STORMWATER MANAGEMENT PLAN (FOR DA)
PROPOSED CHILDCARE CENTRE
Lot B, No.11 LEWIS STREET, BALGOWLAH HEIGHTS

GENERAL NOTES

1. FINAL LOCATION OF NEW DOWNPIPES TO BE DETERMINED BY BUILDER/ARCHITECT AT TIME OF CONSTRUCTION.
2. THESE DRAWINGS TO BE READ IN CONJUNCTION WITH ARCHITECTS AND OTHER CONSULTANTS DRAWINGS. ANY DISCREPANCIES TO BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH WORK.
3. ALL MATERIALS AND WORKMANSHIP TO BE IN ACCORDANCE WITH AS/NZS 3500.3:2003 STORMWATER DRAINAGE, BCA AND LOCAL COUNCIL POLICY/CONSENT/REQUIREMENTS.
4. ALL DIMENSIONS AND LEVELS TO BE VERIFIED BY BUILDER ON-SITE PRIOR TO COMMENCEMENT OF WORKS. THESE DRAWINGS ARE NOT TO BE SCALED FOR DIMENSIONS NOR TO BE USED FOR SETOUT PURPOSES.
5. ALL SURVEY INFORMATION AND PROPOSED BUILDING AND FINISHED SURFACE LEVELS SHOWN IN THESE DRAWINGS ARE BASED ON LEVELS OBTAINED FROM DRAWINGS BY OTHERS.
6. ALL STORMWATER DRAINAGE PIPES ARE TO BE uPVC AT MINIMUM 1% GRADE UNLESS NOTED OTHERWISE.
7. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE AND LEVEL ALL EXISTING SERVICES OR OTHER STRUCTURES WHICH MAY AFFECT/BE AFFECTED BY THIS DESIGN PRIOR TO COMMENCEMENT OF WORKS.
8. ALL PITS WITHIN DRIVEWAYS TO BE 150mm THICK CONCRETE OR EQUAL.
9. THIS PLAN IS THE PROPERTY OF NY CIVIL ENGINEERING AND MAY NOT BE USED OR REPRODUCED WITHOUT WRITTEN PERMISSION FROM NY CIVIL ENGINEERING.

PLAN SPECIFIC NOTES

1. **ROOF DRAINAGE NOTE:** AS 3500 ROOF DRAINAGE REQUIRES EAVES GUTTERS TO BE SIZED FOR 20 YEAR 5 MIN. STORM = 205mm/hr. FOR EAVES GUTTERS, AS 3500.3:2003 THEN HAS THE FOLLOWING REQUIREMENTS:
   i) FOR TYPICAL STANDARD QUAD GUTTER WITH Ae = 6000mm² AND GUTTER SLOPE 1:500 AND STEEPER, THIS REQUIRES ONE DOWNPIPE PER 30m² ROOF AREA.
   ii) DOWNPIPES TO BE MINIMUM 90mm DIA. OR 100 x 50mm FOR GUTTERS SLOPE 1:500 AND STEPPER.
   iii) OVERFLOW METHOD TO FIGURE G1 OF AS 3500.3:2003
   IT IS THE RESPONSIBILITY OF THE PLUMBER AND / OR BUILDER TO COMPLY WITH THIS. THIS DRAWING SHOWS PRELIMINARY LOCATIONS / NUMBERS OF DOWNPIPES ONLY WHICH ARE TO BE VERIFIED BY BUILDER / PLUMBER
2. **TREE PRESERVATION:** IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ANY PRIOR APPROVAL REQUIRED FROM COUNCIL WITH RESPECT TO POTENTIAL IMPACT ON TREES FOR ANY WORKS SHOWN ON THIS DRAWING PRIOR TO THE COMMENCEMENT OF THOSE WORKS
3. ALL ROOF GUTTERS TO HAVE OVERFLOW PROVISION IN ACCORDANCE WITH AS 3500.3:2003 AND SECTIONS 3.5.3, 3.7.5 AND APPENDIX G OF AS 3500.3:2003
4. THIS DRAWING IS NOT TO BE USED FOR SET-OUT PURPOSES - REFER TO ARCHITECTURAL DRAWINGS
5. LOCATION OF SURFACE STORMWATER GRATED INLET PITS MAY BE VARIED OR NEW PITS INSTALLED AT THE CONSTRUCTION STAGE PROVIDED DESIGN INTENT OF THIS DRAWING IS MAINTAINED

LEGEND

SURFACE INLET PIT		GRATED TRENCH DRAIN	
SURFACE INLET PIT (WITH ENVIROPOD 200 MICRON)		ABSORPTION TRENCH	
ACCESS GRATE (WITH ENVIROPOD 200 MICRON)		PROPOSED ROOF GUTTER FALL	
450 SQUARE INTERVAL	450 X 450	PROPOSED DOWNPIPE SPREADER	SP
GRATE LEVEL = 75.50	SL 75.50	STORMWATER PIPE 100mm DIA. MIN. UNO	
INVERT LEVEL = RL 75.20	IL 75.20	SUBSOIL PIPE	a a
PROPOSED DOWNPIPE 90mm DIA. OR 100mm x 50mm MIN.	DP 90	EXISTING STORMWATER PIPE	SW
NATURAL GROUND FINISHED DESIGN LEVEL	× 10.00	INSPECTION RISER	IR
		RAINWATER HEAD	RWH

DRAINAGE NOTES

PIPE SIZE:
THE MINIMUM PIPE SIZE SHALL BE:
- 90mm DIA WHERE THE LINE ONLY RECEIVES ROOFWATER RUNOFF; OR
- 100mm DIA WHERE THE LINE RECEIVES RUNOFF FROM PAVED OR UNPAVED AREAS ON THE PROPERTY

THE MINIMUM PIPE VELOCITY SHOULD BE 0.6 m/s AND A MAXIMUM PIPE VELOCITY OF 6.0 m/s DURING THE DESIGN STORM.

PIPE GRADE:
THE MINIMUM PIPE GRADE SHALL BE:
- 1.0% FOR PIPES LESS THAN 225mm DIA (UNO)
- 0.5% FOR ALL LARGER PIPES (UNO)

PIPES WITH A GRADIENT GREATER THAN 20% WILL REQUIRE ANCHOR BLOCKS AT THE TOP AND BOTTOM OF THE INCLINED SECTION; AND AT INTERVALS NOT EXCEEDING 3.0m

ANCHOR BLOCKS ARE DESIGNED ACCORDING TO *CLAUSE 3.5.3 OF AS3500.3-1990*

DEPTH OF COVER FOR PVC PIPES:
MINIMUM PIPE COVER SHALL BE AS FOLLOWS:

LOCATION	MINIMUM COVER
NOT SUBJECT TO VEHICLE LOADING	100mm SINGLE RESIDENTIAL 300mm ALL OTHER DEVELOPMENTS
SUBJECT TO VEHICLE LOADING	450mm WHERE NOT IN A ROAD
UNDER A SEALED ROAD	600mm
UNSEALED ROAD	750mm
PAVED DRIVEWAY	100mm PLUS DEPTH OF CONCRETE

SEE AS2032 INSTALLATION OF UPVC PIPES FOR FURTHER INFORMATION.

CONCRETE PIPE COVER SHALL BE IN ACCORDANCE WITH *AS3725-1989 LOADS ON BURIED CONCRETE PIPES*, HOWEVER A MINIMUM COVER OF 450mm WILL APPLY.

WHERE INSUFFICIENT COVER IS PROVIDED, THE PIPE SHALL BE COVERED AT LEAST 50mm THICK OVERLAY AND SHALL THEN BE PAVED WITH AT LEAST:
- 150mm REINFORCED CONCRETE WHERE SUBJECT TO HEAVY VEHICLE TRAFFIC;
- 75mm THICKNESS OF BRICK OR 100mm OF CONCRETE PAVING WHERE SUBJECT TO LIGHT VEHICLE TRAFFIC; OR
- 50mm THICK BRICK OR CONCRETE PAVING WHERE NOT SUBJECT TO VEHICLE TRAFFIC.

CONNECTIONS TO STORMWATER DRAINS UNDER BUILDINGS:
SHALL BE CARRIED OUT IN ACCORDANCE WITH *SECTION 3.10 OF AS3500.3-1990*

CONNECTIONS TO COUNCIL SYSTEM:
IF PROPOSED DRAINAGE SYSTEM IS DESIGNED TO CONNECT TO COUNCIL'S DRAINAGE SYSTEM, IT IS ADVISED THAT A 'WORKS PERMIT' IS OBTAINED FROM THE RESPECTIVE COUNCIL PRIOR TO COMMENCEMENT OF WORKS

ABOVE GROUND PIPEWORK:
SHALL BE CARRIED OUT IN ACCORDANCE WITH *SECTION 6 OF AS3500.3-1990*

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 4.6.3 OF AS3500.4-1990. 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.

REVISION	DRAWN	DESCRIPTION	DATE
A	MR	ISSUED FOR DA	17.12.2020

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DRAWING TITLE: DETAILS, NOTES & LEGEND

PROJECT TITLE: PROPOSED CHILDCARE CENTRE
LOT B, No.11 LEWIS STREET
BALGOWLAH HEIGHTS

APPROVED BY: NADER ZAKI
MIEAust CPEng NER

DESIGNED	CHECKED
MR	YR
SHEET SIZE	SCALE
A3	-
ISSUE	No. IN SET
A	12
JOB REFERENCE	DRAWING No.
E200246	D1

PUMP-OUT CALCULATIONS

PROPOSED RISING MAIN PIPE DIAMETER:
65mm DIA uPVC 'PRESSURE PIPE' CLASS "12"

HEAD LOSS

- STATIC = 0.62 m (approx)
- PIPE FRICTION = 0.5 m
- FITTINGS = 0.5 m
- TOTAL = 1.62 m

PUMP DUTY :
5 l/s AT 4.0 m HEAD

PUMP TYPE :
SUBMERSIBLE EQUAL TO DAVEY D150 2.2 kW, 240 V, OR EQUIVALENT.
USE TWO (2) x PUMPS TO OPERATE

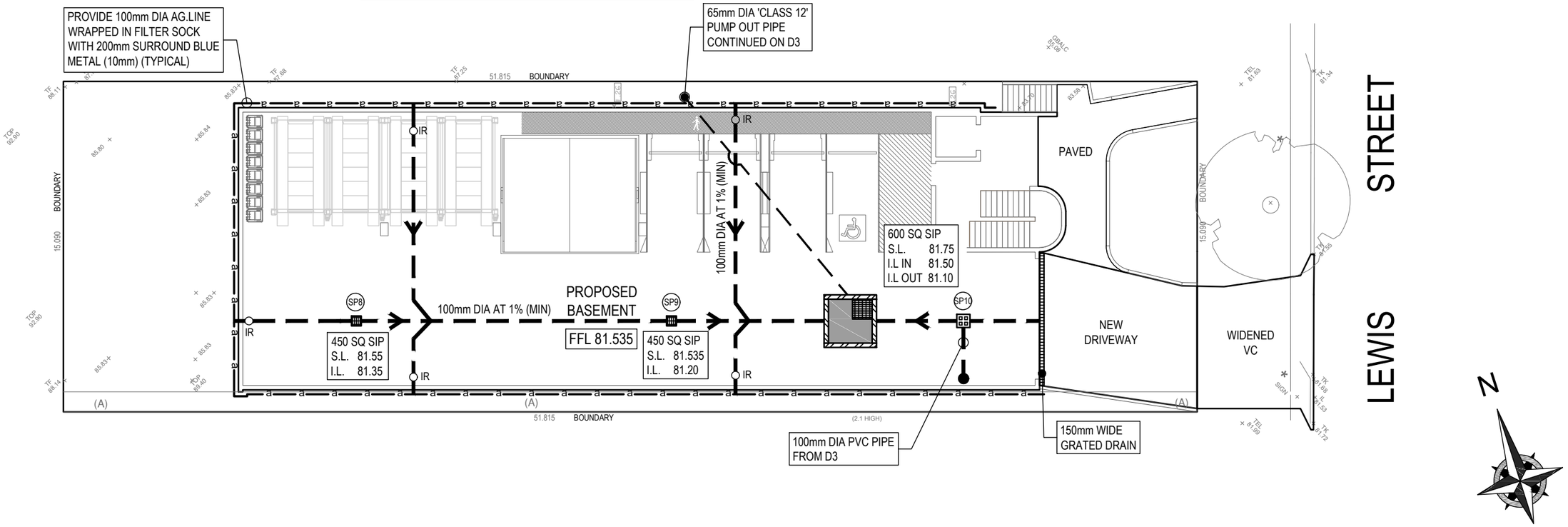
ALTERNATIVELY
AS PER AS3500.3.

PUMP CONTROL:
AUTOMATIC WITH FLOAT SWITCHES

PUMP OUT SYSTEM

- DESIGN STORM 10 ARI 2Hr (I = 34mm/hr)
- AREA TO PUMP APPROX 42m^2
- MAX FLOW $\frac{0.0042Ha \times 266\ mm/hr}{360}$ = 3.1L/s
- DESIGN FLOW $\frac{0.0042Ha \times 34\ mm/hr}{360}$ = 0.40L/s
- DESIGN VOLUME 0.40L/s x 60s x 120min = 2,880L

THEREFORE PROVIDE MINIMUM 3.0m^3 HOLDING TANK
PUMP OUT PSD 10L/s (AS PER AS 3500.3)
PROVIDE DUAL PUMPS WITH MINIMUM DISCHARGE RATE OF 5 l/s EACH.
REFER TO DETAIL



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DRAWING TITLE
BASEMENT PLAN

PROJECT TITLE
PROPOSED CHILDCARE CENTRE
LOT B, No.11 LEWIS STREET
BALGOWLAH HEIGHTS

APPROVED BY	DESIGNED	CHECKED
NADER ZAKI MIEAust CPEng NER	MR	YR
	SHEET SIZE	SCALE
	A3	1:200
	ISSUE	No. IN SET
	A	12
JOB REFERENCE	DRAWING No.	
E200246	D2	

AREA CALCULATIONS		
TOTAL SITE AREA	781.8	m²
EXISTING DEVELOPMENT		
ROOF AREA	282.7	m²
PAVED AREA	163.9	m²
DRIVEWAY AREA	20.6	m²
IMPERVIOUS AREA	467.2	m²
TOTAL IMPERVIOUS AREA PERCENTAGE	59.76%	
PROPOSED DEVELOPMENT		
PROPOSED ROOF AREA	339.0	m²
PROPOSED PAVED AREA	99.1	m²
PROPOSED DRIVEWAY AREA	41.6	m²
TOTAL IMPERVIOUS AREA	479.7	m²
TOTAL IMPERVIOUS AREA PERCENTAGE	61.36%	

RAINWATER RE-USE TANK - RWT

(AS PER BASIX REQUIREMENTS)

SIZE: 3,040 LITRES (MIN)
SLIMLINE TANK BY "KINGSPAN" OR SIMILAR
(2300L x 700W x 2020H)
INSTALL TO MANUFACTURES SPECIFICATIONS, AS3500 AND COUNCIL REQUIREMENTS

- FOR RE-USE AS SPECIFIED BY BASIX CERTIFICATE
- ENSURE TOP OF TANK IS MIN 1.0m BELOW ROOF GUTTERS TO ENSURE SUFFICIENT HEAD FOR THE SYSTEM
- TANK TO BE INSTALLED BY LICENSED PLUMBER IN ACCORDANCE WITH AS/NZS 3500:2003 AND NSW CODE OF PRACTICE PLUMBING AND DRAINAGE 2006

DRAINAGE PIPE LEGEND

- EXISTING STORMWATER PIPE
- DRAINAGE PIPES TO RAINWATER TANK
- DRAINAGE PIPES VIA GRAVITY
- CHARGED DRAINAGE PIPES

SW — SW
RWT — RWT — RWT
CH — CH — CH

NOTE: ALL PIPES TO BE 100mm DIA PVC UNO

NOTE: ENSURE ANY PROPOSED PAVING IS GRADED SO THAT IT IS NOT IMPACTING ADJOINING PROPERTIES.

INSPECTION RISER (IR)

PROVIDE 'SCREW CAP' INSPECTION RISER AT LOWEST POINT OF 'CHARGED LINES'

BELOW GROUND OSD/ WATER QUALITY CHAMBER

OSD:

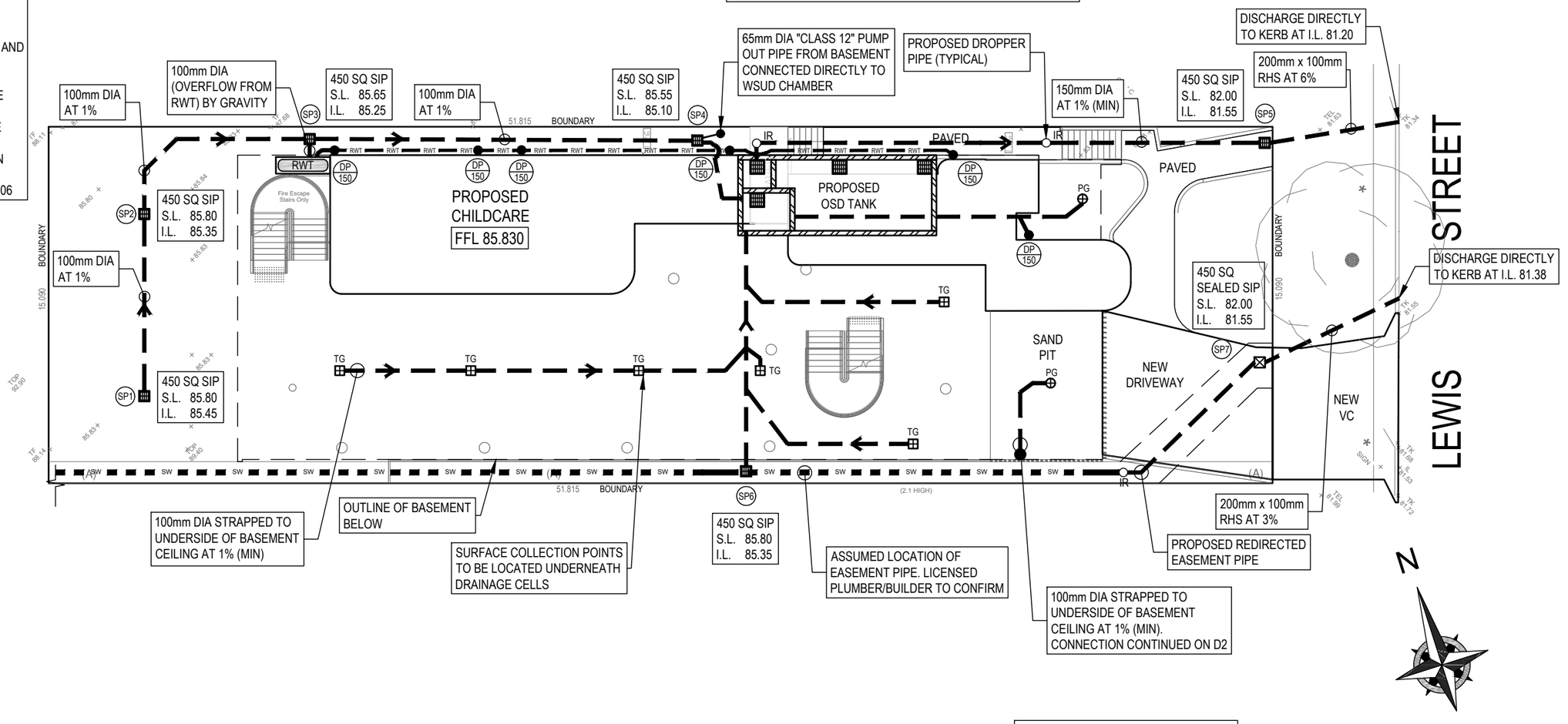
- SURFACE LEVEL RL 85.83
- T.W.L RL 85.63
- INVERT LEVEL RL 84.96
- SURFACE AREA 25.2m²
- AVERAGE DEPTH 0.55m
- ORIFICE DIAMTER 110mm
- PROVIDED VOLUME 13.86m³

WATER QUALITY CHAMBER:

- SURFACE AREA 3.2m²
- WEIR LEVEL RL 85.53
- INVERT LEVEL RL 84.96

WATER QUALITY DEVICES:

- 3* 400mm HIGH CARTRIDGE FILTER BY 'SPEL' OR SIMILAR



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PLANS ARE FOR CONCEPT ONLY AND NOT FOR CONSTRUCTION

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DRAWING TITLE

STORMWATER MANAGEMENT PLAN

PROJECT TITLE

PROPOSED CHILDCARE CENTRE
LOT B, No.11 LEWIS STREET
BALGOWLAH HEIGHTS

APPROVED BY	DESIGNED	CHECKED
NADER ZAKI MIEAust CPEng NER	MR	YR
	SHEET SIZE	SCALE
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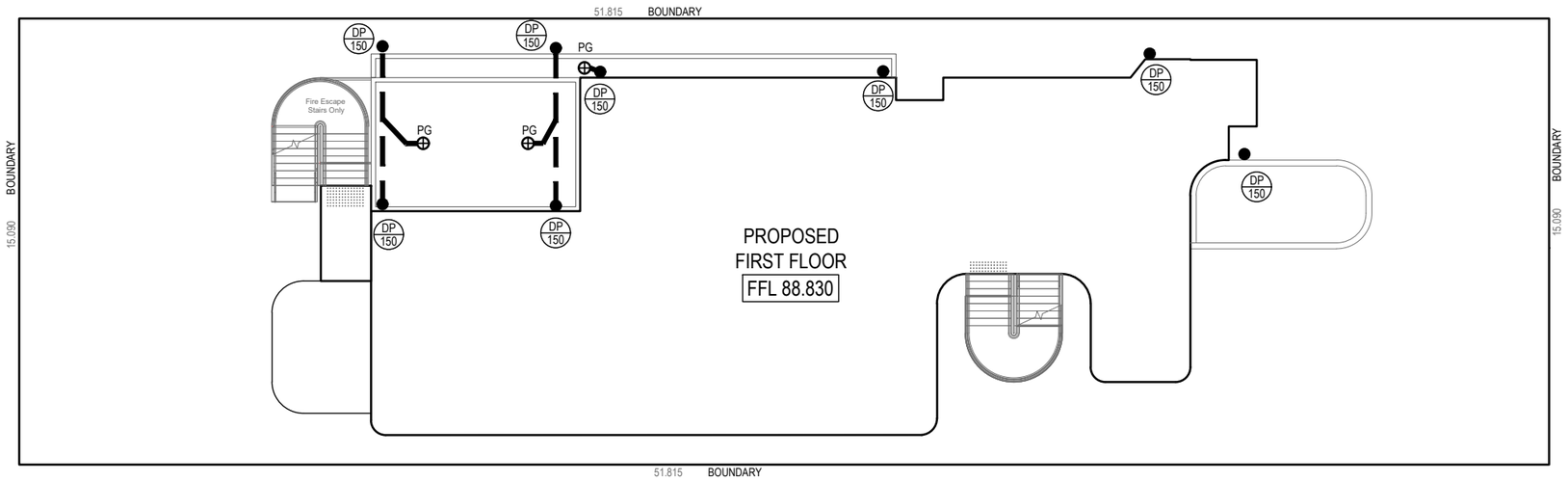
	A	12
JOB REFERENCE	DRAWING No.	
E200246	D3	



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DRAWING TITLE

FIRST FLOOR PLAN

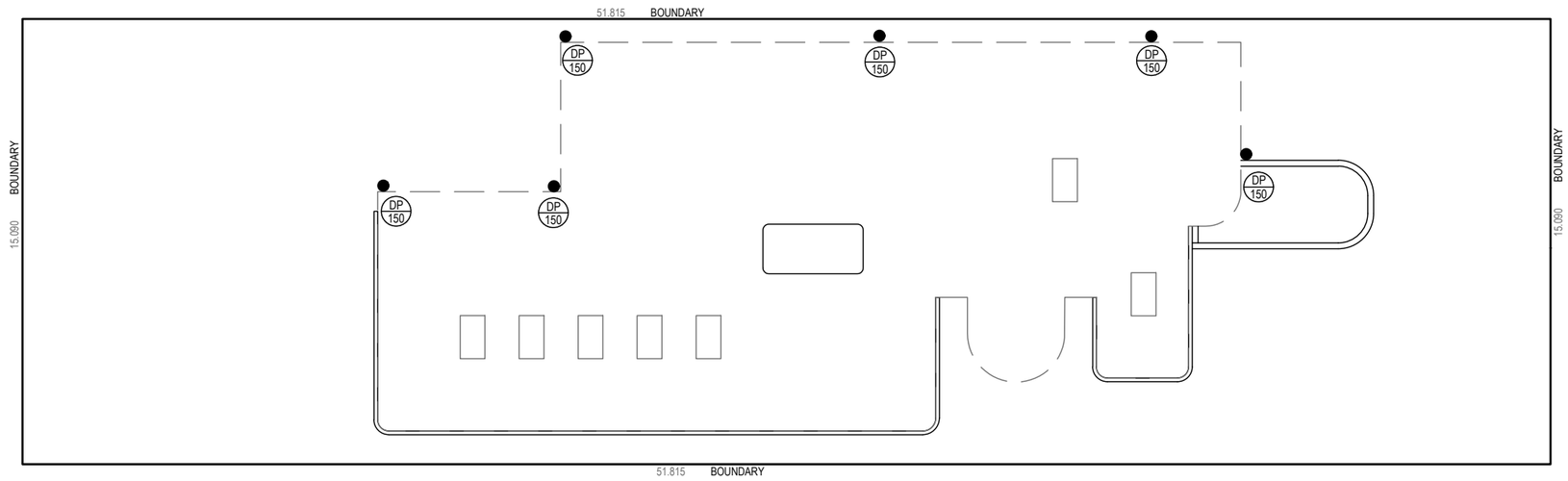
PROJECT TITLE

PROPOSED CHILDCARE CENTRE
LOT B, No.11 LEWIS STREET
BALGOWLAH HEIGHTS

APPROVED BY

NADER ZAKI
MIEAust CPEng NER

DESIGNED	CHECKED
MR	YR
SHEET SIZE	SCALE
A3	1:200
ISSUE	No. IN SET
A	12
JOB REFERENCE	DRAWING No.
E200246	D4



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DRAWING TITLE

ROOF PLAN

PROJECT TITLE

PROPOSED CHILDCARE CENTRE
LOT B, No.11 LEWIS STREET
BALGOWLAH HEIGHTS

APPROVED BY

NADER ZAKI
MIEAust CPEng NER

DESIGNED	CHECKED
MR	YR
SHEET SIZE	SCALE
A3	1:200
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JOB REFERENCE	DRAWING No.
E200246	D5

ROOF AREA = 339m²
TO OSD AND SPEL FILTER SYSTEM

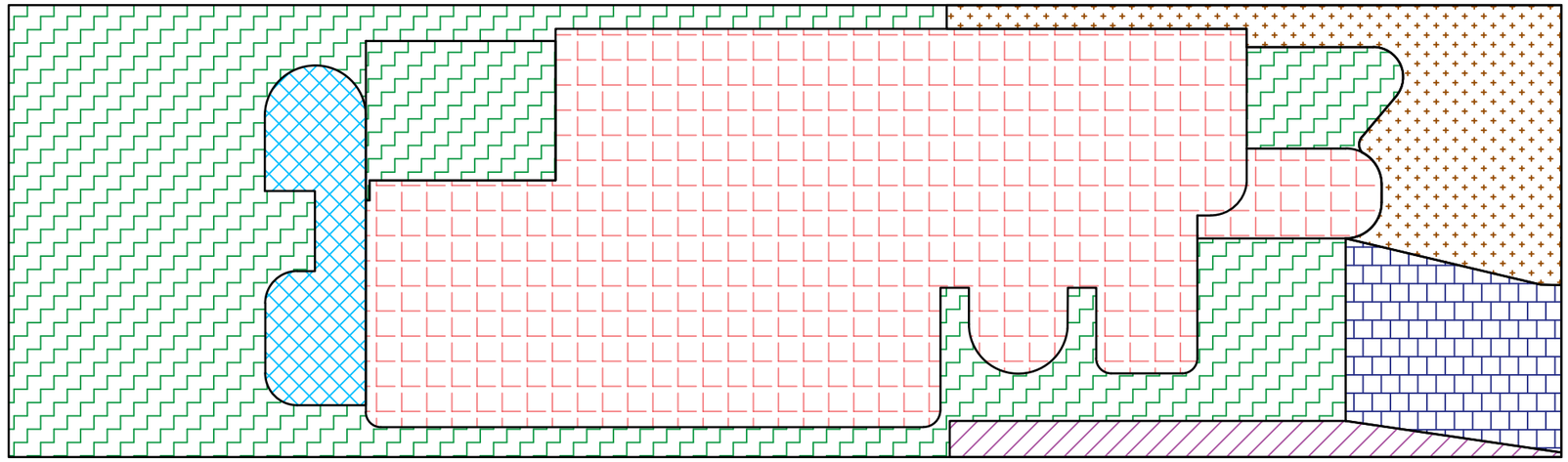
DRIVEWAY AREA = 41.6m²
TO OSD AND SPEL FILTER SYSTEM

PAVED AREA =32.0 m^2
TO OSD AND SPEL FILTER SYSTEM

PAVED AREA =67.1 m^2
BYPASS WSUD AND OSD

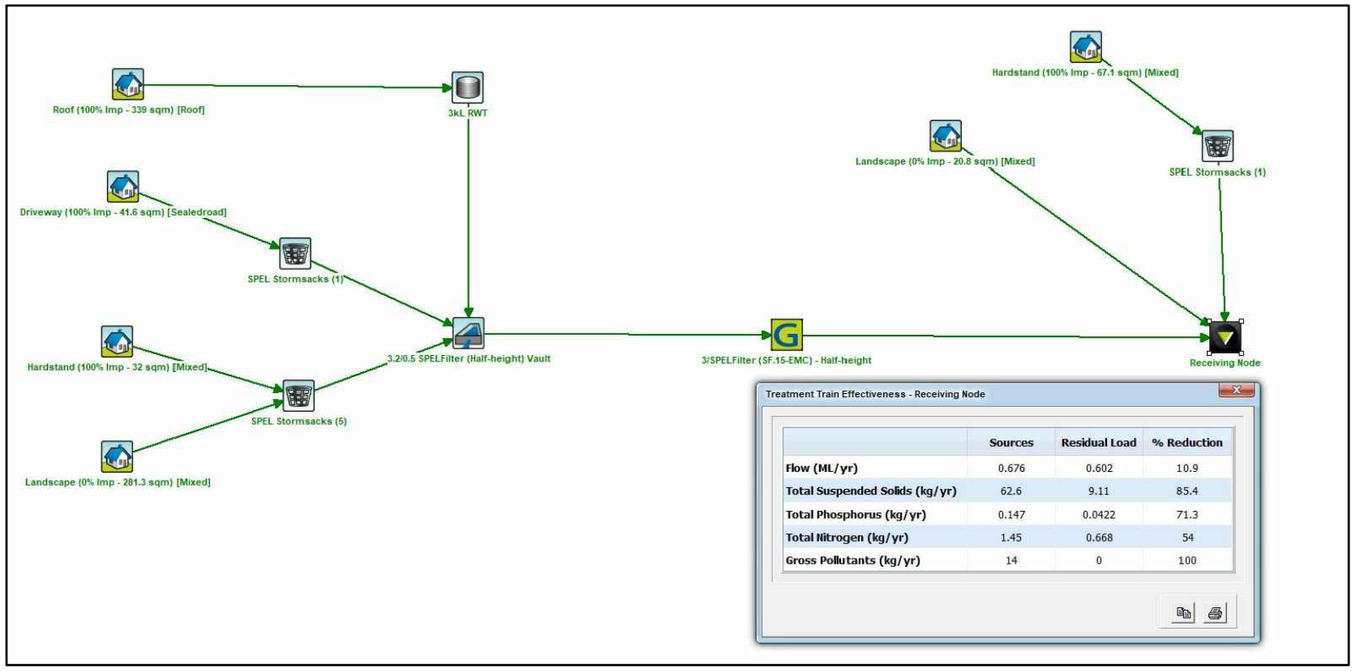
LANDSCAPED AREA = 281.3m^2
TO OSD AND SPEL FILTER SYSTEM

LANDSCAPED AREA = 20.8m^2
BYPASS WSUD AND OSD



WATER QUALITY CATCHMENT PLAN - No. 11 LEWIS STREET, BALGOWLAH

1:200



	Sources	Residual Load	% Reduction
Flow (ML/yr)	0.676	0.602	10.9
Total Suspended Solids (kg/yr)	62.6	9.11	85.4
Total Phosphorus (kg/yr)	0.147	0.0422	71.3
Total Nitrogen (kg/yr)	1.45	0.668	54
Gross Pollutants (kg/yr)	14	0	100

MUSIC MODEL RESULTS

N

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DRAWING TITLE

WSUD CATCHMENT PLAN

PROJECT TITLE

PROPOSED CHILDCARE CENTRE
LOT B, No.11 LEWIS STREET
BALGOWLAH HEIGHTS

APPROVED BY

NADER ZAKI
MIEAust CPEng NER

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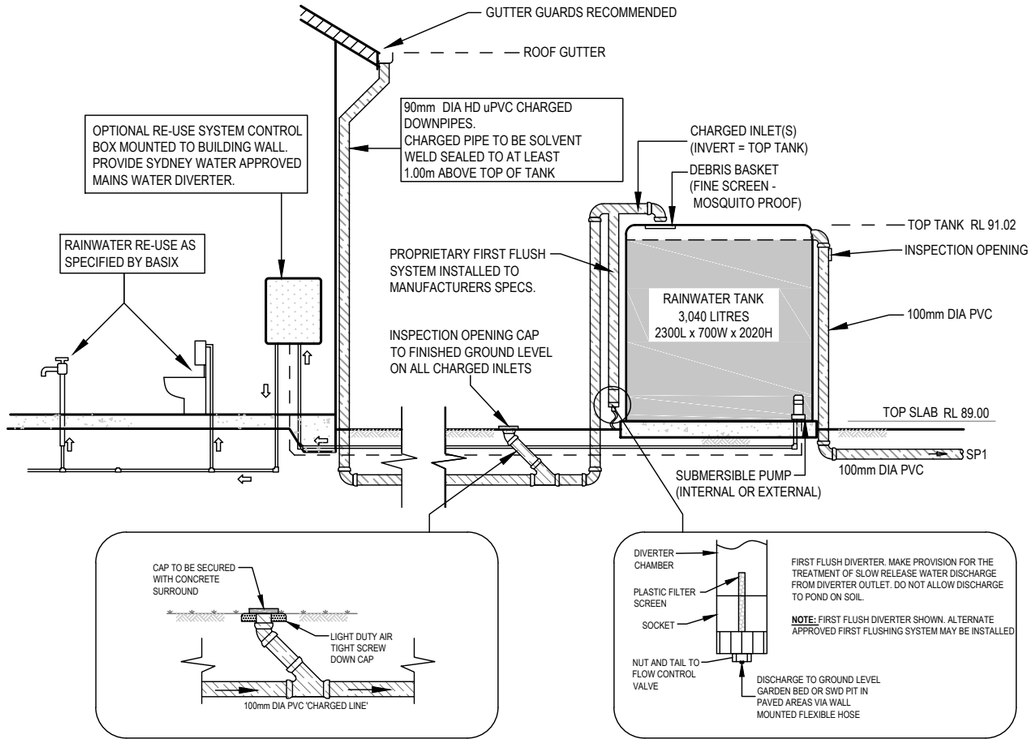


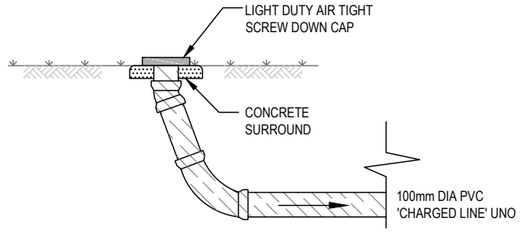
RAINWATER RE-USE TANK - ABOVE GROUND

NTS

TYPICAL WARNING SIGN

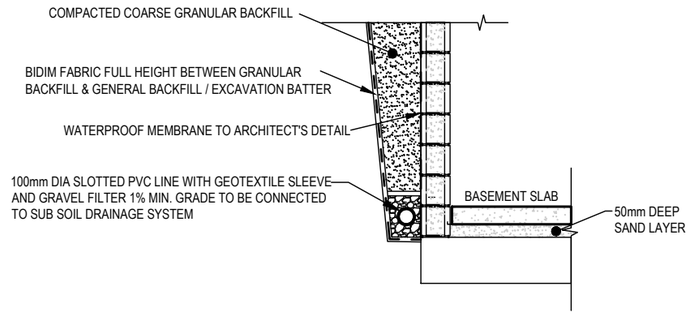
NTS

EVERY EXTERNAL SUPPLY OUTLET FROM RAINWATER RE-USE TANK TO BE LABELED WITH METALLIC WARNING SIGN



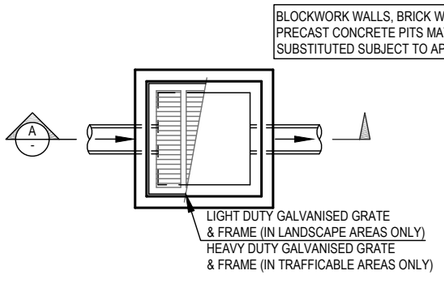
INSPECTION RISER - IR

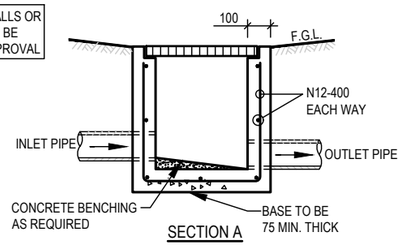
NTS



SUB-SOIL DRAINAGE

NTS

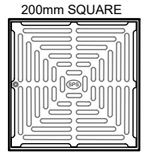




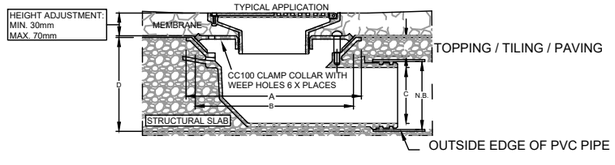
TYPICAL PIT (SIP)

NTS

NOTE:
ALL PROPOSED SITE PITS ARE TO BE CONSTRUCTED IN CONCRETE CAST IN SITU, PLASTIC OR BRICK PITS ARE NOT ACCEPTABLE. HOWEVER, 'COUNCIL MAY CONSIDER PRE-CAST UNITS IF THE UNITS ARE PLACED ON A SOLID BASE OF GRAVEL OR CONCRETE OF 75mm THICK AND BACKFILL UP TO HALF THE DEPTH OF THE PIT SURROUND WITH CONCRETE.



SPECIFICATION CODES:
Q200G/C109 (bronze grate, CI lower body)
Q200N/C109 (nickel bronze grate, CI lower body)
Q200S4/C109 (polished 304SS grate, CI lower body)
Q200S/C109 (satin 316 SS grate, CI lower body)
For 80mm outlet, use suffix "C89" not "C109"



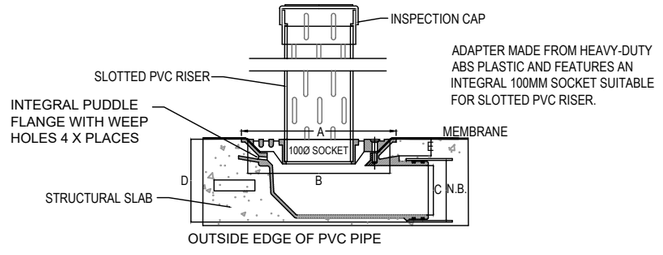
N.B.	A	B	C	D	E
80	260	240	62	115	28
100	260	240	83	140	28

TERRACE GRATE (SPS) - TG

NTS

SPS TRUFLO 80MM & 100MM 90° RWO WITH ALL-PURPOSE PLANTER BOX ADAPTER

SPECIFICATION CODE:
TIA80/90PB (80MM CI BODY WITH PLANTER BOX INSERT)
TIA100/90PB (100MM CI BODY WITH PLANTER BOX INSERT)



N.B.	A	B	C	D	E	FLOW RATE L/S
80	260	240	62	115	28	N/A
100	260	240	83	140	28	N/A

PLANTER GRATE (SPS) - PG

NTS

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DRAWING TITLE

STORMWATER DETAILS

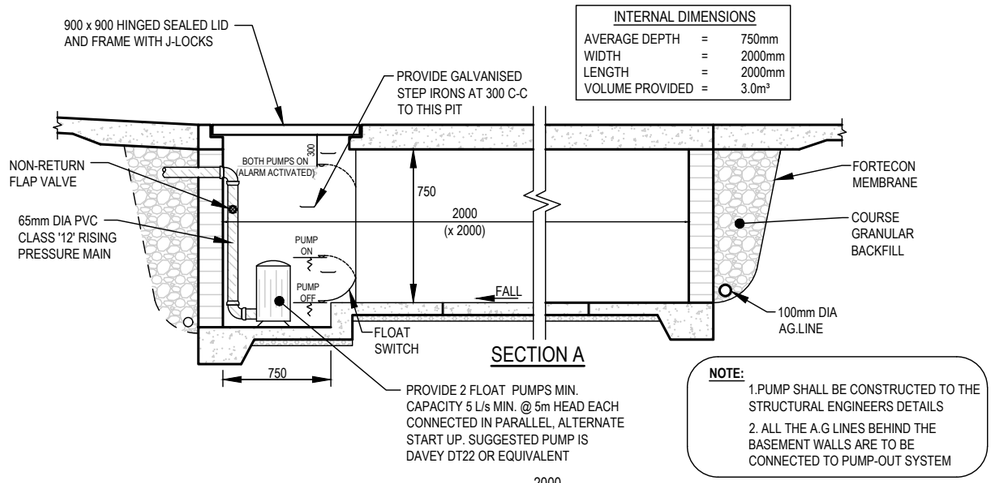
PROJECT TITLE

PROPOSED CHILDCARE CENTRE
LOT B, No.11 LEWIS STREET
BALGOWLAH HEIGHTS

APPROVED BY

NADER ZAKI
MIEAust CPEng NER

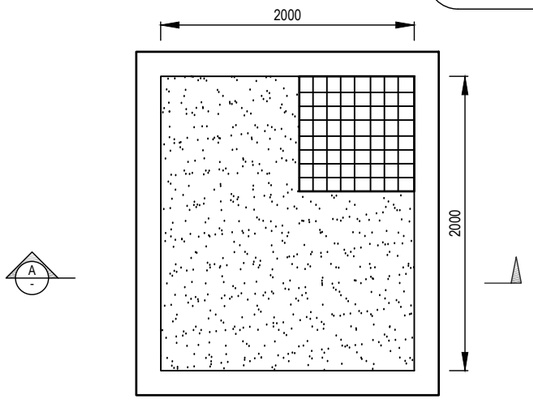
DESIGNED	CHECKED
MR	YR
SHEET SIZE	SCALE
A3	AS NOTED
ISSUE	No. IN SET
A	12
JOB REFERENCE	DRAWING No.
E200246	D7



SECTION A

NOTE:

1. PUMP SHALL BE CONSTRUCTED TO THE STRUCTURAL ENGINEERS DETAILS
2. ALL THE A.G LINES BEHIND THE BASEMENT WALLS ARE TO BE CONNECTED TO PUMP-OUT SYSTEM



PLAN

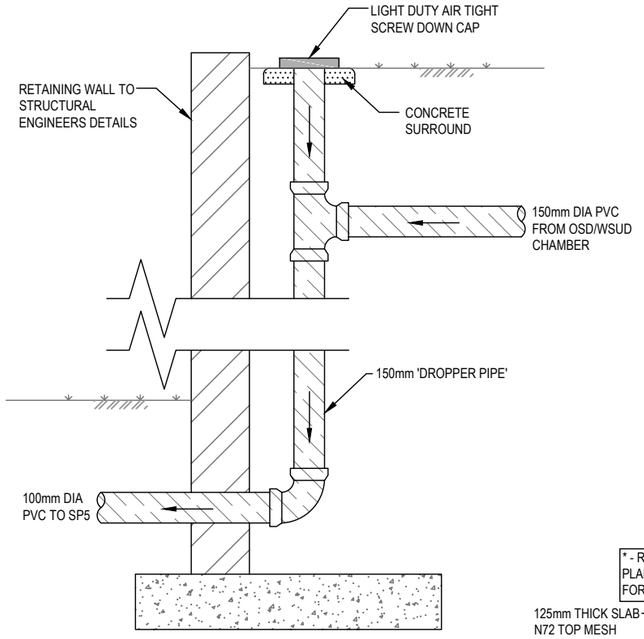
PUMP HOLDING TANK (TYPICAL)

NTS

STANDARD PUMP OUT DESIGN NOTES:

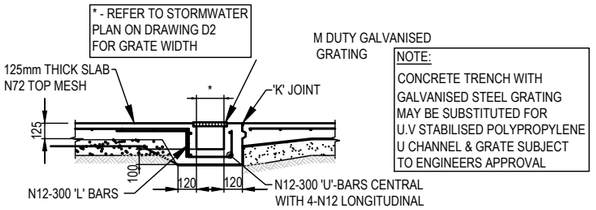
THE PUMP OUT SYSTEM SHALL BE DESIGNED TO OPERATE IN THE FOLLOWING MANNER-

- THE PUMPS SHALL BE PROGRAMMED TO WORK ALTERNATELY SO AS TO ALLOW BOTH PUMPS TO HAVE AN EQUAL OPERATION LOAD AND PUMP LIFE.
- 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 THE FLOAT WILL FUNCTION AS AN OFF SWITCH FOR THE PUMPS.
- A SECOND FLOAT HALL BE PROVIDED AT A HIGHER LEVEL, APPROXIMATELY 300mm ABOVE THE MINIMUM WATER LEVEL, WHEREBY ONE OF THE PUMPS WILL OPERATE AND DRAIN THE TANK TO THE LEVEL OF THE LOW-LEVEL FLOAT.
- 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 AND ACTIVATE THE ALARM.
- AN ALARM SYSTEM SHALL BE PROVIDED WITH A FLASHING STROBE LIGHT AND 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.



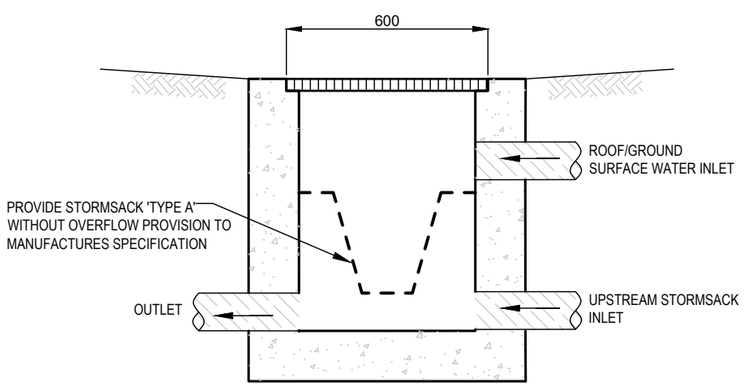
INSPECTION RISER - 'DROP PIPE'

NTS



GRATED DRAIN

NTS



SIP DETAIL WITH STORMSACK (SP10)

NTS

REVISION	DRAWN	DESCRIPTION	DATE
A	MR	ISSUED FOR DA	17.12.2020

PLAN BY
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DRAWING TITLE

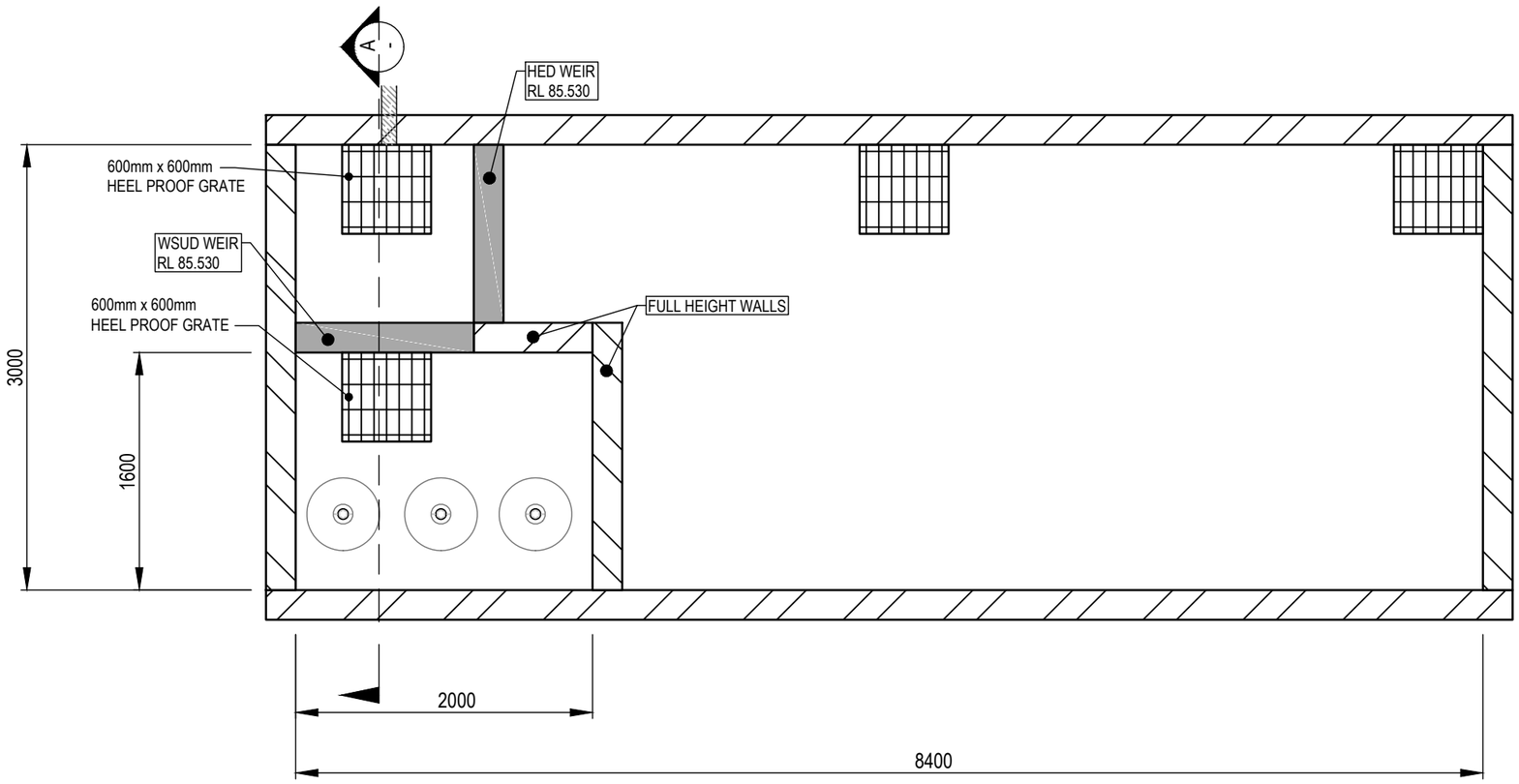
STORMWATER DETAILS

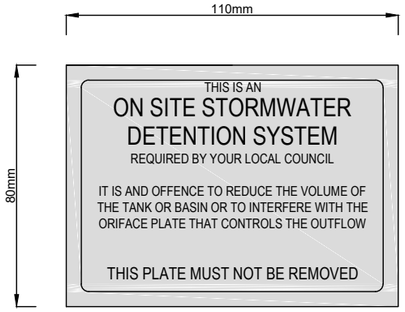
PROJECT TITLE

PROPOSED CHILDCARE CENTRE
LOT B, No.11 LEWIS STREET
BALGOWLAH HEIGHTS

APPROVED BY
NADER ZAKI
MIEAust CPEng NER

DESIGNED	CHECKED
MR	YR
SHEET SIZE	SCALE
A3	AS NOTED
ISSUE	No. IN SET
A	12
JOB REFERENCE	DRAWING No.
E200246	D8





CORNERS: SQUARE
COLOUR: ETCHED AND FILLED BLACK LEGEND ON NATURAL SILVER BACKGROUND
MATERIAL: ALUMINIUM 0.9mm MILL

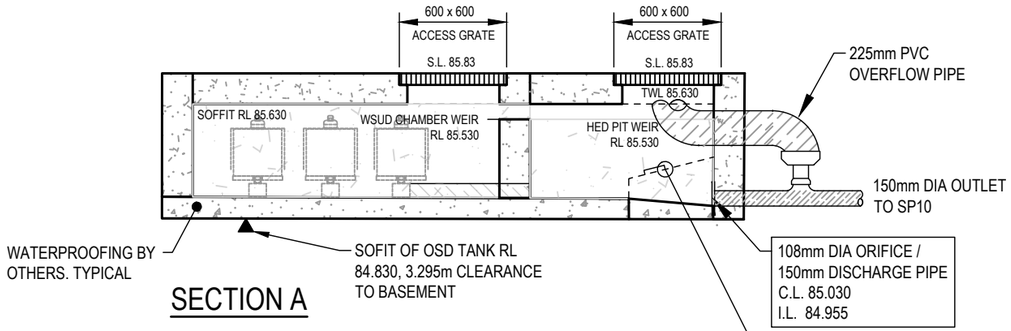
OSD PLAQUE
NTS

NOTE:-

1 - SIGN SHALL BE PLACED IN A CLEAR AND VISIBLE LOCATION OF EACH DETENTION BASIN.

COLOURS:-
TRIANGLE AND "WARNING" - RED
WATER - BLUE
FIGURE AND OTHER LETTERING - BLACK

ON-SITE DETENTION WARNING SIGN
NTS



SECTION A

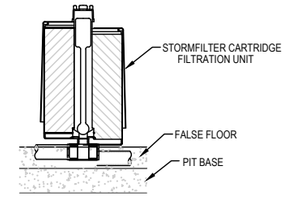
OVERFLOW WEIR CALCULATIONS - 'HED'

AREA TO OSD = 693.9m^2

FLOW TO DETENTION TANK = (1 x 274mm/hr x 0.06939 /360)
= 52.8 L/s

RECTANGULAR WEIR CAPACITY = (1.67 x 1.2 x 0.1$^{1.5}$)
= 63.4 L/s

THEREFORE 1.2m LONG x 100mm HIGH WEIR SATISFACTORY



STORMFILTER CARTRIDGE DETAIL
NTS

REVISION	DRAWN	DESCRIPTION	DATE
A	MR	ISSUED FOR DA	17.12.2020

PLAN BY

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DRAWING TITLE: OSD DETAILS

PROJECT TITLE: PROPOSED CHILDCARE CENTRE
LOT B, No.11 LEWIS STREET
BALGOWLAH HEIGHTS

APPROVED BY: NADER ZAKI
MIEAust CPEng NER

DESIGNED	CHECKED
MR	YR
SHEET SIZE	SCALE
A3	AS NOTED
ISSUE	No. IN SET
A	12
JOB REFERENCE	DRAWING No.
E200246	D9

PIT / NODE DETAILS

Name	Max HGL	Max Pond HGL	Max Surfa Flow Arriv (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboarc (m)	Overflow (cu.m/s)	Constraint
N4	84.06			0			

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
Predev	0.022	0.009	0.013	3	7	2	20% AEP, 10 min burst, Storm 8
Bypass	0.003	0.002	0.001	3	7	2	20% AEP, 10 min burst, Storm 8
Area to OS	0.027	0.025	0.001	3	7	2	20% 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
Pipe1	0.017	2.57	85.2	84.06	20% AEP, 5 min burst, Storm 1

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
OF2103	0	0	0.908	0	0	0	0	

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
OSD	85.04	2.3	0.017	0.017	0

20% AEP DRAINS RESULTS

PIT / NODE DETAILS

Name	Max HGL	Max Pond HGL	Max Surfa Flow Arriv (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboarc (m)	Overflow (cu.m/s)	Constraint
N4	84.06			0			

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
Predev	0.044	0.017	0.027	3	7	2	1% AEP, 5 min burst, Storm 1
Bypass	0.005	0.003	0.002	3	7	2	1% AEP, 10 min burst, Storm 7
Area to OS	0.049	0.045	0.004	3	7	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
Pipe1	0.018	2.6	85.232	84.061	1% AEP, 5 min burst, Storm 1

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
OF2103	0	0	1.479	0	0	0	0	

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
OSD	85.41	13.6	0.017	0.017	0

1% AEP DRAINS RESULTS

PIT / NODE DETAILS

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
N1	Node							0		600
N2	Node							0		614
N4	Node					22.9		0		829

DETENTION BASIN DETAILS

Name	Elev	Surf. Area	Not Used	Outlet Type	K	Dia(mm)	Centre RL	Pit Family	Pit Type	x
OSD	84.96	30		Orifice		108	85.01			608
	85.53	30								

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)
Predev	N1	0.0782	35	65	0	3	7	2		
Bypass	N2	0.009	50	50	0	3	7	2		
Area to OS	OSD	0.0693	85	15	0	3	7	2		

PIPE DETAILS

Name	From	To	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Type	Dia (mm)	I.D. (mm)	Rough
Pipe1	OSD	N4	10	84.96	84	9.6	uPVC, not	150	154	0.012

DETAILS of SERVICES CROSSING PIPES

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

CHANNEL DETAILS

Name	From	To	Type	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Base Widt (m)	L.B. Slope (1:?)	R.B. Slope (1:?)

OVERFLOW ROUTE DETAILS

Name	From	To	Travel Time (min)	Spill Level (m)	Crest Length (m)	Weir Coeff. C	Cross Section	Safe Dept Major Sto (m)	SafeDept Minor Sto (m)	Safe DxV (sq.m/sec)
OF2103	OSD	N4	0.1	85.53	1	1.6	4 m wide	0.3	0.15	0.4

PIPE COVER DETAILS

Name	Type	Dia (mm)	Safe Cove	Cover (m)	
Pipe1	uPVC, not	154	0.3	-61.26	Unsafe

DRAINS DATA

REVISION	DRAWN	DESCRIPTION	DATE
A	MR	ISSUED FOR DA	17.12.2020

PLAN BY

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DRAWING TITLE

DRAINS/MUSIC RESULTS

PROJECT TITLE

PROPOSED CHILDCARE CENTRE
LOT B, No.11 LEWIS STREET
BALGOWLAH HEIGHTS

APPROVED BY

NADER ZAKI
MIEAust CPEng NER

DESIGNED	CHECKED
MR	YR
SHEET SIZE	SCALE
A3	AS NOTED
ISSUE	No. IN SET
A	12
JOB REFERENCE	DRAWING No.
E200246	D10