NORTHERN BEACHES COUNCIL

PROPOSED SUBDIVISION
39 STARKEY ST, FORESTVILLE NSW 2087

STORMWATER DRAINAGE CONCEPT PLAN

DIAL 1100 BEFORE YOU DIG

STORMWATER DRAINAGE NOTES

1. ALL LINES ARE TO BE MIN. 100Φ 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. EXISTING STORMWATER DRAINAGE SYSTEM TO BE CCTV CAMERA TESTED BY LICENSED PLUMBER PRIOR TO CONSTRUCTION.
4. ALL PIPES TO HAVE MIN 200mm COVER IF LOCATED WITHIN THE PROPERTY.
5. ENSURE ALL PIT GRATES ARE SET BELOW FINISHED SURFACE LEVEL WITHIN THE PROPERTY.
6. TOP OF PIT RL'S ARE APPROXIMATE ONLY AND MAY BE VARIED SUBJECT TO APPROVAL OF THE ENGINEER. ALL INVERT LEVELS ARE TO BE ACHIEVED.
7. ALL PITS IN DRIVEWAYS BE HEAVY DUTY GRATES. DIRECT SURFACE FLOW TO ALL GRATED SURFACE INLET PITS.
8. ALL WORK DO BE DONE IN ACCORDANCE WITH AS/NZ 3500.3:2018 AND COUNCIL SPECIFICATIONS.
9. 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.
10. THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL, HYDRAULIC, LANDSCAPE AND STRUCTURAL PLANS.
11. ANY DISCREPANCIES OR OMISSIONS SHALL BE REFERRED TO THE DESIGN ENGINEER FOR RESOLUTION PRIOR PROCEEDING CONSTRUCTION.
12. THE SITE SHALL BE GRADED AND DRAINED SO THAT STORMWATER WILL BE DIRECTED AWAY FROM THE BUILDING PLATFORM.
13. SITE TO BE GRADED AS SUCH SO WATER CAN NOT POND ON THE SURFACE.
14. ALL PITS OR GRATES IN TRAFFICABLE AREAS TO BE HEAVY DUTY.
15. ALL GUTTERS WILL BE FITTED WITH LEAF GUARDS AND SHOULD BE INSPECTED AND CLEANED TO ENSURE LEAF LITTER CANNOT ENTER THE DOWNPIPES.
16. PROVIDE EMERGENCY OVERFLOW TO ALL PLANTER BOX AND BALCONIES.
17. ALL PITS WITH DEPTH MORE THAN 1M MUST HAVE IRON STEPS.
18. ADEQUATE SUB-SOIL DRAINAGE CONNECTING TO THE STORMWATER DRAINAGE SYSTEM SHALL BE PROVIDED TO ALL RETAINING WALLS & EMBANKMENTS.
19. PROVIDE STORMWATER GRATE 150W×150D AT THE BASE OF ALL MECHANICAL SHAFTS AND UNCOVERED STAIRS OR OPENINGS.
20. ENSURE ALL DRAINAGE WORKS ARE AWAY FROM TREE ROOTS.

AS3500.3:2021 MIN. REQUIREMENTS

MINIMUM GRADIENT OF PIPES	
PIPE DIAMETER (mm)	MINIMUM GRADIENT
100	1:100
150	1:100
225	1:200
300	1:250
375	1:300

MINIMUM PIPE COVERS	
LOCATION	PLASTIC PIPES MINIMUM COVER (mm)
1. NO VEHICULAR LOADING	-
(a) NOT PAVED	-
(i) SINGLE DWELLING	100
(ii) OTHERS	300
(b) PAVED	100 BELOW UNDERSIDE OF PAVEMENT
2. VEHICULAR LOADING (NOT ROAD)	-
(i) NOT PAVED	450
(ii) PAVED	100 BELOW UNDERSIDE OF PAVEMENT

MINIMUM INTERNAL DIMENSIONS FOR PITS	
DEPTH TO INVERT OF OUTLET	MINIMUM PIT SIZE (mm)
≤ 450mm	350 x 350
≤ 600mm	450 x 450
< 600mm ≤ 900mm	600 x 600
< 900mm ≤ 1200mm	600 x 900
> 1200mm	900 x 900

RAINWATER REUSE NOTES

1. EVERY FIXTURE SERVICED FROM THE RECYCLED WATER SUPPLY MUST BE NOTED WITH A PLAQUE FOR IDENTIFICATION AND MARKED WITH "NOT FOR HUMAN CONSUMPTION" OR "NON-POTABLE WATER".
2. RAINWATER TANK TO BE CONNECTED TO AT LEAST ONE OUTDOOR TAP.
3. OVERFLOW FROM RAINWATER TANK TO BE CONNECTED TO STORMWATER DRAINAGE SYSTEM. NO OTHER CONNECTIONS TO THE OVERFLOW PIPELINE SUCH AS SURFACE WATER INLETS.
4. ALL RECYCLE WATER PIPES TO BE COLOUR CODED FOR IDENTIFICATION.
5. FIRST-FLUSH DEVICES ARE REQUIRED TO BE CHECKED AND CLEANED REGULARLY.
6. WATER AUTHORITY MUST BE CONTACTED REGARDING RECYCLED WATER ON THE BUILDING AND FOR THE BACKFLOW PREVENTION REQUIREMENTS AND TOP-UP SYSTEM.
7. ANY GARDEN OR CARWASH TAPS CONNECTED RECYCLE SYSTEM MUST BE LOCATED 1.5m MIN. ABOVE THE SURFACE.
8. FOR PERIOD OF LOW WATER LEVEL IN THE RAINWATER TANK, A CONNECTION TO WATER MAIN IS NEEDED AND TO BE PROVIDED IN ACCORDANCE WITH THE WATER AUTHORITY.
9. PUMPS AND FILTERS ON OUTLETS FROM RECYCLE SYSTEM TO BE SUPPLIED AS MAY BE REQUIRED.

SITE LOCATION PLAN

LEGEND

- EX. DP# — EXISTING DOWNPIPE
- EX. SP# — EXISTING DOWNPIPE SPREADER
- SW — PROPOSED STORMWATER PIPES
- RWT — PROPOSED PIPES CONNECTING TO RAINWATER TANK
- I — PROPOSED SUBSOIL DRAINAGE
- FLOW DIRECTION
- GRATED PIT
- STRIP DRAIN

DRAWING SCHEDULE

DWG NO.	DWG TITLE
D000	COVER SHEET
D010	ROOF STORMWATER DRAINAGE CONCEPT PLAN
D020	GROUND FLOOR STORMWATER DRAINAGE CONCEPT PLAN
D030	DRAINS MODEL AND RESULTS

REVISIONS

REV.	BY	DATE	DESCRIPTION	APPD.
B	F.Y.	16.06.2023	PRELIMINARY ISSUE	Q.S.
A	F.Y.	27.02.2023	PRELIMINARY ISSUE	Q.S.

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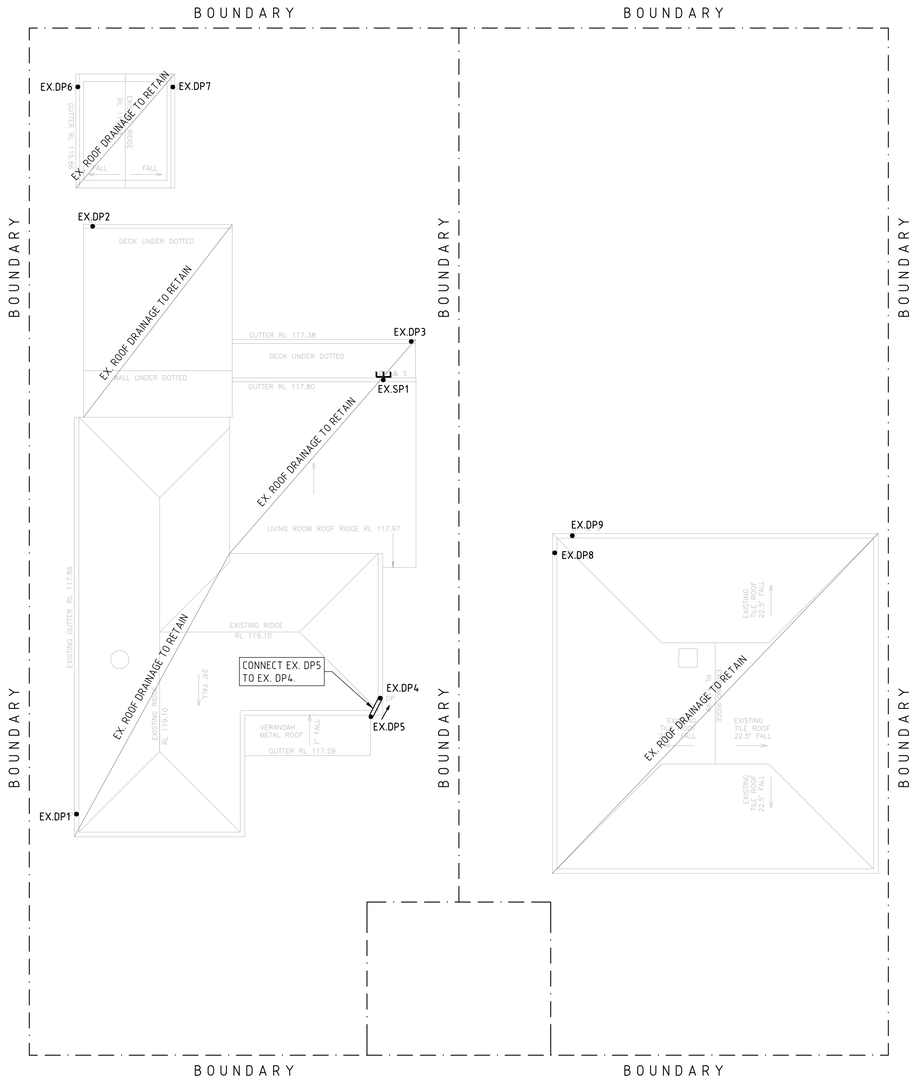
DRAWN	F.Y.
DESIGNED	F.Y.
CHECKED	O.S.
SCALE	AS INDICATED
SIZE	A1

PROJECT: PROPOSED SUBDIVISION 39 STARKEY ST, FORESTVILLE NSW 2087

DRAWING NO.: D000 — REV.: B

DRAWING TITLE: COVER SHEET

JOB NO.: 20144



ROOF LEVEL STORMWATER DRAINAGE CONCEPT PLAN

SCALE: 1:100

NOTES:

1. ALL DOWNPIPE LOCATIONS TO BE CHECKED BY ARCHITECT AND CONTRACTOR PRIOR TO CONSTRUCTION.

LOT 2 SITE CALCULATIONS

PROVISION FOR POTENTIAL FUTURE SITE DEVELOPMENT TO BE 80% IMPERVIOUS AND 20% PERVIOUS WITH ALL EXISTING AND PROPOSED ROOF AREAS DRAINING TO OSD/RWT.

- TOTAL SITE AREA : 467.9 m^2
- IMPERVIOUS PAVED AREA BYPASS : 104.2 m^2
- ROOF AREA TO OSD/RWT: 270.1 m^2
- PROPOSED PERVIOUS AREA BYPASS : 90.6 m^2
- POST DEVELOPMENT IMPERVIOUS PERCENTAGE: 80.0%

FLOW RATE CALCULATION:

CALCULATION ARI:	5, 20 AND 100YRS
CALCULATION METHOD USED:	DRAINS – ILSAX MODEL
RAINFALL INTENSITY:	BASED ON ARR 87
CALCULATED ORIFICE SIZE :	40Ø

AS STATED BY NORTHERN BEACHES COUNCIL OSD TECHNICAL SPECIFICATION, PERMISSIBLE SITE DISCHARGE IS TO BE CALCULATED ON THE MAXIMUM ALLOWABLE IMPERVIOUS FRACTION OF 0%.

1 IN 5 YEARS PERMISSIBLE SITE DISCHARGE:	7 L/s
1 IN 20 YEARS PERMISSIBLE SITE DISCHARGE:	11 L/s
1 IN 100 YEARS PERMISSIBLE SITE DISCHARGE:	17 L/s
1 IN 5 YEARS PEAK DISCHARGE RATE:	7 L/s
1 IN 20 YEARS PEAK DISCHARGE RATE:	11 L/s
1 IN 100 YEARS PEAK DISCHARGE RATE:	13 L/s

DESIGN SATISFIES PERMISSIBLE SITE DISCHARGE FOR 20%, 5%, AND 1% AEP STORMS.

LOT 3 SITE CALCULATIONS

CALCULATIONS OF PERVIOUS AND IMPERVIOUS AREAS FOR EXISTING SITE CONDITIONS. ALL EXISTING ROOF AREA ASSUMED DRAINING TO OSD/RWT.

- TOTAL SITE AREA : 467.9 m^2
- IMPERVIOUS PAVED AREA BYPASS : 117 m^2
- ROOF AREA TO OSD/RWT: 118 m^2
- PROPOSED PERVIOUS AREA BYPASS : 232.9 m^2
- POST DEVELOPMENT IMPERVIOUS PERCENTAGE: 50.2%

FLOW RATE CALCULATION:

CALCULATION ARI:	5, 20 AND 100YRS
CALCULATION METHOD USED:	DRAINS – ILSAX MODEL
RAINFALL INTENSITY:	BASED ON ARR 87
CALCULATED ORIFICE SIZE :	40Ø

AS STATED BY NORTHERN BEACHES COUNCIL OSD TECHNICAL SPECIFICATION, PERMISSIBLE SITE DISCHARGE IS TO BE CALCULATED ON THE MAXIMUM ALLOWABLE IMPERVIOUS FRACTION OF 0%.

1 IN 5 YEARS PERMISSIBLE SITE DISCHARGE:	7 L/s
1 IN 20 YEARS PERMISSIBLE SITE DISCHARGE:	11 L/s
1 IN 100 YEARS PERMISSIBLE SITE DISCHARGE:	17 L/s
1 IN 5 YEARS PEAK DISCHARGE RATE:	8 L/s
1 IN 20 YEARS PEAK DISCHARGE RATE:	12 L/s
1 IN 100 YEARS PEAK DISCHARGE RATE:	17 L/s

DESIGN SATISFIES PERMISSIBLE SITE DISCHARGE FOR 1% AEP STORM AND EXCEEDS BY 1L/s FOR 20% AND 5% AEP STORMS. CONTROLLING DISCHARGE BY FURTHER REDUCING ORIFICE DIAMETER MAY RESULT IN BLOCKAGE ISSUES.

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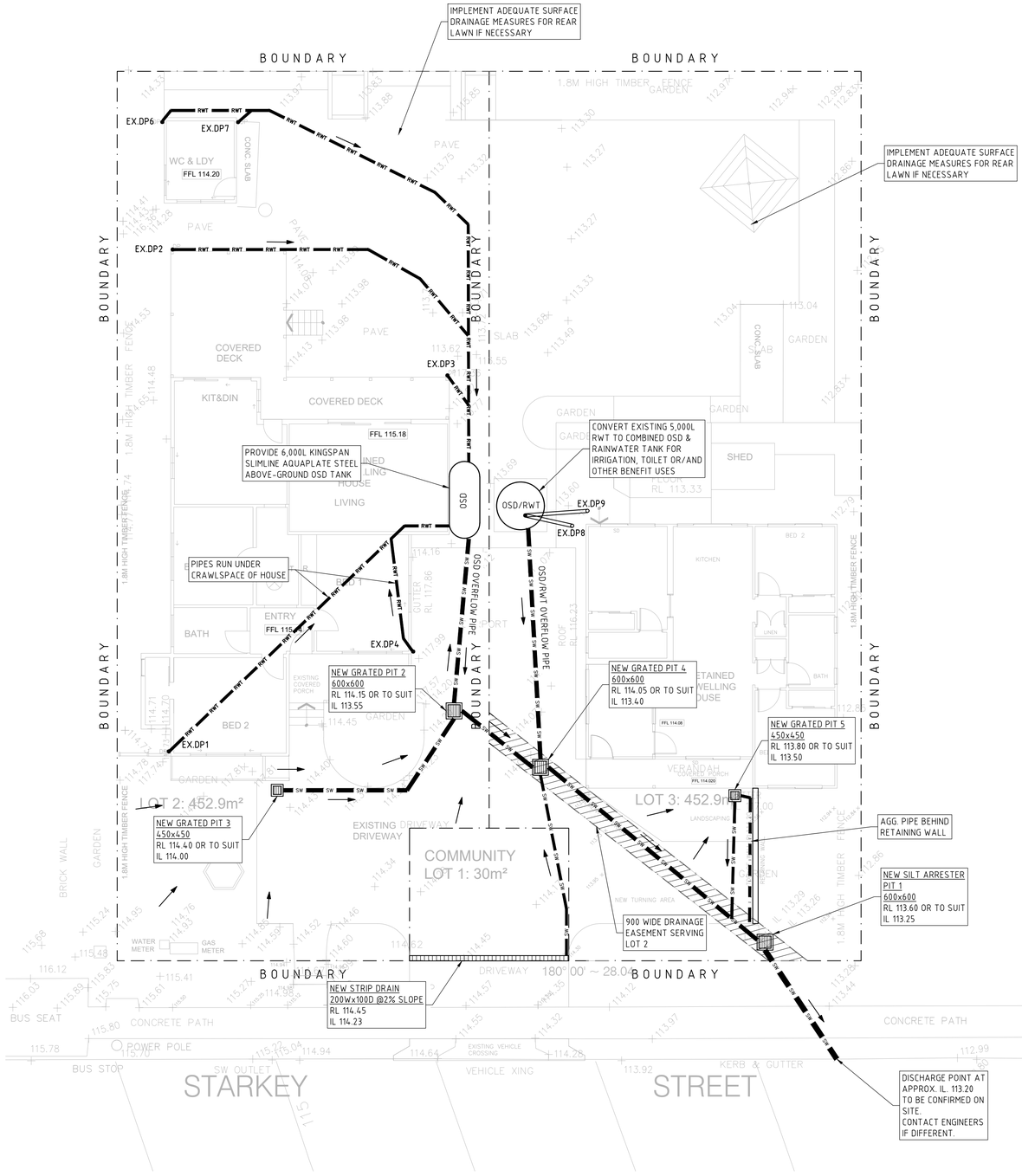
PROJECT: PROPOSED SUBDIVISION
39 STARKEY ST, FORESTVILLE NSW 2087

DRAWING TITLE: ROOF STORMWATER DRAINAGE CONCEPT PLAN

DRAWING NO.: D010

REV.: B

JOB NO.: 20144

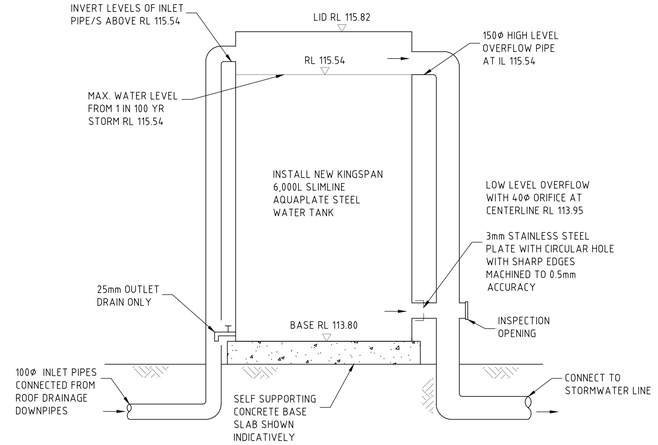


GROUND FLOOR STORMWATER DRAINAGE CONCEPT PLAN

SCALE: 1:100

NOTES:

1. ALL DOWNPIPE LOCATIONS TO BE CHECKED BY ARCHITECT AND CONTRACTOR PRIOR TO CONSTRUCTION.
2. ENSURE ALL ROOF DOWNPIPES ARE CONNECTED TO THE RAINWATER TANK.
3. REMOVE ALL EXISTING REDUNDANT PIPES

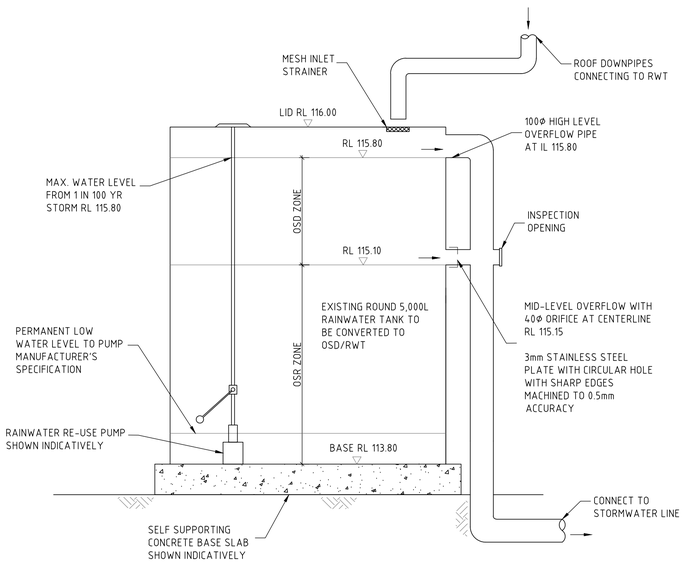


LOT 2 ABOVE-GROUND OSD TANK DETAIL

SCALE: NTS

NOTES:

1. INSTALLATION OF TANK AND DETENTION FITTINGS TO BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS



LOT 3 ABOVE-GROUND OSD TANK DETAIL

SCALE: NTS

NOTES:

1. INSTALLATION OF RWT DETENTION FITTINGS TO EXISTING TANK TO BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS

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REVISIONS					
C	F.Y.	07.07.2023	PRELIMINARY ISSUE	O.S.	
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SIZE	A1

PROJECT: PROPOSED SUBDIVISION
39 STARKEY ST, FORESTVILLE NSW 2087

DRAWING NO.: D020

REV.: C

DRAWING TITLE: GROUND FLOOR STORMWATER DRAINAGE CONCEPT PLAN

JOB NO.: 20144

SUB-CATCHMENT DETAILS (1% AEP)									
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm		
	Flow Q	Max Q	Max Q	Tc	Tc	Tc			
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)			
Pre-Development	0.017	0	0.017	5	8	2	1% AEP, 10 min burst, Storm 10		
Post-Development LOT 3	0.007	0.007	0	5	8	2	1% AEP, 10 min burst, Storm 8		
Bypass LOT 3	0.014	0.006	0.008	5	8	2	1% AEP, 10 min burst, Storm 7		
Post-Development LOT 2	0.016	0.016	0	5	8	2	1% AEP, 10 min burst, Storm 8		
Bypass LOT 2	0.009	0.005	0.003	5	8	2	1% AEP, 10 min burst, Storm 7		
DETENTION BASIN DETAILS (1% AEP)									
Name	Max WL	MaxVol	Max Q	Max Q	Max Q				
			Total	Low Level	High Level				
LOT 3 OSD/RWT	115.8	1.8	0.003	0.003	0				
LOT 2 OSD/RWT	115.54	5.8	0.004	0.004	0				
Run Log for RWT OSD Design - Felix - DRAINS run at 13:20:37 on 14/6/2023 using Watercom Drains v2023.02.8437.28953									

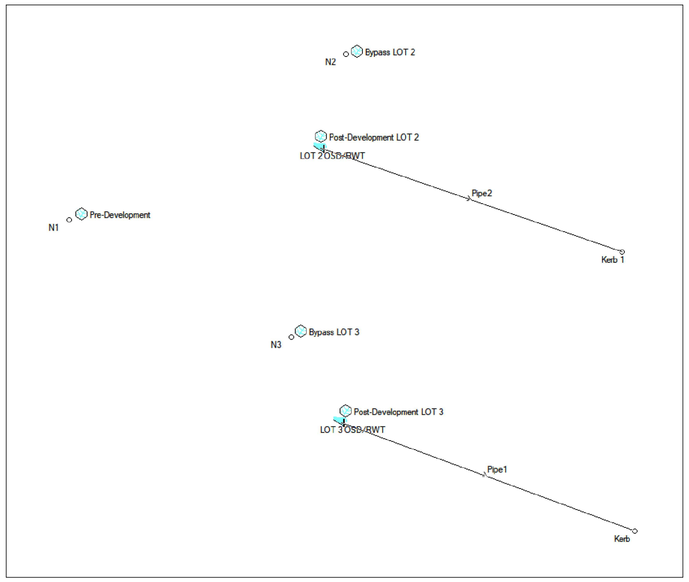
DRAINS MODELING RESULTS (1% AEP)

SUB-CATCHMENT DETAILS (20% AEP)									
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm		
	Flow Q	Max Q	Max Q	Tc	Tc	Tc			
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)			
Pre-Development	0.007	0	0.007	5	8	2	20% AEP, 15 min burst, Storm 6		
Post-Development LOT 3	0.004	0.004	0	5	8	2	20% AEP, 5 min burst, Storm 1		
Bypass LOT 3	0.006	0.003	0.003	5	8	2	20% AEP, 10 min burst, Storm 8		
Post-Development LOT 2	0.009	0.009	0	5	8	2	20% AEP, 5 min burst, Storm 1		
Bypass LOT 2	0.004	0.003	0.001	5	8	2	20% AEP, 10 min burst, Storm 8		
DETENTION BASIN DETAILS (20% AEP)									
Name	Max WL	MaxVol	Max Q	Max Q	Max Q				
			Total	Low Level	High Level				
LOT 3 OSD/RWT	115.46	0.9	0.002	0.002	0				
LOT 2 OSD/RWT	114.74	3.1	0.003	0.003	0				
Run Log for RWT OSD Design - Felix - DRAINS run at 13:20:37 on 14/6/2023 using Watercom Drains v2023.02.8437.28953									

DRAINS MODELING RESULTS (20% AEP)

SUB-CATCHMENT DETAILS (5% AEP)									
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm		
	Flow Q	Max Q	Max Q	Tc	Tc	Tc			
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)			
Pre-Development	0.011	0	0.011	5	8	2	5% AEP, 15 min burst, Storm 6		
Post-Development LOT 3	0.005	0.005	0	5	8	2	5% AEP, 5 min burst, Storm 1		
Bypass LOT 3	0.01	0.005	0.005	5	8	2	5% AEP, 10 min burst, Storm 7		
Post-Development LOT 2	0.012	0.012	0	5	8	2	5% AEP, 5 min burst, Storm 1		
Bypass LOT 2	0.007	0.004	0.002	5	8	2	5% AEP, 15 min burst, Storm 5		
DETENTION BASIN DETAILS (5% AEP)									
Name	Max WL	MaxVol	Max Q	Max Q	Max Q				
			Total	Low Level	High Level				
LOT 3 OSD/RWT	115.62	1.3	0.002	0.002	0				
LOT 2 OSD/RWT	115.12	4.4	0.004	0.004	0				
Run Log for RWT OSD Design - Felix - DRAINS run at 13:20:37 on 14/6/2023 using Watercom Drains v2023.02.8437.28953									

DRAINS MODELING RESULTS (5% AEP)



DRAINS MODEL LAYOUT

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PROJECT: PROPOSED SUBDIVISION
39 STARKEY ST, FORESTVILLE NSW 2087

DRAWING TITLE: DRAINS MODEL AND RESULTS

DRAWING NO.: D030

REV.: B

JOB NO.: 20144