	L.L.	L.Y.	N.L.
SCALE @ A1 1:100 U.N.O		JOB No 20NL103	
AUTHORISED NERMEIN LOKA		DWG No D01	REV H



# 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 49.10mm/hr, AREA DRAINING TOWARDS SUMP IS 70.1m<sup>2</sup>  
 $Q = CIA/3600 = 1.0 \times 49.1 \times 70.1 / 3600 = 0.956 \text{ L/S}$   
 VOLUME REQUIRED IS  $0.956 \times (2 \times 60 \times 60) = 6884 \text{ L}$   
 STORAGE PROVIDED  $4000 \times 2000 \times 1000 = 8000 \text{ L}$   
 THEREFORE ADEQUATE STORAGE PROVIDED  
 PUMP OUT RATE BASED ON 100YR 5MINS. STORM = 273mm/hr  
 $Q = CIA/3600 = 1.0 \times 273 \times 70.1 / 3600 = 5.32 \text{ L/s}$   
 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 7m HEAD

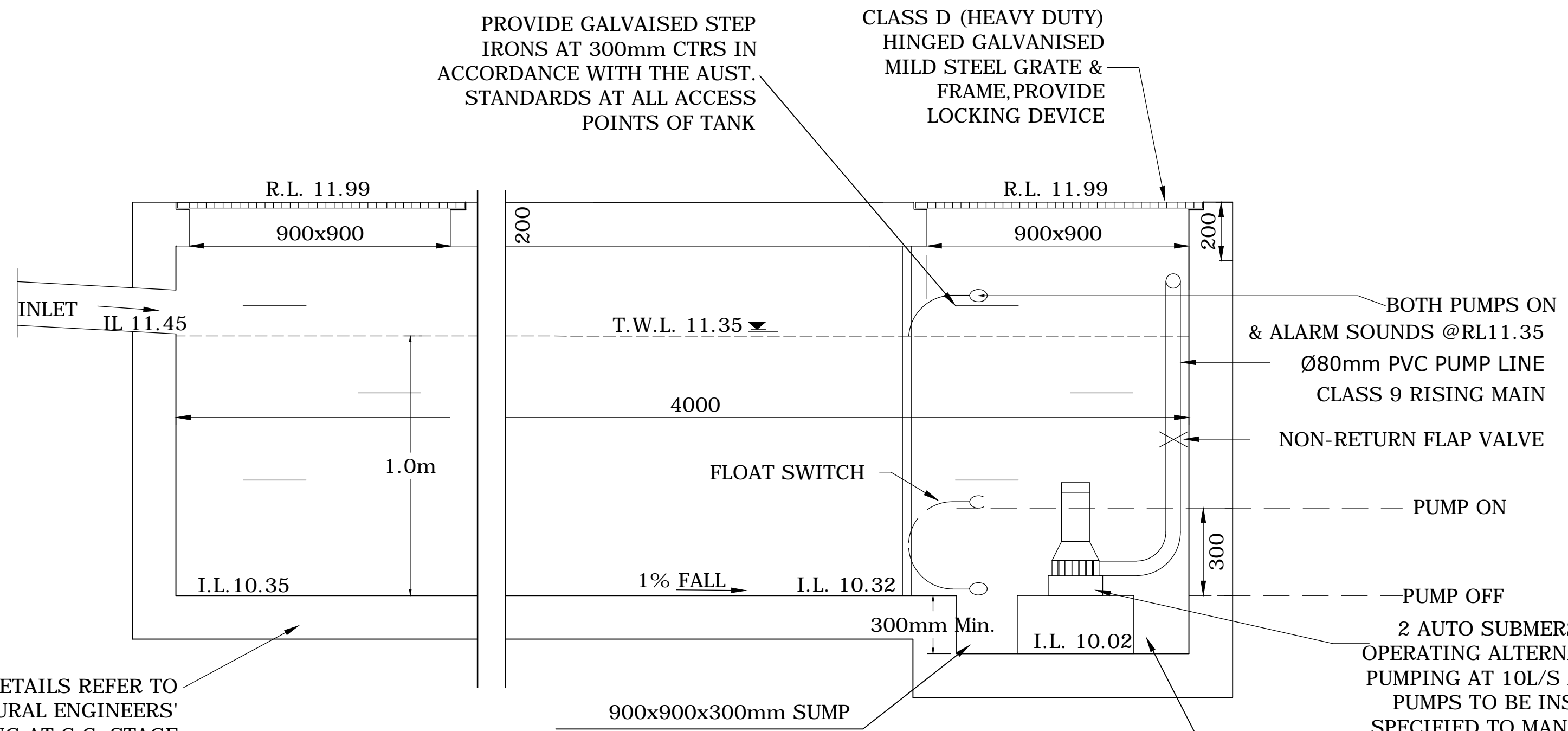
OWNER TO MAINTAIN THIS AREA CLEAN REGULARLY FROM SILTATION EVERY 3-6 MONTHES

**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 AUTHORITIES BEFORE COMMENCEMENT OF ANY WORKS



## NOTES

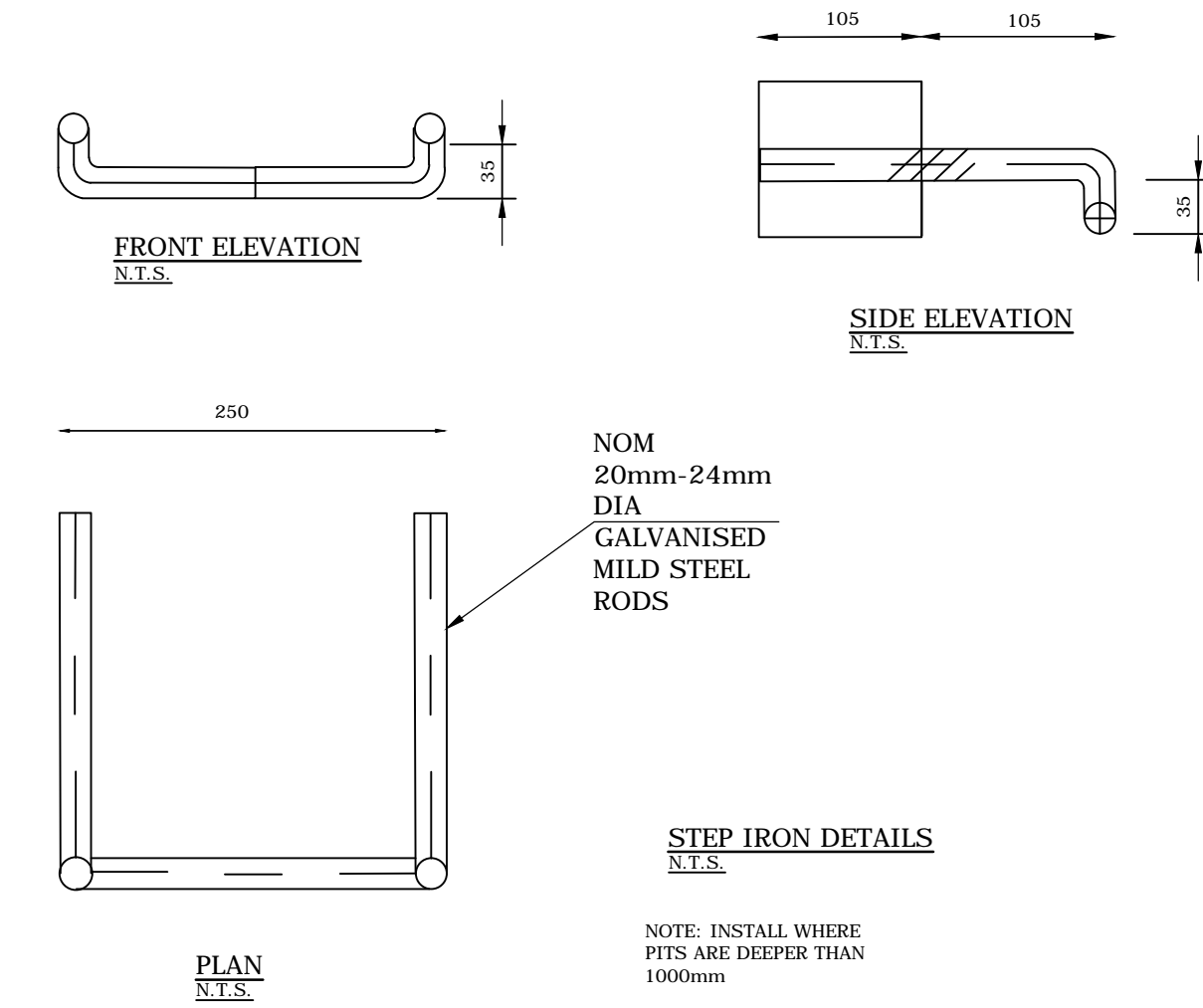
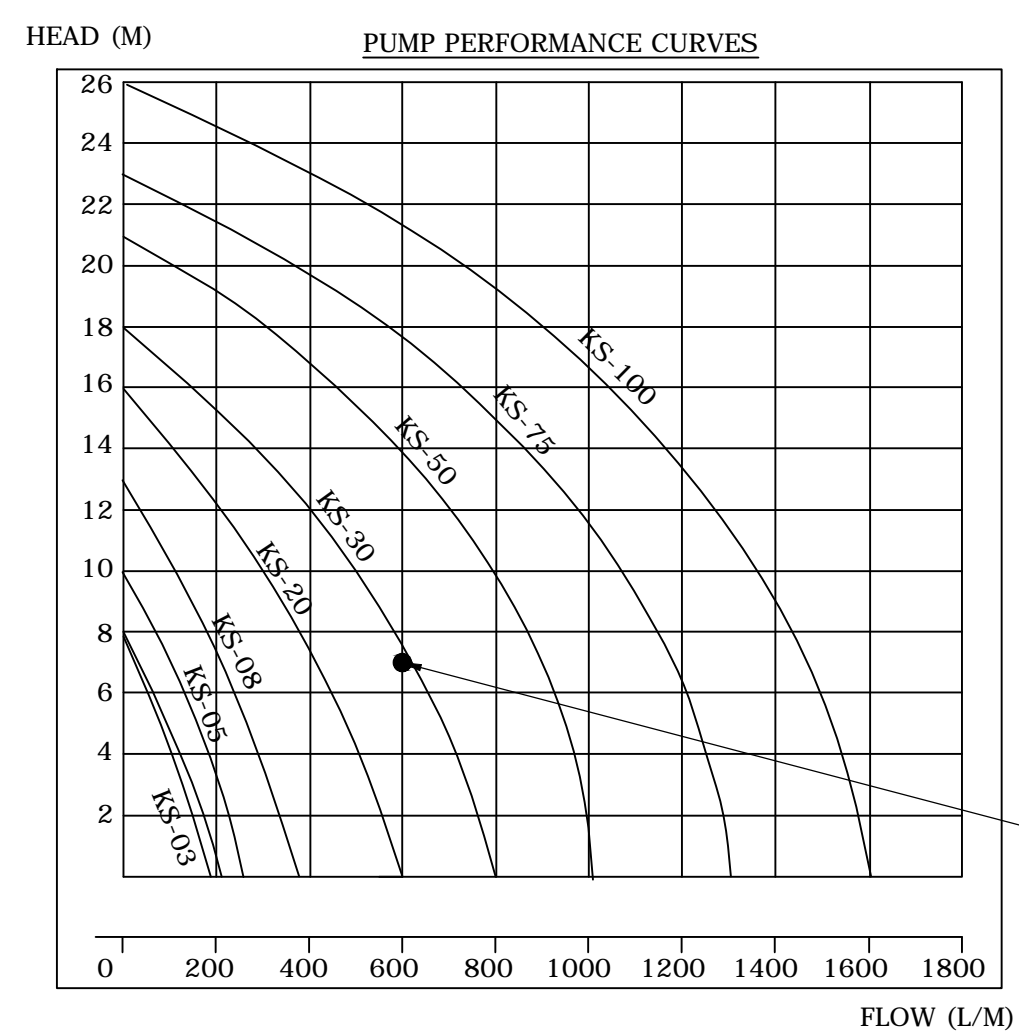
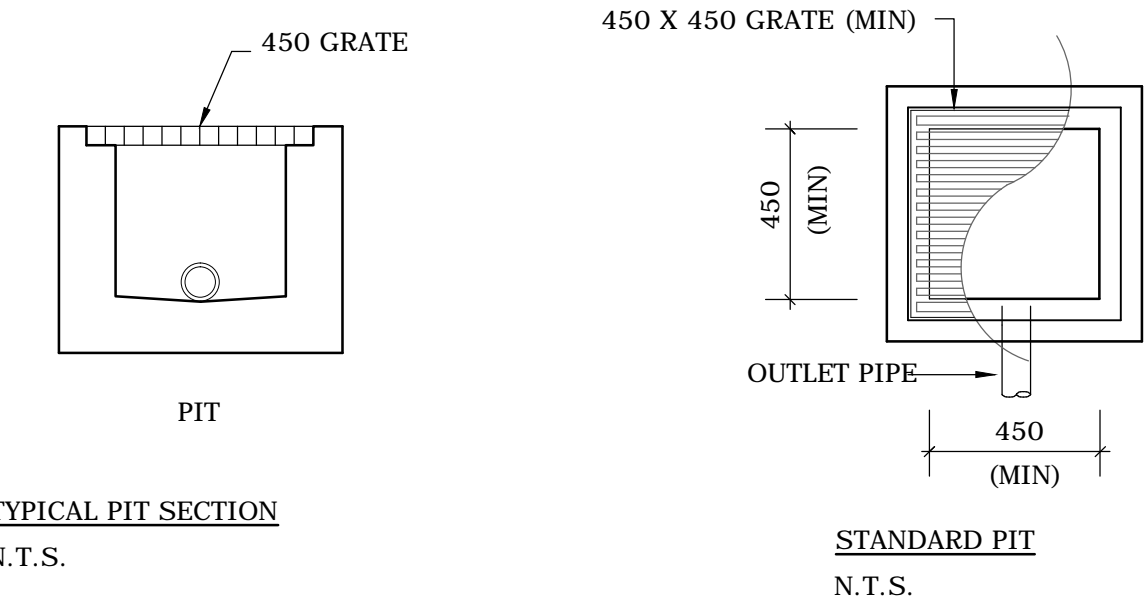
1. ALL LINES ARE TO BE MIN. 1000 UPVC @ MIN 1.0% GRADE UNLESS NOTED OTHERWISE.
2. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE & LEVEL ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS. ALL DESIGN LEVELS SHOWN ON PLAN SHALL BE VERIFIED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORK.
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



**A**  
**D01**  
 SECTION  
 N.T.S.

TYPICAL SECTION A THROUGH PUMP PIT  
 N.T.S.  
 PUMP WELL VOLUME 8.0cum

DETAILS REFER TO STRUCTURAL ENGINEERS' DRAWING AT C.C. STAGE

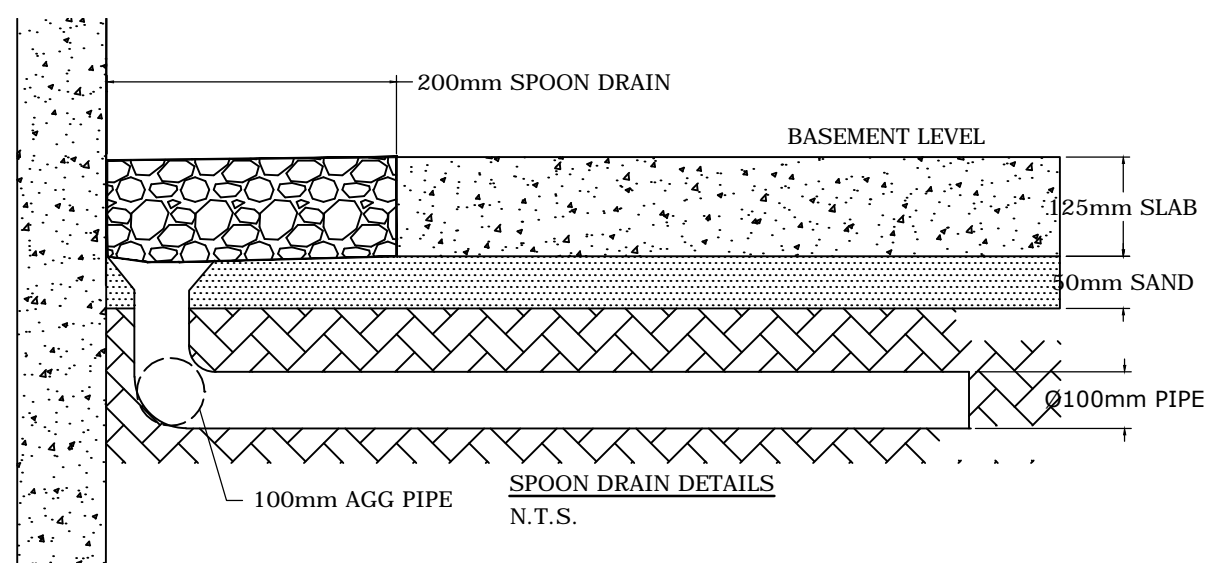
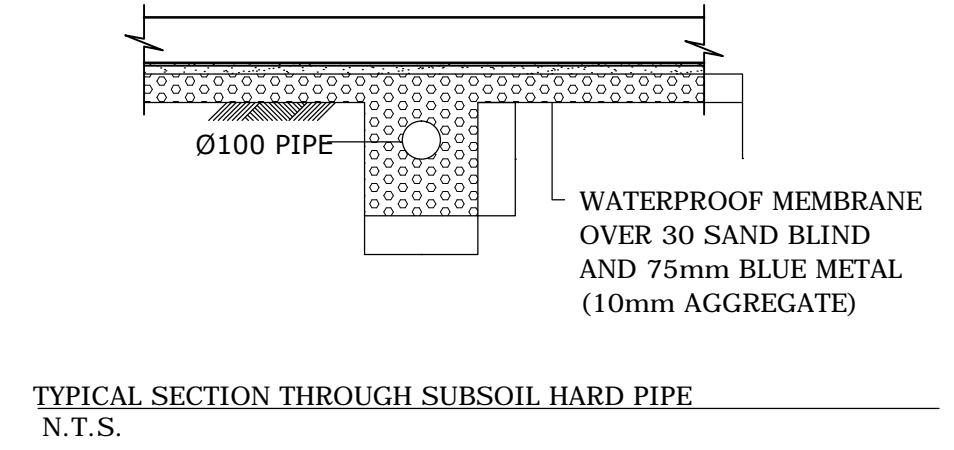


WIDTH 200mm

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.

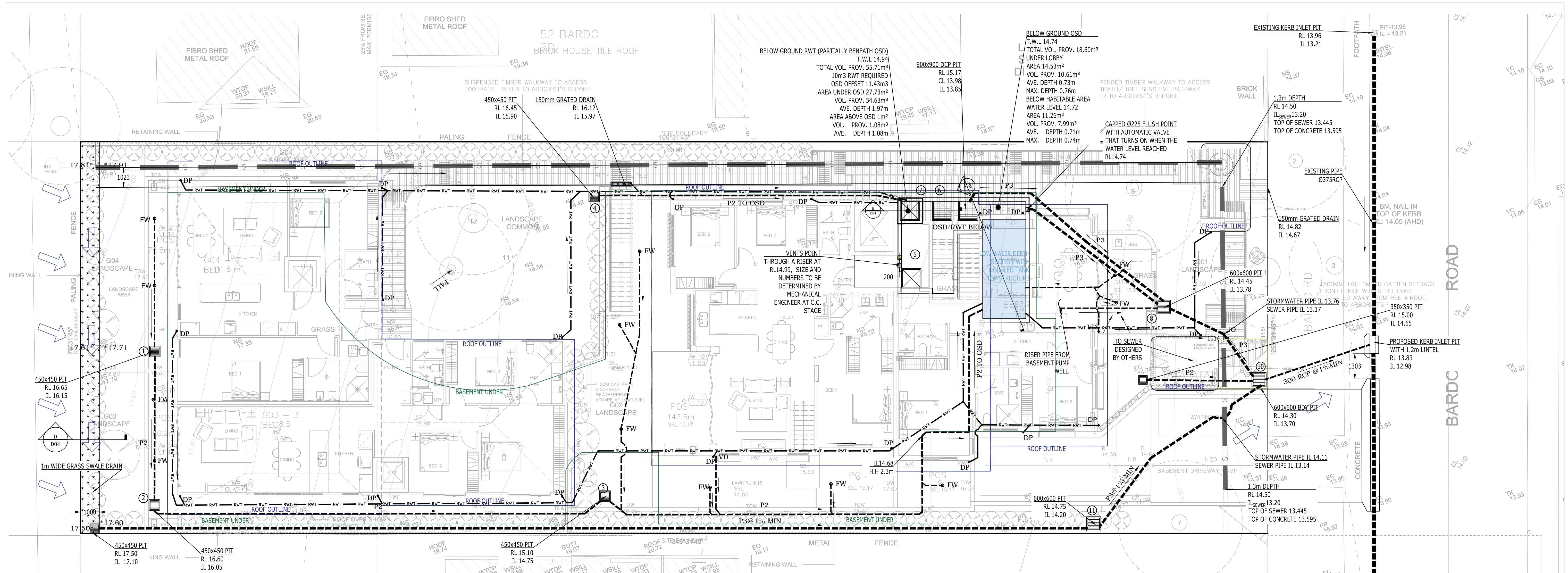
NOTE:  
 TO BE CONFIRMED BY STRUCTURAL ENGINEERS PRIOR CONSTRUCTION.

Type	Output		Outlet		Rated		Maximum		Weigh	Dimension		
	HP	kW	mm	Inch	Head Capacity	Head Capacity	Head Capacity	Capacity		M	L(mm)	W(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

1:100@A1  
 NOT FOR CONSTRUCTION

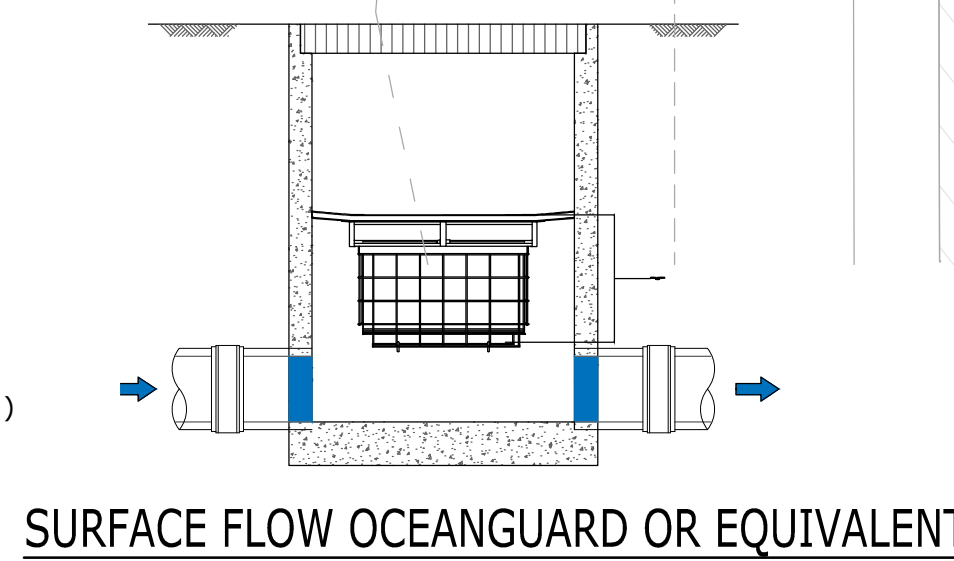
THIS DRAWING IS THE PROPERTY OF LOKA CONSULTING ENGINEERS AND MUST NOT BE RETAINED, COPIED OR USED WITHOUT THE WRITTEN CONSENT OF THE COMPANY				ARCHITECT <b>GILES TRIBE</b> Level 1, 1 Chandos Street ST LEONARDS NSW 2066 P 41 2 9244 5005 E g@lga.com.au		PROJECT PROPOSED SENIOR LIVING 54 BARDO ROAD, NEWPORT, NSW		SHEET SUBJECT BASEMENT STORMWATER DRAINAGE DETAILS		PROJECT 54 BARDO ROAD, NEWPORT											
E FOR S4.55 L.Y. L.Y. 12-08-21		D FOR S4.55 L.Y. L.Y. 10-08-21		C FOR S4.55 L.Y. L.Y. 02-08-21		B FOR D.A. APPROVAL L.Y. L.Y. 01-09-20		A FOR D.A. APPROVAL L.Y. L.Y. 26-08-20		DATE AUG 21		DRAWN L.Y.		DESIGNED L.Y.		CHECKED N.L.					
No AMENDMENT ENG DRAFT DATE No AMENDMENT ENG DRAFT DATE				Nominated Architects: Mark G Broadley (9823) Stuart D Hill (6499) Michael Aaron Vega (8004)				LOKA CONSULTING ENGINEERS 114/8 AVENUE OF THE AMERICAS, NEWINGTON NSW 2127 T. +61 2 9748 8742/8065 9689 M. 0404 142 063 F. +61 2 9748 8290/8065 9690 EMAIL: info@lce.com.au www.lce.com.au				SCALE @ A1 N.T.S.		JOB No 20NL103		AUTHORISED NERMEIN LOKA		DWG No D02		REV E	





**GROUND FLOOR/SITE STORMWATER DRAINAGE PLAN**

- SYMBOLS**
- F.F.L. FINISHED FLOOR LEVEL
  - T.K. TOP OF KERB
  - RL PIT SURFACE LEVEL
  - IL INVERT LEVEL
  - SSD SUBSOIL DRAINAGE PIPE
  - 100Ø STORMWATER DRAINAGE PIPE (U.N.O.)
  - 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



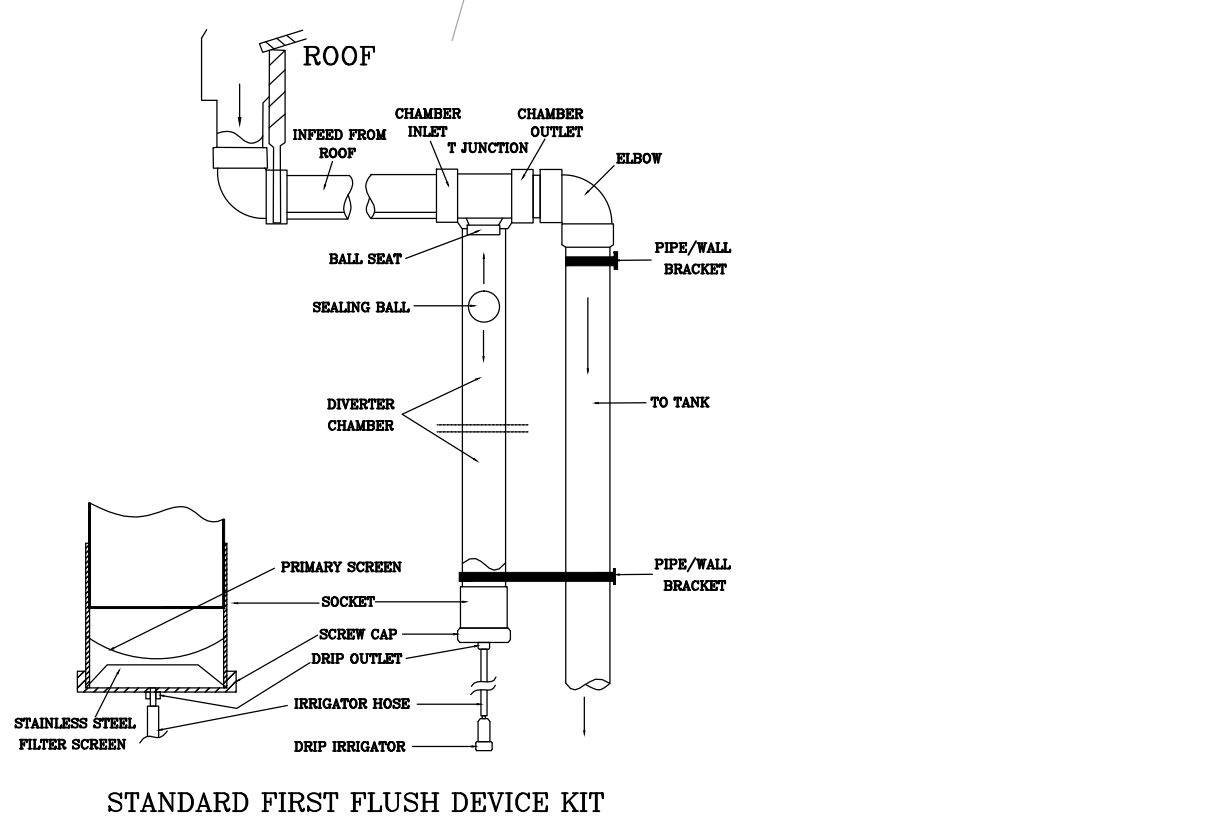
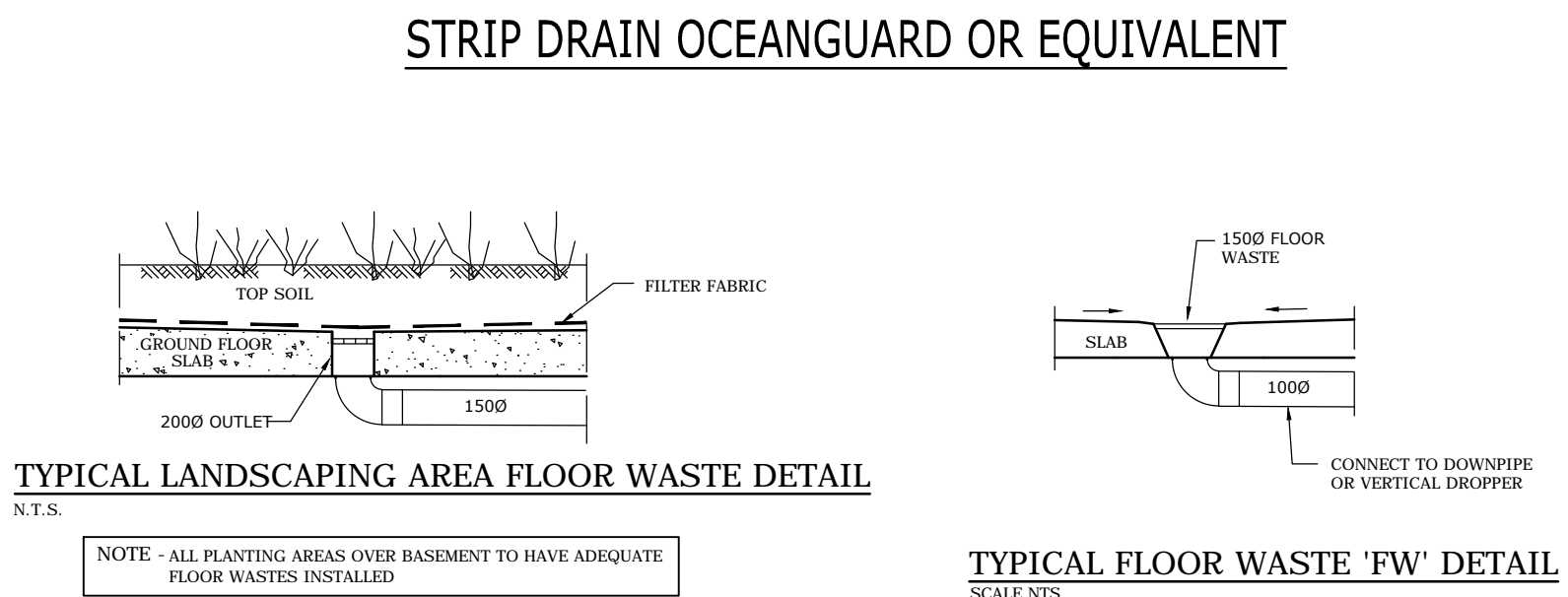
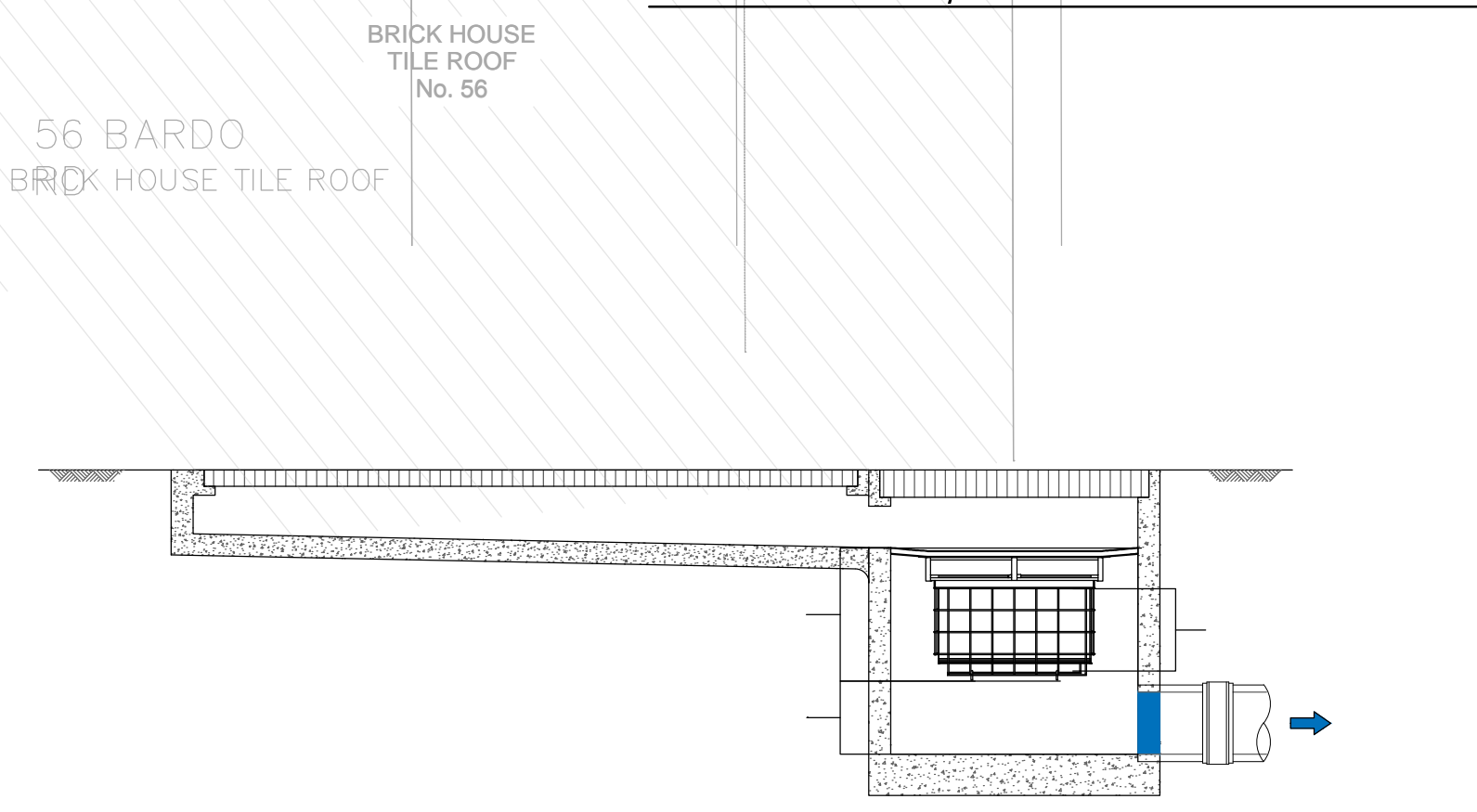
**WATER QUALITY:**  
SITE AREA <1500m<sup>2</sup>

FOR SURFACE INLET PIT NO. 1-4, 8, 10 & 11, LITTER TRAP/BASKET (PRIMARY TREATMENT DEVICES) TO BE PROVIDED. SIMILAR OR EQUIVALENT PRODUCT CAN BE INSTALLED.

PIT IN THE BASEMENT FOR DRIVEWAY DRAINAGE IS TO BE PROVIDED WITH A LITTER TRAP PRIOR CONNECTING INTO PUMP WELL.

ROOF GUTTER TO BE PROVIDED WITH LEAF SCREEN. ALL ROOF DOWN PIPES TO BE CONNECTED TO FIRST-FLUSH DEVICES PRIOR TO RAINWATER TANK.

OSD OUTLET IS TO BE PROVIDED WITH MESH SCREEN



**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 AUTHORITIES BEFORE COMMENCEMENT OF ANY WORKS



**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.

1:100@A1

**NOT FOR CONSTRUCTION**

No	AMENDMENT	ENG	DRAFT	DATE	No	AMENDMENT	ENG	DRAFT	DATE
F	FOR D.A. APPROVAL/COUNCIL COMM.	L.Y.	L.Y.	26-04-21	L	FOR S4.55	L.Y.	L.L.	08-10-21
E	FOR D.A. APPROVAL/COUNCIL COMM.	L.Y.	L.Y.	06-04-21	K	FOR S4.55	L.Y.	L.L.	27-09-21
D	FOR D.A. APPROVAL/COUNCIL COMM.	L.Y.	L.Y.	29-03-21	J	FOR S4.55	L.Y.	L.L.	20-09-21
C	FOR D.A. APPROVAL/ARCH UPDATES	L.Y.	L.Y.	17-03-21	I	FOR S4.55	L.Y.	L.L.	12-08-21
B	FOR D.A. APPROVAL	L.Y.	L.Y.	01-09-20	H	FOR S4.55	L.Y.	L.L.	12-08-21
A	FOR D.A. APPROVAL	L.Y.	L.Y.	26-08-20	G	FOR S4.55	L.Y.	L.L.	02-08-21

THIS DRAWING IS THE PROPERTY OF LOKA CONSULTING ENGINEERS AND MUST NOT BE RETAINED, COPIED OR USED WITHOUT THE WRITTEN CONSENT OF THE COMPANY

**GILES TRIBE**

Level 1, 1 Chandos Street  
ST LEONARDS NSW 2066  
P 41 2 9244 5005  
E g@lga.com.au

Copyright Loka Consulting Engineers as date of issue

**LOKA CONSULTING ENGINEERS**

Level 1, 1 Chandos Street  
ST LEONARDS NSW 2066  
P 41 2 9244 5005  
E g@lga.com.au

LOKA CONSULTING ENGINEERS  
111/8 AVENUE OF THE AMERICAS, NEWPORT NSW 2127  
T +61 2 9748 8742/8065 9689 M 0404 142 063  
F +61 2 9748 1290/8065 9690  
EMAIL: info@lga.com.au www.lga.com.au

PROJECT: PROPOSED SENIOR LIVING  
54 BARDO ROAD, NEWPORT, NSW

CONSENT AUTHORITY: NORTHERN BEACHES-FORMER PITWATER

SHEET SUBJECT: GROUND FLOOR / SITE STORMWATER DRAINAGE PLAN

PROJECT	DATE	DRAWN	DESIGNED	CHECKED
54 BARDO ROAD, NEWPORT	OCT 21	L.L.	L.Y.	N.L.
SCALE @ A1	1:100 U.N.O.		JOB No	20NL103
AUTHORISED	DWG No	REV		
NERMEIN LOKA	D03	L		

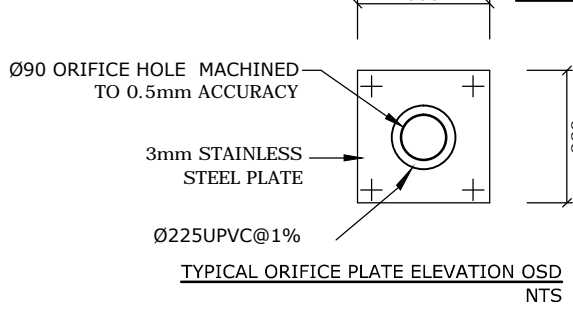


Q 15 l/s  
 Q 0.015 m3/s  
 Cd 0.6  
 g 9.81  
 h 0.76  
 A 0.00647 m  
 D 0.09079 m  
 90.7919 mm

**OSD ORIFICE CALCULATION**

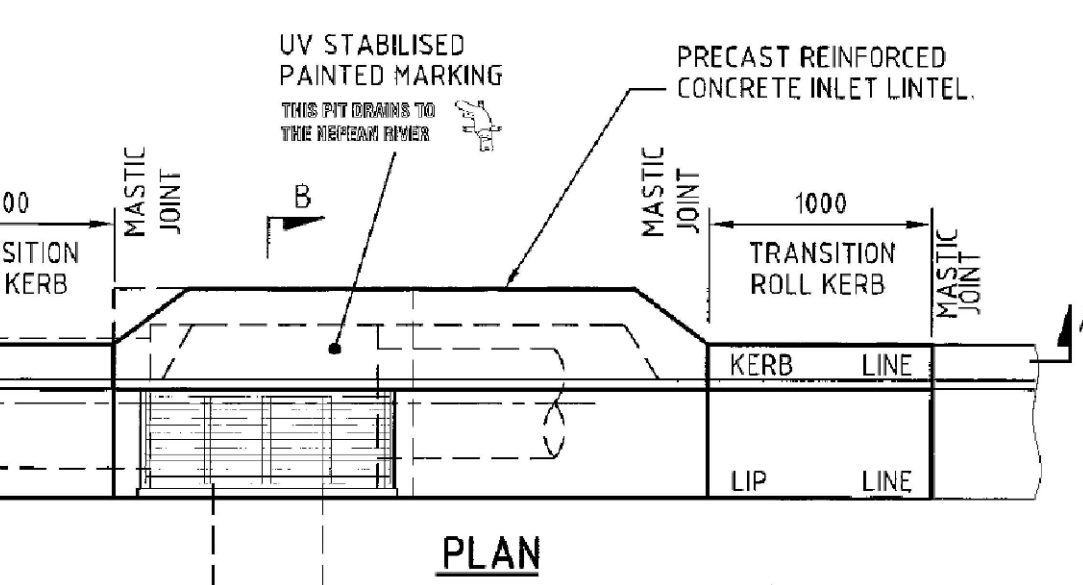


COLOURS: DANGER AND BACKGROUND WHITE, ELIPSE AREA BLACK, RECTANGLE CONTAINING ELIPSE OTHER LETTERING AND BORDER POLYPROPYLENE  
 MATERIALS: POLYPROPYLENE  
 CONFINED SPACE WARNING SIGN N.T.S.

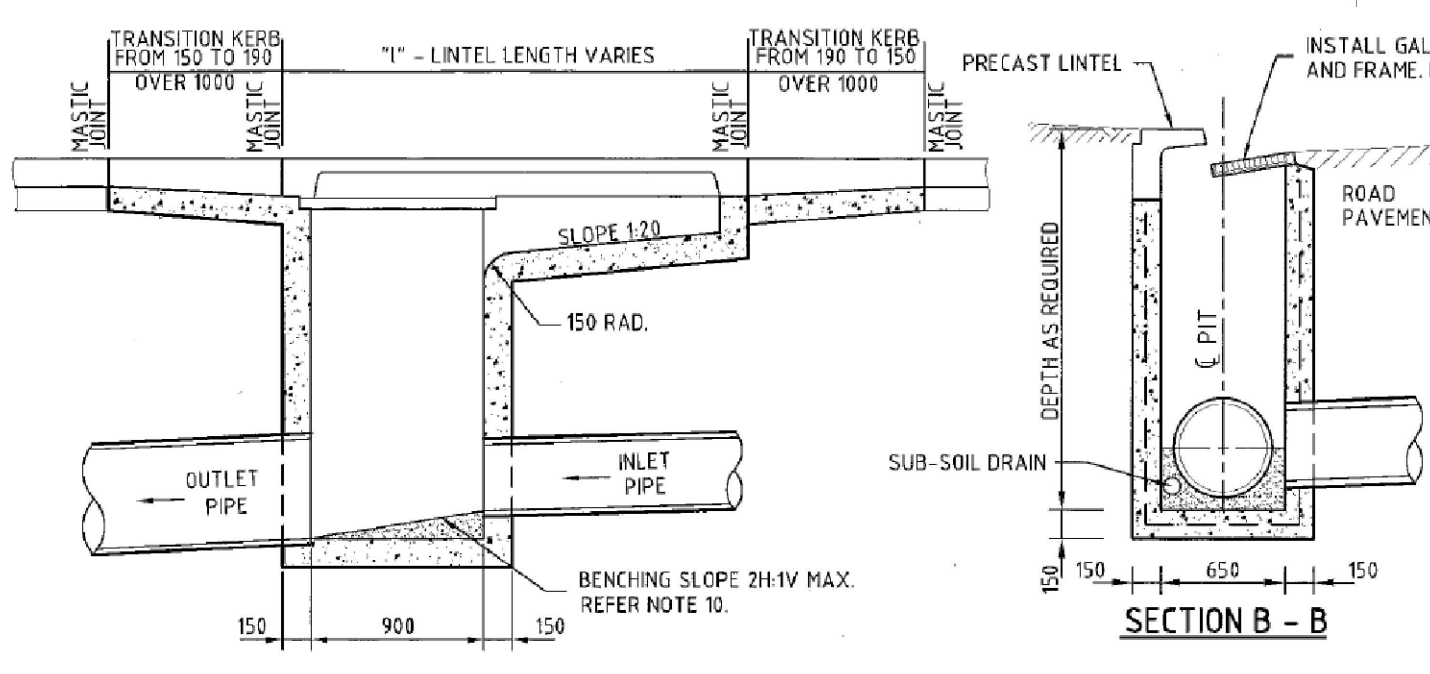


TYPICAL SECTION THROUGH OSD

SECTION A A SECTION N.T.S.



PLAN

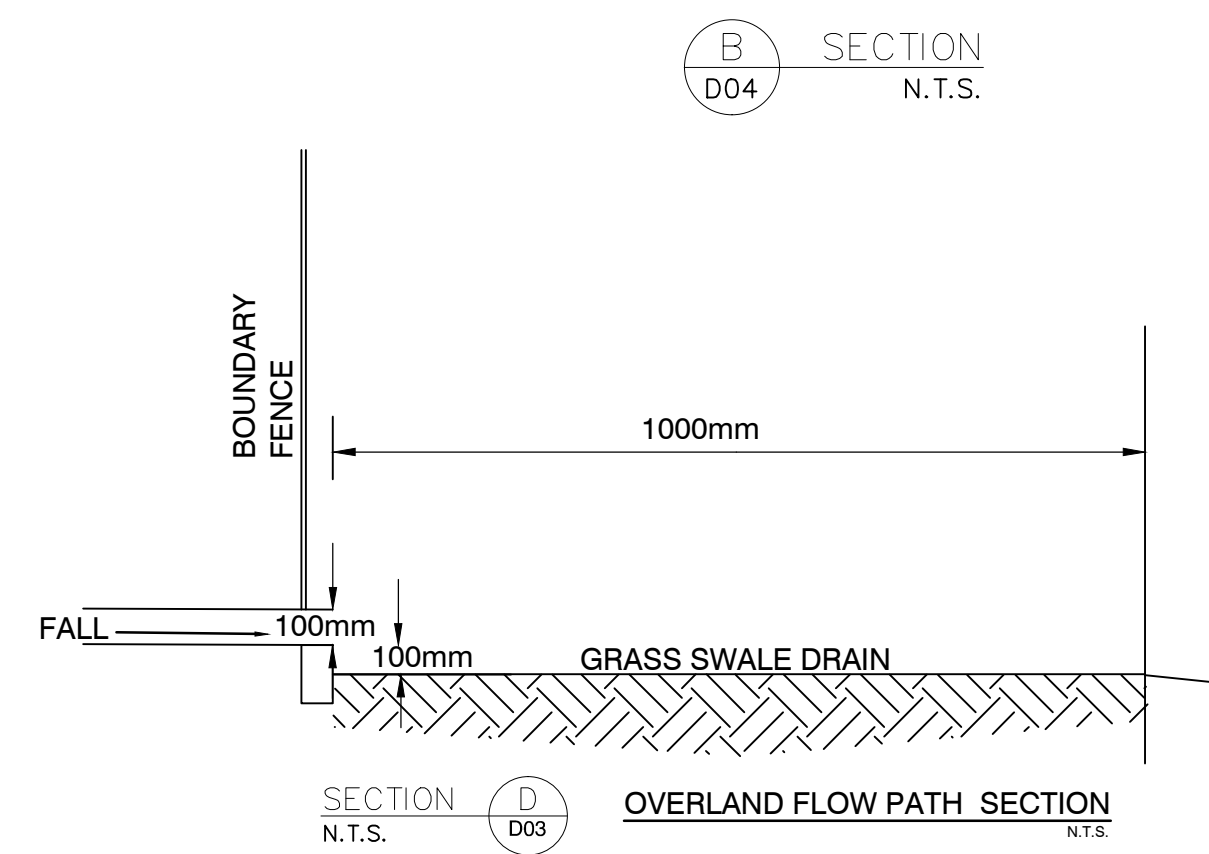


SECTION A - A

NOTES  
 1. CONCRETE TO E

**OVERLAND FLOW PATH CALCULATION**

UPSTREAM CATCHMENT AREA	0.0737 ha
100 YR 6MIN STORM	273 mm/hr
Q100	50.3405 L/s
W	1 m
D	0.1 m
CROSS SECTION AREA	0.1 m2
CHANNEL SLOPE	0.01 m/m
WETTED PERIMETER	1.2 m
HYDRAULIC RADIUS	0.08333
ROUGHNESS PARAMETER	0.035
Q	54.5102 L/s



SECTION D D03 OVERLAND FLOW PATH SECTION N.T.S.

**REQUIREMENTS FOR SIZE AND ALLOWABLE DISCHARGE FROM ON-SITE DETENTION SYSTEMS**

Additional Hard (Impervious) Surface Area (square metres)	Minimum Capacity of On-Site Detention Tank (Litres)	Discharge Rate Litres/Sec
0 - 50	Nil	Nil
>50 - 75	4,500	2
>75 - 100	6,000	3
>100 - 150	9,000	4
>150 - 200	12,000	6
>200 - 250	15,000	7
>250 - 300	18,000	9
>300 - 400	24,000	12
>400 - 500	30,000	15
>500 - 600	36,000	18
>600 - 700	42,000	21
>700 - 800	48,000	24
>800 - 900	54,000	27
>900 - 1,000	60,000	30
>1,000*	A minimum storage capacity of 60 litres per m2 of additional hard/impervious surface area, and a discharge rate which replicates the discharge from the site were it to be undeveloped.	

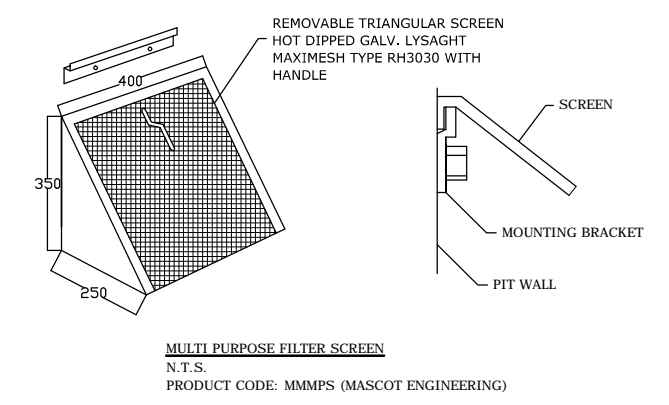
Rainwater tanks may be above or below ground and are required to have storage capacities in accordance with the following table:

**RWT**

Additional Hard (Impervious) Surface Area (square metres)	Minimum Rainwater Tank Storage Capacity
0 - 50	Nil
50 - 75	1,500 litres
75 - 100	2,000 litres
100 - 150	3,000 litres
150 - 200	4,000 litres
200 - 300	6,000 litres
300 - 400	8,000 litres
400 - 500	10,000 litres
500 - 600	12,000 litres
600 - 700	14,000 litres
700 - 800	16,000 litres
800 - 900	18,000 litres
900 - 1,000	20,000 litres
Above 1,000*	See note (1) below, minimum size 20,000 litres



**OSD SUMMARY:**  
 SITE AREA: 1226.3m²  
 EXISTING DEVELOPMENT: SINGLE DWELLING WITH SHED AT REAR  
 IMP. AREA: 400.48m² (32.66%)  
 PROPOSED DEVELOPMENT: SENIOR LIVING  
 IMP. AREA: 893.18m² (72.83%)  
 ADDITIONAL HARD AREA: 492.7m²  
 OSD SSR: 30kL  
 OSD PSD: 15L/s  
 NO IMPERVIOUS AREA BYPASS OSD  
 OSD DISCHARGE: 15L/s  
 ORIFICE: 90mm

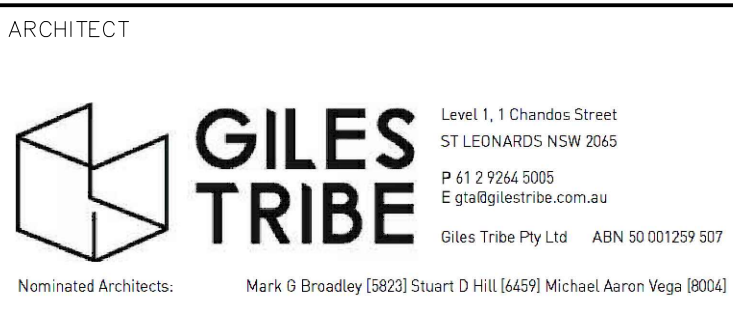


**NOT FOR CONSTRUCTION**

No	AMENDMENT	ENG	DRAFT	DATE	No	AMENDMENT	ENG	DRAFT	DATE
F	FOR S4.55	L.Y.	L.L.	12-08-21					
E	FOR S4.55	L.Y.	L.L.	02-08-21					
D	FOR D.A. APPROVAL/COUNCIL COMM.	L.Y.	L.Y.	26-04-21					
C	FOR D.A. APPROVAL/COUNCIL COMM.	L.Y.	L.Y.	29-03-21	I	FOR S4.55	L.Y.	L.L.	20-10-21
B	FOR D.A. APPROVAL/ARCH UPDATES	L.Y.	L.Y.	17-03-21	H	FOR S4.55	L.Y.	L.L.	20-09-21
A	FOR D.A. APPROVAL	L.Y.	L.Y.	26-08-20	G	FOR S4.55	L.Y.	L.L.	19-08-21

THIS DRAWING IS THE PROPERTY OF LOKA CONSULTING ENGINEERS AND MUST NOT BE RETAINED, COPIED OR USED WITHOUT THE WRITTEN CONSENT OF THE COMPANY

Copyright Loka Consulting Engineers as date of issue

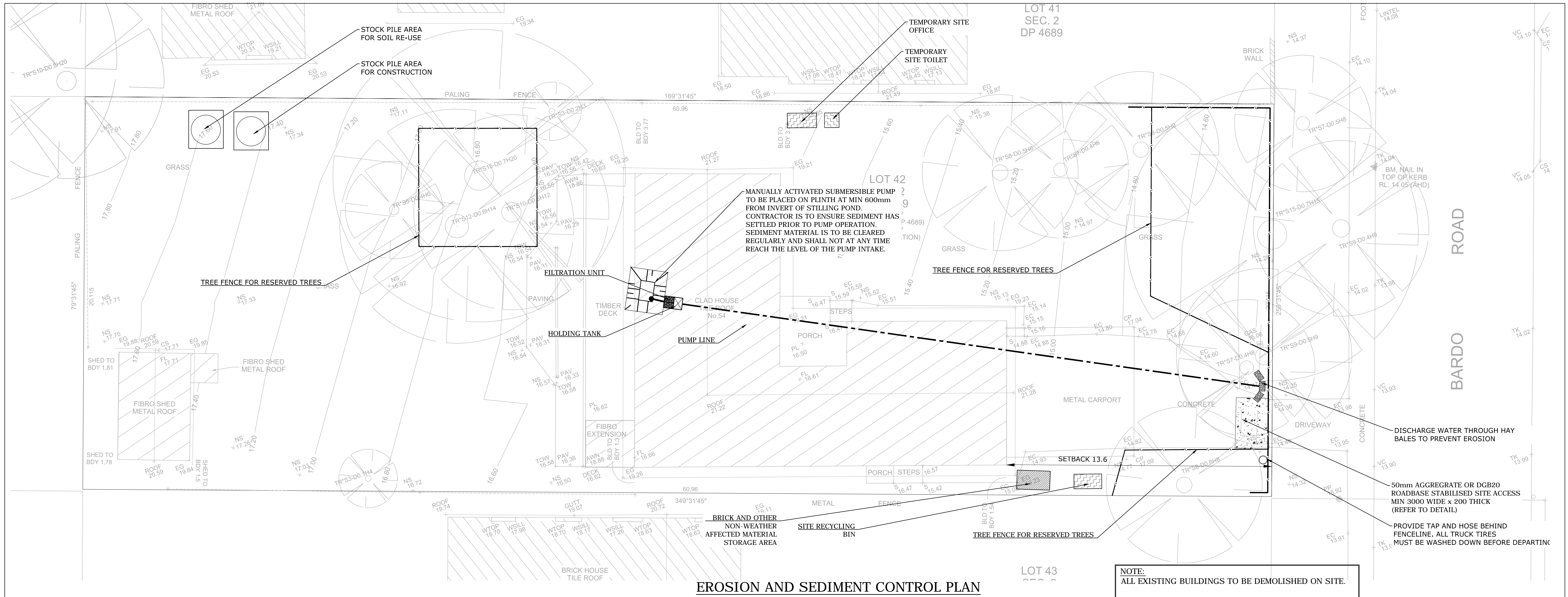


PROJECT: PROPOSED SENIOR LIVING  
 54 BARDO ROAD, NEWPORT, NSW  
 CONSENT AUTHORITY: NORTHERN BEACHES-FORMER PITWATER

SHEET SUBJECT: SITE STORMWATER DRAINAGE DETAILS

PROJECT	DATE	DRAWN	DESIGNED	CHECKED
54 BARDO ROAD, NEWPORT	AUG 21	L.L.	L.Y.	N.L.
SCALE: @ A1	JOB No		20NL103	
AUTHORISED	DWG No	REV		
NERMEIN LOKA	D04	I		



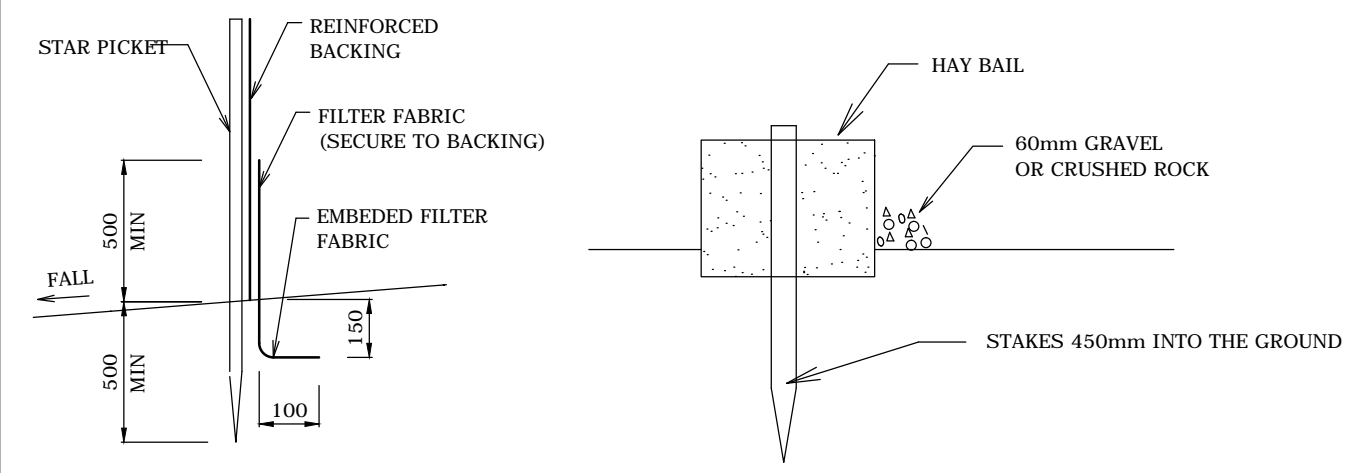


**EROSION AND SEDIMENT CONTROL PLAN**

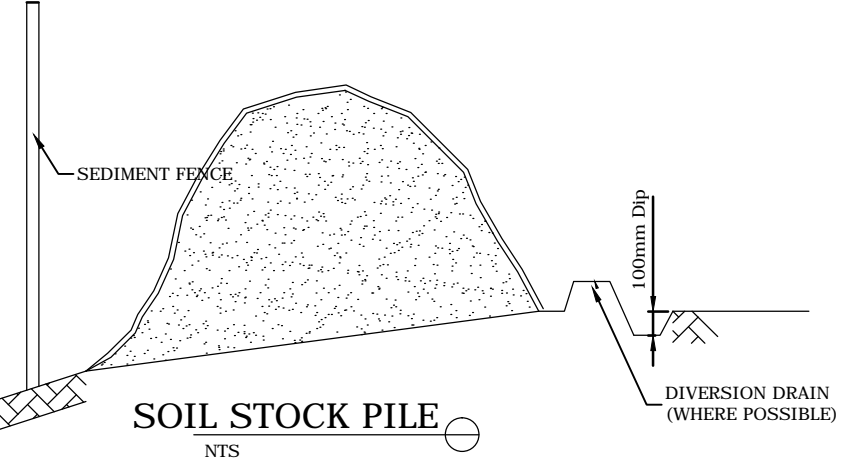
14. ENSURE FENCE IS KEYED AT BOTH ENDS INTO GROUND, WITH BASE TURNED UPSLOPE.
15. WHERE SEDIMENT FENCE IS NEAR STREET, ERECT FENCE WITHIN DEVELOPMENT SIDE OF TURF FILTER STRIPS AND PROPERTY BOUNDARY.
16. SEDIMENT FENCE FILTER CLOTH TO BE FASTENED SECURELY TO WIRE FENCE WITH TIES SPACED EVERY 600MM, OVERLAP 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.

**EROSION CONTROL NOTES**

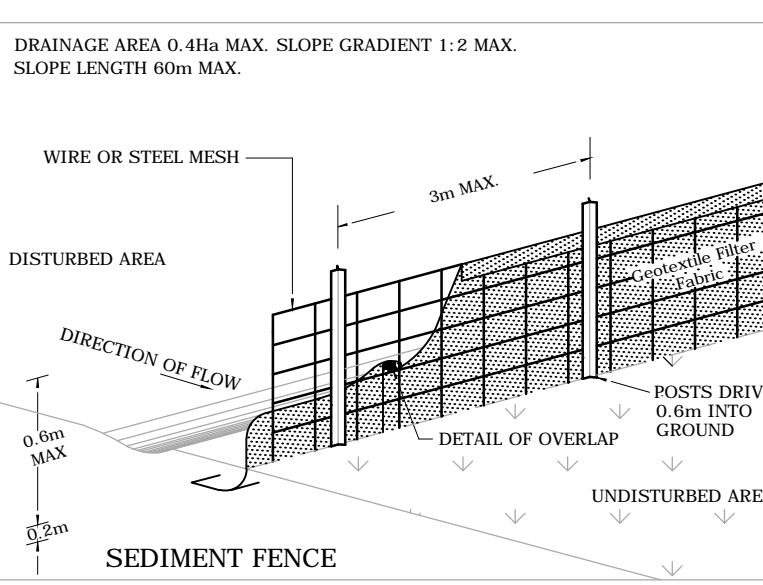
1. ALL EROSION & SEDIMENT CONTROL MEASURES ARE TO BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH 'MANAGING URBAN STORMWATER, 3RD EDITION' PRODUCED BY THE NSW DEPARTMENT OF HOUSING.
2. ALL EROSION AND SILTATION CONTROL DEVICES ARE TO BE PLACED PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION WORKS, AND ALL SILT TRAPS ARE TO HAVE DEPOSITED SILT REMOVED REGULARLY DURING CONSTRUCTION.
3. ALL TREES ARE TO BE PRESERVED UNLESS INDICATED OTHERWISE ON THE ARCHITECT'S OR LANDSCAPE ARCHITECT'S DRAWINGS. EXISTING GRASS COVER SHALL BE MAINTAINED EXCEPT IN AREAS CLEARED FOR BUILDINGS, PAVEMENTS, ETC.
4. STABILISE/REVEGETATE 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.



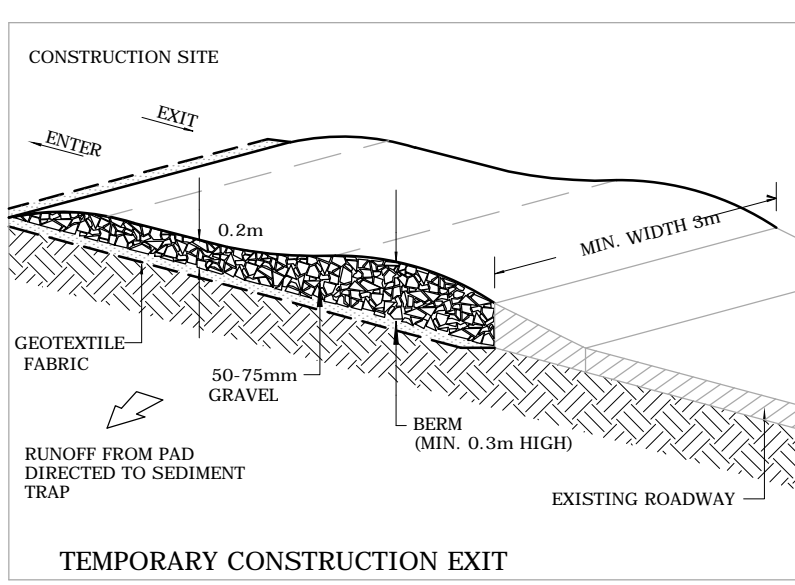
**SILT FENCE DETAIL**  
**HAY BAIL DETAIL**  
TO BE USED AS REQUIRED



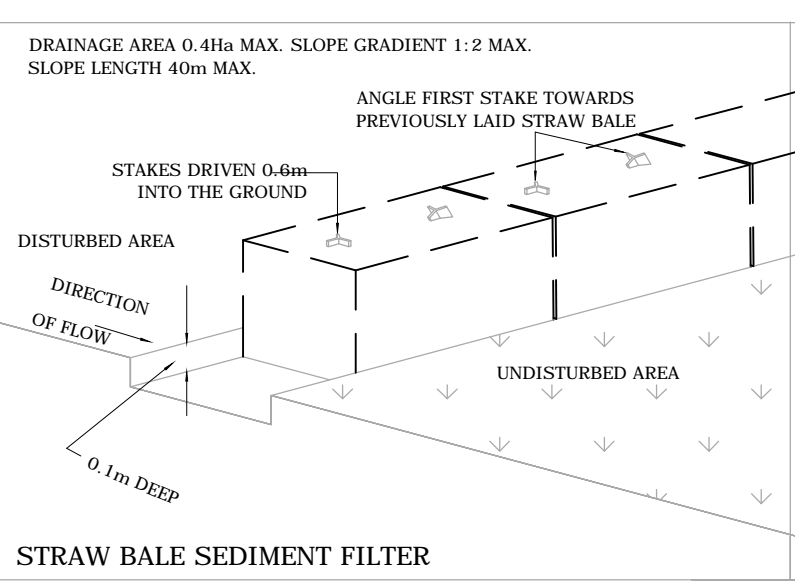
**SOIL STOCK PILE**



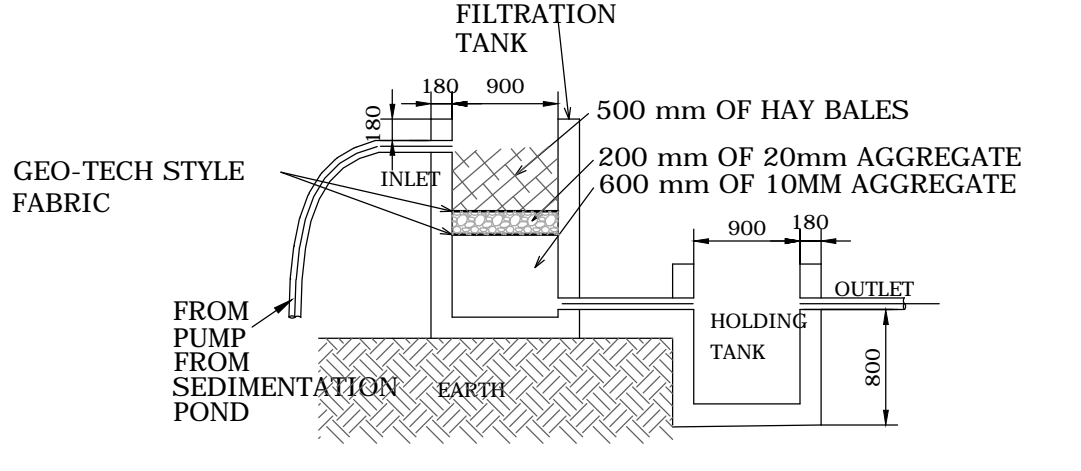
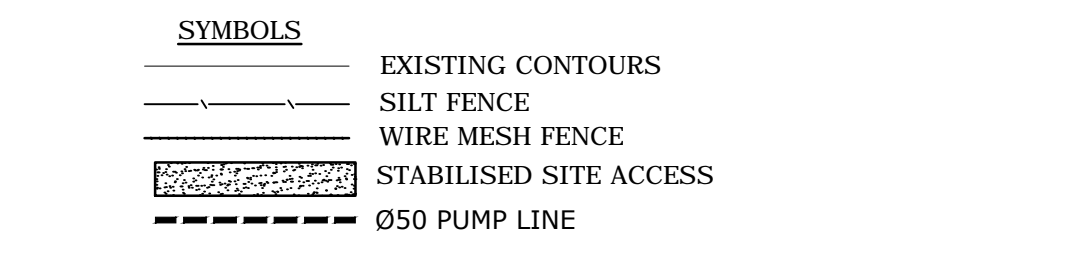
**SEDIMENT FENCE**



**TEMPORARY CONSTRUCTION EXIT**



**STRAW BALE SEDIMENT FILTER**



**TYPICAL DETAIL OF FILTRATION UNIT**  
NOTE: HAY TO BE CHANGED EVERY DAY  
GEO-TECH, SAND, AND BLUE METAL, TO BE CHANGED WEEKLY

1:100@A1  
**NOT FOR CONSTRUCTION**

THIS DRAWING IS THE PROPERTY OF LOKA CONSULTING ENGINEERS AND MUST NOT BE RETAINED, COPIED OR USED WITHOUT THE WRITTEN CONSENT OF THE COMPANY	
FOR S4.55	L.Y. L.Y. 02-08-21
FOR D.A. APPROVAL	L.Y. L.Y. 04-06-20
No	AMENDMENT
ENG	DRAFT
DATE	No
AMENDMENT	ENG
DRAFT	DATE

Copyright Loka Consulting Engineers as date of issue

**GILES TRIBE**  
Level 11, Chandos Street  
ST LEONARDS NSW 2065  
P 61 2 9264 5005  
E giles@tribe.com.au  
Giles Tribe Pty Ltd ABN 50 021259 507

**LOKA CONSULTING ENGINEERS** Pty Ltd  
14/8 AVENUE OF THE AMERICAS, NEWINGTON NSW 2127  
T +61 2 9748 8742/8065 9489 M 0404 142 063  
F +61 2 9748 1290/8065 9690  
EMAIL: info@lceeng.com.au www.lceeng.com.au

PROJECT PROPOSED SENIOR LIVING  
54 BARDO ROAD,  
NEWPORT, NSW  
CONSENT AUTHORITY:  
NORTHERN BEACHES-FORMER PITWATER

SHEET SUBJECT  
**EROSION AND SEDIMENT CONTROL PLAN AND DETAILS**

PROJECT	54 BARDO ROAD, NEWPORT
DATE	AUG 21
DRAWN	L.Y.
DESIGNED	L.Y.
CHECKED	N.L.
SCALE @ A1	1:100 U.N.O
JOB No	20NL103
AUTHORISED	NERMEIN LOKA
DWG No	D05
REV	B