311 HUME HWY
LIVERPOOL

STORMWATER DRAINAGE

LEGEND

ABBREVIATIONS

BG	BOX GUTTER
CI	CAST IRON
CIC	CAST IN COLUMN
CIS	CAST IN SLAB
CO	CLEAR OUT
Cu	COPPER
DI	DUCTILE IRON
DP	DOWN PIPE
DTU	DRAINAGE TURN–UP
DWG	DRAWING
Ex	EXISTING
FFL	FINISHED FLOOR LEVEL
GMS	GALVANISED MILD STEEL
HDC	HEAVY DUTY COVER
HDG	HEAVY DUTY GRATE
HL	HIGH LEVEL
IL	INVERT LEVEL
KEP	KERB ENTRY PIT
LDC	LIGHT DUTY COVER
LDG	LIGHT DUTY GRATE
LL	LOW LEVEL
LTG	LONGITUDINAL TRENCH GRATE
NTS	NOT TO SCALE
OFP	OVERFLOW PATH
P	PENETRATION
PLRO	PLANTER RAINWATER OUTLET
PRO	PARAPET RAINWATER OUTLET
RL	REDUCED LEVEL
RO	RAINWATER OUTLET
RWT	RAINWATER TANK
SRO	SQUARE RAINWATER OUTLET
STW	STORMWATER
SWP	STORMWATER PIT
TG	TRENCH GRATE
TOK	TOP OF KERB
TRO	TERRACE RAINWATER OUTLET
U.N.O.	UNLESS NOTED OTHERWISE
uPVC	UNPLASTICISED POLYVINYL CHLORIDE

SYMBOLS

- EXISTING KERB ENTRY PIT TO BE REMOVED
- RAINWATER OUTLET
- STORMWATER PIT (ACCESS ONLY)
- STORMWATER PIT (INLET)
- SQUARE RAINWATER OUTLET
- KERB ENTRY PIT (SINGLE GRATE)
- KERB ENTRY PIT (DOUBLE GRATE)
- STORMWATER HEADWALL
- SPREADER
- CONTINUATION SYMBOL (CONTINUATION OF SERVICE NOT SHOWN)
- CAPPED OFF SERVICE
- DROPPER
- RISER
- PUMP
- REFLUX VALVE (DRAINAGE)
- ELECTRICAL CONTROL PANEL
- DIRECTIONAL ARROW

LINETYPES

- STORMWATER DRAINAGE
- SUBSOIL DRAINAGE
- SWRM — STORMWATER RISING MAIN
- EXISTING SERVICE
- EXISTING SERVICE TO BE REDUNDANT
- OF — OVERLAND FLOW PATH
- P — PENETRATION
- DIRECTION OF FLOW / SERVICE / SIZE
- HX — CONTINUED ON DWG HX

ABBREVIATIONS, SYMBOLS AND LINETYPES IN THE LEGEND MAY NOT APPEAR ELSEWHERE ON THE DRAWINGS. THIS LEGEND SHOULD BE USED AS A GUIDE ONLY

CIVIL SERVICES DRAWING LIST

NS14152–C01	LEGEND AND NOTES
NS14152–C02	DRAINAGE PLAN BASEMENT 4 LAYOUT
NS14152–C03	DRAINAGE PLAN BASEMENT 3 LAYOUT
NS14152–C04	DRAINAGE PLAN BASEMENT 2 LAYOUT
NS14152–C05	DRAINAGE PLAN BASEMENT 1 LAYOUT
NS14152–C06	DRAINAGE PLAN GROUND FLOOR LAYOUT
NS14152–C07	EROSION AND SEDIMENT CONTROL PLAN
NS14152–C08	DETAIL SHEET

NOTES

ALL WORKS TO BE INSTALLED IN ACCORDANCE WITH AUSTRALIAN STANDARDS AND LOCAL GOVERNING AUTHORITY REQUIREMENTS.

ALLOW TO COORDINATE ALL PIPEWORK WITH ALL STRUCTURAL COMPONENTS AND OTHER BUILDING SERVICES. ALLOW ALL OFFSETS, BENDS AND DIVERSIONS AS MAY BE REQUIRED.

ALLOW TO PAY ALL FEES AND CHARGES AS NECESSARY TO COMPLETE THE WORK.

THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL, STRUCTURAL AND OTHER SERVICES DOCUMENTATION.

THE LOCATION AND SET OUT OF ALL FITTINGS AND FIXTURES IS TO BE FULLY COORDINATED WITH THE ARCHITECTS DETAIL DOCUMENTATION.

ALL EXISTING STORMWATER INFRASTRUCTURE TO BE CONFIRMED ON SITE. RELOCATING / DIVERSION WORKS MAY BE REQUIRED FOR ACTIVE INFRASTRUCTURE ON THE SITE.

ALL EXISTING STORMWATER DRAINAGE, PITS AND GRATES TO BE CLEAN OF ALL SEDIMENT.

ALLOW TO DISCONNECT, SEAL AND MAKE GOOD ALL REDUNDANT STORMWATER INFRASTRUCTURE.

ALL SRO'S TO BE 225mm SQ.

ALLOW TO LOCATE AND CONNECT ALL EXISTING DOWNPIPES INTO NEW STORMWATER SYSTEM.

PIPEWORK TO INDIVIDUAL DP'S & RAIN WATER TANK O/F TO BE 100mm MIN. UNLESS OTHERWISE INDICATED.

ALL OPEN STORMWATER DRAINAGE DURING DEMOLITION PHASE SHALL BE TEMPORARY CONNECTED TO NEAREST DOWNSTREAM STORMWATER INFRASTRUCTURE.

ALL CLEAROUTS (CO) LOCATED IN AREAS SUBJECTED TO VEHICULAR LOADS SHALL BE NICKEL BRONZE WITH BOLTED TRAP SCREWS.

ALLOW TO LOCATE AND CONNECT ALL ACTIVE EXISTING DOWNPIPES INTO NEW STW DRAINAGE WHERE APPLICABLE. CONTRACTOR TO DETERMINE ON SITE.

ALLOW TO LOCATE AND CONNECT ANY ACTIVE STORMWATER DRAINAGE LINE INTO NEW DRAINAGE SYSTEM AS DETERMINED ON SITE DURING CONSTRUCTION.

DRAWINGS ARE DIAGRAMMATIC ONLY. FOR DIMENSIONAL AND CONSTRUCTIONAL DETAILS OF BUILDING REFER ARCHITECTURAL DRAWINGS AND SITE.

ALL PIPEWORK ON DRAWINGS IS SHOWN BELOW SLAB (OR GROUND) UNLESS NOTED OTHERWISE.

SUBSOIL DRAINAGE TO BE PROVIDED IN ACCORDANCE WITH STRUCTURAL ENGINEER'S AND LANDSCAPE ARCHITECTS REQUIREMENTS. (e.g RETAINING WALL, PLANTERS, LANDSCAPE & BEHIND KERBS THAT ADJACENT LANDSCAPE ETC.)

ROOF PLAN NOT SHOWN.

HEAVY DUTY GATES/COVERS SHALL BE PROVIDED TO ALL SWP'S, LTG'S, RO'S & SRO'S LOCATED WITHIN THE AREAS OF VEHICULAR ACCESS.

THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL, STRUCTURAL, LANDSCAPE ARCHITECT AND ALL OTHER SERVICES DOCUMENTATION.

SPECIFICATION NOTES

GENERAL REQUIREMENTS

DIMENSIONS
THE DRAWINGS ARE INDICATIVE ONLY. ALL DIMENSIONS MUST BE CONFIRMED ON SITE BEFORE ANY SITEWORK OR OFF–SITE FABRICATION TAKES PLACE.

MATERIALS
ALL MATERIALS USED IN THE WORK SHALL BE NEW AND OF THE BEST QUALITY AND TYPE AVAILABLE TO CONFORM WITH THE RELEVANT AUSTRALIAN STANDARDS AND BEAR THE REQUIRED STANDARDS MARK AND WATERMARK.

FEES AND PERMITS
MAKE ALL APPLICATIONS TO THE WATER AUTHORITY AND LOCAL COUNCIL. PAY ALL FEES AND OBTAIN ALL NECESSARY PERMITS AND APPROVALS AS REQUIRED BY THE AUTHORITIES.

COORDINATION
COORDINATE SERVICES WITH ALL OTHER TRADES AND WORKS ON THE SITE. REVIEW ALL AVAILABLE EXISTING SERVICES DOCUMENTATION.

EXISTING SERVICES
EXISTING SERVICES SHOWN ON THE DRAWINGS ARE INDICATIVE ONLY AND MAY NOT BE COMPLETE. LOCATE AND CONFIRM ALL EXISTING SERVICES RELEVANT TO THE WORKS, PRIOR TO CARRYING OUT ANY WORK.

NOTE:
EXISTING SERVICES TO BE CAPPED OFF BELOW FINISHED GROUND LEVEL UNLESS THEY ARE REQUIRED TO BE REMOVED DUE TO CONSTRUCTION WORK.

STORMWATER DRAINAGE

STANDARDS
THE INSTALLATION IS TO BE IN ACCORDANCE WITH AS3500.3., NSW CODE OF PRACTICE FOR PLUMBING AND DRAINAGE AND LOCAL AUTHORITY REQUIREMENTS.

PIPEWORK MATERIAL
PIPEWORK UP TO 225mm DIAMETER SHALL BE UPVC DRAINAGE WASTE AND VENT (DWV) GRADE WITH SOLVENT WELDED JOINTS.
PIPEWORK 300mm AND LARGER SHALL BE FIBRE REINFORCED CONCRETE (FRC) WITH 'SUPERTITE' JOINTS.

PIPE GRADES
PIPEWORK SHALL BE LAID AT 1:100 MINIMUM GRADE UNLESS NOTED OTHERWISE. PIPEWORK MAY BE LAID AT STEEPER GRADES AS REQUIRED TO MEET COVER REQUIREMENTS OR AS NOMINATED BY PIPEWORK INVERT LEVELS.

STORMWATER PITS (SWP)
STORMWATER PITS 300 x 300 AND 450 x 450 TO BE 'ACO POLYCRETE' PITS. STORMWATER PITS 600 x 600 OR LARGER SHALL BE PRECAST CONCRETE PITS WITH EXTENSION RISERS AS NECESSARY TO MATCH REQUIRED DEPTHS. PROVIDE STEP IRONS TO THE REQUIREMENTS OF AS 3500.3.

COVERED STORMWATER PITS – CONCRETE INFILL COVERS WITH LIFTING LUGS WITH THE DUTY APPROPRIATE TO THE LOCATION OF THE COVER AND AS NOMINATED ON THE DRAWINGS.

GRATED STORMWATER PITS (NON–TRAFFICABLE AREAS) – GALVANIZED MILD STEEL OR CAST IRON MEDIUM DUTY GRATES.

STORMWATER PITS (TRAFFICABLE AREAS) AS NOMINATED ON THE DRAWINGS – CAST IRON HEAVY DUTY GRATES.

CLEAR OUTS (CO)
CLEAR OUTS SHALL BE A LINE SIZE JUNCTION ON THE PIPE WORK BELOW GROUND AND EXTENDED TO FINISHED SURFACE LEVEL WITH A PIPE AND CAP. THE CAP SHALL BE BRASS FOR INTERNAL AREAS AND WHERE LOCATED IN HARD SURFACE OUTDOOR AREAS BUT MAY BE UPVC WHERE LOCATED SOFT LANDSCAPED AREAS.

DRAINAGE TURN UPS (DTU)
SHALL BE UPVC RISERS WITH UPVC GRATES.

LONGITUDINAL TRENCH GRATES (LTG)
SHALL BE 'ACO POLYCRETE' TO SIZE AS NOMINATED AND WITH GRATES AS NOMINATED ON THE DRAWINGS. ALL HEAVY DUTY GRATES TO BE CAST IRON.

ALL LTG'S LOCATED WITHIN VEHICULAR TRAFFICABLE AREAS SHALL BE 225mm WIDE WITH HEAVY DUTY CAST IRON GRATES. ALL LTG'S LOCATED WITHIN NON VEHICULAR TRAFFICABLE AREAS SHALL BE ACO POLYCRETE KS100S CHANNEL DRAIN SYSTEM WITH HEELGAURD ANTI–SLIP STAINLESS STEEL GRATE (LOAD CLASS 'B') AND STAINLESS STEEL EDGE RAILS.

SUBSOIL DRAINAGE
SHALL BE 90mm SLOTTED UPVC PIPE WRAPPED IN CLOTH SOCK AND SURROUNDED WITH 150mm THICKNESS OF 20mm DIAMETER BLUE METAL AND SURROUNDED IN GEOTEXTILE FABRIC.

RAINWATER OUTLETS
RAINWATER OUTLETS (RO) SHALL BE "GATIC WADE" MODEL W1104/A6 FLOOR DRAIN, WITH 150 mm DIAMETER POLISHED NICKEL BRONZE GRATE AND 100 mm DIAMETER OUTLET.

SQUARE RAINWATER OUTLETS (SRO) SHALL BE "GATIC WADE" MODEL W1214/J12 FLOOR DRAIN, WITH 280 mm x 280 mm SQUARE POLISHED NICKEL BRONZE GRATE WITH SEDIMENT BUCKET AND 100 mm DIAMETER OUTLET.

REV	ISSUE	DATE
4	COUNCIL REQ. AMENDMENTS	22/01/16
3	ISSUED FOR DA	10/07/15
2	ISSUED FOR DA	18/12/14
1	ISSUED FOR DA	17/12/14

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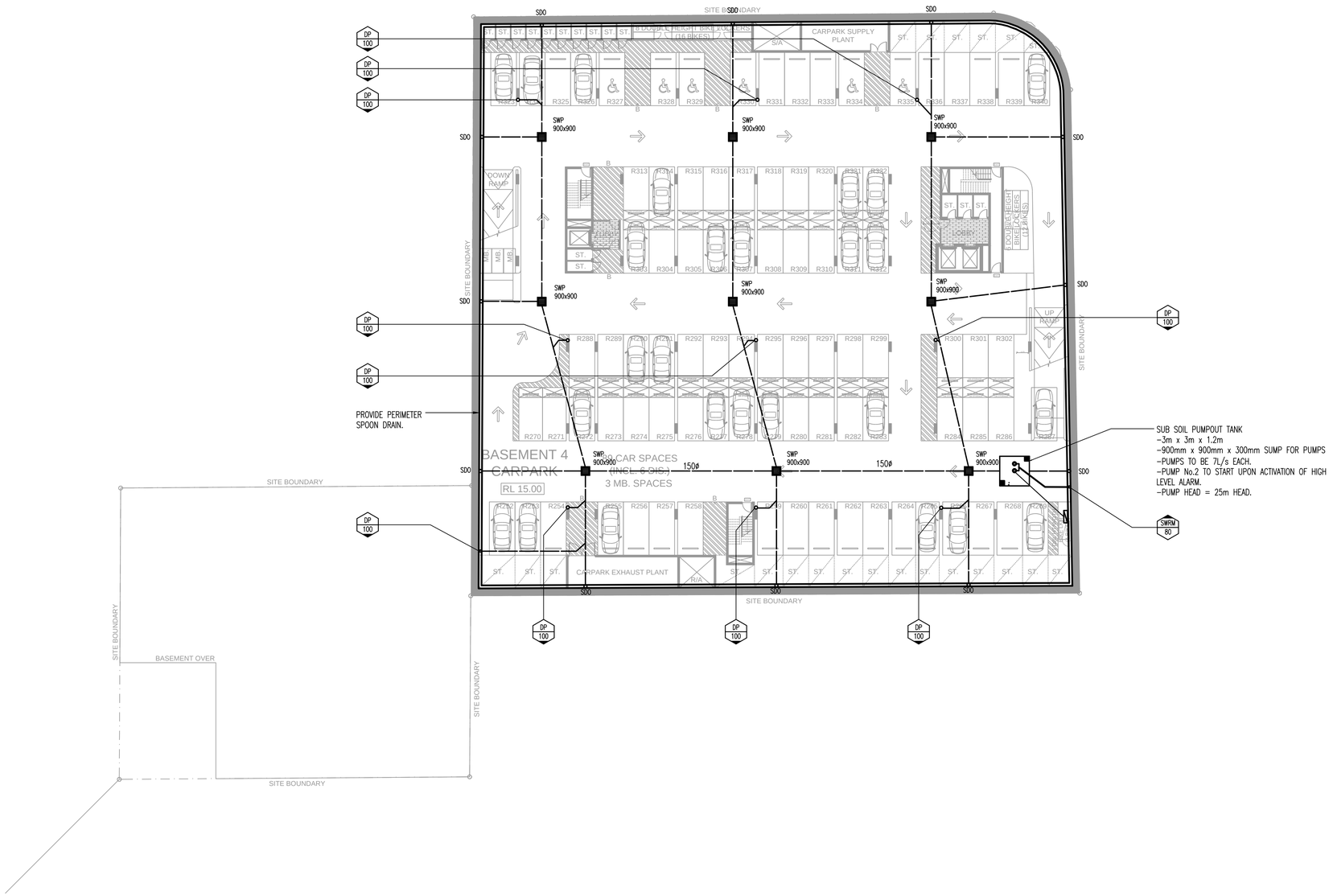
PROJECT
311 HUME HIGHWAY,
LIVERPOOL,
NSW 2170

TITLE
CIVIL SERVICES
LEGEND AND NOTES

DRAWN	DESIGN	SCALE	DWG. No.
E.O.	J.M.	1:100	C01
JOB No.		SHEET SIZE	REV
NS14152		A1	4



REV	ISSUE	DATE
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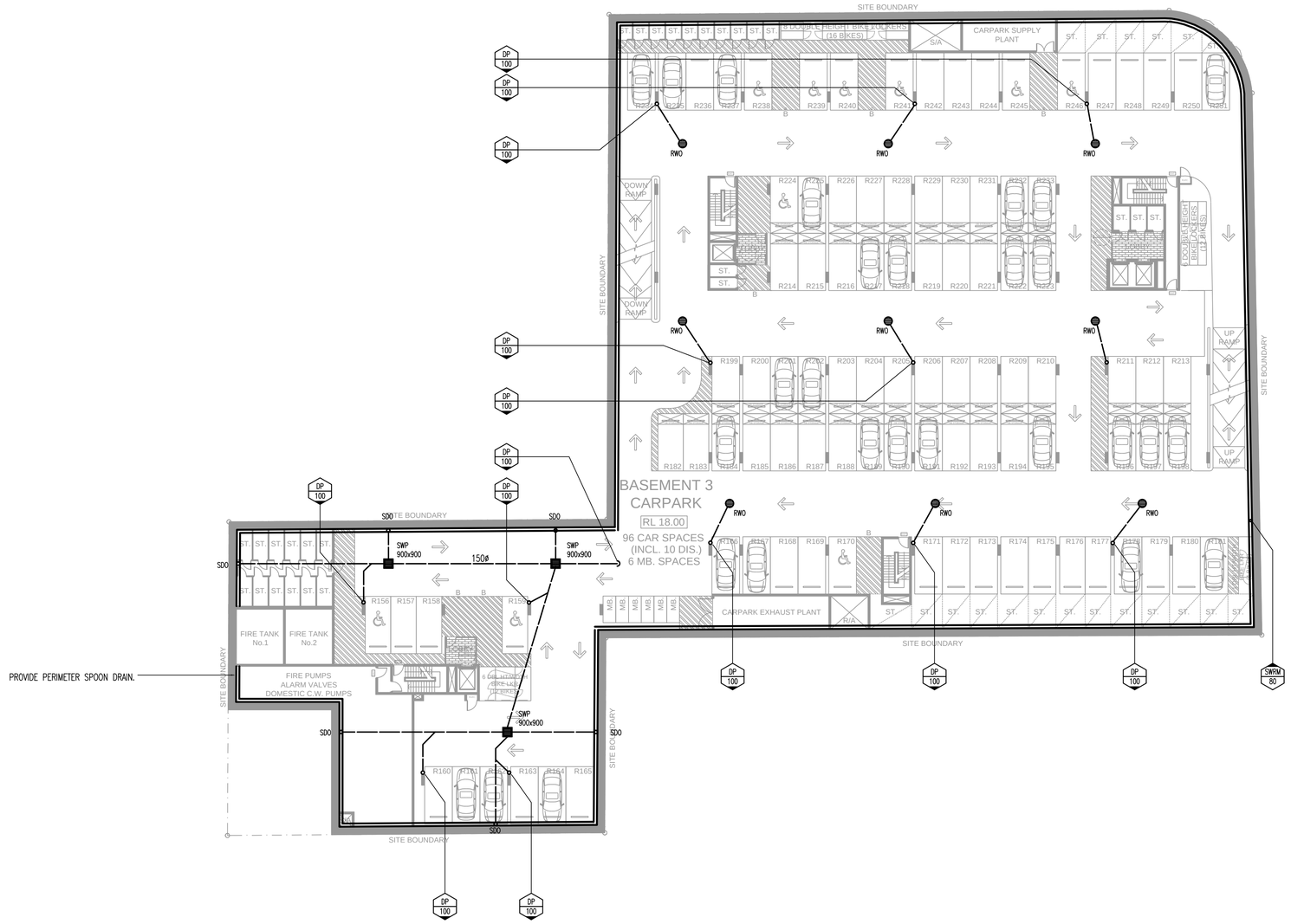
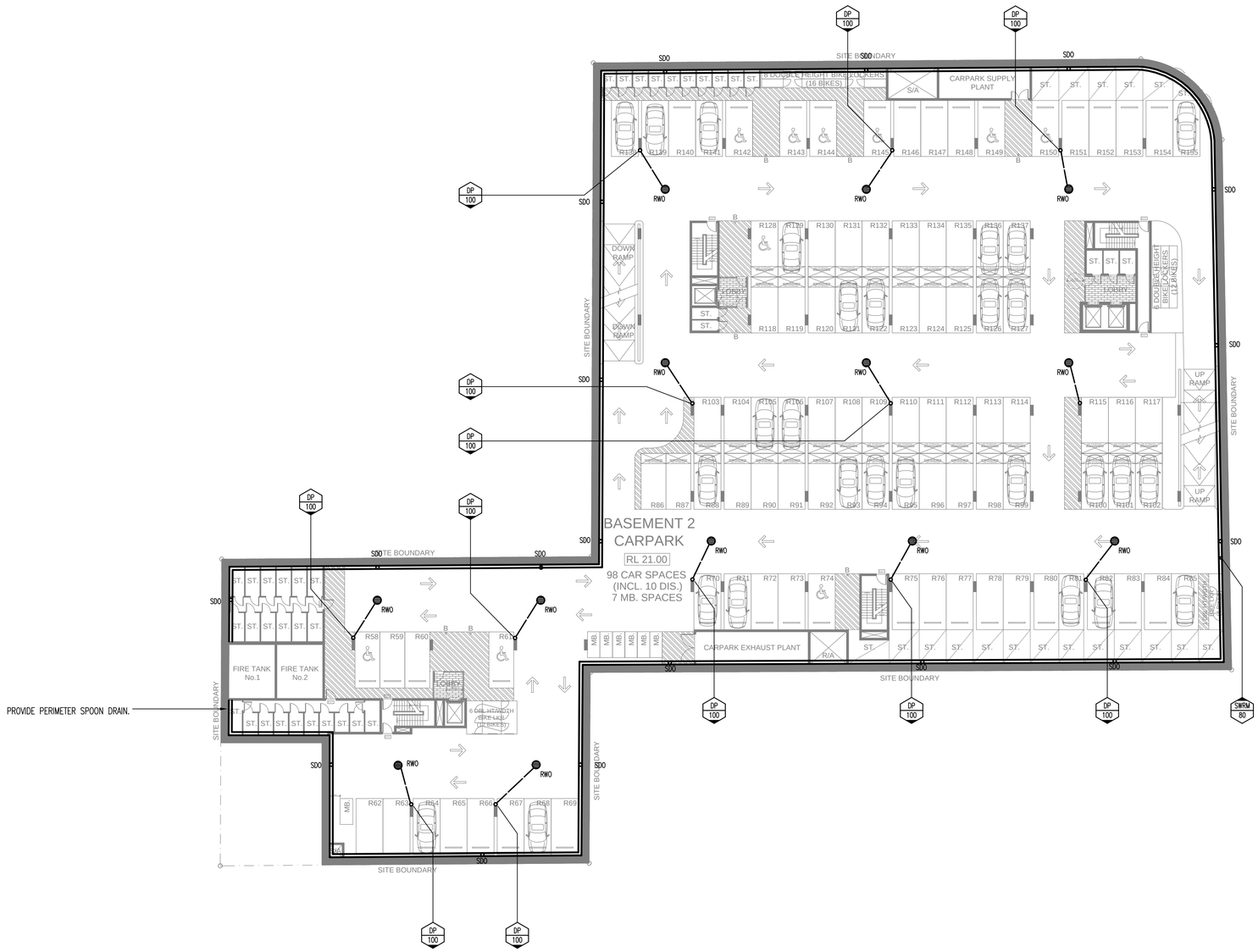
PROJECT
311 HUME HIGHWAY,
LIVERPOOL,
NSW 2170

TITLE
CIVIL SERVICES
DRAINAGE PLAN
BASEMENT 4 LAYOUT

DRAWN	DESIGN	SCALE	DWG. No.
E.O.	J.M.	1:250	C02
JOB No.		SHEET SIZE	REV
NS14152		A1	4



			CLIENT	ARCHITECT		PROJECT	TITLE	DRAWN	DESIGN	SCALE	DWG. No.
			TM	DESIGN WORKSHOP AUSTRALIA	POST: PO BOX 7140, MOUNT ANNAN NSW 2567 PHONE: 0414 013 987 E-MAIL:admin@arrowce.com.au	311 HUME HIGHWAY, LIVERPOOL, NSW 2170	CIVIL SERVICES DRAINAGE PLAN BASEMENT 3 LAYOUT	E.O.	J.M.	1:250	C03
4	COUNCIL REQ. AMENDMENTS	22/01/16						JOB No.		SHEET SIZE	REV
3	ISSUED FOR DA	10/07/15						NS14152		A1	4
2	ISSUED FOR DA	18/12/14									
1	ISSUED FOR DA	17/12/14									
REV	ISSUE	DATE									



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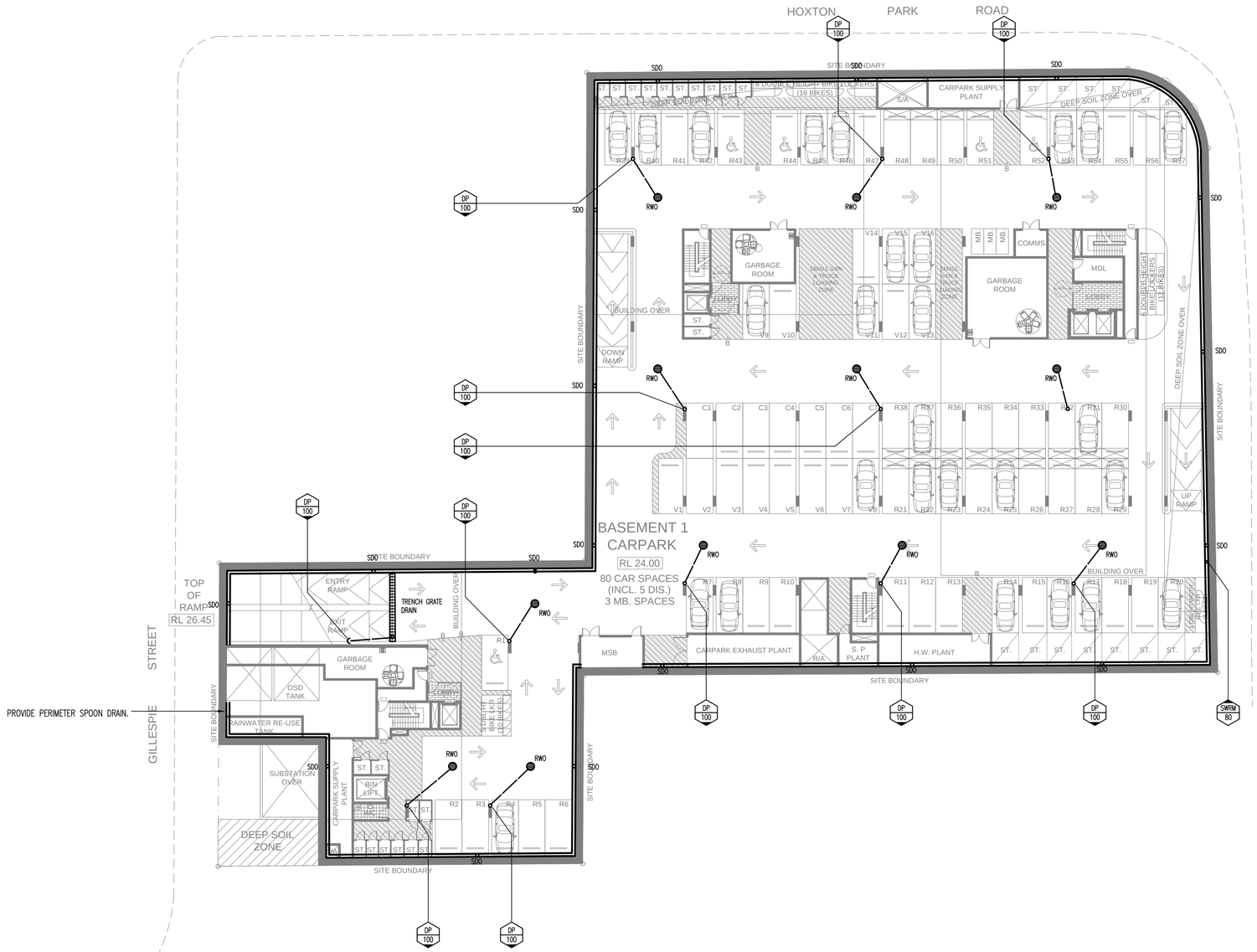
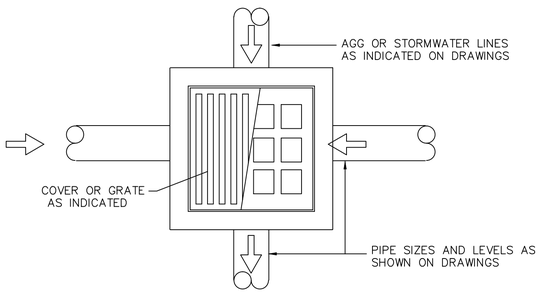
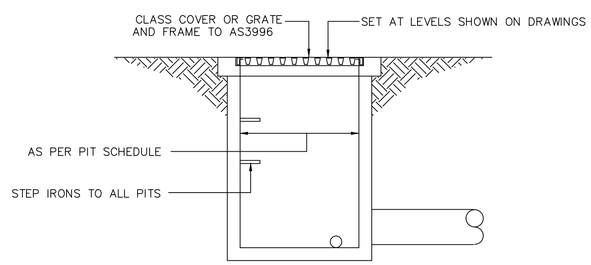
			TM	DWA DESIGN WORKSHOP AUSTRALIA	POST: PO BOX 7140, MOUNT ANNAN NSW 2567 PHONE: 0414 013 987 E-MAIL:admin@arrowce.com.au	311 HUME HIGHWAY, LIVERPOOL, NSW 2170	CIVIL SERVICES DRAINAGE PLAN BASEMENT 2 LAYOUT	E.O. / J.M. / 1:250 / C04
4	COUNCIL REQ. AMENDMENTS	22/01/16						JOB No. NS14152 / SHEET SIZE A1 / REV 4
3	ISSUED FOR DA	10/07/15						
2	ISSUED FOR DA	18/12/14						
1	ISSUED FOR DA	17/12/14						
REV	ISSUE	DATE						





TYPICAL STORMWATER PIT
PLAN VIEW



SECTIONAL ELEVATION
THROUGH PRE-CAST STORMWATER PIT

REV	ISSUE	DATE
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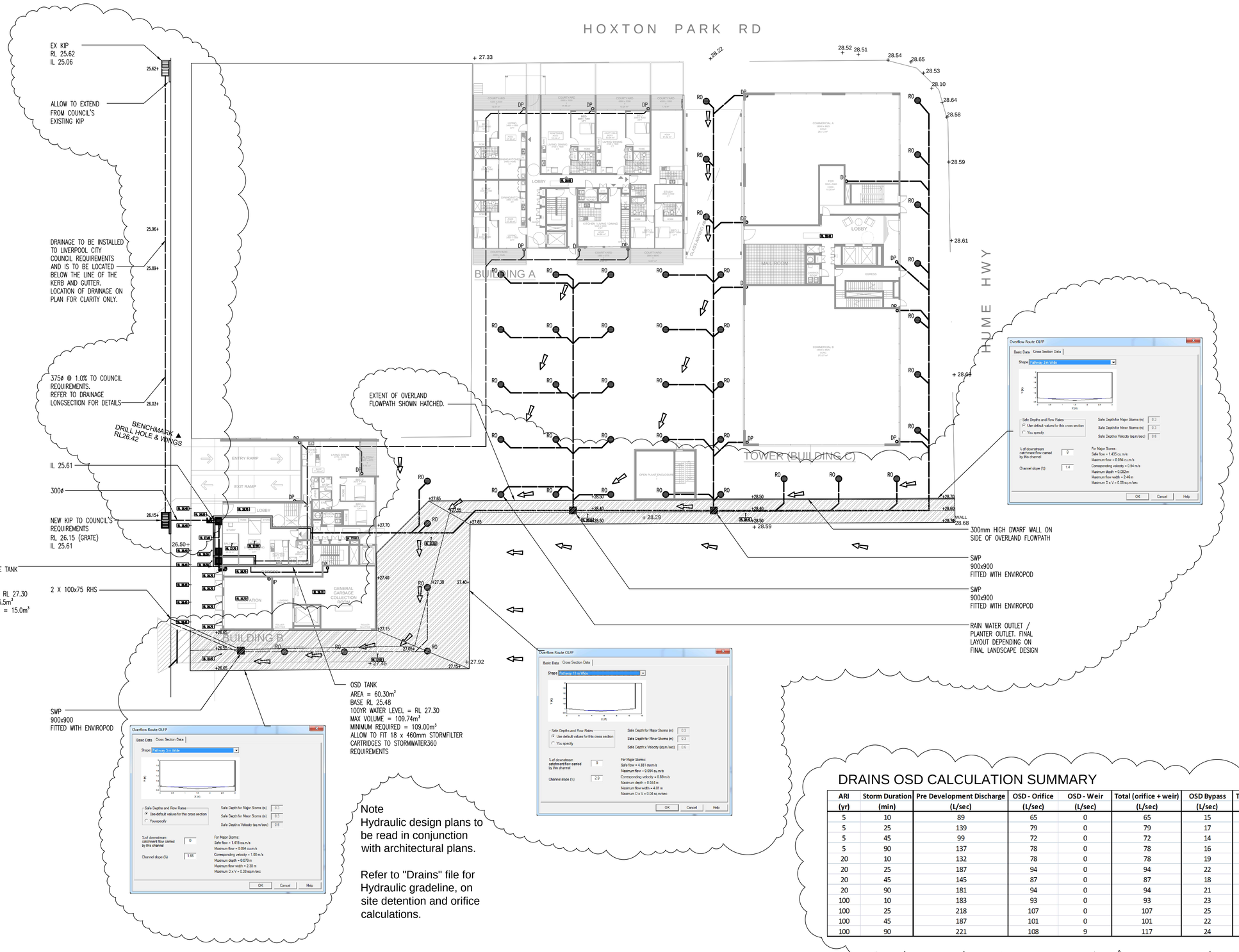
PROJECT
311 HUME HIGHWAY,
LIVERPOOL,
NSW 2170

TITLE
CIVIL SERVICES
DRAINAGE PLAN
BASEMENT 1 LAYOUT

DRAWN	DESIGN	SCALE	DWG. No.
E.O.	J.M.	1:250	C05
JOB No.		SHEET SIZE	REV
NS14152		A1	4



Note
Hydraulic design plans to be read in conjunction with architectural plans.

Refer to "Drains" file for Hydraulic gradeline, on site detention and orifice calculations.

DRAINS OSD CALCULATION SUMMARY

ARI (yr)	Storm Duration (min)	Pre Development Discharge (L/sec)	OSD - Orifice (L/sec)	OSD - Weir (L/sec)	Total (orifice + weir) (L/sec)	OSD Bypass (L/sec)	Total Post Development (L/sec)
5	10	89	65	0	65	15	80
5	25	139	79	0	79	17	96
5	45	99	72	0	72	14	86
5	90	137	78	0	78	16	94
20	10	132	78	0	78	19	97
20	25	187	94	0	94	22	116
20	45	145	87	0	87	18	105
20	90	181	94	0	94	21	115
100	10	183	93	0	93	23	116
100	25	218	107	0	107	25	132
100	45	187	101	0	101	22	123
100	90	221	108	9	117	24	141

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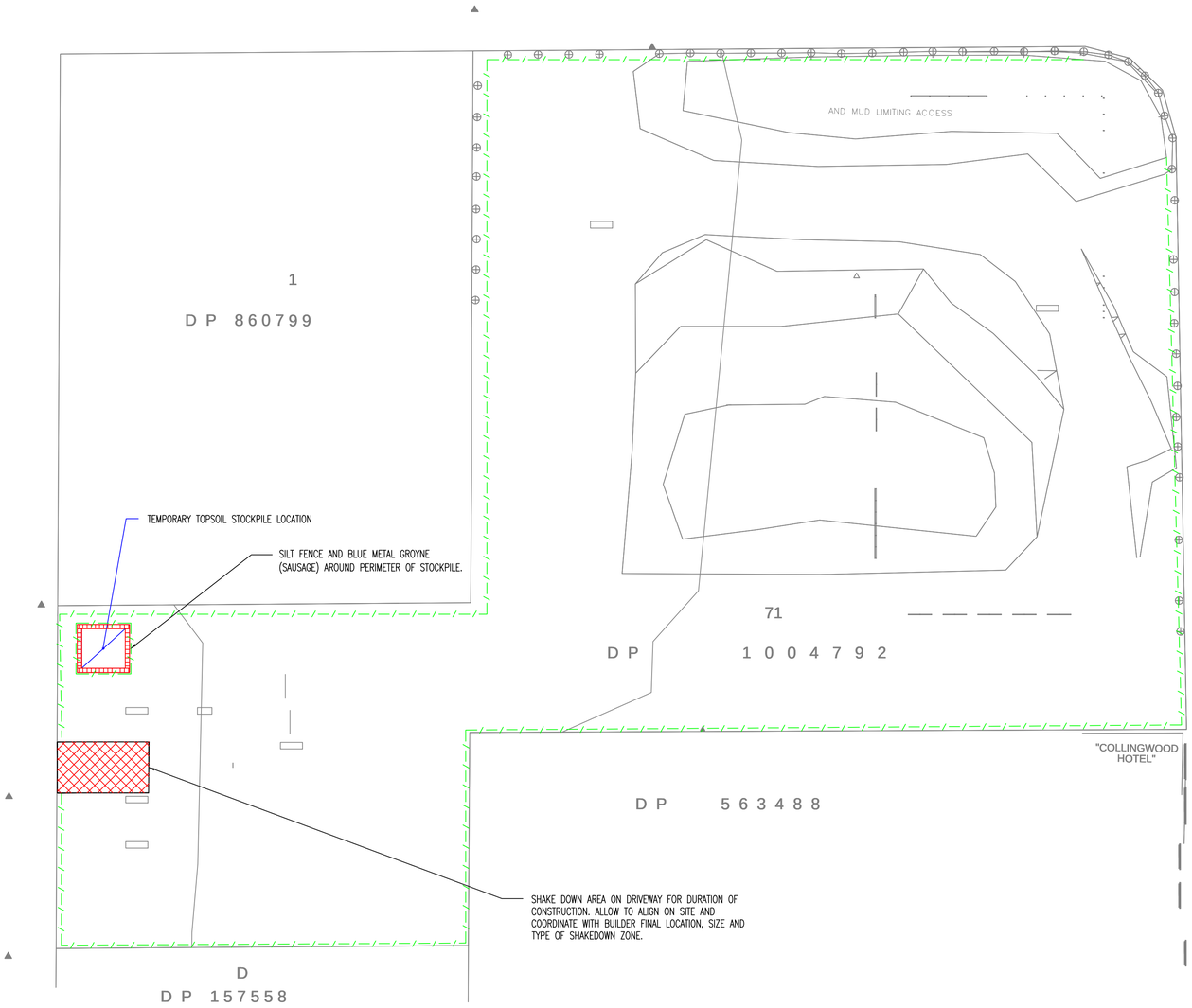
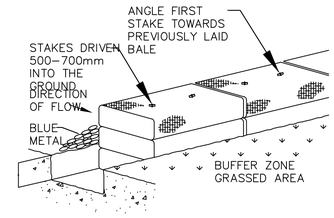
PROJECT
311 HUME HIGHWAY,
LIVERPOOL,
NSW 2170

TITLE
CIVIL SERVICES
DRAINAGE PLAN
GROUND FLOOR LAYOUT

DRAWN	DESIGN	SCALE	DWG. No.
E.O.	J.M.	1:250	C06
JOB No.		SHEET SIZE	REV
NS14152		A1	4



NOTES:
1. EROSION AND SEDIMENT CONTROL DEVICES ARE TO BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION WORKS.
2. ALL RAINWATER MUST BE DIRECTED TO TEMPORARY PUMP OUT PIT. PUMP OUT PIT MUST BE FITTED WITH FILTRATION DEVICE. ALL PUMPED WATER MUST PASS THOUGH FILTRATION DEVICE PRIOR TO BEING PUMPED.



DETAIL - STRAW BALE BARRIERS

DESCRIPTION
A TEMPORARY BARRIER OF STRAW BALES PLACED AROUND THE PERIMETER OF A DISTURBED AREA.

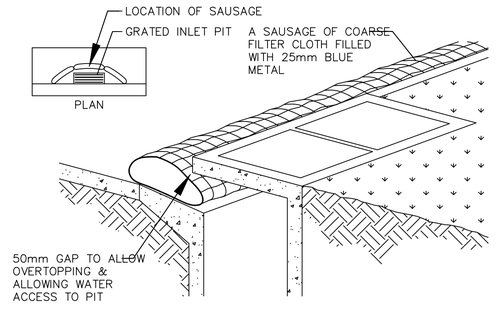
USAGE
STRAW BALE BARRIERS ARE USED TO DESILT CONTAMINATED WATER

INSTALLATION
STRAW BALES ARE ONLY EFFECTIVE ON SITES OF LESS THAN HALF A HECTARE. THE BALES MUST BE PLACED LENGTHWISE IN 100mm DEEP TRENCHES WITH THEIR BINDING ROPE HORIZONTAL TO THE GROUND.

THE BALES MUST BE CONNECTED AND ANCHORED TO THE GROUND BY DRIVING TWO STAR PICKETS OR POSTS THROUGH EACH BALE. THE FIRST STAKE MUST BE DRIVEN TOWARDS THE ADJOINING BALE AT A 45° ANGLE TO FORCE THE BALES TOGETHER.

MAINTENANCE
AFTER RAINFALL STRAW BALE BARRIERS MUST BE INSPECTED AND SEDIMENT REMOVED. DAMAGED BALES SHOULD BE REPAIRED OR REPLACED BALES HAVE A LIFE EXPECTANCY OF THREE TO SIX MONTHS.

NOTE
THE LOCATION OF STRAW BALES ON THE ABOVE SITE PLAN IS DIAGRAMMATIC ONLY. THE REQUIREMENT FOR THE USAGE OF STRAW BALES IS TO BE AS A SUPPLEMENTARY MEASURE TO ASSIST THE SILT FENCES. FINAL LOCATIONS AND EXTENT OF STRAW BALES TO BE DETERMINED BY THE PROJECT MANAGER.

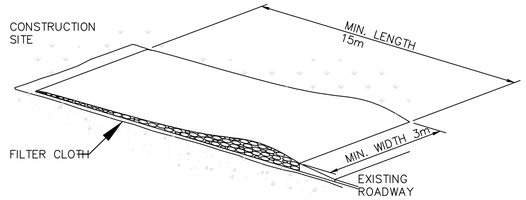


DETAIL - BLUE METAL GROYNE (SAUSAGE)

DESCRIPTION
THE GROYNE COMPRISES A SAUSAGE OF SHADE CLOTH OR OTHER PREVIOUS FABRIC, SOME 200mm DIAMETER, FILLED WITH 25mm BLUE METAL AND CLOSED BOTH ENDS.

INSTALLATION
THE SAUSAGE IS LAID ON THE GROUND ON THE CONTOUR SIMILAR TO A SILT FENCE. GENERALLY THE SAUSAGE SHOULD BE LAID TWO HIGH TO OBTAIN ENOUGH FILTER AREA.

LOCATION
THE GROYNES SHOULD BE LOCATED ACROSS THE ENTRY DRIVEWAY TO THE SITE AND AROUND THE NEAREST DOWNSTREAM KERB ENTRY PITS.



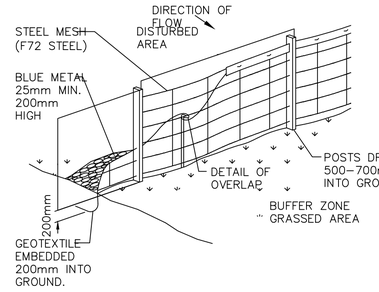
DETAIL - SHAKE DOWN AREA/ACCESS STABLISATION

DESCRIPTION
STABLISED ACCESS SHALL BE A BED OF AGGREGATE ON FILTER CLOTH. GRADE THE ENTRANCE SO THAT IT IS AT LEAST 15 METRES LONG WITH A MINIMUM WIDTH OF 3 METRES FOR A ONE WAY ENTRANCE AND 6 METRES FOR A TWO WAY ENTRANCE. PLACE FILTER CLOTH OVER THE ENTIRE AREA AND COVER IT WITH 150mm MINIMUM THICKNESS OF 50mm AGGREGATE RIVER GRAVEL OR A RECYCLED OR RECLAIMED CONCRETE EQUIVALENT.

USAGE
SUCH STRUCTURES SHALL BE USED AT ALL POINTS WHERE CONSTRUCTION VEHICLES ENTER OR LEAVE THE SITE AND EXISTING ROADWAYS.

TREATMENT/MAINTENANCE

SURFACE WATER FLOWING TO THE ENTRANCE MUST BE PIPED UNDER THE ENTRANCE, OR A BERM CONSTRUCTED TO DIRECT SURFACE FLOW AWAY FROM THE ROAD.
ALL DEPOSITS ARE TO BE REGULARLY CLEARED FROM SITE ACCESS.
THE DRAWBAR, TAILGATE ETC OF ANY VEHICLE INVOLVED IN THE TRANSPORT OF GRAVEL ETC TO A CONSTRUCTION SITE MUST BE MANUALLY CLEANED OF MATERIAL BEFORE THE VEHICLE LEAVES THE SITE.
SHOULD THE MATERIAL BE DEPOSITED ON THE ROADWAY ETC, SUCH MATERIAL SHALL BE SWEPT AND REMOVED FROM THE ROADWAY.



DETAIL - SILT FENCES

SILT FENCES

DESCRIPTION
SILT FENCES ARE TEMPORARY BARRIERS MADE FROM A COMBINATION OF FILTER CLOTH AND BLUE METAL

USAGE
SILT FENCES FILTER RUN–OFF LEAVING THE SITE TRAPPING THE SEDIMENT AND ALLOWING CLEAN FILTERED WATER TO PASS. SILT FENCES ARE TO BE PLACED ON THE CONTOUR OR SLIGHTLY CONVEX TO THE CONTOUR. IF ON THE CONTOUR, EACH END OF THE FENCE SHOULD BE TURNED UP TO CREATE A 'STILLING POND' UP SLOPE OF THE FENCE. WHERE POSSIBLE, A SILT FENCE SYSTEM SHOULD BE NO LONGER THAN ABOUT 20 METRES. THEY SHOULD NOT INTERCEPT LARGE CONCENTRATED OR CHANNELISED FLOWS.

INSTALLATION
THE AREA BELOW A SILT FENCE MUST BE UNDISTURBED ON STABLISED GROUND.

MAINTENANCE
SILT FENCES REQUIRE REGULAR MAINTENANCE. TRAPPED SEDIMENTS SHOULD BE REMOVED, PICKETS STRAIGHTENED, FILTER CLOTH RESECURED AND TIGHTENED AND BLUE METAL REPLACED WHEN HEAVILY CONTAMINATED WITH SILT.

NOTE
FILTER FABRIC SHALL BE EQUIVALENT TO 'GEOLAB' AND BE CAPABLE OF INTERCEPTING SILT PARTICLES DOWN TO 2 MICRON IN SIZE.

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ARCHITECT
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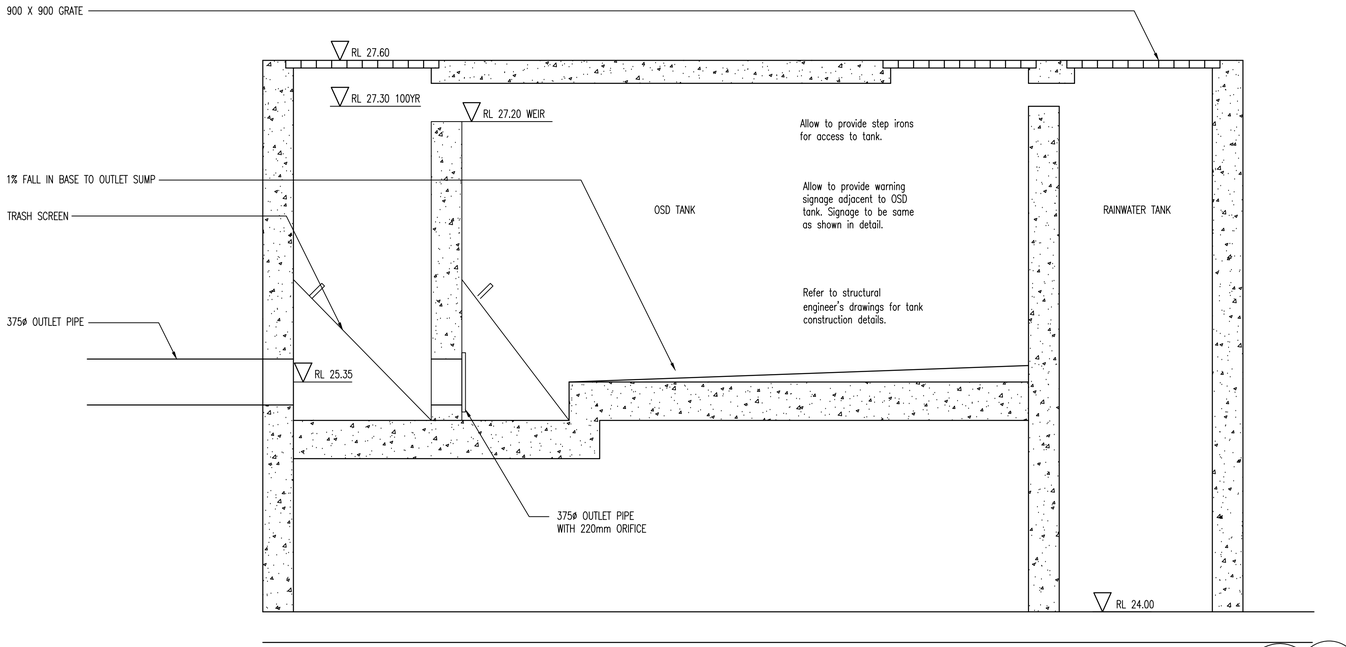
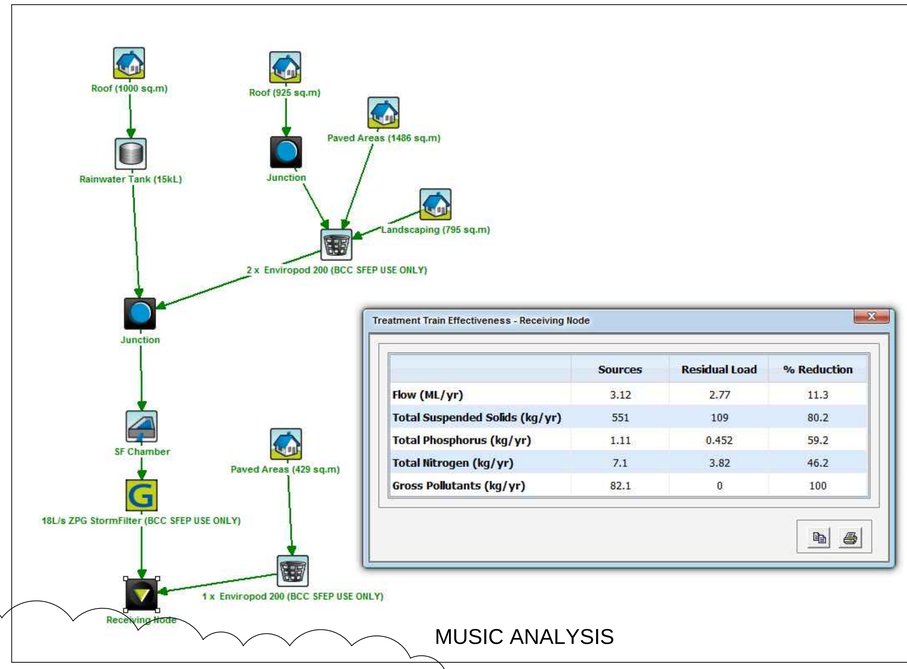
PROJECT
311 HUME HIGHWAY,
LIVERPOOL,
NSW 2170

TITLE
CIVIL SERVICES
EROSION AND SEDIMENT CONTROL PLAN

DRAWN	DESIGN	SCALE	DWG. No.
E.O.	J.M.	1:250	C07
JOB No.		SHEET SIZE	REV
NS14152		A1	4



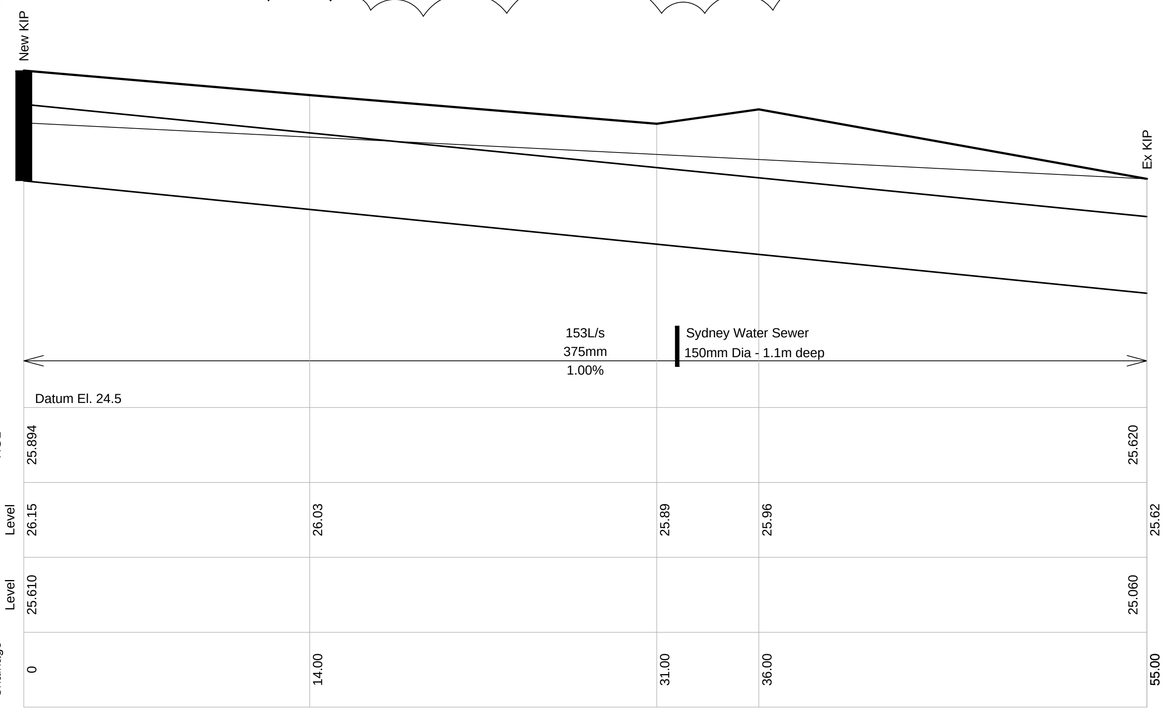
OSD DETAIL



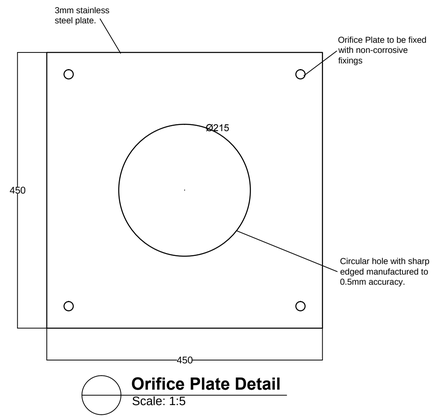
Treatment Train Effectiveness - Receiving Node

	Sources	Residual Load	% Reduction
Flow (ML/yr)	3.12	2.77	11.3
Total Suspended Solids (kg/yr)	551	109	80.2
Total Phosphorus (kg/yr)	1.11	0.452	59.2
Total Nitrogen (kg/yr)	7.1	3.82	46.2
Gross Pollutants (kg/yr)	82.1	0	100

MUSIC ANALYSIS



DRAINAGE LONGSECTION -
HOR 1:15, VERT 1:10



Orifice Plate Detail
Scale: 1:5

Note
Hydraulic design plans to be read in conjunction with architectural plans.

Refer to "Drains" file for Hydraulic gradeline, on site detention and orifice calculations.

OSD Tank Signage

DANGER

CONFINED SPACE

NO ENTRY WITHOUT CONFINED SPACE TRAINING

Note
Structure is an osd facility, is part of the stormwater drainage network, and is NOT to be tampered with.

Identification Number - DA XXX/XXX
Refer to As Constructed plans / maintenance manuals for maintenance requirements

Colours
"DANGER" and background - White
Elliptical area - Red
Rectangle containing ellipse - Black
Other lettering and border - Black

REV	ISSUE	DATE
4	COUNCIL REQ. AMENDMENTS	22/01/16
3	ISSUED FOR DA	10/07/15
2	ISSUED FOR DA	18/12/14
1	ISSUED FOR DA	17/12/14

CLIENT
TM

ARCHITECT
DWA DESIGN WORKSHOP AUSTRALIA

Arrow Consulting Engineers
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PROJECT
311 HUME HIGHWAY,
LIVERPOOL,
NSW 2170

TITLE
CIVIL SERVICES
DETAIL SHEET

DRAWN	DESIGN	SCALE	DWG. No.
E.O.	J.M.	1:100	C08
JOB No.		SHEET SIZE	REV
NS14152		A1	4