0 5 10 20 40MM
SCALE FOR PRINTING PURPOSE ONLY

CUT EXISTING STORMWATER PIPE & CONSTRUCT NEW KERB INLET PIT TO COUNCIL'S SPECIFICATIONS.
NEW SURVEY REQUIRED TO CONFIRM THE SIZE/DEPTH/LEVEL OF THE EXISTING STORMWATER PIPE PRIOR TO ANY CONSTRUCTION ON SITE.

FRIEND STREET VILLAGE WEST

FRIEND STREET VILLAGE EAST

600x600 PIT SL 42.00 IL 41.40

SW/PIT (CONC LID) NO ACCESS

OVERFLOW FROM DETENTION TANK

900X900 SILT ARRESTOR PIT SL 41.40 IL 40.65

450x450 PIT SL 41.30 IL 40.70

450x450 PIT SL 41.30 IL 40.80

450x450 PIT SL 41.30 IL 40.90

450x450 PIT SL 41.30 IL 41.00

"ALDERSON PARK"

GAS STATION EASEMENT CLOSURE

BINS

STAGE 1 LANDSCAPE (TEMPORARY)

UNIT 3 RL 42.500

UNIT 5 RL 42.500

UNIT 7 RL 42.500

UNIT 9 RL 43.00

UNIT 11 RL 43.00

UNIT 13 RL 43.00

UNIT 15 RL 44.150

UNIT 17 RL 44.150

UNIT 19 RL 44.150

UNIT 21 RL 44.150

UNIT 23 RL 44.150

UNIT 25 RL 44.150

UNIT 27 RL 44.650

UNIT 29 RL 44.650

STORMWATER TREATMENT DEVICE VORTSENTRY HS12 (PROVIDED BY OceanProtect)

HIGH EARLY DISCHARGE CHAMBER

STEPPED RETAINING WALL

RETAINING WALL

8.56% ENCROACHMENT

DIG STORMWATER PIPE'S TRENCH BY HAND TO PROTECT TREE ROOT

1.2m TO INVERT

1.5m TO INVERT

225mm SEWER MAIN

150mm SEWER MAIN

1:20 PATH

1:12 ROAD

1:20 ROAD

CAR SPACE

BRICK RESIDENCE TILE ROOF No 14

BOUNDARY FENCE PROVIDED SHOULD INCLUDE A SUITABLE CONTINOUS GAP UNDER THE FENCE TO ALLOW FOR SURFACE RUNOFF.

GRASS SWALE BETWEEN BOUNDARY AND THE RETAINING WALL TO ALLOW FOR OVERLAND FLOW FROM ADJOINING UPSTREAM PROPERTY BYPASSING THE SITE STORMWATER SYSTEM.

681m² AREA(HATCHED) BYPASSING SITE OSD SYSTEM

900 x 900 HEAVY DUTY GRATE WITH CHILDPROOF LOCKABLE, TYP.

UNDERGROUND ON-SITE DETENTION TANK
AREA: 270.46 m²
SL: 42.30 MIN
TWL: 42.00
BASE RL: 40.90
AVERAGE WATER DEPTH: 0.915 m
DET. VOL PROVIDED = 247.47 m³
ORIFICE SIZE: ø104
ORIFICE CENTRE LEVEL: 40.90
PSD = 20.67 L/S

UNDER GROUND RAINWATER TANK
AREA: 9.52 m²
SL: 42.60 MIN
TWL: 42.10
BASE RL: 41.00
AVERAGE WATER DEPTH: 1.075 m
STORAGE VOL PROVIDE: 10.23³

REQUIRED RAINWATER TANK STORAGE VOLUME TO BE CONFIRMED WITH FINAL BASIX CERTIFICATE

GRASS SWALE BETWEEN BOUNDARY AND THE RETAINING WALL TO ALLOW FOR OVERLAND FLOW FROM ADJOINING UPSTREAM PROPERTY BYPASSING THE SITE STORMWATER SYSTEM.

GENERAL STORMWATER NOTES

S1. ALL STORMWATER DRAINAGE TO BE IN ACCORDANCE WITH AS 3500.3 AND COUNCIL REQUIREMENTS.

S2. DOWNPIPE LOCATIONS ARE INDICATIVE ONLY. FINAL LOCATIONS TO BE CONFIRMED..

S3. PRIOR TO ANY CONSTRUCTION ON SITE THE BUILDER SHALL CHECK THE ASSUMED LEVELS OF ALL UPSTREAM AND DOWNSTREAM EXISTING DRAINAGE STRUCTURES TO ENSURE THE VIABILITY OF THE PROPOSED WORKS. THE ENGINEER IS TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES IN LEVELS OR LOCATION OF STRUCTURES.

S4. PRIOR TO ANY CONSTRUCTION ON SITE THE BUILDER SHALL CHECK THE LOCATION AND DEPTH OF ALL SEWER STRUCTURES TO ENSURE NO CONFLICT WITH THE PROPOSED WORKS.

S5. A CHILD PROOF AND CORROSION RESISTANT FASTENING SYSTEM FOR THE ACCESS GRATES TO DETENTION TANK/TANKS/SILT ARRESTOR PIT SHALL BE INSTALLED. (E.G. SPRING LOADED JAY-BOLT).

S6. A 500mm x 200mm SIGN SHALL BE PLACED ADJACENT TO THE DETENTION TANK/SILT ARRESTOR PIT STATING THAT: "THIS DETENTION TANK/SILT ARRESTOR PIT SHALL BE REGULARLY INSPECTED AND CLEANED."

S7. PIPES TO BE THRUST BORED TO MINIMISE ROOT DAMAGE IN THE VICINITY OF TREES.

S8. ALL PIPES SHALL BE SEWER GRADE EXTRA HEAVY DUTY.

S9. INTERNAL FENCES TO BE RAISED 100mm ABOVE THE FINISHED SURFACE LEVEL, TO ALLOW SURFACE FLOWS TO PASS UNDER THE FENCES.

S10. PITS IN GARDEN AND TURFED AREAS TO INCLUDE PERFORATED GALVANISED STEEL MESH UNDER GRATES.

S11. PITS & GRATED DRAIN IN DRIVEWAY/PARKING/PAVED AREAS TO BE WITH GALVANISED HINGED BOLT DOWN AND HEELGUARD GRATES.

S12. AN ON-SITE STORMWATER DETENTION PLATE SHALL BE INSTALLED WITHIN THE DETENTION TANK, THE PLATE SHALL BE LOCATED IN OR NEAR THE DISCHARGE CONTROL UNIT TO ALTER FUTURE OWNERS OF THEIR OBLIGATIONS TO MAINTAIN THE FACILITY AND ITS RESTRICTIONS. THE WORDING

S13. CONFINED SPACE SIGNAGE SHALL BE PROVIDED TO EACH ACCESS OF THE OSD TANK AND INSIDE ALL PIT COVERS.

S14. PROVIDE KERB INLET PIT TO Holroyd DCP and CUMBERLAND COUNCIL REQUIREMENTS.

NOTE:

THE CAPACITY OF THE PROPOSED SITE STORMWATER PIPES WHICH DRAIN TO THE OSD TANK BE DESIGNED FOR 1 IN 100 YEAR(ARI) STORM EVENT.

LEGEND:

STORMWATER PIPE,150ø UPVC,1% MIN,U.N.O.
DOWNPIPE CONNECTION PIPE,150ø UPVC,0.5% MIN, U.N.O.
AREA BYPASSING SITE OSD SYSTEM

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C	06.12.19	UPDATED TO AMENDED ARCHITECTURAL PLAN
B	20.11.19	ISSUED FOR DA
A	05.09.19	UPDATED TO AMENDED ARCHITECTURAL PLAN

DO NOT SCALE DRAWINGS. CHECK ALL DIMENSIONS ON SITE. FIGURED DIMENSIONS TAKE PRECEDENCE.

PROJECT ARCHITECT: CRAWFORD ARCHITECTS PH (02) 9660 3644
STORMWATER CONSULTANT: MICHAEL ELL CONSULTING ENGINEERS PH (02) 9807 5355 FAX (02) 9807 5366
LANDSCAPE CONSULTANT:
HYDRAULIC CONSULTANT:
BUSINESS PARTNER:

PROJECT: **PROPOSED HOUSING UNITS**
AT
16-26 FRIEND STREET, MERRYLANDS

TITLE: SITE STORMWATER DRAINAGE PLAN

STATUS: DEVELOPMENT APPLICATION

DATE	SCALE	Consultant Job No	PROJECT No.
15.07.19	1:150	19001	BGV9R

STAGE	DRAWN	CHECKED
DA	SC	ME

FILE: 19001-C01c PLOTTED: - -

TYPE: C SHEET: 01 REV: C

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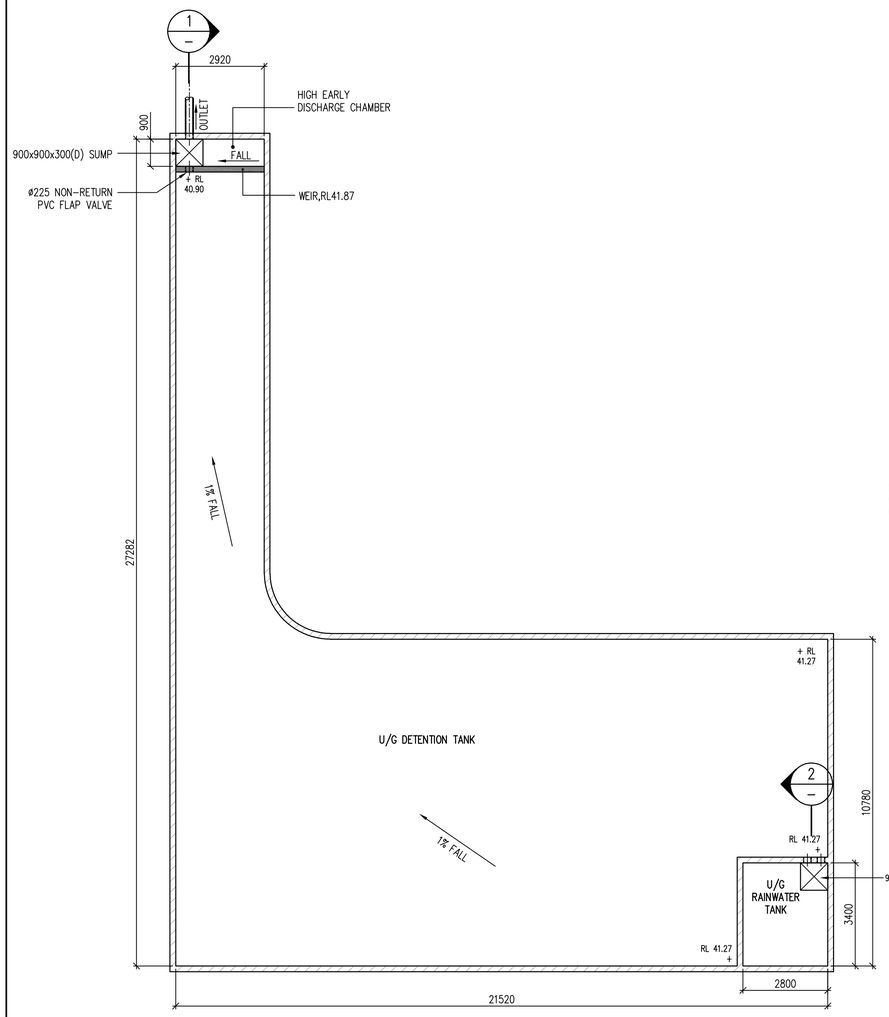
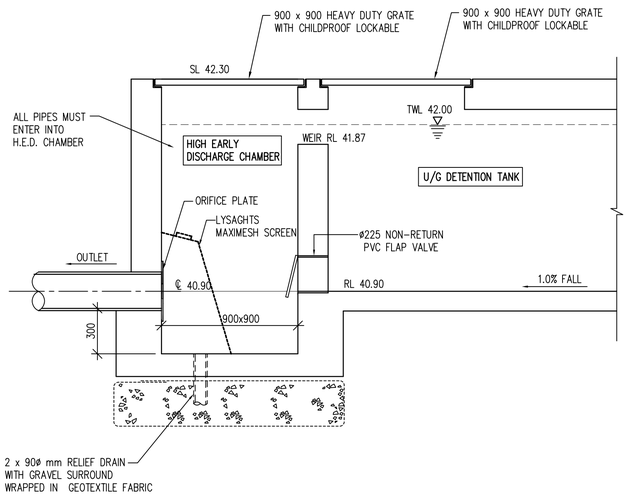


PLAN, U/G DETENTION TANK & RAINWATER TANK

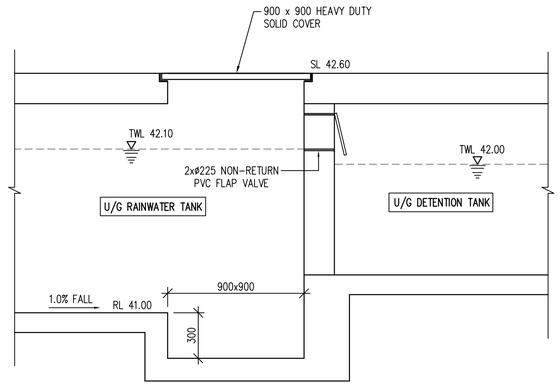
SCALE 1:100

PROVIDE STEP IRONS WHEN PITS/TANKS ARE GREATER THAN 1200 DEEP



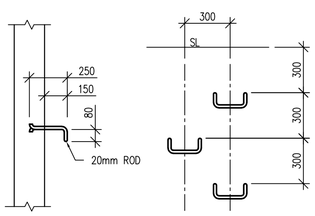
SECTION 1 — SCALE 1:20

PROVIDE STEP IRONS WHEN PITS/TANKS ARE GREATER THAN 1200 DEEP



SECTION 2 — SCALE 1:20

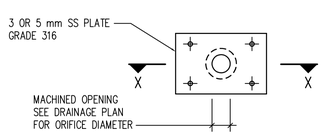
PROVIDE STEP IRONS WHEN PITS/TANKS ARE GREATER THAN 1200 DEEP



STEP IRON DETAIL

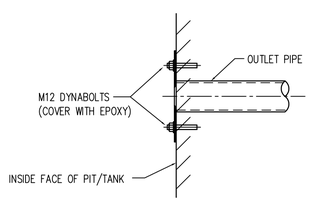
SCALE 1:20

PROVIDE STEP IRONS WHEN PITS/TANKS ARE GREATER THAN 1200 DEEP



ORIFICE PLATE ARRANGEMENT

SCALE 1:10



SECTION X–X

SCALE 1:10

MICHAEL ELL CONSULTING ENGINEERS PTY LTD
Structural, Hydraulic & Civil Engineers
Ph: 9807 5355
Fax: 9807 5366

UPPER PARRAMATTA RIVER CATCHMENT TRUST
On-Site Detention Calculation Sheet

Location : *16-26 Friend Street, Merrylands*

		Free Discharge				Drowned Discharge TK RL 41.16		
Site Area		0.4493	ha	(A)		0.4493	ha	(A)
Basic Storage Volume	470 x A	211.17	m^3	(B)		211.17	m^3	(B)
Basic Discharge	0.08 x A	0.0359	m^3/s	(C)		0.0359	m^3/s	(C)
Area of site drained to storage		0.3812	ha	(D)		0.3812	ha	(D)
(Must must not be less than 85%)		85%				85%		
(D)/(A) x 100		85	%	(E)		85	%	(E)
Storage per ha of contributing area	B / D	554	m^3/ha	(F)		554	m^3/ha	(F)
Using volume/PSD adjustment equation with (F), and calculate new PSD in l/sec/ha		64.5	l/sec/ha	(G)		64.5	l/sec/ha	(G)
Determine final PSD	G x D /1000	0.02459	m^3/s	(H)		0.02459	m^3/s	(H)
Area of site drained to DCP		0.3812	ha	(I)		0.3812	ha	(I)
Peak discharge to DCP for 100 years ARI(225mm/hr)		0.2380	m^3/s	(J)		0.2380	m^3/s	(J)
Peak flow over weir (J - H)		0.21341	m^3/s	(K)		0.21341	m^3/s	(K)
Selected width of weir		2.92	m	(L)		2.92	m	(L)
Selected height of weir above centreline of orifice		0.97	m	(M)		0.97	m	(M)
Depth of flow over weir		0.13	m	(N)		0.13	m	(N)
Maximum head to orifice centre		1.10	m	(P)	Effective head	0.84	m	(P)
Calculated orifice diameter		0.104	m	(Q)		0.104	m	(Q)
Maximum discharge		24.59	l/s	(R)		20.67	l/s	(R)
Head for high early discharge		0.97	m	(S)		0.71	m	(S)
High early discharge	R x (S / P)^0.5	23.11	l/s	(T)		19.00	l/s	(T)
Approximate mean discharge	(R + T) / 2	23.85	l/s	(U)		19.84	l/s	(U)
Average discharge / ha	U / D	62.60	l/sec/ha	(V)		52.00	l/sec/ha	(V)
Using volume/PSD adjustment equation with (V), and calculate final stroage volume per hectare.		566	m^3/ha	(W)		648	m^3/ha	(W)
Determine actual SSR	W x D	215.8	m^3			247.1	m^3	
Primary Storage proportion			m^3			247.5	m^3	
Secondary Storage proportion			m^3			0	m^3	
Tertiary Storage proportion			m^3			0	m^3	
Check (T) + (U) + (V) = (S)			m^3			247.5	m^3	***OK !***

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BUSINESS PARTNER:

PROJECT: **PROPOSED HOUSING UNITS**
AT
16-26 FRIEND STREET, MERRYLANDS

TITLE: OSD TANK & RAINWATER TANK PLAN & DETAILS

STATUS: DEVELOPMENT APPLICATION

DATE	SCALE	CONSULTANT JOB NO	PROJECT NO
15.07.19	1:20	19001	BGV9R
STAGE: DA	DRAWN: SC	CHECKED: ME	

FILE: 19001-C02c
PLOTTED: - -
TYPE: C
SHEET: 02
REV: C

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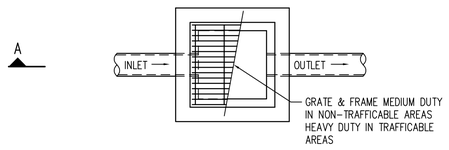
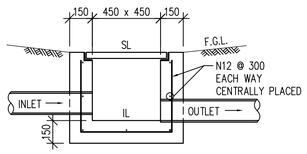


450 x 450 STORMWATER PIT
PRECAST CONCRETE PITS MAY BE SUBSTITUTED SUBJECT TO APPROVAL



SECTION A-A
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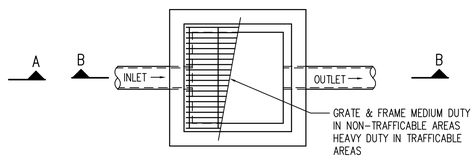
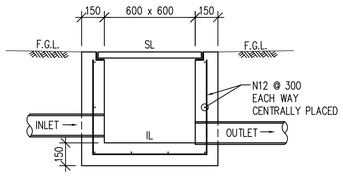
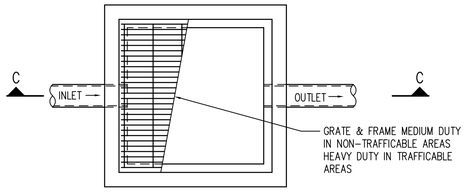


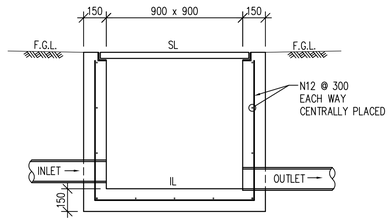
600 x 600 STORMWATER PIT
PRECAST CONCRETE PITS MAY BE SUBSTITUTED SUBJECT TO APPROVAL



SECTION B-B
SCALE 1:20



900 x 900 STORMWATER PIT
PRECAST CONCRETE PITS MAY BE SUBSTITUTED SUBJECT TO APPROVAL



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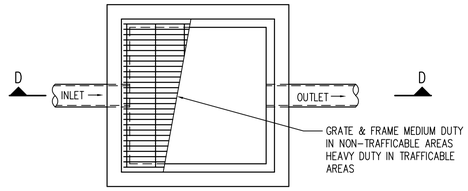
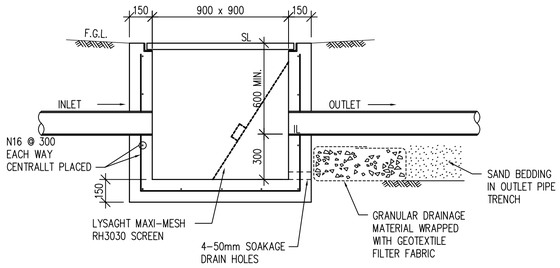


900 x 900 SILT ARRESTOR PIT
PRECAST CONCRETE PITS MAY BE SUBSTITUTED SUBJECT TO APPROVAL



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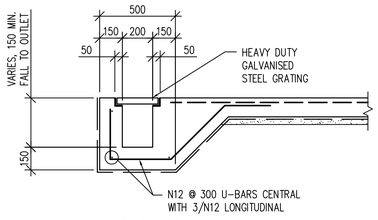

GRATED DRAIN
SCALE 1:20

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LANDSCAPE CONSULTANT:

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PH (02) 9807 5355 FAX (02) 9807 5366

HYDRAULIC CONSULTANT:

BUSINESS PARTNER:

PROJECT:
PROPOSED HOUSING UNITS

AT
16-26 FRIEND STREET, MERRYLANDS

TITLE: STORMWATER DETAILS

FILE: 19001-C03b
PLOTTED: - -

STATUS: DEVELOPMENT APPLICATION

DATE:	SCALE:	Consultant Job No:	PROJECT No.
15.07.19	1:20	19001	BGV9R
STAGE:	DRAWN:	CHECKED:	
DA	SC	ME	

TYPE:	SHEET:	REV:
C	03	B