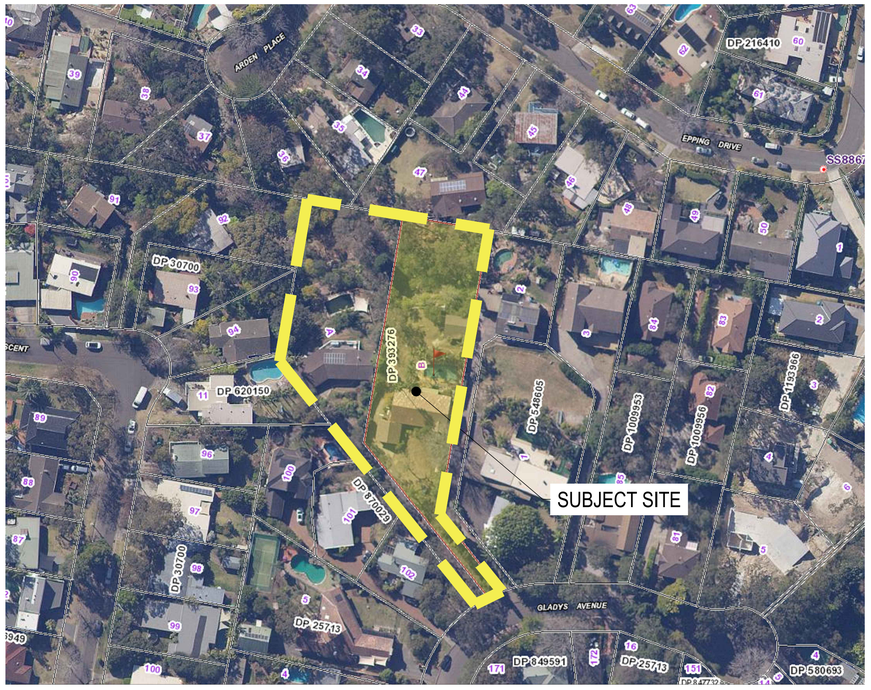
PROPOSED SUBDIVISION
No.12-14 GLADYS AVENUE, FRENCHS FOREST
STORMWATER MANAGEMENT CONCEPT PLAN



LOCATION PLAN

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 JCO CONSULTANTS MUST BE CONTACTED IMMEDIATELY FOR VERIFICATION
2. WHERE THESE PLANS ARE NOTED FOR DEVELOPMENT APPLICATION PURPOSES ONLY, THEY SHALL NOT BE USED FOR OBTAINING 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 JCO CONSULTANTS

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 JCO CONSULTANTS 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:
3. PERMANENT AIR GAP
4. BACKFLOW PREVENTION DEVICE
5. NO DIRECT CONNECTION BETWEEN TOWN WATER SUPPLY AND THE
6. RAIN WATER SUPPLY
7. AN APPROVED STOP VALVE AND/OR PRESSURE LIMITING VALVE AT THE RAINWATER TANK PROVIDE APPROPRIATE FLOAT VALVES AND/OR SOLENOID VALVES
8. TO CONTROL TOWN WATER SUPPLY INLET TO TANK IN ORDER TO
9. ACHIEVE THE TOP-UP INDICATED ON THE TYPICAL DETAIL
10. ALL PLUMBING WORKS ARE TO BE CARRIED OUT BY LICENSED PLUMBERS IN ACCORDANCE WITH AS/NZS3500.1 NATIONAL PLUMBING AND DRAINAGE CODE PRESSURE PUMP ELECTRICAL CONNECTION TO BE CARRIED OUT BY A LICENSED ELECTRICIAN
11. ONLY ROOF RUN-OFF IS TO BE DIRECTED TO THE RAINWATER TANK . SURFACE WATER INLETS ARE NOT TO BE CONNECTED 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
12. 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)
13. EVERY RAINWATER SUPPLY OUTLET POINT AND THE RAINWATER TANK ARE TO BE LABELED 'RAINWATER' ON A METALLIC SIGN IN ACCORDANCE WITH AS1319
14. ALL INLETS AND OUTLETS TO THE RAINWATER TANK ARE TO HAVE SUITABLE MEASURES PROVIDED TO PREVENT MOSQUITO AND VERMIN ENTRY

DIAL BEFORE YOU DIG

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

PIT SIZES AND DESIGN:

DEPTH (mm)	MINIMUM PIT SIZE (mm)
UP TO 450mm	450 x 450
450mm TO to 600mm	600 x 600
600mm TO 900mm	600 x 900
900mm TO 1500mm	900 x 900 (WITH STEP IRONS)
1500mm TO 2000mm	1200 x 1200 (WITH STEP IRONS)

ALL PIPES SHOULD BE CUT FLUSH WITH THE WALL OF THE PIT.

PITS GREATER THAN 600mm DEEP SHALL HAVE A MINIMUM ACCESS OPENING OF 600 x 600mm

THE GRATED COVERS OF PITS LARGER THAN 600 x 600mm ARE TO BE HINGED TO PREVENT THE GRATE FROM FALLING INTO THE PIT.

THE BASE OF THE DRAINAGE PITS SHOULD BE AT THE SAME LEVEL AS THE INVERT OF THE OUTLET PIPE. RAINWATER SHOULD NOT BE PERMITTED TO POND WITHIN THE STORMWATER SYSTEM

- **TRENCH DRAINS:**
  CONTINUOUS TRENCH DRAINS ARE TO BE OF WIDTH NOT LESS THAN 150mm AND DEPTH NOT LESS THAN 100mm. THE BARS OF THE GRATING ARE TO BE PARALLEL TO THE DIRECTION OF SURFACE FLOW.
- **STEP IRONS:**
  PITS BETWEEN 1.2m AND 6m ARE TO HAVE STEP IRONS IN ACCORDANCE WITH AS1657. FOR PITS GREATER THAN 6m OTHER MEANS OF ACCESS MUST BE PROVIDED.
- **PVC PITS:**
  PVC PITS WILL ONLY BE PERMITTED IF THEY ARE NOT A GREATER SIZE THAN 450 x 450mm (MAXIMUM DEPTH 450mm) AND ARE HEAVY DUTY
- **IN-SITU PITS:**
  IN-SITU PITS ARE TO BE CONSTRUCTED ON A CONCRETE BED OF AT LEAST 150mm THICK. THE WALLS ARE TO BE DESIGNED TO MEET THE MINIMUM REQUIREMENTS OF CLAUSE 7.5.5.1 OF AS3500.3-2018. PITS DEEPER THAN 1.8m SHALL BE CONSTRUCTED WITH REINFORCED CONCRETE.
- **GRATES:**
  GRATES ARE TO BE GALVANISED STEEL GRID TYPE. GRATES ARE TO BE OF HEAVY-DUTY TYPE IN AREAS WHERE THEY MAY BE SUBJECT TO VEHICLE LOADING.

DRAWING REGISTER

DRAWING NO.	TITLE	REVISION
DA-SW100	COVERSHEET	7
DA-SW200	STORMWATER MANAGEMENT CONCEPT PLAN - GROUND FLOOR	7
DA-SW201	WSUD CATCHMENT PLAN & DETAILS	7
DA-SW300	STORMWATER DETAILS SHEET	7
DA-SW500	HGL ANALYSIS & EASEMENT PIT CONNECTION DETAIL	7
DA-SW501	DRAINS MODEL DATA & RESULTS - 1 & DETAILS	7
DA-SW502	DRAINS MODEL DATA & RESULTS - 2	7
DA-SW600	EROSION AND SEDIMENT CONTROL PLAN & DETAILS	7

REV.	DATE	AMENDMENT	INT.	APP.
7	10/05/2023	RETAINING WALL REVISED	J.L	J.H
6	5/09/2022	RETAINING WALL REVISED	J.L	J.H
5	15/08/2022	ISSUED FOR DA	J.L	J.H
4	25/05/2022	ISSUED FOR REVIEW	J.L	J.L
3	19/05/2022	ISSUED FOR REVIEW	J.L	J.L
2	15/05/2022	ISSUED FOR REVIEW	J.L	J.L
1	11/04/2022	ISSUED FOR REVIEW	J.L	J.L

Client: JACK ZHANG

Architect: NKP ARCHITECURE

JCO CONSULTANTS PTY LTD
SUITE 801C, No.1 RIDER BOULEVARD, RHODES NSW 2138
EMAIL: Jason@jcoconsultants.com.au

Project: PROPOSED SUBDIVISION
12-14 GLADYS AVENUE
FRENCHS FOREST NSW 2030

Drawing Title: COVERSHEET

Design: J.L | Drawn: J.L | Validate: J.H

Job Number: 20220060

Drawing Number: DA-SW100

Scale: NTS | Date: 10/05/2023 | Size: A1 | Datum: A.H.D

North Point: N

Status: DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION

Scale: 0 0.02 0.04 0.06 0.08 0.1m
SCALE 1:1 @A1

DATE PLOTTED: 10 May 2023 4:30 PM

CAD File: P:\2022\20220060-12-14 Gladys Avenue, Frenchs Forest\Civil\cad\DA-SW100.dwg

GROUND FLOOR

PIT SCHEDULE

PIT No.	GRATED INLET	PIT SIZE	SURFACE LEVEL	INVERT LEVEL
SP1	GRATED INLET (CLASS C) WITH OCEANGUARD	450 x 450	156.16	155.70
SP2	GRATED INLET (CLASS C) WITH OCEANGUARD	450 x 450	155.36	154.90
SP3	GRATED INLET (CLASS C) WITH OCEANGUARD	450 x 450	154.50	154.05
SP4	GRATED INLET (CLASS C) WITH OCEANGUARD	450 x 450	152.34	151.85
SP5	GRATED INLET (CLASS C) WITH OCEANGUARD	450 x 450	149.70	149.20
SP6	GRATED INLET (CLASS C) WITH OCEANGUARD	600 x 600	148.50	147.90
SP7	GRATED INLET (CLASS C) WITH OCEANGUARD	900 x 900	147.40	146.40
SP8	GRATED INLET (CLASS C)	900 x 900	147.40	145.90
SP9	GRATED INLET (CLASS B)	900 x 900	137.50	136.50
SP10	GRATED INLET (CLASS B)	900 x 900	133.50	132.70
SP11	GRATED INLET (CLASS B)	600 x 600	131.30	130.50
SP12	GRATED INLET (CLASS B) WITH OCEANGUARD	450 x 450	153.50	153.05
SP13	GRATED INLET (CLASS B) WITH OCEANGUARD	450 x 450	153.10	152.65
SP14	GRATED INLET (CLASS B) WITH OCEANGUARD	900 x 900	150.20	148.20
SP15	GRATED INLET (CLASS B) WITH OCEANGUARD	450 x 450	149.40	148.60
SP16	GRATED INLET (CLASS B) WITH OCEANGUARD	450 x 450	147.10	146.65
SP17	GRATED INLET (CLASS B) WITH OCEANGUARD	450 x 450	149.50	149.05
SP18	GRATED INLET (CLASS B) WITH OCEANGUARD	900 x 900	150.50	148.80
SP19	GRATED INLET (CLASS B) WITH OCEANGUARD	450 x 450	148.95	148.50
SP20	GRATED INLET (CLASS B) WITH OCEANGUARD	450 x 450	147.40	147.00
SP21	GRATED INLET (CLASS B)	450 x 450	142.20	141.75
SP22	GRATED INLET (CLASS B)	450 x 450	141.95	141.50
SP23	GRATED INLET (CLASS B) WITH OCEANGUARD	900 x 900	137.70	136.00
SP27	GRATED INLET (CLASS B)	450 x 450	148.20	144.75
SP28	GRATED INLET (CLASS B)	900 x 900	137.70	137.00

NOTE

1. ALL OUTLET PIPES FROM OSD TANKS TO BE 150mm AT 1% FALL (MIN)
2. ALL DOWNPIPE PIPES TO RAINWATER TANK TO BE 100mm DIA (UNO). FINAL DOWNPIPE LOCATIONS TO BE DESIGN IN CC STAGE
3. ALL OUTLET PIPES FROM GRATED TRENCHES TO BE 100mm DIA (UNO)

LEGEND

DRAINAGE PIPES VIA GRAVITY	
CHARGED DRAINAGE PIPES TO RWT/OSD	CSW
SUB SOIL DRAINAGE (AG. LINE)	SSD
EXISTING DRAINAGE PIPE	SW
RDP	Ø100mm ROOF DOWNPIPE
DP	Ø100mm DOWNPIPE
DDO	100mm DIA DISH DRAIN OUTLET
RWO	150mm DIA FLOOR WASTE
BO	100mm DIA FLOOR WASTE (BALCONY OUTLET)

OSD DESIGN SUMMARY

SITE AREA: 4704m2
EXISTING SITE NODE WAS MODELED AS FULLY UNDEVELOPED NATURAL SURFACE FOR PURPOSE OF MODELING.

5YR ARI PRE-DEVELOPMENT DISCHARGE = 88L/s
5YR ARI POST-DEVELOPMENT BYPASS = 17L/s
5YR ARI POST-DEVELOPMENT DISCHARGE = 47L/s

20YR ARI PRE-DEVELOPMENT DISCHARGE = 137L/s
20YR ARI POST-DEVELOPMENT BYPASS = 26L/s
20YR ARI POST-DEVELOPMENT DISCHARGE = 61L/s

100YR ARI PRE-DEVELOPMENT DISCHARGE = 206L/s
100YR ARI POST-DEVELOPMENT BYPASS = 38L/s
100YR ARI POST-DEVELOPMENT DISCHARGE = 79L/s

OSD VOLUME FOR LOT 1 REQUIRED BY 'DRAINS' MODEL= 5.7m3
OSD VOLUME FOR LOT 2 REQUIRED BY 'DRAINS' MODEL= 14.8m3
OSD VOLUME FOR LOT 3 REQUIRED BY 'DRAINS' MODEL= 5.6m3
OSD VOLUME FOR LOT 4 REQUIRED BY 'DRAINS' MODEL= 5.4m3
OSD VOLUME UNDER DRIVEWAY REQUIRED BY 'DRAINS' MODEL= 55.8m3

ABOVE GROUND COMBINED RWT/OSD TANK
(3500L x 1150W x 2020H SLIMLINE TANK BY 'KINGSPAN WATER' OR SIMILAR)
TOP OF TANK RL:150.22
IL:148.20
RWT VOLUME REQUIRED:1.5m3 (MIN.)
OSD VOLUME REQUIRED:5.7m3 (MIN.)
PSD:6L/s
ORIFICE Ø:50mm
ORIFICE CL: 149.61
SUBJECT TO DETAILED DESIGN IN CC STAGE

ABOVE GROUND RWT TANK
(1500L x 700W x 2020H SLIMLINE TANK BY 'KINGSPAN WATER' OR SIMILAR)
TOP OF TANK RL:142.32
IL:140.30
RWT VOLUME REQUIRED:1.5m3 (MIN.)
SUBJECT TO DETAILED DESIGN IN CC STAGE

HATCHED AREA TO BYPASS OSD SYSTEM (82.6m² 1.8% OF TOTAL SITE AREA)

Ø150mm uPVC O/F FROM RWT/OSD

EX. Ø375mm RCP (SPP01245)
EX. Ø525mm RCP
REFER TO STORMWATER SYSTEM ASSESSMENT REPORT PREPARED BY 'NASTASI & ASSOCIATES CONSULTING ENGINEERS'. FOR DETAILED CAPACITY ASSESSMENT.
EXISTING PIT (SP01245) RL:127.51 IL:126.59
Ø225mm uPVC AT 1.28%

(E)- PROPOSED EASEMENT FOR DRAINAGE 1m WIDE
(E2)- PROPOSED EASEMENT FOR DRAINAGE INCLUDING LOT 2 OSD FOOTPRINT

Ø225mm uPVC AT 2.5%

BELOW GROUND OSD TANK - 2
SURFACE RL:131.7
IL:130.55
AVG. WATER PONDING: 0.89m
AREA:17.60m2 (INTERNAL)
VOLUME REQUIRED:14.80m3
VOLUME PROVIDED:15.66m3
TWL:131.54
PSD:79L/s
ORIFICE Ø:205mm
ORIFICE CL:130.66
REFER TO DRAWING DA-SW300 FOR DETAILS.

CONSTRUCT NEW RETAINING WALL ABOVE GROUND LEVEL TO DIVERT RUNOFF TO OSD 2

PIPE I.L.131.775

Ø225mm uPVC AT 5.2%

FFL 148.40
FFL 148.25
FFL 139.30
FFL 147.50
FFL 147.45
FFL 147.55
FFL 153.55
FFL 153.60
FFL 153.28

LOT 1
LOT 2
LOT 3
LOT 4

OSD

100mm HIGH KERB

Ø150mm uPVC
Ø225mm uPVC AT 1%
Ø225mm uPVC AT 53.1%
Ø225mm uPVC AT 12%
Ø225mm uPVC AT 27.1%
Ø150mm uPVC O/F FROM RWT/OSD

200mm WIDE x 200mm DEEP GRATED DRAIN (TYPICAL)

R.O.W
F 160.95
F 148.73
F 147.40
F 152.02
F 153.77
F 154.65
F 155.12
F 155.69
F 156.62

VERTICAL DROP FROM EXPOSED UPSTREAM PIPE TO I.L.141.60

(E)- PROPOSED EASEMENT FOR DRAINAGE 1m WIDE

BELOW GROUND OSD/STORMFILTER TANK - 1

ON-SITE DETENTION TANK (OSD)
SURFACE RL:147.40
IL:145.90
AVG. WATER PONDING: 1.055m
AREA:58.11m2 (INTERNAL)
VOLUME REQUIRED:55.80m3
VOLUME PROVIDED:61.30m3
TWL:147.20
PSD:64L/s
ORIFICE Ø:135mm
ORIFICE CL:146.013

STORMFILTER TANK (SF)
MINIMUM SURFACE AREA: 10m2
(11 x TALL(690) PSORB CARTRIDGE STORMFILTER)

REFER TO DRAWING DA-SW300 FOR DETAILS.

HATCHED AREA TO BYPASS OSD SYSTEM (792.1m² 16.8% OF TOTAL SITE AREA)

ABOVE GROUND COMBINED RWT/OSD TANK
(3500L x 1150W x 2020H SLIMLINE TANK BY 'KINGSPAN WATER' OR SIMILAR)
TOP OF TANK RL:155.45
IL:153.43
RWT VOLUME REQUIRED:1.5m3 (MIN.)
OSD VOLUME REQUIRED:5.4m3 (MIN.)
PSD:9L/s
ORIFICE Ø:60mm
ORIFICE CL: 154.86
SUBJECT TO DETAILED DESIGN IN CC STAGE

Ø150mm uPVC O/F FROM RWT/OSD

ABOVE GROUND COMBINED RWT/OSD TANK
(3500L x 1150W x 2020H SLIMLINE TANK BY 'KINGSPAN WATER' OR SIMILAR)
TOP OF TANK RL:149.52
IL:147.50
RWT VOLUME REQUIRED:1.5m3 (MIN.)
OSD VOLUME REQUIRED:5.6m3 (MIN.)
PSD:6L/s
ORIFICE Ø:50mm
ORIFICE CL: 148.60
SUBJECT TO DETAILED DESIGN IN CC STAGE

GLADYS AVENUE

REV.	DATE	AMENDMENT	INT.	APP.
7	10/05/2023	RETAINING WALL REVISED	J.L	J.H
6	5/09/2022	RETAINING WALL REVISED	J.L	J.H
5	15/08/2022	ISSUED FOR DA	J.L	J.H
4	25/05/2022	ISSUED FOR REVIEW	J.L	J.L
3	19/05/2022	ISSUED FOR REVIEW	J.L	J.L
2	15/05/2022	ISSUED FOR REVIEW	J.L	J.L
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Client: JACK ZHANG
Architect: NKP ARCHITECURE

JCO CONSULTANTS PTY LTD
SUITE 801C, No.1 RIDER BOULEVARD, RHODES NSW 2138
EMAIL: Jason@jcoconsultants.com.au

Project: PROPOSED SUBDIVISION
12-14 GLADYS AVENUE
FRENCHS FOREST NSW 2030

Drawing Title: STORMWATER MANAGEMENT CONCEPT PLAN - GROUND FLOOR

Design	Drawn	Validate
J.L	J.L	J.H

Job Number: 20220060
Drawing Number: DA-SW200

Scale: 1:200
Date: 10/05/2023
Size: A1
Datum: A.H.D

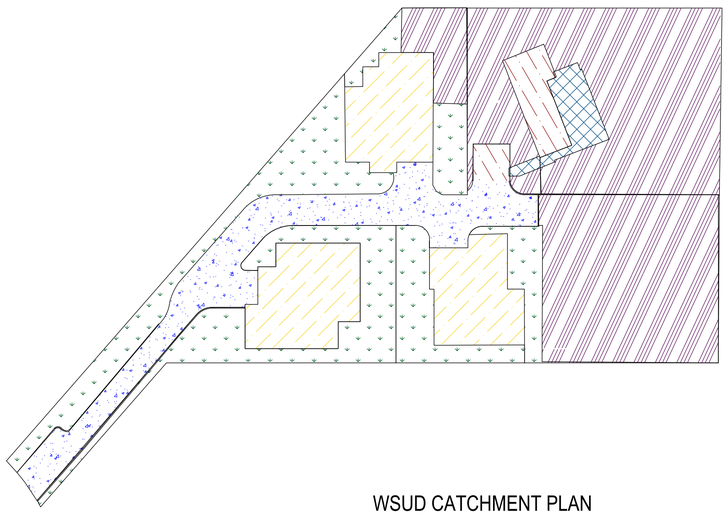
North Point: N

Status: DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION

Scale: 0 5 10 15 20m
SCALE 1:200 @A1

DATE PLOTTED: 10 May 2023 4:30 PM

CAD File: P:\2022\20220060-12-14 Gladys Avenue, Frenchs Forest\Civil\cad\DA-SW200.dwg

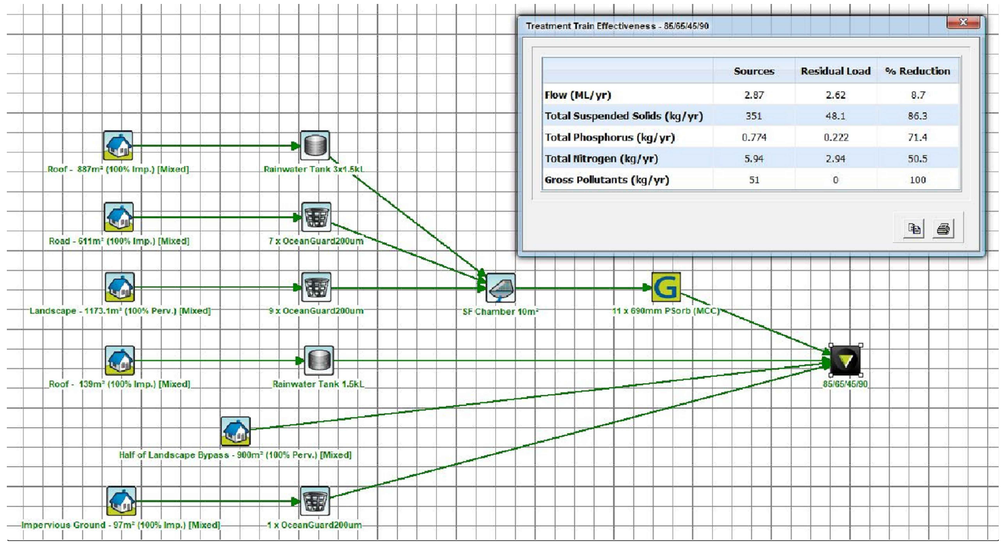


WSUD CATCHMENT PLAN
1:500(A1)

LEGEND

SITE AREA: 4706.5m²

- UN-HABITABLE ROOF AREA DRAINING TO STORMFILTER TANK VIA RAINWATER TANK = 886.7m²
- UN-HABITABLE ROOF AREA (LOT 2) DRAINING BYPASS STORMFILTER TANK = 138.6m²
- TRAFIICABLE AREA DRAINING TO STORMFILTER TANK VIA OCEANGUARD = 610.8m²
- PERVIOUS AREA TO STORMFILTER TANK VIA OCEANGUARD = 1173.1m²
- IMPERVIOUS AREA BYPASS STORMFILTER TANK = 96.7m²
- PERVIOUS AREA BYPASS STORMFILTER TANK = 1800.7m² (AREA REMAINS AS UNDEVELOPED)



Treatment Train Effectiveness - 85/65/45/90

	Sources	Residual Load	% Reduction
Flow (ML/yr)	2.87	2.62	8.7
Total Suspended Solids (kg/yr)	351	48.1	86.3
Total Phosphorus (kg/yr)	0.774	0.222	71.4
Total Nitrogen (kg/yr)	5.94	2.94	50.5
Gross Pollutants (kg/yr)	51	0	100

'MUSIC' MODELLING RESULT

STORMWATER TREATMENT SUMMARY

SITE AREA = 4706m²

WE MODELLED WITH FOLLOWING PARAMETERS:

- MUSIC VERSION 6.3.0
- RAINFALL STATION 066037 SYDNEY AIRPORT, 6 MINUTE TIME STEP FROM 1979 TO 1988
- SYDNEY CATCHMENT MANAGEMENT AUTHORITY (CMA) UTILIZING MODIFIED % IMPERVIOUS AREA, RAINFALL THRESHOLD, SOIL PROPERTIES & POLLUTANT CONCENTRATION
- NO DRAINAGE ROUTING BETWEEN NODES.

WE HAVE MODELLED THE SYSTEMS TO MEET CURRENT NORTHERN BEACHES COUNCIL WATER MANAGEMENT FOR DEVELOPMENT POLICY. THESE ARE:

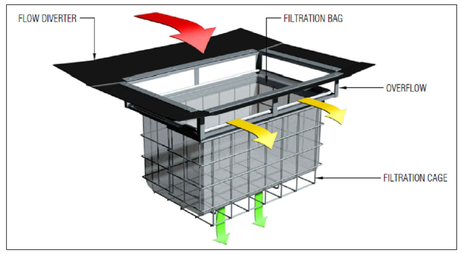
- 85% TOTAL SUSPENDED SOLIDS REDUCTION
- 65% TOTAL PHOSPHORUS REDUCTION
- 45% TOTAL NITROGEN REDUCTION
- 90% GROSS POLLUTANT REDUCTION

THE SYSTEM HAS BEEN MODELLED TO MEET THE NORTHERN BEACHES COUNCIL DCP TARGET

- 86% TOTAL SUSPENDED SOLIDS REDUCTION
- 71% TOTAL PHOSPHORUS REDUCTION
- 51% TOTAL NITROGEN REDUCTION
- 100% GROSS POLLUTANTS REDUCTION

TREATMENT DEVICES:

1. 4 x 1,500L OF RAINWATER TANK CONNECTED TO ALL TOILETS AND AT LEAST 1 OUTDOOR TAB FOR IRRIGATION
2. 17 x OCEANGUARDS WITH 200um MESH BAGS (OG-200).
3. 11 x TALL(690) PSORB CARTRIDGE STORMFILTER SYSTEM WITHIN A 10m² STORMFILTER CHAMBER.



STORMFILTER DESIGN TABLE

THE SIZE 4.5 x 2.1m STORMFILTER TREATMENT CAPACITY VARIES BY NUMBER OF FILTER CARTRIDGES INSTALLED AND BY REGION SPECIFIC INTERNAL FLOW CONTROLS. · THE STANDARD CONFIGURATION IS SHOWN. ACTUAL CONFIGURATION OF THE SPECIFIED STRUCTURE(S) PER CIVIL ENGINEER WILL BE SHOWN ON SUBMITTAL DRAWING(S). · ALL PARTS PROVIDED AND INTERNAL ASSEMBLY BY OCEANPROTECT UNLESS OTHERWISE NOTED.

CARTRIDGE HEIGHT	690		460		310	
SYSTEM HYDRAULIC DROP (H - REQ'D. MIN.)	930		700		550	
TREATMENT BY MEDIA SURFACE AREA L/S/m2	1.4	0.7	1.4	0.7	1.4	0.7
CARTRIDGE FLOW RATE (L/s)	1.42	0.71	0.95	0.47	0.63	0.32

PLAN ID	MAXIMUM PIT PLAN DIMENSIONS
S	450mm x 450mm
M	600mm x 600mm
L	900mm x 900mm
XL	1200mm x 1200mm

DEPTH ID	BAG DEPTH	OVERALL DEPTH
1	170	270
2	300	450
3	600	700

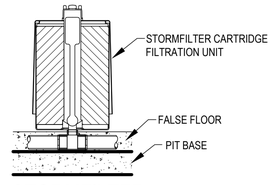
PLAN ID	DEPTH ID 1	2	3
S	■		
M	■	■	
L	■	■	■
XL	■	■	■

GENERAL NOTES

1. THE MINIMUM CLEARANCE DEPENDS ON THE CONFIGURATION (SEE NOTE 2) AND THE LOCAL COUNCIL REQUIREMENTS.
2. CLEARANCE FOR ANY PIT WITHOUT AN INLET PIPE (ONLY USED FOR SURFACE FLOW) CAN BE AS LOW AS 50mm. FOR OTHER PITS, THE RECOMMENDED CLEARANCE SHOULD BE GREATER OR EQUAL TO THE PIPE OBVERT SO AS NOT TO INHIBIT HYDRAULIC CAPACITY.
3. OCEAN PROTECT PROVIDES TWO FILTRATION BAG TYPES:- 200 MICRON BAGS FOR HIGHER WATER QUALITY FILTERING AND A COARSE BAG FOR TARGETING GROSS POLLUTANTS.
4. DRAWINGS NOT TO SCALE.

GENERAL NOTES

1. INLET AND OUTLET PIPING SHALL BE SPECIFIED BY SITE CIVIL ENGINEER (SEE PLANS) AND PROVIDED BY CONTRACTOR. STORMFILTER IS PROVIDED WITH OPENINGS AT INLET AND OUTLET LOCATIONS. 2. IF THE PEAK FLOW RATE, AS DETERMINED BY THE SITE CIVIL ENGINEER, EXCEEDS THE PEAK HYDRAULIC CAPACITY OF THE PRODUCT, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED. PLEASE CONTACT OCEANPROTECT FOR OPTIONS. 3. THE FILTER CARTRIDGE(S) ARE SIPHON-ACTUATED AND SELF-CLEANING. THE STANDARD DETAIL DRAWING SHOWS THE MAXIMUM NUMBER OF CARTRIDGES. THE ACTUAL NUMBER SHALL BE SPECIFIED BY THE SITE CIVIL ENGINEER ON SITE PLANS OR IN DATA TABLE BELOW. CONCRETE STRUCTURE TO BE PROVIDED BY OTHERS. 4. SEE STORMFILTER DESIGN TABLE FOR REQUIRED HYDRAULIC DROP. FOR SHALLOW, LOW DROP OR SPECIAL DESIGN CONSTRAINTS, CONTACT OCEANPROTECT FOR DESIGN OPTIONS. 5. ALL WATER QUALITY PRODUCTS REQUIRE PERIODIC MAINTENANCE AS OUTLINED IN THE O&M GUIDELINES. PROVIDE MINIMUM CLEARANCE FOR MAINTENANCE ACCESS. 6. STRUCTURE AND ACCESS COVERS DESIGNED BY OTHERS. ACCESS COVERS TO BE A MINIMUM 900X900 ABOVE CARTRIDGES. 7. THE STRUCTURE THICKNESSES SHOWN ARE FOR REPRESENTATIONAL PURPOSES AND VARY REGIONALLY. 8. ANY BACKFILL DEPTH, SUB-BASE, AND OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY SITE CIVIL ENGINEER. 9. CARTRIDGE HEIGHT AND ASSOCIATED DESIGN PARAMETERS PER STORMFILTER DESIGN TABLE. 10. STORMFILTER BY OCEANPROTECT: SYDNEY (AU) PHONE: 1300 354 722 www.oceanprotect.com.au



STORMFILTER CARTRIDGE DETAIL

NTS

REV.	DATE	AMENDMENT	INT.	APP.
7	10/05/2023	RETAINING WALL REVISED	J.L	J.H
6	5/09/2022	RETAINING WALL REVISED	J.L	J.H
5	15/08/2022	ISSUED FOR DA	J.L	J.H
4	25/05/2022	ISSUED FOR REVIEW	J.L	J.L
3	19/05/2022	ISSUED FOR REVIEW	J.L	J.L
2	15/05/2022	ISSUED FOR REVIEW	J.L	J.L
1	11/04/2022	ISSUED FOR REVIEW	J.L	J.L

Client: JACK ZHANG

Architect: NKP ARCHITECURE

JCO CONSULTANTS PTY LTD
SUITE 801C, No.1 RIDER BOULEVARD, RHODES NSW 2138
EMAIL: Jason@jcoconsultants.com.au

Project: PROPOSED SUBDIVISION
12-14 GLADYS AVENUE
FRENCHS FOREST NSW 2030

Drawing Title: WSUD CATCHMENT PLAN & DETAILS

Design: J.L | Drawn: J.L | Validate: J.H

Job Number: 20220060

Drawing Number: DA-SW201

Scale: 1:500
Date: 10/05/2023
Size: A1
Datum: A.H.D

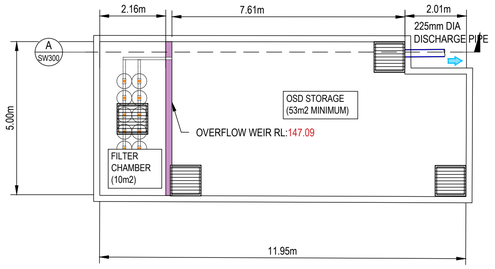
North Point

Status: DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION

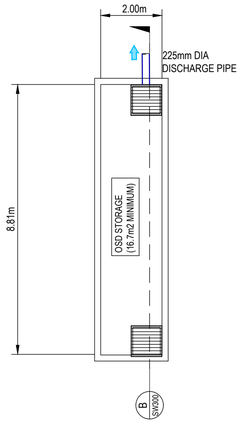
Scale: 0 10 20 30 40 50m
SCALE 1:500 @A1

DATE PLOTTED: 10 May 2023 4:30 PM

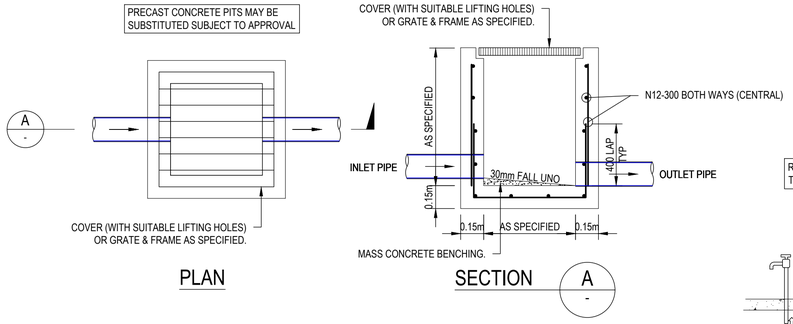
CAD File: P:\2022\20220060-12-14 Gladys Avenue, Frenchs Forest\Civil\cad\DA-SW201.dwg



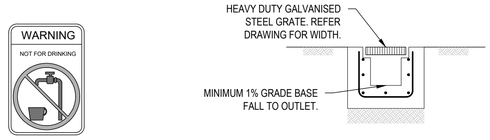
OSD 1 PLAN VIEW
1:100 (A1)



OSD 2 PLAN VIEW
1:100 (A1)

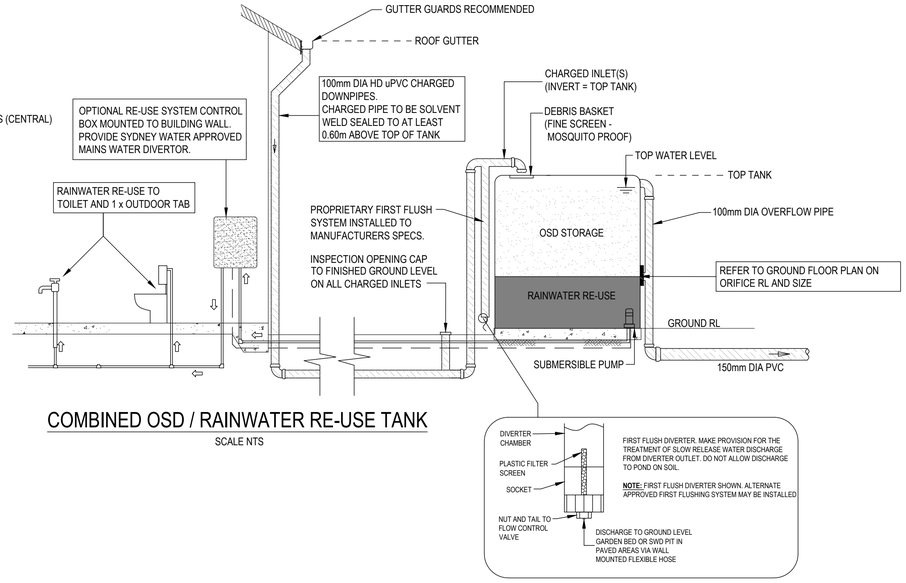


TYPICAL SURFACE INLET PIT (GSIP)
SCALE 1:20

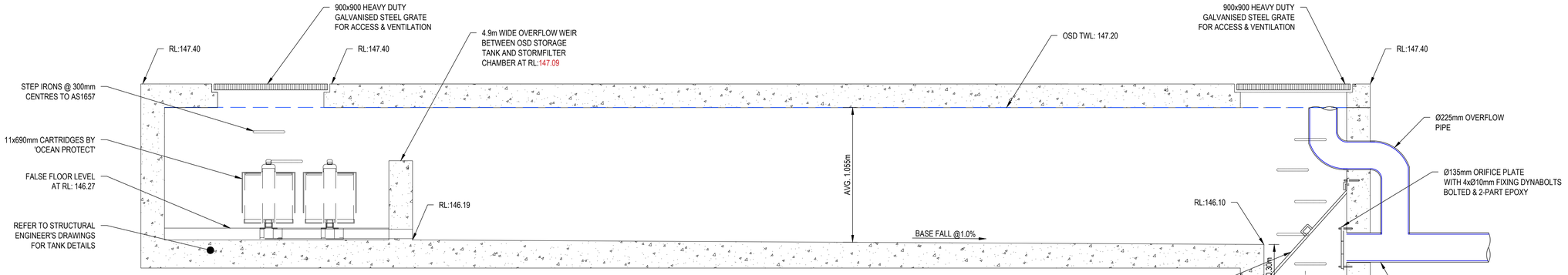


TYPICAL WARNING SIGN
NOT TO SCALE

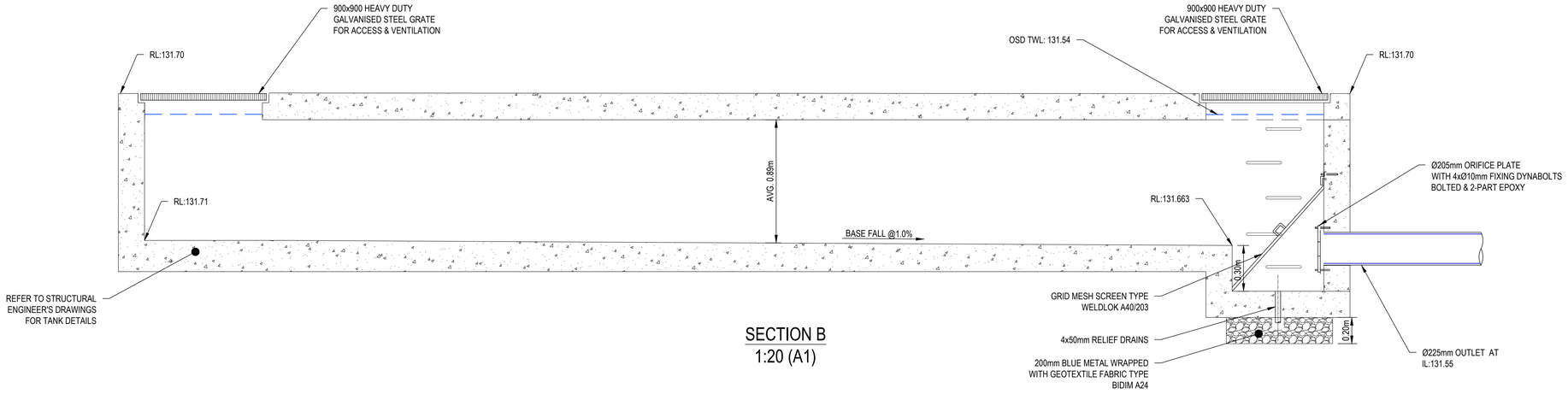
GRATED TRENCH DRAIN
SCALE 1:20



COMBINED OSD / RAINWATER RE-USE TANK
SCALE NTS



SECTION A
1:20 (A1)



SECTION B
1:20 (A1)

REV.	DATE	AMENDMENT	INT.	APP.
7	10/05/2023	RETAINING WALL REVISED	J.L	J.H
6	5/09/2022	RETAINING WALL REVISED	J.L	J.H
5	15/08/2022	ISSUED FOR DA	J.L	J.H
4	25/05/2022	ISSUED FOR REVIEW	J.L	J.L
3	19/05/2022	ISSUED FOR REVIEW	J.L	J.L
2	15/05/2022	ISSUED FOR REVIEW	J.L	J.L
1	11/04/2022	ISSUED FOR REVIEW	J.L	J.L

Client: JACK ZHANG

Architect: NKP ARCHITECURE

JCO CONSULTANTS PTY LTD
SUITE 801C, No.1 RIDER BOULEVARD, RHODES NSW 2138
EMAIL: Jason@jcoconsultants.com.au

Project: PROPOSED SUBDIVISION
12-14 GLADYS AVENUE
FRENCHS FOREST NSW 2030

Drawing Title: STORMWATER DETAILS SHEET

Design: J.L | Drawn: J.L | Validate: J.H

Job Number: 20220060

Drawing Number: DA-SW300

Scale: AS NOTED

Date: 10/05/2023

Size: A1

Datum: A.H.D

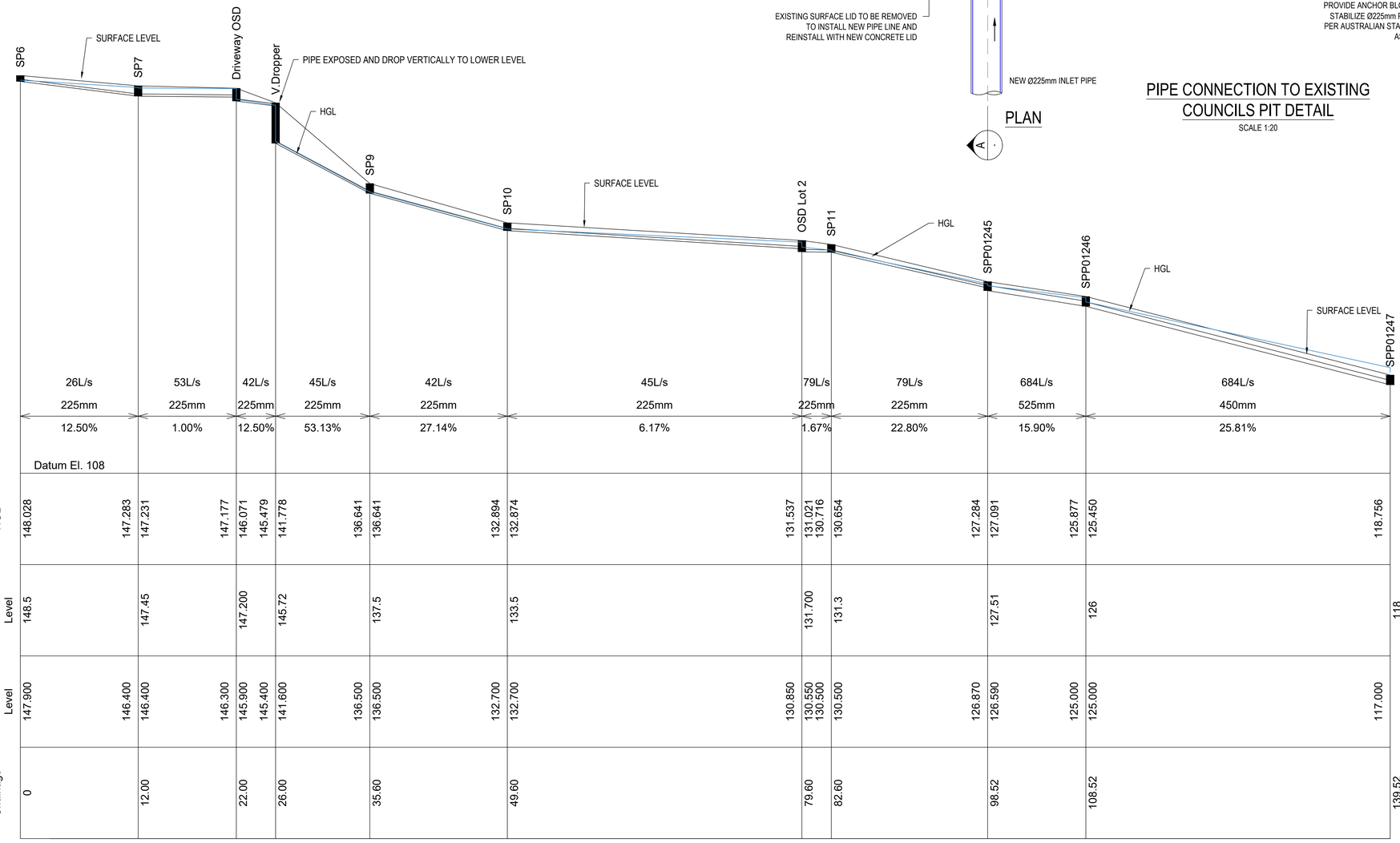
North Point

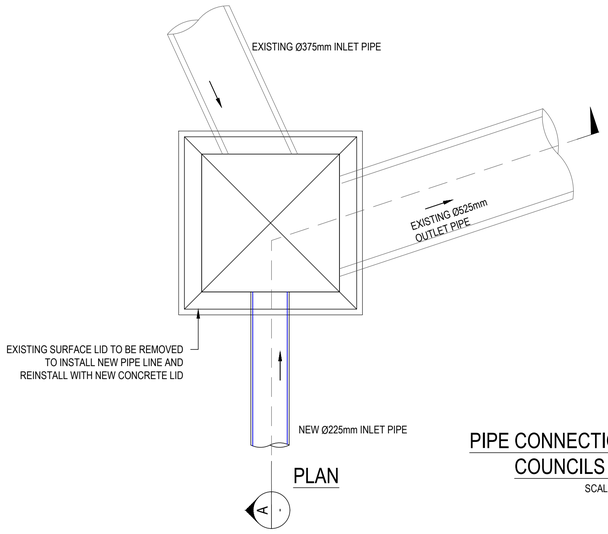
Status: DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION

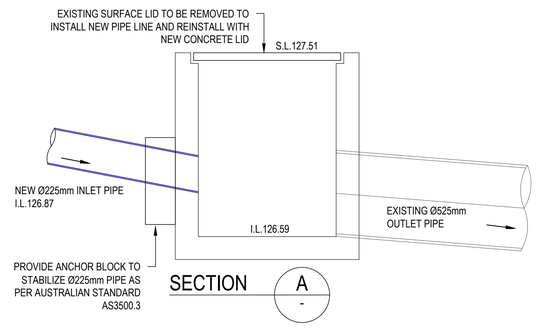
Scale

DATE PLOTTED: 10 May 2023 4:30 PM

CAD File: P:\2022\20220060-12-14 Gladys Avenue, Frenchs Forest\Civil\cad\DA-SW300.dwg







PIPE CONNECTION TO EXISTING COUNCILS PIT DETAIL

SCALE 1:20

HORIZONTAL SCALE 1:250 (A1)
VERTICAL SCALE 1:250 (A1)

REV.	DATE	AMENDMENT	INT.	APP.
7	10/05/2023	RETAINING WALL REVISED	J.L	J.H
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4	25/05/2022	ISSUED FOR REVIEW	J.L	J.L
3	19/05/2022	ISSUED FOR REVIEW	J.L	J.L
2	15/05/2022	ISSUED FOR REVIEW	J.L	J.L
1	11/04/2022	ISSUED FOR REVIEW	J.L	J.L

Client: JACK ZHANG

Architect: NKP ARCHITECURE

JCO CONSULTANTS PTY LTD
SUITE 801C, No.1 RIDER BOULEVARD, RHODES NSW 2138
EMAIL: Jason@jcoconsultants.com.au

Project: PROPOSED SUBDIVISION
12-14 GLADYS AVENUE
FRENCHS FOREST NSW 2030

Drawing Title: HGL ANALYSIS & EASEMENT PIT CONNECTION DETAIL

Design: J.L | Drawn: J.L | Validate: J.H

Job Number: 20220060

Drawing Number: DA-SW500

Scale: AS NOTED

Date: 10/05/2023

Size: A1

Datum: A.H.D

North Point

Status: DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION

Scale

DATE PLOTTED: 10 May 2023 4:30 PM

CAD File: P:\2022\20220060-12-14 Gladys Avenue, Frenchs Forest\Civil\cad\DA-SW500.dwg

NOTE

THE STORMWATER PLANS IS TO BE READ IN CONJUNCTION WITH THE STORMWATER SYSTEM ASSESSMENT REPORT PREPARED BY 'NASTASI & ASSOCIATES CONSULTING ENGINEERS'.

ACCORDING TO THE DOWNSTREAM PIPE CAPACITY CALCULATION FROM STORMWATER SYSTEM ASSESSMENT REPORT
'THE ESTIMATED MAXIMUM DISCHARGE RATE FROM 12-14 GLADYS AVE TO PIT SPP01245 SHALL BE 85 L/S FOR 100-YEAR ARI EVENT.'

THE POST DEVELOPMENT TOTAL SITE DISCHARGE TOWARDS THE EXISTING SPP01245 IS ONLY 79L/s WHICH IS LESS THAN THE PERMITTED DISCHARGED FLOW RATE 85L/s. HENCE, THE EXISTING DOWNSTREAM PIPE SYSTEM WILL HAVE ADDITIONAL CAPACITY TO CATER FOR FUTURE DEVELOPMENT WITHIN THE SUBJECT SITE, SUCH AS A GRANNY FLAT.

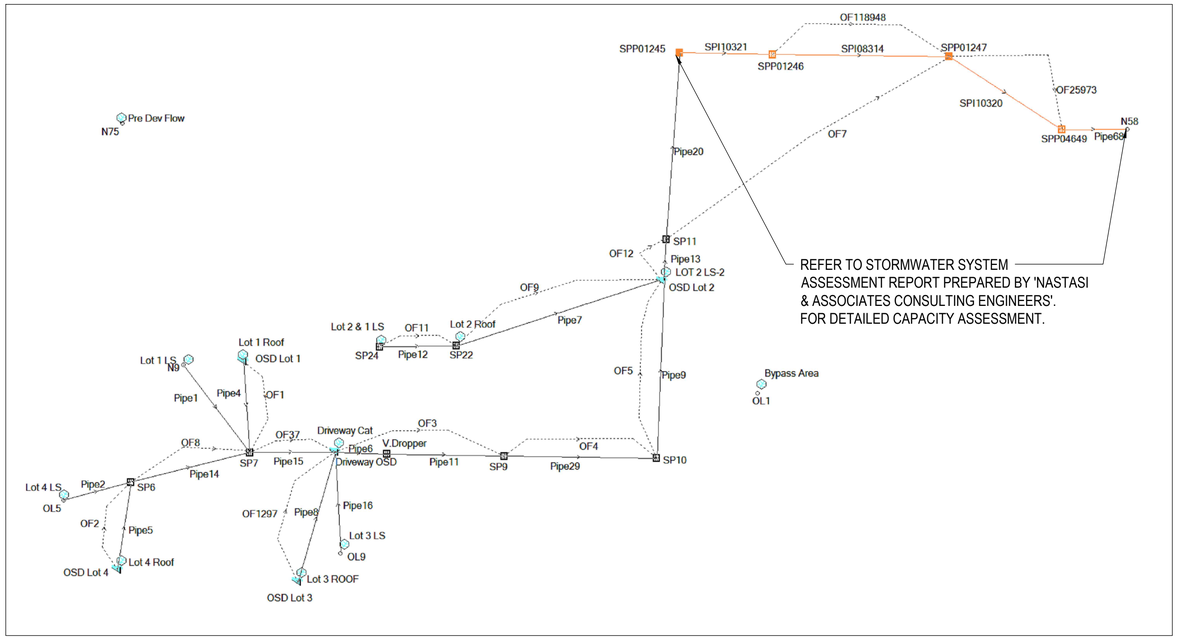
OSD DESIGN SUMMARY

SITE AREA: 4704m2
EXISTING SITE NODE WAS MODELED AS FULLY UNDEVELOPED NATURAL SURFACE FOR PURPOSE OF MODELING.

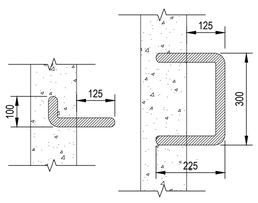
POST DEVELOPMENT ROOF AREA TO ABOVE GROUND OSD STORAGE, THEN DISCHARGE TO DRIVEWAY COMMON OSD TANK, THEN THE OVERFLOW DRAINS TO THE LOWER OSD IN LOT 2.
POST DEVELOPMENT BYPASS AREA = 880m2 (18% OF TOTAL SITE AREA)

5YR ARI PRE-DEVELOPMENT DISCHARGE	= 88L/s
5YR ARI POST-DEVELOPMENT BYPASS	= 17L/s
5YR ARI POST-DEVELOPMENT DISCHARGE	= 47L/s
20YR ARI PRE-DEVELOPMENT DISCHARGE	= 137L/s
20YR ARI POST-DEVELOPMENT BYPASS	= 26L/s
20YR ARI POST-DEVELOPMENT DISCHARGE	= 61L/s
100YR ARI PRE-DEVELOPMENT DISCHARGE	= 206L/s
100YR ARI POST-DEVELOPMENT BYPASS	= 38L/s
100YR ARI POST-DEVELOPMENT DISCHARGE	= 79L/s

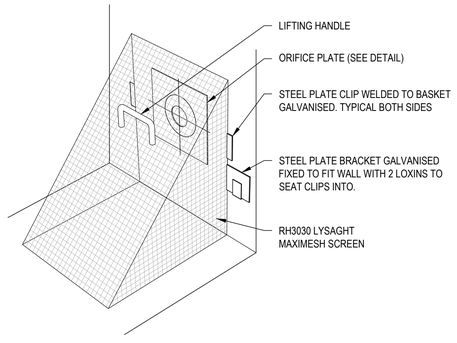
OSD VOLUME FOR LOT 1 REQUIRED BY 'DRAINS' MODEL= 5.7m3
OSD VOLUME FOR LOT 2 REQUIRED BY 'DRAINS' MODEL= 14.8m3
OSD VOLUME FOR LOT 3 REQUIRED BY 'DRAINS' MODEL= 5.6m3
OSD VOLUME FOR LOT 4 REQUIRED BY 'DRAINS' MODEL= 5.4m3
OSD VOLUME UNDER DRIVEWAY REQUIRED BY 'DRAINS' MODEL= 55.8m3



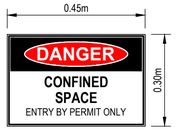
1%AEP DRAINS LAYOUT



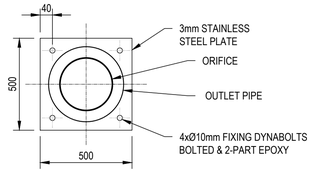
STEP IRONS
SCALE 1:10



DEBRIS SCREEN
SCALE 1:10

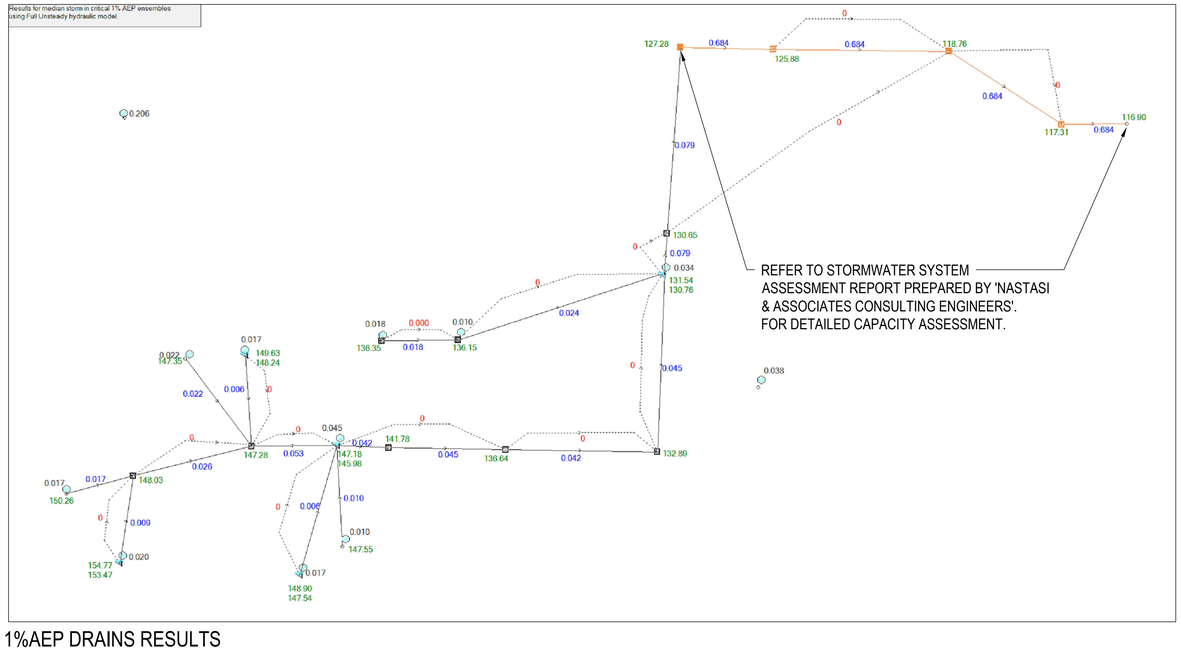


CONFINED SPACE SIGN
SCALE 1:10



ORIFICE PLATE
NTS

OSD SIGN
NOT TO SCALE



1%AEP DRAINS RESULTS

REV.	DATE	AMENDMENT	INT.	APP.
7	10/05/2023	RETAINING WALL REVISED	J.L	J.H
6	5/09/2022	RETAINING WALL REVISED	J.L	J.H
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3	19/05/2022	ISSUED FOR REVIEW	J.L	J.L
2	15/05/2022	ISSUED FOR REVIEW	J.L	J.L
1	11/04/2022	ISSUED FOR REVIEW	J.L	J.L

Client: JACK ZHANG
Architect: NKP ARCHITECURE

JCO CONSULTANTS PTY LTD
SUITE 801C, No.1 RIDER BOULEVARD, RHODES NSW 2138
EMAIL: Jason@jcoconsultants.com.au

Project: PROPOSED SUBDIVISION
12-14 GLADYS AVENUE
FRENCHS FOREST NSW 2030

Drawing Title: DRAINS MODEL DATA & RESULTS - 1 & DETAILS

Design: J.L | Drawn: J.L | Validate: J.H

Job Number: 20220060
Drawing Number: DA-SW501

Scale: NTS
Date: 10/05/2023
Size: A1
Datum: A.H.D

North Point

Status: DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION

Scale

DATE PLOTTED: 10 May 2023 4:30 PM

CAD File: P:\2022\20220060-12-14 Gladys Avenue, Frenchs Forest\Civil\cad\DA-SW501.dwg

PIT / NODE DETAILS — Version 15

Name	Type	Family	Size	Ponding Volume (cu.m)	Pressure Change Coeff. Ku	Surface Elev (m)	Max Pond Depth (m)	Base Inflow (cu.m/s)	Blocking Factor	x	y	Bolt-down lid	id	Part Full Shock Loss	Inflow Hydrograph	Pit is	Internal Width (mm)	Inflow is Misaligned	Minor Pond Depth (m)	Safe Major Pond Depth (m)
SP7	OnGrade	NWS Pits	GSIP 900x900		1.5	147.45		0	0.5	724.742	-176.915	No	48416352	1 x Ku	No	New		No		
V.Dropper	OnGrade	Downpipe	Downpipe		3	145.72		0	0	761.431	-177.319	No	84502735	1 x Ku	No	New		No		
SP9	OnGrade	NWS Pits	GSIP 900x900		0.6	137.5		0	0.5	792.865	-177.917	No	47	1 x Ku	No	New		No		
SP10	OnGrade	NWS Pits	GSIP 900x900		1.8	133.5		0	0.5	833.565	-178.498	No	128	1 x Ku	No	New		Yes		
SP11	OnGrade	NWS Pits	GSIP 600x600		0.2	131.3		0	0.5	836.084	-119.961	No	66	1 x Ku	No	New		No		
SPP01245	OnGrade	Junction Pit or Man	Junction Pit or Manh		1.3	127.51		0.605	0	839.712	-70.005	Yes	72	1 x Ku	No	Existing		Yes		
SPP01246	OnGrade	NWS Pits	GSIP 900x900		0.9	126		0	0.5	864.551	-70.563	No	95	1 x Ku	No	Existing		No		
SPP01247	OnGrade	Junction Pit or Man	Junction Pit or Manh		1	118		0	0	911.715	-71.121	Yes	179	1 x Ku	No	Existing		Yes		
SPP04649	OnGrade	NSW Dept. of Hous	RM7		0.3	117.8		0	0.5	941.856	-90.657	No	190	1 x Ku	No	Existing		No		
N58	Node					117.5		0		959.275	-90.51		184		No					
SP6	OnGrade	NWS Pits	GSIP 600x600		1.1	148.5		0	0.5	693.055	-184.894	No	48416247	1 x Ku	No	New		No		
N9	Node					150		0		707.009	-153.497		39		No					
N75	Node							0		690.683	-88.983		371		No					
OL1	Node							0		860.504	-161.172		18076853		No					
Pit90275	OnGrade	Junction Pit or Man	Junction Pit or Manh		1.5	127.51		0.601	0	839.573	-27.678	Yes	54972897	1 x Ku	No	Existing				
Pit90368	OnGrade	NWS Pits	GSIP 900x900		0.9	126		0	0.5	865.853	-26.98	No	54972990	1 x Ku	No	Existing		No		
Pit90460	OnGrade	Junction Pit or Man	Junction Pit or Manh		1	118		0	0	909.343	-28.841	Yes	54973082	1 x Ku	No	Existing		Yes		
Pit90553	OnGrade	NSW Dept. of Hous	RM7		1.4	117.8		0	0.5	939.344	-40.469	No	54973175	1 x Ku	No	Existing		Yes		
N207083	Node					117.5		0		979.579	-43.957		54973275		No					
OL9	Node					148		0		749.065	-203.887		70001733		No					
OL5	Node					150.5		0		675.031	-189.739		92071704		No					
SP24	OnGrade	NWS Pits	GSIP 900x900		1.5	137.8		0	0	759.547	-148.652	No	1.12E+08	1 x Ku	No	New				
SP22	OnGrade	NWS Pits	GSIP 900x900		1.5	137.7		0	0	780.139	-148.49	No	1.12E+08	1 x Ku	No	New				

DETENTION BASIN DETAILS

Name	Elev	Surf. Area	Not Used	Outlet Type	K	Dia(mm)	Centre RL	Pit Family	Pit Type	x	y	HED	Crest RL	Crest Length	id
OSD Lot 1	148.2	4		Orifice		50	148.25			723.056	-152.567	No		13	
	150.22	4													
Driveway OSD	145.9	0.81		Orifice		135	146.013			747.634	-176.845	No		92068988	
	146.1	0.81													
	146.11	52													
	147.2	52													
OSD Lot 2	130.55	15		Orifice		205	130.67			835.051	-131.048	No		16	
	131.6	15													
OSD Lot 3	147.5	4		Orifice		50	147.55			737.63	-211.639	No		24	
	149.52	4													
OSD Lot 4	153.43	4		Orifice		60	153.48			689.373	-208.344	No		26	
	155.45	4													

SUB-CATCHMENT DETAILS

Name	Pit or Node	Total Area (ha)	Paved Area %	Grass Area %	Supp Area %	Paved Time (min)	Grass Time (min)	Supp Time (min)	Paved Length (m)	Grass Length (m)	Supp Length (m)	Paved Slope(%)	Grass Slope %	Supp Slope %	Paved Rough	Grass Rough	Supp Rough	Lag Time or Factor	Gutter Length (m)	Gutter Slope %	Gutter Flow	Facto	Rainfall Multiplier
Lot 1 Roof	OSD Lot 1	0.0238	100	0	0	5		10	2									0					1
Driveway Cat	Driveway OSD	0.061	100	0	0	5		10	2									0					1
LOT 2 LS-2	OSD Lot 2	0.0768	0	100	0	5		13	2									0					1
Lot 3 ROOF	OSD Lot 3	0.0234	100	0	0	5		10	2									0					1
Lot 4 Roof	OSD Lot 4	0.0276	100	0	0	5		10	2									0					1
Lot 1 LS	N9	0.0494	0	100	0	5		12	2									0					1
Pre Dev Flow	N75	0.4704	0	100	0	5		13	2									0					1
Bypass Area	OL1	0.088	10	90	0	5		13	2									0					1
Lot 3 LS	OL9	0.0229	0	100	0	5		12	2									0					1
Lot 4 LS	OL5	0.0388	0	100	0	5		12	2									0					1
Lot 2 & 1 LS	SP24	0.0394	0	100	0	5		12	2									0					1
Lot 2 Roof	SP22	0.0139	100	0	0	5		10	2									0					1

PIPE DETAILS

Name	From	To	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Type	Dia (mm)	I.D. (mm)	Rough	Pipe Is	No. Pipes	Chg From	At Chg	Chg (m)	Rl (m)	Chg (m)	Rl (m)	etc (m)
Pipe4	OSD Lot 1	SP7	25	148.2	146.4	7.2	Concrete, not under roads, 0.5% minimum slope	150	150	0.013	New	Fixed	1 OSD Lot 1	0					
Pipe15	SP7	Driveway OSD	10	146.4	146.3	1	Concrete, not under roads, 0.5% minimum slope	225	225	0.013	New	Fixed	1 SP7	0					
Pipe6	Driveway OSD	V.Dropper	4	145.9	145.4	12.5	Concrete, not under roads, 0.5% minimum slope	225	225	0.013	New	Fixed	1 Driveway	0					
Pipe11	V.Dropper	SP9	9.6	141.6	136.5	53.13	Concrete, not under roads, 0.5% minimum slope	225	225	0.013	New	Fixed	1 V.Dropper	0					
Pipe29	SP9	SP10	14	136.5	132.7	27.14	Concrete, not under roads, 0.5% minimum slope	225	225	0.013	New	Fixed	1 SP9	0					
Pipe9	SP10	OSD Lot 2	30	132.7	130.85	6.17	uPVC, not under roads, 1% minimum slope	225	242	0.012	New	Fixed	1 SP10	0					
Pipe13	OSD Lot 2	SP11	3	130.55	130.5	1.67	uPVC, not under roads, 1% minimum slope	225	242	0.012	New	Fixed	1 OSD Lot 2	0					
Pipe20	SP11	SPP01245	15.92	130.5	126.87	22.8	uPVC, not under roads, 1% minimum slope	225	242	0.012	New	Fixed	1 SP11	0					
SPI10321	SPP01245	SPP01246	10	126.59	125	15.9	Concrete, not under roads, 0.5% minimum slope	525	525	0.013	Existing		1 SPP01245	0					
SPI08314	SPP01246	SPP01247	31	125	117	25.81	Concrete, not under roads, 0.5% minimum slope	450	450	0.013	Existing		1 SPP01246	0					
SPI10320	SPP01247	SPP04649	38	117	116.5	1.32	Concrete, not under roads, 0.5% minimum slope	525	525	0.013	Existing		1 SPP01247	0					
Pipe68	SPP04649	N58	10	116.5	116.4	1	Concrete, not under roads, 0.5% minimum slope	525	525	0.013	Existing		1 SPP04649	0					
Pipe8	OSD Lot 3	Driveway OSD	22	147.5	146	6.82	Concrete, not under roads, 0.5% minimum slope	150	150	0.013	New	Fixed	1 OSD Lot 3	0					
Pipe5	OSD Lot 4	SP6	25	153.43	148	21.72	Concrete, not under roads, 0.5% minimum slope	150	150	0.013	New	Fixed	1 OSD Lot 4	0					
Pipe14	SP6	SP7	12	147.9	146.4	12.5	Concrete, not under roads, 0.5% minimum slope	225	225	0.013	New	Fixed	1 SP6	0					
Pipe1	N9	SP7	10	147	146.4	6	Concrete, not under roads, 0.5% minimum slope	150	150	0.013	New	Fixed	1 N9	0					
P156602	Pit90275	Pit90368	10	126.59	125	15.9	Concrete, not under roads, 0.5% minimum slope	525	525	0.013	Existing		1 Pit90275	0					
P156698	Pit90368	Pit90460	31	125	117	25.81	Concrete, not under roads, 0.5% minimum slope	450	450	0.013	Existing		1 Pit90368	0					
P156792	Pit90460	Pit90553	38	117	116.5	1.32	Concrete, not under roads, 0.5% minimum slope	525	525	0.013	Existing		1 Pit90460	0					
P156886	Pit90553	N207083	10	116.5	116.4	1	Concrete, not under roads, 0.5% minimum slope	525	525	0.013	Existing		1 Pit90553	0					
Pipe16	OL9	Driveway OSD	30	146.8	146.5	1	uPVC, not under roads, 1% minimum slope	100	105	0.012	New	Fixed	1 OL9	0					
Pipe2	OL5	SP6	25	150.2	147.9	9.2	uPVC, not under roads, 1% minimum slope	150	154	0.012	New		1 OL5	0					
Pipe12	SP24	SP22	13	136.2	136	1.54	uPVC, not under roads, 1% minimum slope	150	154	0.012	New	Fixed	1 SP24	0					
Pipe7	SP22	OSD Lot 2	26	136	131.3	18.08	Concrete, not under roads, 0.5% minimum slope	150	150	0.013	New	Fixed	1 SP22	0					

DETAILS of SERVICES CROSSING PIPES

Pipe	Chg Bottom Elev (m)	Height of Chg (m)	Chg (m)	Bottom Elev (m)	Height of Service Chg (m)	Chg (m)	Bottom Elev (m)	Height of etc (m)	etc

CHANNEL DETAILS

Name	From	To	Type	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Base Width (m)	L.B. Slope (1:7)	R.B. Slope (1:7)	Manning n	Depth (m)	Roofed

OVERFLOW ROUTE DETAILS

Name	From	To	Travel Time (min)	Spill Level (m)	Crest Length (m)	Weir Coeff. C	Cross Section	Safe Major (m)	Depth Minor (m)	Safe Depth Sto (m)	Safe DxV (sq.m/sec)	Bed Slope (%)	D/S Area Contributing %	id	U/S IL	D/S IL	Length (m)
OF1	OSD Lot 1	SP7	0.1	150.22	0.9	1.7	4 m wide pathway	0.3	0.15	0.4	11.08	0		1160623	150.22	147.45	25
OF37	SP7	Driveway OSD	0.1				4 m wide pathway	0.3	0.15	0.4	0.5	0		48416388	147.45	147.4	10
OF3	Driveway OSD	SP9	0.1	147.4	0.9	1.7	4 m wide pathway	0.3	0.15	0.4	47	0		1160625	147.4	138	20
OF4	SP9	SP10	0.1				Swale with 1:4 sideslopes	0.45	0.3	1	25.68	0		1160626	137.5	133.5	18.11
OF5	SP10	OSD Lot 2	0.2				Swale with 1:4 sideslopes	0.45	0.3	1	6.83	0		16454372	133.5	131.6	30
OF12	OSD Lot 2	SP11	0.1	131.6	0.9	1.7	Swale with 1:4 sideslopes	0.45	0.3	1	10	0		1.17E+08	131.6	131.3	3
OF7	SP11	SPP01247	0.2				4 m wide pathway	0.3	0.15	0.4	26.6	0		1160629	131.3	118	50
OF118948	SPP01246	SPP01247	0.1				4 m wide pathway	0.3	0.15	0.4	25.81	0		611308S4	126	118	31
OF25973	SPP01247	SPP04649	0.3				4 m wide pathway	0.3	0.15	0.4	1	0		17659894	118	117.8	38
OF1297	OSD Lot 3	Driveway OSD	0.1	149.52	0.9	1.7	4 m wide pathway	0.3	0.15	0.4	30.2	0		2316612	149.52	147.4	22
OF2	OSD Lot 4	SP6	0.1	155.45	0.1	1.7	4 m wide pathway	0.3	0.15	0.4	27.4	0		1160624	155.45	148.5	25
OF8	SP6	SP7	0.1				4 m wide pathway	0.3	0.15	0.4	8.75	0		48416381	148.5	147.45	12
OF118945	Pit90368	Pit90460	0.1				4 m wide pathway	0.3	0.15	0.4	25.81	0		611308S1	126	118	31
OF107558	Pit90460	Pit90553	0.3				4 m wide pathway	0.3	0.15	0.4	1	0		54973840	118	117.8	38
OF11	SP24	SP22	0.1				4 m wide pathway	0.3	0.15	0.4	0.77	0		1.26E+08	137.8	137.7	13
OF9	SP22	OSD Lot 2	0.1				4 m wide pathway	0.3	0.15	0.4	10.33	0		1160632	137.7	131.6	30

PIPE COVER DETAILS

Name	Type	Dia (mm)	Safe Cover (m)	Cover (m)
Pipe4	Concrete, not under roac	150	0.45	-0.18
Pipe15	Concrete, not under roac	225	0.45	-0.66
Pipe6	Concrete, not under roac	225	0.45	-0.26
Pipe11	Concrete, not under roac	225	0.45	0.74
Pipe29	Concrete, not under roac	225	0.45	0.54
Pipe9	uPVC, not under roads, 1	242	0.3	-0.55
Pipe13	uPVC, not under roads, 1	242	0.3	-0.25
Pipe20	uPVC, not under roads, 1	242	0.3	0.39
SPI10321	Concrete, not under roac	525	0.45	0.35
SPI08314	Concrete, not under roac	450	0.45	0.51
SPI10320	Concrete, not under roac	525	0.45	0.43
Pipe68	Concrete, not under roac	525	0.45	0.53
Pipe8	Concrete, not under roac	150	0.45	-0.28
Pipe5	Concrete, not under roac	150	0.45	-0.18
Pipe14	Concrete, not under roac	225	0.45	0.34
Pipe1	Concrete, not under roac	150	0.45	0.87
P156602	Concrete, not under roac	525	0.45	0.35
P156698	Concrete, not under roac	450	0.45	0.51
P156792	Concrete, not under roac	525	0.45	0.43
P156886	Concrete, not under roac	525	0.45	0.53
Pipe16	uPVC, not under roads, 1	105	0.3	-0.71
Pipe2	uPVC, not under roads, 1	154	0.3	0.14
Pipe12	uPVC, not under roads, 1	154	0.3	1.44
Pipe7	Concrete, not under roac	150	0.45	-0.93

This model has no pipes with non-return valves

DRAINS DATA

DRAINS results prepared from Version 2022.012

PIT / NODE DETAILS — Version 8

Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
SP7	147.28		0		0.17	0	None
V.Dropper	141.78		0		3.94		None
SP9	136.64		0		0.86	0	None
SP10	132.89		0		0.61	0	None
SP11	130.65		0.007		0.65	0	None
SPP01245	127.28		0		0.23		None
SPP01246	125.88		0		0.12	0	None
SPP01247	118.76		0.001		0	0	Outlet System
SPP04649	117.31		0		0.49		None
N58	116.9		0				
SP6	148.03		0		0.47	0	None
N9	147.35		0.024				
Pit90275	127.23		0		0.28		None
Pit90368	125.69		0		0.31	0	None
Pit90460	118.77		0		0	0	Outlet System
Pit90553	117.64		0		0.16		None
N207083	116.89		0				
OL9	147.55		0.011				
OL5	150.26		0.019				
SP24	136.35		0.019		1.45	0	Inlet Capacity
SP22	136.15		0.013		1.55	0	None

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
Lot 1 Roof	0.017	0.017	0	5	10		2 1% AEP, 5 min burst, Storm 1
Driveway Cat	0.045	0.045	0	5	10		2 1% AEP, 5 min burst, Storm 1
LOT 2 LS-2	0.034	0	0.034	5	13		2 1% AEP, 15 min burst, Storm 8
Lot 3 ROOF	0.017	0.017	0	5	10		2 1% AEP, 5 min burst, Storm 1
Lot 4 Roof	0.02	0.02	0	5	10		2 1% AEP, 5 min burst, Storm 1
Lot 1 LS	0.022	0	0.022	5	12		2 1% AEP, 15 min burst, Storm 8
Pre Dev Flow	0.206	0	0.206	5	13		2 1% AEP, 15 min burst, Storm 8
Bypass Area	0.038	0.005	0.035	5	13		2 1% AEP, 15 min burst, Storm 8
Lot 3 LS	0.01	0	0.01	5	12		2 1% AEP, 15 min burst, Storm 8
Lot 4 LS	0.017	0	0.017	5	12		2 1% AEP, 15 min burst, Storm 8
Lot 2 & 1 LS	0.018	0	0.018	5	12		2 1% AEP, 15 min burst, Storm 8
Lot 2 Roof	0.01	0.01	0	5	10		2 1% AEP, 5 min burst, Storm 1

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Pipe4	0.006	0.35	149.468	147.283	1% AEP, 25 min burst, Storm 1
Pipe15	0.053	1.34	147.231	147.177	1% AEP, 15 min burst, Storm 8
Pipe6	0.042	3.37	146.071	145.479	1% AEP, 45 min burst, Storm 2
Pipe11	0.045	1.73	141.778	136.641	1% AEP, 30 min burst, Storm 3
Pipe29	0.042	1.61	136.641	132.894	1% AEP, 45 min burst, Storm 2
Pipe9	0.045	1.28	132.874	131.537	1% AEP, 45 min burst, Storm 5
Pipe13	0.079	1.82	131.021	130.716	1% AEP, 20 min burst, Storm 9
Pipe20	0.079	2.56	130.654	127.284	1% AEP, 20 min burst, Storm 9
SPI10321	0.684	3.21	127.091	125.877	1% AEP, 20 min burst, Storm 9
SPI08314	0.684	4.3	125.45	118.756	1% AEP, 20 min burst, Storm 9
SPI10320	0.684	3.16	118.265	117.309	1% AEP, 20 min burst, Storm 9
Pipe68	0.684	3.2	117.157	116.904	1% AEP, 20 min burst, Storm 9
Pipe8	0.006	0.35	148.766	147.177	1% AEP, 25 min burst, Storm 1
Pipe5	0.009	2.97	154.298	148.033	1% AEP, 20 min burst, Storm 8
Pipe14	0.026	1.1	148.028	147.283	1% AEP, 15 min burst, Storm 8
Pipe1	0.022	1.25	147.35	147.283	1% AEP, 15 min burst, Storm 8
P156602	0.601	2.89	127.073	125.688	1% AEP, 5 min burst, Storm 1
P156698	0.601	3.78	125.45	118.774	1% AEP, 5 min burst, Storm 1
P156792	0.601	2.78	118.38	117.642	1% AEP, 5 min burst, Storm 1
P156886	0.601	2.86	117.085	116.89	1% AEP, 2 hour burst, Storm 4
Pipe16	0.01	1.18	147.554	147.177	1% AEP, 15 min burst, Storm 8
Pipe2	0.017	2.57	150.26	148.028	1% AEP, 15 min burst, Storm 8
Pipe12	0.018	1.12	136.322	136.151	1% AEP, 15 min burst, Storm 8
Pipe7	0.024	1.45	136.135	131.537	1% AEP, 20 min burst, Storm 8

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS

Name	Max Q	U/S	Max Q	D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
OF1	0		0		1.362	0		0	0	0
OF37	0		0		1.497	0		0	0	0
OF3	0		0		1.224	0		0	0	0
OF4	0		0		0.983	0		0	0	0
OF5	0		0		1.461	0		0	0	0
OF12	0		0		1.292	0		0	0	0
OF7	0		0		1.302	0		0	0	0
OF118948	0		0		1.283	0		0	0	0
OF25973	0		0		1.479	0		0	0	0
OF1297	0		0		1.26	0		0	0	0
OF2	0		0		1.281	0		0	0	0
OF8	0		0		1.383	0		0	0	0
OF118945	0		0		1.283	0		0	0	0
OF107558	0		0		1.479	0		0	0	0
OF11	0		0		1.49	0		0	0	0
OF9	0		0		1.346	0		0	0	0

DETENTION BASIN DETAILS

Name	Max WL	MaxVol Total	Max Q	Max Q Low Level	Max Q High Level
OSD Lot 1	149.63	5.7	0.006	0.006	0
Driveway OSD	147.18	55.8	0.042	0.042	0
OSD Lot 2	131.54	14.8	0.079	0.079	0
OSD Lot 3	148.9	5.6	0.006	0.006	0
OSD Lot 4	154.77	5.4	0.009	0.009	0

Run Log for 220060v7.drn run at 10:03:15 on 9/5/2023 using version 2022.012
No water upwelling from any pit.
Freeboard was less than 0.15m at SPP01246
Flows were safe in all overflow routes.

1%AEP DRAINS RESULTS

REV.	DATE	AMENDMENT	INT.	APP.
7	10/05/2023	RETAINING WALL REVISED	J.L	J.H
6	5/09/2022	RETAINING WALL REVISED	J.L	J.H
5	15/08/2022	ISSUED FOR DA	J.L	J.H
4	25/05/2022	ISSUED FOR REVIEW	J.L	J.L
3	19/05/2022	ISSUED FOR REVIEW	J.L	J.L
2	15/05/2022	ISSUED FOR REVIEW	J.L	J.L
1	11/04/2022	ISSUED FOR REVIEW	J.L	J.L

Client: JACK ZHANG

Architect: NKP ARCHITECURE

JCO CONSULTANTS PTY LTD
SUITE 801C, No.1 RIDER BOULEVARD, RHODES NSW 2138
EMAIL: Jason@jcoconsultants.com.au

Project: PROPOSED SUBDIVISION
12-14 GLADYS AVENUE
FRENCHS FOREST NSW 2030

Drawing Title: DRAINS MODEL DATA & RESULTS - 2

Design: J.L | Drawn: J.L | Validate: J.H

Job Number: 20220060

Drawing Number: DA-SW502

Scale: NTS

Date: 10/05/2023

Size: A1

Datum: A.H.D

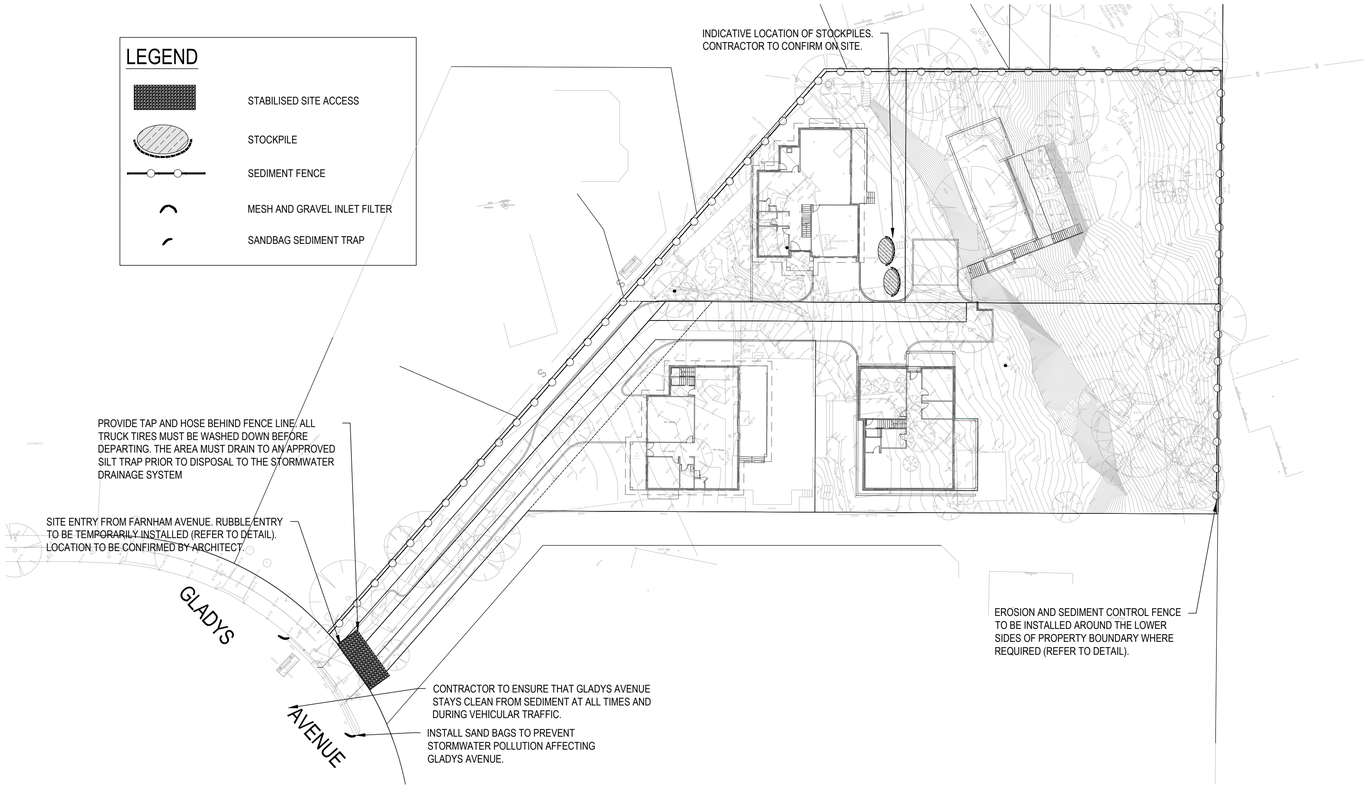
North Point

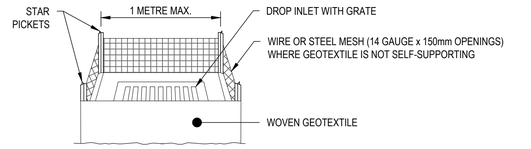
Status: DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION

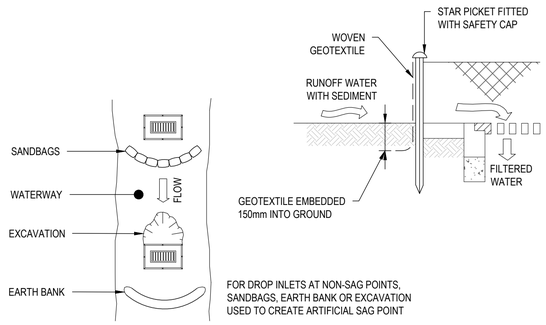
Scale

DATE PLOTTED: 10 May 2023 4:30 PM

CAD File: P:\2022\20220060-12-14 Gladys Avenue, Frenchs Forest\Civil\cad\DA-SW502.dwg



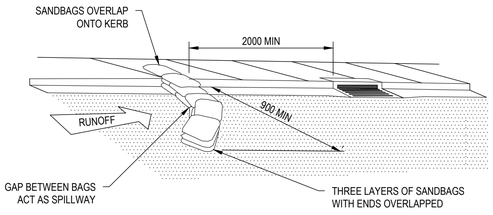




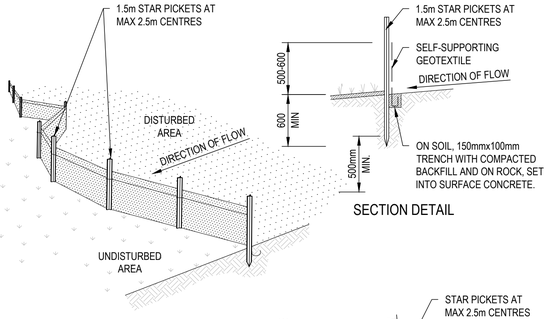
CONSTRUCTION NOTES

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1 METRE CENTRES.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER (SD 6-12)



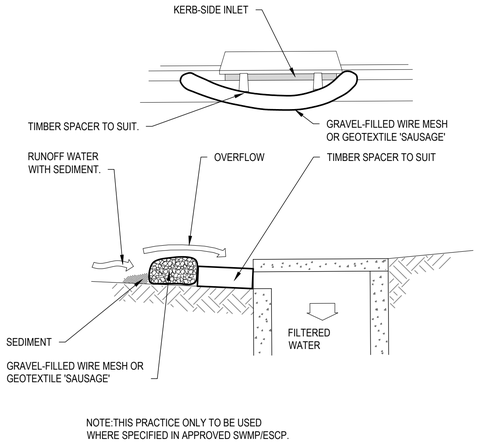
SANDBAG SEDIMENT TRAP



CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

SEDIMENT FENCE (SD 6-8)

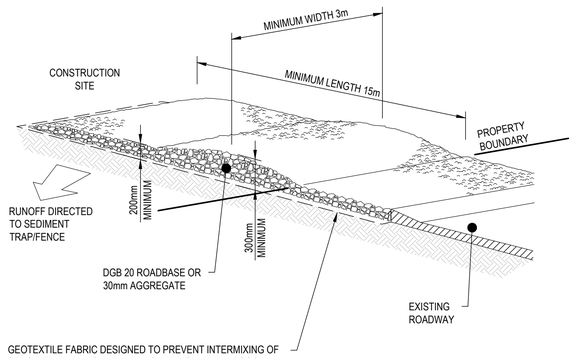


NOTE:THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN APPROVED SWMP/ESCP.

CONSTRUCTION NOTES

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

MESH AND GRAVEL INLET FILTER (SD 6-11)



GEOTEXTILE FABRIC DESIGNED TO PREVENT INTERMIXING OF SUBGRADE AND BASE MATERIALS AND TO MAINTAIN GOOD PROPERTIES OF THE SUB-BASE LAYERS. GEOFABRIC MAY BE A WOVEN OR NEEDLE-PUNCHED PRODUCT WITH A MINIMUM CBR BURST STRENGTH (AS3706.4-90) OF 2500 N

CONSTRUCTION NOTES

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

STABILISED SITE ACCESS (SD 6-14)

REV.	DATE	AMENDMENT	INT.	APP.
7	10/05/2023	RETAINING WALL REVISED	J.L	J.H
6	5/09/2022	RETAINING WALL REVISED	J.L	J.H
5	15/08/2022	ISSUED FOR DA	J.L	J.H
4	25/05/2022	ISSUED FOR REVIEW	J.L	J.L
3	19/05/2022	ISSUED FOR REVIEW	J.L	J.L
2	15/05/2022	ISSUED FOR REVIEW	J.L	J.L
1	11/04/2022	ISSUED FOR REVIEW	J.L	J.L

Client: JACK ZHANG

Architect: NKP ARCHITECURE

JCO CONSULTANTS PTY LTD
SUITE 801C, No.1 RIDER BOULEVARD, RHODES NSW 2138
EMAIL: Jason@jcoconsultants.com.au

Project: PROPOSED SUBDIVISION
12-14 GLADYS AVENUE
FRENCHS FOREST NSW 2030

Drawing Title: EROSION AND SEDIMENT CONTROL PLAN & DETAILS

Design: J.L | Drawn: J.L | Validate: J.H

Job Number: 20220060

Drawing Number: DA-SW600

Scale: AS NOTED | Date: 10/05/2023 | Size: A1 | Datum: A.H.D

North Point

Status: DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION

Scale: 0 10 20 30 40m
SCALE 1:400 @A1

DATE PLOTTED: 10 May 2023 4:30 PM

CAD File: P:\2022\20220060-12-14 Gladys Avenue, Frenchs Forest\Civil\cad\DA-SW600.dwg