Prepared by:





Prepared for:

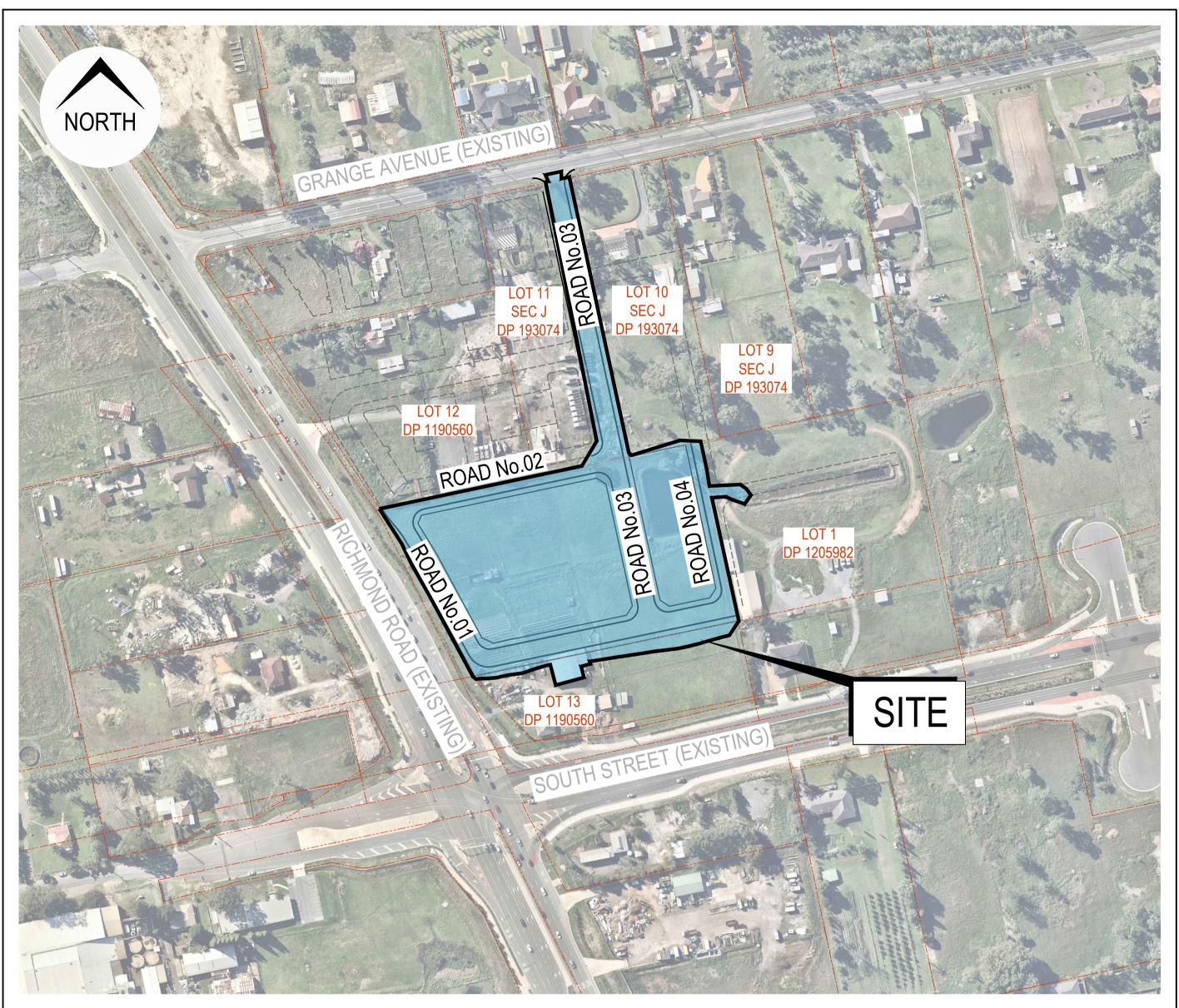






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SITE / LOCATION (Image courtesy of Nearmap 07.04.2019)

LOT 13 D.P.1190560

DA: SPP-20-00002

971 RICHMOND ROAD, MARSDEN PARK ROAD AND DRAINAGE DESIGN

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GENERAL NOTES

- G1. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH BLACKTOWN CITY COUNCIL'S WORKS SPECIFICATION CIVIL (CURRENT EDITION) AND/OR AS DIRECTED BY THEIR REPRESENTATIVE
- G2. SURVEY MARKS: -
- a. SURVEY MARKS SHOWN THUS 🚵 SHALL BE RETAINED AT ALL TIMES. WHERE RETENTION IS NOT POSSIBLE THE SUPERINTENDENT
- G3. THE CONTRACTOR SHALL LOCATE AND LEVEL ALL EXISTING SERVICES PRIOR TO COMMENCING CONSTRUCTION AND MAKE ARRANGEMENTS WITH THE RELEVANT AUTHORITY TO RELOCATE OR ADJUST IF NECESSARY AT DEVELOPERS EXPENSE.
- G4. THE CONTRACTOR SHALL NOT ENTER UPON NOR DO ANY WORK WITHIN ADJACENT LANDS WITHOUT THE WRITTEN PERMISSION OF THE OWNERS. TO BE PROVIDED PRIOR TO THE APPROVAL OF THE PLANS.
- G5. THE CONTRACTOR SHALL MAINTAIN SERVICES AND ALL WEATHER ACCESS AT ALL TIMES TO ADJOINING PROPERTIES.

MUST BE NOTIFIED AND CONSENT RECEIVED PRIOR TO THEIR REMOVAL.

- G6. COUNCIL'S TREE PRESERVATION ORDER MUST BE OBSERVED AND NO TREE SHALL BE FELLED, LOPPED OR REMOVED WITHOUT THE PRIOR APPROVAL OF COUNCIL'S ENGINEER.
- G7. TREES TO BE RETAINED ON SITE SHALL BE PROTECTED BY SUITABLE STURDY APPROVED PROTECTIVE FENCING PRIOR TO COMMENCEMENT OF SITE WORKS. NO TREES TO BE REMOVED WITHOUT COUNCIL'S WRITTEN APPROVAL.
- G8. THE CONTRACTOR SHALL CLEAR THE SITE BY REMOVING ALL RUBBISH, FENCES, EXISTING INFRASTRUCTURE AND DEBRIS ETC.
- G9. FILLING IS TO BE FROM A NOMINATED SOURCE, OF SOUND CLEAN MATERIAL, FREE FROM LARGE ROCK, STUMPS, CONTAMINATED MATTER, INDUSTRIAL AND BUILDING WASTE, ORGANIC MATTER AND OTHER DEBRIS. PLACING OF FILLING ON THE PREPARED AREAS SHALL NOT COMMENCE UNTIL THE AUTHORITY TO DO SO HAS BEEN OBTAINED FROM THE COUNCIL
- G10. SITE FILL AREAS: THE CONTRACTOR SHALL TAKE LEVELS OF EXISTING SURFACE AFTER STRIPPING TOPSOIL AND PRIOR TO COMMENCING FILL OPERATIONS.
- G11. ALL SITE FILLING TO BE COMPACTED TO 95% STANDARD COMPACTION AND SHALL BE CONTROLLED BY A REGISTERED SOIL LABORATORY IN ACCORDANCE WITH COUNCIL'S "WORKS SPECIFICATION".
- G12. ALL SITE REGRADING AREAS SHALL BE GRADED AT A MINIMUM 1% TO THE ENGINEERS REQUIREMENTS
- G13. SURPLUS EXCAVATED MATERIAL SHALL BE PLACED WHERE DIRECTED BY THE SUPERINTENDENT
- G14. ALL DRAINAGE LINES THROUGH LOTS SHALL BE CONTAINED WITHIN THEIR EASEMENTS AND CONFORM WITH COUNCIL'S STANDARDS.
- G15. DRAINAGE LINES UNDER ROADS SHALL BE BACKFILLED WITH NON-COHESIVE SAND AND HAVE 3m OF SUBSOIL DRAIN WRAPPED IN APPROVED FILTER SOCK, DISCHARGING INTO DOWN STREAM PITS.
- G16. VEHICULAR CROSSINGS SHALL BE CONSTRUCTED IN KERB AND GUTTER WHERE SHOWN. DRIVEWAYS & LAYBACKS ARE TO HAVE A MINIMUM 1 METRE CLEARANCE FROM POWER & LIGHT POLES & STORMWATER DRAINS AND 6 METRES CLEARANCE FROM KERB RETURN TANGENT POINTS AND TO COUNCIL STANDARD DRAWING A(BS) 102S.
- G17. PRAM CROSSINGS SHALL BE CONSTRUCTED IN KERB AND GUTTER IN ACCORDANCE WITH COUNCIL'S STANDARD DRAWING A(BS) 104M.
- G18. ALL NEW WORKS SHALL MAKE A SMOOTH JUNCTION WITH EXISTING CONDITIONS.
- G19. DIMENSIONS OF ANY DETAIL SHALL NOT BE SCALED DIMENSIONS, IF IN DOUBT, SHALL BE VERIFIED BY THE SUPERINTENDENT
- G20. ALL CONSTRUCTION AND RESTORATION WORK ON COUNCIL'S ROAD AND FOOTPATH AREA ARE TO BE CARRIED OUT IN ACCORDANCE WITH THE APPROVED DRAWINGS AND COUNCIL'S STANDARD SPECIFICATIONS.
- G21. ALL LIGHT POLES. STREET NAME POLES AND BUS SHELTERS IN THIS SUBDIVISION WILL BE BLACK POWDER COATED TO THE SATISFACTION OF BLACKTOWN CITY COUNCIL AND COMPLY TO COUNCIL'S SPECIFICATION.
- G22. CONDUITS TO BE PLACED WHERE REQUIRED BY RELEVANT AUTHORITIES.
- G23. PITS ARE TO HAVE STEP IRONS IF DEEPER THAN 1.2m, REFER TO COUNCIL'S STANDARD DWG A(BS)111S
- G24. STRUCTURAL CERTIFICATION REQUIRED FOR CONSTRUCTION OF MAJOR AND NON-STANDARD STRUCTURES (PITS & RETAINING WALLS).
- G25. 100 YEAR FLOW PATHS TO BE FORMED AT TIME OF CONSTRUCTION.

SURVEY SET OUT INFORMATION NOTES:

- S1. ALL SITE SET OUT AND CONTROL POINTS ARE TO BE CERTIFIED BY A REGISTERED SURVEYOR.
- S2. THE INFORMATION DETAILED ON THE CERTIFIED CONSTRUCTION CERTIFICATE PLANS TAKES PRECEDENCE OVER ALL ELECTRONIC INFORMATION PROVIDED. THE ORDER OF PRIORITY FOR USE OF ALL INFORMATION PROVIDED IS AS FOLLOWS:
- a. CERTIFIED CONSTRUCTION CERTIFICATE DRAWINGS b. 2D DRAFTING BASE (ELECTRONIC FILE)
- c. 3D DTM (ELECTRONIC FILE)

S3. ANY DISCREPANCY BETWEEN ANY OF THE INFORMATION CONTAINED WITHIN THESE FILES IS TO BE BROUGHT TO THE ATTENTION OF THE SUPERINTENDENT PRIOR TO CONSTRUCTION WHO WILL SEEK CLARIFICATION AND ISSUE INSTRUCTIONS ON THE APPROPRIATE COURSE OF ACTION.

EARTHWORKS NOTES

- E1. EARTHWORKS ARE TO BE CARRIED OUT TO THE SATISFACTION OF THE COUNCIL. UNSUITABLE MATERIALS ARE TO BE REMOVED FROM ROADS AND LOTS PRIOR TO FILLING. THE CONTRACTOR IS TO ARRANGE AND MAKE AVAILABLE COMPACTION TESTING RESULTS FOR ALL AREAS THAT CONTAIN FILL IN EXCESS OF 250mm.
- E2. COMPACTION OF EARTHWORKS SHALL CONTINUE UNTIL A DRY DENSITY RATIO OF 95% FOR SITE FILLING AND 100% FOR ROAD PAVEMENT SUBGRADES HAS BEEN ACHIEVED IN ACCORDANCE WITH TEST METHOD AS1289.5.3.1 OR AS.1289.5.1.1. THE CONTROL TESTING OF EARTHWORKS SHALL BE IN ACCORDANCE WITH THE GUIDELINES IN AS3798 'GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS'. WHERE IT IS PROPOSED TO USE TEST METHOD AS1289.5.8.1 TO DETERMINE THE FIELD DENSITY, A SAND REPLACEMENT METHOD SHALL BE USED TO CONFIRM THE RESULTS.
- E3. THE SUITABLE QUALIFIED GEOTECHNICAL ENGINEER, SHALL HAVE A LEVEL 1 RESPONSIBILITY FOR ALL FILLING AS DEFINED IN APPENDIX B AS3798 'GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS', AND AT THE END OF THE WORKS SHALL CONFIRM THE EARTHWORKS COMPLY WITH THE REQUIREMENTS OF THE SPECIFICATION AND DRAWINGS BY WRITTEN NOTIFICATION.
- E4. IN AREAS TO BE FILLED WHERE THE SLOPE OF THE NATURAL SURFACE EXCEEDS 1(V):4(H), BENCHES ARE TO BE CUT TO PREVENT SLIPPING OF THE PLACED FILL MATERIAL AS REQUIRED BY THE COUNCIL.
- E5. ALL BATTERS ARE TO BE SCARIFIED TO A DEPTH OF 50mm TO ASSIST WITH ADHESION OF TOP SOIL TO BATTER
- E6. PROVIDE MINIMUM 100mm AND MAXIMUM 250mm TOPSOIL DEPTH ON FOOTPATHS, FILLED AREAS AND ALL OTHER AREAS DISTURBED DURING CONSTRUCTION. TOPSOILED AREAS TO BE STABILISED WITH APPROVED VEGETATION A MAXIMUM OF 14 DAYS AFTER TOPSOILING AND ARE TO BE WATERED TO ENSURE GERMINATION.

ISSUED TO ADDRESS CLIENT'S COMMENTS

H KW/SA SA PB 03/08/2021 ISSUED TO ADDRESS CLIENT'S COMMENTS

F KW/SA SA PB 28/07/2021 ISSUED TO ADDRESS CLIENT'S COMMENTS

SA | MC | MC | 02/06/2021 | ISSUED TO ADDRESS CLIENT'S COMMENTS

Revision Description

D | SA | MC | MC | 31/05/2021 | ISSUED TO ADDRESS SOFAC COMMENTS

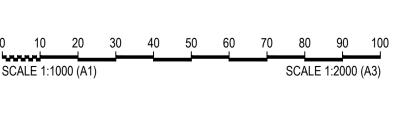
C KW/PZ MC MC 21/12/2020 ISSUED FOR COUNCIL'S COMMENT

G KW/SA SA PB 29/07/2021

ev Drawn Design Appd. Date

- E7. THE CONTRACTOR SHALL CONTROL SEDIMENTATION, EROSION AND POLLUTION DURING CONSTRUCTION IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT EDITION OF 'MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION' PRODUCED BY LANDCOM.
- E8. FOOTWAY AREA TO BE FULLY TURFED WITH COUCH GRASS, AND SHALL BE MAINTAINED AND REPLACED AS REQUIRED DURING THE CONSTRUCTION MAINTENANCE PERIOD, IN ACCORDANCE WITH CONDITION.
 - ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE THESE DRAWINGS, PLANS, AND SPECIFICATIONS AND THE COPYRIGHT ARE THE PROPERTY OF ORION CONSULTING ENGINEERS PTY LTD AND MUST NOT BE REPRODUCED OR COPIED WHOLLY OR IN PART WITHOUT THE PERMISSION OF ORION CONSULTING ENGINEERS PTY LTD

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D6. AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE

D9. ALL INTERALLOTMENT DRAINAGE LINES SHALL BE LAID AT A MINIMUM GRADE OF 1% UNLESS OTHERWISE INDICATED.

D11. PRECAST KERB INLET LINTELS SHALL BE USED ON GULLY PITS. GULLY PITS SHALL BE IN ACCORDANCE WITH A(BS)106M.

D12. PROVIDE STUB Ø100 uPVC SN4 PIPES AT INTER-ALLOTMENT DRAINAGE PITS FOR FUTURE CONNECTION. REFER TO DRAINAGE

D7. DRAINAGE LINES UNDER ROADS SHALL BE BACKFILLED WITH NON-COHESIVE SAND AND HAVE 3.0m OF SUBSOIL DRAIN WRAPPED IN

D10. DRAINAGE LINES ON PLANS ARE DIAGRAMMATIC ONLY AND PIPE CENTRELINES SHALL ENTER AND EXIT PITS AT THE CENTRE OF THE



PIPE SIZE SCHEDULE

MATERIAL

UPVC PIPE

UPVC PIPE

UPVC PIPE

MIN. GRADE

1%

1%

0.50%

UTILITY - OVERHEAD LINE

CONTOUR LINE & LABEL

LOT NUMBER & BOUNDARY

BUILDING / ENVELOPE

OR STAGE

CROSSING

CROSSING

OTHERS

TANK

EDGE OF BITUMEN

APPROXIMATE LIMIT OF WORKS

ROAD, NUMBER, CONTROL LINE.

CHAINAGE & CHAINAGE MARK

COUNCIL STANDARD KERB &

GUTTER, ROLL KERB OR DISH

COUNCIL STANDARD CONCRETE FOOTPATH & KERB RAMP

INDICATIVE DRIVEWAY AND VC

LOCATION CONSTRUCTED BY

STORMWATER RAINWATER

STORMWATER DRAINAGE PIPE

STORMWATER DRAINAGE PIPE

TEMPORARY STORMWATER

EASEMENT (REFER LEGEND)

RAINWATER TANK

AND STRUCTURE

DRAINAGE PIPE

SUBSOIL DRAIN

DIVERSION SWALE

RETAINING WALL

TREE - TO BE RETAINED

TREE - TO BE REMOVED

EXTERNAL BOUNDARY

GUARDRAIL

BATTER

OVERFLOW LINE FROM RAINWATER TANK

AND STUB

COUNCIL STANDARD DISH

WATER

EXISTING STORM WATER

PIPE

DIAMEMTER

Ø100

Ø150

Ø225

DP 193074

LOT 9

SEC J

DP 193074

RUAD & DRAINAGE DESIGN

DA

INCLUDE ALL SERVICES WITHIN THE LIMIT OF WORKS. T IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY 'SOUTH STREET (EXISTING)

LOCATE AND AVOID DAMAGE TO THEM AS SPECIFIED BY EACH UTILITIES EXCAVATION GUIDE LINES/STANDARDS.

UTILITIES SHOWN ARE DIAGRAMMATIC ONLY AND MAY NOT

LEGEND

—— D ——

LOT#

EXISTING PROPOSED

FUTURE

LOT#

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LOT#

(A) (B) (C)



DD A ET ONI V

	971 RICHMOND ROAD,	
	MARSDEN PARK	
R	OAD & DRAINAGE DESIGN	

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itle:	
	GENERAL LAYOUT PLAN,
	NOTES & LEGEND

19-35

D1 D2 D3 SEC J Ö **DESIGNED BY WOOD & GRIEVE ENGINEERS REFER TO COUNCIL** APPROVED PLANS DA-15-02765 FOR DETAILS DP 1190560 **TEMPORARY STORMWATER** TANK No.0 STORMWATER TANK No.02

STORMWATER DRAINAGE NOTES

- D1. STORMWATER DESIGN CRITERIA: 1:100 MAJOR SYSTEM
 - 1:5 MINOR SYSTEM
- D2. PIPES TO BE INSTALLED TO TYPE HS1 SUPPORT IN ACCORDANCE WITH AS 3725 (1989) IN ALL CASES BACKFILL TRENCH WITH SAND TO 300mm ABOVE PIPE (UNO). WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75)

RL: 33.64 (AHD)

D3. ALL INTERNAL WORKS WITHIN PROPERTY BOUNDARIES ARE TO COMPLY WITH THE REQUIREMENTS OF AS 3500 3.1 AND AS/NZS 3500 3.2 & COUNCIL'S SPECIFICATIONS.

REFER TO DRG No. DA-200 ENGINEERING PLAN

- D4. CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
- D5. GRATES AND COVERS SHALL CONFORM TO AS 3996.

DP 1190560

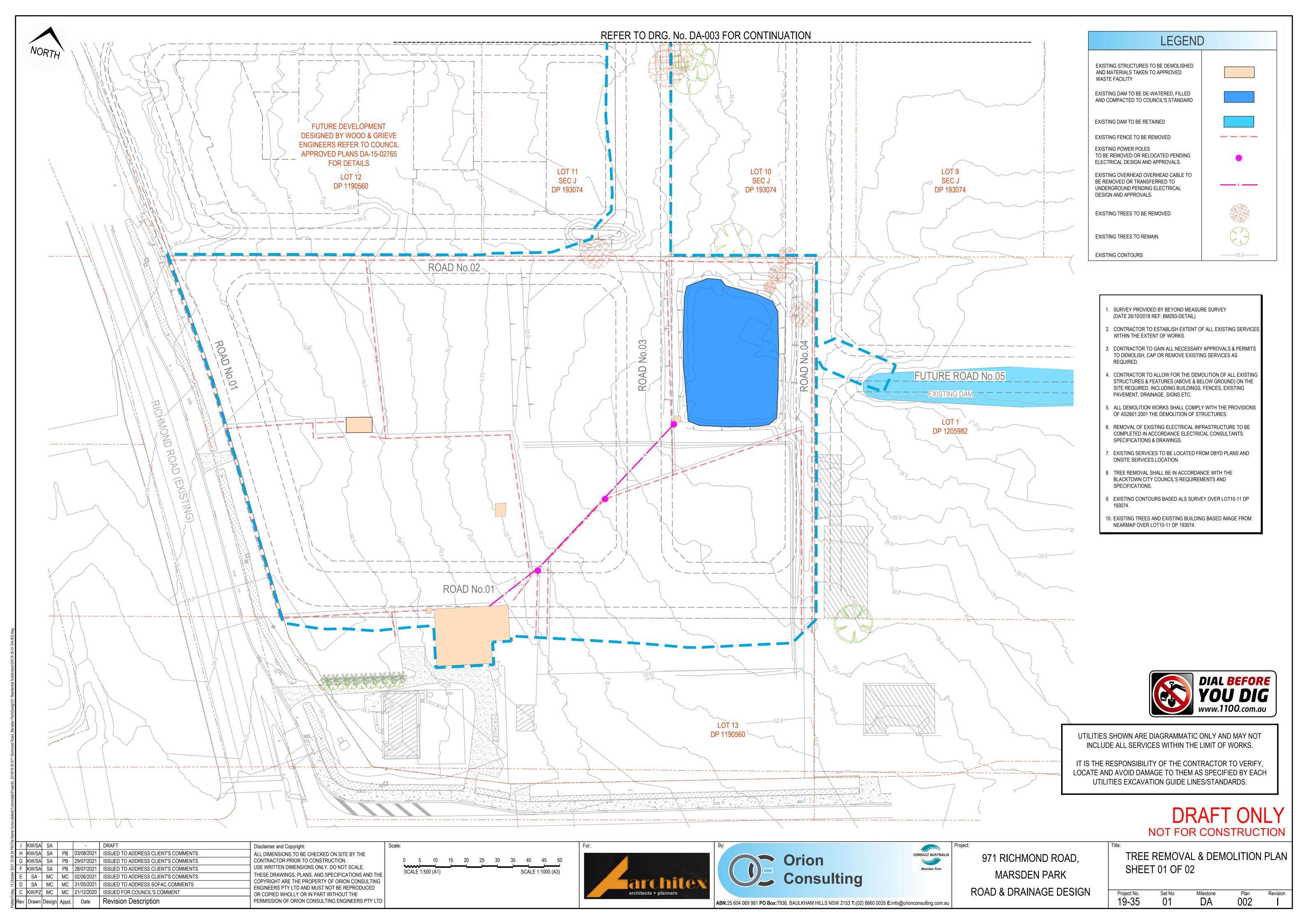
AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.

APPROVED FILTER SOCK, DISCHARGING INTO DOWN STREAM PITS.

RESPECTIVE PIT WALLS (UNO).

LONGSECTIONS.

D8. ALL STORMWATER PIPES WITHIN ROADS TO BE REINFORCED CONCRETE PIPE (RCP) CLASS 2.





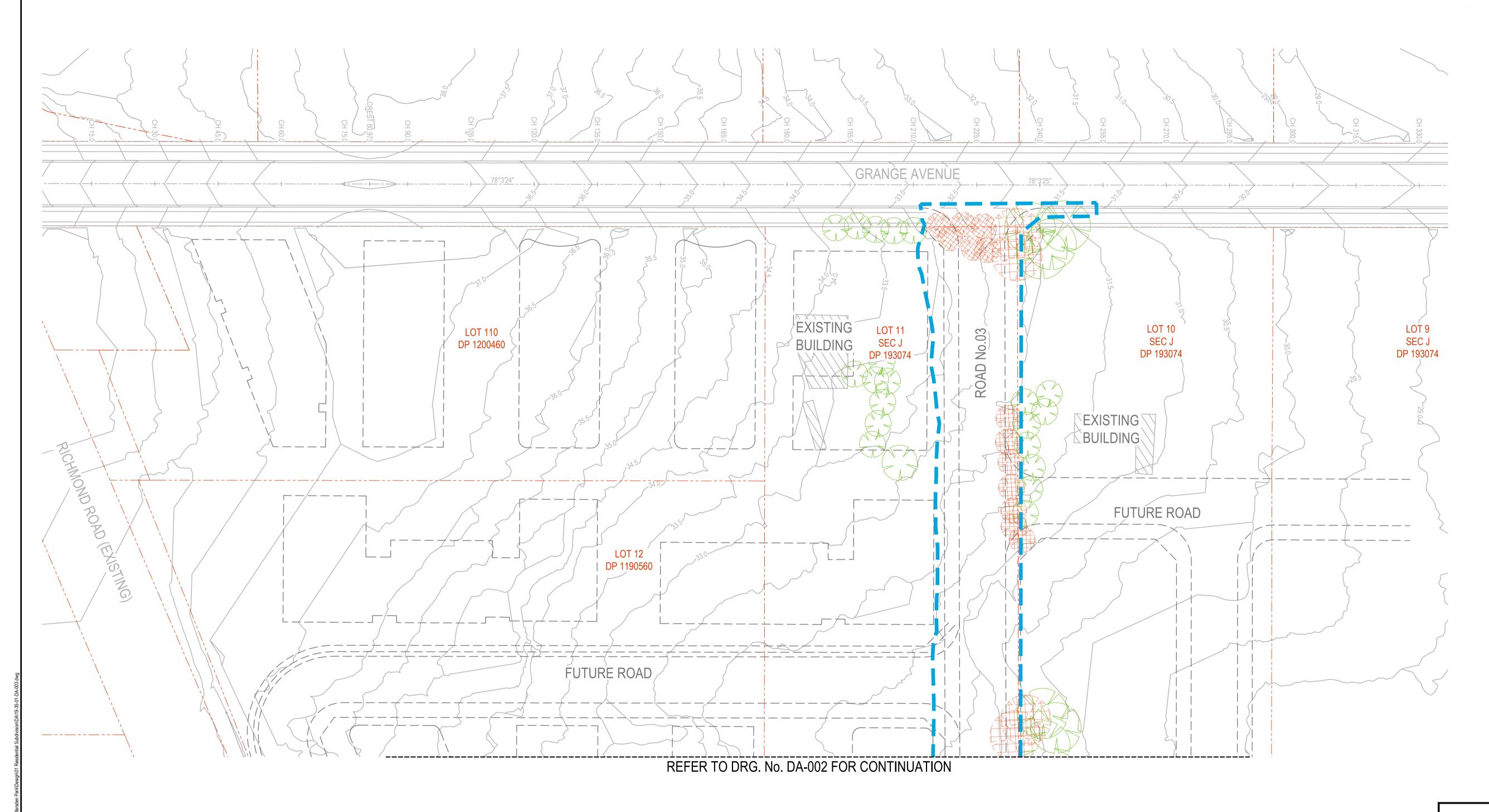
LEGEND

EXISTING TREES TO BE REMOVED



EXISTING TREES TO REMAIN

EXISTING CONTOURS



- SURVEY PROVIDED BY BEYOND MEASURE SURVEY (DATE 26/10/2018 REF: BM293-DETAIL)
- 2. CONTRACTOR TO ESTABLISH EXTENT OF ALL EXISTING SERVICES WITHIN THE EXTENT OF WORKS.
- 3. CONTRACTOR TO GAIN ALL NECESSARY APPROVALS & PERMITS TO DEMOLISH, CAP OR REMOVE EXISTING SERVICES AS REQUIRED.
- 4. CONTRACTOR TO ALLOW FOR THE DEMOLITION OF ALL EXISTING STRUCTURES & FEATURES (ABOVE & BELOW GROUND) ON THE SITE REQUIRED, INCLUDING BUILDINGS, FENCES, EXISTING PAVEMENT, DRAINAGE, SIGNS ETC.
- 5. ALL DEMOLITION WORKS SHALL COMPLY WITH THE PROVISIONS OF AS2601:2001 THE DEMOLITION OF STRUCTURES.
- REMOVAL OF EXISTING ELECTRICAL INFRASTRUCTURE TO BE COMPLETED IN ACCORDANCE ELECTRICAL CONSULTANTS SPECIFICATIONS & DRAWINGS.
- EXISTING SERVICES TO BE LOCATED FROM DBYD PLANS AND ONSITE SERVICES LOCATION.
- 8. TREE REMOVAL SHALL BE IN ACCORDANCE WITH THE BLACKTOWN CITY COUNCIL'S REQUIREMENTS AND SPECIFICATIONS.
- 9. EXISTING CONTOURS BASED ALS SURVEY OVER LOT10-11 DP 193074.
- 10. EXISTING TREES AND EXISTING BUILDING BASED IMAGE FROM NEARMAP OVER LOT10-11 DP 193074.



UTILITIES SHOWN ARE DIAGRAMMATIC ONLY AND MAY NOT INCLUDE ALL SERVICES WITHIN THE LIMIT OF WORKS.

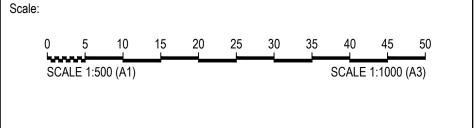
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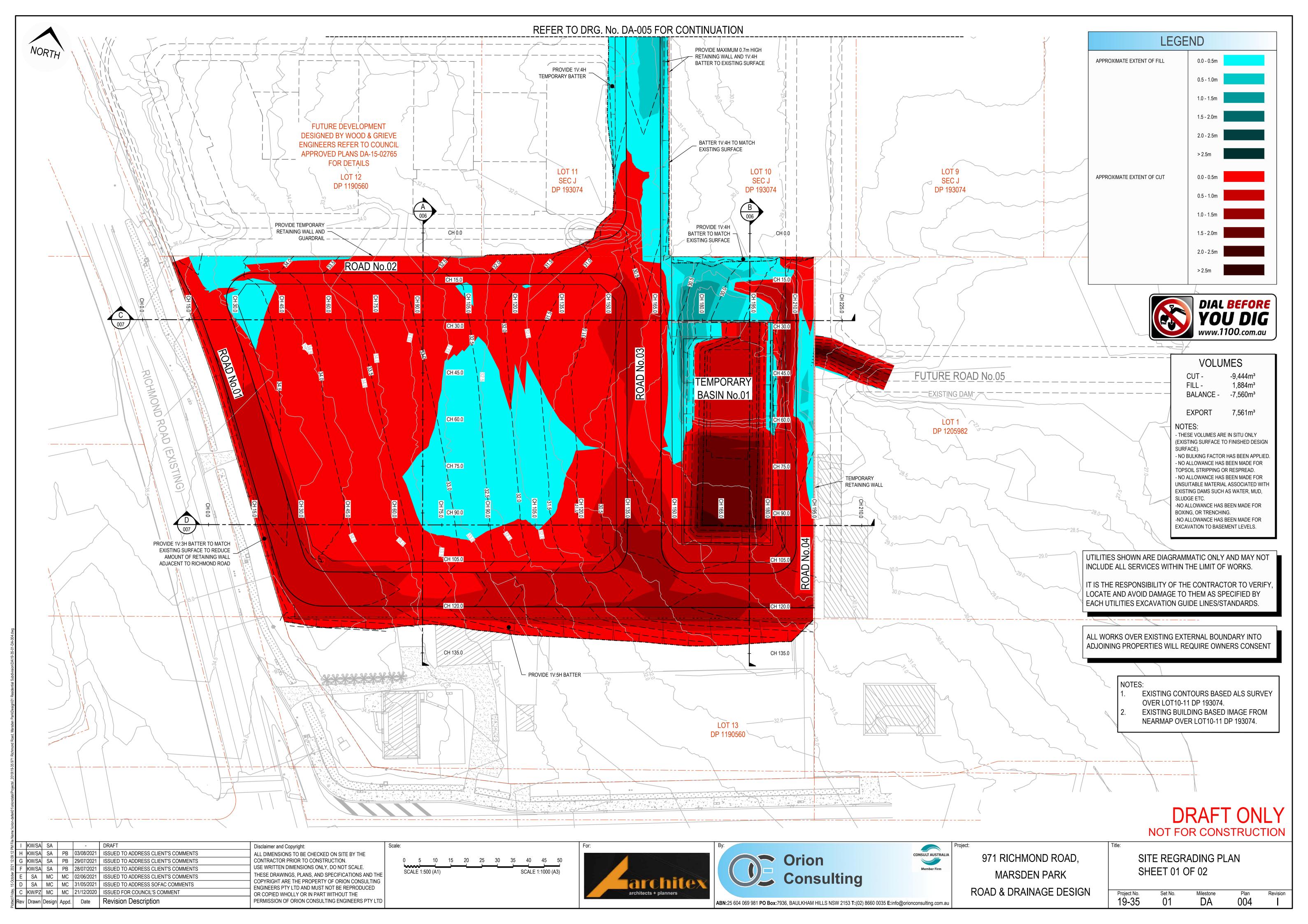
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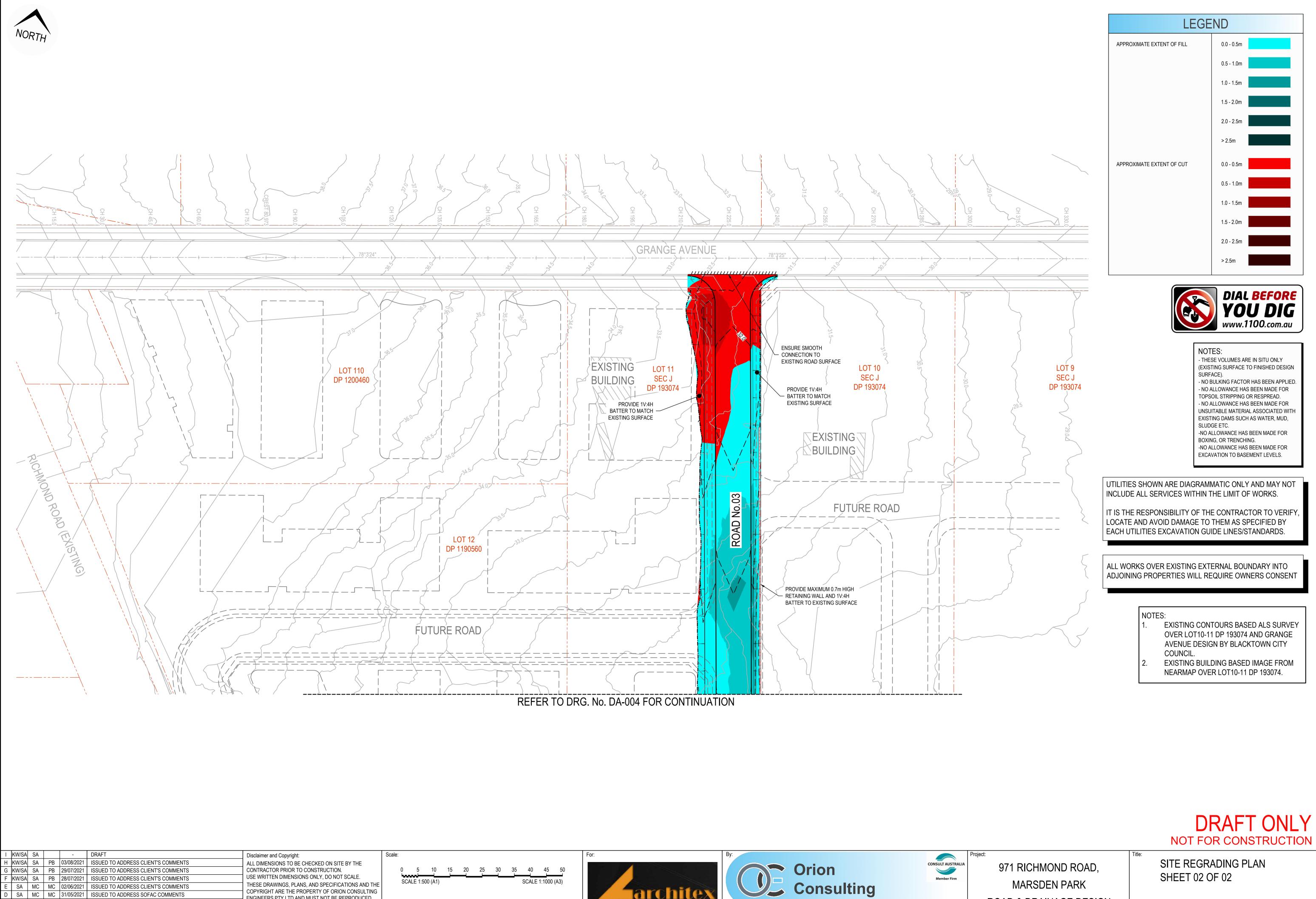
MARSDEN PARK

ROAD & DRAINAGE DESIGN

TREE REMOVAL & DEMOLITION PLAN
SHEET 02 OF 02

Project No.	Set No.	Milestone	Plan	Revi
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Revision Description

Plan **005**

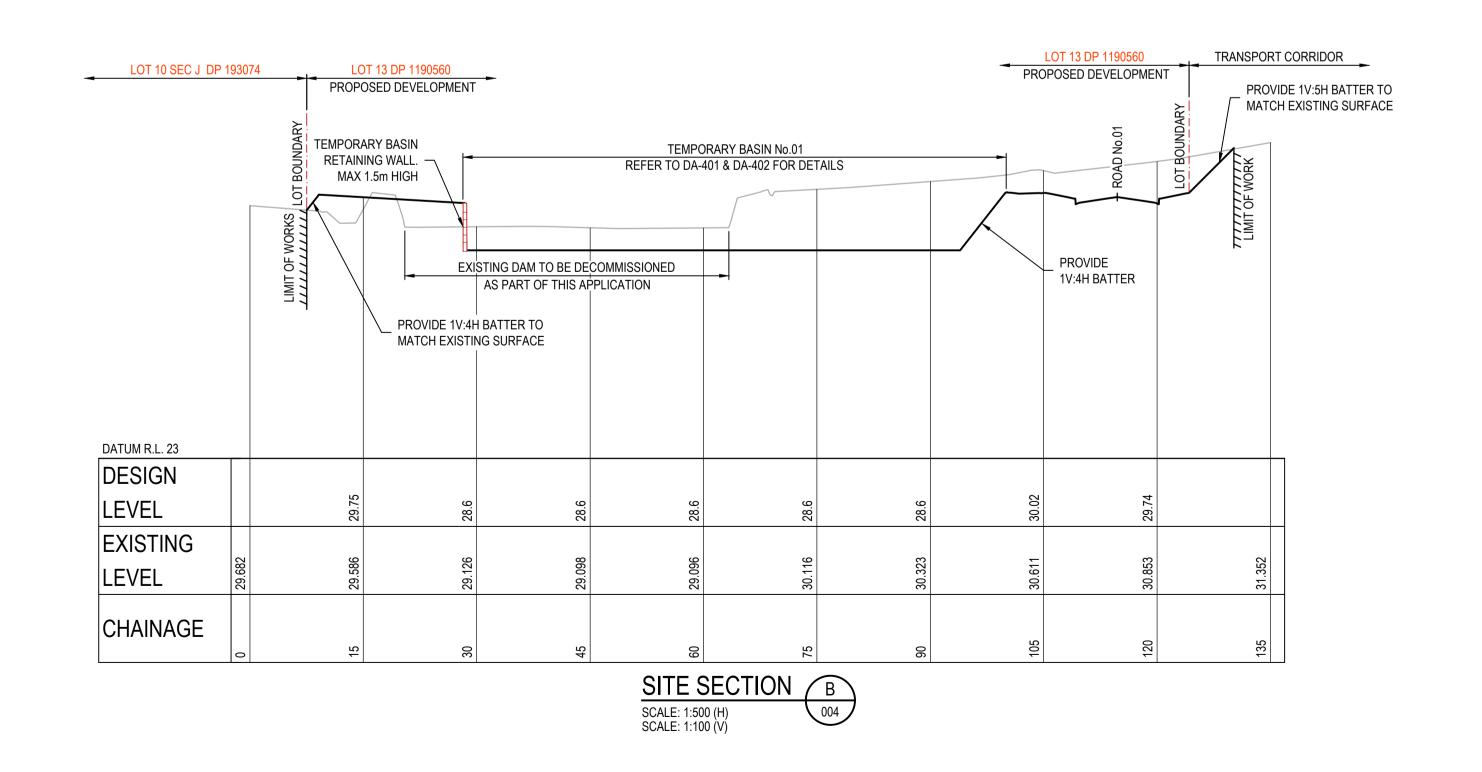
Project No. **19-35** DA

ROAD & DRAINAGE DESIGN

ABN:25 604 069 981 PO Box:7936, BAULKHAM HILLS NSW 2153 T:(02) 8660 0035 E:info@orionconsulting.com.au

LEGEND								
FINISHED DESIGN SURFACE LEVEL								
EXISTING SURFACE								
FUTURE SURFACE								
LOT BOUNDARY								

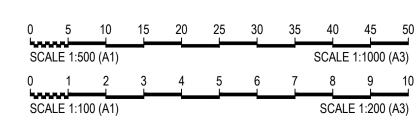




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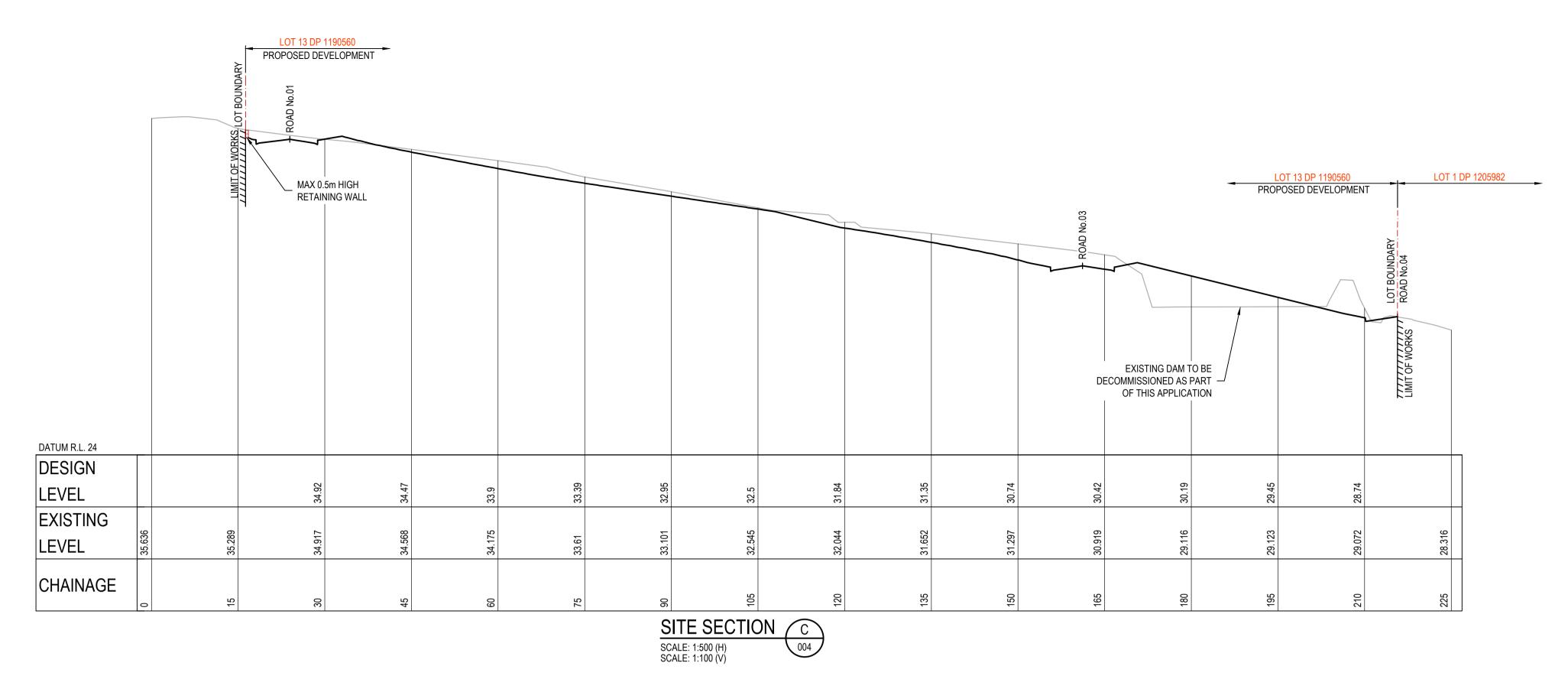
971 RICHMOND ROAD, MARSDEN PARK **ROAD & DRAINAGE DESIGN**

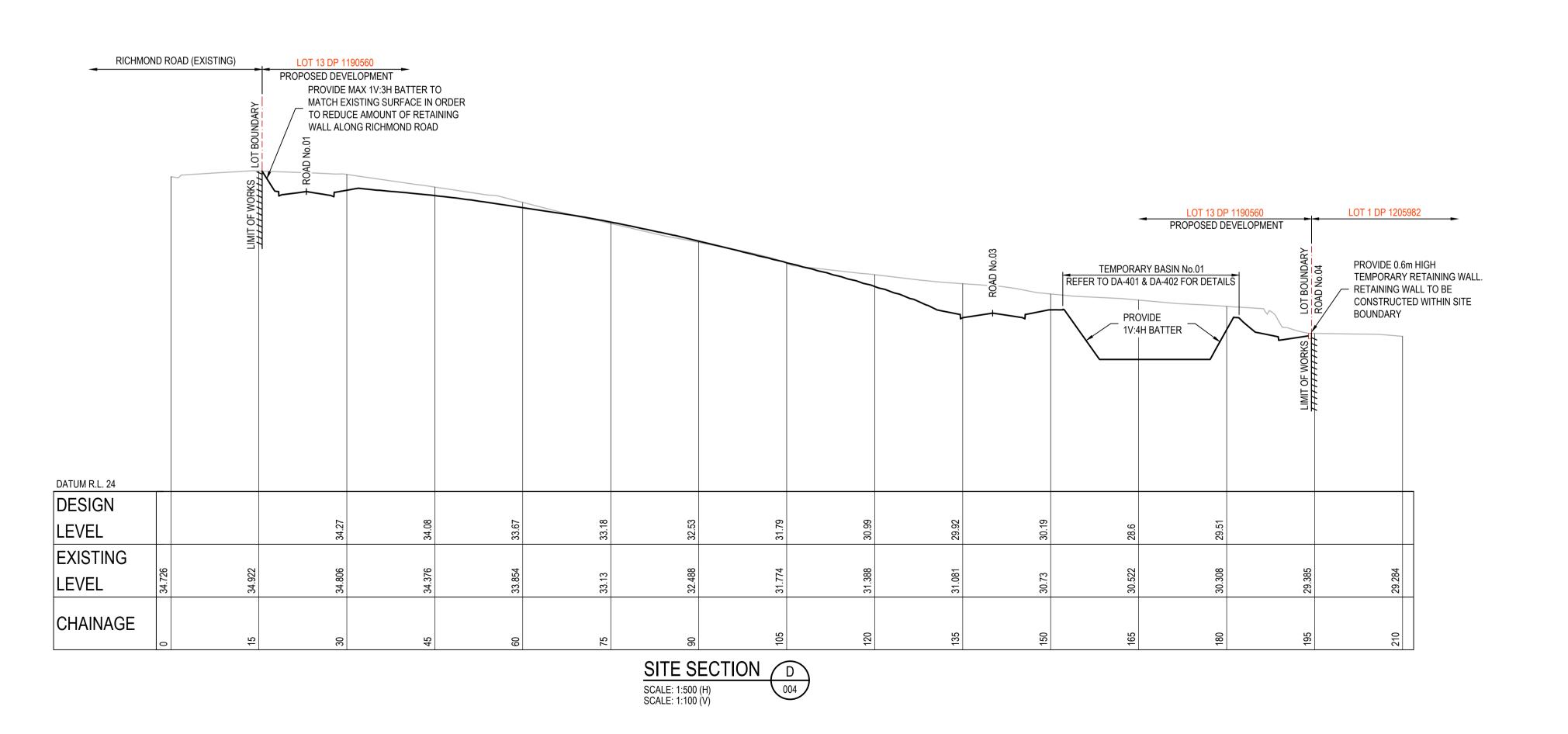
Member Firm

SITE REGRADING SECTIONS SHEET 01 OF 02

Project No.	Set No.	Milestone	Plan	Revisi
19-35	01	DA	006	

FINISHED DESIGN SURFACE LEVEL EXISTING SURFACE FUTURE SURFACE LOT BOUNDARY





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Scale:

0 5 10 15 20 25 30 35 40 45 50

SCALE 1:500 (A1) SCALE 1:1000 (A3)

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SCALE 1:100 (A1) SCALE 1:200 (A3)





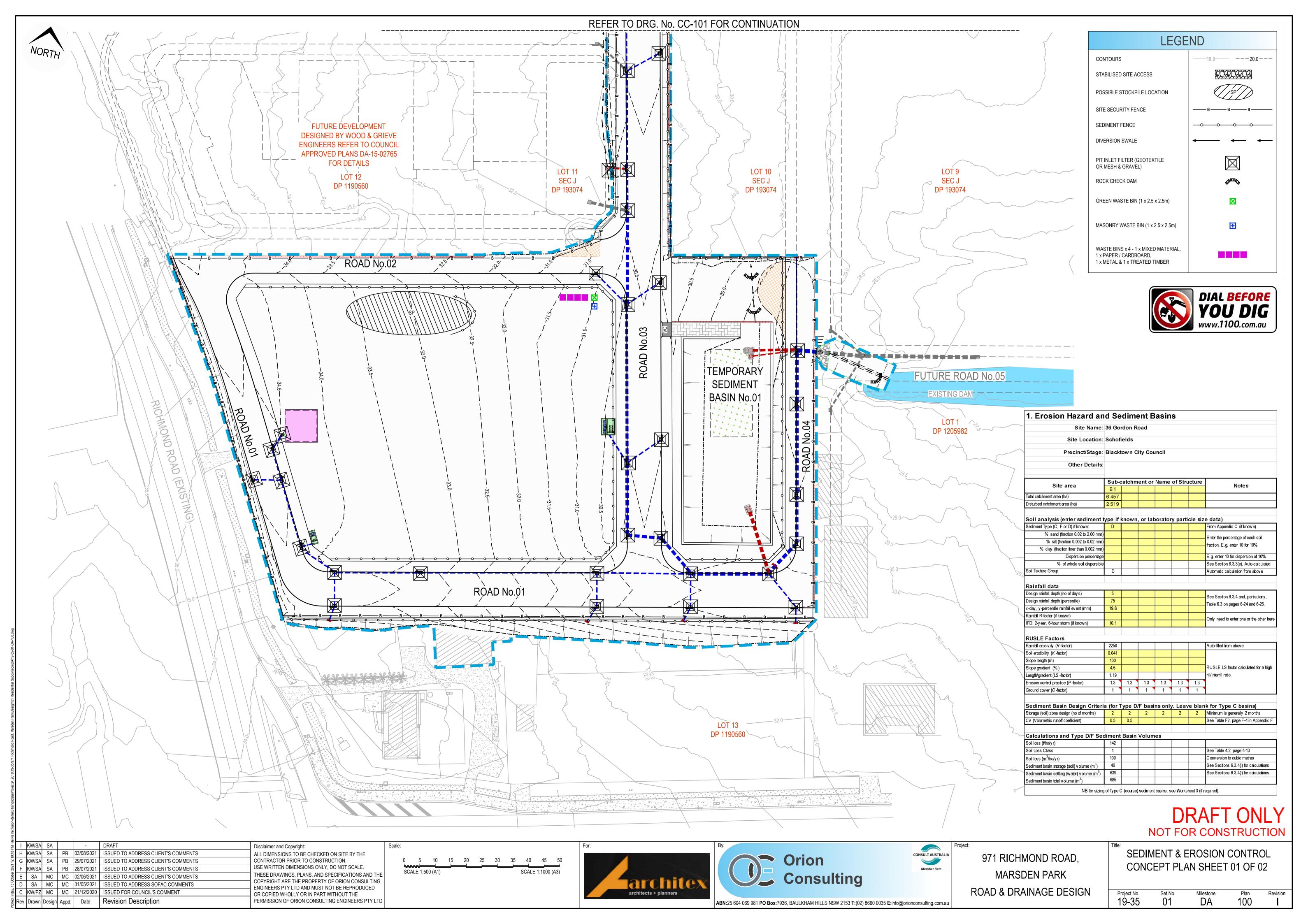
971 RICHMOND ROAD,

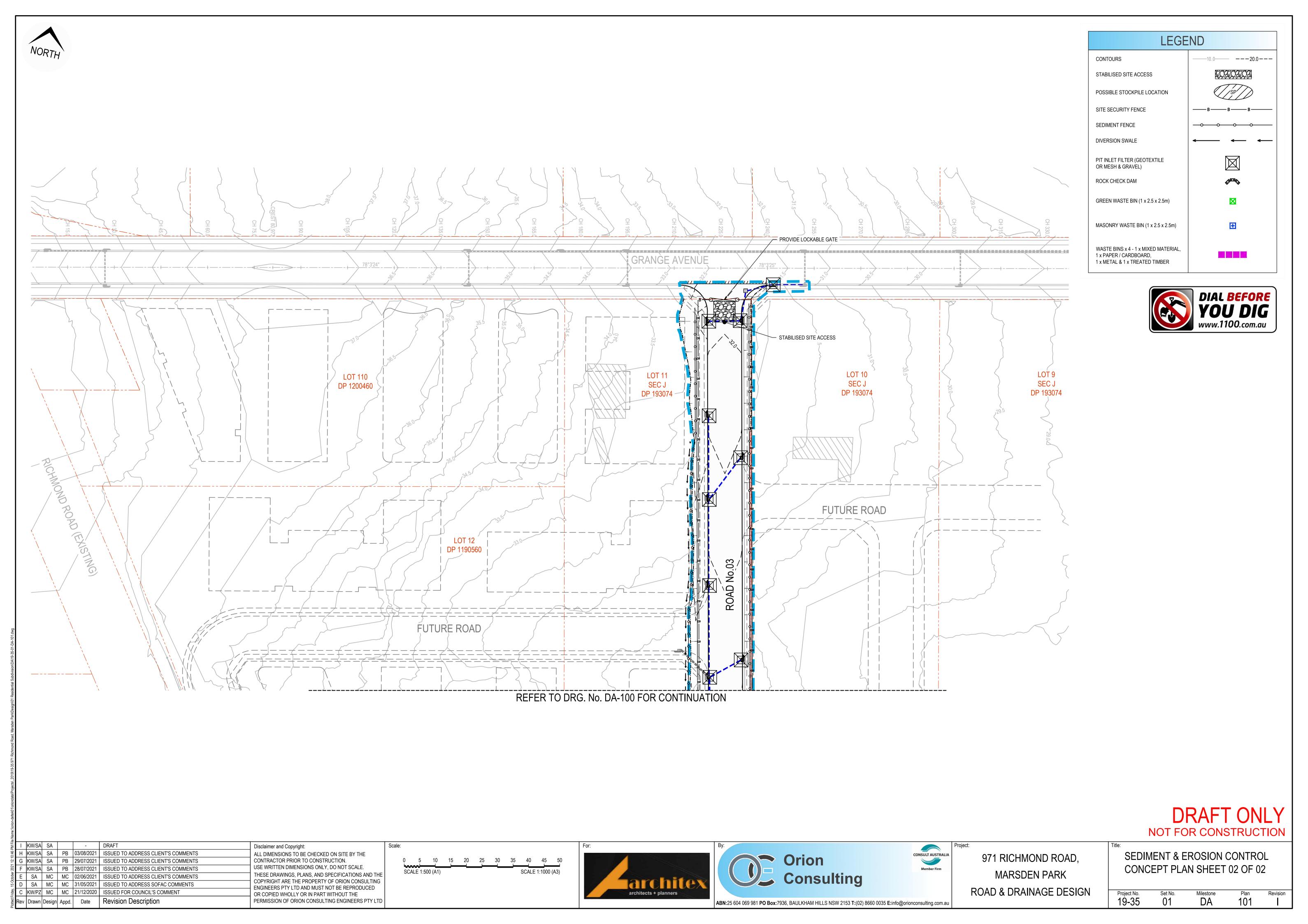
MARSDEN PARK

ROAD & DRAINAGE DESIGN

SITE REGRADING SECTIONS SHEET 02 OF 02

Project No.	Set No.	Milestone	Plan	Revisio
19-35	01	DA	007	





GENERAL NOTES

- ALL EROSION AND SEDIMENT CONTROL MEASURES, INCLUDING REVEGETATION AND STORAGE OF SOIL AND TOPSOIL. SHALL BE IMPLEMENTED TO THE REQUIREMENTS OF THE "ENVIRONMENT PROTECTION AUTHORITY".AND "DEPT OF LAND AND WATER CONSERVATION". MEASURES OUTLINED IN THE SEDIMENT & EROSION CONTROL PLAN MUST BE IMPLEMENTED PRIOR TO AND MAINTAINED DURING AND AFTER THE CONSTRUCTION WORKS.
- 2. TOPSOIL FROM ALL AREAS TO BE DISTURBED SHALL BE STOCKPILED AND LATER RESPREAD TO AID REVEGETATION IN THOSE AREAS.
- 3. ALL DRAINAGE WORKS SHALL BE CONSTRUCTED AND STABILIZED AS EARLY AS POSSIBLE DURING DEVELOPMENT.
- 4. ALL TAIL-OUT DRAINS SHALL BE GRASSED AND TRAPEZOIDAL IN SECTION, STRAW BALES SHALL BE PLACED AS A SEDIMENT CONTROL DEVICE WHERE REQUIRED.
- 5. VEHICULAR TRAFFIC SHALL BE CONTROLLED DURING DEVELOPMENT CONFINING ACCESS WHERE POSSIBLE TO PROPOSED OR EXISTING ROAD ALIGNMENTS. AREAS TO BE LEFT UNDISTURBED SHALL BE MARKED OFF.
- 6. DISTURBANCE OF VEGETATION SHALL BE LIMITED TO FILL AREAS, ROADWAYS AND DRAINAGE LINES. NO LOT GRADING SHALL BE CARRIED OUT IN UNDISTURBED AREAS WITHOUT CONSULTATION WITH COUNCIL'S ENGINEER.
- 7. ALL DISTURBED AREAS SHALL BE REVEGETATED WITHIN 14 WORKING DAYS FROM THE CONCLUSION OF LAND SHAPING.
- 8. MINIMISE DUST BY WATERING WHEN REQUIRED.

STOCKPILE NOTES

- 9. SPOIL AND TOPSOIL STOCKPILES SHALL BE LOCATED AWAY FROM DRAINAGE LINES AND AREAS WHERE WATER MAY CONCENTRATE.
- 10. IF STOCKPILES ARE TO BE IN PLACE FOR LONGER THAN 14 DAYS THEN THEY SHALL BE STABILIZED BY COVERING WITH A MULCH OR WITH TEMPORARY
- 11. FOLLOWING CONSTRUCTION, TOPSOIL SHALL BE RESPREAD TO A MINIMUM DEPTH OF 100mm ON THE BARE SOIL SURFACES AND REVEGETATE.
- 12. ALL STOCKPILES TO BE (MAX) 2m HIGH AND PROTECTED WITH SILT FENCE.

SPECIAL NOTES

- 13. LOCATION AND EXTENT OF SOIL AND WATER MANAGEMENT DEVICES IS DIAGRAMMATIC ONLY AND THE ACTUAL REQUIREMENTS SHALL BE CONFIRMED ON SITE.
- 14. THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE GUIDELINES SET OUT IN "MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION " -4TH EDITION AND THE ACCOMPANYING ROAD AND DRAINAGE PLANS.
- 15. CONFORMITY WITH THIS PLAN SHALL IN NO WAY REDUCE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT AGAINST WATER DAMAGE DURING THE COURSE OF THE CONTRACT.
- 16. MANAGEMENT DEVICES SHALL BE MAINTAINED ON A REGULAR BASIS. WHERE CLEANING IS REQUIRED, THE SEDIMENT SHALL BE REMOVED TO A POINT NOMINATED BY THE ENGINEER.
- 17. PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS, AND AFTER THE ROAD CENTRELINES HAVE BEEN PEGGED AND/OR PERMANENTLY MARKED, THE SITE MUST BE INSPECTED BY COUNCIL'S REPRESENTATIVE AND THE APPLICANT'S REPRESENTATIVE TO IDENTIFY AND APPROPRIATELY
- a) THE TREES TO BE RETAINED. b) ALL TREES TO BE LEFT UNDISTURBED AND TO BE CORDONED OFF.
- 18. NO TREES SHALL BE REMOVED WITHOUT COUNCIL'S CLEARANCE.
- 19. MANAGEMENT DEVICES TO REMAIN UNTIL THE END OF THE MAINTENANCE PERIOD.

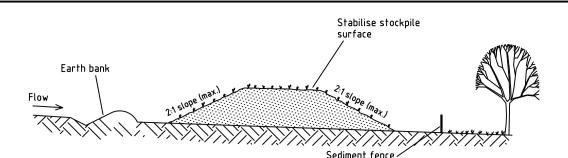
SEDIMENTATION CONTROL DEVICES

- 20. ALL STRAW BALES SHALL BE BOUND WITH WIRE. STRAW BALES SHALL BE PLACED END TO END IN A SINGLE ROW AND EMBEDDED INTO THE SOIL TO A DEPTH OF 100mm. EACH BALE SHALL BE SECURELY ANCHORED WITH TWO STEEL STAKES DRIVEN 450mm INTO THE GROUND AND LOCATED ON THE BALE CENTRE LINE.
- 21. SILT FENCES SHALL BE CONSTRUCTED BY STRETCHING A FILTER FABRIC (PROPEX OR SIMILAR) BETWEEN POSTS AT 2m (3m MAX) CENTRES. FABRIC SHALL BE BURIED 150mm ALONG ITS LOWER EDGE.

ALL SEDIMENT AND EROSION CONTROL MEASURES ARE TO BE PLACED WHOLLY WITHIN THE SUBJECT SITES AND NOT EXTEND INTO ADJACENT PROPERTY WITHOUT LANDOWNER CONSENT.

FOR CLARITY PURPOSES SOME FENCES HAVE BEEN SHOWN OUTSIDE THE SITE BOUNDARY. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT THESE FENCES ARE CONTAINED WITHIN THE SITE AND NOT ENCROACH INTO ANY ADJACENT LAND.

ADJOINING OWNER'S CONSENT REQUIRED FOR ANY SEDIMENT & EROSION CONTROL DEVICES ON THEIR LAND.

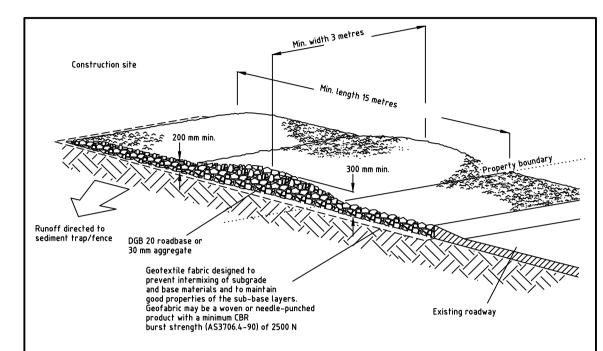


Construction Notes

- 1. Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
- 2. Construct on the contour as low, flat, elongated mounds.
- 3. Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height. 4. Where they are to be in place for more than 10 days, stabilise following the approved ESCP or SWMP to reduce the C-factor to less than 0.10.
- 5. Construct earth banks (Standard Drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (Standard Drawing 6-8) 1 to 2 metres downslope.

STOCKPILES

SD 4-1

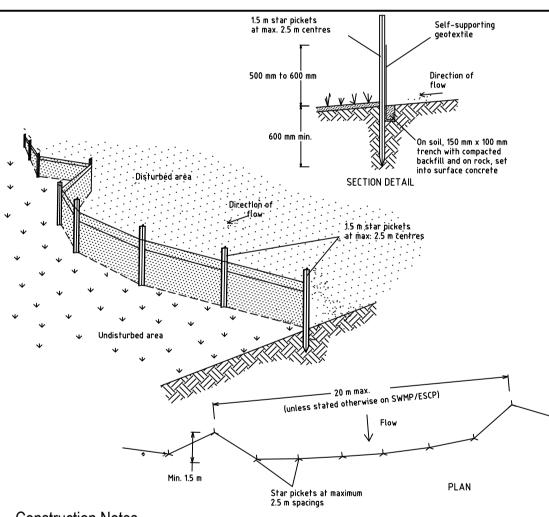


Construction Notes

- 1. Strip the topsoil, level the site and compact the subgrade.
- 2. Cover the area with needle-punched geotextile.
- 3. Construct a 200 mm thick pad over the geotextile using road base or 30 mm 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



Construction Notes

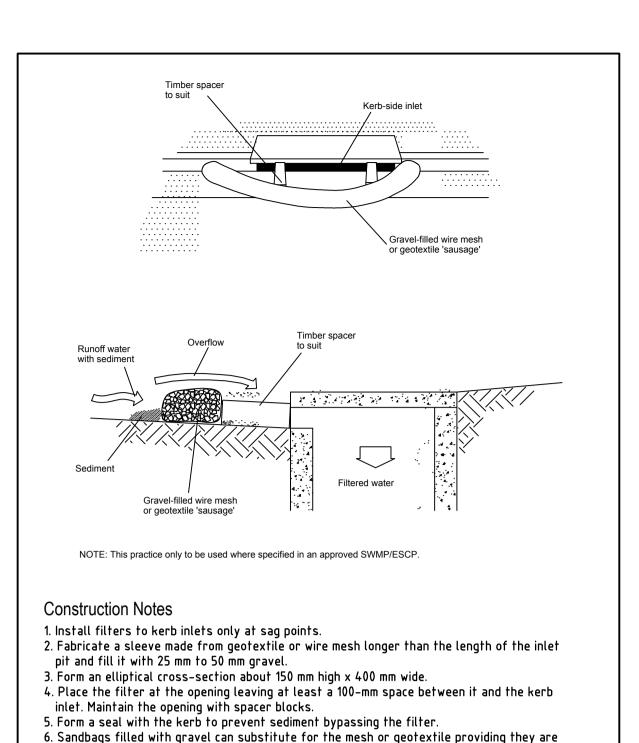
- 1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
- 2. Cut a 150-mm 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.

Scale:

. Join sections of fabric at a support post with a 150-mm overlap. 6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

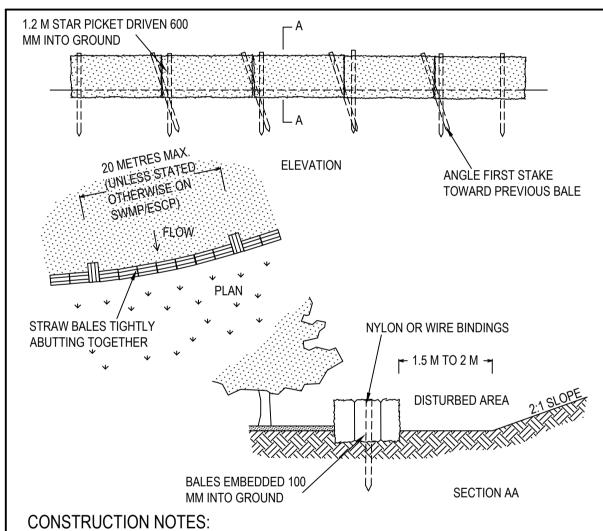
SEDIMENT FENCE

SD 6-8



MESH AND GRAVEL INLET FILTER

SD 6-11



placed so that they firmly abut each other and sediment-laden waters cannot pass between.

1. CONSTRUCT THE STRAW BALE FILTER AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE. 2. PLACE BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE STRAW TO FILL ANY GAPS BETWEEN BALES. STRAWS ARE TO BE PLACED PARALLEL TO GROUND.

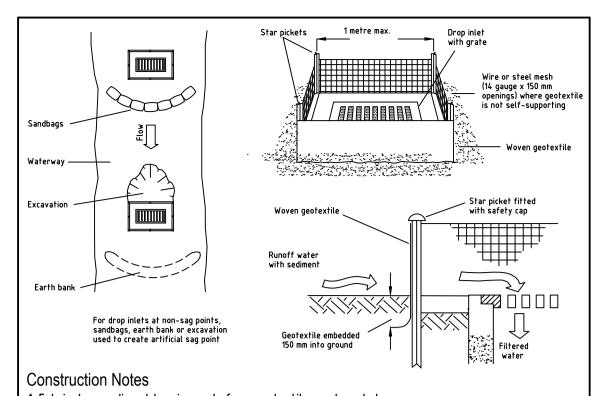
3. ENSURE THAT THE MAXIMUM HEIGHT OF THE FILTER IS ONE BALE. 4. EMBED EACH BALE IN THE GROUND 75 mm TO 100 mm AND ANCHOR WITH TWO 1.2 METRE STAR PICKETS OR STAKES. ANGLE THE FIRST STAR PICKET OR STAKE IN EACH BALE TOWARDS THE PREVIOUSLY LAID BALE.DRIVE THEM 600 mm INTO THE GROUND AND, IF POSSIBLE, FLUSH WITH THE TOP OF THE BALES. WHERE STAR PICKETS ARE USED AND THEY PROTRUDE ABOVE THE BALES, ENSURE THEY ARE FITTED WITH SAFETY CAPS.

5. WHERE A STRAW BALE FILTER IS CONSTRUCTED DOWNSLOPE FROM A DISTURBED BATTER, ENSURE THE BALES ARE PLACED 1 TO 2 METRES DOWNSLOPE FROM THE TOE. 6. ESTABLISH A MAINTENANCE PROGRAM THAT ENSURES THE INTEGRITY OF THE BALES IS RETAINED -

STRAW BALE FILTER

THEY COULD REQUIRE REPLACEMENT EACH TWO TO FOUR MONTHS.

SD 6-7



- 1. Fabricate a sediment barrier made from geotextile or straw bales. 2. Follow Standard Drawing 6-8 for installation procedures for 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

SEDIMENT STORAGE ZONE

GEOTEXTILE INLET FILTER

SD 6-12

GUTTER ROADWAY **CONSTRUCTION NOTES:** 1. INSTALL A 400mm MINIMUM WIDE ROLL OF TURF ON THE FOOTPATH NEXT TO THE KERB AND AT THE SAME LEVEL AS THE TOP OF THE KERB. 2. LAY 1.4 METRE LONG TURF STRIPS NORMAL TO THE KERB EVERY 10m. 3. REHABILITATE DISTURBED SOIL BEHIND THE TURF STRIP FOLLOWING THE ESCP/SWMP. KERBSIDE TURF STRIP SD 6-13

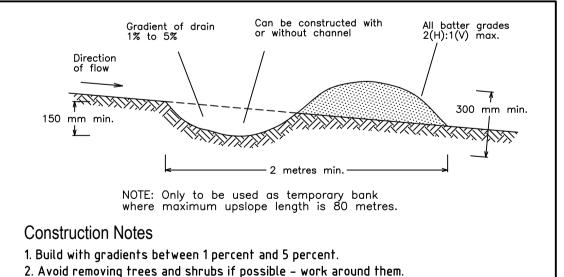
~EARTH EMBANKMENT **PLAN VIEW** LENGTH/WIDTH RATIO 3:1 MIN. ORIGINAL GROUND LEVEL SEDIMENT SETTLING ZONE SEDIMENT STORAGE ZONE

☐ 750 mm MIN. INFLOW **CREST OF SPILLWAY** WATER DEPTH 1 500 mm MIN. CUT-OFF TRENCH 600 MM MII DEPTH BACKFILLED WITH CROSS-SECTION IMPERMEABLE CLAY AND **CONSTRUCTION NOTES:** COMPACTED 1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA. 2. CONSTRUCT A CUT-OFF TRENCH 500 MM DEEP AND 1,200 MM WIDE ALONG THE CENTRELINE OF THE EMBANKMENT EXTENDING TO A POINT ON THE GULLY WALL LEVEL WITH THE RISER CREST 3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95 PER CENT STANDARD PROCTOR DENSITY. 4. SELECT FILL FOLLOWING THE SWMP THAT IS FREE OF ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL

FOLLOWING THE SWMP. 7. CONSTRUCT THE EMERGENCY SPILLWAY. 8. REHABILITATE THE STRUCTURE FOLLOWING THE SWMP. EARTH BASIN - WET (APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY)

COMPACTED FILL TO THE EXISTING SUBSTRATE

SD 6-4



5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100 MM TO HELP BOND

6. SPREAD THE FILL IN 100 MM TO 150 MM LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT

- 3. Ensure the structures are free of projections or other irregularities that could
- impede water flow. 4. Build the drains with circular, parabolic or trapezoidal cross sections, not V shaped.
- 5. Ensure the banks are properly compacted to prevent failure. 6. Complete permanent or temporary stabilisation within 10 days of construction.

EARTH BANK (LOW FLOW)

SD 5-5

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- DRAFT H KW/SA SA PB 03/08/2021 ISSUED TO ADDRESS CLIENT'S COMMENTS G KW/SA SA PB 29/07/2021 ISSUED TO ADDRESS CLIENT'S COMMENTS F KW/SA SA PB 28/07/2021 ISSUED TO ADDRESS CLIENT'S COMMENTS SA MC MC 02/06/2021 ISSUED TO ADDRESS CLIENT'S COMMENTS SA MC MC 31/05/2021 ISSUED TO ADDRESS SOFAC COMMENTS C KW/PZ MC MC 21/12/2020 ISSUED FOR COUNCIL'S COMMENT ev | Drawn | Design | Appd. | Date Revision Description

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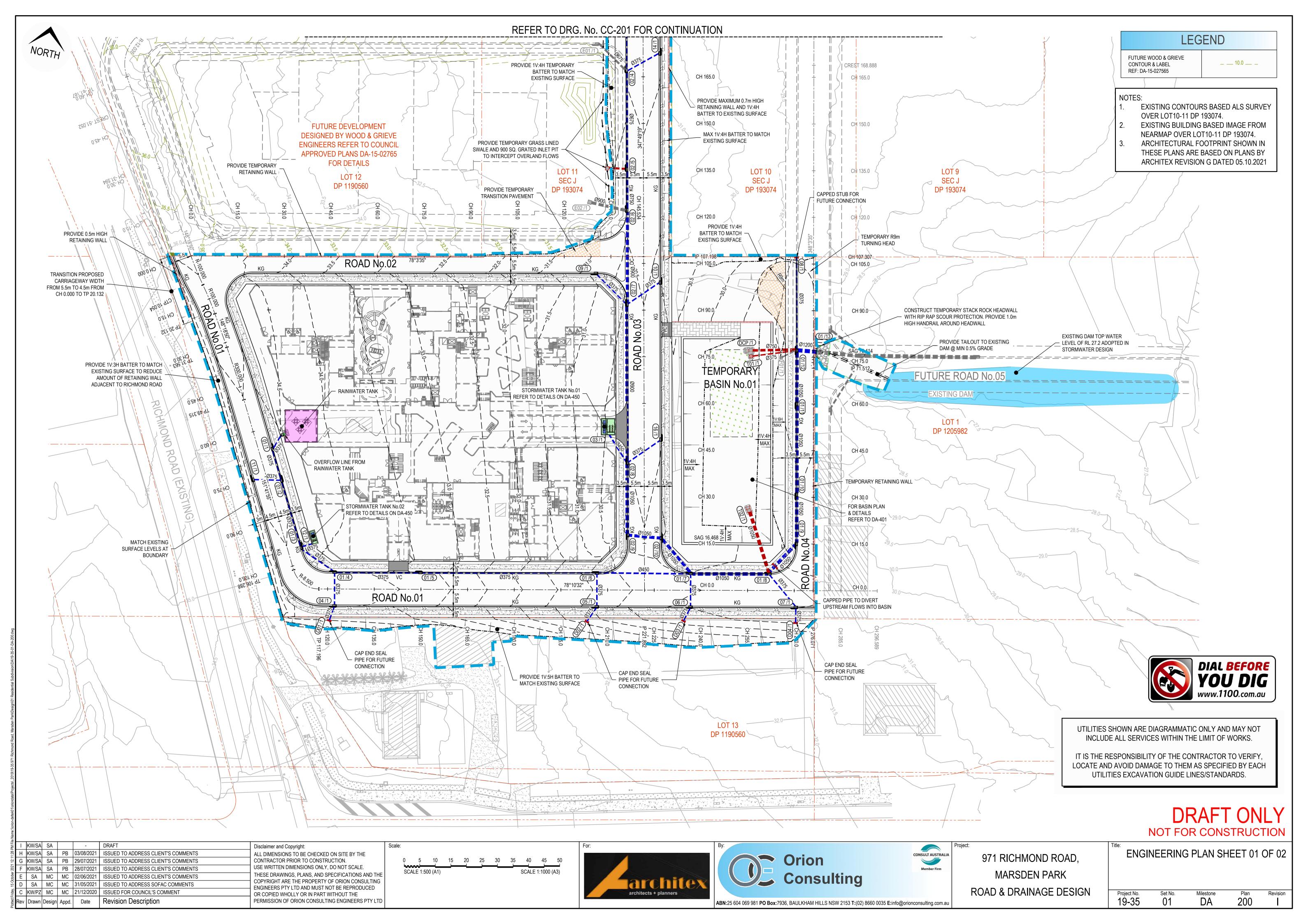






971 RICHMOND ROAD, MARSDEN PARK **ROAD & DRAINAGE DESIGN** **SEDIMENT & EROSION CONTROL** NOTES & ETAILS

Project No. 19-35 DA 102

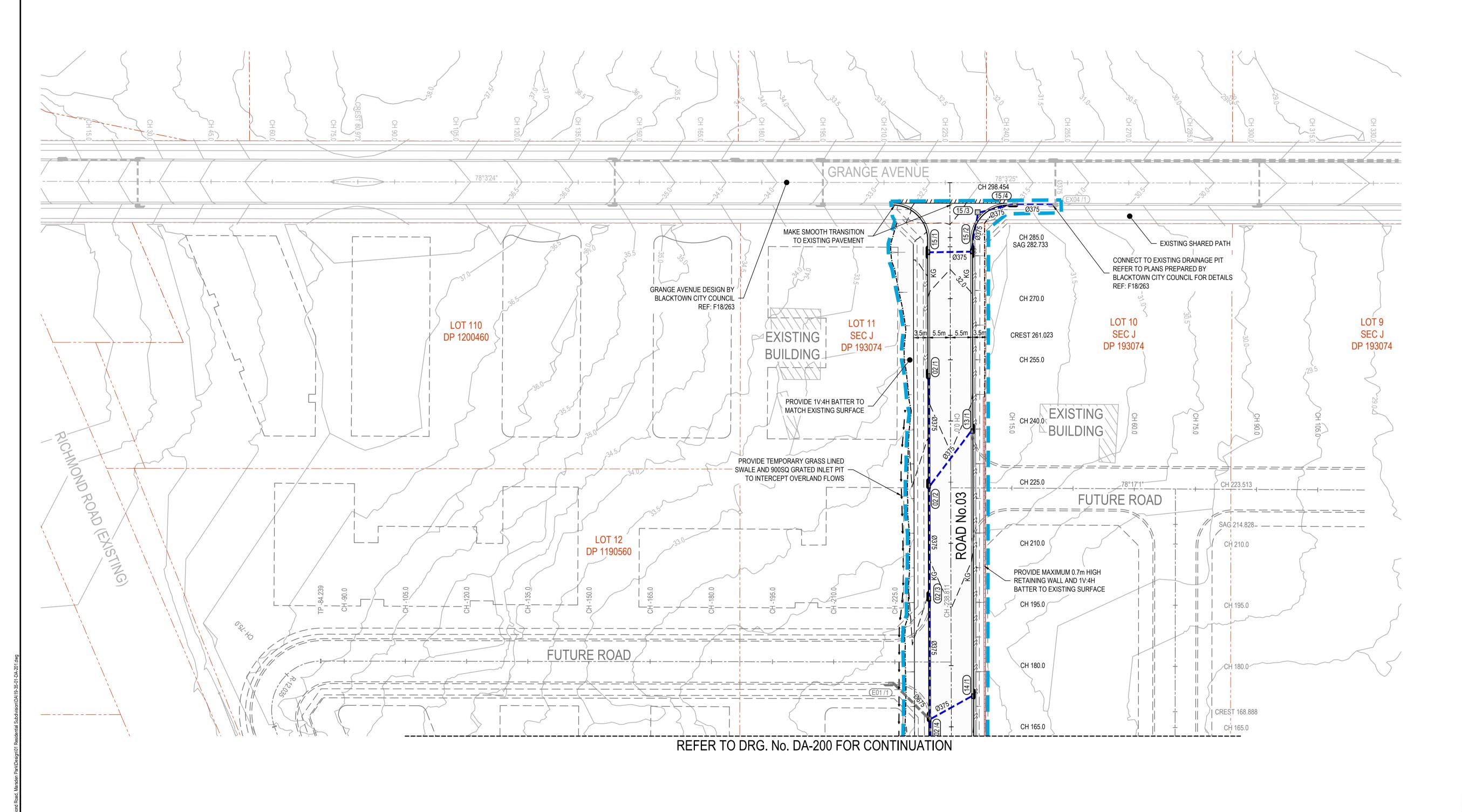




UTILITIES SHOWN ARE DIAGRAMMATIC ONLY AND MAY NOT INCLUDE ALL SERVICES WITHIN THE LIMIT OF WORKS.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY, LOCATE AND AVOID DAMAGE TO THEM AS SPECIFIED BY EACH UTILITIES EXCAVATION GUIDE LINES/STANDARDS.





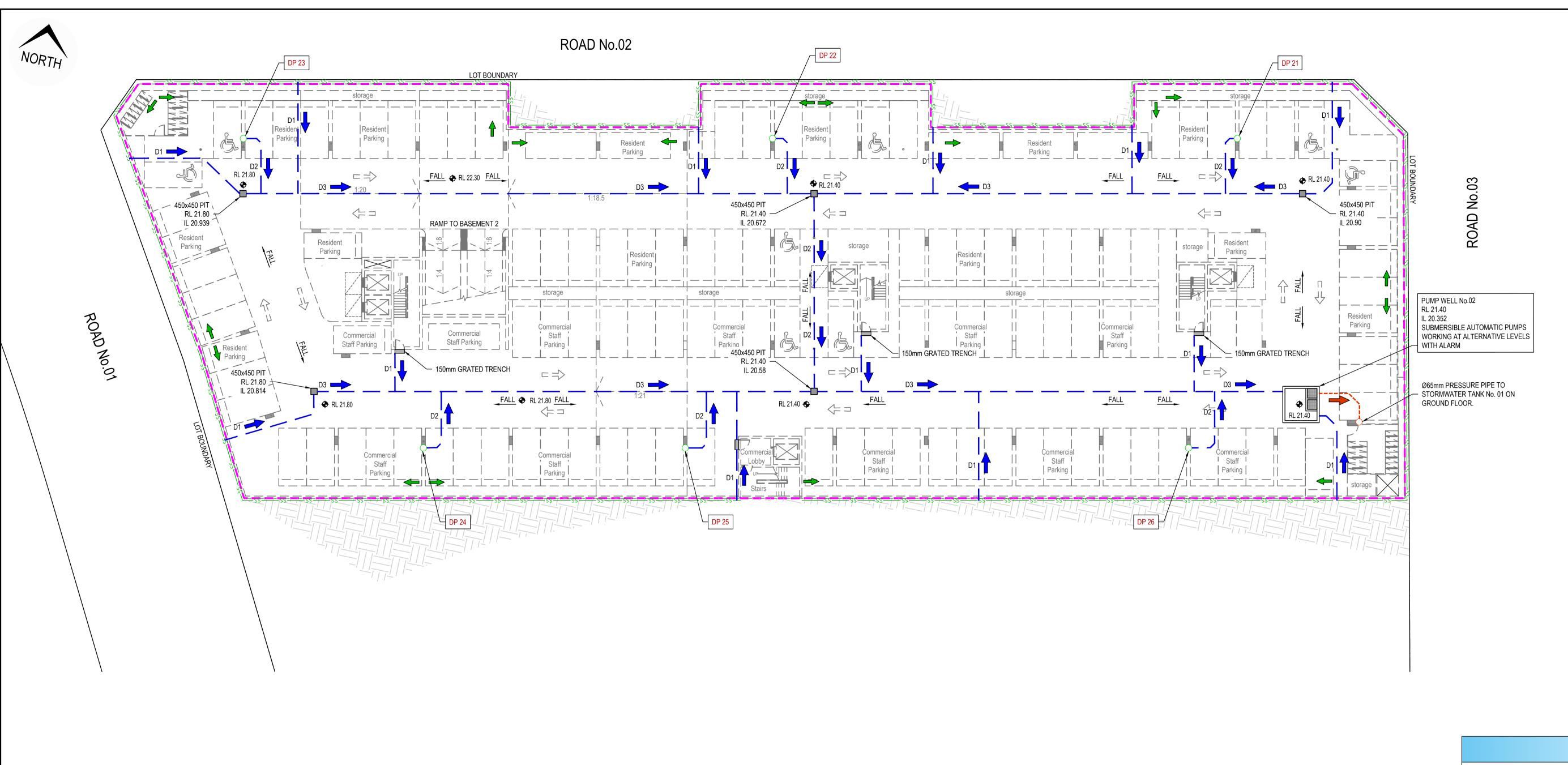
NOTES:

I. EXISTING CONTOURS BASED ALS SURVEY
OVER LOT10-11 DP 193074 AND GRANGE
AVENUE DESIGN BY BLACKTOWN CITY
COUNCIL. REF: F18/263

EXISTING BUILDING BASED IMAGE FROM NEARMAP OVER LOT10-11 DP 193074.

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鴑 H KW/SA SA	PB 03/08/2021 ISSUED TO ADDRESS CLIENT'S COMMENTS	ALL DIMENSIONS TO BE CHECKED ON SITE BY THE				CONSULT AUSTRALIA		ENGIN	NEERING	PLAN SH	EET 02 (JF 02
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ố F KW/SA SA	PB 28/07/2021 ISSUED TO ADDRESS CLIENT'S COMMENTS	USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.	SCALE 1:500 (A1) SCALE 1:1000 (A3)			Member Firm						
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۵.												



LEGEND INDICATIVE BASEMENT SUBSOIL DRAIN. REFER TO STRUCTURAL ENGINEER'S ----\$\$----**DESIGN FOR DETAILS** PROPOSED BASEMENT SUBSOIL DRAIN FALL DIRECTION PROPOSED STORMWATER DRAINAGE PIPE AND PIT PROPOSED BUCKET TRAP SURFACE OUTLET DENOTES PIPE SIZE & GRADE. REFER TO D1 DRG. No. DA 001 PIPE SIZE SCHEDULE BASEMENT STORMWATER DRAINAGE FALL DIRECTION FALL PROPOSED FLOOR FALL DIRECTION PROPOSED RISING MAIN WITH VERTICAL ____ PIPE PROTECTOR TO OSD TANK PROPOSED DOWN PIPE WITH VERTICAL ODP PIPE PROTECTOR TO PUMP WELL PROPOSED 150mm GRATED TRENCH DP1 PROPOSED DOWN PIPE TAG PROPOSED PUMP WELL PROPOSED ARCHITECTURAL FLOOR LEVEL PROPOSED BASEMENT WALL OUTLINE ____

NOTE:

- 1. FINAL BASEMENT FLOOR LEVEL TO ENSURE
- ADEQUATE FALL TO STORMWATER PITS
 2. CONCEPT STORMWATER LAYOUT SHOWN

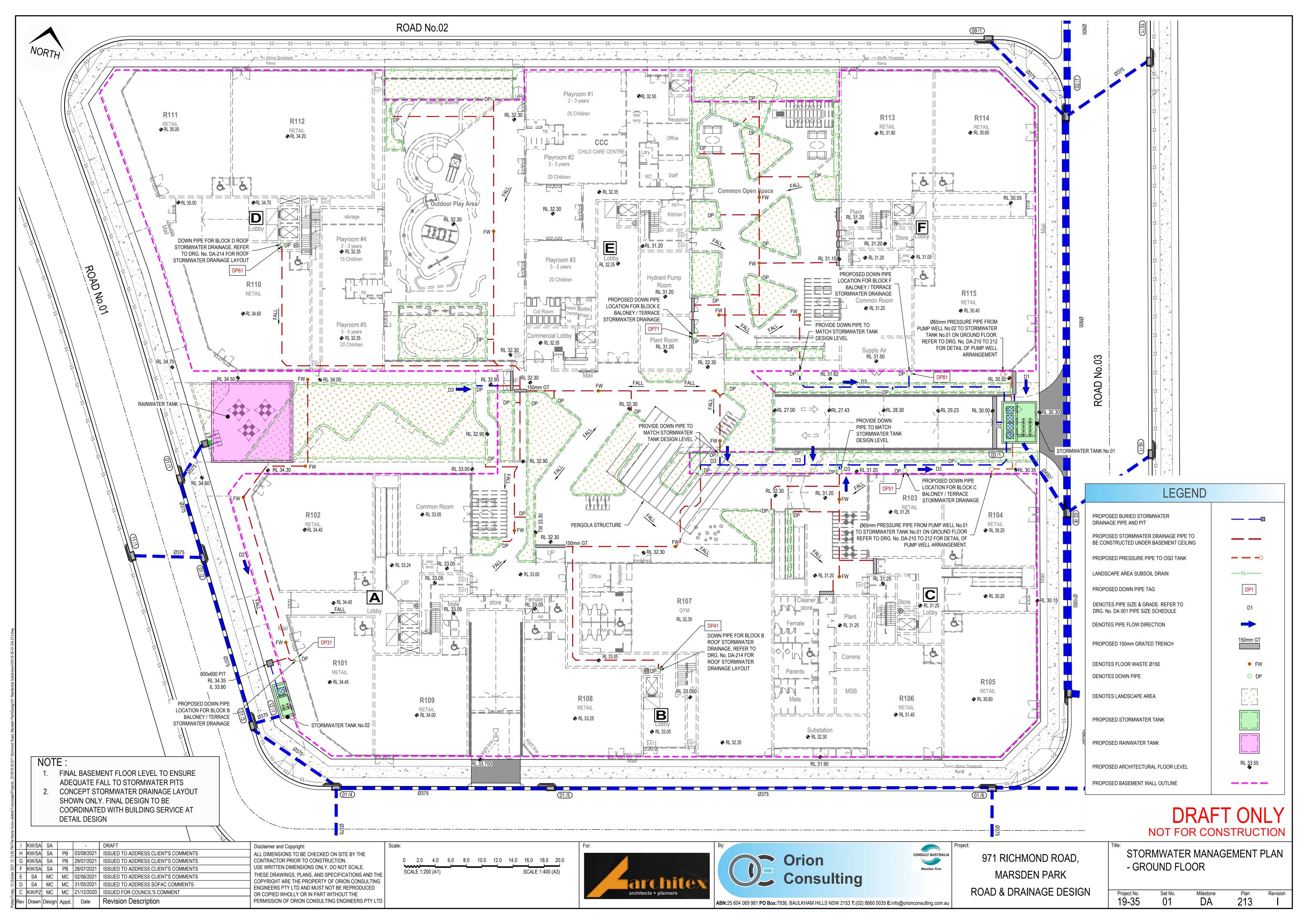
ONLY. FINAL DESIGN TO BE COORDINATED WITH BUILDING SERVICE AT DETAIL DESIGN

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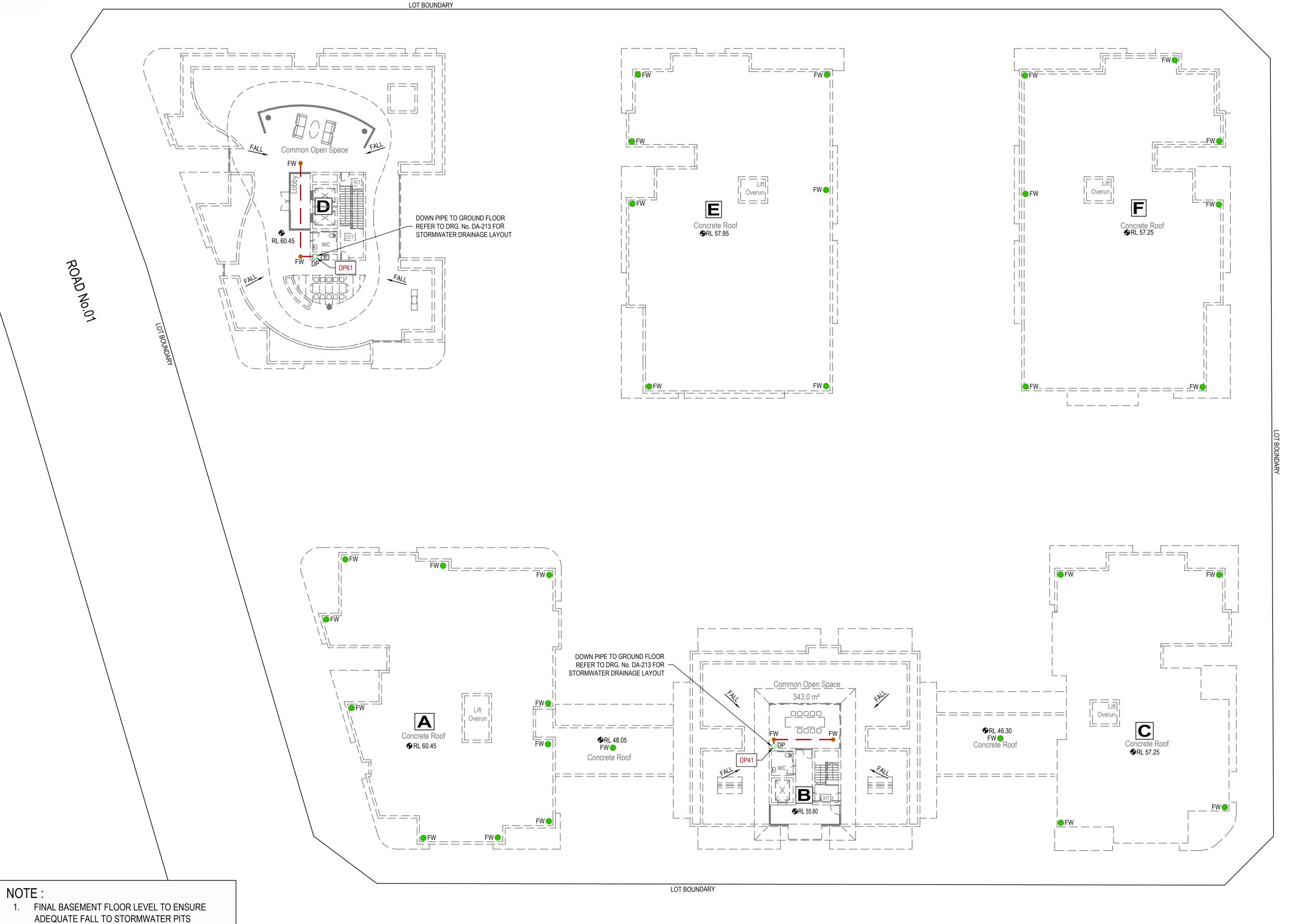




2. CONCEPT STORMWATER LAYOUT SHOWN

ONLY. FINAL DESIGN TO BE COORDINATED

WITH BUILDING SERVICE AT DETAIL DESIGN



PROPOSED DOWN PIPE TAG

INDICATIVE FLOOR WASTE TO BE
CONNECTED TO RAINWATER TANK.
DETAILS TO BE PROVIDED IN CC STAGE

DENOTES FLOOR WASTE Ø150

DENOTES DOWN PIPE

PROPOSED ARCHITECTURAL FLOOR LEVEL

DP1

FW

FW

DP1

PRUPITAG

FW

FW

DP

RL 33.55

LEGEND

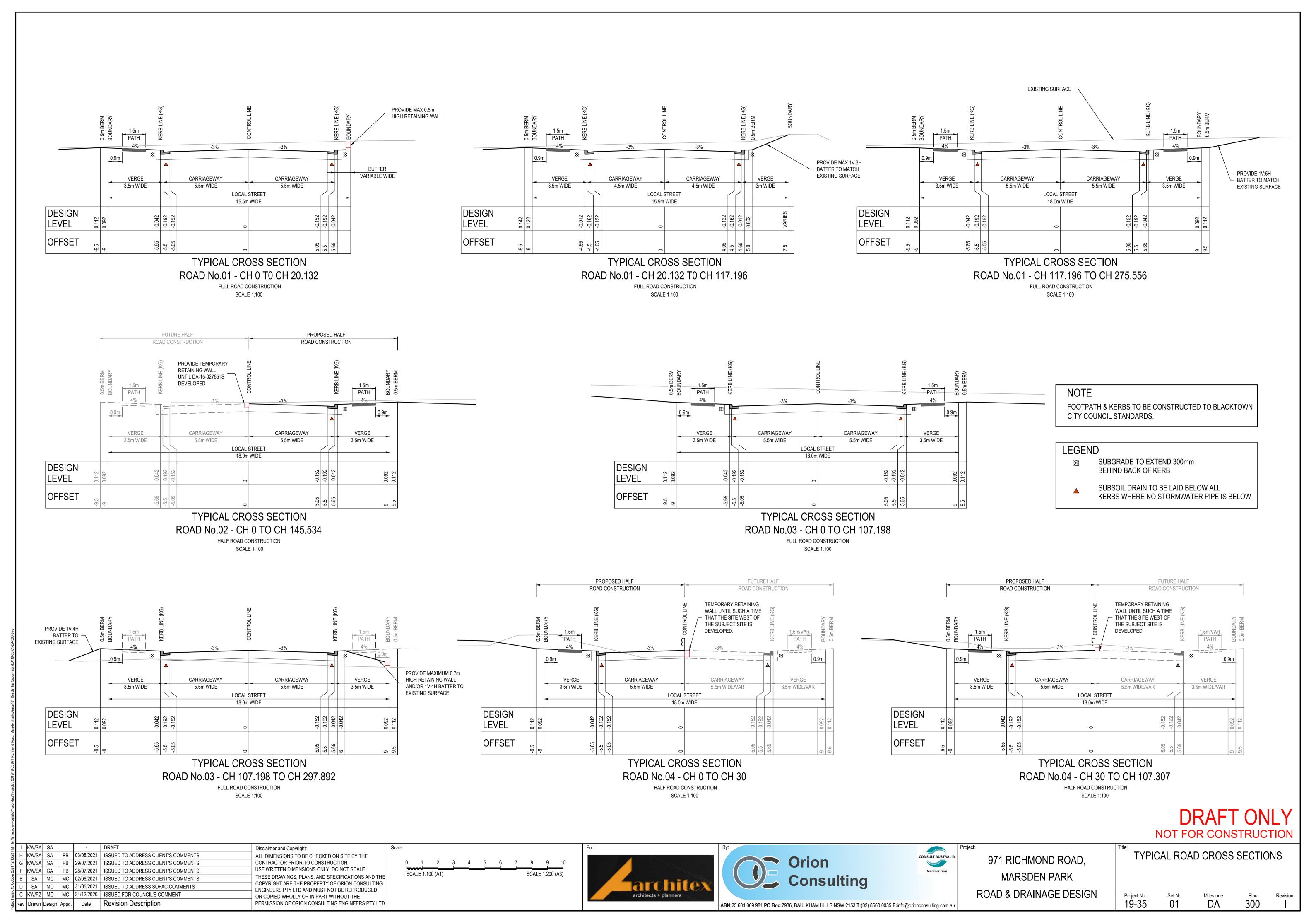
PROPOSED STORMWATER DRAINAGE PIPE TO

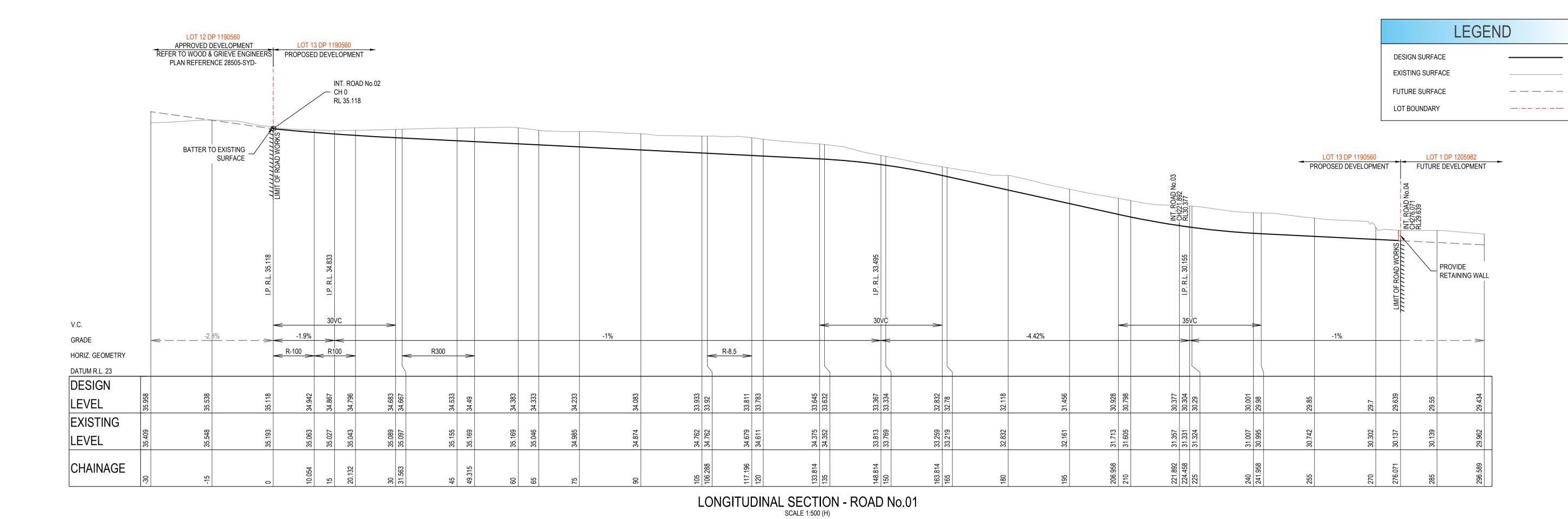
BE CONSTRUCTED UNDER CEILING

ROAD No.03

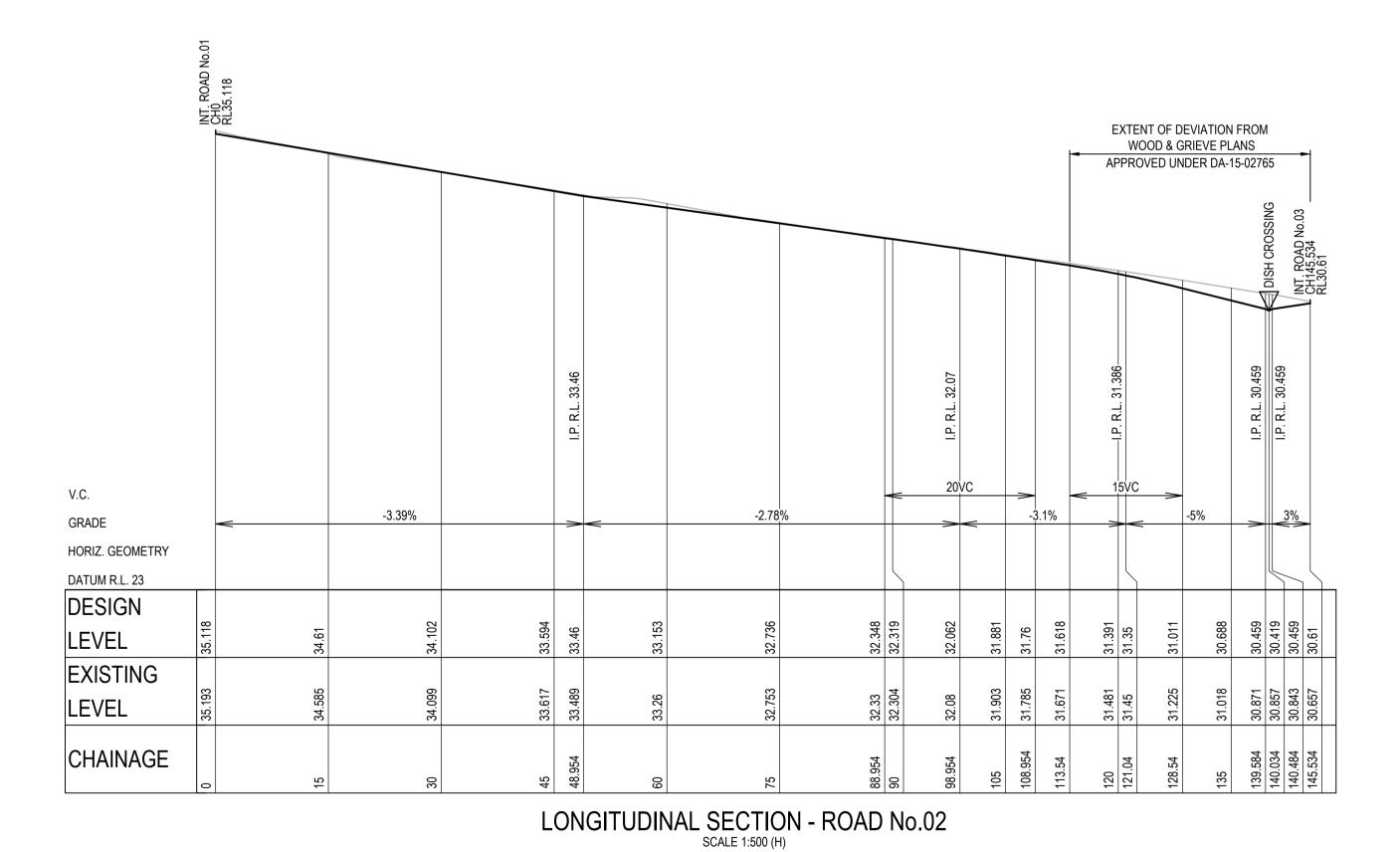
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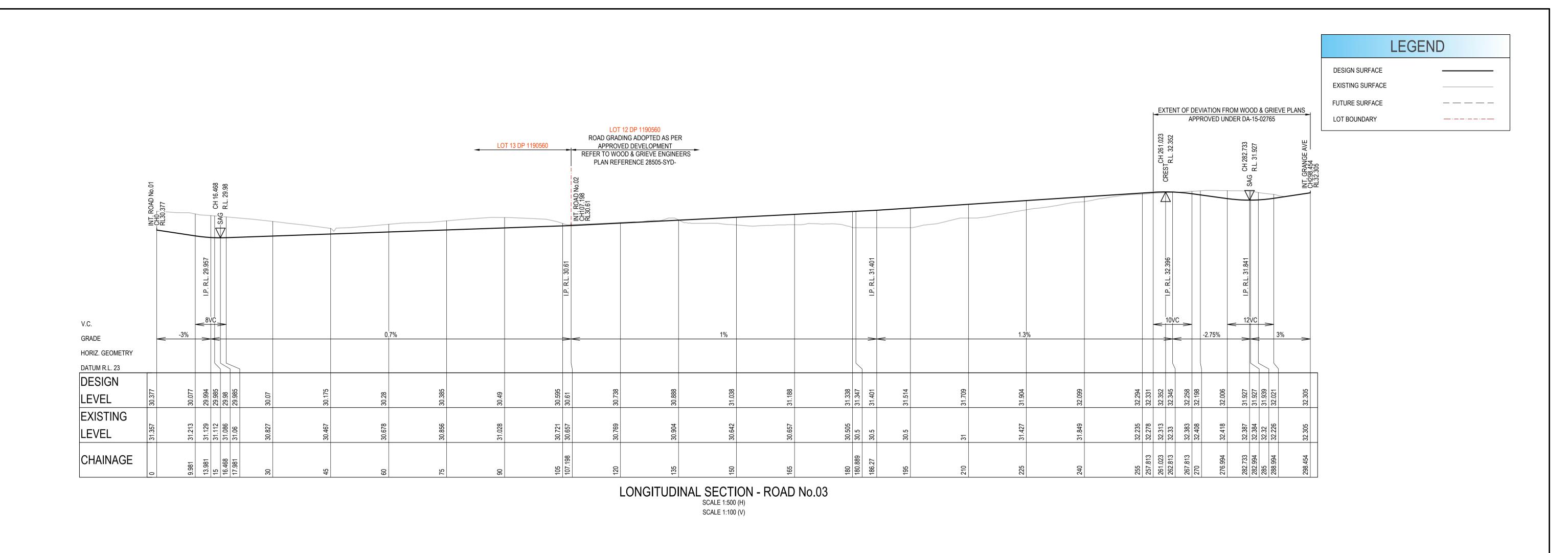
SCALE 1:100 (V)

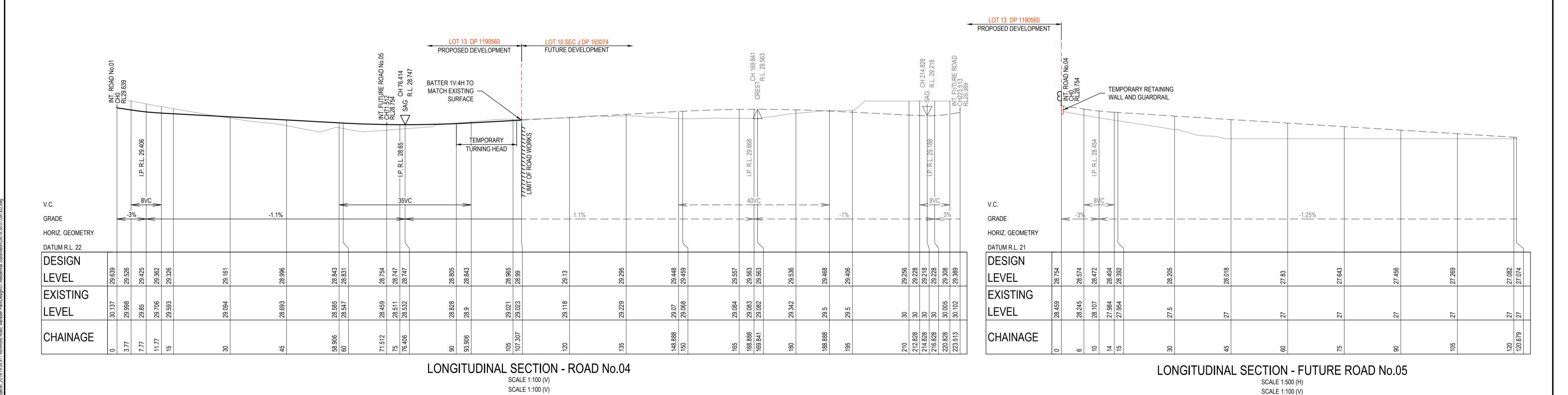


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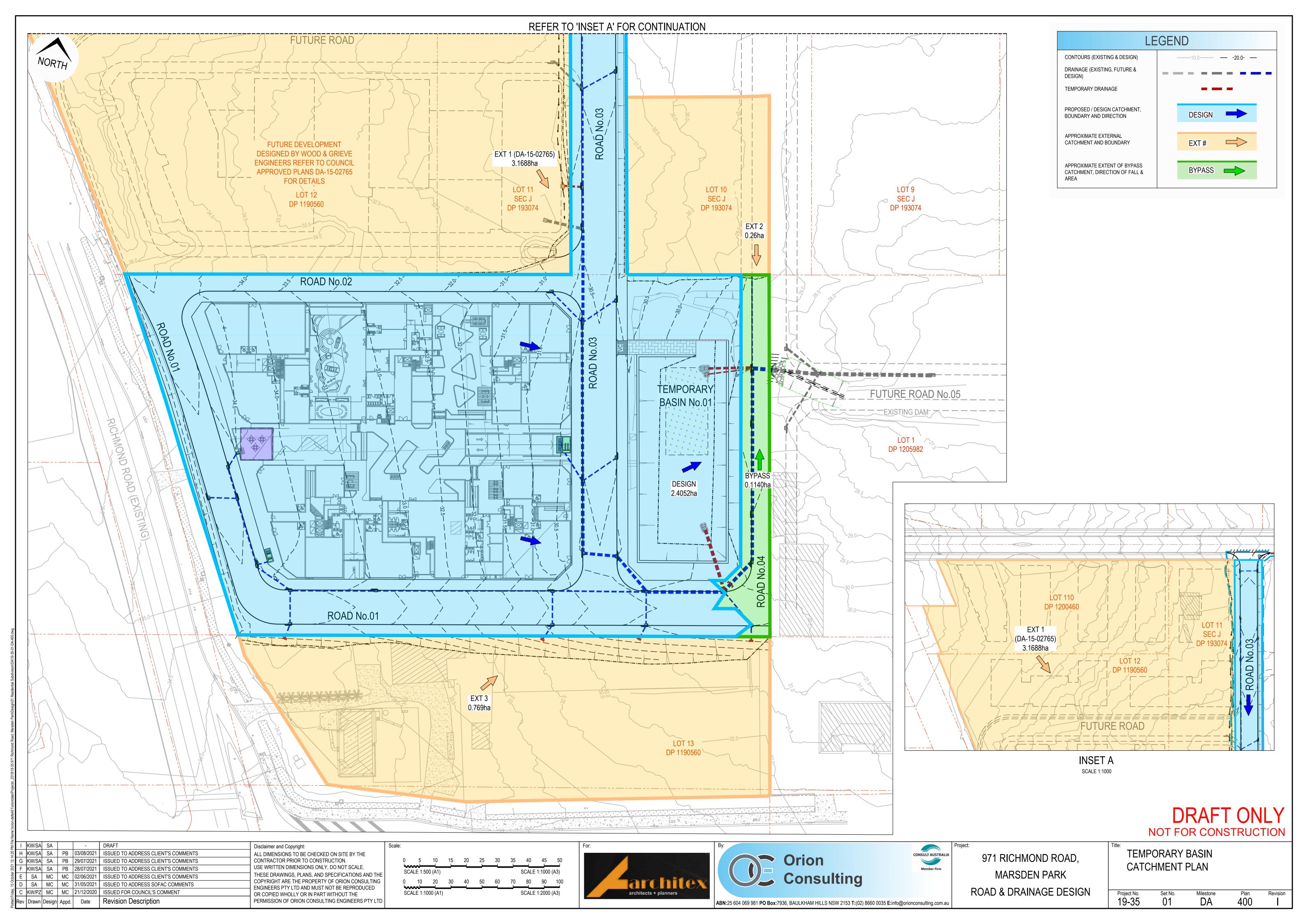
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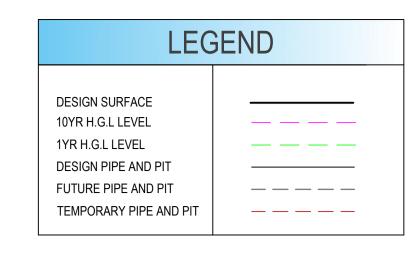


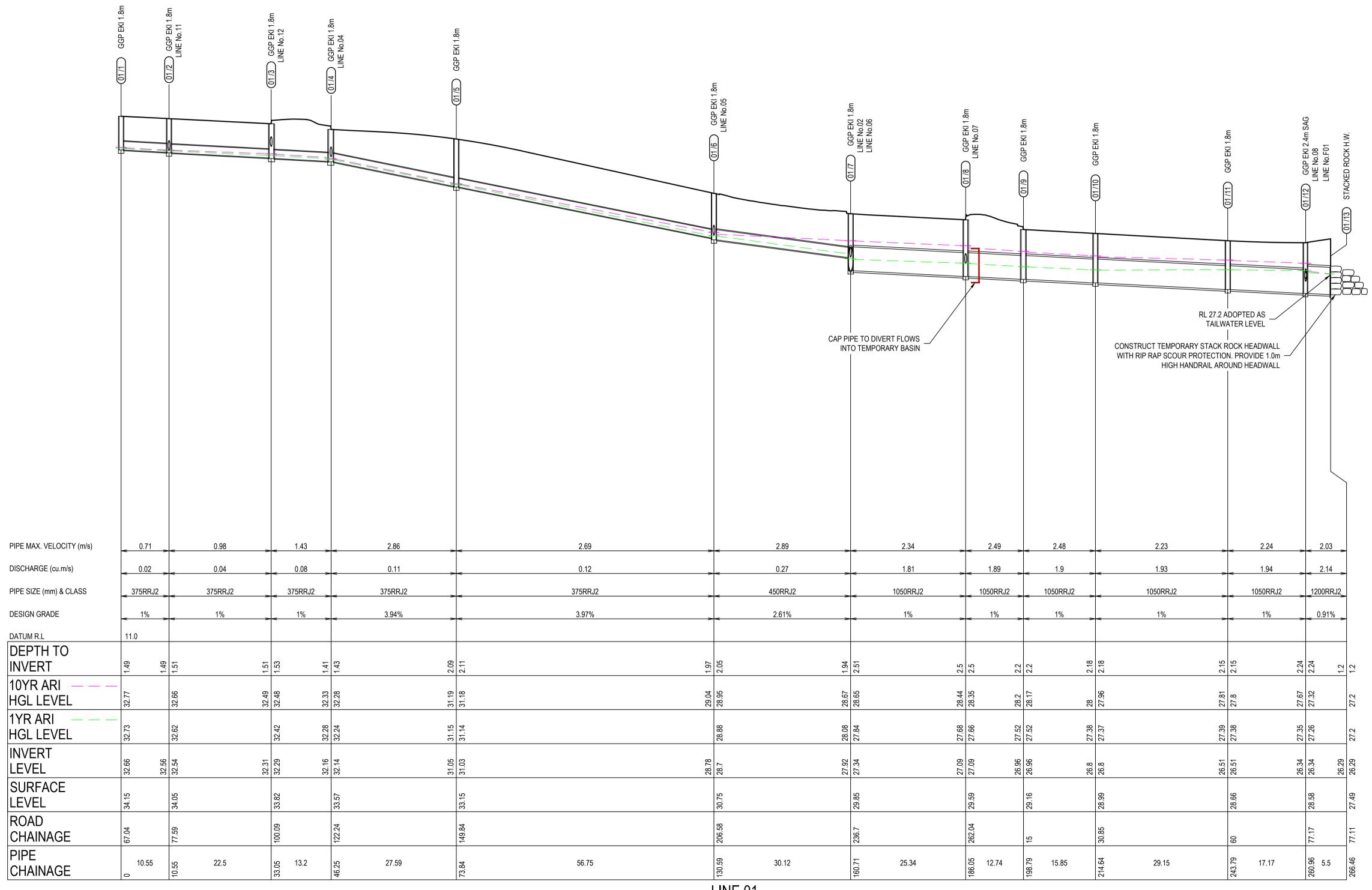
DRAFT ONLY NOT FOR CONSTRUCTION Project: Title:

Scale: Disclaimer and Copyright: ROAD LONGITUDINAL SECTIONS H KW/SA SA PB 03/08/2021 ISSUED TO ADDRESS CLIENT'S COMMENTS Orion Consulting ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONSULT AUSTRALIA 971 RICHMOND ROAD, G KW/SA SA PB 29/07/2021 ISSUED TO ADDRESS CLIENT'S COMMENTS CONTRACTOR PRIOR TO CONSTRUCTION. 0 5 10 15 20 25 30 35 40 45 50 SHEET 02 OF 02 USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE. F KW/SA SA PB 28/07/2021 ISSUED TO ADDRESS CLIENT'S COMMENTS Member Firm SCALE 1:1000 (A3) SCALE 1:500 (A1) MARSDEN PARK THESE DRAWINGS, PLANS, AND SPECIFICATIONS AND THE E SA MC MC 02/06/2021 ISSUED TO ADDRESS CLIENT'S COMMENTS architex architects + planners COPYRIGHT ARE THE PROPERTY OF ORION CONSULTING D SA MC MC 31/05/2021 ISSUED TO ADDRESS SOFAC COMMENTS ENGINEERS PTY LTD AND MUST NOT BE REPRODUCED **ROAD & DRAINAGE DESIGN** C KW/PZ MC MC 21/12/2020 ISSUED FOR COUNCIL'S COMMENT SCALE 1:100 (A1) SCALE 1:200 (A3) Project No. **19-35** Plan Revision OR COPIED WHOLLY OR IN PART WITHOUT THE 01 DA 302 Revision Description PERMISSION OF ORION CONSULTING ENGINEERS PTY LTD Rev Drawn Design Appd. Date ABN:25 604 069 981 PO Box:7936, BAULKHAM HILLS NSW 2153 T:(02) 8660 0035 E:info@orionconsulting.com.au





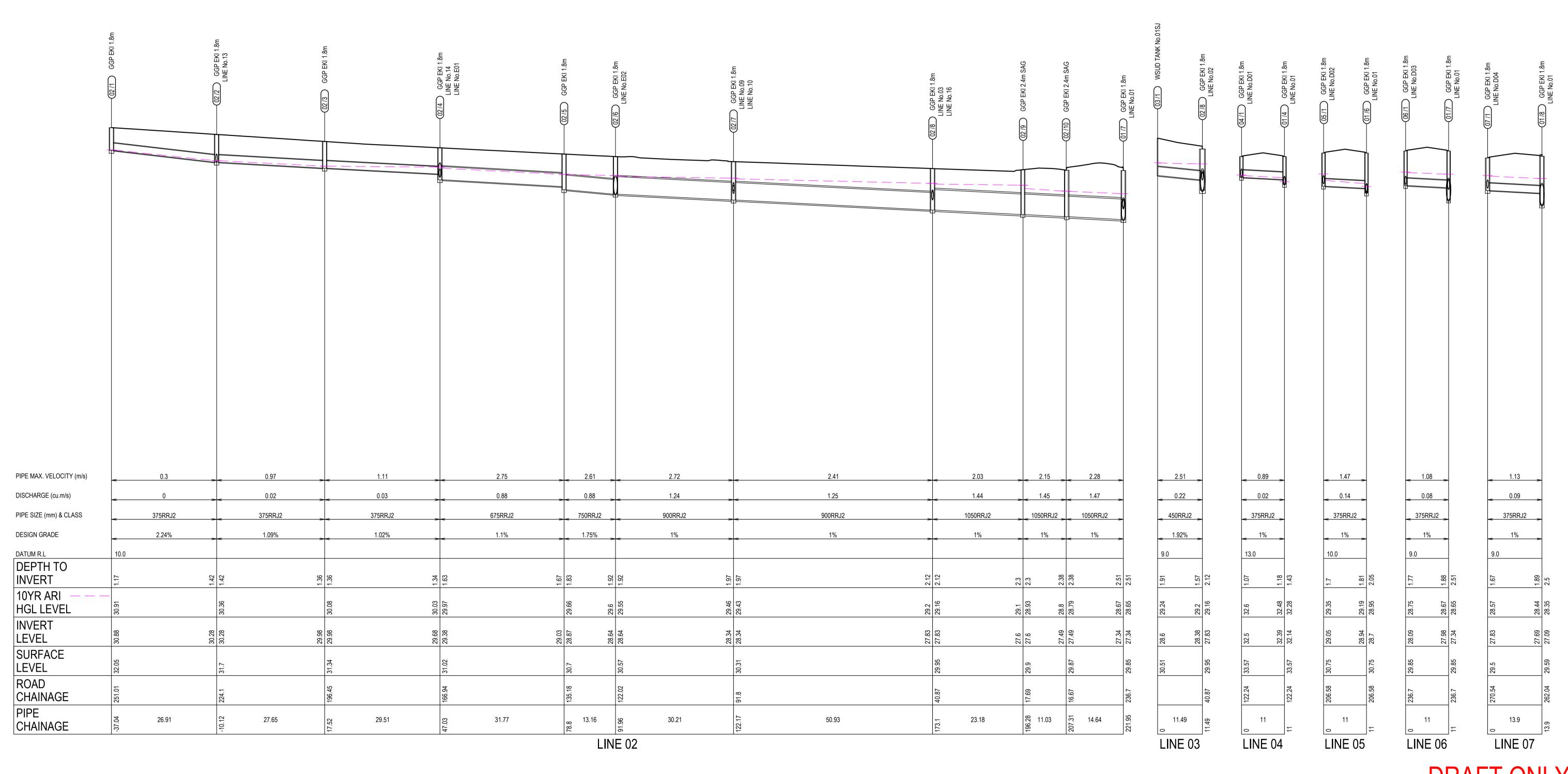




LINE 01

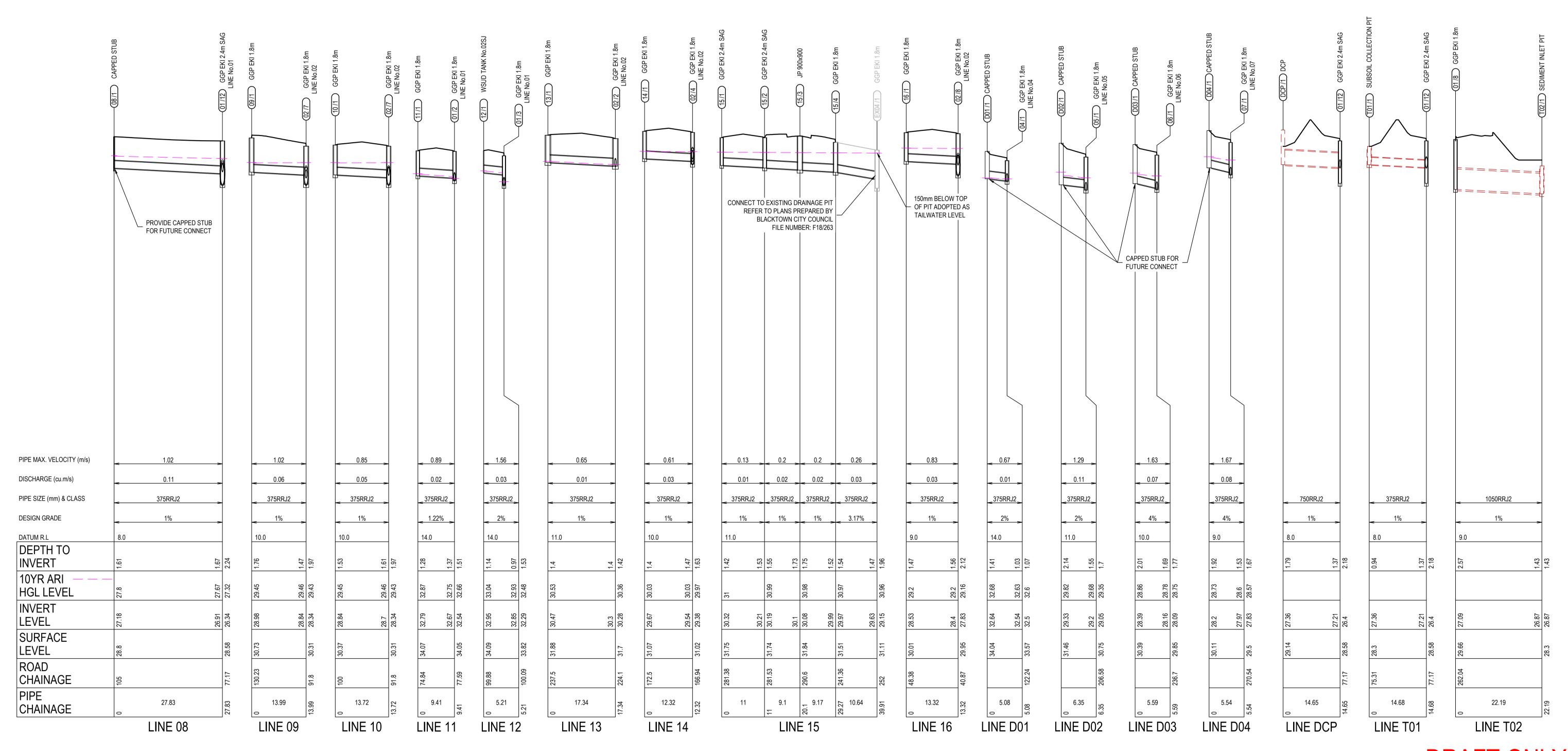
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PM File	KW/SA S	SA -	DRAFT	Disclaimer and Copyright:	Scale:	For:	Ву:	Proje	ect:	Title:			
H:53	KW/SA S	SA PB 03/08/2021	ISSUED TO ADDRESS CLIENT'S COMMENTS	ALL DIMENSIONS TO BE CHECKED ON SITE BY THE				CONSULT AUSTRALIA	074 DICLIMOND DOAD	DRAIN	NAGE LON	G SECTION	NS I
1:21 G	KW/SA S	SA PB 29/07/2021	ISSUED TO ADDRESS CLIENT'S COMMENTS	CONTRACTOR PRIOR TO CONSTRUCTION.	0 5 10 15 20 25 30 35 40 45 50		Orion		971 RICHMOND ROAD,				
F 202	KW/SA S	SA PB 28/07/2021	ISSUED TO ADDRESS CLIENT'S COMMENTS	USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.	SCALE 1:500 (A1) SCALE 1:1000 (A3)			Member Firm	MADODEN DADI	SHEE	T 1 OF 3		
cto pe	SA N	MC MC 02/06/2021	ISSUED TO ADDRESS CLIENT'S COMMENTS	THESE DRAWINGS, PLANS, AND SPECIFICATIONS AND THI	E		Consulting		MARSDEN PARK				
15 D	SA N	MC MC 31/05/2021	ISSUED TO ADDRESS SOFAC COMMENTS	ENGINEERS PTY LTD AND MUST NOT BE REPRODUCED		architex	Oorisuiting						
C C	KW/PZ N	MC MC 21/12/2020	ISSUED FOR COUNCIL'S COMMENT	OR COPIED WHOLLY OR IN PART WITHOUT THE	SCALE 1:100 (A1) SCALE 1:200 (A3)	architects + planners			ROAD & DRAINAGE DESIGN	Project No.	Set No.	Milestone	Plan Revision
Plotted:F	Drawn De		Revision Description	PERMISSION OF ORION CONSULTING ENGINEERS PTY LTD			ABN:25 604 069 981 PO Box:7936, BAULKHAM HILLS NSW 2153 T:(02) 8660 0035 E:info@oric	onconsulting.com.au		19-35	01	DA 4	402 I



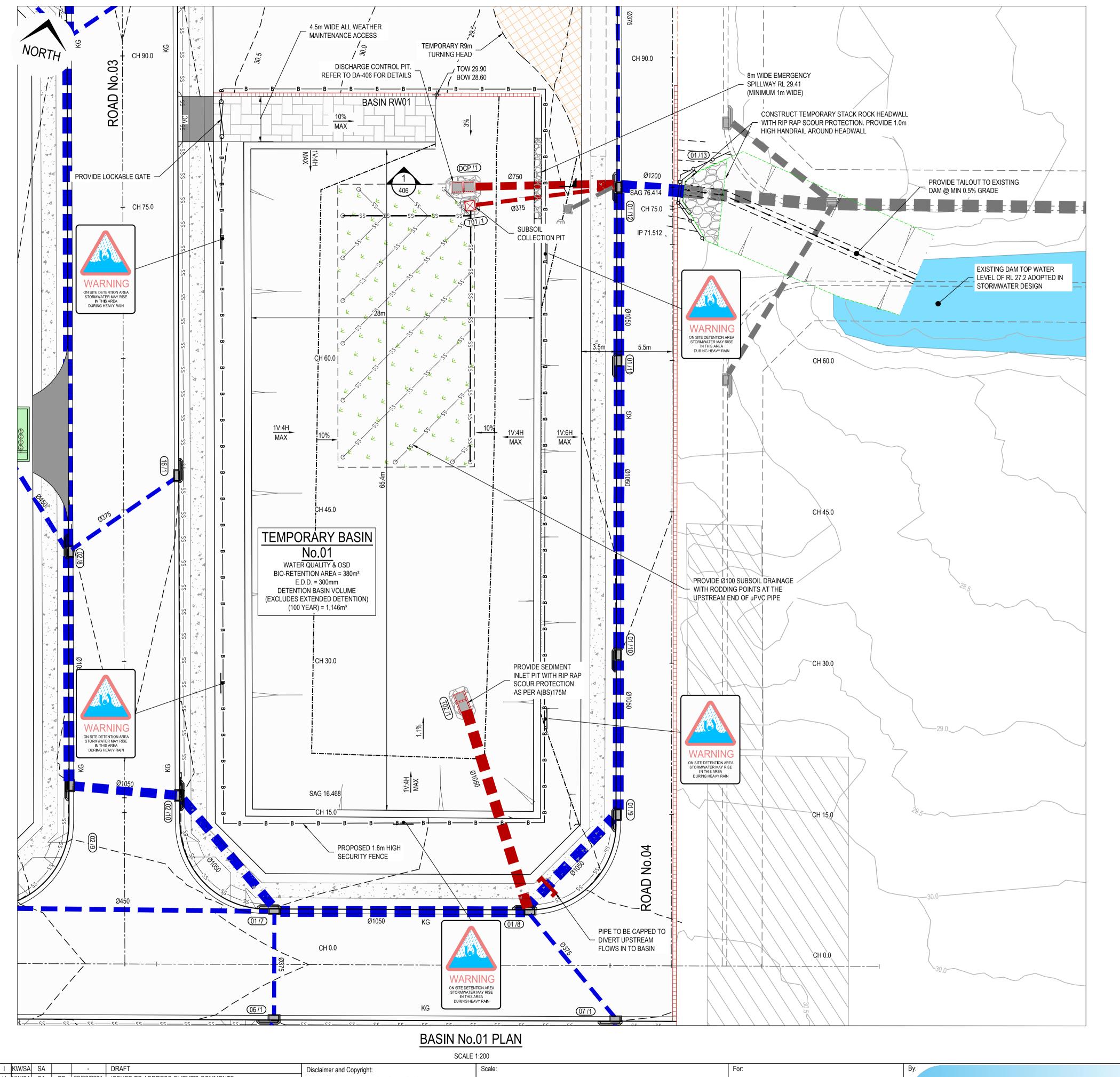
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, 15 October 2021 12:15:01 PM File	KW/SA SA - KW/SA SA PB 03/08/2021 KW/SA SA PB 29/07/2021 KW/SA SA PB 28/07/2021 SA MC MC 02/06/2021 SA MC MC 31/05/2021	DRAFT ISSUED TO ADDRESS CLIENT'S COMMENTS ISSUED TO ADDRESS SOFAC COMMENTS	Disclaimer and Copyright: ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE. THESE DRAWINGS, PLANS, AND SPECIFICATIONS AND THE COPYRIGHT ARE THE PROPERTY OF ORION CONSULTING ENGINEERS PTY LTD AND MUST NOT BE REPRODUCED	Scale: 0 5 10 15 20 25 30 35 40 45 50 SCALE 1:500 (A1) 0 1 2 3 4 5 6 7 8 9 10	For:	Orion Consulting	CONSULT AUSTRALIA Member Firm	971 RICHMOND ROAD, MARSDEN PARK		NAGE LON	NG SECTI	ONS	
Friday	KW/PZ MC MC 21/12/2020	ISSUED FOR COUNCIL'S COMMENT	OR COPIED WHOLLY OR IN PART WITHOUT THE	SCALE 1:100 (A1) SCALE 1:200 (A3)	architects + planners			ROAD & DRAINAGE DESIGN	Project No.	Set No.	Milestone	Plan	Revision
Plotted:	Drawn Design Appd. Date	Revision Description	PERMISSION OF ORION CONSULTING ENGINEERS PTY LTD			ABN:25 604 069 981 PO Box:7936, BAULKHAM HILLS NSW 2153 T:(02) 8660 0035 E:info@	@orionconsulting.com.au		19-35	01	DA	403	1 /



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M File	KW/S/	SA SA	-	DRAFT	Disclaimer and Copyright:	Scale:	For:	By:	Projec		Title:		
5:10 F	H KW/S/	SA SA PB	03/08/2021	ISSUED TO ADDRESS CLIENT'S COMMENTS	ALL DIMENSIONS TO BE CHECKED ON SITE BY THE				CONSULT AUSTRALIA		DRAINA	GE LONG	SECTIONS
52 G	S KW/S/	SA SA PB	29/07/2021	ISSUED TO ADDRESS CLIENT'S COMMENTS	CONTRACTOR PRIOR TO CONSTRUCTION.	0 5 10 15 20 25 30 35 40 45 50		Orion		971 RICHMOND ROAD,			
702 F	KW/S/	SA SA PB	28/07/2021	ISSUED TO ADDRESS CLIENT'S COMMENTS	USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.	SCALE 1:500 (A1) SCALE 1:1000 (A3)			Member Firm	MADODEN DADIC	SHEET	3 OF 3	
ctobe	E SA	MC MC	02/06/2021	ISSUED TO ADDRESS CLIENT'S COMMENTS	THESE DRAWINGS, PLANS, AND SPECIFICATIONS AND THE	00/LE 1.1000 (NO)		Consulting		MARSDEN PARK			
15 D	SA	MC MC	31/05/2021	ISSUED TO ADDRESS SOFAC COMMENTS	COPYRIGHT ARE THE PROPERTY OF ORION CONSULTING ENGINEERS PTY LTD AND MUST NOT BE REPRODUCED	0 1 2 3 4 5 6 7 8 9 10	architex	Consuming					
riday,	KW/P	PZ MC MC	21/12/2020	ISSUED FOR COUNCIL'S COMMENT	OR COPIED WHOLLY OR IN PART WITHOUT THE	SCALE 1:100 (A1) SCALE 1:200 (A3)	architects + planners			ROAD & DRAINAGE DESIGN	Project No.	Set No. Mile	stone Plan
Re	ev Drawr	wn Design Appd.	Date	Revision Description	PERMISSION OF ORION CONSULTING ENGINEERS PTY LTD			ABN:25 604 069 981 PO Box:7936, BAULKHAM HILLS NSW 2153 T:(02) 8660 0035 E:info@oi	rionconsulting.com.au		19-35	01 D	A 404





SIGNS:

STANDARD FLOODWAY WARNING SIGN AND MOUNTING BRACKET IN ACCORDANCE WITH COUNCIL STANDARD DRAWING A(BS)114S

LEGEND PROPOSED STORMWATER PIPE PROPOSED TEMPORARY STORMWATER PIPE FUTURE STORMWATER PIPE PROPOSED DISCHARGE CONTROL PIT PROPOSED BATTER PROPOSED BIO-BASIN PROPOSED 1.8m HIGH SECURITY ——в—— FENCE WITH VEHICLE ACCESS GATES Ø100 SUBSOIL LINES AT 3.0m CENTRES END OF SUBSOIL DRAINAGE LINE WITH —ss——ss—— FLUSHING POINT.

Site:	Ground OSD Summary with calculated values	
	C'A A	25406
	Site Area NOT decision to OSD	25186 m
D. J.	Site Area NOT draining to OSD	1140 m
<u>keauc</u>	ed Levels (AHD):	20.50
	RL of Top of Tank	29.59
	RL of Bottom of OSD Tank	28.60
	RL of 1.5 Year ARI Overflow Weir	29.13
	RL of Emergency Overflow Weir	29.4
	RL of 1.5 Year ARI Orifice Centerline	27.60
	RL of 100 Year ARI Orifice Centreline	27.60
	RL of Invert of Discharge to Council Drainage Pit	27.36
	RL of obvert of Pit outlet pipe	27.20
	Minium RL of Garage Floor	29.68
	Minium RL of House Floor	29.78
<u>OSD V</u>	olume:	
	Required Storage BELOW 1.5 Year ARI Overflow Weir	755.6 m
	Required Storage BELOW Emergency Overflow Weir	1146.0 m
<u>Discha</u>	arge Details:	
	Using Filter Cartridges to manage Water Quality	No
	Discharge Location	Council Drainage Pit
	Length of Emergency Overflow Weir	8.00 r
	Maximum 1.5 Year ARI Site Discharge	93.90 L/
	1.5 Year ARI Orifice Discharge	93.90 L/
	Maximum 100 Year ARI Site Discharge	414.69 L/
	100 Year ARI Orifice Discharge	414.69 L/
Orifice	e Details:	
	Number of 1.5 Year ARI Orifices	
	Number of 100 Year ARI Orifices	
	1.5 Year ARI Orifice Size (mm)	189.0 mr
	-100 Year ARI Orifice Size (mm)	 381.5 mr

PROPOSED SCOUR PROTECTION

NOTE:

ORIFICE SIZES LISTED BELOW TO BE ADOPTED AS PER COUNCILS REQUEST

1.5YR ORIFICE = 180mm dia 100YR ORIFICE = 330mm dia

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Revision Description

Rev Drawn Design Appd. Date



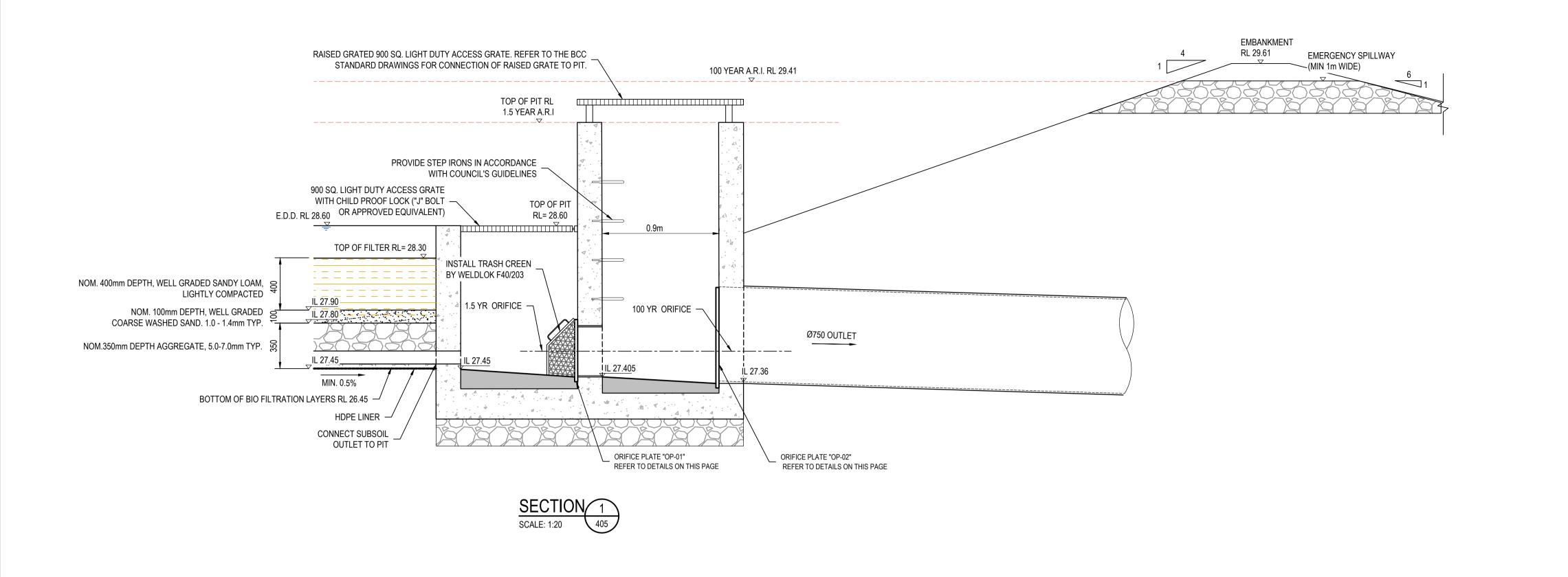


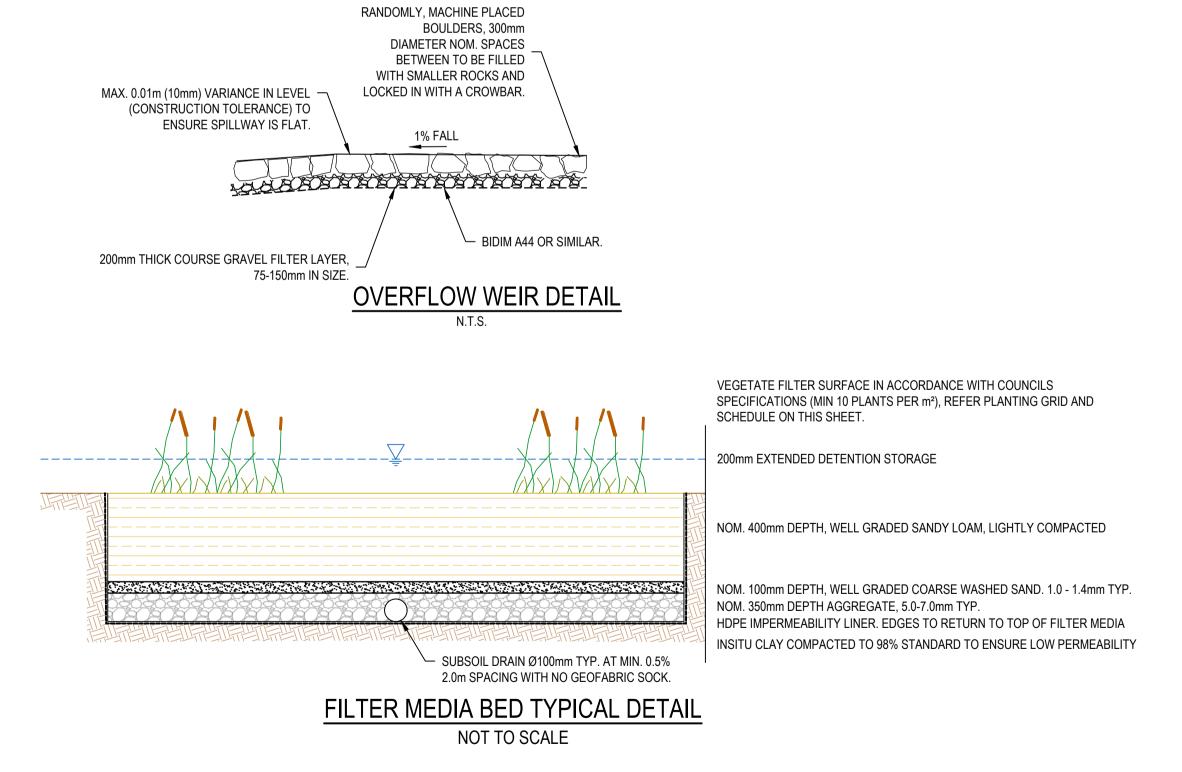
971 RICHMOND ROAD, MARSDEN PARK **ROAD & DRAINAGE DESIGN**

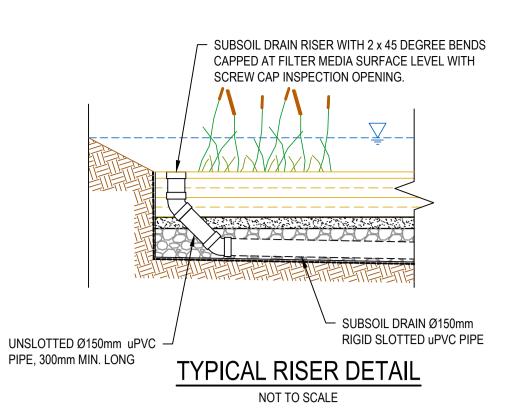
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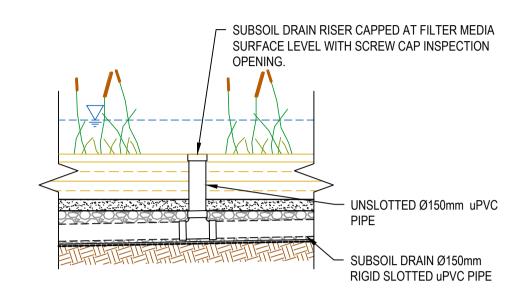
TEMPORARY BASIN No.01 PLAN, SECTIONS & DETAILS SHEET 1 OF 2

Project No. **19-35** 405 DA

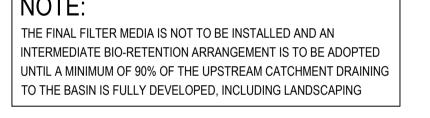


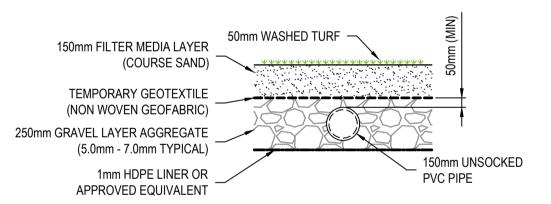




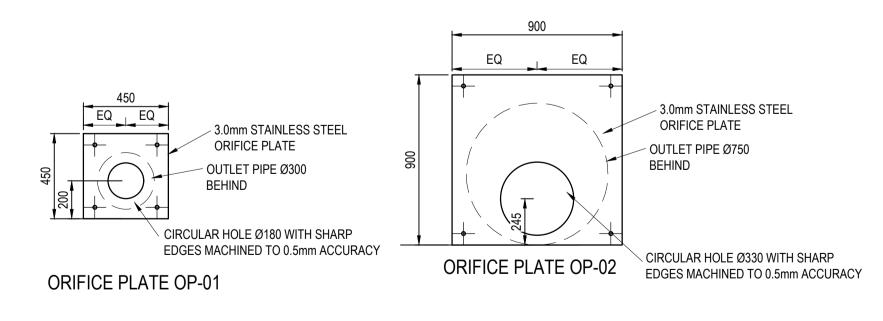


INTERMEDIATE RISER DETAIL NOT TO SCALE





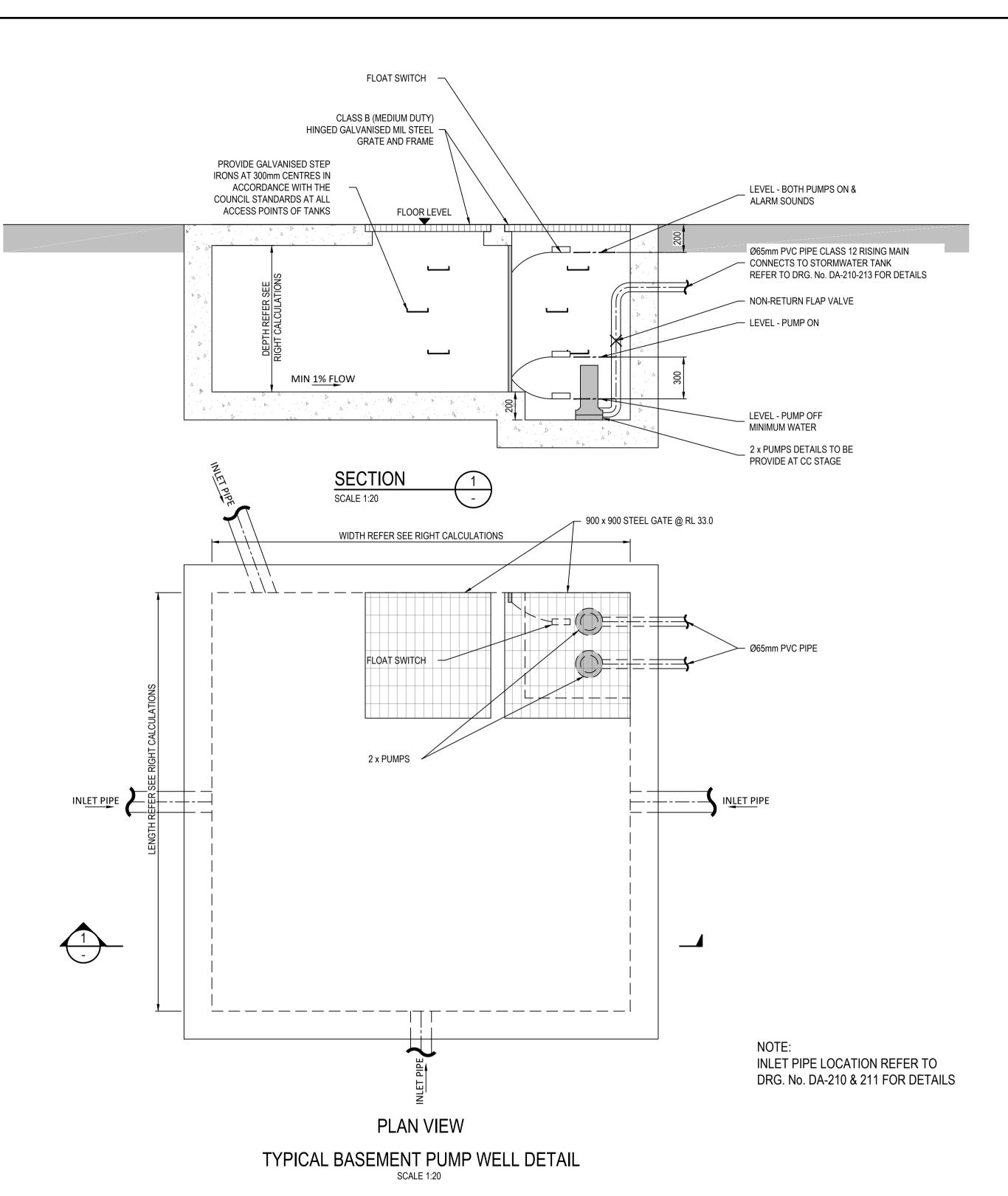
INTERMEDIATE BIO-RETENTION DESIGN SCALE 1:20



ORIFICE PLATE DETAIL

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₩ I KW/S	A SA	-	DRAFT	Disclaimer and Copyright:	Scale:	For:	By:	Pr	oject:	Title:	
₹ H KW/S	A SA P	PB 03/08/2021	ISSUED TO ADDRESS CLIENT'S COMMENTS	ALL DIMENSIONS TO BE CHECKED ON SITE BY THE				CONSULT AUSTRALIA		TEMPORARY E	BASIN No.01 PLAN,
51 G KW/S	A SA P	PB 29/07/2021	ISSUED TO ADDRESS CLIENT'S COMMENTS	CONTRACTOR PRIOR TO CONSTRUCTION.	0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0		Orion		971 RICHMOND ROAD,		•
ଞ୍ଚି F KW/S	A SA P	PB 28/07/2021	ISSUED TO ADDRESS CLIENT'S COMMENTS	USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.	SCALE 1:20 (A1) SCALE 1:40 (A3)			Member Firm	MADODENIDADIA	SECTIONS & D	ETAILS SHEET 2 OF
कु E SA	MC M	1C 02/06/2021	ISSUED TO ADDRESS CLIENT'S COMMENTS	THESE DRAWINGS, PLANS, AND SPECIFICATIONS AND THE	00/12 1.10 (N)	Towns letter	Consulting		MARSDEN PARK		
D SA	MC M	1C 31/05/2021	ICCHEN IN ANNOESS SHEAT TONAMENTS	COPYRIGHT ARE THE PROPERTY OF ORION CONSULTING ENGINEERS PTY LTD AND MUST NOT BE REPRODUCED		architex	Consuming				
ggi C KW/F	Z MC M	1C 21/12/2020	ISSUED FOR COUNCIL'S COMMENT	OR COPIED WHOLLY OR IN PART WITHOUT THE		architects + planners			ROAD & DRAINAGE DESIGN	Project No. Set No.	Milestone Plan Re
Rev Drav	n Design Ap	opd. Date	Revision Description	PERMISSION OF ORION CONSULTING ENGINEERS PTY LTD			ABN:25 604 069 981 PO Box:7936, BAULKHAM HILLS NSW 2153 T:(02) 8660 0035 E:in	nfo@orionconsulting.com.au		19-35 01	DA 406

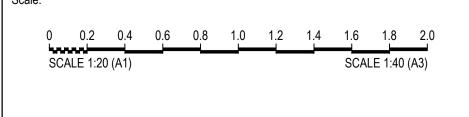


PUMP WELL No.01 BASEMENT 3 BASEMENT 2 3477 m² 66.3 mm/hr BASEMENT 1 3596 m² HR FOR STORM = 1 HR TOTAL (METRE SQUARE) 7073 m² **71** m² 1% OF TOTAL AREA PUMP WELL STAGE 2 SUMP SIZE AND PUMP BASE ON 100 YEAR 1 HR STORM INTENSITY IS 66.3 mm/hr, AREA DRAINING TO TOWARDS SUMP IS 70.73 m² Q=CIA/3600 = 1 L/s VOLUME REQUIRED IS 4689 L/s STORAGE PROVIDED =2000X2000X1342= 5368 L PUMP WELL STAGE 2 DIMENSION 2000 2000

PUMP WELL No.02 4270 m² BASEMENT 3 C= BASEMENT 2 4270 m² 66.3 mm/hr 4968 m² BASEMENT 1 HR FOR STORM = 1 HR TOTAL (METRE SQUARE) 13508 m² 1% OF TOTAL AREA 135 m² PUMP WELL STAGE 1 SUMP SIZE AND PUMP BASE ON 100 YEAR 1 HR STORM INTENSITY IS 66.3 mm/hr, AREA DRAINING TO TOWARDS SUMP IS 135.08 m2 Q=CIA/3600 = 2 L/s 8956 L/s VOLUME REQUIRED IS 3000 =3000X3000X1000= PUMP WELL STAGE 1 DIMENSION 3000 STORAGE PROVIDED 9000 L

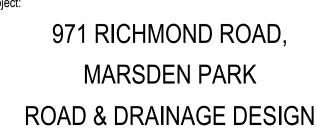
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CONSULT AUSTRALIA

PUMP WELL DETAILS & **CALCULATIONS**

> Project No. **19-35** DA 410

					M	INOR S	ΓORM - :	10YR AF	RI HYDRC	LOGY C	CALCULA	TIONS						
PIT	PIT	CATCHMENT	PERCENT	Тс	Тс	CRITICAL	APPROACH	CAPTURED	UNCAPTURED	GRATE	ROAD	ROAD	BYPASS	BYPASS CHANNEL	U/S	U/S	D/S	D/S
NAME	TYPE	AREA	IMPERVIOUS	IMP	PERV	STORM	FLOW	FLOW	FLOW	DEPTH	GRADE	CROSSFALL	PIT	FLOW	FLOW WIDTH	VxD	FLOW WIDTH	VxD
(-)	(-)	(Ha)	(%)	(min)	(min)	(min)	(L/s)	(L/s)	(L/s)	(mm)	(%)	(%)	(-)	(L/s)	(m)	(m/s^2)	(m)	(m/s^2)
01\1	GGP EKI 1.8m	0.049	85	5	6	15	18	18	0	0	1	3	01\2	0	0	0	0	0
01\2	GGP EKI 1.8m	0.009	85	5	6	5	3	3	0	0	1	3	01\3	0	0	0	0	0
01\3	GGP EKI 1.8m	0.018	85	5	6	15	7	7	0	0	1	3	01\4	0	0	0	0	0
01\4	GGP EKI 1.8m	0.016	85	5	6	15	6	6	0	0	1	3	01\5	0	0	0	0	0
01\5	GGP EKI 1.8m	0.025	85	5	6	15	9	9	0	0	2.7	3	01\6	0	0	0	0	0
01\6	GGP EKI 1.8m	0.054	85	5	6	15	20	20	0	0	4.4	3	02\9	0	0	0	0	0
01\7	GGP EKI 1.8m	0.005	85	5	6	5	2	2	0	0	1.6	3	01\8	0	0	0	0	0
01\8	GGP EKI 1.8m	0.023	85	5	6	15	9	9	0	0	1	3	01\9	0	0	0	0	0
01\9	GGP EKI 1.8m	0.022	85	5	6	15	8	8	0	0	1.1	1.7	01\10	0	0	0	0	0
01\10	GGP EKI 1.8m	0.08	85	5	6	15	30	29	1	20	1.1	3	01\11	1	0.23	0	0.23	0
01\11	GGP EKI 1.8m	0.029	85	5	6	15	12	12	0	0	1.1	3	01\12	0	0	0	0	0
01\12	GGP EKI SAG 2.4m	0.051	85	5	6	15	19	19	0	28	0.1	3						
01\13	HW Out - Stacked Rock		0			5	0	0	0	0								
02\1	GGP EKI 1.8m	0.007	85	5	6	15	3	3	0	0	1.3	3	02\2	0	0	0	0	0
02\2	GGP EKI 1.8m	0.025	85	5	6	25	10	10	0	0	1.3	3	02\3	0	0	0	0	0
02\3	GGP EKI 1.8m	0.026	85	5	6	15	10	10	0	0	1.3	3	02\4	0	0	0	0	0
02\4	GGP EKI 1.8m	0.066	85	5	6	25	25	24	0	13	1	3	02\5	0	0.15	0	0.14	0
02\5	GGP EKI 1.8m	0.028	85	5	6	25	11	11	0	0	1	3	02\6	0	0	0	0	0
02\6	GGP EKI 1.8m	0.012	85	<u>5</u>	6	5	4	4	0	0	1	3	02\7	0	0	0	0	0
02\7	GGP EKI 1.8m	0.022	85	5	6	15	11	11	0	0	0.7	3	02\8	0	0	0	0	0
02\8	GGP EKI 1.8m	0.047	85	5	6	15	18	18	0	0	0.7	3	02\9	0	0	0	0	0
02\8	GGP EKI SAG 2.4m	0.05	85	5	6	15	19	18	1	27	0.9	1.8	02\10	1	0.31	0	0.32	0
02\3	GGP EKI SAG 2.4m	0.03	85	5	6	15	19	18	0	27	0.3	2	01\7	0	0.31	0	0.32	0
03\1	WSUD TANK No.01	0.578	85	5	6	25	218	218	0	0	5	2	01(/	0	0		· ·	
04\1	GGP EKI 1.8m	0.044	85	5	6	25	17	17	0	0	1	3	05\1	0	0	0	0	0
05\1	GGP EKI 1.8m	0.044	85	5	6	25	31	30	1	13	4.4	3	06\1	0	0.15	0	0.15	0
06\1	GGP EKI 1.8m	0.081	85	5	6	15	11	11	0	0	1.6	3	07\1	0	0.15	0	0.15	0
	GGP EKI 1.8m	0.027	85	5							1.0	3	LOST	0	0	0	0	
07\1			+		6	15	12	12	0	0								0
08\1	CAPPED STUB	0.294	85 85	5	6	25	111	111	0	0	16.7	1.3	01\12	0	0	0	0	0
09\1	GGP EKI 1.8m	0.114	85 85	5	6	15	43	39	4	29	5	3	02\7	3	0.33	0.02	0.33	0.02
10\1	GGP EKI 1.8m	0.069	85	5	6	15	26	26	1		0.7	3	16\1	0	0	0	0	0
11\1	GGP EKI 1.8m	0.049	85	5	6	25	19	19	0	0	1	3	04\1	0	0	0	0	0
12\1	WSUD TANK No.01	0.082	85	5	6	15	31	31	0	0	4.2	3.5	4.4\4					
13\1	GGP EKI 1.8m	0.02	85	5	6	15	7	7	0	0	1.3	3	14\1	0	0	0	0	0
14\1	GGP EKI 1.8m	0.059	85	5	6	15	22	22	0	2	1	3	10\1	0	0	0	0	0
15\1	GGP EKI SAG 2.4m	0.038	85	5	6	15	14	14	0	23	1.1	3	15\2	0	0.26	0	0.18	0
15\2	GGP EKI SAG 2.4m	0.023	85	5	6	25	9	8	0	16	1	2.7	15\4	0	0.18	0	0.17	0
15\3	JP 900x900		0			5	0	0	0	0	1	3.4						
15\4	GGP EKI 1.8m	0.015	85	5	6	15	6	6	0	0	3.9	3	LOST	0	0	0	0	0
EX 04\1	GGP EKI 1.8m		85			5	0	0	0	0								
16\1	GGP EKI 1.8m	0.049	85	5	6	15	18	18	0	0	0.7	3	02\10	0	0	0	0	0
D01\1	CAPPED STUB	0.02	85	5	6	15	7	7	0	0								
D02\1	CAPPED STUB	0.304	85	5	6	25	114	114	0	0								
D03\1	CAPPED STUB	0.188	85	5	6	25	71	71	0	0								
D04\1	CAPPED STUB	0.211	85	5	6	25	79	79	0	0								
E01\1	CAPPED STUB	2.171	85	5	6	25	819	819	0	0		2.1						
E02\1	CAPPED STUB	0.995	85	5	6	25	375	375	0	0								
F01\1	FUTURE TANK	0.278	85	5	6	25	105	105	0	0								

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971 RICHMOND ROAD, MARSDEN PARK ROAD & DRAINAGE DESIGN

CONSULT AUSTRALIA

Member Firm

DRAINAGE CALCULATIONS SHEET 01 OF 04

Project No. **19-35**

Milestone DA Plan **420**

					M	AJOR ST	ORM - 1	.00YR A	RI HYDRO	OLOGY (CALCUL	ATIONS						
PIT	PIT	CATCHMENT	PERCENT	Тс	Тс	CRITICAL	APPROACH	CAPTURED	UNCAPTURED	GRATE	ROAD	ROAD	BYPASS	BYPASS CHANNEL	U/S	U/S	D/S	D/S
NAME	TYPE	AREA	IMPERVIOUS	IMP	PERV	STORM	FLOW	FLOW	FLOW	DEPTH	GRADE	CROSSFALL	PIT	FLOW	FLOW WIDTH	VxD	FLOW WIDTH	VxD
(-)	(-)	(Ha)	(%)	(min)	(min)	(min)	(L/s)	(L/s)	(L/s)	(mm)	(%)	(%)	(-)	(L/s)	(m)	(m/s^2)	(m)	(m/s^2)
01\1	GGP EKI 1.8m	0.049	85	5	6	5	26	21	6	44	1	3	01\2	5	0.58	0.02	0.58	0.02
01\2	GGP EKI 1.8m	0.009	85	5	6	5	10	8	2	29	1	3	01\3	2	0.34	0.01	0.34	0.01
01\3	GGP EKI 1.8m	0.018	85	5	6	15	11	9	2	28	1	3	01\4	2	0.32	0.01	0.33	0.01
01\4	GGP EKI 1.8m	0.016	85	5	6	15	11	9	2	28	1	3	01\5	2	0.33	0.01	0.33	0.01
01\5	GGP EKI 1.8m	0.025	85	5	6	5	15	12	3	26	2.7	3	01\6	3	0.3	0.02	0.41	0.01
01\6	GGP EKI 1.8m	0.054	85	5	6	15	32	25	7	35	4.4	3	02\9	7	0.41	0.03	1.6	0.02
01\7	GGP EKI 1.8m	0.005	85	5	6	5	3	2	1	18	1.6	3	01\8	1	0.21	0	0.3	0
01\8	GGP EKI 1.8m	0.023	85	5	6	5	13	10	3	26	1	3	01\9	3	0.3	0.02	0.38	0.01
01\9	GGP EKI 1.8m	0.022	85	5	6	15	14	11	3	33	1.1	1.7	01\10	3	0.38	0.01	1.09	0.01
01\10	GGP EKI 1.8m	0.08	85	5	6	15	45	32	13	59	1.1	3	01\11	13	1.09	0.03	1.09	0.03
01\11	GGP EKI 1.8m	0.029	85	5	6	15	28	22	6	52	1.1	3	01\12	6	0.85	0.02	1.89	0.01
01\12	GGP EKI SAG 2.4m	0.051	85	5	6	5	63	62	0	83	0.1	3						
01\13	HW Out - Stacked Rock		0			5	0	0	0	0								
02\1	GGP EKI 1.8m	0.007	85	5	6	5	4	3	1	20	1.3	3	02\2	1	0.23	0	0.37	0
02\2	GGP EKI 1.8m	0.025	85	5	6	15	14	11	3	32	1.3	3	02\3	3	0.37	0.01	0.5	0.01
02\3	GGP EKI 1.8m	0.026	85	5	6	5	17	13	64	41	1.3	3	02\4	5	0.5	0.02	3.17	0.01
02\4	GGP EKI 1.8m	0.066	85	5	6	15	39	-32	171	121	1	3	02\5	137	3.17	0.11	3.17	0.11
02\5	GGP EKI 1.8m	0.028	85	5	6	5	150	74	76	100	1	3	02\6	74	2.48	0.08	2.48	0.08
02\6	GGP EKI 1.8m	0.012	85	5	6	5	79	49	31	79	1	3	02\7	30	1.76	0.05	1.76	0.05
02\7	GGP EKI 1.8m	0.022	85	5	6	5	58	49	9	56	0.7	3	02\8	8	0.99	0.02	2.55	0.01
02\8	GGP EKI 1.8m	0.047	85	5	6	5	31	21	67	102	0.7	3	02\9	36	2.55	0.04	1.96	0.05
02\9	GGP EKI SAG 2.4m	0.05	85	5	6	15	66	51	13	74	0.9	1.8	02\10	13	1.6	0.02	2.74	0.02
02\10	GGP EKI SAG 2.4m	0.047	85	5	6	5	111	96	13	108	0.3	2	01\7	13	0	0	0	0
03\1	WSUD TANK No.01	0.578	85	5	6	15	309	309	0	0	5							
04\1	GGP EKI 1.8m	0.044	85	5	6	5	28	22	6	35	1	3	05\1	5	0.4	0.03	0.86	0.02
05\1	GGP EKI 1.8m	0.081	85	5	6	15	48	34	20	52	4.4	3	06\1	14	0.86	0.04	0.86	0.04
06\1	GGP EKI 1.8m	0.027	85	5	6	15	28	22	6	44	1.6	3	07\1	5	0.61	0.02	0.61	0.02
07\1	GGP EKI 1.8m	0.033	85	5	6	5	22	18	5	40	1	3	LOST	4	0.46	0.02	0.46	0.02
08\1	CAPPED STUB	0.294	85	5	6	15	157	126	31	80	16.7	1.3	01\12	31	1.81	0.05	1.89	0.04
09\1	GGP EKI 1.8m	0.114	85	5	6	15	61	41	20	58	5	3	02\7	19	1.07	0.05	1.07	0.05
10\1	GGP EKI 1.8m	0.069	85	5	6	15	56	38	18	176	0.7	3	16\1	0	12.72	0.03	12.95	0.03
11\1	GGP EKI 1.8m	0.049	85	5	6	5	26	21	6	42	1	3	04\1	5	0.54	0.02	0.54	0.02
12\1	WSUD TANK No.01	0.082	85	5	6	15	44	44	0	0		3.5						
13\1	GGP EKI 1.8m	0.02	85	5	6	15	11	8	2	29	1.3	3	14\1	2	0.34	0.01	1.46	0.01
14\1	GGP EKI 1.8m	0.059	85	5	6	15	34	25	109	70	1	3	10\1	21	1.46	0.04	5.78	0.02
15\1	GGP EKI SAG 2.4m	0.038	85	5	6	5	20	19	1	42	1.1	3	15\2	1	0.54	0	0.35	0.01
15\2	GGP EKI SAG 2.4m	0.023	85	5	6	5	13	11	2	31	1	2.7	15\4	2	0.35	0.01	0.35	0.01
15\3	JP 900x900		0			5	0	0	0	0	1	3.4						
15\4	GGP EKI 1.8m	0.015	85	5	6	5	10	8	2	30	3.9	3	LOST	2	0.34	0.01	0.34	0.01
EX 04\1	GGP EKI 1.8m		85			5	0	0	0	0								
16\1	GGP EKI 1.8m	0.049	85	5	6	15	224	105	76	123	0.7	3	02\10	94	3.25	0.07	2.97	0.08
D01\1	CAPPED STUB	0.02	85	5	6	15	11	11	0	0								
D02\1	CAPPED STUB	0.304	85	5	6	15	162	162	0	0								
D03\1	CAPPED STUB	0.188	85	5	6	15	101	101	0	0								
D04\1	CAPPED STUB	0.211	85	5	6	15	113	113	0	0								
E01\1	CAPPED STUB	2.171	85	5	6	15	1161	1161	0	0		2.1						
E02\1	CAPPED STUB	0.995	85	5	6	15	532	532	0	0								
F01\1	FUTURE TANK	0.278	85	5	6	15	149	149	0	0								

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971 RICHMOND ROAD, MARSDEN PARK ROAD & DRAINAGE DESIGN DRAINAGE CALCULATIONS SHEET 02 OF 04

Project No. **19-35**

Milestone DA

						N	/INOR S	TORM -	10YR AF	RI HYDR	AULIC C	ALCULA	TIONS							
PIPE	PIPE	PIPE	PIPE	PIPE	CRITICAL	PEAK	CAPACITY	PEAK	PIPE	PIPE	PIPE	U/S PIT	D/S PIT	PIT LOSS	WSE LOSS	U/S PIPE	D/S PIPE	HGL	MINIMUM	MINIMUM
NAME	DIAMETER	TYPE	LENGTH	GRADE	STORM	FLOW	RATIO	VELOCITY	U/S IL	D/S IL	D/S DROP	Ku	Kw	(Ku.V'head)	(Kw.V'head)	HGL	HGL	GRADE	COVER	FREEBOARD
(-)	(mm)	(-)	(m)	(%)	(min)	(L/s)	(-)	(m/s)	(m)	(m)	(m)	(-)	(-)	(m)	(m)	(m)	(m)	(%)	(m)	(m)
01\1 to 01\2	375	RRJ2	10.55	1	15	18	0.1	0.71	32.664	32.558	0.02	4.5	0	0.02	0	32.765	32.655	1.04	1.07	1.371
01\2 to 01\3	375	RRJ2	22.5	1	25	40	0.21	0.98	32.538	32.313	0.02	0.89	0	0	0	32.655	32.495	0.71	1.09	1.391
01\3 to 01\4	375	RRJ2	13.2	1	25	77	0.41	1.43	32.293	32.161	0.02	2.01	0	0.02	0	32.476	32.327	1.13	1.16	1.325
01\4 to 01\5	375	RRJ2	27.59	3.94	25	107	0.28	2.86	32.141	31.053	0.02	1.01	0	0	0	32.283	31.19	3.96	1.01	1.285
01\5 to 01\6	375	RRJ2	56.75	3.97	25	115	0.3	2.69	31.033	28.779	0.075	0.65	0	0	0	31.176	29.037	3.77	1.58	1.971
01\6 to 01\7	450	RRJ2	30.12	2.61	25	270	0.54	2.89	28.704	27.918	0.575	1.06	0	0.1	0	28.952	28.669	0.94	1.41	1.716
01\7 to 01\8	1050	RRJ2	25.34	1	25	1806	0.61	2.34	27.343	27.09	0	0.64	0	0.09	0	28.654	28.444	0.83	1.37	1.186
01\8 to 01\9	1050	RRJ2	12.74	1	25	1893	0.64	2.49	27.09	26.962	0	0.8	0	0.1	0	28.352	28.2	1.19	1.21	1.143
01\9 to 01\10	1050	RRJ2	15.85	1	25	1902	0.64	2.48	26.962	26.804	0	0.59	0	0.08	0	28.167	27.997	1.07	1.06	0.96
01\10 to 01\11	1050	RRJ2	29.15	1	25	1928	0.65	2.23	26.804	26.512	0	0.3	0	0.07	0	27.961	27.812	0.51	1.03	0.988
01\11 to 01\12	1050	RRJ2	17.17	1	25	1938	0.65	2.24	26.512	26.341	0	2.09	0	0.06	0	27.797	27.674	0.72	1.02	0.853
01\12 to 01\13	1200	RRJ2	5.5	0.91	25	2143	0.53	2.03	26.341	26.29	0	1.99	0	0.36	0	27.318	27.2	2.14	0.68	0.906
02\1 to 02\2	375	RRJ2	26.91	2.24	15	3	0.01	0.3	30.882	30.279	0	4.5	0	0	0	30.908	30.358	2.04	0.75	1.143
02\2 to 02\3	375	RRJ2	27.65	1.09	15	19	0.1	0.97	30.279	29.978	0	3.76	0	0	0	30.358	30.076	1.02	0.96	1.343
02\3 to 02\4	375	RRJ2	29.51	1.02	25	29	0.15	1.11	29.978	29.677	0.293	1.96	0	0	0	30.076	30.03	0.16	0.92	1.266
02\4 to 02\5	675	RRJ2	31.77	1.1	25	884	0.92	2.75	29.384	29.033	0.16	0.64	0	0.06	0	29.974	29.656	1	0.9	0.986
02\5 to 02\6	750	RRJ2	13.16	1.75	20	881	0.55	2.61	28.873	28.643	0.10	0.68	0	0	0	29.656	29.596	0.46	1.02	1.042
02\6 to 02\7	900	RRJ2	30.21	1.73	20	1235	0.63	2.72	28.643	28.341	0	0.29	0	0.09	0	29.551	29.463	0.29	0.95	0.971
02\7 to 02\8	900	RRJ2	50.93	1	20	1250	0.64	2.41	28.341	27.832	0	0.25	0	0.08	0	29.428	29.197	0.45	1	0.848
02\% to 02\8	1050	RRJ2	23.18	1	25	1435	0.49	2.03	27.832	27.6	0	0.29	0	0.07	0	29.16	29.104	0.24	0.99	0.757
02\9 to 02\10	1050	RRJ2	11.03	1	25	1452	0.49	2.15	27.6	27.489	0	1.96	0	0.07	0	28.929	28.801	1.16	1.18	0.791
02\10 to 01\7	1050	RRJ2	14.64	1	25	1470	0.43	2.28	27.489	27.343	0	0.66	0	0.08	0	28.792	28.669	0.84	1.4	1.066
03\1 to 02\8	450	RRJ2	11.49	1.92	20	223	0.52	2.51	28.6	28.38	0.548	0.00	0	0.08	0	29.237	29.197	0.35	1.24	1.258
04\1 to 01\4	375	RRJ2	11.49	1.92	25	24	0.32	0.89	32.502	32.392	0.348	4.5	0	0.04	0	32.601	32.482	1.08	0.69	0.938
05\1 to 01\6	375	RRJ2	11	1	25	143	0.13	1.47	29.054	28.944	0.231	4.5	0	0.03	0	29.351	29.186	1.5	1.32	1.07
06\1 to 01\7	375	RRJ2	11	1	15	78	0.73	1.08	28.086	27.976	0.633	4.5	0	0.33	0	28.751	28.669	0.75	1.32	1.077
07\1 to 01\8	375	RRJ2	13.9	1	15		0.41	1.13	27.833	27.694	0.604	4.5	0	0.09	0	28.566	28.444	0.73	1.39	0.902
		RRJ2		1																
08\1 to 01\12	375		27.83	1	15	110	0.58	1.02	27.185	26.906	0.566	0.5	0	0.03	0	27.798	27.674	0.45	1.19	0.975
09\1 to 02\7	375	RRJ2	13.99	1	25	64	0.34	1.02	28.977	28.837	0.496	4.5	0	0.08	0	29.451	29.463	-0.09	1.22	1.261
10\1 to 02\7	375	RRJ2	13.72	1 22	25	53	0.28	0.85	28.839	28.702	0.361	4.5	0	0.07	0	29.455	29.463	-0.06	1.15	0.904
11\1 to 01\2	375	RRJ2	9.41	1.22	25	19	0.09	0.89	32.79	32.675	0.137	4.5	0	0.03	0	32.873	32.75	1.31	0.9	1.175
12\1 to 01\3	375	RRJ2	5.21	2	15	31 7	0.12	1.56	32.95	32.846	0.553	0.2	0	0	0	33.04	32.932	2.07	0.72	1.044
13\1 to 02\2	375	RRJ2	17.34	1	15	•	0.04	0.65	30.472	30.299	0.02	4.5	0	0	0	30.532	30.358	0.03	1.02	1.342
14\1 to 02\4	375	RRJ2	12.32	1	25	25	0.13	0.61	29.667	29.544	0.16	4.5	0	0.05	0	30.034	30.03	0.03	1.02	1.029
15\1 to 15\2	375	RRJ2	11	1	15	14	0.07	0.13	30.323	30.213	0.02	4.5	0		0	30.996	30.99	0.05	1.04	0.75
15\2 to 15\3	375	RRJ2	9.1	1	15	22	0.12	0.2	30.193	30.102	0.02	1.91	0	0	0	30.99	30.982	0.09	1.24	0.755
15\3 to 15\4	375	RRJ2	9.17	1	25	23	0.12	0.2	30.082	29.991	0.02	1.37	0	0	0	30.982	30.971	0.12	1.25	0.855
15\4 to EX 04\1	375	RRJ2	10.64	3.17	15	28	0.08	0.26	29.971	29.633		0.9	0	0	0	30.971	30.956	0.14	1.08	0.538
16\1 to 02\8	375	RRJ2	13.32	1	15	26	0.14	0.83	28.532	28.399	0.567	4.5	0	0.06	0	29.202	29.197	0.04	1.09	0.8
D01\1 to 04\1	375	RRJ2	5.08	2	15	7	0.03	0.67	32.637	32.535	0.033	9.7	0	0	0	32.68	32.631	0.96	0.78	1.363
D02\1 to 05\1	375	RRJ2	6.35	2	25	114	0.42	1.29	29.326	29.199	0.146	9.45	0	0.19	0	29.822	29.683	2.19	1.31	1.486
D03\1 to 06\1	375	RRJ2	5.59	4	15	68	0.18	1.63	28.386	28.163	0.077	9.7	0	0.13	0	28.862	28.778	1.5	1.42	1.464
D04\1 to 07\1	375	RRJ2	5.54	4	15	77	0.2	1.67	28.196	27.975	0.142	9.7	0	0.11	0	28.73	28.6	2.35	1.25	1.34
E01\1 to 02\4	675	RRJ2	12.19	1.58	25	817	0.71	3.17	29.737	29.544	0.16	0.2	0	0.02	0	30.228	30.03	1.62	0.72	1.067
E02\1 to 02\6	900	RRJ2	12.11	1	15	363	0.19	1.09	28.764	28.643	0	6.87	0	0.06	0	29.701	29.596	0.87	1.11	1.333
F01\1 to 01\12	375	RRJ2	5.4	7.77	15	105	0.2	2.32	27.439	27.02	0.679	7	0	0.22	0	27.755	27.674	1.5	1.1	1.09

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971 RICHMOND ROAD, MARSDEN PARK ROAD & DRAINAGE DESIGN

CONSULT AUSTRALIA

Member Firm

DRAINAGE CALCULATIONS SHEET 03 OF 04

Project No. **19-35** Milestone DA Plan **422**

						V	1AJOR ST	ΓORM -	100YR A	RI HYDF	RAULIC C	CALCULA	ATIONS							
PIPE	PIPE	PIPE	PIPE	PIPE	CRITICAL	PEAK	CAPACITY	PEAK	PIPE	PIPE	PIPE	U/S PIT	D/S PIT	PIT LOSS	WSE LOSS	U/S PIPE	D/S PIPE	HGL	MINIMUM	MINIMUM
NAME	DIAMETER	TYPE	LENGTH	GRADE	STORM	FLOW	RATIO	VELOCITY	U/S IL	D/S IL	D/S DROP	Ku	Kw	(Ku.V'head)	(Kw.V'head)	HGL	HGL	GRADE	COVER	FREEBOARD
(-)	(mm)	(-)	(m)	(%)	(min)	(L/s)	(-)	(m/s)	(m)	(m)	(m)	(-)	(-)	(m)	(m)	(m)	(m)	(%)	(m)	(m)
01\1 to 01\2	375	RRJ2	10.55	1	5	20	0.11	0.7	32.664	32.558	0.02	4.5	0	0.01	0	32.776	32.667	1.03	1.07	1.361
01\2 to 01\3	375	RRJ2	22.5	1	15	48	0.25	0.93	32.538	32.313	0.02	1.21	0	0	0	32.667	32.546	0.54	1.09	1.378
01\3 to 01\4	375	RRJ2	13.2	1	15	101	0.53	1.47	32.293	32.161	0.02	2.11	0	0.04	0	32.508	32.355	1.16	1.16	1.274
01\4 to 01\5	375	RRJ2	27.59	3.94	15	141	0.37	3.04	32.141	31.053	0.02	1.02	0	0	0	32.309	31.212	3.98	1.01	1.258
01\5 to 01\6	375	RRJ2	56.75	3.97	15	153	0.4	2.66	31.033	28.779	0.075	0.66	0	0.01	0	31.199	30.038	2.05	1.58	1.936
01\6 to 01\7	450	RRJ2	30.12	2.61	15	364	0.73	2.88	28.704	27.918	0.575	1.23	0	0.17	0	29.989	29.389	1.99	1.41	0.714
01\7 to 01\8	1050	RRJ2	25.34	1	15	2211	0.75	2.55	27.343	27.09	0	0.67	0	0.1	0	29.344	29.058	1.13	1.37	0.465
01\8 to 01\9	1050	RRJ2	12.74	1	15	2341	0.79	2.7	27.09	26.962	0	0.76	0	0.18	0	28.874	28.695	1.41	1.21	0.53
01\9 to 01\10	1050	RRJ2	15.85	1	15	2352	0.79	2.72	26.962	26.804	0	0.57	0	0.1	0	28.591	28.383	1.31	1.06	0.464
01\10 to 01\11	1050	RRJ2	29.15	1	15	2383	0.81	2.75	26.804	26.512	0	0.35	0	0.07	0	28.383	28.093	0.99	1.03	0.602
01\11 to 01\12	1050	RRJ2	17.17	1	15	2404	0.81	2.78	26.512	26.341	0	2.09	0	0.07	0	28.076	27.884	1.12	1.02	0.572
01\11 to 01\12 01\12 to 01\13	1200	RRJ2	5.5	0.91	15	2730	0.68	2.78	26.341	26.29	0	1.93	0	0.56	0	27.33	27.884	2.36	0.68	0.696
02\1 to 02\2	375	RRJ2	26.91	2.24	20	-104	-0.37	1.15	30.882	30.279	0	4.5	0	0.30	0	31.611	31.483	0.48	0.08	0.439
02\1 to 02\2 02\2 to 02\3	375	RRJ2	27.65	1.09	5	-104	-0.37	1.13	30.882	29.978	0	0.88	0	0.22	0	31.524	31.382	0.48	0.73	0.439
02\2 to 02\3 02\3 to 02\4	375	RRJ2	29.51	1.09	90	-170	-0.85	1.81	29.978	29.677	0.293	0.67	0	0.06	0	31.383	31.137	0.83	0.96	-0.041
02\3 to 02\4 02\4 to 02\5	675	RRJ2	31.77	1.02	5	1197	1.25	3.35	29.384	29.077	0.293	0.67	0	0.07	0	31.383	30.74	1.19	0.92	-0.041
02\4 to 02\5 02\5 to 02\6	750	RRJ2	13.16	1.75	10	1086	0.68	2.58	29.384	28.643	0.16	0.53	0	0.22	0	30.736	30.74	0.71	1.02	-0.121
02\5 to 02\6				1.75	5						0		0		0		-		+	+
· · · · · · · · · · · · · · · · · · ·	900	RRJ2	30.21	1		1510	0.77	2.72	28.643	28.341		0.34		0.11	-	30.635	30.365	0.89	0.95	-0.079
02\7 to 02\8	900	RRJ2	50.93	1	20	1428	0.73	2.41	28.341	27.832	0	0.28	0	0.1	0	30.317	30.057	0.51	0.00	-0.056
02\8 to 02\9	1050	RRJ2	23.18	1	20	1703	0.58	2.01	27.832	27.6	0	0.28	0	0.07	0	30.011	29.935	0.33	0.99	-0.102
02\9 to 02\10	1050	RRJ2	11.03	1	20	1722	0.58	2.15	27.6	27.489	0	1.96	0	0.31	0	29.71	29.575	1.22	1.18	-0.074
02\10 to 01\7	1050	RRJ2	14.64	1 1 02	20	1788	0.6	2.22	27.489	27.343	0	0.67	0	0.11	0	29.546	29.389	1.07	1.4	0.293
03\1 to 02\8	450	RRJ2	11.49	1.92	5	336	0.79	2.64	28.6	28.38	0.548	0.2	0	0.04	0	30.179	30.057	1.06	1.24	0.314
04\1 to 01\4	375	RRJ2	11	1	15	32	0.17	0.95	32.502	32.392	0.251	4.5	0	0.04	0	32.617	32.497	1.09	0.69	0.912
05\1 to 01\6	375	RRJ2	11	1	15	189	0.99	1.77	29.054	28.944	0.24	4.5	0	0.58	0	30.24	30.038	1.84	1.32	-0.052
06\1 to 01\7	375	RRJ2	11	1	15	119	0.63	1.11	28.086	27.976	0.633	4.5	0	0.17	0	29.526	29.389	1.25	1.39	0.158
07\1 to 01\8	375	RRJ2	13.9	1	15	127	0.67	1.15	27.833	27.694	0.604	4.5	0	0.19	0	29.235	29.058	1.27	1.29	0.078
08\1 to 01\12	375	RRJ2	27.83	1	15	126	0.66	1.14	27.185	26.906	0.566	0.5	0	0.03	0	28.08	27.884	0.7	1.19	0.693
09\1 to 02\7	375	RRJ2	13.99	1	5	-129	-0.68	1.17	28.977	28.837	0.496	4.5	0	0.11	0	30.37	30.365	0.04	1.22	0.337
10\1 to 02\7	375	RRJ2	13.72	1	5	180	0.95	1.63	28.839	28.702	0.361	4.5	0	0.49	0	30.144	30.244	-0.73	1.15	0.224
11\1 to 01\2	375	RRJ2	9.41	1.22	15	21	0.1	0.91	32.79	32.675	0.137	4.5	0	0.03	0	32.877	32.754	1.31	0.9	1.168
12\1 to 01\3	375	RRJ2	5.21	2	15	44	0.16	1.72	32.95	32.846	0.553	0.2	0	0	0	33.058	32.948	2.11	0.72	1.025
13\1 to 02\2	375	RRJ2	17.34	1	20	-169	-0.89	1.55	30.472	30.299	0.02	4.5	0	0.1	0	31.469	31.524	-0.32	1.02	0.405
14\1 to 02\4	375	RRJ2	12.32	1	5	-67	-0.35	0.61	29.667	29.544	0.16	4.5	0	0.06	0	31.139	31.137	0.02	1.02	-0.07
15\1 to 15\2	375	RRJ2	11	1	5	19	0.1	0.17	30.323	30.213	0.02	4.5	0	0.01	0	30.997	30.991	0.05	1.04	0.749
15\2 to 15\3	375	RRJ2	9.1	1	5	30	0.16	0.27	30.193	30.102	0.02	1.9	0	0.01	0	30.991	30.983	0.09	1.24	0.754
15\3 to 15\4	375	RRJ2	9.17	1	5	30	0.16	0.27	30.082	29.991	0.02	1.37	0	0.01	0	30.983	30.971	0.13	1.25	0.855
15\4 to EX 04\1	375	RRJ2	10.64	3.17	5	38	0.11	0.35	29.971	29.633		0.9	0	0.01	0	30.971	30.956	0.14	1.08	0.538
16\1 to 02\8	375	RRJ2	13.32	1	10	113	0.6	1.03	28.532	28.399	0.567	4.5	0	0.13	0	30.099	30.057	0.32	1.09	-0.123
D01\1 to 04\1	375	RRJ2	5.08	2	15	11	0.04	0.72	32.637	32.535	0.033	9.7	0	0	0	32.687	32.657	0.59	0.78	1.356
D02\1 to 05\1	375	RRJ2	6.35	2	15	160	0.6	1.45	29.326	29.199	0.146	8.96	0	0.21	0	30.954	30.805	2.35	1.31	0.384
D03\1 to 06\1	375	RRJ2	5.59	4	15	99	0.26	1.6	28.386	28.163	0.077	8.02	0	0.14	0	29.726	29.697	0.52	1.42	0.577
D04\1 to 07\1	375	RRJ2	5.54	4	15	111	0.29	1.63	28.196	27.975	0.142	8.57	0	0.14	0	29.52	29.425	1.71	1.25	0.535
E01\1 to 02\4	675	RRJ2	12.19	1.58	5	1138	0.99	3.19	29.737	29.544	0.16	0.2	0	0.09	0	31.3	31.137	1.34	0.72	-0.002
E02\1 to 02\6	900	RRJ2	12.11	1	5	616	0.31	1.23	28.764	28.643	0	6.69	0	0.23	0	30.759	30.643	0.96	1.11	0.217
F01\1 to 01\12	375	RRJ2	5.4	7.77	15	148	0.28	2.32	27.439	27.02	0.679	7	0	0.21	0	28.143	27.884	4.79	1.1	0.781

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971 RICHMOND ROAD, MARSDEN PARK ROAD & DRAINAGE DESIGN

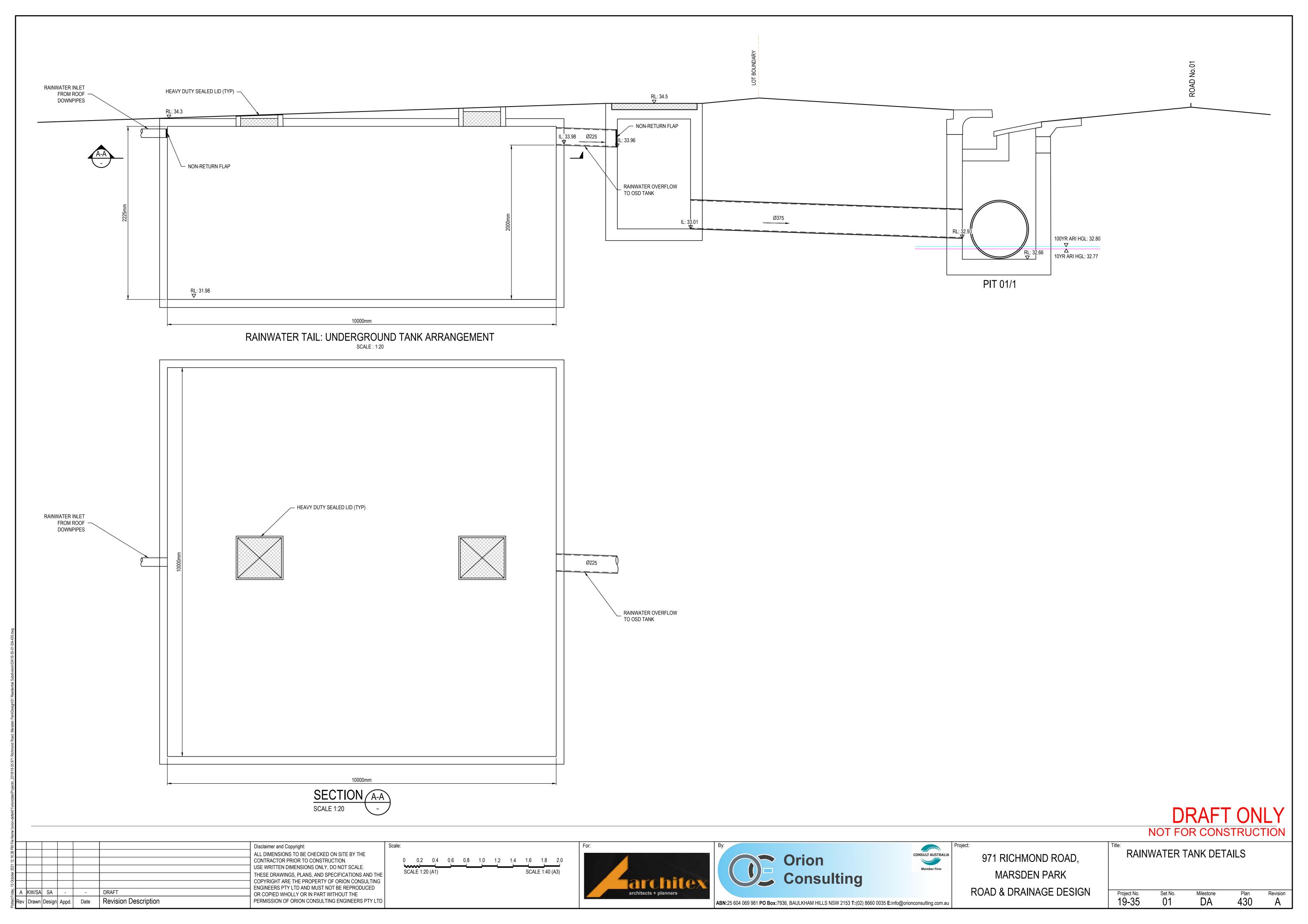
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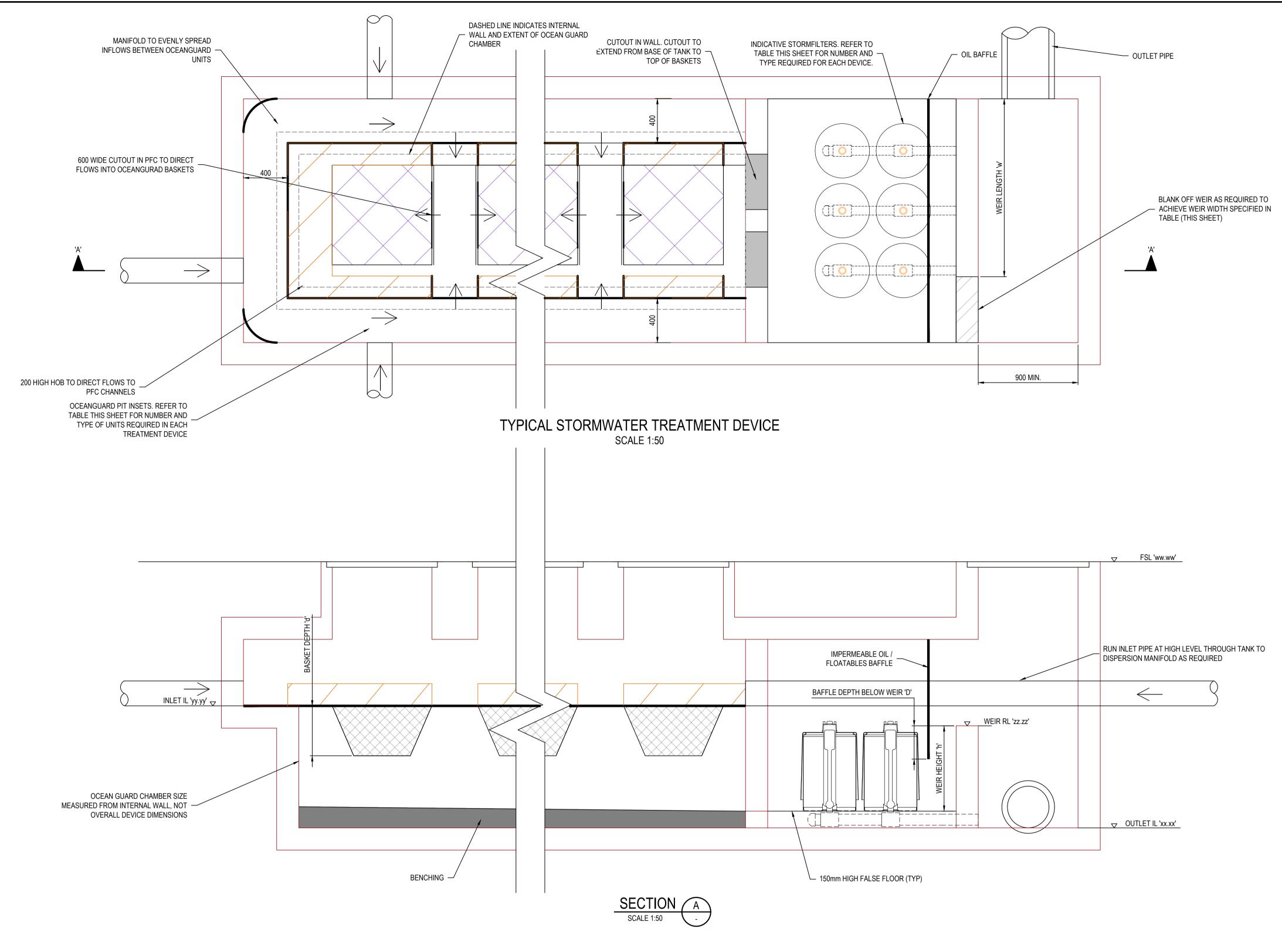
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Project No. **19-35**

Milestone DA Plan **423**





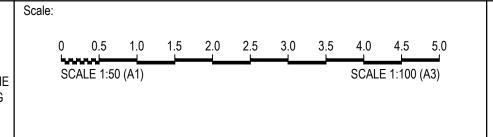
STORMWATER WATER TREATMENT DEVICE SLIMMARY TARLE

STORIVIVAT	ER WATER II	REATMENT D	EVICE SUMMAN	RYTABLE																	
DEVICE	CATCHMENT			LE	VELS								OCEAN G	UARD			STC	RMFILTERS		OVERALL PLAN	N DIMENSIOS
NAME	AREA	OUTLET	FALSE FLOOR	DS 1EY HGL	INLET	WEIR	TANK SOFFIT	F.S.L.	WEIR HEIGHT	LENGTH	OIL BAFFLE DEPTH	NO.	TYPE	BASKET DEPTH	NO.	TYPE	TOTAL CARTRIDGE	CARTRIDGE CHAMBER	HYDRAULIC LOADING	LENGTH	WIDTH
		'xx.xx'			'yy.yy'	'zz.zz'		'ww.ww'	'h'		'D'			'd'	CARTRIDGES		AREA	AREA	RATE (TSS)	'a'	'b'
(-)	(Ha)	(mAHD)	(mAHD)	(mAHD)	(mAHD)	(mAHD)	(mAHD)	(mAHD)	(m)	(m)	(m)	(-)	(-)	(m)	(-)	(-)	(m2)	(m2)	(kg/yr/CARTRIDGE)	(m)	(m)
TANK No.01	0.593	28.60	28.80	28.77	29.50	29.34	30.00	30.30	0.54	3.5	0.3	6	L2	0.45	14	Standard - 460	5.0	15.4	21.1	5.0	3.8
TANK No.02	0.079	29.95	33.15	33.01	33.70	33.54	34.20	34.30	0.39	0.71	0.2	1	L2	0.45	4	Small - 310	0.6	2.93	11.7	2.6	1.5

FOR DEVELOPMENT APPLICATION

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971 RICHMOND ROAD, MARSDEN PARK **ROAD & DRAINAGE DESIGN**

WATER QUALITY DEVICE DETAILS Project No. **19-35** Milestone DA Plan **450**