

# WALLACIA COUNTRY CLUB

## CIVIL, STORMWATER & WSUD DEVELOPMENT APPLICATION



**LOCALITY AERIAL**  
NOT TO SCALE

SOURCE : GOOGLE EARTH

DRAWING SCHEDULE		
DRG. No.	DRAWING TITLE	REV.
C1.00 Arrangement and Overview Plans		
C1.01	Cover Sheet	5
C1.02	Specification Notes	4
C1.03	General Arrangement Plan Sheet 1 of 2	5
C1.04	General Arrangement Plan Sheet 2 of 2	5
C2.00 Sediment and Erosion Control		
C2.01	Sediment and Erosion Control Plan	4
C2.02	Sediment and Erosion Control Details	4
C6.00 Stormwater Drainage		
C6.01	Stormwater Layout Plan Sheet 1 of 2	7
C6.02	Stormwater Layout Plan Sheet 2 of 2	6
C6.03	Stormwater Catchment Plan	6
C6.04	Pit Schedule	6
C6.05	On Site Detention (OSD) Tank Plan	5
C6.06	On Site Detention (OSD) Tank Sections	5
C6.07	Stormwater Drainage Details	4

Plot Date: 09/03/2020 11:41:59 Login Name: HCS/gpa Cad File: I:\6675000\Drawings\Wallacia\DWG\Civil\DCDC1.01 Cover Sheet.dwg

CLIENT  
**St Johns Park Bowling Club**

PROJECT MANAGER

ARCHITECT  
**Axilarchitects**  
Architecture | Interior Design | Planning

**Warren Smith**  
Consulting Engineers

**WARREN SMITH CONSULTING ENGINEERS PTY LTD** **SINCE 1981.**

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GLOBAL COMPLIANCE CERTIFICATION  
**GCC**  
ISO 9001 Certified

**Serving the Construction Industry since 1981.**

TITLE  
**COVER SHEET**

SCALE AS SHOWN	DRAWN M.Cz.	DESIGNED M.Cz.	CHECKED J.G.	APPROVED
JOB No. <b>6675000</b>	DRAWING No. <b>C1.01</b>		ISSUE <b>5</b>	
DATE DECEMBER 2019	STATUS DEVELOPMENT APPLICATION			

Plot Date

**GENERAL**

- G1. DESIGN HEREIN HAS BEEN PREPARED BY WARREN SMITH AND PARTNERS PTY LTD CONSULTING CIVIL ENGINEERS, LEVEL 9, 233 CASTLEREAGH ST, SYDNEY NSW 2000. TEL:- (02) 9299 1312, FAX:- (02) 9290 1295.
- G2. THE DRAWINGS HEREIN SHALL BE READ AS REQUIRED IN CONJUNCTION WITH ARCHITECT DRAWINGS BY: AXIL ARCHITECTS SUIT 27, 2 BEATTIE ST BALMAIN, NSW 2041 TEL: (02) 9555 1100
- G3. ALL DIMENSIONS IN MILLIMETRES UNO, REDUCED LEVELS AND CHAINAGES ARE IN METRES. DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS.
- G4. THE PROPOSED WORKS DETAILED HEREIN SHALL BE CONSTRUCTED TO THE REQUIREMENTS OF COUNCIL GENERALLY AS DETAILED HEREUNDER.
- G5. ALL EXISTING SERVICES SHALL BE VERIFIED FOR DEPTH AND HORIZONTAL POSITION BY PHYSICAL MEANS PRIOR TO EXCAVATION. ANY DISCREPANCIES SHALL BE BROUGHT FORTHWITH TO THE PROJECT MANAGER'S ATTENTION.
- G6. REFERENCE SHALL BE MADE TO THE CONSTRUCTION MANAGEMENT PLAN FOR ALL SITE WORKS DETAILED HEREIN.

**STORMWATER & SUB-SOIL DRAINAGE MATERIALS:**

- STW1. PIPES AND FITTINGS FOR STORMWATER DRAINAGE SHALL BE AS FOLLOWS UNO ON THE DRAWINGS:
  - A. SEWER GRADE uPVC (SN8) WITH SOLVENT WELDED JOINTS FOR BELOW GROUND DRAINAGE. UP TO 225mm.
  - B. REINFORCED CONCRETE WITH RUBBER RINGS. CLASS 3, FOR PIPE DIA'S GREATER THAN 225mm OR WHERE REQUIRED BY AS3500 FOR EXCESSIVE DEPTH.
  - C. INSTALL IN ACCORDANCE WITH AUSTRALIAN STANDARD AS3500 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
- STW2. PIPES & FITTINGS FOR SUBSOIL DRAINAGE SHALL BE SLOTTED POLYVINYL CHLORIDE (PVC) WITH SOLVENT WELDED JOINTS, MIN. 150mm DIAMETER.
- STW3. IN GROUND DRAINAGE PIPEWORK SERVING DP'S SHALL BE MINIMUM 150mm DIA. UNO.
- STW4. GRATED DRAINS SHALL BE 150mm NOM.
  - A. 150mm NOM. WIDTH IN NON TRAFFICABLE AREAS.
  - B. 225mm NOM. WIDTH IN TRAFFICABLE AREAS.
- STW5. STORMWATER PITS ARE AS SHOWN & SPECIFIED ON THE PLANS. PRECAST TYPE ACCEPTABLE WITH STEP IRONS FOR DEPTH GREATER THAN 1200. BENCH ALL PITS MIN. 50mm & FORM SMOOTH TRANSITION FROM INLET TO OUTLET.
- STW6. SELECT FILL SHALL BE MATERIAL OBTAINED FROM EXCAVATION OF THE PIPE TRENCH OR IMPORTED WITH A PARTICLE SIZE FOR ROCK NOT GREATER THAN 75mm OR FOR OTHER THAN ROCK NOT GREATER THAN 150mm.
- STW7. IMPORTED FILL SHALL BE EITHER, AND GENERALLY CONSIST OF SINGLE SIZED AGGREGATE WITH PARTICLE SIZE NOT GREATER THAN 5mm WRAPPED ALL ROUND WITH GEOTEXTILE FILTER FABRIC OR APPROVED HIGH COMPACTION SAND OR APPROVED CRUSHED ROAD GRAVEL CONFORMING TO RTA FORM 3051 OR SIMILAR.
- STW8. STORMWATER PITS AND GRATES TO CONFORM WITH STANDARD COUNCIL REQUIREMENTS, WHERE ON PUBLIC LAND. GRATES TO BE SUPPLIED IN CLASS SHOWN ON THE DRAWINGS.

**INSTALLATION REQUIREMENTS:**

- STW9. PIPES SHALL BE TRUE TO GRADES SHOWN AND ALIGNED SO THAT THE CENTRES OF THE INLET PIPES INTERSECT WITH THE CENTRE OF THE OUTLET PIPE AT THE DOWNSTREAM FACE OF THE PIT.
- STW10. MINIMUM GRADES FOR GRAVITY STORMWATER DRAINAGE SHALL CONFORM TO AS3500 PART3 AS FOLLOWS, UNO:
  - 1% FOR 100 AND 150 mm DIA.
  - 0.5% FOR 225 mm DIA
  - 0.5% FOR 300 mm DIA
  - 0.4% FOR 375 mm DIA
- STW11. MINIMUM DEPTH OF COVER SHALL BE :-
  - 300mm IN PRIVATE PROPERTY (NON VEHICULAR TRAFFIC).
  - 450mm IN PUBLIC AREAS.
  - 600mm IN VEHICULAR TRAFFICABLE AREAS (FOOTWAY/ROADWAY)

- STW12. BED ALL PIPES FIRMLY AND EVENLY ONTO IMPORTED BEDDING FILL MATERIAL.
- STW13. LAY AND JOINT ALL PIPES IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND AS 3725-1989 BURIED FLEXIBLE PIPELINES AS 2666-1998 LOADS ON BURIED FLEXIBLE PIPELINES AS 1597.2-1996 PRECAST REINFORCED CONCRETE BOX CULVERTS. AS 3500-1990 NATIONAL PLUMBING & DRAINAGE CODE. PART 2. SANITARY PLUMBING AND SANITARY DRAINAGE. SYDNEY WATER REQUIREMENTS.
- STW14. ALLOW TO TEST ALL PIPES AND PITS TO MANUFACTURERS REQUIREMENTS.

**CONCRETE WORKS**

- C1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600, THE STANDARDS ASSOCIATION AUSTRALIA, STANDARDS CITED IN AS3600, THE DRAWINGS AND THE SPECIFICATION.
- C2. ALL CONCRETE SHALL BE 80mm NOMINAL SLUMP, 20mm MAXIMUM AGGREGATE WITH NO ADMIXTURES OR FLY ASH. UNLESS OTHERWISE APPROVED. ALL CONCRETE WORK IN CONTACT WITH SEWER TO HAVE TYPE SL PORTLAND CEMENT, OTHERWISE TYPE A CEMENT FOR BRIDGE WORKS, A MAXIMUM 56 DAYS SHRINKAGE OF 600 MICROSTRAIN, A MINIMUM CEMENT CONTENT 350kg/m3 AND MAXIMUM WATER:CEMENT RATIO OF 0.40.
- C3. STRENGTH GRADE OF CONCRETE SHALL BE : 25 MPa (KERBS, EDGE STRIPS & CONCRETE ENCASMENT) AND 32 MPa ELSEWHERE.
- C4. CONSTRUCTION JOINTS SHALL BE PROPERLY FORMED AND USED ONLY WHERE SHOWN OR APPROVED. GENERALLY FOR HAND PLACED KERB & GUTTER 6mm THICK APPROVED BITUMINOUS MASTIC JOINTING MATERIAL SHALL BE PROVIDED AT INTERVALS NOT EXCEEDING 6m. FOR MACHINE PLACED KERB & GUTTER 6mm THICK APPROVED BITUMINOUS MASTIC JOINTING MATERIAL SHALL BE PROVIDED AT INTERVALS NOT EXCEEDING 12m & GUILLOTINED DUMMY GROOVED JOINTS, 25mm IN DEPTH, SHALL BE FORMED EVERY 3m OF GUTTER. JOINTS ARE ALSO REQUIRED AT EACH END OF GUTTER CROSSING AND GULLY PITS. JOINTS SHALL BE SET VERTICAL AND SQUARE TO THE KERB.
- C5. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.
- C6. ELDING OR SPLICES IN REINFORCEMENT SHALL BE USED ONLY IN POSITIONS APPROVED BY THE ENGINEER.
- C7. CONCRETE CURING SHALL BE IN ACCORDANCE WITH AS3600. CURING SHALL BE COMMENCED WITHIN TWO HOURS OF FINISHING OPERATIONS AND SHALL BE CONTINUED FOR A MINIMUM OF SEVEN DAYS BY AN APPROVED PROPRIETARY COMPOUND OR BY KEEPING CONTINUOUSLY WET.
- C8. FORMWORK SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH AS3610. FORMWORK SHALL NOT BE STRIPPED NOR PROPS REMOVED WITHOUT APPROVAL.
- C9. FABRIC LAP DETAILS SHALL BE IN ACCORDANCE WITH FIG.13.2.4 OF AS3600.
- C10. HOOKS, LAPS AND BENDS SHALL BE IN ACCORDANCE WITH AS3600 UNO.
- C11. ALL CHEMICAL ANCHORS SHALL BE EITHER 'CHEMSET' BY 'RAMSET' WITH THE GLASS CAPSULE SYSTEM INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS OR HILTI HVU ADHESIVE ANCHOR WITH FOIL CAPSULE SYSTEM INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS INSTRUCTION.
- C12. ALL CHEMICAL ANCHORS SHALL BE HOT DIPPED GALVANIZED AND BE MIN M16 DIA. U.N.O.

**GENERAL EARTHWORKS, SITEWORKS & FILLING:**

- SGE1. THESE CLAUSES SHALL BE READ IN CONJUNCTION WITH THE GEOTECHNICAL INVESTIGATION REPORT.
- SGE2. THE RECOMMENDATIONS CONTAINED IN THE GEOTECH REPORT SHALL OVERRIDE THE CLAUSES PRESENTED HEREIN.
- SGE3. STRIP ALL TOPSOIL AND UNDERLYING FILL AND STOCKPILE TOPSOIL FOR LATER REUSE FOR LANDSCAPING PURPOSES.
- SGE4. NEW FILL REQUIRED TO REINSTATE CUT LEVELS TO PROPOSED BENCHING LEVELS SHALL BE SOURCED FROM OTHER PARTS OF THE EXCAVATION AS SELECT FILL OR IMPORTED FILL AS SPECIFIED BELOW IN SGE 5 AND SGE 6.
- SGE5. SELECT FILL SHALL CONSIST OF LOCALLY DERIVED OR

- SGE6. CUT NATURAL CLAYS. IMPORTED FILL SHALL CONSIST OF RIPPED SANDSTONE OR SHALE OR SIMILAR MATERIAL WITH MAXIMUM PARTICLE SIZE NOT GREATER THAN 120mm AND A MOISTURE CONTENT WITHIN 2-3% OF STANDARD OPTIMUM.
- SGE7. ALL FILL (COHESIVE SOIL) SHALL BE PLACED IN LAYERS OF 200mm MAXIMUM THICKNESS, COMPACTED BY MACHINE ROLLING TO ACHIEVE A DRY DENSITY RATIO OF NOT LESS THAN 98% STANDARD MAXIMUM AT A CORRESPONDING MOISTURE CONTENT WITHIN 2-3% OF STANDARD OPTIMUM.
- SGE8. IN AREAS WHERE HIGH IMPACT ROLLING IS USED TEST EACH FINAL LAYER OF NOT GREATER THAN 300mm TO 400mm TO ACHIEVE A DRY DENSITY SGE8. RATIO OF NOT LESS THAN 98% STANDARD MAXIMUM AT A CORRESPONDING MOISTURE CONTENT WITHIN 2-3% OF STANDARD OPTIMUM.
- EXCAVATION BATTERS:
  - SGE9. ALL TEMPORARY BATTERS CUT IN CLAY SUBSTRATE SHALL BE 1 HORIZ : 1 VERT. ALL LONG TERM EXPOSED BATTERS CUT IN CLAY SUBSTRATE SHALL BE 2 HORIZ : 1 VERT. ALL DETENTION BASIN BATTERS IN CLAY SUBSTRATE SHALL BE 3 HORIZ : 1 VERT. ALL DETENTION BASIN BATTERS IN ROCK SUBSTRATE SHALL BE NEAR VERTICAL.
  - SGE10. GEOTECHNICAL TESTING IS TO BE UNDERTAKEN TO AT LEAST LEVEL 1 CONTROL OF FILL COMPACTION STANDARD, AS DEFINED IN AS. 3738 AS FOLLOWS
    - FOR GENERAL FILL OR CUT AREAS OVER THE AREA PROVIDE ONE (1) TEST PER 200mm LAYER, OVER AN AREA NOT GREATER THAN 500 sqm
    - FOR GENERAL FILL AREAS IN CONCENTRATED AREAS ADJACENT TO AND BEHIND THE STRUCTURE AND ADJACENT TO AND BEHIND RETAINING WALLS PROVIDE ONE (1) TEST PER 200mm LAYER, OVER AN AREA NOT GREATER THAN 50m<sup>2</sup>
  - SGE11. SUBMIT ALL GEOTECHNICAL TEST RESULTS TO WARREN SMITH & PARTNERS FOR REVIEW PRIOR TO CONTINUATION WITH SUBSEQUENT SECTION OF WORK.

**EARTH WORKS FOR SERVICES**

- E1. EXCAVATE TRENCHES AND STOCKPILE ALL MATERIAL FOR INSPECTION WITH REGARD TO RE-USE FOR TRENCH BACKFILL. REMAINING MATERIAL TO BE REMOVED FROM SITE.
- E2. BEDDING MATERIAL SHALL CONSIST OF IMPORTED FILL ONLY. THICKNESS OF BEDDING LAYER SHALL BE 75mm IN O.T.R. AND 200mm IN ROCK.
- E3. EMBED ALL PIPES WITH IMPORTED FILL. PROVIDE 200mm SIDE SUPPORT AND 150mm OVERLAY ABOVE PIPE CROWN.
- E4. TRENCH FILL ABOVE THE EMBEDMENT ZONE TO THE UNDERSIDE OF THE ROAD PAVEMENT OR FOOTWAY FILL MATERIAL SHALL BE AS FOLLOWS :

**UNDER ROADWAY**

- TRENCH FILL MATERIAL SHALL CONSIST OF IMPORTED FILL AS SPECIFIED HEREIN OF EITHER HIGH GRADE COMPACTION SAND OR APPROVED CRUSHED ROAD GRAVEL CONFORMING TO RTA FORM 3051 OR SIMILAR.

**OTHER THAN ROADWAY**

- TRENCH FILL MATERIAL EXCAVATED SHALL CONSIST OF SELECT FILL AS SPECIFIED HEREIN AND SHALL NOT CONTAIN MORE THAN 20% OF STONES OF SIZE BETWEEN 75mm & 150mm AND NONE LARGER THAN 150mm. PRIOR TO THE USE OF THE EXCAVATED MATERIAL IT SHALL BE INSPECTED AND APPROVED BY THE CONSULTANT.
- E5. COMPACT BEDDING, EMBEDMENT AND TRENCH FILL MATERIALS AS FOLLOWS:
  - EMBEDMENT- FOR GRANULAR FILL MATERIAL (NON-COHESIVE SOILS) EG. COARSE AGGREGATE FILL. HIGH GRADE COMPACTION SAND. THE DENSITY INDEX (ID) SHALL BE NOT LESS THAN 70%.
  - TRENCH FILL- FOR GRANULAR MATERIAL (NON-COHESIVE SOILS), THE DENSITY INDEX (ID) SHALL BE NOT LESS THAN 70%.
  - FOR NON-GRANULAR FILL MATERIAL (COHESIVE SOILS), THE DRY DENSITY RATIO (RD) SHALL BE NOT LESS THAN 95%.
- E6. MEASURE OF COMPACTION- THE DEGREE OF COMPACTION SHALL BE MEASURED BY ONE OF THE FOLLOWING PARAMETERS :-
  - GRANULAR FILL (NON-COHESIVE SOILS). THE DENSITY

- INDEX (ID) DETERMINED IN ACCORDANCE WITH AS 1289.E5.1 BASED ON THE MAXIMUM AND MINIMUM DRY DENSITIES IN ACCORDANCE WITH AS 1289.E5.1 AND THE FIELD DRY DENSITY IN ACCORDANCE WITH AS 1289.5.3.2, AS 1289.E3.5 OR AS 1289.E8.1.

- NON-GRANULAR FILL (COHESIVE SOILS). THE DRY DENSITY RATION (RD) DETERMINED IN ACCORDANCE WITH AS 1289.5.4.1 BASED ON THE FIELD DRY DENSITY IN ACCORDANCE WITH AS 1289.5.3.2 AND THE MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289.5.1.1

- E7. GEOTECHNICAL TESTING IS TO BE UNDERTAKEN TO AT LEAST LEVEL 1 CONTROL OF FILL COMPACTION STANDARD, AS DEFINED IN AS. 3738 AS FOLLOWS:
  - TEST EACH 300mm LAYER ABOVE PIPE CROWN.
  - TEST BASE & SUB-BASE LAYERS WHERE APPLICABLE.
  - TESTS SHALL BE REQUIRED AT EACH 50m CENTRES WHERE THE LENGTH OF TRENCH IS WITHIN THE 50m REQUIREMENT.
- E8. SUBMIT ALL GEOTECHNICAL TEST RESULTS TO WARREN SMITH & PARTNERS FOR REVIEW PRIOR TO CONTINUATION WITH SUBSEQUENT SECTION OF WORK.

**RESTORATION:**

- RES1. RESTORE ALL TRAFFIC AREAS TO PRE EXISTING CONDITION.
- RES2. FOR ALL SURFACES OTHER THAN IN TRAFFIC AREAS RESTORE DISTURBED SURFACES TO PRE-EXISTING CONDITIONS AND COMPACT AS SPECIFIED.
- RES3. RESTORE ALL AUTHORITY OWNED AREAS TO COUNCIL STANDARDS

**ROAD WORKS, DRIVEWAYS & CARPARKS**

- R1. ALLOW FOR LEVEL 2 TESTING AND SUB-GRADE CONDITIONS & PAVEMENT THICKNESS TO BE VERIFIED BY GEOTECHNICAL CONSULTANT AFTER INSPECTION OF PRELIMINARY BOXING.
- R2. ALLOW FOR ANY SUB-GRADE REPLACEMENT WORK TO BE DETERMINED AS REQUIRED BY GEOTECHNICAL CONSULTANT AT THE TIME OF PAVEMENT CONSTRUCTION.
- R3. MINIMUM DRY DENSITY RATIOS (AS 1289 3.4.1-1993) TO BE:
 

BASE COURSE:	98% MODIFIED
SUB-BASE:	95% MODIFIED
SUB-GRADE:	100% STANDARD
SUB-GRADE REPLACEMENT:	100% STANDARD
- R4. PAVEMENT MATERIALS TO COMPLY WITH RMS SPECIFICATION No. 3051 OR SIMILAR AS APPROVED BY GEOTECHNICAL CONSULTANT.
- R5. PROVIDE (1) TEST FOR EACH LAYER NOT EXCEEDING 250mm THICK BEING BASECOURSE, SUB-BASE & SUB-GRADE OVER AN AREA NOT GREATER THAN 500m<sup>2</sup>
- R6. SUBMIT ALL GEOTECHNICAL TEST RESULTS TO WARREN SMITH & PARTNERS FOR REVIEW PRIOR TO CONTINUATION WITH SUBSEQUENT SECTION OF WORK.

**APPROVALS**

- A1. THE AS CONSTRUCTED WORKS SHALL BE INSPECTED BY DESIGN CONSULTANT. MINIMUM 48 HOURS NOTICE SHALL APPLY TO ALL INSPECTIONS.
- A2. THE DESIGN PLANS HEREIN ARE SUBJECT TO LOCAL COUNCIL APPROVAL PRIOR TO CONSTRUCTION. OBTAIN EXPRESS (WRITTEN) ADVICE TO PROCEED FROM PROJECT MANAGER PRIOR TO COMMENCEMENT.
- A3. SUBMIT WORK-AS-EXECUTED DRAWINGS IN CIVILCAD OR DXF DIGITAL FORMAT AND HARD COPY FORMAT. VERIFY ALL CONSTRUCTION WORKS SHOWN HEREON.
- A4. CERTIFY THAT THE AS CONSTRUCTED SYSTEM HAS BEEN BUILT IN ACCORDANCE WITH THE APPROVED PLANS ISSUED FOR CONSTRUCTION.

**SERVICES UNDER ROAD SURFACES**

- S1. ALL OTHER SERVICES INCLUDING BUT NOT LIMITED TO WATER, HYDRANT, GAS, SEWER, ELECTRICAL AND COMMUNICATIONS CONDUITS OR CABLES SHALL BE LAID WITH MINIMUM 600mm U.N.O. COVER BELOW PROPOSED ROAD SURFACE OR APPROVED OTHER MEANS TO PROTECT DURING CONSTRUCTION.

**ROAD SIGNS & LINE MARKING**

- RS1. ALL SIGNS AND LINEMARKING SHALL BE TO ROADS & TRAFFIC AUTHORITY STANDARDS AND SPECIFICATIONS AND AS.1742, MANUAL OF UNIFORM TRAFFIC CONTROL

**DEVICES**

- RS2. ALL LINEMARKING SHALL BE AUGMENTED BY RETROREFLECTIVE RAISED PAVEMENT MARKERS (RRPMs) AND ALL SHALL BE TO AS 1742.2 - 1994 AND AS 1742.2 /AMDT 1/1997-10-05
- RS3. ALL ROAD SIGNS AND POSTS SHALL BE TO AS 1742.2 - 1994 AND AS 1742.2 /AMDT 1/1997-10-05

**PROTECTION OF FLORA - REFER SPECIFICATION**

- 1. ANY TRENCHES WITHIN 3m OF TREES SHALL BE HAND DUG TO AVOID DAMAGE TO TREE ROOTS.
- 2. IF IT IS CONSIDERED NECESSARY TO PERFORM ANY WORK ON TREES, INCLUDING TRIMMING, LOPPING, ROOT CUTTING, REPAIR AND REMOVAL, APPLICATION IN WRITING SHALL BE MADE BY THE CONTRACTOR TO THE SUPERINTENDENT. ANY WORK PERMITTED TO BE DONE ON TREES TO BE RETAINED SHALL BE PERFORMED IN ACCORDANCE WITH THE ARBORISTS REPORT.
- 3. MATURE TREES AND SHRUBS ARE TO BE REMOVED IN ACCORDANCE WITH THE ARBORISTS REPORT.

**AUTHORITY STANDARDS**

- LGA 1. THE DRAWINGS HEREIN SHALL BE READ IN CONJUNCTION WITH PENRITH CITY COUNCIL STANDARDS & SPECIFICATIONS WHICH SHALL OVERRIDE SPECIAL DETAILS SHOWN ON THE DRAWINGS.

**TRAFFIC NOTE:**

- 1. A TRAFFIC CONTROL PLAN IS TO BE PREPARED BY AN ACCREDITED RMS 1. TRAFFIC CONTROLLER AND SUBMITTED TO COUNCIL. THIS TRAFFIC PLAN IS TO BE CERTIFIED BY AND IMPLEMENTED TO THE SATISFACTION OF AN ACCREDITED RMS TRAFFIC CONTROLLER

**PRIOR TO COMMENCEMENT OF WORK**

- 2. ALL TRAFFIC CONTROL WORKS SHALL ONLY BE CARRIED OUT BY 2. ACCREDITED RMS TRAFFIC CONTROLLERS.

**CLOSED CIRCUIT COLOUR TV (CCTV)**

- CCTV 1. UNDERTAKE A CCTV INSPECTION OF ALL THE COMPLETED DRAINAGE IN ACCORDANCE WITH THE GUIDELINES OF THE AUSTRALIAN CONDUIT CONDITION EVALUATION MANUAL (ACCEM)
- CCTV 2. APPLY THE FOLLOWING REQUIREMENTS TO THE CCTV INSPECTION:-
  - A. USE DATA CAPTURE SOFTWARE APPROVED BY SYDNEY WATER
  - B. USE CERTIFIED CCTV OPERATORS C. THE CCTV FOOTAGE SHALL BE OF QUALITY TO ALLOW ACCURATE ASSESSMENT OF THE INTERNAL CONDITION OF THE PIPE. FURNISH TO THE DESIGN CONSULTANT.-
- CCTV 3.
  - A. VIDEOS IN MPG FORMAT
  - B. CCTV REPORT AND SURVEY DATA IN PDF FORMAT

**PROTECTION OF TREES**

- T1. WHERE STORMWATER DRAINAGE IS LAID WITHIN THE VICINITY OF TREES /CANOPIES OF TREES, WORK IS TO BE COMPLETED TO THE PROJECT ARBORISTS REQUIREMENTS AND SPECIFICATIONS.

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REVISION	AMENDMENT	DATE	REVISION	AMENDMENT	DATE
1	DRAFT DEVELOPMENT APPLICATION	26/11/19			
2	DEVELOPMENT APPLICATION	06/12/19			
3	RE-ISSUE FOR DEVELOPMENT APPLICATION	24/03/21			
4	RE-ISSUE FOR DEVELOPMENT APPLICATION	09/03/22			

**St Johns Park**  
Bowling Club

---

**WALLACIA COUNTRY CLUB**

PREPARED BY

**Warren Smith**  
Consulting Engineers

**WARREN SMITH CONSULTING ENGINEERS PTY LTD**  
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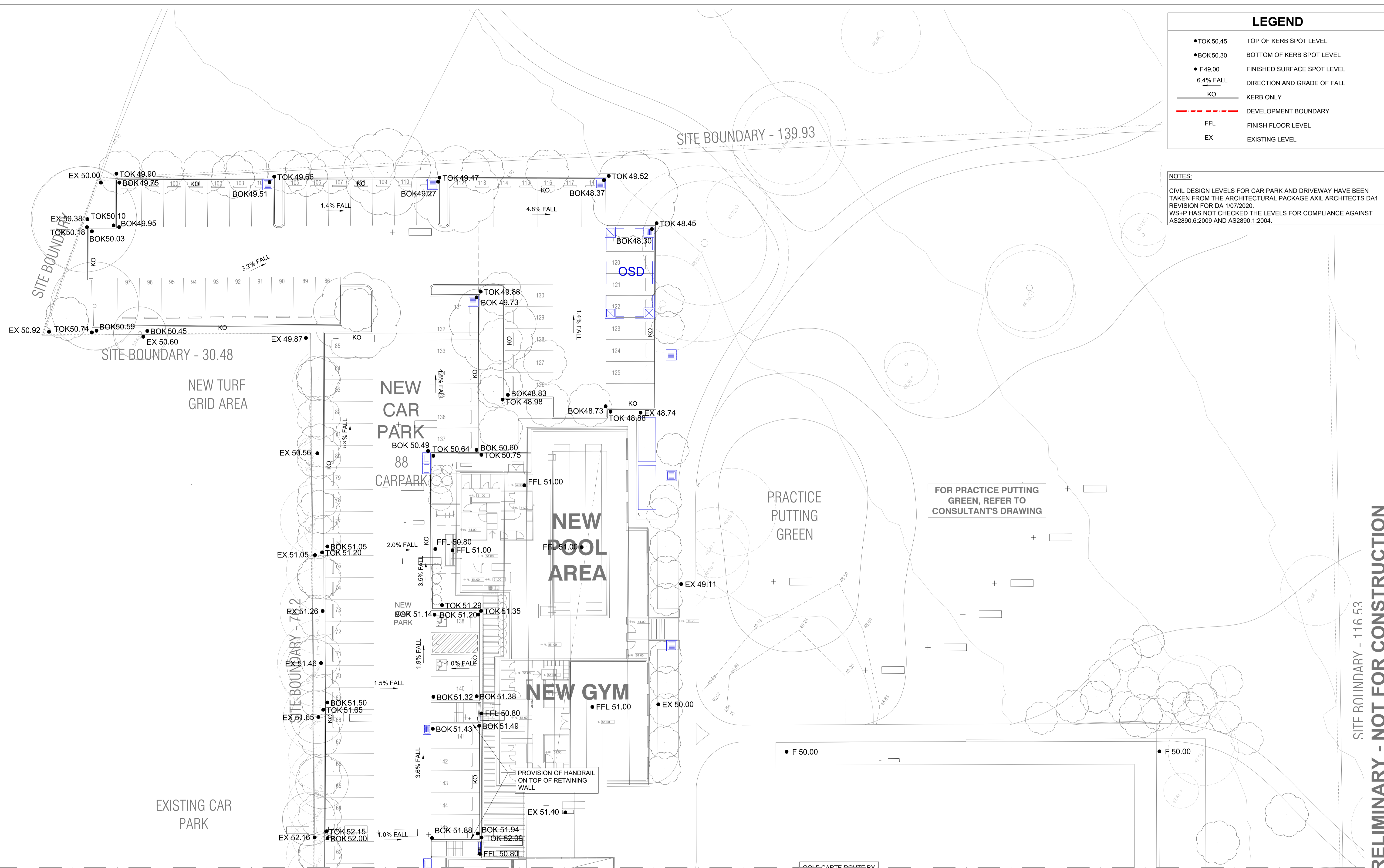
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■ Hydraulic ■ Fire ■ Civil ■ Utilities Infrastructure

SPECIFICATION NOTES				
SCALE	DRAWN	DESIGNED	CHECKED	APPROVED
AS SHOWN	M.Cz.	M.Cz.	J.G.	
JOB No.	DRAWING No.		ISSUE	
<b>6675000</b>	<b>C1.02</b>		<b>4</b>	
DATE	STATUS			
DECEMBER 2019	DEVELOPMENT APPLICATION			

LEGEND	
● TOK 50.45	TOP OF KERB SPOT LEVEL
● BOK 50.30	BOTTOM OF KERB SPOT LEVEL
● F49.00	FINISHED SURFACE SPOT LEVEL
6.4% FALL	DIRECTION AND GRADE OF FALL
KO	KERB ONLY
---	DEVELOPMENT BOUNDARY
FFL	FINISH FLOOR LEVEL
EX	EXISTING LEVEL

NOTES:  
 CIVIL DESIGN LEVELS FOR CAR PARK AND DRIVEWAY HAVE BEEN TAKEN FROM THE ARCHITECTURAL PACKAGE AXIL ARCHITECTS DA1 REVISION FOR DA 1/07/2020.  
 WS+P HAS NOT CHECKED THE LEVELS FOR COMPLIANCE AGAINST AS2890.6:2009 AND AS2890.1:2004.



PRELIMINARY - NOT FOR CONSTRUCTION  
 SITE BOUNDARY - 116 5.3

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NORTH

SCALE 1:200 A1 SHEET

REVISION	AMENDMENT	DATE	REVISION	AMENDMENT	DATE
1	DRAFT DEVELOPMENT APPLICATION	26/11/19			
2	DEVELOPMENT APPLICATION	06/12/19			
3	DEVELOPMENT APPLICATION	30/07/20			
4	RE-ISSUE FOR DEVELOPMENT APPLICATION	23/03/21			
5	RE-ISSUE FOR DEVELOPMENT APPLICATION	09/03/22			

FOR CONTINUATION REFER DRG C1.04

CLIENT: **St Johns Park Bowling Club**

PROJECT: **WALLACIA COUNTRY CLUB**

PREPARED BY: **Warren Smith Consulting Engineers**

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 ■ Hydraulic ■ Fire ■ Civil ■ Utilities Infrastructure

TITLE: **GENERAL ARRANGEMENT PLAN SHEET 1 OF 2**

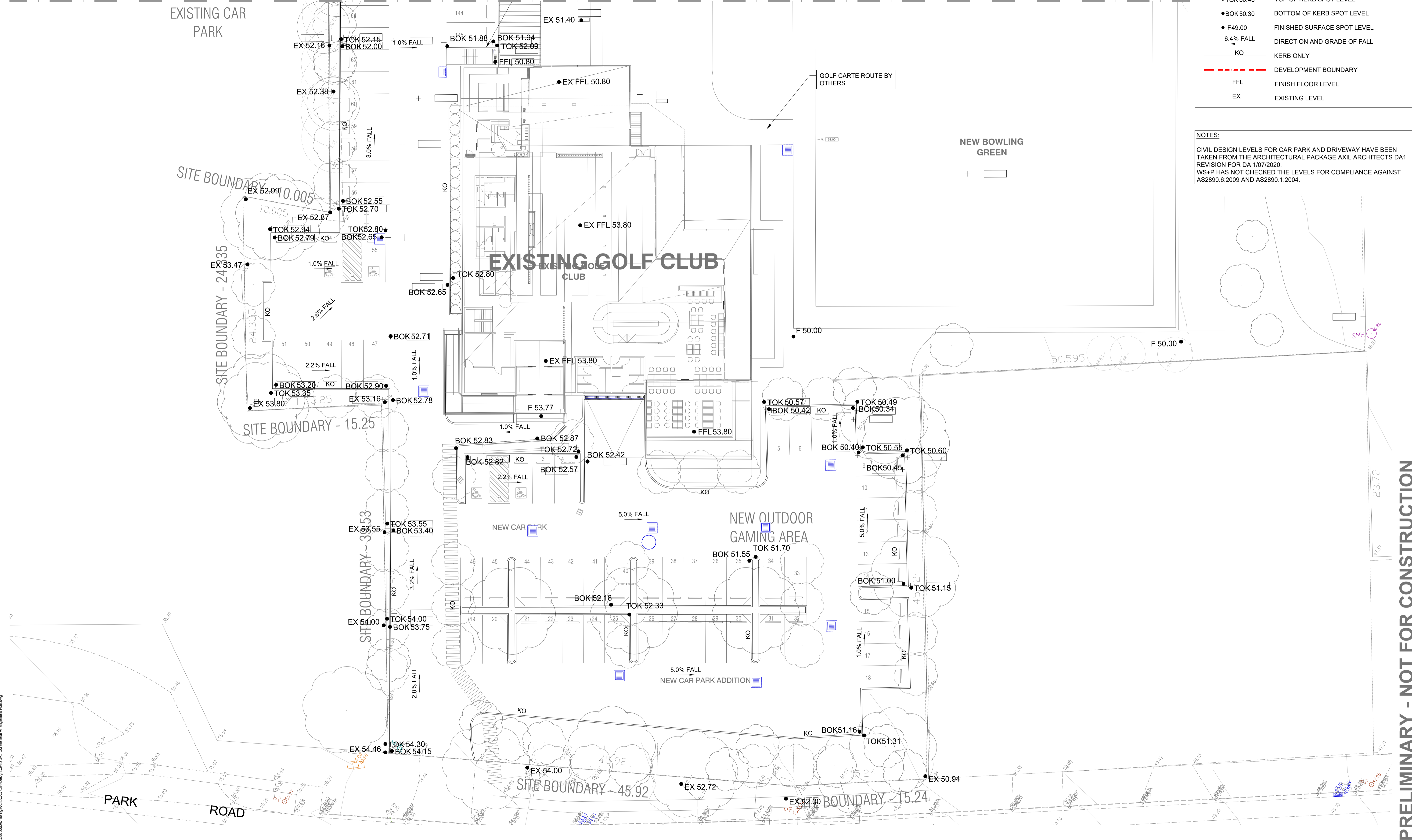
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JOB No. 6675000	DRAWING No. C1.03	ISSUE 5		
DATE: DECEMBER 2019	STATUS: DEVELOPMENT APPLICATION			

FOR CONTINUATION REFER DRG C1.03

LEGEND

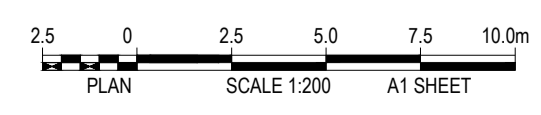
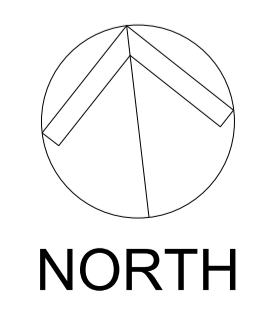
- TOK 50.45 TOP OF KERB SPOT LEVEL
- BOK 50.30 BOTTOM OF KERB SPOT LEVEL
- F49.00 FINISHED SURFACE SPOT LEVEL
- 6.4% FALL DIRECTION AND GRADE OF FALL
- KO KERB ONLY
- DEVELOPMENT BOUNDARY
- FFL FINISH FLOOR LEVEL
- EX EXISTING LEVEL

NOTES:  
CIVIL DESIGN LEVELS FOR CAR PARK AND DRIVEWAY HAVE BEEN TAKEN FROM THE ARCHITECTURAL PACKAGE AXIL ARCHITECTS DA1 REVISION FOR DA 1/07/2020.  
WS+P HAS NOT CHECKED THE LEVELS FOR COMPLIANCE AGAINST AS2890.6:2009 AND AS2890.1:2004.



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1	DRAFT DEVELOPMENT APPLICATION	26/11/19			
2	DEVELOPMENT APPLICATION	06/12/19			
3	DEVELOPMENT APPLICATION	30/07/20			
4	RE-ISSUE FOR DEVELOPMENT APPLICATION	24/03/21			
5	RE-ISSUE FOR DEVELOPMENT APPLICATION	09/03/22			

CLIENT **St Johns Park Bowling Club**

PROJECT **WALLACIA COUNTRY CLUB**

PREPARED BY **Warren Smith Consulting Engineers**

**WARREN SMITH CONSULTING ENGINEERS PTY LTD**  
SINCE 1981.

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wsp@warrensmith.com.au  
ACN 002 197 088 ABN 36 300 430 126

■ Hydraulic ■ Fire ■ Civil ■ Utilities Infrastructure

TITLE **GENERAL ARRANGEMENT PLAN SHEET 2 OF 2**

SCALE AS SHOWN	DRAWN M.T.	DESIGNED M.Cz.	CHECKED J.G.	APPROVED
JOB No. <b>6675000</b>	DRAWING No. <b>C1.04</b>	ISSUE <b>5</b>		
DATE <b>DECEMBER 2019</b>	STATUS <b>DEVELOPMENT APPLICATION</b>			







FOR CONTINUATION REFER DRG C6.01

EXISTING CAR PARK

SITE BOUNDARY - 10.005

SITE BOUNDARY - 24.335

SITE BOUNDARY - 15.25

SITE BOUNDARY - 39.53

EXISTING GOLF CLUB

SITE BOUNDARY - 45.92

SITE BOUNDARY - 15.24

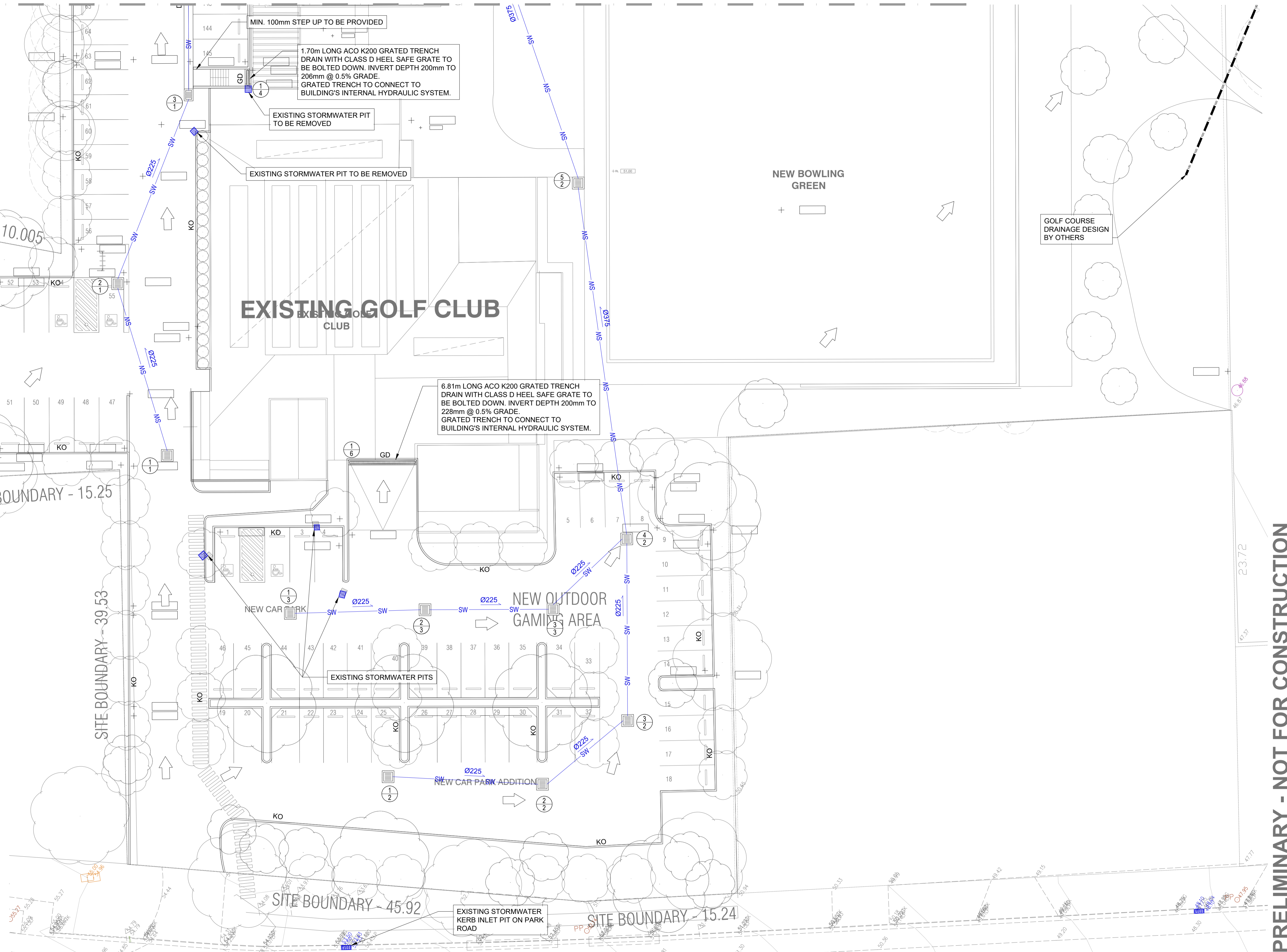
NEW BOWLING GREEN

GOLF COURSE DRAINAGE DESIGN BY OTHERS

### LEGEND

- INDICATIVE OVERLAND FLOW ROUTE
- PIPE DIAMETER AND DIRECTION OF FLOW
- STORMWATER PIPE
- BUTTERFLY GRATE IN DISH DRAIN
- GRATED INLET PIT
- JUNCTION PIT
- PIT STRUCTURE NUMBER
- STORMWATER LINE NUMBER
- GRATED TRENCH DRAIN
- DEVELOPMENT BOUNDARY

NOTES:  
OCEAN PROTECT ENVIROPOD FILTERS ARE TO BE INSTALLED IN PITS:  
1/1, 2/1, 3/1, 4/1, 5/1, 1/2, 2/2, 3/2, 1/3, 2/3, 1/7 AND 1/8.

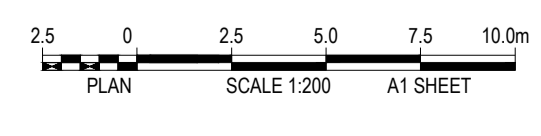


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NORTH



REVISION	AMENDMENT	DATE	REVISION	AMENDMENT	DATE
1	DRAFT DEVELOPMENT APPLICATION	26/11/19			
2	DEVELOPMENT APPLICATION	06/12/19			
3	ISSUE FOR COORDINATION	03/07/20			
4	DEVELOPMENT APPLICATION	30/07/20			
5	RE-ISSUE FOR DEVELOPMENT APPLICATION	23/03/21			
6	DEVELOPMENT APPLICATION	09/03/22			

CLIENT **St Johns Park Bowling Club**

PROJECT **WALLACIA COUNTRY CLUB**

PREPARED BY **Warren Smith Consulting Engineers**

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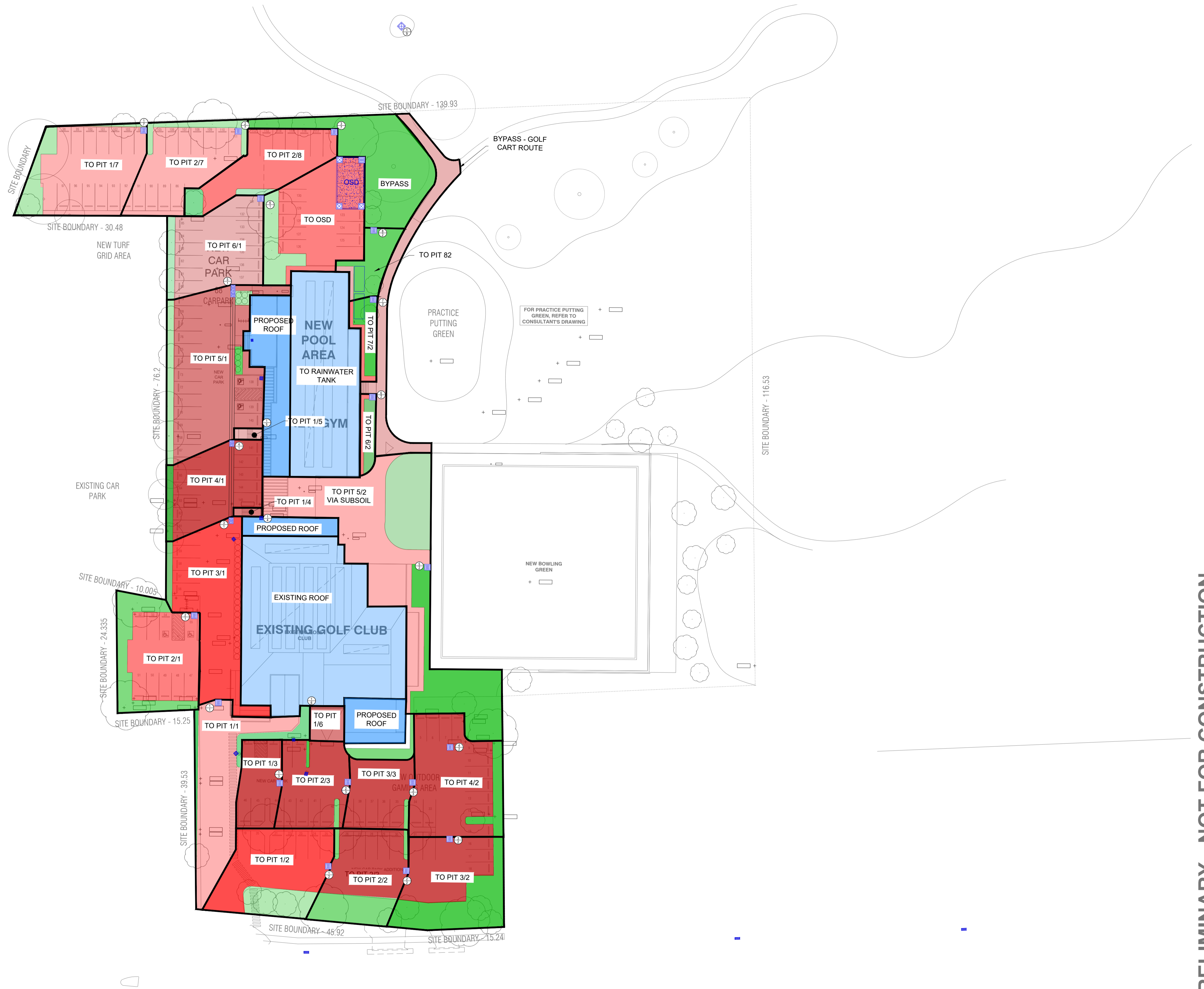
Hydraulic Fire Civil Utilities Infrastructure

TITLE **STORMWATER LAYOUT PLAN SHEET 2 OF 2**

SCALE AS SHOWN	DRAWN M.T.	DESIGNED M.C.Z.	CHECKED J.G.	APPROVED
JOB No. <b>6675000</b>	DRAWING No. <b>C6.02</b>	ISSUE <b>6</b>		
DATE <b>DECEMBER 2019</b>	STATUS <b>DEVELOPMENT APPLICATION</b>			

**LEGEND**

- SITE BOUNDARY
- ROOF CATCHMENTS
- LANDSCAPE CATCHMENTS
- HARDSTAND CATCHMENTS

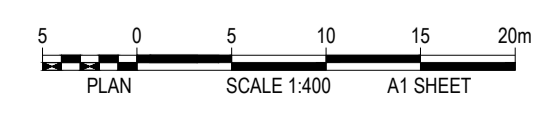
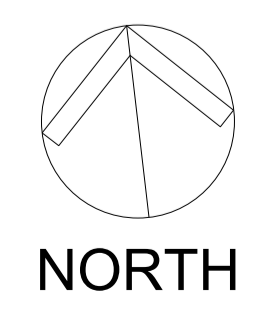


PRELIMINARY - NOT FOR CONSTRUCTION

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1	DRAFT DEVELOPMENT APPLICATION	26/11/19			
2	DEVELOPMENT APPLICATION	06/12/19			
3	DEVELOPMENT APPLICATION	30/07/20			
4	RE-ISSUE FOR DEVELOPMENT APPLICATION	24/03/21			
5	RE-ISSUE FOR DEVELOPMENT APPLICATION	02/12/21			
6	RE-ISSUE FOR DEVELOPMENT APPLICATION	09/03/22			

**St Johns Park**  
Bowling Club

PROJECT  
**WALLACIA COUNTRY CLUB**

PREPARED BY

**Warren Smith**  
Consulting Engineers

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TITLE  
**STORMWATER CATCHMENT PLAN**

SCALE AS SHOWN	DRAWN M.T.	DESIGNED M.Cz.	CHECKED J.G.	APPROVED ISSUE
<b>6675000</b>		<b>C6.03</b>		<b>6</b>

DATE  
DECEMBER 2019

STATUS  
DEVELOPMENT APPLICATION

Name	Fitted with Enviropod	Surface Elev. (m)	Pit Depth (m)	Pit Size and Type	From	To	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Pipe Type	Dia (mm)	No. Pipes
Pit 1/1	YES	52.78	0.83	900 SQ PIT WITH CLASS D GRATE	Pit 1/1	Pit 2/1	17.06	51.95	51.77	1.06	uPVC (SN8)	225	1
Pit 2/1	YES	52.65	0.91	900 SQ PIT WITH CLASS D GRATE	Pit 2/1	Pit 3/1	19.36	51.74	51.01	3.77	uPVC (SN8)	225	1
Pit 3/1	YES	51.84	0.86	900 SQ PIT WITH 600 x 900 CLASS D BUTTERFLY GRATE	Pit 3/1	Pit 4/1	14.41	50.98	50.54	3.05	RCP (CLASS 3)	300	1
Pit 4/1	YES	51.37	0.86	900 SQ PIT WITH 600 x 900 CLASS D BUTTERFLY GRATE	Pit 4/1	Pit 5/1	28.74	50.51	49.60	3.17	RCP (CLASS 3)	300	1
Pit 5/1	YES	50.43	0.86	2 x 900 SQ PIT WITH 600 x 900 CLASS D BUTTERFLY GRATE	Pit 5/1	Pit 6/1	17.71	49.57	48.85	4.07	RCP (CLASS 3)	300	1
Pit 6/1	YES	49.73	0.93	900 SQ PIT WITH CLASS D GRATE	Pit 6/1	OSD	14.77	48.8	48.5	2.03	RCP (CLASS 3)	300	1
Pit 1/2	YES	52.08	1.17	900 SQ PIT WITH CLASS D GRATE	Pit 1/2	Pit 2/2	14.60	50.91	50.39	3.56	uPVC (SN8)	225	1
Pit 2/2	YES	51.34	0.98	900 SQ PIT WITH CLASS D GRATE	Pit 2/2	Pit 3/2	9.95	50.36	50.07	2.91	uPVC (SN8)	225	1
Pit 3/2	YES	51.04	1	1200 SQ PIT WITH CLASS D GRATE	Pit 3/2	Pit 4/2	17.30	50.04	49.44	3.47	RCP (CLASS 3)	375	1
Pit 4/2	NO	50.42	1.01	1200 SQ PIT WITH CLASS D GRATE	Pit 4/2	Pit 5/2	35.09	49.41	49.23	0.51	RCP (CLASS 3)	375	1
Pit 5/2	NO	50.38	1.18	900 SQ PIT WITH CLASS B GRATE	Pit 5/2	Pit 6/2	34.63	49.2	48.89	0.90			
Pit 6/2	NO	49.79	0.93	901 SQ PIT WITH CLASS B GRATE	Pit 6/2	Pit 7/2	18.36	48.86	48.37	2.67	RCP (CLASS 3)	375	1
Pit 7/2	NO	49.2	0.86	902 SQ PIT WITH CLASS B GRATE	Pit 7/2	Pit 8/2	9.72	48.34	48.27	0.72	RCP (CLASS 3)	375	1
Pit 8/2	NO	49.1	0.86	903 SQ PIT WITH CLASS B GRATE	Pit 8/2	OSD	18.09	48.24	47.9	1.88	RCP (CLASS 3)	375	1
Pit 1/3	YES	52.6	0.83	900 SQ PIT WITH CLASS D GRATE	Pit 1/3	Pit 2/3	12.60	51.77	51.1	5.32	uPVC (SN8)	225	1
Pit 2/3	YES	52.1	1.03	900 SQ PIT WITH CLASS D GRATE	Pit 2/3	Pit 3/3	11.90	51.07	50.57	4.20	uPVC (SN8)	225	1
Pit 3/3	NO	51.5	0.96	900 SQ PIT WITH CLASS D GRATE	Pit 3/3	Pit 4/2	9.60	50.54	49.44	11.46	uPVC (SN8)	225	1
Pit 1/4	NO	50.8	0.2m - 0.22m	1.70m LONG ACO K200 GRATED TRENCH DRAIN WITH CLASS B HEEL SAFE GRATE		TO INTERNAL HYDRAULIC SYSTEM					uPVC (SN8)	150	1
Pit 1/5	NO	50.8	0.2m - 0.23m	2.23m LONG ACO K200 GRATED TRENCH DRAIN WITH CLASS B HEEL SAFE GRATE		TO INTERNAL HYDRAULIC SYSTEM					uPVC (SN8)	150	1
Pit 1/6	NO	50.8	0.2m - 0.27m	6.81m LONG ACO K200 GRATED TRENCH DRAIN WITH CLASS B HEEL SAFE GRATE		TO INTERNAL HYDRAULIC SYSTEM					uPVC (SN8)	150	1
Pit 1/7	YES	49.72	0.83	900 SQ PIT WITH CLASS D GRATE	Pit 1/7	OSD	12.52	48.89	48.4	3.91	uPVC (SN8)	225	1
Pit 1/8	YES	49.25	1	900 SQ PIT WITH CLASS D GRATE	Pit 1/8	OSD	12.14	48.25	48.1	1.24	uPVC (SN8)	225	1

PRELIMINARY - NOT FOR CONSTRUCTION

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4	RE-ISSUE FOR DEVELOPMENT APPLICATION	04/11/20			
5	RE-ISSUE FOR DEVELOPMENT APPLICATION	24/03/21			
6	RE-ISSUE FOR DEVELOPMENT APPLICATION	09/03/22			

CLIENT **St Johns Park Bowling Club**

PROJECT **WALLACIA COUNTRY CLUB**

PREPARED BY **Warren Smith Consulting Engineers**

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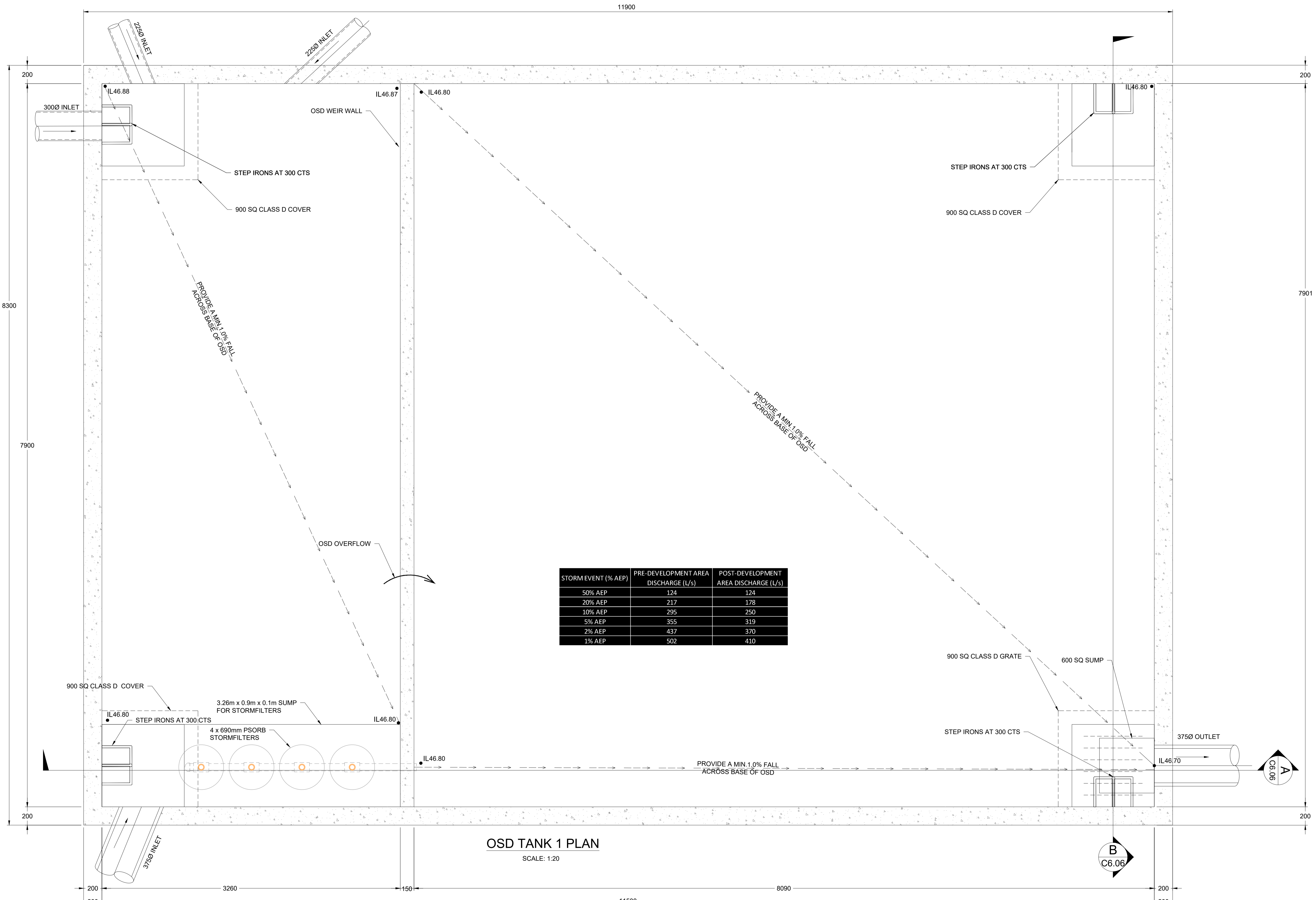
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Hydraulic Fire Civil Utilities Infrastructure

TITLE **PIT SCHEDULE**

SCALE AS SHOWN	DRAWN M.Cz.	DESIGNED M.Cz.	CHECKED J.G.	APPROVED
JOB No. <b>6675000</b>		DRAWING No. <b>C6.04</b>		ISSUE <b>6</b>
DATE DECEMBER 2019		STATUS DEVELOPMENT APPLICATION		



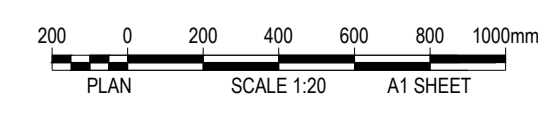
STORM EVENT (% AEP)	PRE-DEVELOPMENT AREA DISCHARGE (L/s)	POST-DEVELOPMENT AREA DISCHARGE (L/s)
50% AEP	124	124
20% AEP	217	178
10% AEP	295	250
5% AEP	355	319
2% AEP	437	370
1% AEP	502	410

**OSD TANK 1 PLAN**  
SCALE: 1:20

PRELIMINARY - NOT FOR CONSTRUCTION

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3	DEVELOPMENT APPLICATION	30/07/20			
4	RE-ISSUE FOR DEVELOPMENT APPLICATION	24/03/21			
5	RE-ISSUE FOR DEVELOPMENT APPLICATION	09/03/22			

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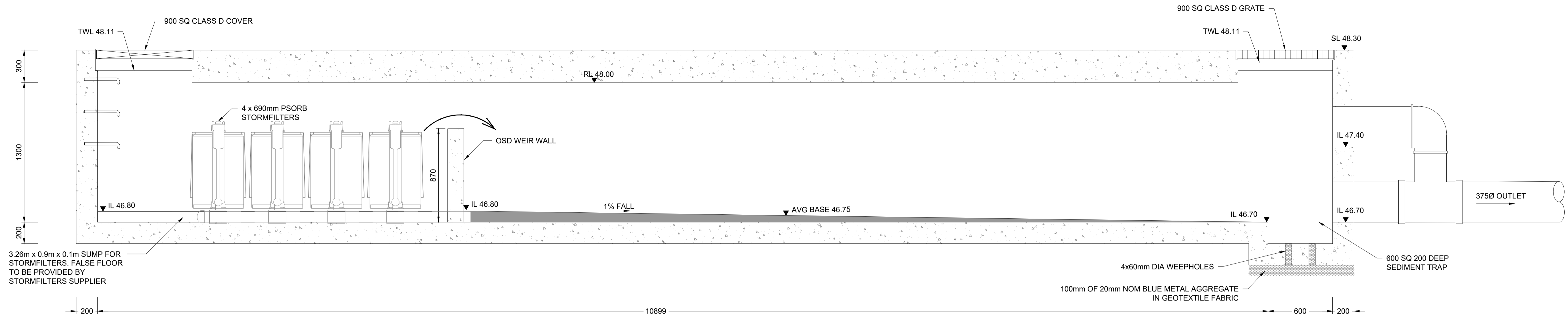
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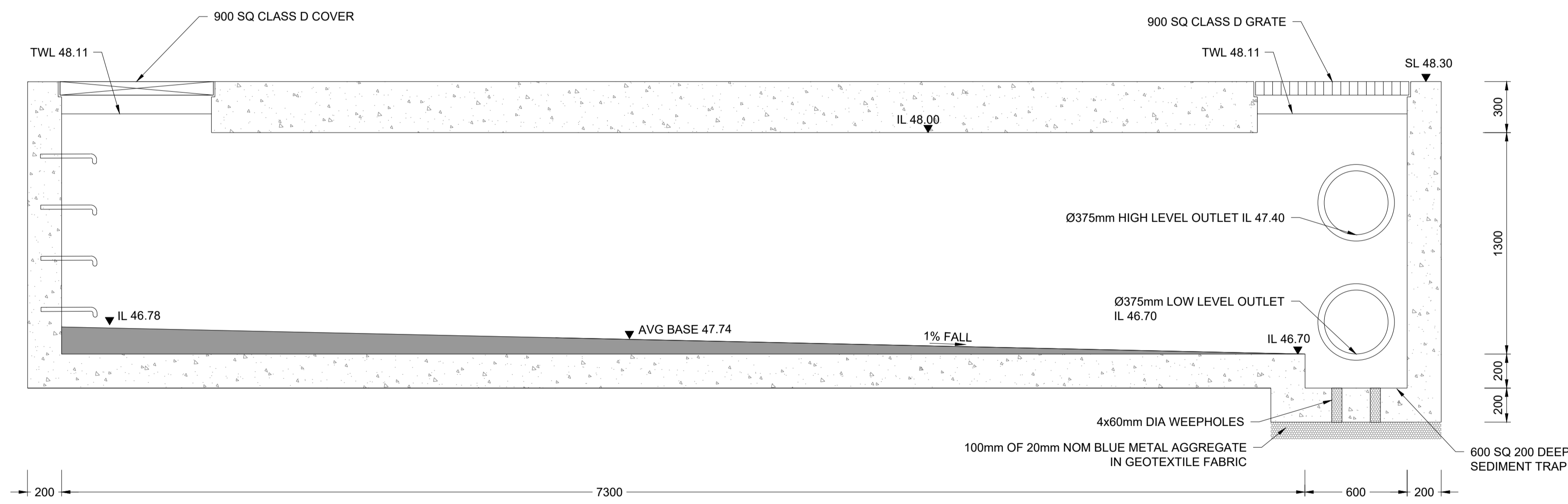
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TITLE **ON SITE DETENTION (OSD) TANK PLAN**

SCALE AS SHOWN	DRAWN M.Cz.	DESIGNED M.Cz.	CHECKED J.G.	APPROVED
JOB No. <b>6675000</b>	DRAWING No. <b>C6.05</b>	ISSUE <b>5</b>		
DATE <b>DECEMBER 2019</b>	STATUS <b>DEVELOPMENT APPLICATION</b>			



**SECTION A**  
SCALE: 1:20  
C6.05

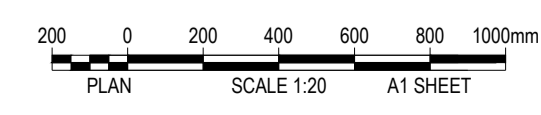


**B SECTION**  
SCALE: 1:20  
C6.05

PRELIMINARY - NOT FOR CONSTRUCTION

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2	DEVELOPMENT APPLICATION	06/12/19			
3	DEVELOPMENT APPLICATION	10/07/20			
4	RE-ISSUE FOR DEVELOPMENT APPLICATION	24/03/21			
5	RE-ISSUE FOR DEVELOPMENT APPLICATION	09/03/22			

**St Johns Park**  
Bowling Club

PROJECT  
**WALLACIA COUNTRY CLUB**

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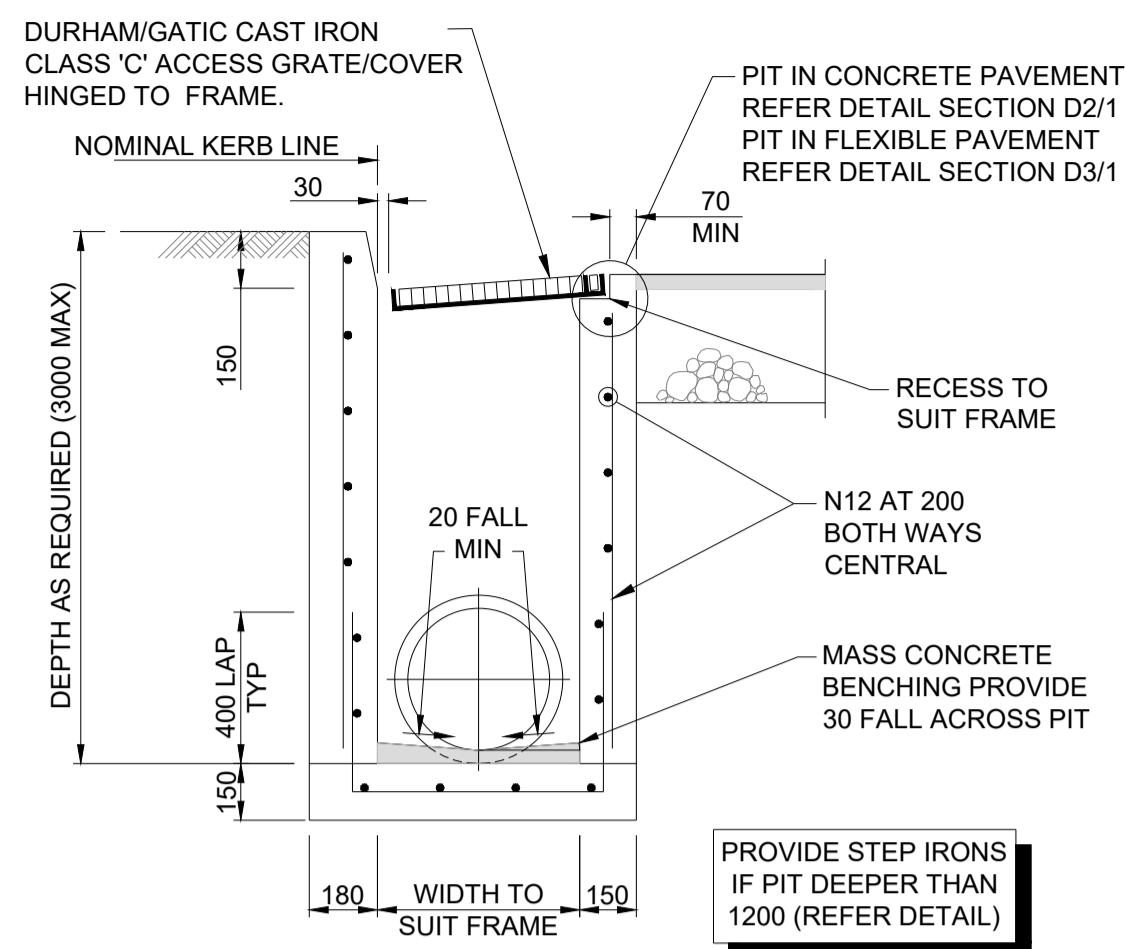
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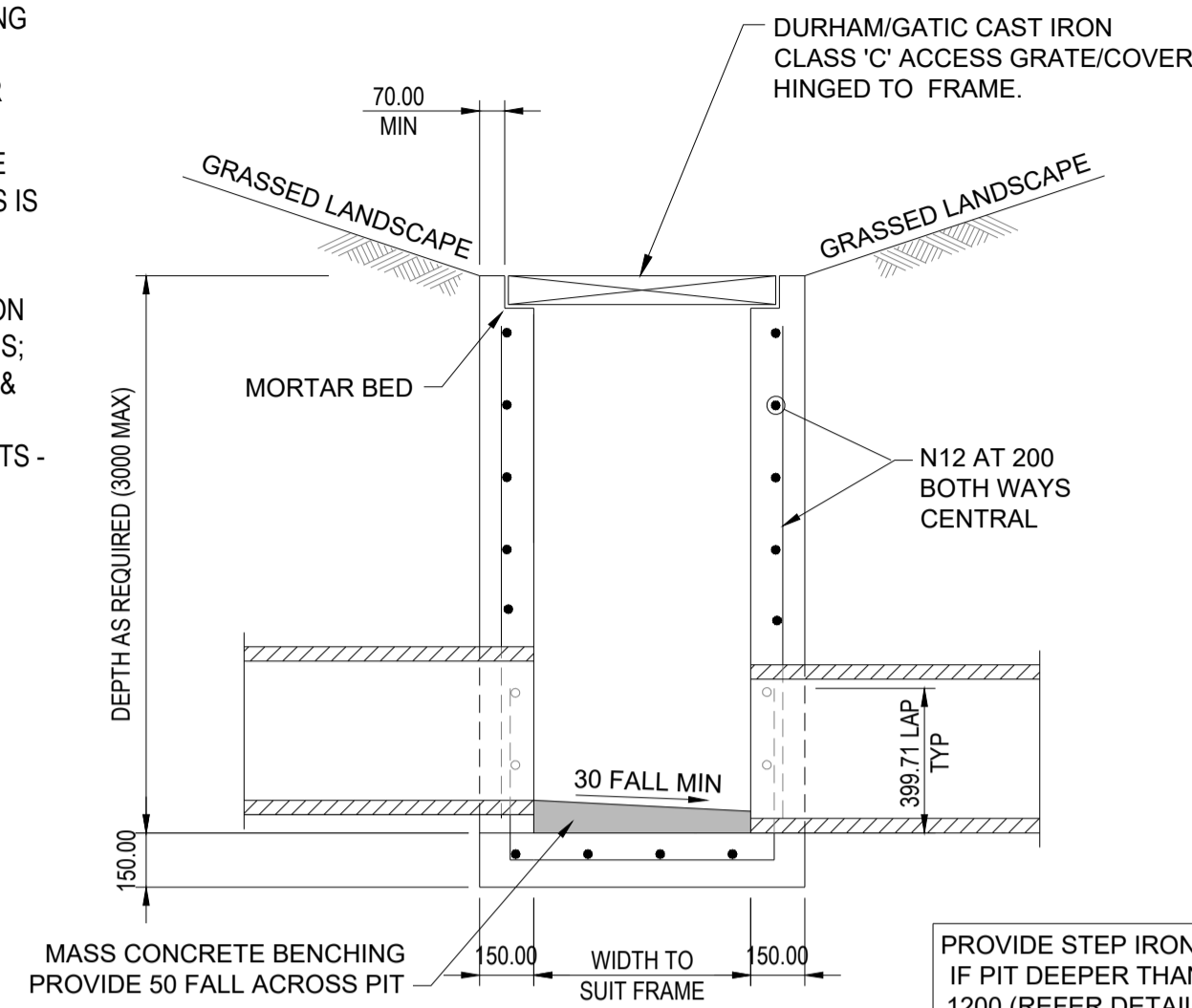
TITLE  
**ON SITE DETENTION (OSD)  
TANK SECTIONS**

SCALE AS SHOWN	DRAWN M.Cz.	DESIGNED M.Cz.	CHECKED J.G.	APPROVED
JOB No. <b>6675000</b>	DRAWING No. <b>C6.06</b>	ISSUE <b>5</b>		
DATE DECEMBER 2019	STATUS DEVELOPMENT APPLICATION			

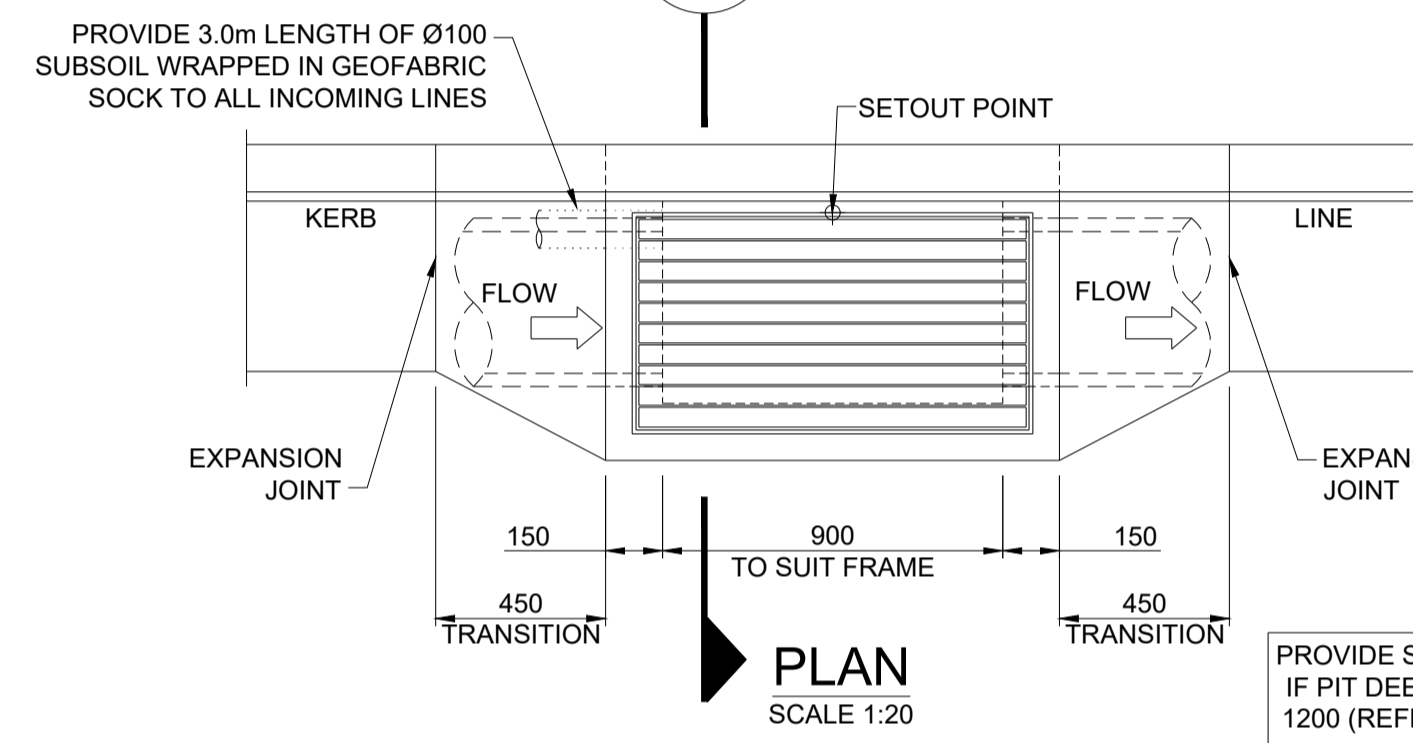


**NOTES:**

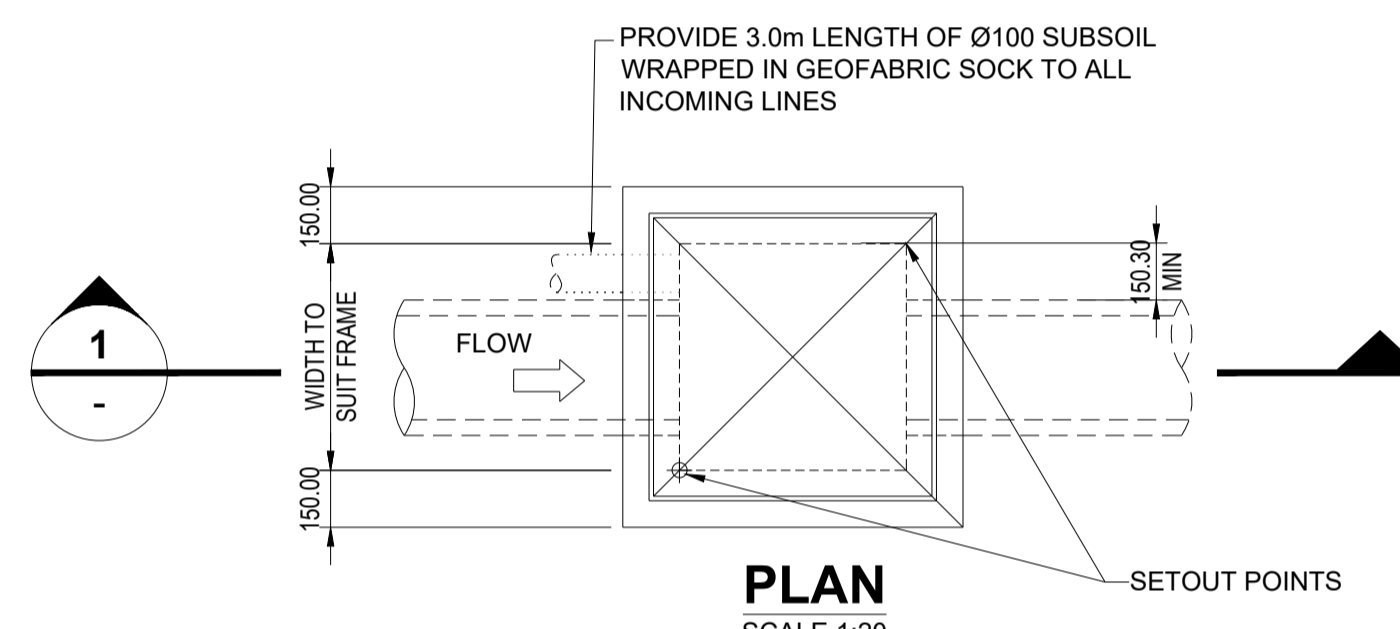
- TRENCH WIDTH MAY NEED TO BE INCREASED SUBJECT TO ACHIEVING ADEQUATE COMPACTION.
- MINIMUM PIPE COVER NOT UNDER ROADS = 450mm UNO.
- THE CONTRACTOR SHALL ENSURE THAT THE SHORING OF TRENCHES IS INSTALLED AS REQUIRED BY STATUTORY REQUIREMENTS.
- ENSURE BACKFILLING COMPACTION MEETS THE RELEVANT STANDARDS;
  - TRENCHES UNDER PAVED AREAS & BUILDINGS - 100% SMDD.
  - TRENCHES NOT UNDER PAVEMENTS - 95% SMDD.



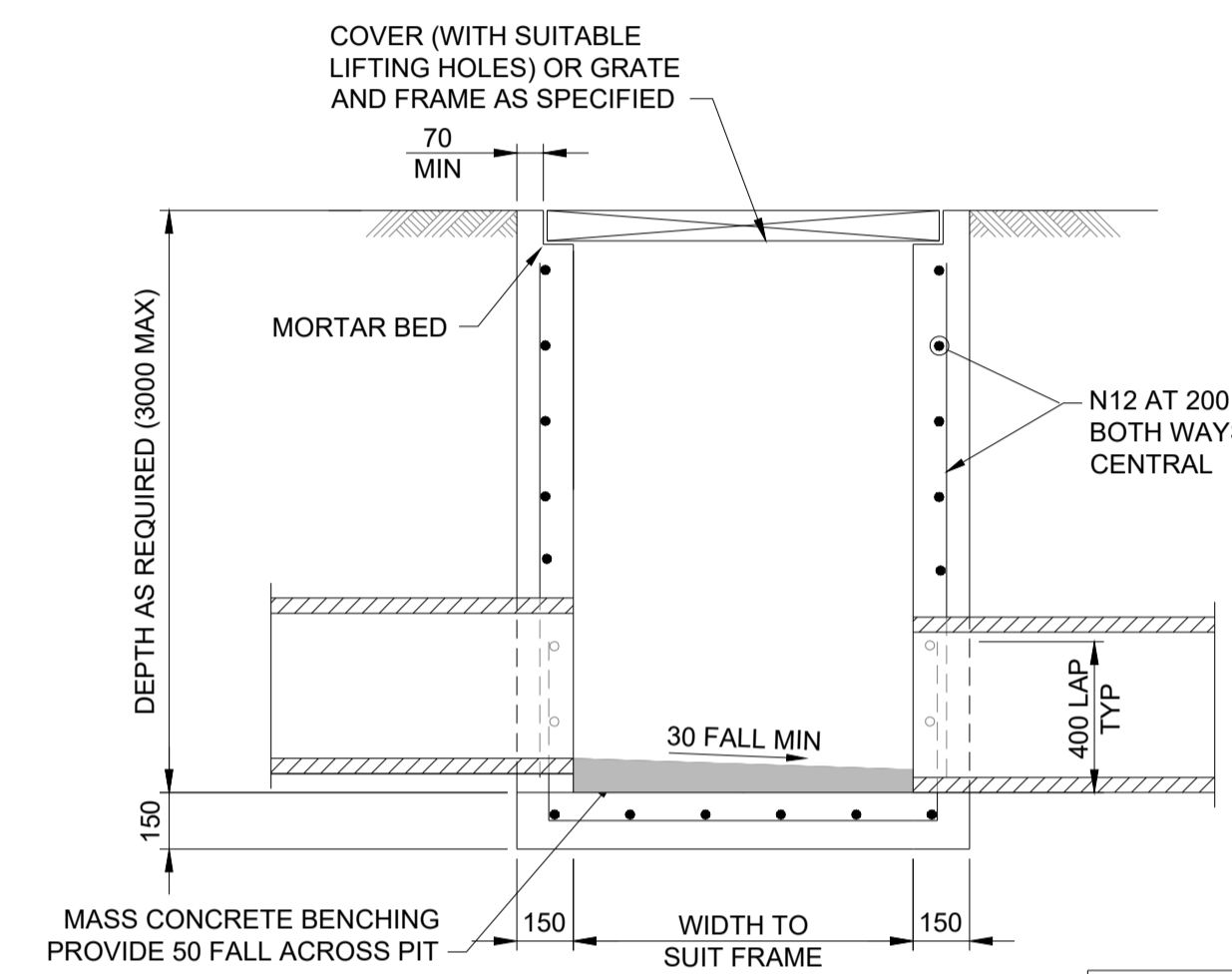
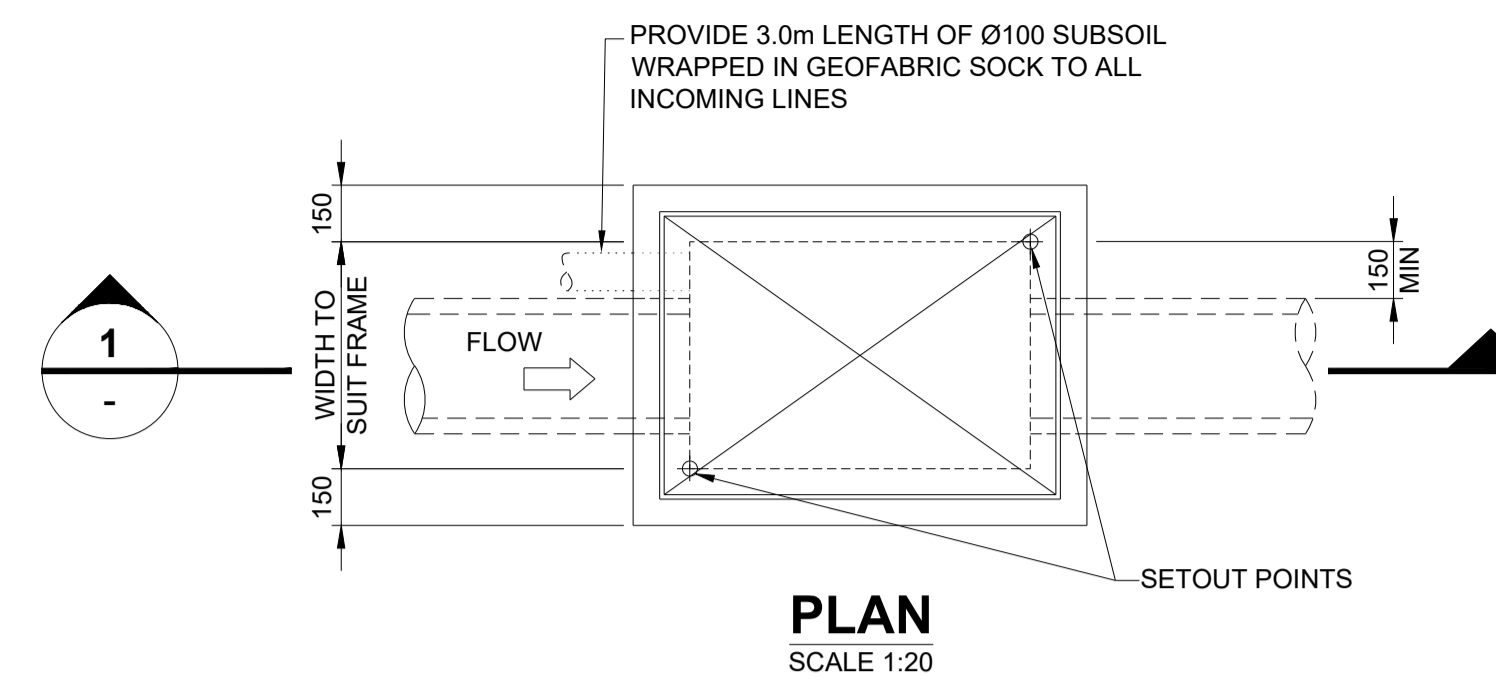
**DETAIL**  
SCALE 1:20



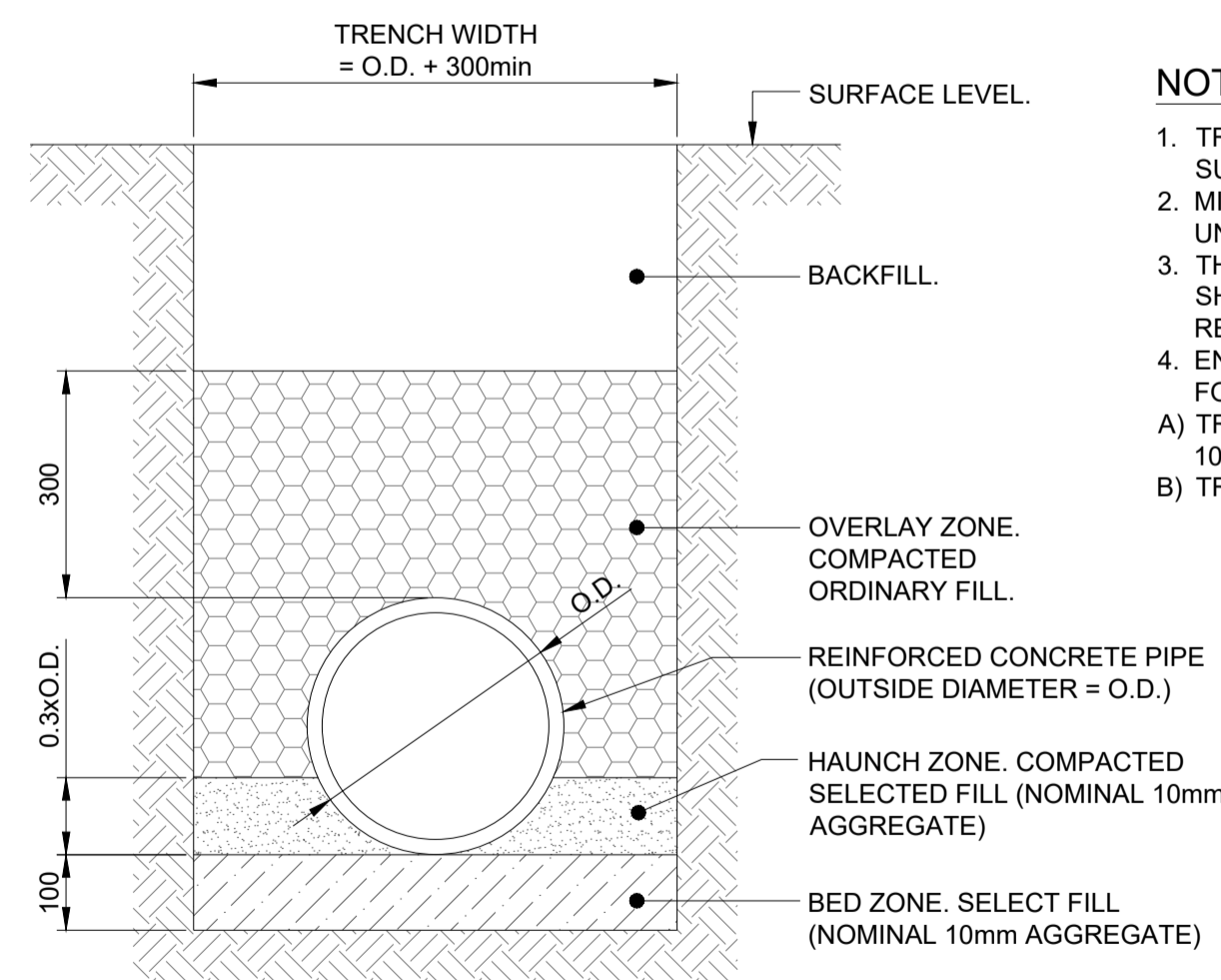
**GRATED GULLY PIT**  
(PIPE SIZES ≤ Ø375)



**600 - 900SQ SURFACE INLET PITS**

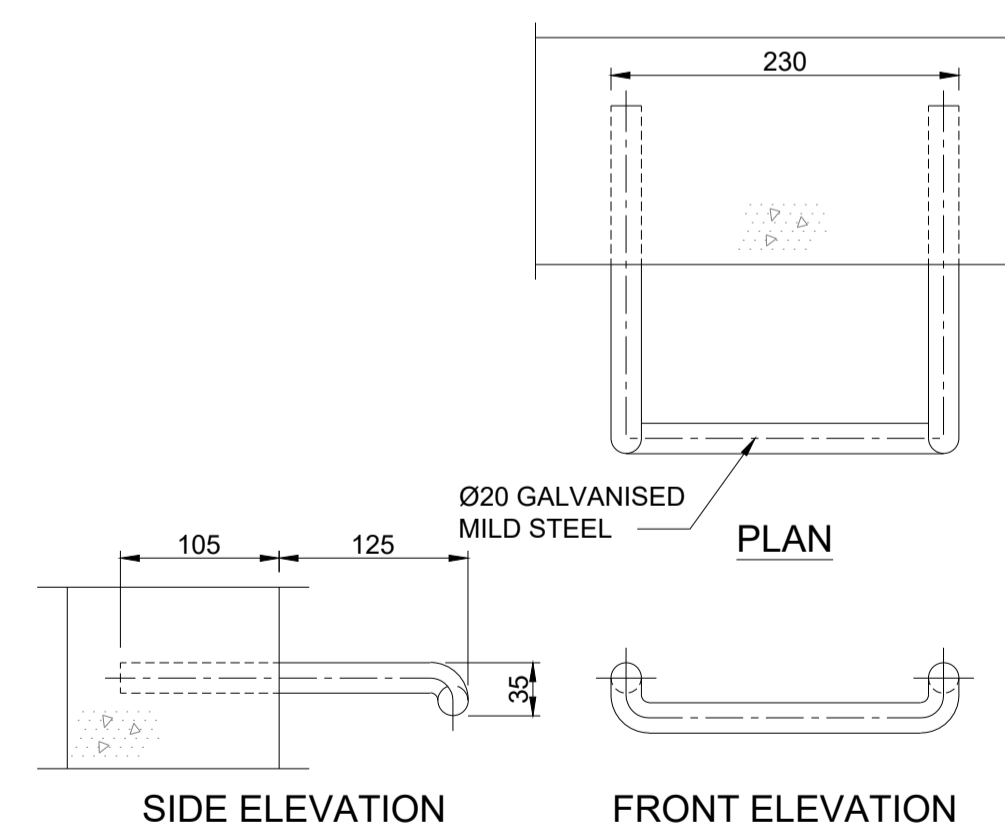


**SURFACE INLET / JUNCTION PIT**  
(PIPE SIZES ≤ Ø450)

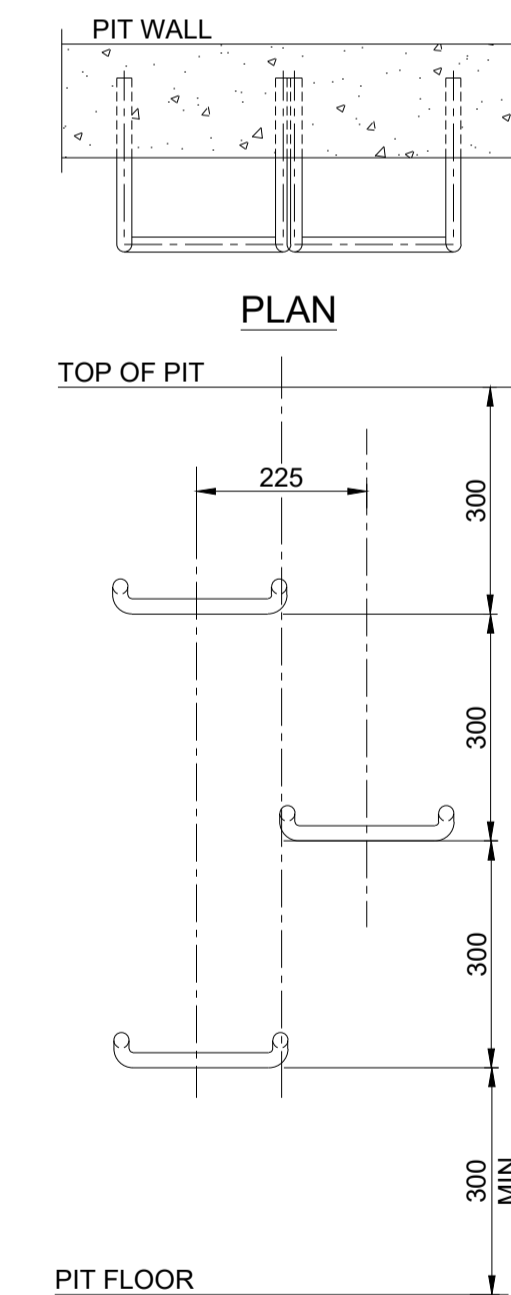


**NOTES:**

- TRENCH WIDTH MAY NEED TO BE INCREASED SUBJECT TO ACHIEVING ADEQUATE COMPACTION.
- MINIMUM PIPE COVER NOT UNDER ROADS = 300mm UNO.
- THE CONTRACTOR SHALL ENSURE THAT THE SHORING OF TRENCHES IS INSTALLED AS REQUIRED BY STATUTORY REQUIREMENTS.
- ENSURE BACKFILLING COMPACTION MEETS THE FOLLOWING STANDARDS;
  - TRENCHES UNDER PAVED AREAS & BUILDINGS - 100% SMDD.
  - TRENCHES NOT UNDER PAVEMENTS - 90% SMDD.



**STEP IRON DETAIL**  
SCALE 1:5



**STEP IRON PLACEMENT TO PIT WALL**  
NOT TO SCALE

Path: X:\20200303\_18\_A\H...  
 Plot Date: 08/03/2022 09:14:18  
 Logon Name: NGC@st...  
 Code File: T:\6615000\Drawings\Asst\DWG\Civil\2020\03\03\Stormwater Drainage Details.dwg

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1	DRAFT DEVELOPMENT APPLICATION	26/11/19			
2	DEVELOPMENT APPLICATION	06/12/19			
3	RE-ISSUE FOR DEVELOPMENT APPLICATION	24/03/21			
4	RE-ISSUE FOR DEVELOPMENT APPLICATION	09/03/22			

CLIENT: **St Johns Park Bowling Club**

PROJECT: **WALLACIA COUNTRY CLUB**

PREPARED BY: **Warren Smith Consulting Engineers**

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Hydraulic Fire Civil Utilities Infrastructure

TITLE: **STORMWATER DRAINAGE DETAILS**

SCALE: AS SHOWN	DRAWN: M.Cz.	DESIGNED: M.Cz.	CHECKED: J.G.	APPROVED:
JOB No: 6675000	DRAWING No: C6.07	ISSUE: 4		
DATE: DECEMBER 2019	STATUS: DEVELOPMENT APPLICATION			

**PRELIMINARY - NOT FOR CONSTRUCTION**

PROJECT NAME : Wallacia Country Club  
 PROJECT NO.: 6675000  
 CLIENT : St Johns Park Bowling Club  
 Revision: 9  
 DATE: 09/03/2022

DISCIPLINE : Civil  
 ISSUED BY: James Georgiades



**DOCUMENT TRANSMITTAL**

Drawing Number	Drawing Title	Revision												Latest							
		Day	26	6	3	11	30	4	24	2	9										
		Month	11	12	7	7	7	11	3	12	3										
		Year	19	19	20	20	20	21	21	21	22										
C1.01	Cover Sheet		1	2			3		4		5										5
C1.02	Specification Notes		1	2					3		4										4
C1.03	General Arrangement Plan Sheet 1 of 2		1	2			3		4		5										5
C1.04	General Arrangement Plan Sheet 2 of 2		1	2			3		4		5										5
C2.01	Sediment and Erosion Control Plan		1	2					3		4										4
C2.02	Sediment and Erosion Control Details		1	2					3		4										4
C6.01	Stormwater Layout Plan - Sheet 1 of 2		1	2	3		4		5	6	7										7
C6.02	Stormwater Layout Plan - Sheet 2 of 2		1	2	3		4		5		6										6
C6.03	Stormwater Catchment Plan		1	2	3				4	5	6										6
C6.05	Pit Schedule		1	2			3	4	5		6										6
C6.06	On Site Detention (OSD) Tank Plan		1	2			3		4		5										5
C6.07	On Site Detention (OSD) Tank Secitons		1	2		3			4		5										5
C6.08	Stormwater Drainage Details		1	2					3		4										4
<b>Distribution</b>		<b>Media</b>																			
		E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
<b>Media Type:</b>		H - HAND				E - EMAIL				C - COURIER		D - DROPBOX		D - DROPBOX		A - Aconex					