



Sonning Golf Club, Duffield Road, Sonning. RG4 6GJ

DRAINAGE STRATEGY SUMMARY:

Sonning Golf Club

ADDRESS:

Sonning Golf Club, Duffield Road,
Sonning. RG4 6GJ

R01 – First Issue

Aventus Design Ltd
Unit 5 – Leaches Farm
Business Centre, Bicester Road
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6	Infiltration Test Results	4
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APPENDICES

A. SITE SURVEY DRAWING H1515/400-1 & 400-2

B. AREAS DRAWINGS H1515/450 - EXISTING AREAS PLAN
H1515/451 - PROPOSED AREAS PLAN
H1515/452 - DRAINAGE AREAS PLAN

C. EXISTING RUN-OFF CALCULATIONS

D. SITE INVESTIGATION REPORT BY SOIL CONSULTANTS
INCLUDING INFILTRATION TEST RESULTS

E. EXTERNAL WORKS DRAWINGS H1515/430 > H1515/441

F. CAUSEWAY “FLOW” CALCULATIONS

G. DESIGN EXCEEDANCE DRAWING H1515/453

H. SURFACE WATER MANAGEMENT PLAN

1 Introduction

This report outlines the surface and foul water Drainage Strategy for the proposed development, Sonning Golf Club, Duffield Road, Sonning. RG4 6GJ. The proposed changes to the External Works comprise a new entrance off Duffield Road, stopping up the existing entrance, alternations to the existing carpark, a new Pro shop and internal amendments to the west wing of the club house.

2 Planning Application proposals

Application for the approval of reserved matters pursuant to outline planning consent 223458 (as amended by applications 242641 and 250553), for the Revised access off Duffield Road plus associated modifications to Sonning Golf Club, including reconfiguration of the golf club parking areas and conversion of the west wing of the existing clubhouse to accommodate a new golf simulator practice facility.

3 Technical Summary

Detailed drawings have been submitted to the planning authority which include the construction works to the following.

- New Site Entrance including S278 Highway Works in Duffield Road.
- Stopping up of the existing site entrance.
- Amendments to the existing carparks to the north and south of the club house
- New Pro shop to replace the starters hut.
- Internal amendments to the West wing have not been submitted as this work does not have any impact of the surface water drainage as the roof and all the surface water drainage is remaining.

4 Existing Drainage

The Topographical survey drawing has identified numerous soakaways to drain the existing impermeable areas. Foul water from the Golf club site drains to two pump stations which ultimately drain into the adjacent housing development and connect to the public foul water sewer. Refer to Appendix A - Drawings H1515-400-1 & H1515-400-2 - Site Survey Sheets 1 & 2. Refer to Appendix B - Drawing H1515-450 – Existing Areas Plan & H1515-451 – Proposed Areas Plan.

5 Existing Greenfield Run-off

Existing Run-off is calculated using Micro Drainage Source Control

QBar is determined as 2.2l/s and Q100 is calculated as 6.9l/s. Refer to Appendix C – Existing Run-off Rates

6 Infiltration Test Results

Infiltration testing was carried out by Soil Consultants dated 01/09/25. Refer to Appendix A – Site Investigation Report which includes Infiltration Test Results.

Trial pit soakage testing resulted in infiltration rates of between $1.59 \times 10^{-5} \text{m/s}$ and $9.45 \times 10^{-6} \text{m/s}$, which indicate the shallow granular soils may provide a suitable medium for the disposal of surface water via traditional soakaways.

7 Detailed Drainage Layout & Details

A detailed drainage layouts have been prepared to show the new paved / roof areas discharging to soakaways which have been designed using “Flow”. Soakaways have been modelled for the 1:100year storm plus 40% for climate change.

Existing areas of paving drain to existing soakaways and where new gullies are located in existing paved areas, these are shown to connect to existing soakaways.

Refer to Appendix D – External Works Drawings H1515/430 > H1515/441.

Refer to Appendix B – Drainage Areas Plan H1515/452.

Refer to Appendix F – Causeway “Flow” Calculations.

8 Design Exceedance

Design Exceedance flow arrows are shown on drawing H1515/453.

9 Surface Water Management Plan

Refer to Appendix H – Surface Water Management Plan

APPENDIX A

SITE SURVEY DRAWINGS

1060mN

1040mN

1020mN

1000mN

980mN

960mN

Existing Drainage Key

Existing Public Foul
Water Sewer

NOTE:
Details of public sewers taken from local Water Authority Sewer Records. Following the introduction of the The Water Industry (Schemes for Adoption of Private Sewers 2011), all existing sewers serving more than 1 dwelling will be vested as local water authority sewers and therefore shown as assumed public sewers for the purposes of design and connections.

STATION	CO-ORDINATES	
NO.	EASTING	NORTHING
2	939.745	877.342
3	905.557	937.297
13	897.567	1032.055
22	1118.595	1000.039
23	1124.349	1017.360
24	1227.176	987.442
25	1036.015	1036.571
26	1267.958	1017.850
27	989.844	996.275
28	1135.023	1033.797
29	906.168	992.476
30	1131.529	1081.861
31	1145.505	1074.694
32	1183.214	1081.720
33	1183.214	995.689
34	1208.152	1082.444
35	1079.420	1079.420
36	1194.863	994.733
37	1008.716	953.247
38	1368.510	1023.686
39		

122.11 SURVEY STATION

STATIONS IN HARD SURFACES ARE CROSS HEAD GALVANISED BOLTS.

STATIONS IN SOFT GROUND ARE PEGS AT GROUND LEVEL WITH CROSS HEAD GALVANIZED SCREWS.

ABBREVIATION LIST

AV	AIR VALVE
B	BOLLARD
CL	COVER LEVEL
DK	DROP KERB
DPC	DAMP PROOF COURSING
ECB	ELECTRIC CABLE CABINET
ECP	ELECTRIC CABLE PIT
EP	ELECTRIC POLE
ER	EARTH ROD
FAI	FRESH AIR INLET
FH	FIRE HYDRANT
GU	GULLY
GC	GAS COCK
IL	INVERT LEVEL
LC	LAMP COLUMN
M	SERVICE MARKER
MH	MANHOLE COVER
OHC	OVERHEAD CABLES
RS	ROAD SIGN
RWP	RAIN WATER PIPE
SC	STOP COCK
SV	STOP VALVE
SVP	SOIL AND VENT PIPE
TBM	TEMPORARY BENCH MARK
TCB	TELEPHONE CABLE CABINET
TC	TELEPHONE CABLE PIT
TP	TELEPHONE POLE
TOS	TOP OF SILT
TOW	TOP OF WALL
TV	CABLE T.V. V.
UTL	UNABLE TO LIFT
VP	VENT PIPE
WL	WATER LEVEL
WM	WATER METER
WO	WASH OUT

Existing Services Key

Existing Gas

Existing Telecom

Existing Electric

Existing Water

Existing Overhead

Notes:

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- 1.6 This drawing is based upon the survey by KND Surveys Ltd, reference E 12 22 dated 31st May 2022 provided in digital format.
- 1.7 Levels are related to previous KND Surveys Drawing (A0515-1).
- 1.8 The grid relates to a local datum.
- 1.9 The Contractor must check the levels of all existing drainage outfalls prior to construction of any drainage, unless otherwise agreed, to ensure the proposed design may be achieved. Any discrepancies must be reported immediately to Aventus Design.
- 1.10 Sulphates have been determined as class 1 (DS-x) for design purposes in accordance with BRE Special Digest 1 (2001). Buried Concrete to be in accordance with ACCE Site Class AC-x.
- 1.11 All external building dimensions are to be checked against the Architects drawings prior to any construction commencing.
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- 1.14 Formation to road/hardstanding to be proof rolled and any soft spots in subgrade of road/Hardstanding areas are to be excavated and replaced with well compacted sub-base or free draining granular material to Department of Transport Specification for Highway Works Part 2' Table 6/1 Class 1 (General Granular Fill) and compacted in accordance with Table 6/4.

CDM REGULATIONS 2015

Aventus Design have considered and where reasonably practicable avoided foreseeable risks in the preparation of the design shown on this and related drawings. Significant risks which remain and associated control measures are identified in the Risk Register and should be given particular attention by the main contractor on site.

RISKS RELATING TO THIS DRAWING:

RISK NUMBERS ? & ? on Risk Register

NOTE: The Risk Register records only those elements considered unusual, difficult to manage or outside the anticipated expertise of a competent contractor.

Drawing Status: PRELIMINARY ISSUE

B	19.02.26	Services annotated, drainage added.	CU	PP
A	31.10.25	Sycamore Tree added.	CU	PP
REV.	DATE	DESCRIPTION	CHK	APP

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Email: mail@aventusdesign.co.uk
Web: www.aventusdesign.co.uk

Client: Sonning Golf Club

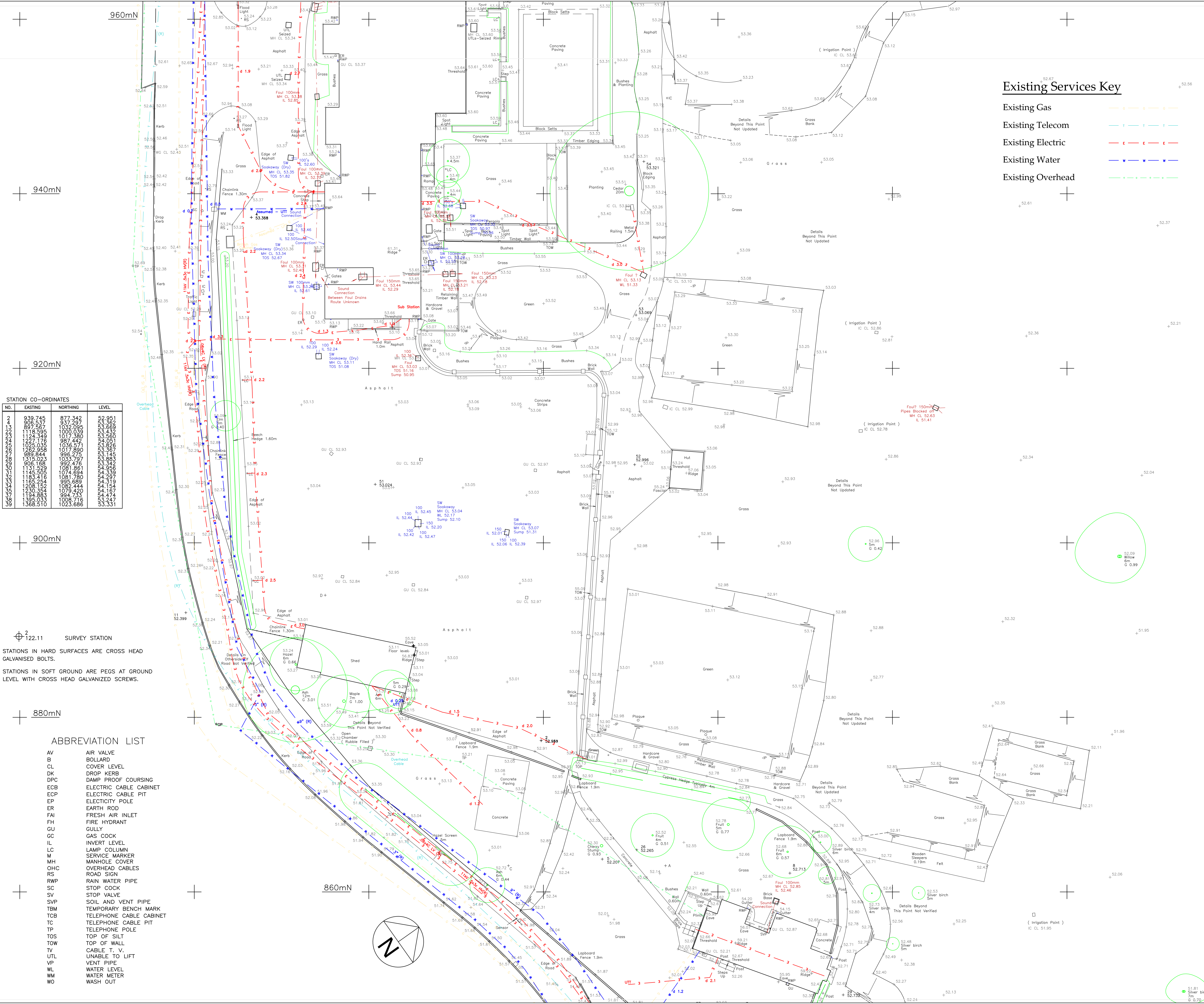
Site: Sonning Golf Club,
Duffield Road, Sonning
RG4 6GJ

Title: Site Survey Sheet 1 of 2

Drawing no. H1515 - 400-1

Issue:	Scale: 1:200 @ A1	Checked: -	Date: -
B	Drw: C.U.	Date: July '25	Approve: -

ORIGINAL SIZE - A1



Existing Services Key

- Existing Gas
- Existing Telecom
- Existing Electric
- Existing Water
- Existing Overhead

STATION CO-ORDINATES			
NO.	EASTING	NORTHING	LEVEL
2	939.745	877.342	52.951
13	908.537	937.287	53.562
13	897.567	1032.095	53.669
23	1118.595	1000.039	53.432
23	1124.349	1017.380	53.560
24	1227.749	987.442	54.051
24	1225.076	1036.571	54.056
26	1262.958	1017.890	53.367
26	989.844	906.275	54.145
28	1315.023	1033.797	53.853
28	906.168	952.476	54.956
30	1151.529	1081.861	54.956
32	1145.505	1074.694	54.339
32	1165.116	1081.780	54.297
33	1165.254	995.689	54.319
34	1208.152	1082.444	54.194
34	1230.354	1079.420	54.167
35	1394.683	994.733	53.247
36	1394.633	1008.716	53.247
39	1368.510	1023.686	53.331

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- EP ELECTICITY POLE
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- FAI FRESH AIR INLET
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- GU GULLY
- GC GAS COCK
- IL INVERT LEVEL
- LC LAMP COLUMN
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- MH MANHOLE COVER
- OHC OVERHEAD CABLES
- RS ROAD SIGN
- RWP RAIN WATER PIPE
- SC STOP COCK
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- TP TELEPHONE POLE
- TOS TOP OF SILT
- TOW TOP OF WALL
- TV CABLE T.V.
- UTL UNABLE TO LIFT
- VP VENT PIPE
- WL WATER LEVEL
- WM WATER METER
- WO WASH OUT

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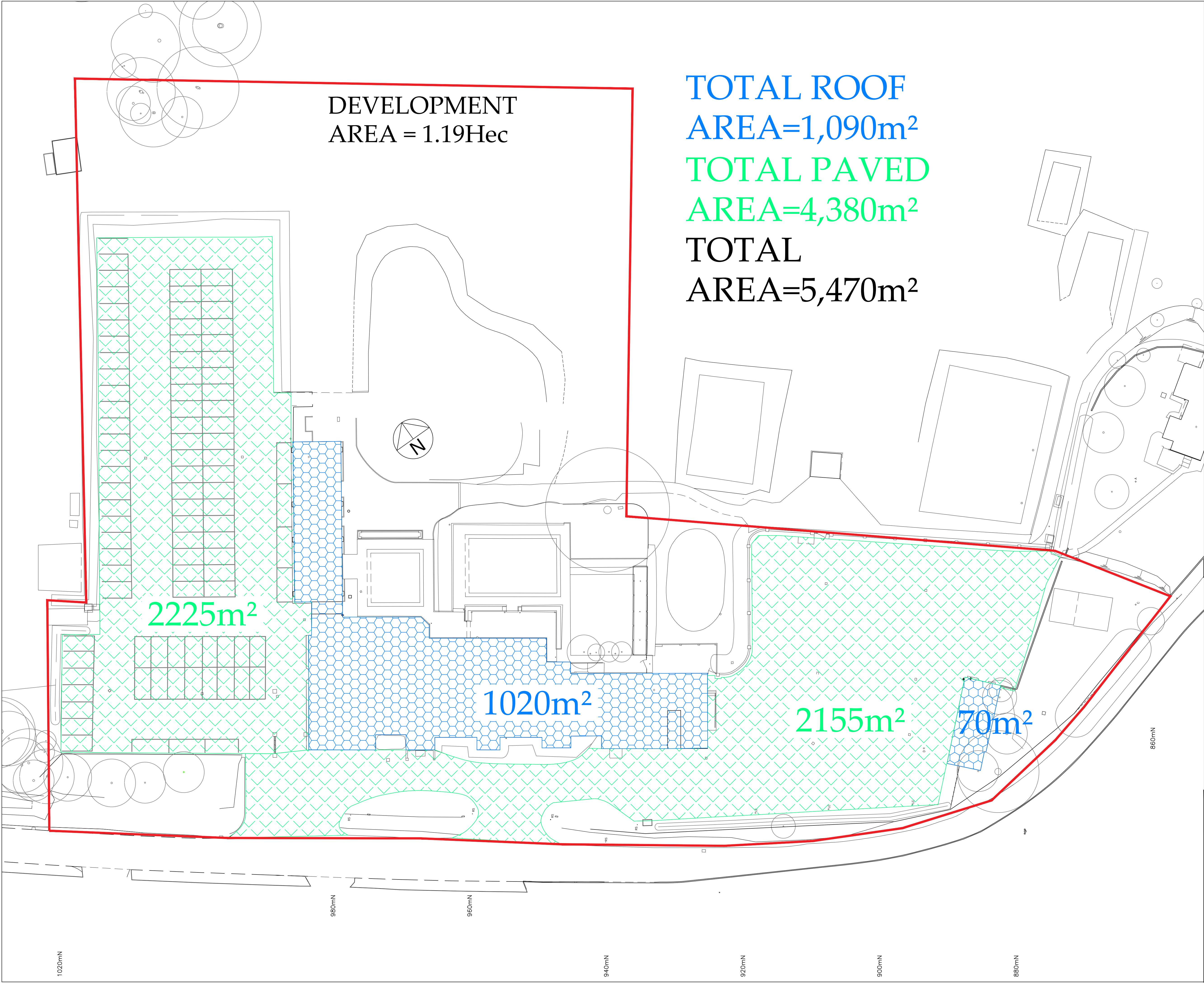
Drawing Status PRELIMINARY ISSUE

A	19.02.26	Services annotated, drainage added.	CU	PP
REV.	DATE	DESCRIPTION	CHK	APP
Aventus Design Ltd Unit 5 - Leaches Farm Business Centre Bicester Road Kingswood Aylesbury Bucks HP18 0RF Tel: 01296 770066 Email: mail@aventsdesign.co.uk Web: www.aventsdesign.co.uk				
Client: Sonning Golf Club				
Site: Sonning Golf Club, Duffield Road, Sonning RG4 6GJ				
Title: Site Survey Sheet 2 of 2				
Drawing no. H1515 - 400-2				
Issue: A	Scale: 1:200 @ A1	Checked: -	Date: -	
	Dwg: C.U.	Date: July '25	Approve: -	Date: -

50mm
100mm
150mm
200mm
250mm
ORIGINAL SIZE - A1

APPENDIX B

AREAS DRAWINGS



Notes:

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Drawing Status

PRELIMINARY ISSUE

REV.	DATE	DESCRIPTION	CHK	APP
-	-	-	-	-

Aventus Design Ltd
Unit 5 - Leaches Farm
Business Centre
Bicester Road
Kingswood
Aylesbury
Bucks HP18 0RF
Tel: 01296 770066

Aventus
DESIGN

Civil & Structural Engineers
Email: mail@aventusdesign.co.uk
Web: www.aventusdesign.co.uk

Client:

Sonning Golf Club

Site:

Sonning Golf Club,
Duffield Road, Sonning
RG4 6GJ

Title:

Existing Areas Plan

Drawing no.

H1515 - 450

Issue:

Scale: 1:250 @ A1

Checked: -

Date: -

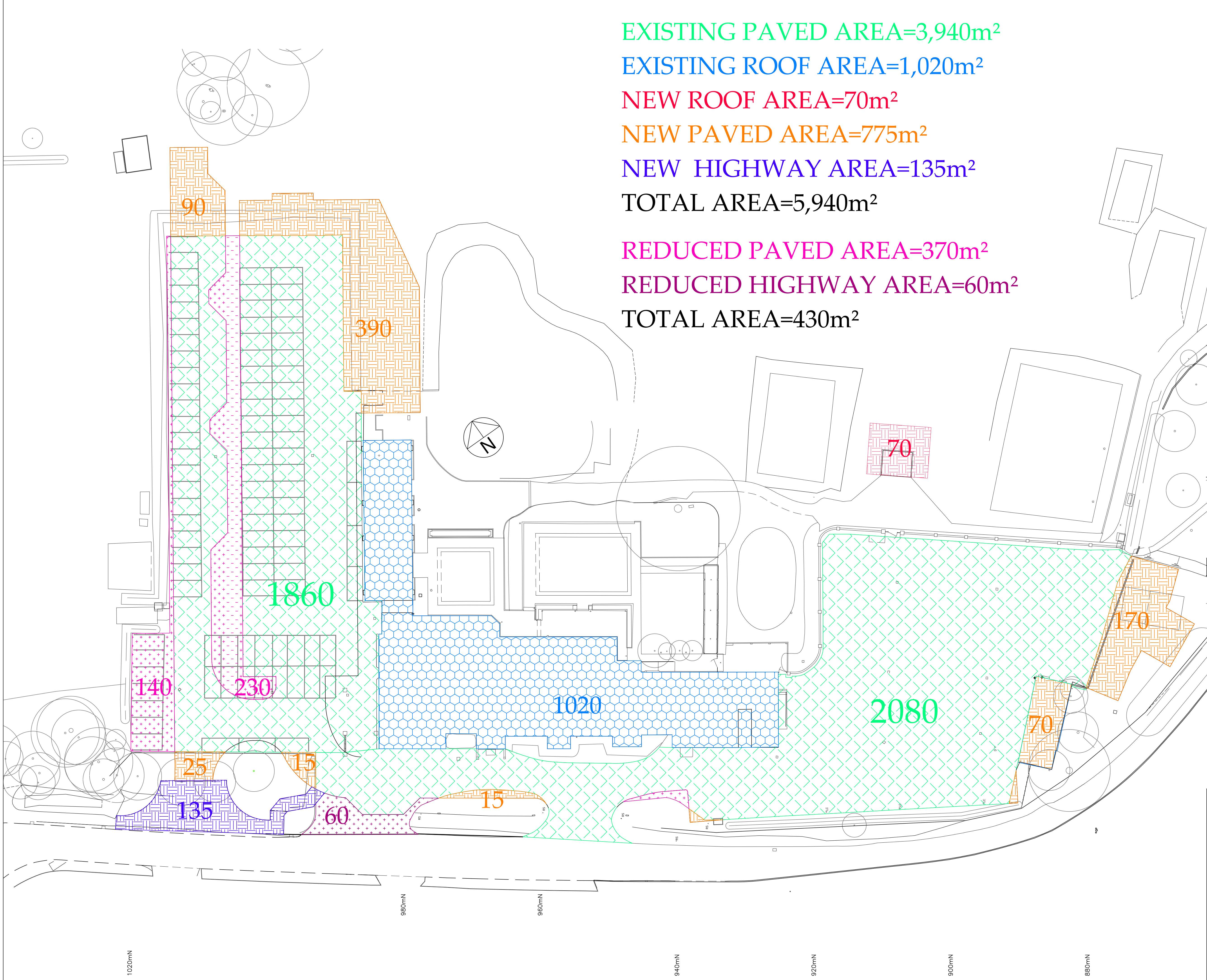
Dr: C.U.

Date: Apr '26

Approve: -

Date: -

ORIGINAL SIZE - A1



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Drawing Status

PRELIMINARY ISSUE

REV.

DATE

DESCRIPTION

CHK

APP

Aventus Design Ltd

Unit 5 - Leaches Farm

Business Centre

Bicester Road

Kingswood

Aylesbury

Bucks HP18 0RF

Tel: 01296 770066

Aventus

DESIGN

Civil & Structural Engineers

Email: mail@aventusdesign.co.uk

Web: www.aventusdesign.co.uk

Client:

Sonning Golf Club

Site:

Sonning Golf Club,

Duffield Road, Sonning

RG4 6GJ

Title:

Proposed Areas Plan

Drawing no.

H1515 - 451

Issue:

Scale: 1:250 @ A1

Checked: -

Date: -

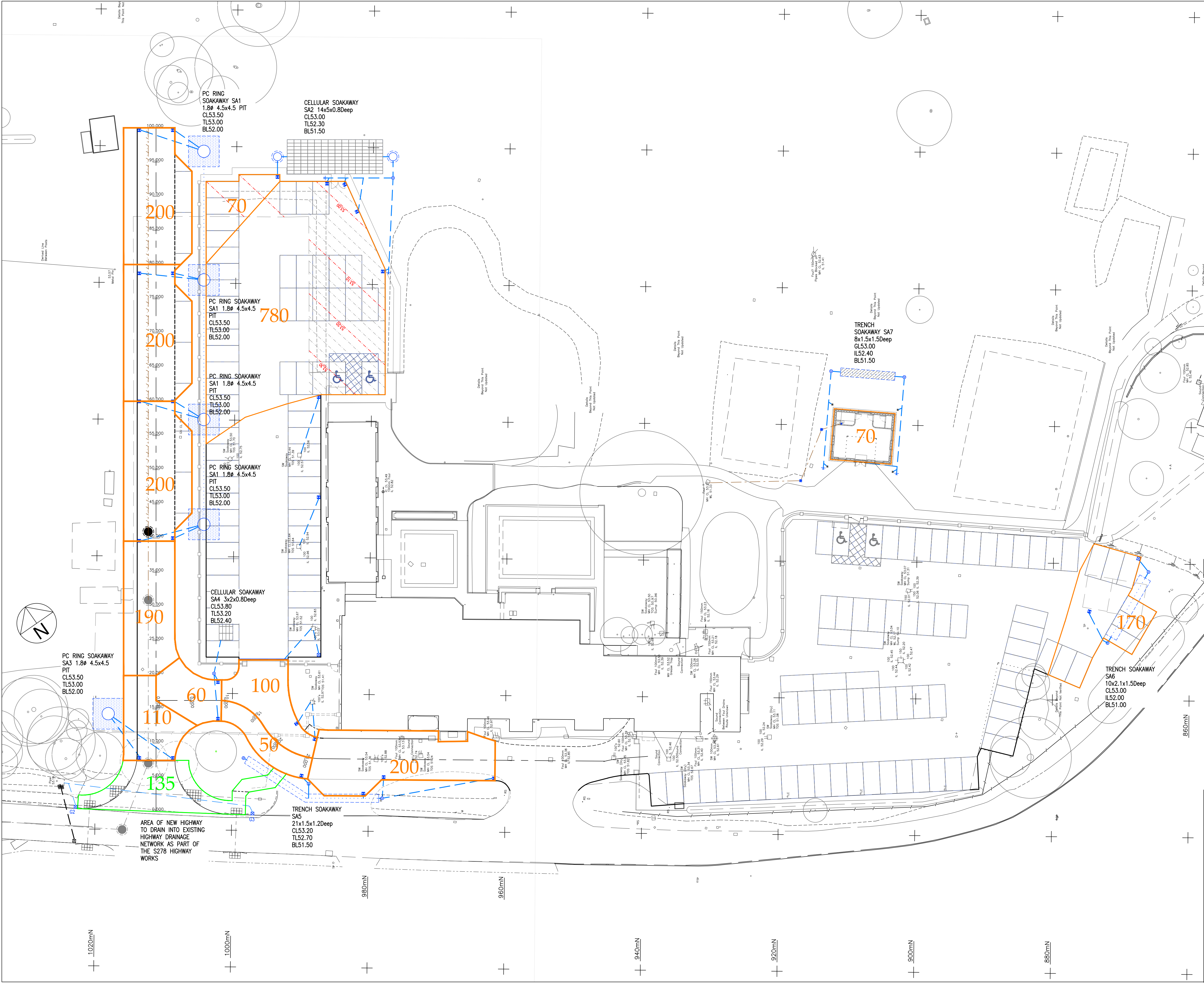
Drn: C.U.

Date: Apr '26

Approve: -

Date: -

ORIGINAL SIZE - A1



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RISKS RELATING TO THIS DRAWING:
RISK NUMBERS 4 - 6 on Risk Register
NOTE: The Risk Register records only those elements considered unusual, difficult to manage or outside the anticipated expertise of a competent contractor.

Drawing Status: **PRELIMINARY ISSUE**

REV.	DATE	DESCRIPTION	CHK	APP
-	-	-	-	-
Aventus Design Ltd Unit 5 - Leaches Farm Business Centre Bicester Road Kingswood Aylesbury Bucks HP18 0RF Tel: 01296 770066 Email: mail@aventusdesign.co.uk Web: www.aventusdesign.co.uk				
Client: Sonning Golf Club				
Site: Sonning Golf Club, Duffield Road, Sonning RG4 6GJ				
Title: Drainage Areas Plan				
Drawing no. H1515 - 452				
Issue:	Scale: 1:200 @ A1	Checked: PP	Date: Apr 26	
	Drn: S.U.	Date: Apr 26	Approve: SU	Date: Apr 26

ORIGINAL SIZE - A1
50mm
100mm
150mm
200mm
250mm

APPENDIX C

EXISTING RUN-OFF CALCULATIONS

Aventus Design Limited		Page 1
Unit 7, Leaches Farm Bus. Ce... Bicester Road Kingswood, Aylesbury, Bucks ...		
Date 05/05/2026 10:59 File	Designed by su-av Checked by	
Elstree Computing Ltd		Source Control 2020.1.3
<u>ICP SUDS Mean Annual Flood</u> Input Return Period (years) 100 Soil 0.300 Area (ha) 1.190 Urban 0.000 SAAR (mm) 700 Region Number Region 6 Results 1/s QBAR Rural 2.2 QBAR Urban 2.2 Q100 years 6.9 Q1 year 1.8 Q30 years 4.9 Q100 years 6.9		
©1982-2020 Innovyze		

APPENDIX D

SITE INVESTIGATION REPORT BY SOIL CONSULTANTS

GROUND INVESTIGATION REPORT

PROPOSED REDEVELOPMENT:

**SONNING GOLF CLUB (PHASE 1 WORKS & PROSHOP), DUFFIELD ROAD, SONNING, READING,
BERKSHIRE RG4 6GJ**



Client: Sonning Golf Club
Duffield Road, Sonning,
Reading, Berkshire
RG4 6GJ

Consulting Engineers: Aventus Design Ltd
Unit 5 Leaches Farm Business Centre, Bicester Road
Kingswood, Aylesbury, Bucks. HP18 0RF

Report ref: 11043b/CA_Rev2

Date: 18th March 2026

GROUND INVESTIGATION REPORT**PROPOSED REDEVELOPMENT:****SONNING GOLF CLUB (PHASE 1 WORKS & PROSHOP), DUFFIELD ROAD, SONNING, READING,
BERKSHIRE RG4 6GJ****DOCUMENT ISSUE STATUS:**

Issue	Date	Description	Author	Checked / approved
Rev 0	01/09/25	First issue	Chris Avalos BSc(Hons) MSc FGS	Stuart Wagstaff BSc(Hons), MSc, FGS, CGeol, RoGEP
Rev 1	04/02/2026	Update to development plans	Chris Avalos BSc(Hons) MSc FGS	Stuart Wagstaff BSc(Hons), MSc, FGS, CGeol, RoGEP
Rev 2	18/03/2026	Update to development plans	Chris Avalos BSc(Hons) MSc FGS	Stuart Wagstaff BSc(Hons), MSc, FGS, CGeol, RoGEP

This investigation has been undertaken within the constraints of the client's instruction/contract, together with those set out in the 'General information, limitations and exceptions' section at the end of this report. The Soil Consultants Limited (SCL) 'Standard Terms of Appointment' are also included at the end of this report and these identify the contractual arrangements for the investigation. Conclusions or recommendations made in this report are limited to those which can be reasonably based upon the research and/or intrusive investigation work carried out. Any comments which rely on third-party information which has been provided to us are made in good faith and on the assumption that such information is accurate. SCL have not carried out independent validation of any third-party information. Any views or recommendations made by the authors are expressed solely on behalf of SCL and not as individuals.

SCL has prepared this Report for the Client in accordance with the Terms of Appointment under which our services were performed. With respect to third parties, no other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by us. This Report may not be relied upon by any other party without the prior and express written agreement of SCL. Any warranty provided with this report will commence on the day of the first issue (Rev0) and this will not change without the express written agreement of SCL.

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General Information, Limitations and Exceptions

Standard Terms of Appointment

APPENDIX A

Fieldwork, in-situ testing and monitoring

-  Foreword
-  Borehole records
-  Standard Penetration Test results
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-  Trial pit records
-  Dynamic Probe Test results
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-  Soakage Test results

Laboratory testing

-  Particle size distribution tests

Ground profiles

-  Plot of SPT 'N' value versus depth
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Contamination and chemical testing

-  Foreword
-  General soil suite
-  WAC test results
-  Sulphate/pH suite

Plans, drawings & photographs

-  Site photographs
-  Proposed development plans
-  Site Plan
-  Site Walkover Plan
-  Site Service Plan
-  Site Location Plan

1.0 INTRODUCTION

Consideration is being given to the construction of a new retail building intended to be used as a 'Pro Shop' replacing the existing timber structure. As part of the works, the existing car parking areas may be re-surfaced with a small additional parking area created in the south eastern corner of the visitor car park. Soakaways are proposed for the dispersal of storm water from the structure and parking areas. In connection with the proposed works, Soil Consultants Ltd (SCL) were commissioned by Aventus Design Ltd on behalf of Sonning Golf Club Limited, to carry out a ground investigation to include the following elements:

-  Intrusive investigation to identify the ground sequence and groundwater conditions
-  Geotechnical and geo-environmental sampling and laboratory testing
-  Provision of advice on shallow foundation design along with considerations for the construction of new hard standing and soakaways
-  Provision of an outline onsite contamination assessment

This report describes the intrusive investigation undertaken, gives a summary of the ground conditions encountered and discusses geotechnical design elements. An outline contamination assessment is also provided.

2.0 SITE DESCRIPTION

A summary description of the site and its general setting is as follows:

Element	Description
Site location and setting	- Located in Wokingham Borough Council district, within the county of Berkshire - Golf club green space located to the northeast of Duffield Road - The proposed Shop site forms part of the wider Sonning Golf Club located on the northern boundary of the visitors car park which is positioned on the south eastern side of the main club house building. The car parking areas are located either side of the club house building. - Predominately residential area with sports ground to the north with open farm land beyond - NGR 476505E, 174600N - Railway tracks are present approx. 100m southeast (Photo 6)
Site dimensions	New building occupies an area of about 15m (NE-SW) x 10m (NW-SE)
Site boundaries	- The north, east and west have no definable boundaries and is open to the surrounding golf course greens and fairways (Photos 3, 4 & 5) - The southern boundary comprises a brick wall separating the golf course from the visitors parking area (Photos 3, 4 & 5)
Site description	- The site currently comprises a small single storey wooden structure used as a halfway hut/referee hut with soft landscaping to the north, east and west and hardstanding pathway to the south (Photo 1) - Areas of hardstanding used for vehicle parking is present surround the main clubhouse to the east, south and west (Photos 2, 5 & 7) - An area of scrubland is present approx. 37m SE and currently comprises dilapidated hardstanding with overgrown shrubs and weeds (Photo 5)
Topography and site levels	- Topographical information has been provided for the area around the existing club house (Aventus Design, drawing ref: H1515-100-1) - Measured levels across the general development area indicate that the site lies at +52.99mOD. - The site development area is generally flat, however the wider area slopes slightly downwards to the northwest
Existing vegetation within site and adjacent properties	- A 5m tall small-leaved lime tree is present 20m northeast of the existing wooden structure; a 14m tall cedar tree is present 30m west of the existing wooden structure - Trees are present within the southeastern corner of the visitors car park which include maple, ash and hazel of varying stages of maturity attaining heights of up to 12m. A conifer screen is present along the western boundary of the main car park attaining a height of about 3m with trees along the southern boundary comprising yew, sycamore ash and elm of heights up to about 12m. Other vegetation is identified on topographical drawing

The current site features are shown on the Site Plan which is included in the Appendix.

2.1 Unexploded ordnance risk assessment

From a preliminary search of UXO risk (shown below), the site is within a low risk UXO area therefore on-site support is considered to not be required for both investigation or development works.



This map principally indicates a hazard from Unexploded Bombs (UXB) due to WWII bombardment. Other sources of Unexploded Ordnance (UXO) may be present. It should be noted that this map does not represent UXO risk and should not be reported as such when reproduced.

LEGEND					
■	High: Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.		Military		Industry
■	Moderate: Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.		Transport		Docks
■	Low: Areas indicated as having 15 bombs per 1000acre or less.		Utilities		Bombing decoy
			UXO find		Luftwaffe targets
			Airfields		Other

3.0 EXPLORATORY WORK AND LABORATORY TESTING

The ground investigation was carried out between 21st to 24th July 2025 and is described below.

3.1 Constraints of investigation

At the time of the investigation suitable access was available to the majority of areas across the site and reasonable coverage was possible.

3.2 Dynamic sampler boreholes

Four window sample boreholes (WS101 to WS104) were completed using a tracked rig under the supervision of an experienced geo-environmental engineer. Representative samples were taken for geotechnical and environmental testing. In-situ Standard Penetration Testing (SPT) were carried out at appropriate intervals. The hammer Energy Ratio (Er) for the SPT equipment used was 73%; the relevant test certificate is appended.

3.3 Dynamic probing

Dynamic probe testing was carried out through the base of the respective borehole using 'Super Heavy-B' apparatus, to assist in the assessment of the potential presence of chalk dissolution features. A maximum depth of 10.00m bgl was achieved with the majority refusing at shallow depth between 2.60m and 2.70mbgl due to the high density of the soils.

3.4 Trial pits

Three trial pits (TP101 to TP103) were completed using a 2.5-ton tracked excavator to depths of between 1.0m and 2.0m under the supervision on an experienced geotechnical engineer. Representative geotechnical and geo-environmental samples were recovered from the trial pits. Soakage testing was undertaken in all of the trial pits in general accordance with the procedure outlined in BRE Digest 365:2016 'Soakaway design'.

One trial pit (HP01) was excavated using hand tools to provide samples for contamination testing and identification of the shallow ground conditions. The pit extended to a depth of 0.30m bgl.

3.5 Geotechnical laboratory testing

The following geotechnical laboratory testing was completed:



Particle size distribution tests

3.6 Chemical and contamination testing

Selected soil samples were delivered to a specialist laboratory (NORMEC DETS Ltd), and the following testing was carried out:

	General soil suite	-	2no samples
	Asbestos screening	-	2no samples
	Waste Acceptance Criteria (WAC)	-	1no sample
	Soluble sulphate/sulphur/pH analyses	-	5no samples

The engineering borehole and trial pit logs and the laboratory testing results are included in the Appendix.

4.0 GROUND CONDITIONS

Published BGS information (1:50,000 and 1:10,000 scale maps) indicates that the site is underlain by River Terrace Deposits which rest upon the Lambeth Group; this in turn overlies the Seaford and Newhaven Chalk Formations which are present at greater depth beneath the site. It is noted that a geological fault runs diagonally through the south-western part of the site in a NW/SE direction. Further faults are recorded about 37m southwest and 260m northwest of site, both aligned in a NW/SE direction

The presence of River Terrace Deposits was confirmed by the investigation, with a covering of made ground and reworked natural material associated with the landscaping. The Lambeth Group and undifferentiated chalk formations were not encountered within the depth of investigation although tentatively, in DP103, there was a reduction of resistance values measured below about 3.5m which could indicate the presence of Lambeth Group Deposits or, a compositional change within the river Terrace Deposits.

Detailed descriptions are presented on the exploratory hole records, and the ground sequence is represented on the geological cross sections; this information is appended. The ground sequence is summarised in the following sections. Note that all depths are relative to existing ground level unless otherwise stated.

4.1 Topsoil

Topsoil was encountered from ground level and identified to depths between 0.10m and 0.15m bgl and generally comprised brown silty gravelly sand locally with occasional live roots and rootlets.

4.2 Made ground

Made ground was encountered below the topsoil to depths of between 0.25m and 0.60m bgl. With the exception of a thin layer (150mm thick) in TP102 which contained anthropogenic material of brick fragments, the soils were devoid of man-made material, generally comprising light greyish-brown silty gravelly sand. It is considered that this material represents naturally derived material used for regrading and landscaping of the golf course and fairways and also possibly to aid drainage.

Particle size distribution (PSD) analyses undertaken from one sample (TP101, 0.12m-0.50m) from this strata indicates the material is predominantly gravel (72%) with secondary component of sand (20%) and subordinate fines (8%).

4.3 River Terrace Deposits

River Terrace Deposits were met beneath the made ground, and the base of this stratum was not proven within the depths investigated (maximum depth proven 3.20m bgl). These soils generally comprised orangish-brown silty very gravelly sand and orangish-brown silty very sandy gravel

Particle size distribution (PSD) analyses undertaken indicate a predominance of sand (between 51-68%) with a secondary component of gravel (25-44%) with subordinate fines (between 5-8%). One sample taken from WS103 at 2.00m depth indicates a predominance of gravel (53%) with a secondary competent of sand (40%) and a minor component of fines (7%).

Standard Penetration Test (SPT) N values of between 12 and >50 (refusal) indicates the soils to be in a generally dense to very dense, locally medium dense, state of compaction with a general increase in density with depth.

4.4 Groundwater

During site investigation works groundwater was encountered only in WS103 at 2.43mbgl, with no rise noted after 20 minutes. This is considered to be perched groundwater within the River Terrace Deposits and seems anomalous with the other boreholes. We consider that the 'main' groundwater table lies within the underlying Lambeth Group and / or undifferentiated chalk formations at greater depth.

Of course, groundwater levels can of course vary seasonally and may be higher during the winter months and / or following periods of wet weather. We note that the investigation was undertaken during a period of extended dry weather (spring / summer 2025).

4.5 Environmental observations

No obvious olfactory or visual signs of soil or groundwater contamination were encountered during site investigation works. PID headspace testing (for VOC concentrations) was undertaken on samples of made ground and natural soils during the borehole exercise and during subsequent monitoring - no elevated levels were noted.

5.0 GEOTECHNICAL ASSESSMENT

The proposed works at this site include the following elements:

-  demolition of the existing structure
-  construction of new 'Pro Shop'
-  resurfacing of existing car parking areas along with new car parking off the south eastern corner of the visitors parking area.
-  Construction of new soakaway drainage

The investigation has revealed that beneath a layer of topsoil (up to 0.15m bgl) which overlies made ground (up to 0.) which in turn overlies the competent natural River Terrace Deposits proven to a maximum depth of 3.20m bgl. We anticipate that the granular material of the River Terrace Deposits should be suitable to support the structural loads using spread foundations.

5.1 Chalk dissolution and ground stability

Dissolution features within the chalk occur due to erosional processes during the last periglacial period. Their occurrence is random, and mobilisation of these features can be triggered by construction activities and/or changes to the groundwater regime.

The appended Groundsure report includes information on historical mining and natural cavities recorded in the vicinity of the site. The report indicates there are no recorded instances of natural cavities within 500m and the site lies within an area of 'negligible' risk with regards to the presence of chalk dissolution features, which are considered to be 'unlikely' to be present. There are no recorded underground workings in proximity to site and the nearest recorded surface ground working is 230m south of site. We have undertaken a natural cavities risk assessment using Edmonds procedure (Engineering Geology Special Publications No.18, 2001); this assessment indicates the site to have a 'Moderately low' subsidence hazard classification.

Our investigation revealed competent granular soils at shallow depth, with boreholes and dynamic probe tests generally refusing at shallow depth; the chalk was not encountered. A single probe (DP103) was completed to a depth of 10.0mbgl, which identified a probable change in strata at about 3.5mbgl; based on nearby historical boreholes we consider this could reflect the base of the River Terrace Gravel / top of the Lambeth Group. The Lambeth Group are typically composed of interbedded clay and sand and, are, shown to extend to about 20mbgl in this area. The boreholes and probes did not identify any significant weak / loose soils or open voids which could be associated with the presence of chalk dissolution and given the significant thickness of cover deposits shown above the chalk on historical logs, the risk to foundation performance from the presence of chalk dissolution is considered to be low. Notwithstanding this, our investigation provided only limited lateral and vertical coverage of the site, and thus the presence of solution features below the site cannot be totally ruled out. Thus, a careful watching brief should therefore be adopted during construction and if anomalous ground conditions are encountered then specialist advice should be sought from geotechnical contractors experienced in providing options for additional measures.

5.2 Spread foundations

Spread foundations must bypass any topsoil and made ground and be placed within the competent natural River Terrace Deposits. The natural granular soils are not considered to be frost susceptible and thus, a minimum foundation depth of 0.75m is recommended although some deepening may be required to ensure that the 'reworked' soils are bypassed and the natural undisturbed soils are exposed at founding level.

For preliminary assessment of the feasibility and sizing of foundations placed within the natural gravel, we envisage that an allowable bearing resistance of 200kN/m² would be appropriate; this would be applicable to moderate sized strip or pad foundations, say up to 2.5m width. Settlement at this design pressure is expected to be very small and well within normal tolerable design limits. As required by EC7, the design engineer must ensure that the correct comparisons are made between Design Actions and Design Resistances after the application of appropriate partial factors and using the final base geometry. For ULS design the bearing resistance should be determined, using undrained and/or drained analysis as appropriate, to calculate the degree of utilisation of the foundation (limit state GEO). SLS checks should be carried out using appropriate methods in accordance with current practice.

Whilst the boreholes and trial pits encountered non-shrinkable granular soils to at least 2.95mbgl, in our experience cohesive, shrinkable, clay layers can occur within River Terrace Deposits, and some variability in soil composition should be expected across the site. Thus, if clay soils are encountered then foundations should be deepened to bear on natural granular soils. In proximity to the trees on site, attention should be given any potential desiccation effects which may affect foundation design and construction and the guidance contained within NHBC Chapter 4.2 should be adopted.

The foundation excavations will encounter made ground and natural deposits that are granular in nature. These are expected to remain stable in the short term although some spalling of the unconsolidated soils could occur. Thus, provision for temporary lateral support should be made if excavations are to remain open or personnel entrance is required. On the basis of the boreholes, the excavations should remain dry, but it must be noted that groundwater levels can rise significantly during wet periods. We recommend that a monitoring of the borehole installations is carried out to confirm the groundwater levels.

As an alternative, consideration could be given to the use of a reinforced raft foundation. Following removal of any topsoil and made ground, the raft could be constructed on the natural undisturbed soils following proof rolling and replacement of any loose/soft zones. For this type of structure, the UDL is expected to be small and thus the bearing resistance of the soils should be adequate to accommodate the structural loads. If there are any concentrated or high loads, then further assessment should be undertaken to ensure intolerable deflection or punching failure of the raft does not occur.

5.3 Ground floor slab

Whilst the investigation has indicated that made ground is present across the site, this is generally less than 600mm thick and thus, ground bearing floor slabs could be adopted following proof rolling of the formation level. Any weak zone identified by proof rolling should be excavated and replaced with suitably compacted fill material. In proximity to trees, any root infested soils should be replaced.

Alternatively, fully suspended floor slabs could be adopted.

5.4 Pavement construction

Within the area of proposed new pavement (TRL 106 & 107), following removal of any topsoil and made ground, a preliminary CBR value of 5% is considered appropriate for the natural underlying granular soils present at shallow depth. The formation should be proof rolled prior to surfacing, and any soft/loose zones replaced with suitably compacted granular material. Proof rolling could of course generate a higher CBR value dependent upon the method and achievable compaction depth. Based on the CBR value of the slightly deeper soils, a CBR value in excess of 20% could be achievable. This should be confirmed by the ground works contractor and validated through post compaction testing.

The shallow soils across the site are assessed as being not frost-susceptible.

The current construction of hardstanding vehicle parking areas located to the west of the main clubhouse includes 20mm of asphalt with at least 100mm of granular subbase, the base of which was not proven however from the probe results, this sub-base could extend to between about 250mm and 400mm below ground level.

5.5 Soakaways

Trial pit soakage testing resulted in infiltration rates of between 1.59×10^{-5} m/s and 9.45×10^{-6} m/s, which indicate the shallow granular soils may provide a suitable medium for the disposal of surface water via traditional soakaways. Variability in the soakage rate is observable and this is likely due to compositional changes within the river Terrace Gravel. Thus, trench style soakaways may offer the most efficient form of soakaway design.

The site lies within a source protection zone and thus, use of soakaways may require approval from the Environment Agency. Although it is considered that the risk of chalk solution features is low, it is recommended that any soakaway is at a minimum distance of 5m from any structure.

5.6 Foundation concrete

Very low concentrations of water-soluble sulphates (2:1 water/soil extract) were measured in selected soil and groundwater samples, with near neutral pH values. The results fall into Site Design Class DS-1 of

Table C2 given in BRE Special Digest 1 (2005). We assess the site as having 'mobile' groundwater and this would result in an ACEC Site Class of AC-1.

Consideration should also be given to the potential oxidation of pyritic soils. Following the procedure recommended in the BRE digest, the amount of oxidisable sulphides is seen to be >0.3% in none of samples, suggesting that pyrite is not present.

6.0 OUTLINE ENVIRONMENTAL ASSESSMENT

This appraisal is generally based on the Environment Agency's 'Land contamination: risk management', 2023, adopting current UK practice which uses the Source-Pathway-Receptor methodology to assess contamination risks. For a site to be designated as contaminated a plausible linkage between any identified sources and receptors must be identified, i.e. whether potential contaminant linkages (PCLs) are present. In considering the potential for contamination to cause a significant effect, the extent and nature of the potential source are assessed and pathways/receptors identified; without a PCL there is theoretically no risk to the receptors from contamination.

6.1 Contamination testing

To confirm the presence or absence of contaminants for the proposed redevelopment, we have undertaken analysis of two soil samples for a range of general commonly occurring contaminants.

The soil test results have been assessed where relevant against the DEFRA Soil Guideline Values (SGV) and Category 4 Screening Levels (C4SLs), together with the LQM/CIEH Suitable 4 Use Level (S4UL) for Human Health Risk Assessment in which Generic Assessment Criteria (GACs) have been derived from the CLEA Model (2nd Edition, 2009). The contamination testing was carried out specifically for the purpose of providing a general guidance evaluation for the proposed development. Reference should be made to the foreword to the appended contamination test results in order to fully understand the context in which this discussion should be viewed.

We have used, where relevant, the trigger levels for **public open space (parks)** to assess the results of the contamination testing.

Using the relevant the trigger levels, all of the results fell below the threshold values.

The results of the testing suggest that there is no widespread contamination present at the exploratory positions. It should be noted that there may of course be pockets of undetected contamination between exploratory points.

Although Asbestos-Containing Materials (ACMs) were neither observed on site nor identified in the samples examined, we note that buildings, especially those constructed or refurbished before 2000, are a potential source of ACM and may contribute to Asbestos-Containing Soils (ACS) on-site and in surrounding areas. Furthermore, made ground, construction and/or demolition materials on site may also contain ACM and/or ACS which should be further investigated, if encountered, by competent persons. These matters should be addressed and assessed by competent persons in the Pre-Construction H&S plan prior to any demolition or earthworks being undertaken.

6.2 Disposal of excavated soils

Whilst a rigorous hazard assessment of the results was not within the scope of our investigation, a composite sample was taken for Waste Acceptance Criteria (WAC) determination. It should be noted that WAC tests alone do not allow for the characterisation of wastes under current UK law, which requires solid material results to be used to generate an appropriate European Waste Code (EWC) for the material. WAC results merely indicate if a waste soil or other excavated material “may” be suitable for disposal at a UK landfill of the appropriate type or if other methods of disposal are indicated or required. The WAC results to date indicate that the material would be suitable for disposal at a facility capable of accepting Inert wastes.

Specialist waste advice should be sought to confirm these findings using the additional contamination data provided in the environmental analysis in this report. These results should be sufficient to allow a characterisation to be undertaken by a competent waste advisor and they are available in electronic form on request.

Note that materials defined as wastes (i.e. anything intended to be discarded) cannot be removed from site or transported without being classified as either hazardous or non-hazardous and the appropriate EWC and Hazard Codes being determined, recorded, agreed and applied by competent licensed waste contractors.

If re-use or retention of waste materials on-site is considered desirable or required (for example to meet sustainability criteria), this will have to be agreed with the regulator prior to being undertaken to avoid such actions being considered ‘licensable and chargeable’ waste activities under current UK legislation and guidance. Additional investigation and data analysis by competent persons may be required in order to determine and/or confirm the suitability and fitness for purpose of the materials concerned on a site-specific basis.

The investigation has provided limited coverage of the site, and it is self-evident that there may be zones of contamination within the site which were not encountered. A careful watching brief should be kept during construction to ensure that any potentially contaminated soil encountered is disposed of in a safe and controlled manner. Site workers should observe normal hygiene precautions when handling soils and if material suspected of being contaminated is identified during construction, this should be set aside under protective cover and further tests undertaken to verify the nature and levels of contamination present. If contamination is present, a full site re-assessment may be required, and a contingency should be in place in this regard.



GENERAL INFORMATION, LIMITATIONS AND EXCEPTIONS

Unless otherwise stated, our Report should be construed as being a Ground Investigation Report (GIR) as defined in BS EN1997-2. Our Report is not intended to be and should not be viewed or treated as a Geotechnical Design Report (GDR) as defined in EN1997-2. Any 'design' recommendations which are provided are for guidance only and are intended to allow the designer to assess the results and implications of our investigation/testing and to permit preliminary design of relevant elements of the proposed scheme.

The methods of investigation used have been chosen taking into account the constraints of the site including but not limited to access and space limitations. Where it has not been possible to reasonably use an EC7 compliant investigation technique we have adopted a practical technique to obtain indicative soil parameters and any interpretation is based upon our engineering experience and relevant published information.

The Report is issued on the condition that Soil Consultants Ltd will under no circumstances be liable for any loss arising directly or indirectly from ground conditions between the exploratory points which differ from those identified during our investigation. In addition, Soil Consultants Ltd will not be liable for any loss arising directly or indirectly from any opinion given on the possible configuration of strata between the exploratory points, below the maximum depth of the investigation or where site conditions have changed since the exploratory work; such opinions, where given, are for guidance only and no liability can be accepted as to their accuracy. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in using this Report. We will provide an indication of the strata configuration within the site based upon exploratory holes undertaken. Any strata boundaries shown will relate to the principal layers but it should be noted that these boundaries could be gradational and the depths identified would then not be definitive. The boundary depths/levels are given for guidance only.

Comments made relating to groundwater or ground-gas are based upon observations made during our investigation unless otherwise stated. Groundwater and ground-gas conditions may vary with time from those reported due to factors such as seasonal effects, atmospheric effects and and/or tidal conditions. We recommend that if monitoring installations have been included as part of our investigation, continued monitoring should be carried out to maximise the information gained.

Specific geotechnical features/hazards such as (but not limited to) areas of root-related desiccation and dissolution features in chalk/soluble rock can exist in discrete localised areas - there can be no certainty that any or all of such features/hazards have been located, sampled or identified. Where a risk is identified the designer should provide appropriate contingencies to mitigate the risk through additional exploratory work and/or an engineered solution.

Where a specific risk of ground dissolution features has been identified in our Report (anything above a 'low' risk rating), reference should be made to the local building control to establish whether there are any specific local requirements for foundation design and appropriate allowances should be incorporated into the design. If such a risk assessment was not within the scope of our investigation and where it is deemed that the ground sequence may give rise to such a risk (for example near-surface chalk strata) it is recommended that an appropriate assessment should be undertaken prior to design of foundations.

Where spread foundations are used, we recommend that all excavations are inspected and approved by suitably experienced personnel; appropriate inspection records should be kept. This should also apply to any structures which are in direct contact with the soil where the soil could have a detrimental effect on performance or integrity of the structure.

Ground contamination often exists in small discrete areas - there can be no certainty that any or all such areas have been located, sampled or identified.

The findings and opinions conveyed in this Report may be based on information from a variety of sources such as previous desk studies, investigations or chemical analyses. Soil Consultants Limited cannot and does not provide any guarantee as to the authenticity, accuracy or reliability of such information from third parties; such information has not been independently verified unless stated in our Report. No liability will be accepted for changes to the ground and groundwater conditions which occur post investigation.

Our Report is written in the context of an agreed scope of work between Soil Consultants Ltd and the Client and should not be used in any different context. In light of additional information becoming available, improved practices and changes in legislation, amendment or re-interpretation of the assessment or the Report in part or in whole may be necessary after its original publication.

Unless otherwise stated our investigation does not include an arboricultural survey, asbestos survey, ecological survey or flood risk assessment and these should be deemed to be outside the scope of our investigation.

We will identify tree and plant species if possible, but a suitably qualified arboriculturalist/botanist should be consulted to provide definitive identification.

Where reference to 'topsoil' is made, this should be construed as any turf (if present) plus any obvious organic-rich/humic layer of soil beneath, which may or may not contain roots/rootlets. Unless otherwise requested, we do not provide a detailed description, undertake sampling/testing for classification purposes or provide a specific classification. The thickness of the 'topsoil' identified on our exploratory hole records is indicative only and should not be used for detailed volume or site strip calculations.

STANDARD TERMS OF APPOINTMENT OF SOIL CONSULTANTS LTD FOR GEOTECHNICAL SERVICES

- 1 Unless previously withdrawn, our offer remains valid for a period of sixty days from date of offer. If an instruction is given after the sixty days we reserve the right to reasonably adjust any cost associated with the project to reflect any variance on the original offer. In placing an instruction to proceed with exploratory work, whether directly from the Client or Client's representative, the Client is deemed to have accepted our Terms of Appointment.
- 2 Our offer is on the basis that free, unhindered access and working conditions are available and that the investigation can be completed in one visit, if applicable. Delays beyond our control will incur additional charges. If additional works outside our offer are required to facilitate the investigation these will be advised and any costs will be passed on to the Client.
- 3 In our quotation we will provide an estimate of any mobilisation period following an instruction to proceed. This estimate will be accurate at the time of quotation, but it should be noted that the mobilisation period may vary at a later date due to factors such as sub-contractor availability and workload.
- 4 In commissioning this work, the Client has a responsibility for the health, safety and welfare of operatives invited to undertake work on their site. The Client shall indemnify us in respect of any failure to fulfil their obligations in connection with all relevant and current Health and Safety Regulations.
- 5 The methods of investigation used have been chosen taking into account the constraints of the site including but not limited to access, space and budgetary limitations. Where it has not been possible to reasonably use an EC7 compliant investigation technique, or where a non-compliant technique has been specified, we will adopt practical and appropriate techniques to obtain indicative soil parameters.
- 6 Unless otherwise stated, our Report should be construed as being a Ground Investigation Report (GIR) as defined in BS EN1997-2. Our Report is not intended to be and should not be viewed or treated as a Geotechnical Design Report (GDR) as defined in BS EN1997-2. Any interpretation which is provided is for guidance only and must not be regarded as design or design recommendation.
- 7 Where excavation is required as part of the exploratory work, the Client shall provide drawings or plans showing accurate and complete locations of all underground services and structures. In performing our service, we shall take reasonable precautions to avoid damage to underground services or structures. We will not be responsible for any damage caused to underground services or structures and will not be liable for any claims for damage, expenses arising or losses unless the location of all underground services or structures are accurately shown on drawings and those plans have been provided to us in good time prior to commencement of the exploratory work. Risk to the Client can be further reduced by undertaking a scan of the site using a specialist underground scanning service which would be intended to identify traceable services at shallow depth.
- 8 With some sites, especially those in certain areas of London and other large towns and cities, there may be a risk of unexploded ordnance (UXO) being present. Unless otherwise stated our offer is on the basis that the Client or their representative provides a preliminary UXO risk assessment for the site. It should be noted that if the site is deemed to be in an area of risk then further measures will be required. These would normally comprise either a more detailed risk assessment and/or specialist site attendance by an EOD engineer. These measures can be commissioned either by the Client or Soil Consultants Ltd. If the Client requires, we would be pleased to obtain a preliminary risk assessment at cost+10%.
- 9 The Client will supply a site plan (to a rational scale), an indication of the scope and type of the proposed development and an indication of any relevant structural loading information.
- 10 Should the Client terminate the contract after instruction, we reserve the right to recover costs associated to work carried out between the time of instruction and the point of termination. Cancellation fees, and material costs shall be charged at cost plus 20% (+VAT). Engineer/technician time shall be charged at £95+VAT per hour and principal consultant/director time shall be charged at £125+VAT per hour.

- 11 The Report is issued on the condition that Soil Consultants Ltd will under no circumstances be liable for any loss arising directly or indirectly from ground conditions between the exploratory points which differ from those identified during the investigation. In addition Soil Consultants Ltd will not be liable for any loss arising directly or indirectly from any opinion given on the possible configuration of strata both between the exploratory points and/or below the maximum depth of the investigation; such opinions, where given, are for guidance only and no liability can be accepted as to their accuracy. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in using this Report.
- 12 If and when instructed, an agreed number of contamination tests will be carried out to give an outline assessment of potential contaminants. In some circumstances it may be necessary to recommend further monitoring, contamination testing and assessment and the scope of this work would be agreed with the Client. Notwithstanding this additional scope, local regulatory authorities may have specific requirements which need to be addressed. Unless otherwise agreed or stated our reporting will constitute neither a Quantitative Risk Assessment nor a Remediation Statement or Strategy.
- 13 Our reports are counter-checked by one of our suitably qualified and experienced engineers/geologists.
- 14 Notwithstanding anything to the contrary contained in these terms, our liability under or in connection with these terms whether in contract or in tort, in negligence, for breach of statutory duty or otherwise (other than in respect of personal injury or death) shall not exceed the sum equivalent to ten times our contract fee or £100,000 whichever is less in the aggregate for geotechnical and environmental matters unless otherwise agreed.
- 15 Without prejudice to any other exclusion or limitation of liability, damages, loss, expense or costs our liability for any claim or claims under this agreement be further limited to such sum as it would be just and equitable for us to pay having regard to the extent of our responsibility for the loss or damage giving rise to such claim or claims ("the loss and damage") and on the assumptions that:
 - (a) All other consultants, contractors, sub-contractors, project managers or advisers engaged in connection with the Project have provided contractual undertakings to the Client on terms no less onerous than those set out in the original contracts in respect of the carrying out of their obligations in connection with the Project; and
 - (b) There are no exclusions of or limitations of liability nor joint insurance or co-insurance provisions between the Client and any other party referred to in this clause and any such other party who is responsible to any extent for the loss and damage is contractually liable to the Client for the loss and damage; and
 - (c) All such other consultants, contractors, sub-contractors, project managers or advisers have paid to the Client such proportion of the loss or damage which it would be just and equitable for them to pay having regard to the extent of their responsibility for the loss and damage.
- 16 Further and notwithstanding anything to the contrary contained in this agreement and without prejudice to any provision in this agreement whereby liability is excluded or limited to a lesser amount, our liability under or in connection with this agreement whether in contract or in tort, in negligence, for breach of statutory duty or otherwise for any claim shall not exceed the amount, if any, recoverable by us by way of indemnity against the claim in question under professional indemnity insurance taken out by us and in force at the time that the claims or (if earlier) circumstances that may give rise to the claim is or are reported to the insurers in question. The limitation shall not apply if no such amount is recoverable due to us having been in breach of our obligations or the terms of any insurance maintained in accordance therewith or having failed to report any such claim or circumstances to the Insurers in question timeously.
- 17 Whilst our investigation may include asbestos screening/quantification on selected samples, this must not be deemed to constitute a full asbestos survey or be taken as sufficient to definitively identify the presence or quantity of asbestos within or on the ground. We will not accept responsibility if asbestos is encountered during any subsequent construction or development works and in placing a contract with us the Client accepts this condition. Where the fabric of a building is to be disturbed, the Client shall provide an appropriate asbestos survey to us prior to exploratory work and make adequate provision to allow the implementation of sufficient and appropriate protective/remedial measures for the work to progress safely.

- 18 Where our report refers to 'topsoil', this should be construed as any turf (if present) plus any obvious organic rich/humic layer of soil beneath, which may or may not contain roots/rootlets. Unless otherwise requested, we do not provide a detailed description, undertake sampling/testing for classification purposes or provide a specific classification. The thickness of the 'topsoil' identified on our exploratory hole records is indicative only and should not be used for detailed volume or site strip calculations; if this type of classification is required, this should be identified to us at an early stage and the method of sampling, testing and classification agreed.
- 19 The Client agrees that they shall not bring any claim personally against any director/employee of Soil Consultants Ltd or consultant to us in respect of loss or damage suffered by the Client arising out of this contract.
- 20 Our appointment shall be under simple agreement and our liability under this agreement whether in contract or in tort shall be for a period of six years from date of instruction.
- 21 Our reports are non-assignable and are prepared for the benefit of the Client. No reliance can be assumed by others without written agreement from Soil Consultants Ltd. We will provide a letter of reliance at our discretion and this will be subject to payment of our fee, which will be 10% of contract value, subject to a minimum fee of £1,250 plus VAT. The terms of our letter of reliance are non-negotiable and the beneficiary should be aware that the information shall only apply to the scheme for which the report was originally produced and the original rights and benefits will apply.
- 22 A VAT invoice (at current rate) will be presented in respect of the work undertaken. Payment of our account is to be made within twenty-eight days of issue of our invoice unless otherwise agreed. On no account shall payment be on a 'pay-when-paid' basis. The information contained within our report remains the property of Soil Consultants Ltd and no reliance may be assumed by any party with an interest in the project until payment has been received in full. After one calendar month interest shall be chargeable at 10% above the Bank of England Rate and compensation claimed in accordance with 'Late Payments of Commercial Debts (Interest) Act 1998 and subsequent revisions. If the debt is referred to a debt collection agency then we have the right to recover associated fees under the terms of our contract.

APPENDIX A

Fieldwork, in-situ testing and monitoring

-  Foreword
-  Borehole records
-  Standard Penetration Test results
-  SPT hammer calibration certificates
-  Trial pit records
-  Dynamic Probe Test results
-  TRL DCP Test results
-  Soakage Test results

Laboratory testing

-  Particle size distribution tests

Ground profiles

-  Plot of SPT 'N' value versus depth
-  Plot of SPT 'N' value versus level
-  Cross section through boreholes

Contamination and chemical testing

-  Foreword
-  General soil suite
-  WAC test results
-  Sulphate/pH suite

Plans, drawings & photographs

-  Site photographs
-  Proposed development plans
-  Site Plan
-  Site Walkover Plan
-  Site Service Plan
-  Site Location Plan

FOREWORD FOR DYNAMIC SAMPLER BOREHOLES (WINDOWLESS) - GUIDANCE NOTES

GENERAL

The borehole records are compiled from the driller's description of the strata encountered, an examination of the samples by our geotechnical engineer and the results of in-situ and laboratory tests. Based on these data, the report presents an opinion on the configuration of strata within the site. However, such reasonable assumptions are given for guidance only and no liability can be accepted for changes in conditions not revealed by the boreholes.

BORING METHODS

The dynamic sampler technique uses 1m long tubes containing a rigid plastic liner. These are driven into the ground by a falling hammer, then withdrawn and the liner removed. The borehole commences using a large diameter tube (usually 100mm) with each succeeding tube reducing usually by 10mm in diameter to assist the extraction of the tube from the ground. Thus, it is theoretically possible to obtain a total continuous sample of the soil for examination or testing. Casing can be utilised as required. The technique allows the ground conditions to be reasonably well established although disturbance of the ground is inevitable, particularly some "softening" of the upper zone of clay immediately beneath a granular soil. The presence of thin layers of different soils within a stratum may not always be detected.

GROUND WATER

The depth at which ground water was struck is entered on the borehole records. However, this observation may not indicate the true water level at that time. Due to the speed of boring and the relatively small diameter of the borehole, natural ground water may be present at a depth higher than the water strike. Moreover, ground water levels are subject to variations caused by changes in the local drainage conditions and by seasonal effects. When a moderate inflow of water does take place, boring is suspended for at least 10 minutes to enable a more accurate short-term water level to be achieved. An estimate of the rate of inflow is also given. This is a relative term and serves only as a guide to the probable flow of water into an excavation.

Further observations of the water level made during the progress of the borehole are shown including end of shift and overnight readings and the depth at which water was sealed off by the borehole casing, if applicable.

SAMPLES

Small disturbed samples can be recovered from the lining tubes for subsequent laboratory testing, including moisture content, index property tests and contamination analyses.

IN-SITU TESTING

Standard Penetration Test (SPT): this test is performed in accordance with the procedure given in BS EN ISO 22476-3:2005. The individual blow count record for each test is given on a separate table. The 'N' value is normally the number of blows to achieve a penetration of 0.3m following a seating distance of 0.15m and is quoted at the mid-depth of the test zone. However if a change of stratum occurs within the test zone then a revised 'N' value can be calculated to assess one layer in particular. In hard strata full penetration may not be obtained. The presence of groundwater and particularly Where groundwater can affect the test and the measured values may not represent the true in-situ density of the soil.

Hand Shear Vane: provides the shear strength of cohesive soils, values reported in kPa

Pocket Penetrometer: provides an estimate of the unconfined compression strength, values reported in kg/cm²

Site & Location: Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ							Borehole No: WS101		
Client: Sonning Golf Club Ltd					Coordinates: 476498E, 174600N		Sheet 1 of 1		
Engineer: Aventus Design Ltd					Ground Level: +53.02mOD		Report No: 11043b/CA		
Progress & Observations	Samples & Tests		Field Test Results	Strata		Legend	Strata Descriptions	Backfill / Installation	
	Type	Depth (m)		Depth (m)	Level (m)				
BH commenced: 21/07/2025 									

Sonning Golf Club (Phase 1 Works & Proshop)										Borehole No: WS102	
Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ											
Client: Sonning Golf Club Ltd					Coordinates: 476503E, 174604N			Sheet 1 of 1			
Engineer: Aventus Design Ltd					Ground Level: +53.04mOD			Report No: 11043b/CA			
Progress & Observations	Samples & Tests		Field Test Results	Strata		Legend	Strata Descriptions	Backfill / Installation			
	Type	Depth (m)		Depth (m)	Level (m)						
BH commenced: 21/07/2025	D ES PID	0.10	0.0	0.10	52.94		Grass over brown gravelly sandy TOPSOIL.		1		
		0.10									POSSIBLE MADE GROUND: Light greyish-brown slightly silty very gravelly fine to medium sand. Gravel is angular to subangular fine to coarse flint.
		0.10									
	D ES PID	0.60	0.0	0.60	52.44		Medium dense becoming very dense orangish-brown very gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse flint.				
		0.60									
	SPT/S	1.00	N=29								
Inspection pit to 1.20m	D PID	1.20	0.0				...below 1.20m, becoming dark orangish-brown mottled light grey and silty				
BH dia. 100mm reducing with depth		1.20									
	SPT/S	1.60	N>50*								
BH complete: 21/07/2025 BH depth: 2.10m (refusal) Water depth: Dry Dynamic Probe follow-on from 2.10m, see DP102				2.10	50.94		End of hole at 2.10m		2		
									3		
									4		
Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone PP = Pocket Penetrometer [kg/cm²] HV = Hand Vane [kPa] PID = Photo Ionisation Detector [ppm - Isobutylene Equivalent, PhoCheck Tiger, 10.6eV lamp] * = full SPT penetration not achieved - see summary sheet								Borehole type: Dynamic Sampler			
Remarks: A) Co-ordinates and levels obtained by SVS Ltd B) Backfilled with arisings								Borehole No: WS102			

Sonning Golf Club (Phase 1 Works & Proshop) Site & Location: Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ							Borehole No: WS103	
Client: Sonning Golf Club Ltd Engineer: Aventus Design Ltd							Coordinates: 476508E, 174599N Ground Level: +52.98mOD	Sheet 1 of 1 Report No: 11043b/CA
Progress & Observations	Samples & Tests		Field Test Results	Strata		Legend	Strata Descriptions	Backfill / Installation
	Type	Depth (m)		Depth (m)	Level (m)			
BH commenced: 21/07/2025 Inspection pit to 1.20m BH dia. 100mm reducing with depth Groundwater encountered at 2.43m bgl, no rise after 20 mins BH complete: 21/07/2025 BH depth: 3.20m (refusal) Water depth: Dry on completion Dynamic Probe follow-on from 3.20m, see DP103	D	0.10	0.0	0.10	52.88		Grass over brown slightly silty gravelly sandy TOPSOIL.	
	PID	0.10					POSSIBLE MADE GROUND: Light greyish-brown slightly silty very gravelly fine to medium sand. Gravel is angular to subangular fine to coarse flint.	
	D	0.30	0.0	0.30	52.68		Orangish-brown very gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint.	
	PID	0.30						
	D	0.80	N=12 0.0	0.80	52.18		Medium dense yellowish-brown and orangish-brown slightly silty gravelly fine to medium SAND. Gravel is angular to subrounded fine to coarse flint.	
	D	1.00					...below 1.00m, becoming greenish-grey	
	SPT/S	1.00						
	PID	1.00						
	D	1.50	N=46	1.50	51.48		Dense becoming very dense dark orangish-brown silty very sandy GRAVEL. Gravel is angular to subrounded fine to coarse flint.	
	SPT/S	2.00						
		2.00						
	SPT/S	2.75	N=62					
				3.20	49.78		End of hole at 3.20m	
								4
Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone PP = Pocket Penetrometer [kg/cm ²] HV = Hand Vane [kPa] PID = Photo Ionisation Detector [ppm - Isobutylene Equivalent, PhoCheck Tiger, 10.6eV lamp] * = full SPT penetration not achieved - see summary sheet								Borehole type: Dynamic Sampler Borehole No: WS103
Remarks: A) Co-ordinates and levels obtained by SVS Ltd B) Backfilled with arisings								

Site & Location: Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ							Borehole No: WS104			
Client: Sonning Golf Club Ltd					Coordinates: 476505E, 174594N		Sheet 1 of 1			
Engineer: Aventus Design Ltd					Ground Level: +52.92mOD		Report No: 11043b/CA			
Progress & Observations	Samples & Tests		Field Test Results	Strata		Legend	Strata Descriptions	Backfill / Installation		
	Type	Depth (m)		Depth (m)	Level (m)					
BH commenced: 21/07/2025 Inspection pit to 1.20m BH dia. 100mm reducing with depth BH complete: 21/07/2025 BH depth: 2.20m (refusal) Water depth: Dry Dynamic Probe follow-on from 2.20m, see DP104	D	0.10	0.0	0.10	52.82		Grass over brown slightly silty gravelly sandy TOPSOIL.			
	ES	0.10		0.25	52.67					
	PID	0.10								
	D	0.25								
	PID	0.25	0.0							
	D	0.60	0.0							
	PID	0.60								
	D	0.85								
	D	1.00								
	SPT/S	1.10	N=39							
	SPT/S	1.70	N>50*							
					2.20	50.72			End of hole at 2.20m	
Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone PP = Pocket Penetrometer [kg/cm²] HV = Hand Vane [kPa] PID = Photo Ionisation Detector [ppm - Isobutylene Equivalent, PhoCheck Tiger, 10.6eV lamp] * = full SPT penetration not achieved - see summary sheet										
Remarks: A) Co-ordinates and levels obtained by SVS Ltd B) Backfilled with arisings										
Borehole type: Dynamic Sampler Borehole No: WS104										



Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ	Report No:	11043b/CA
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STANDARD PENETRATION TEST SUMMARY

BH ID	Depth (m)	Test type	N value (Note b)	Blow-counts and penetration						Casing depth (m)	Water depth (m)	Remarks
				Seating blows		Test blows						
WS101	1.00	S	N=34	5	7	8	8	8	10		Dry	
WS101	1.60	S	(58)	5	12	14	21	23			Dry	
WS102	1.00	S	N=29	3	5	5	5	8	11		Dry	
WS102	1.60	S	(49)	8	12	14	17	18			Dry	
WS103	1.00	S	N=12	1	2	2	3	3	4		Dry	
WS103	2.00	S	N=46	6	10	11	10	11	14		Dry	
WS103	2.70	S	N=62	5	7	10	17	16	19		2.43	
WS104	1.10	S	N=39	6	7	8	10	10	11		Dry	
WS104	1.70	S	(53)	7	12	17	18	18			Dry	
												</

- a) Standard Penetration Test : BS EN ISO 22476:2005 Part 3
- b) Where full penetration was not achieved, the total test blow-counts are reported
- c) Hammer Energy Ratio, Er = 73%

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Southern Testing
Unit 11
Charlwoods Road
East Grinstead
West Sussex
RH19 2HU

SPT Hammer Ref: 2014RP
Test Date: 29/03/2025
Report Date: 28/03/2025
File Name: 2014RP.spt
Test Operator: BOB

Instrumented Rod Data

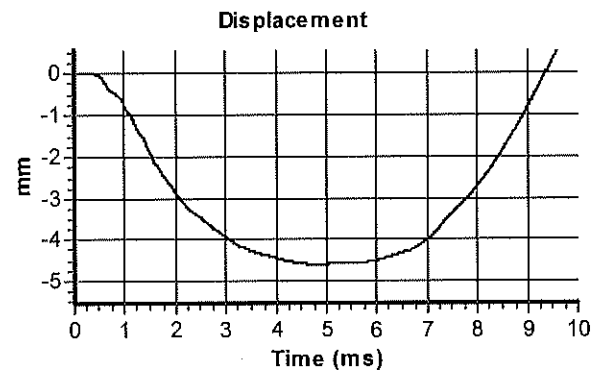
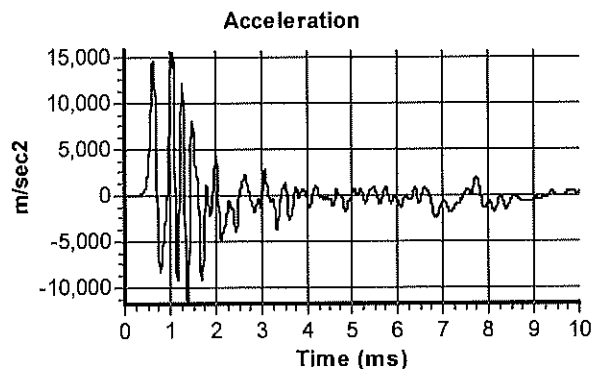
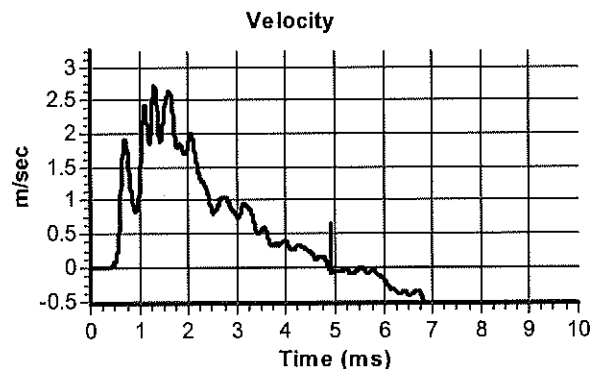
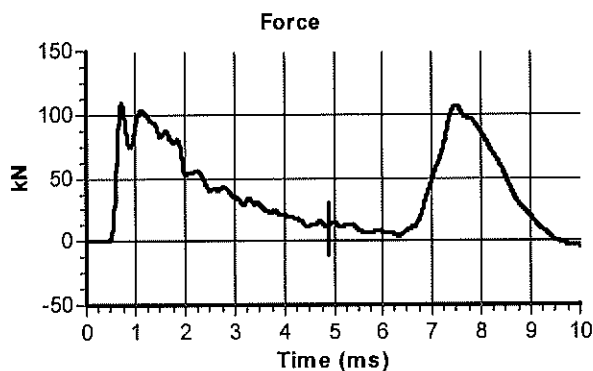
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.7
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 73547
Accelerometer No.2: 64789

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 14.7

Comments / Location

CHARLWOODS



Calculations

Area of Rod A (mm²): 996
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 345

Energy Ratio E_r (%): **73**

Signed: Bob Stewart
Title: Technician

The recommended calibration interval is 12 months

Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ		Trial Pit No:	TP101	
Client:	Sonning Golf Club Ltd		Coords:	476441, 174691	
Engineer:	Aventus Design Ltd		Level:	+53.387mOD	
			Report No:	11043b/CA	

Depth (m)	Strata description	Samples / tests		
		Depth (m)	Type	Test results
GL to 0.12m	Grass over brown gravelly sandy TOPSOIL. Gravel is angular to subrounded fine to coarse flint with frequent live roots and rootlets.	0.0-0.12	D/ES	
0.12m to 0.60m	POSSIBLE MADE GROUND: Light greyish brown silty sandy gravel. Gravel is angular to rounded fine to coarse flint.	0.12-0.50	D/ES	
		0.12-0.50	B	
0.60m to 2.00m	Orangish-brown very gravelly fine to coarse SAND. Gravel is angular to rounded, fine to coarse flint. Low flint cobble content.	1.00-1.50	B	
		1.50-2.00	B	
		1.80	D	
		2.00	D	



Date of excavation:	22 nd July 2025	Groundwater:	Damp soils below 1.00m		
Equipment:	DX27z 2.5 ton excavator				
Stability:	Stable	Logged by:	CA/RL	Checked by:	SCW
Remarks: Infiltration testing undertaken in pit Length: 2.00m, width: 0.45m, depth: 2.00m					

Key: D = Small disturbed sample; B = Bulk disturbed sample; HV = Hand Shear Vane test (kN/m²); P = Pocket Penetrometer (kg/cm²)

Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ		Trial Pit No:	TP102	
Client:	Sonning Golf Club Ltd	Coords: 476497, 174605		Report No:	11043b/CA
Engineer:	Aventus Design Ltd	Level: +53.035mOD			

Depth (m)	Strata description	Samples / tests		
		Depth (m)	Type	Test results
GL to 0.15m	MADE GROUND: grass over topsoil like material composed of brown slightly silty gravelly to very gravelly fine and medium sand. Gravel is angular to subrounded, fine to coarse flint with rare fragments of brick.	0.0-0.15	D/ES	
0.15m to 0.40m	POSSIBLE MADE GROUND: Light greyish brown slightly silty very gravelly fine to medium sand. Gravel is angular to subrounded fine to coarse flint.	0.15-0.40	D/ES	
0.40m to 1.10m	Orangish-yellow mottled light grey silty very gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint. ...below 0.90m, occasional manganese staining	0.50	B	
		1.00	B	



Date of excavation:	24 th July 2025	Groundwater:	Dry on completion		
Equipment:	DX27z 2.5 ton excavator				
Stability:	Stable	Logged by:	CA/RL	Checked by:	SCW
Remarks: Infiltration testing undertaken in pit Length: 1.40m, width: 0.45m, depth: 1.10m					

Key: D = Small disturbed sample; B = Bulk disturbed sample; HV = Hand Shear Vane test (kN/m²); P = Pocket Penetrometer (kg/cm²)

Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ		Trial Pit No:	TP103	
Client:	Sonning Golf Club Ltd		Coords:	476511, 174607	
Engineer:	Aventus Design Ltd		Level:	+52.971mOD	
			Report No:	11043b/CA	

Depth (m)	Strata description	Samples / tests		
		Depth (m)	Type	Test results
GL to 0.10m	Grass over brown gravelly sandy TOPSOIL. Gravel is angular to subrounded, fine to coarse flint.	0.0-0.10	D/ES	
0.10m to 0.50m	POSSIBLE MADE GROUND: Light greyish brown slightly silty very gravelly fine to medium sand. Gravel is angular to subrounded fine to coarse flint.	0.10-0.40	D/ES	
0.50m to 1.50m	Orangish-brown silty very gravelly fine to coarse SAND. Gravel is angular to rounded fine to coarse flint. ...below 1.00m, becoming slightly silty and mottled light grey ...below 1.30m, becoming silty and slightly clayey	0.60	B	
		1.00	B	
		1.50	B	



Date of excavation:	24 th July 2025	Groundwater:	Damp soils below 1.50m		
Equipment:	DX27z 2.5 ton excavator				
Stability:	Stable	Logged by:	CA/RL	Checked by:	
Remarks: Infiltration testing undertaken in pit Length: 1.55m, width: 0.48m, depth: 1.50m					

Key: D = Small disturbed sample; B = Bulk disturbed sample; HV = Hand Shear Vane test (kN/m²); P = Pocket Penetrometer (kg/cm²)

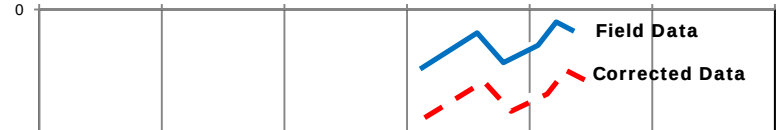
Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ		Trial Pit No:	HP01	
Client:	Sonning Golf Club Ltd		Coords: 476508 , 174597	Report No:	11043b/CA
Engineer:	Aventus Design Ltd		Level: +52.971mOD		

Depth (m)	Strata description	Samples / tests		
		Depth (m)	Type	Test results
GL to 0.10m	Grass over brown gravelly sandy TOPSOIL with frequent rootlets. Gravel is angular to subrounded, fine to coarse flint.	0.0-0.10	D/ES	
0.10m to 0.30m	POSSIBLE MADE GROUND: Light greyish-brown slightly silty very gravelly fine to medium sand. Gravel is angular to subrounded fine to coarse flint.	0.10-0.30	D/ES	



Date of excavation:	28 th August 2025	Groundwater:	Dry on completion		
Equipment:	Hand tools				
Stability:	Stable	Logged by:	CA	Checked by:	SCW
Remarks: Infiltration testing undertaken in pit Length: 0.30m, width: 0.30m, depth: 0.30m					

Key: D = Small disturbed sample; B = Bulk disturbed sample; HV = Hand Shear Vane test (kN/m²); P = Pocket Penetrometer (kg/cm²)

Site & Location		Sonning Golf Club (Phase 1 Works & Proshop)				DP No: DP101		
Location		Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ						
Client:		Sonning Golf Club Ltd		Co-ords (E-N): 476498 174600		Sheet No: 1 of 1		
Eng:		Aventus Design		Ground level (mOD) 53.02		Report No: 11043b/CA		
Dynamic probe record								
Depth (m)	DP blows/100mm		N100 value (blows/100mm)				Torque (Nm)	
0.50								
1.00								
1.50								
2.00	23							
2.50	46							
3.00	36							
3.50	25							
4.00	19							
4.50	29							
5.00	29							
5.50								
6.00								
6.50								
7.00								
7.50								
8.00								
8.50								
9.00								
9.50								
10.00								
Probing by: SPG SI			Remarks:					
Equipment: DPSH-B		Hammer weight (kg): 63.5		Date: 21 Jul 25				
Cone area (cm2): 20		Hammer drop (mm): 750		Rod dia (mm) 35				

Site & Location		Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ				DP No: DP102	
Client:		Sonning Golf Club Ltd		Co-ords (E-N): 476503 174604		Sheet No: 1 of 1	
Eng:		Aventus Design		Ground level (mOD): 53.04		Report No: 11043b/CA	
Dynamic probe record							
Depth (m)	DP blows/100mm		N100 value (blows/100mm)				Torque (Nm)
0.50			Field Data Corrected Data				20
1.00							
1.50							
2.00	26						
2.50	33 26 23 25						
3.00	25						
3.50							
4.00							
4.50							
5.00							
5.50							
6.00							
6.50							
7.00							
7.50							
8.00							
8.50							
9.00							
9.50							
10.00							
Probing by: SPG SI			Remarks:			SoilConsultants	
Equipment: DPSH-B		Hammer weight (kg): 63.5		Date: 21 Jul 25			
Cone area (cm2): 20		Hammer drop (mm): 750		Rod dia (mm) 35			
			N100 values adjusted according to Butcher et al. 1995				

Site & Location		Sonning Golf Club (Phase 1 Works & Proshop)				DP No: DP103		
Location		Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ						
Client:		Sonning Golf Club Ltd		Co-ords (E-N):	476508 174599	Sheet No:	1 of 1	
Eng:		Aventus Design		Ground level (mOD):	52.98	Report No:	11043b/CA	
Dynamic probe record								
Depth (m)	DP blows/100mm				N100 value (blows/100mm)			Torque (Nm)
0.50					Field Data Corrected Data			
1.00								
1.50								
2.00								
2.50								
3.00								
3.50	14 12 8							
4.00	3	3	2	2	3			40
4.50	4	2	2	2	2			
5.00	2	3	2	2	3			40
5.50	3	2	3	3	3			
6.00	3	3	3	3	5			40
6.50	4	3	3	4	3			
7.00	4	3	4	4	4			40
7.50	6	6	7	8	9			
8.00	7	8	7	8	9			60
8.50	8	9	9	13	12			
9.00	11	13	16	16	12			160
9.50	12	13	14	16	16			
10.00	20	18	21	23	24			200
Probing by: SPG SI					Remarks: N100 values adjusted according to Butcher et al. 1995			
Equipment: DPSH-B	Hammer weight (kg): 63.5		Date: 21 Jul 25					
Cone area (cm2): 20	Hammer drop (mm): 750		Rod dia (mm) 35					

Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ			TRL Probe No:	TRL 101																																																																						
Client:	Sonning Golf Club Ltd			(Sheet 1 of 1)																																																																							
Engineers:	Aventus Design Ltd			Report No:	11043b/CA																																																																						
TRL Dynamic Cone Penetration test result																																																																											
Blow Count	Depth (mm)	mm per blow	CBR (%)	PLOT OF CBR VS DEPTH																																																																							
Commencement Depth	0	25	8.0	Estimated CBR (%) <table><thead><tr><th>Depth (mm)</th><th>CBR (%)</th></tr></thead><tbody><tr><td>0</td><td>8.0</td></tr><tr><td>25</td><td>12.0</td></tr><tr><td>41</td><td>24.0</td></tr><tr><td>51</td><td>18.0</td></tr><tr><td>63</td><td>24.0</td></tr><tr><td>73</td><td>20.0</td></tr><tr><td>84</td><td>30.0</td></tr><tr><td>92</td><td>20.0</td></tr><tr><td>103</td><td>40.0</td></tr><tr><td>108</td><td>30.0</td></tr><tr><td>116</td><td>27.0</td></tr><tr><td>133</td><td>27.0</td></tr><tr><td>150</td><td>40.0</td></tr><tr><td>163</td><td>40.0</td></tr><tr><td>176</td><td>35.0</td></tr><tr><td>190</td><td>40.0</td></tr><tr><td>203</td><td>30.0</td></tr><tr><td>219</td><td>27.0</td></tr><tr><td>236</td><td>24.0</td></tr><tr><td>255</td><td>24.0</td></tr><tr><td>273</td><td>18.0</td></tr><tr><td>297</td><td>18.0</td></tr><tr><td>320</td><td>18.0</td></tr><tr><td>343</td><td>30.0</td></tr><tr><td>359</td><td>24.0</td></tr><tr><td>378</td><td>18.0</td></tr><tr><td>402</td><td>40.0</td></tr><tr><td>414</td><td>40.0</td></tr><tr><td>426</td><td>40.0</td></tr><tr><td>436</td><td>40.0</td></tr><tr><td>443</td><td>40.0</td></tr><tr><td>452</td><td>40.0</td></tr><tr><td>467</td><td>40.0</td></tr><tr><td>479</td><td>40.0</td></tr></tbody></table>		Depth (mm)	CBR (%)	0	8.0	25	12.0	41	24.0	51	18.0	63	24.0	73	20.0	84	30.0	92	20.0	103	40.0	108	30.0	116	27.0	133	27.0	150	40.0	163	40.0	176	35.0	190	40.0	203	30.0	219	27.0	236	24.0	255	24.0	273	18.0	297	18.0	320	18.0	343	30.0	359	24.0	378	18.0	402	40.0	414	40.0	426	40.0	436	40.0	443	40.0	452	40.0	467	40.0	479	40.0
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Remarks:																																																																											

Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ			TRL Probe No:	TRL 102																																																								
Client:	Sonning Golf Club Ltd			(Sheet 1 of 1)																																																									
Engineers:	Aventus Design Ltd			Report No:	11043b/CA																																																								
TRL Dynamic Cone Penetration test result																																																													
Blow Count	Depth (mm)	mm per blow	CBR (%)	PLOT OF CBR VS DEPTH																																																									
Commencement Depth	0	23	8.0	Estimated CBR (%) <table><thead><tr><th>Depth (mm)</th><th>CBR (%)</th></tr></thead><tbody><tr><td>0</td><td>8.0</td></tr><tr><td>23</td><td>3.0</td></tr><tr><td>74</td><td>5.0</td></tr><tr><td>107</td><td>6.0</td></tr><tr><td>136</td><td>8.0</td></tr><tr><td>160</td><td>8.0</td></tr><tr><td>183</td><td>10.0</td></tr><tr><td>202</td><td>14.0</td></tr><tr><td>216</td><td>14.0</td></tr><tr><td>230</td><td>24.0</td></tr><tr><td>240</td><td>24.0</td></tr><tr><td>250</td><td>24.0</td></tr><tr><td>260</td><td>24.0</td></tr><tr><td>270</td><td>30.0</td></tr><tr><td>285</td><td>40.0</td></tr><tr><td>298</td><td>40.0</td></tr><tr><td>308</td><td>40.0</td></tr><tr><td>316</td><td>40.0</td></tr><tr><td>325</td><td>40.0</td></tr><tr><td>345</td><td>40.0</td></tr><tr><td>363</td><td>40.0</td></tr><tr><td>383</td><td>40.0</td></tr><tr><td>409</td><td>27.0</td></tr><tr><td>451</td><td>20.0</td></tr><tr><td>508</td><td>27.0</td></tr><tr><td>551</td><td>14.0</td></tr><tr><td>624</td><td>4.0</td></tr></tbody></table>		Depth (mm)	CBR (%)	0	8.0	23	3.0	74	5.0	107	6.0	136	8.0	160	8.0	183	10.0	202	14.0	216	14.0	230	24.0	240	24.0	250	24.0	260	24.0	270	30.0	285	40.0	298	40.0	308	40.0	316	40.0	325	40.0	345	40.0	363	40.0	383	40.0	409	27.0	451	20.0	508	27.0	551	14.0	624	4.0
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				Note:	CBR value plots at top of the drive increment																																																								
Remarks:																																																													

Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ			TRL Probe No:	TRL 103
Client:	Sonning Golf Club Ltd			(Sheet 1 of 1)	
Engineers:	Aventus Design Ltd			Report No:	11043b/CA
TRL Dynamic Cone Penetration test result					
Blow Count	Depth (mm)	mm per blow	CBR (%)	PLOT OF CBR VS DEPTH	
Commencement Depth	120	0	40.0	Estimated CBR (%)	
1	120	5	40.0		
2	125	1	40.0		
3	126	0	40.0		
13	128	0	40.0		
23	128	0	40.0		
33	128	0	40.0		
43	132	0	40.0		
53	135	0	40.0		
63	135	0	40.0		
83	137	0	40.0		
				Date of test: 18/08/25 Note: CBR value plots at top of the drive increment	
Remarks:					

Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ			TRL Probe No:	TRL 103 (T2)
Client:	Sonning Golf Club Ltd			(Sheet 1 of 1)	
Engineers:	Aventus Design Ltd			Report No:	11043b /CA
TRL Dynamic Cone Penetration test result					
Blow Count	Depth (mm)	mm per blow	CBR (%)	PLOT OF CBR VS DEPTH	
Commencement Depth	120	0	40.0	Estimated CBR (%)	
1	120	5	40.0		
2	125	1	40.0		
3	126	0	40.0		
8	128	0	40.0		
13	128	0	40.0		
18	128	0	40.0		
23	128	0	40.0		
28	128	0	40.0		
33	128	0	40.0		
38	130	0	40.0		
43	132	0	40.0		
48	133	0	40.0		
53	134	0	40.0		
58	135	0	40.0		
63	135	0	40.0		
73	136	0	40.0		
83	137	0	40.0		
				Date of test: 18 / 08 / 25 Note: CBR value plots at top of the drive increment	
Remarks:					

Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ			TRL Probe No:	TRL 104
Client:	Sonning Golf Club Ltd			(Sheet 1 of 1)	
Engineers:	Aventus Design Ltd			Report No:	11043b/CA
TRL Dynamic Cone Penetration test result					
Blow Count	Depth (mm)	mm per blow	CBR (%)	PLOT OF CBR VS DEPTH	
Commencement Depth	0	55	2.5		
1	55	17	12.0		
2	72	23	8.0		
3	95	37	4.0		
4	132	20	10.0		
5	152	3	40.0		
				Date of test: 28/08/25 Note: CBR value plots at top of the drive increment	
Remarks:					

Site & Location		Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ		TRL Probe No: TRL 104 (T2)	
Client:		Sonning Golf Club Ltd		(Sheet 1 of 1)	
Engineers:		Aventus Design Ltd		Report No: 11043b/CA	
TRL Dynamic Cone Penetration test result					
Blow Count	Depth (mm)	mm per blow	CBR (%)	PLOT OF CBR VS DEPTH	
Commencement Depth	0	50	3.0	Estimated CBR (%) 0.05.010.015.020.025.030.035.040.045.0 0 100 200 300 400 500 600 700 800	
1	50	38	4.0		
2	88	32	5.0		
3	120	23	8.0		
4	143	2	40.0		
5	145	5	40.0		
6	150	5	40.0		
16	199	36	4.0		
21	378	3	40.0		
26	395	4	40.0		
31	413	7	35.0		
33	427	12	18.0		
35	450	13	16.0		
37	475	12	18.0		
39	498	7	35.0		
41	512	6	40.0		
43	523	4	40.0		
45	530	4	40.0		
50	550	4	40.0		
55	569	5	40.0		
60	595	6	40.0		
70	658	5	40.0		
80	705	7	35.0		
90	773	5	40.0		
Date of test:				28/08/25	
Note:				CBR value plots at top of the drive increment	
Remarks:					

Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ			TRL Probe No:	TRL 105
Client:	Sonning Golf Club Ltd			(Sheet 1 of 1)	
Engineers:	Aventus Design Ltd			Report No:	11043b/CA
TRL Dynamic Cone Penetration test result					
Blow Count	Depth (mm)	mm per blow	CBR (%)	PLOT OF CBR VS DEPTH	
Commencement Depth	0	45	3.0		
1	45	25	8.0		
2	70	19	10.0		
3	89	6	40.0		
4	95	12	18.0		
5	107	10	24.0		
10	155	9	24.0		
15	200	7	35.0		
20	235	6	40.0		
				Date of test: 28/08/25 Note: CBR value plots at top of the drive increment	
Remarks:					

Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ			TRL Probe No:	TRL 105 (T2)	
Client:	Sonning Golf Club Ltd			(Sheet 1 of 1)		
Engineers:	Aventus Design Ltd			Report No:	11043b/CA	
TRL Dynamic Cone Penetration test result						
Blow Count	Depth (mm)	mm per blow	CBR (%)	PLOT OF CBR VS DEPTH		
Commencement Depth	0	30	5.0	Estimated CBR (%) Depth below ground level (mm)		
1	30	20	10.0			
2	50	10	24.0			
3	60	19	10.0			
4	79	9	24.0			
5	88	11	20.0			
7	110	11	20.0			
9	132	8	30.0			
11	148	7	35.0			
13	162	7	40.0			
15	175	3	40.0			
20	192	4	40.0			
25	210	5	40.0			
30	235	5	40.0			
35	260	6	40.0			
40	290	5	40.0			
50	341	6	40.0			
60	405	10	24.0			
70	505	9	24.0			
80	598	14	14.0			
90	740	11	20.0			
				Date of test:	28/08/25	
				Note:	CBR value plots at top of the drive increment	
Remarks:						

Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ			TRL Probe No:	TRL 106
Client:	Sonning Golf Club Ltd			(Sheet 1 of 1)	
Engineers:	Aventus Design Ltd			Report No:	11043b /CA
TRL Dynamic Cone Penetration test result					
Blow Count	Depth (mm)	mm per blow	CBR (%)	PLOT OF CBR VS DEPTH	
Commencement Depth	0	50	3.0		
1	50	29	6.0		
2	79	16	12.0		
3	95	15	14.0		
4	110	12	18.0		
5	122	11	20.0		
10	175	9	24.0		
15	221	7	35.0		
20	255	7	35.0		
25	290	6	40.0		
30	322	6	40.0		
40	380	7	35.0		
50	447	10	20.0		
60	550	12	18.0		
70	665	9	24.0		
				Date of test: 28/08/25 Note: CBR value plots at top of the drive increment	
Remarks:					

Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ			TRL Probe No:	TRL 107																																																
Client:	Sonning Golf Club Ltd			(Sheet 1 of 1)																																																	
Engineers:	Aventus Design Ltd			Report No:	11043b/CA																																																
TRL Dynamic Cone Penetration test result																																																					
Blow Count	Depth (mm)	mm per blow	CBR (%)	PLOT OF CBR VS DEPTH																																																	
Commencement Depth	0	60	2.5	Estimated CBR (%) <table><thead><tr><th>Depth (mm)</th><th>CBR (%)</th></tr></thead><tbody><tr><td>0</td><td>2.5</td></tr><tr><td>60</td><td>4.0</td></tr><tr><td>102</td><td>3.0</td></tr><tr><td>145</td><td>5.0</td></tr><tr><td>180</td><td>8.0</td></tr><tr><td>205</td><td>8.0</td></tr><tr><td>230</td><td>10.0</td></tr><tr><td>250</td><td>8.0</td></tr><tr><td>273</td><td>8.0</td></tr><tr><td>295</td><td>8.0</td></tr><tr><td>318</td><td>6.0</td></tr><tr><td>467</td><td>12.0</td></tr><tr><td>502</td><td>14.0</td></tr><tr><td>530</td><td>12.0</td></tr><tr><td>565</td><td>10.0</td></tr><tr><td>605</td><td>16.0</td></tr><tr><td>632</td><td>20.0</td></tr><tr><td>654</td><td>40.0</td></tr><tr><td>666</td><td>27.0</td></tr><tr><td>683</td><td>27.0</td></tr><tr><td>700</td><td>30.0</td></tr><tr><td>740</td><td>24.0</td></tr><tr><td>785</td><td>40.0</td></tr></tbody></table>		Depth (mm)	CBR (%)	0	2.5	60	4.0	102	3.0	145	5.0	180	8.0	205	8.0	230	10.0	250	8.0	273	8.0	295	8.0	318	6.0	467	12.0	502	14.0	530	12.0	565	10.0	605	16.0	632	20.0	654	40.0	666	27.0	683	27.0	700	30.0	740	24.0	785	40.0
Depth (mm)	CBR (%)																																																				
0	2.5																																																				
60	4.0																																																				
102	3.0																																																				
145	5.0																																																				
180	8.0																																																				
205	8.0																																																				
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530	12.0																																																				
565	10.0																																																				
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666	27.0																																																				
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1	60	42	4.0																																																		
2	102	43	3.0																																																		
3	145	35	5.0																																																		
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19	530	18	12.0																																																		
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25	632	11	20.0																																																		
27	654	6	40.0																																																		
29	666	9	27.0																																																		
31	683	9	27.0																																																		
33	700	8	30.0																																																		
38	740	9	24.0																																																		
43	785	6	40.0																																																		
				Date of test:	28/08/25																																																
				Note:	CBR value plots at top of the drive increment																																																
Remarks:																																																					

Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ	Report No: 11043b/CA
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Trial pit soakage test results

TP No: **TP101**

Depth: **1.80** m

Test No: **1**

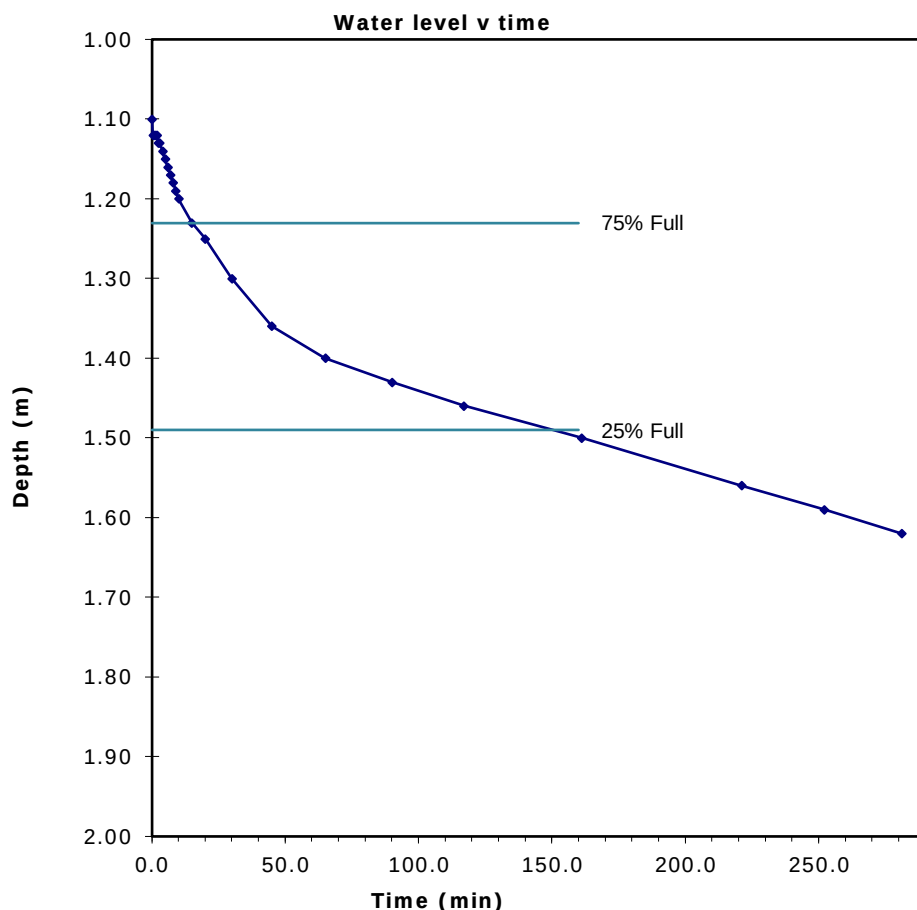
Dimensions: Width = **0.45** m
Length = **2.00** m
Pit filled with gravel (Y/N) **No**
Voids Ratio

Ground sequence:

GL - 0.12 TOPSOIL
0.12 - 0.60 POSSIBLE MADE GROUND
0.60 - 2.00 Orangish-brown very gravelly SAND

GW Standing at: **Dry**

Time (mins)	Depth (mBGL)
0.0	1.10
0.5	1.12
1.0	1.12
1.5	1.12
2.0	1.12
2.5	1.13
3.0	1.13
4.0	1.14
5.0	1.15
6.0	1.16
7.0	1.17
8.0	1.18
9.0	1.19
10.0	1.20
15.0	1.23
20.0	1.25
30.0	1.30
45.0	1.36
65.0	1.40
90.0	1.43
117.0	1.46
161.0	1.50
221.0	1.56
252.0	1.59
281.0	1.62



Depth of water at start of test 1.10 m
Depth of water at end of test 1.62 m
Depth at 75% full 1.23 m
Depth at 25% full 1.49 m

Comments: 600L of water added for test (2min fill time)
Pit collapse to 1.80m after addition of water

Base area of pit 0.90 m²
Effective soakage area a_{s50} 3.06 m²
Volume Change $V_{75}-V_{25}$ 0.23 m³
Time used in calculation t_{p75} 900 sec
Time used in calculation t_{p25} 9000 sec

Soil infiltration rate 9.45E-06 m/sec

The 'soil infiltration rate' is calculated using two selected water levels (BRE DG 365: 2016 "Soakaway design")

Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ	Report No: 11043b/CA
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Trial pit soakage test results

TP No: **TP102**

Depth: **1.06** m

Test No: **1**

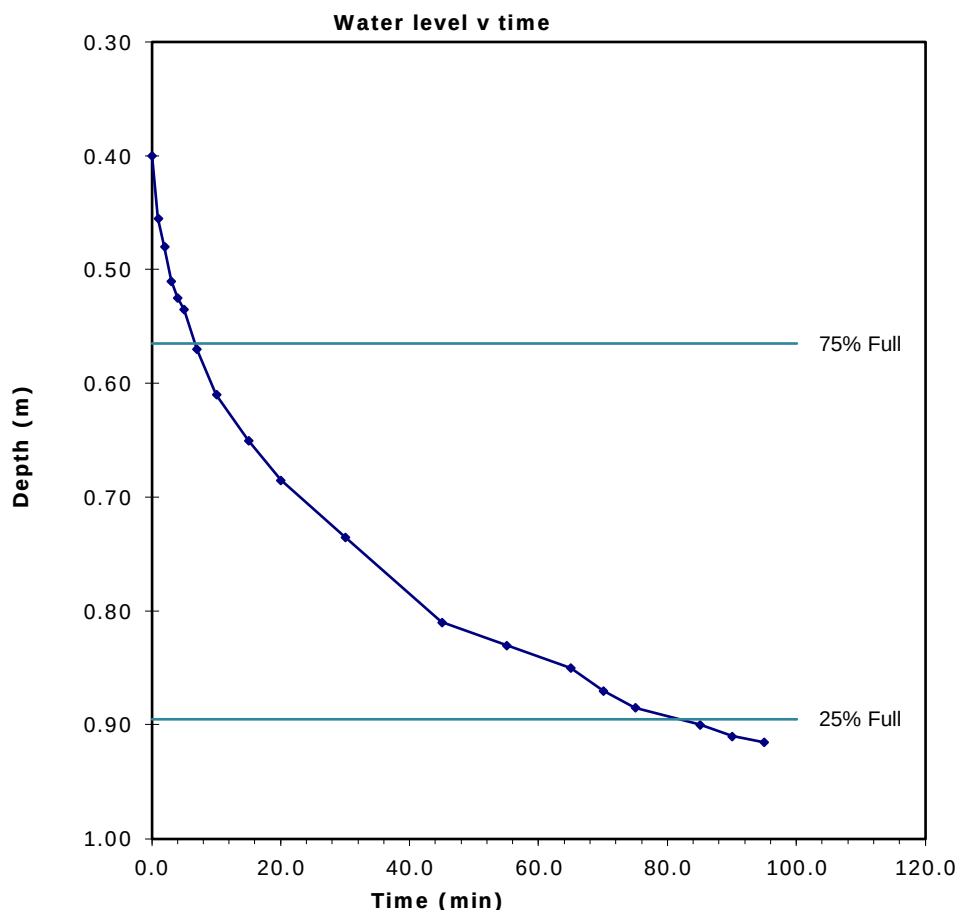
Dimensions: Width = **0.45** m
Length = **1.40** m
Pit filled with gravel (Y/N) **No**
Voids Ratio

Ground sequence:

GL - 0.15 TOPSOIL
0.15 - 0.40 POSSIBLE MADE GROUND
0.40 - 1.10 Orangish-yellow silty very gravelly SAND

GW Standing at: **Dry**

Time (mins)	Depth (mBGL)
0.0	0.40
1.0	0.46
2.0	0.48
3.0	0.51
4.0	0.53
5.0	0.54
7.0	0.57
10.0	0.61
15.0	0.65
20.0	0.69
30.0	0.74
45.0	0.81
55.0	0.83
65.0	0.85
70.0	0.87
75.0	0.89
85.0	0.90
90.0	0.91
95.0	0.92



Depth of water at start of test 0.40 m
Depth of water at end of test 0.92 m
Depth at 75% full 0.57 m
Depth at 25% full 0.90 m

Comments: 300L of water added for test (1.5min fill time)
Pit collapse to 1.06 after addition of water

Base area of pit 0.63 m²
Effective soakage area a_{s50} 1.85 m²
Volume Change $V_{75}-V_{25}$ 0.21 m³
Time used in calculation t_{p75} 403 sec
Time used in calculation t_{p25} 4900 sec

Soil infiltration rate 2.50E-05 m/sec

The 'soil infiltration rate' is calculated using two selected water levels (BRE DG 365: 2016 "Soakaway design")

Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ	Report No: 11043b/CA
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Trial pit soakage test results

TP No: **TP102**

Depth: **1.06** m

Test No: **2**

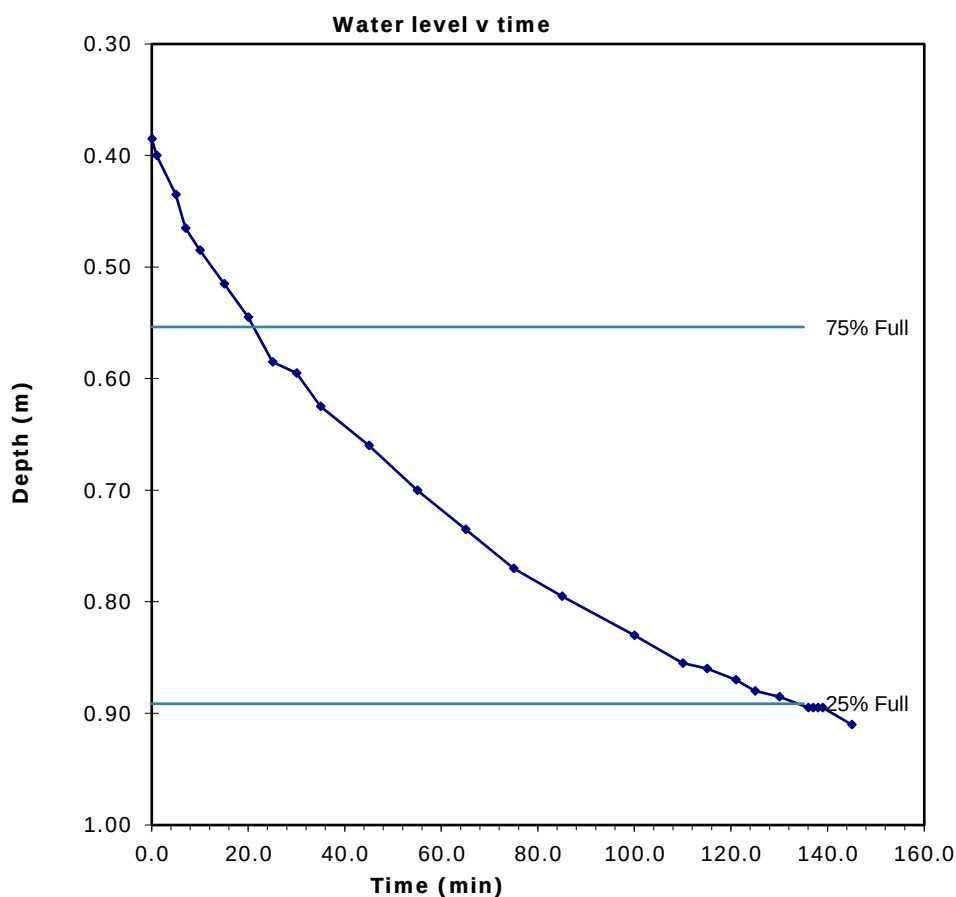
Dimensions: Width = **0.45** m
Length = **1.40** m
Pit filled with gravel (Y/N) **No**
Voids Ratio

Ground sequence:

GL - 0.15 TOPSOIL
0.15 - 0.40 POSSIBLE MADE GROUND
0.40 - 1.10 Orangish-yellow silty very gravelly SAND

GW Standing at: **Dry**

Time (mins)	Depth (mBGL)
0.0	0.39
1.0	0.40
5.0	0.44
7.0	0.47
10.0	0.49
15.0	0.52
20.0	0.55
25.0	0.59
30.0	0.60
35.0	0.63
45.0	0.66
55.0	0.70
65.0	0.74
75.0	0.77
85.0	0.80
100.0	0.83
110.0	0.86
115.0	0.86
121.0	0.87
125.0	0.88
130.0	0.89
136.0	0.90
137.0	0.90
138.0	0.90
139.0	0.90
145.0	0.91



Depth of water at start of test 0.39 m

Depth of water at end of test 0.91 m

Depth at 75% full 0.55 m

Depth at 25% full 0.89 m

Comments: 300L of water added for test (1.5min fill time)
Pit collapse to 1.06 after addition of water

Base area of pit 0.63 m²

Effective soakage area a_{s50} 1.88 m²

Volume Change $V_{75}-V_{25}$ 0.21 m³

Time used in calculation t_{p75} 1266 sec

Time used in calculation t_{p25} 8025 sec

Soil infiltration rate 1.67E-05 m/sec

The 'soil infiltration rate' is calculated using two selected water levels (BRE DG 365: 2016 "Soakaway design")

Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ	Report No: 11043b/CA
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Trial pit soakage test results

TP No: **TP102**

Depth: **1.04** m

Test No: **3**

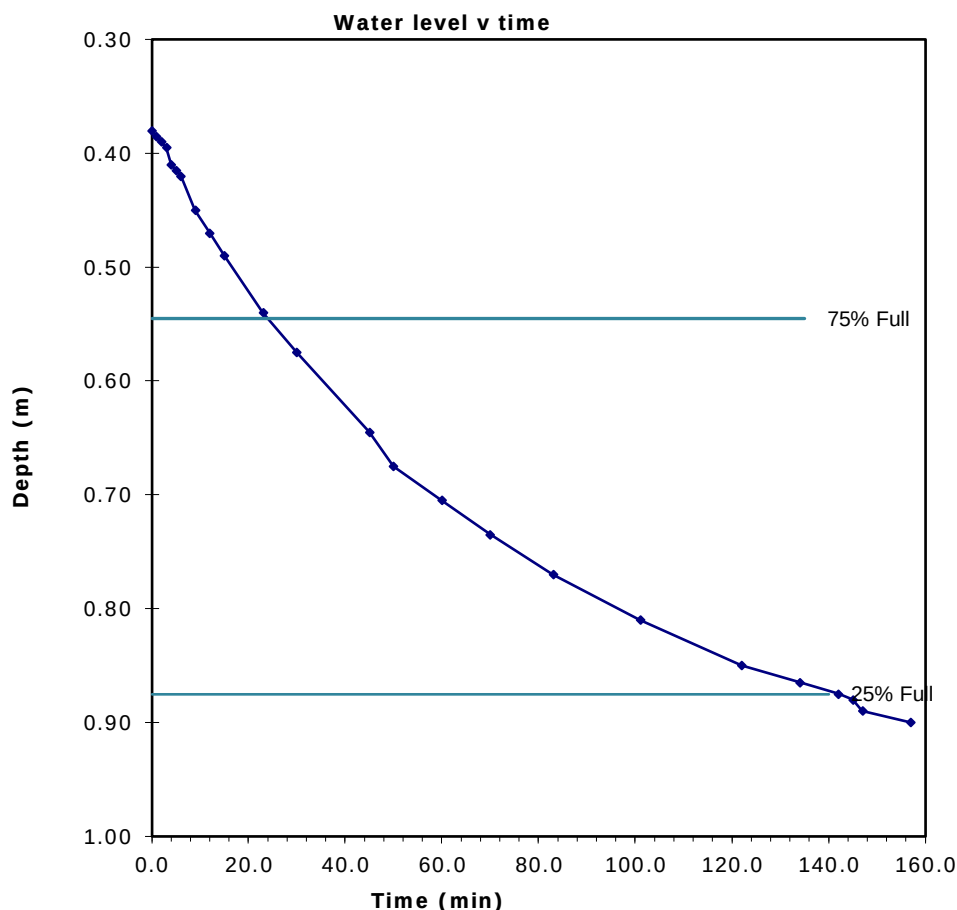
Dimensions: Width = **0.45** m
Length = **1.40** m
Pit filled with gravel (Y/N) **No**
Voids Ratio

Ground sequence:

GL - 0.15 TOPSOIL
0.15 - 0.40 POSSIBLE MADE GROUND
0.40 - 1.10 Orangish-yellow silty very gravelly SAND

GW Standing at: **Dry**

Time (mins)	Depth (mBGL)
0.0	0.38
1.0	0.39
2.0	0.39
3.0	0.40
4.0	0.41
5.0	0.42
6.0	0.42
9.0	0.45
12.0	0.47
15.0	0.49
23.0	0.54
30.0	0.58
45.0	0.65
50.0	0.68
60.0	0.71
70.0	0.74
83.0	0.77
101.0	0.81
122.0	0.85
134.0	0.87
142.0	0.88
145.0	0.88
147.0	0.89
157.0	0.90



Depth of water at start of test 0.38 m
Depth of water at end of test 0.90 m
Depth at 75% full 0.55 m
Depth at 25% full 0.88 m

Comments: 200L of water added for test (1.5min fill time)
Pit collapse to 1.04 after addition of water

Base area of pit 0.63 m²
Effective soakage area a_{s50} 1.85 m²
Volume Change $V_{75}-V_{25}$ 0.21 m³
Time used in calculation t_{p75} 1440 sec
Time used in calculation t_{p25} 8520 sec

Soil infiltration rate 1.59E-05 m/sec

The 'soil infiltration rate' is calculated using two selected water levels (BRE DG 365: 2016 "Soakaway design")

Site & Location	Sonning Golf Club (Phase 1 Works & Proshop) Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ	Report No: 11043b/CA
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Trial pit soakage test results

TP No: **TP103**

Depth: **1.50** m

Test No: **1**

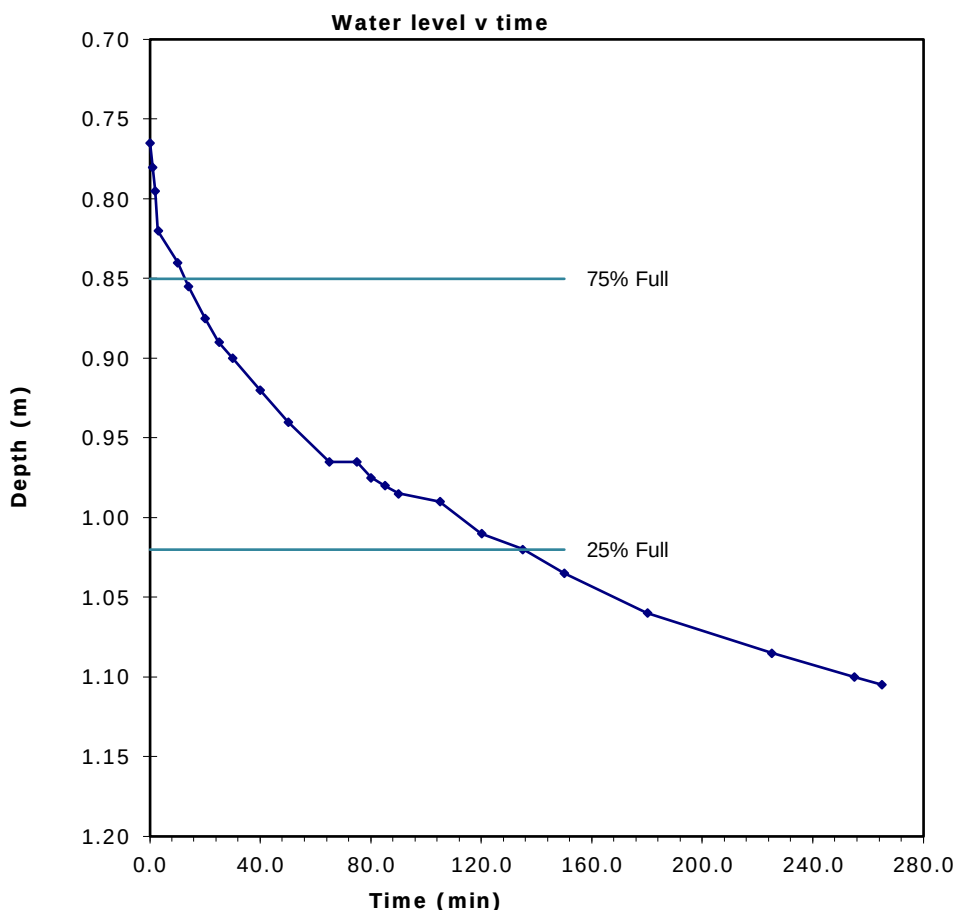
Dimensions: Width = **0.48** m
Length = **1.55** m
Pit filled with gravel (Y/N) **No**
Voids Ratio

Ground sequence:

GL - 0.10 TOPSOIL
0.10 - 0.50 POSSIBLE MADE GROUND
0.50 - 1.50 Orangish-brown silty very gravelly SAND

GW Standing at: **Dry**

Time (mins)	Depth (mBGL)
0.0	0.77
1.0	0.78
2.0	0.80
3.0	0.82
10.0	0.84
14.0	0.86
20.0	0.88
25.0	0.89
30.0	0.90
40.0	0.92
50.0	0.94
65.0	0.97
75.0	0.97
80.0	0.98
85.0	0.98
90.0	0.99
105.0	0.99
120.0	1.01
135.0	1.02
150.0	1.04
180.0	1.06
225.0	1.09
255.0	1.10
265.0	1.11



Depth of water at start of test 0.77 m

Depth of water at end of test 1.11 m

Depth at 75% full 0.85 m

Depth at 25% full 1.02 m

Comments: 700L of water added for test (1.5min fill time)

Base area of pit 0.74 m²

Effective soakage area a_{s50} 3.04 m²

Volume Change $V_{75}-V_{25}$ 0.13 m³

Time used in calculation t_{p75} 760 sec

Time used in calculation t_{p25} 8100 sec

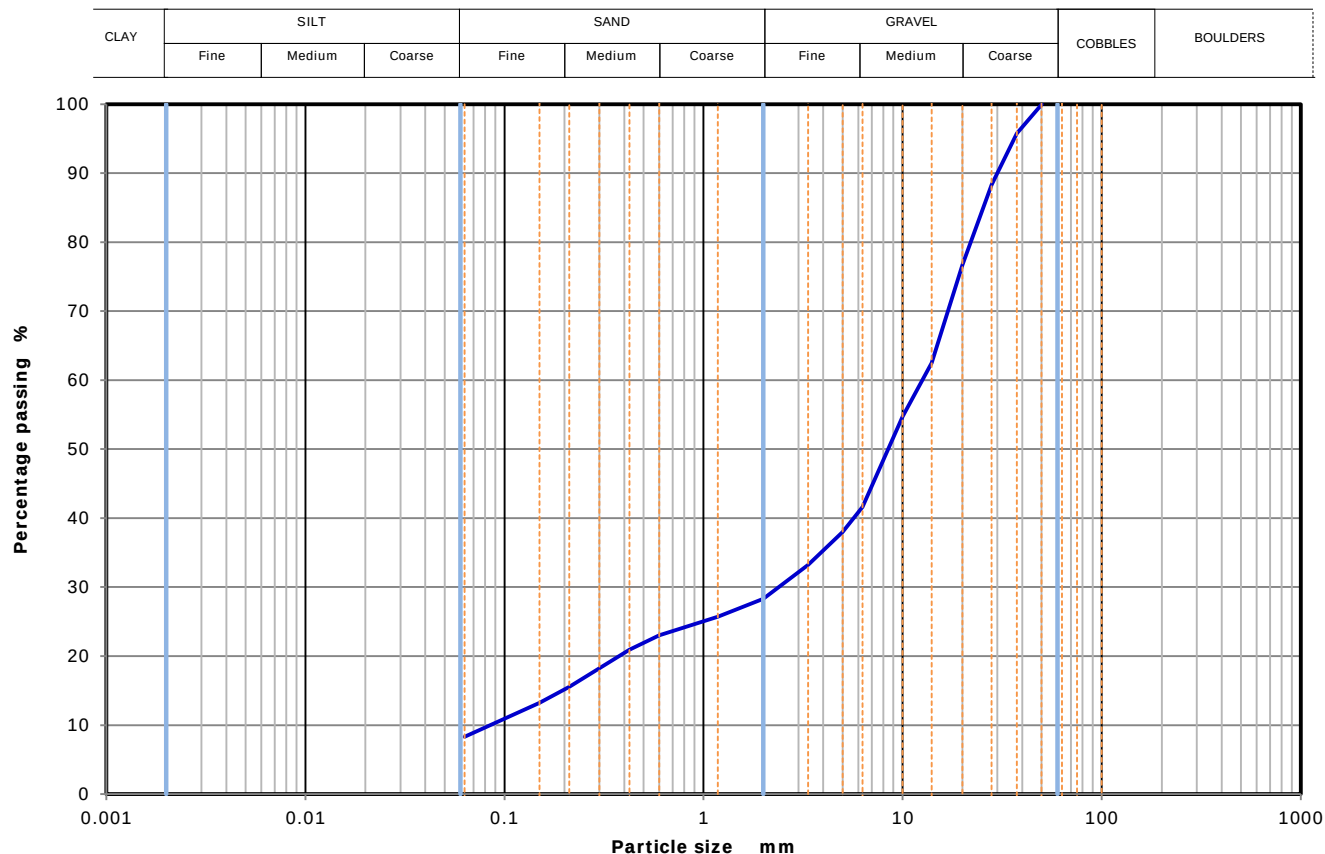
Soil infiltration rate 5.67E-06 m/sec

The 'soil infiltration rate' is calculated using two selected water levels (BRE DG 365: 2016 "Soakaway design")

Particle size distribution

Hole ID:	TP101
Depth (m):	0.12-0.50

Description:	Light greyish brown silty sandy GRAVEL
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Sieving	
Size (mm)	% passing
0	0.0
0	0.0
50	100.0
37.5	95.8
28	88.3
20	76.7
14	62.5
10	54.7
6.3	41.6
5	38.0
3.35	33.2
2	28.3
1.18	25.7
0.6	23.0
0.425	20.9
0.3	18.2
0.212	15.5
0.15	13.2
0.063	8.3

Sedimentation	
Size (μm)	% passing

Sample proportions	%
Cobbles	0
Gravel	72
Sand	20
Fines (<0.063mm)	8

Grading analysis		
D60	mm	13
D30	mm	2
D10	mm	0
Uniformity Coefficient		148
Curvature Coefficient		5

Test method and date	
Method: BS EN ISO 17892-4:2016	
- Wet sieving method	
Reporting date:	29 Aug 25

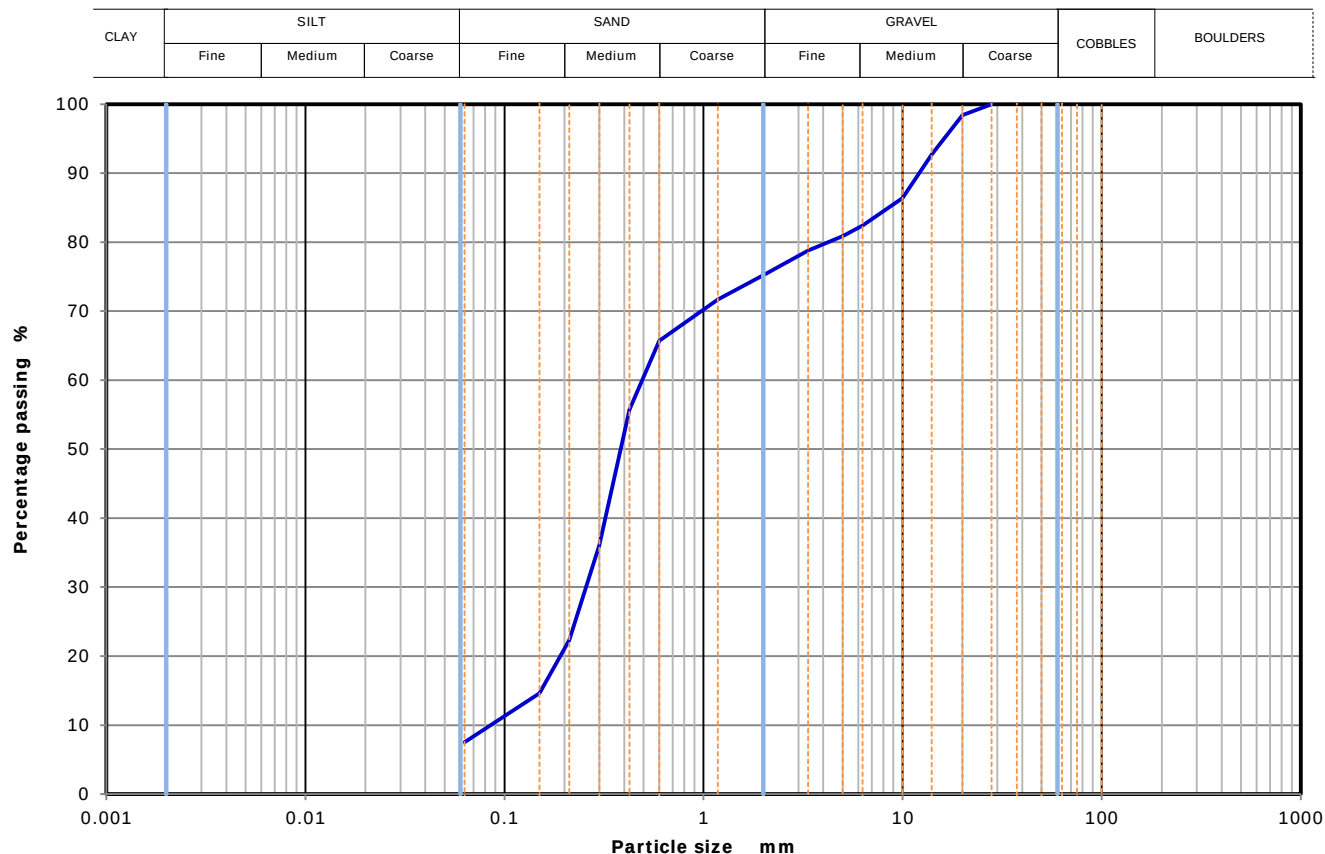
Particle size distribution

Hole ID: **TP102**

Depth (m): **0.50**

Description:	
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Orangish-yellow mottled light grey silty very gravelly fine to coarse SAND



Sieving	
Size (mm)	% passing
0	0.0
0	0.0
0	0.0
0	0.0
28	100.0
20	98.4
14	92.7
10	86.4
6.3	82.4
5	80.9
3.35	78.8
2	75.2
1.18	71.7
0.6	65.7
0.425	55.7
0.3	36.1
0.212	22.3
0.15	14.6
0.063	7.5

Sedimentation	
Size (μm)	% passing

Sample proportions	%
Cobbles	0
Gravel	25
Sand	68
Fines (<0.063mm)	8

Grading analysis		
D60	mm	0
D30	mm	0
D10	mm	0
Uniformity Coefficient		6
Curvature Coefficient		2

Test method and date	
Method: BS EN ISO 17892-4:2016 - Wet sieving method	
Reporting date:	29 Aug 25

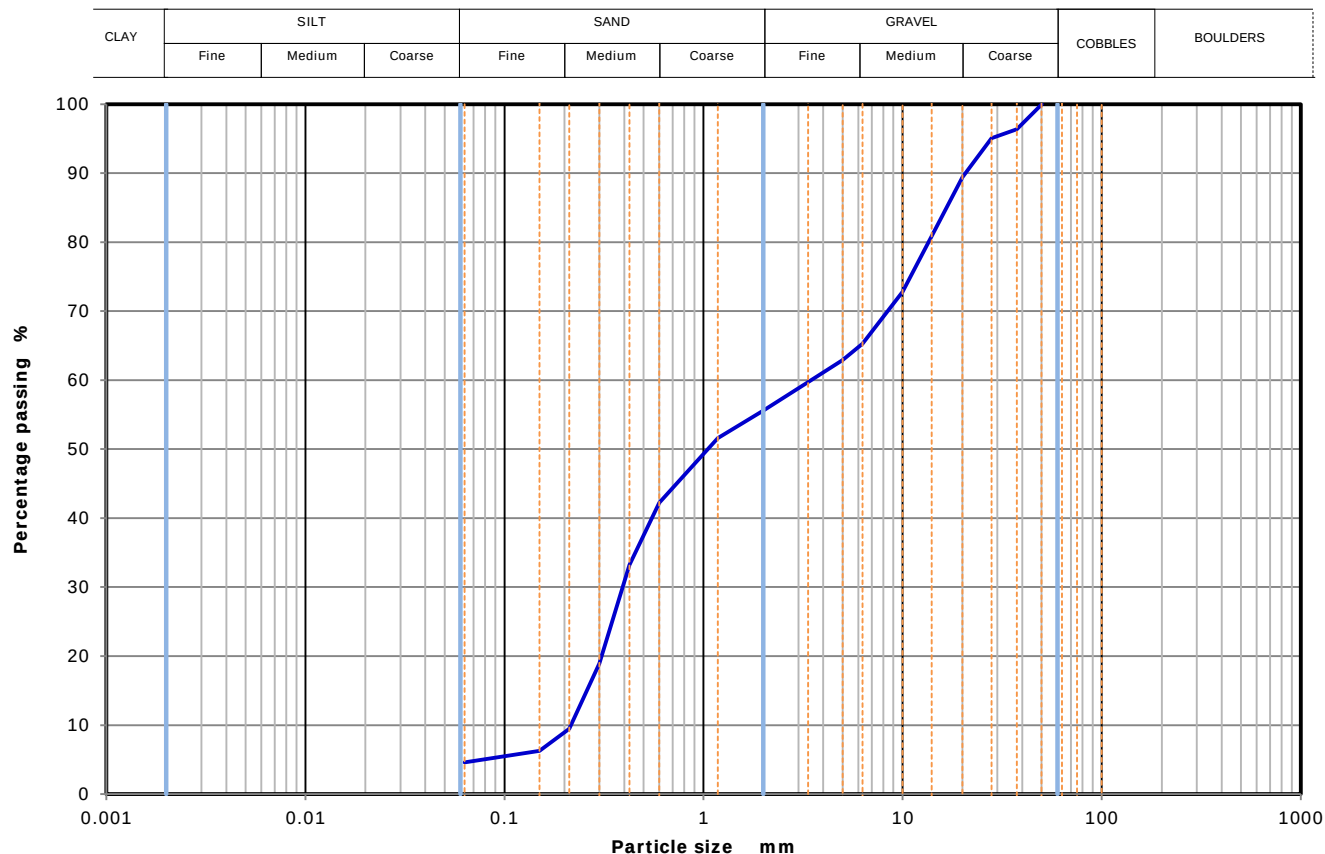
Particle size distribution

Hole ID: **TP103**

Depth (m): **1.50**

Description:

Orangish-brown silty very gravelly fine to coarse SAND



Sieving	
Size (mm)	% passing
0	0.0
0	0.0
50	100.0
37.5	96.4
28	95.1
20	89.4
14	80.9
10	72.8
6.3	65.3
5	62.9
3.35	59.7
2	55.6
1.18	51.6
0.6	42.2
0.425	33.2
0.3	18.9
0.212	9.5
0.15	6.3
0.063	4.6

Sedimentation	
Size (μm)	% passing

Sample proportions	%
Cobbles	0
Gravel	44
Sand	51
Fines (<0.063mm)	5

Grading analysis		
D60	mm	3
D30	mm	0
D10	mm	0
Uniformity Coefficient		16
Curvature Coefficient		0

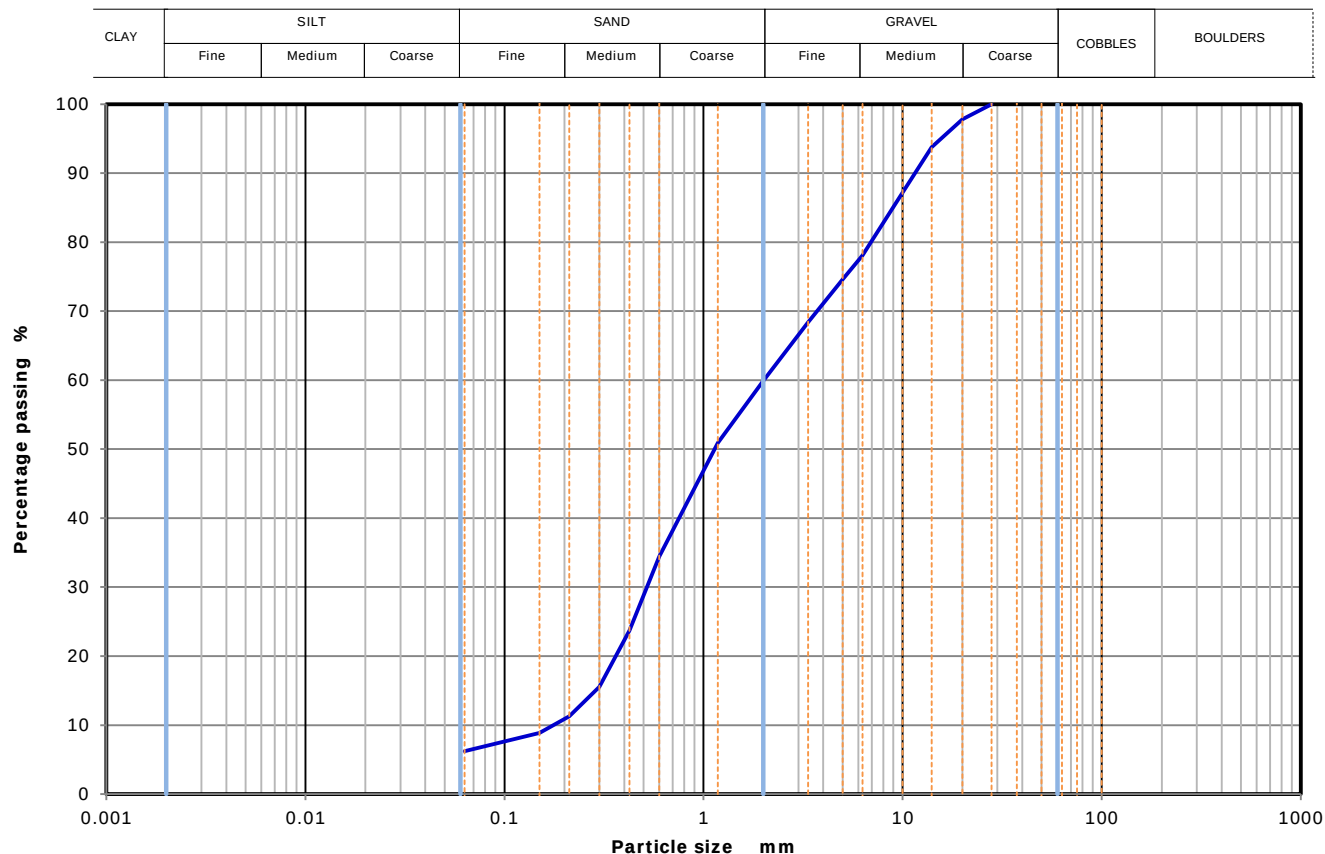
Test method and date	
Method: BS EN ISO 17892-4:2016	
- Wet sieving method	
Reporting date:	29 Aug 25

Particle size distribution

Hole ID: **WS104**Depth (m): **1.00**

Description:

Orangish-brown, silty, very gravelly, fine to coarse SAND



Sieving	
Size (mm)	% passing
0	0.0
0	0.0
0	0.0
0	0.0
28	100.0
20	97.8
14	93.8
10	87.2
6.3	78.1
5	74.6
3.35	68.4
2	59.9
1.18	50.9
0.6	34.4
0.425	23.7
0.3	15.5
0.212	11.3
0.15	8.9
0.063	6.2

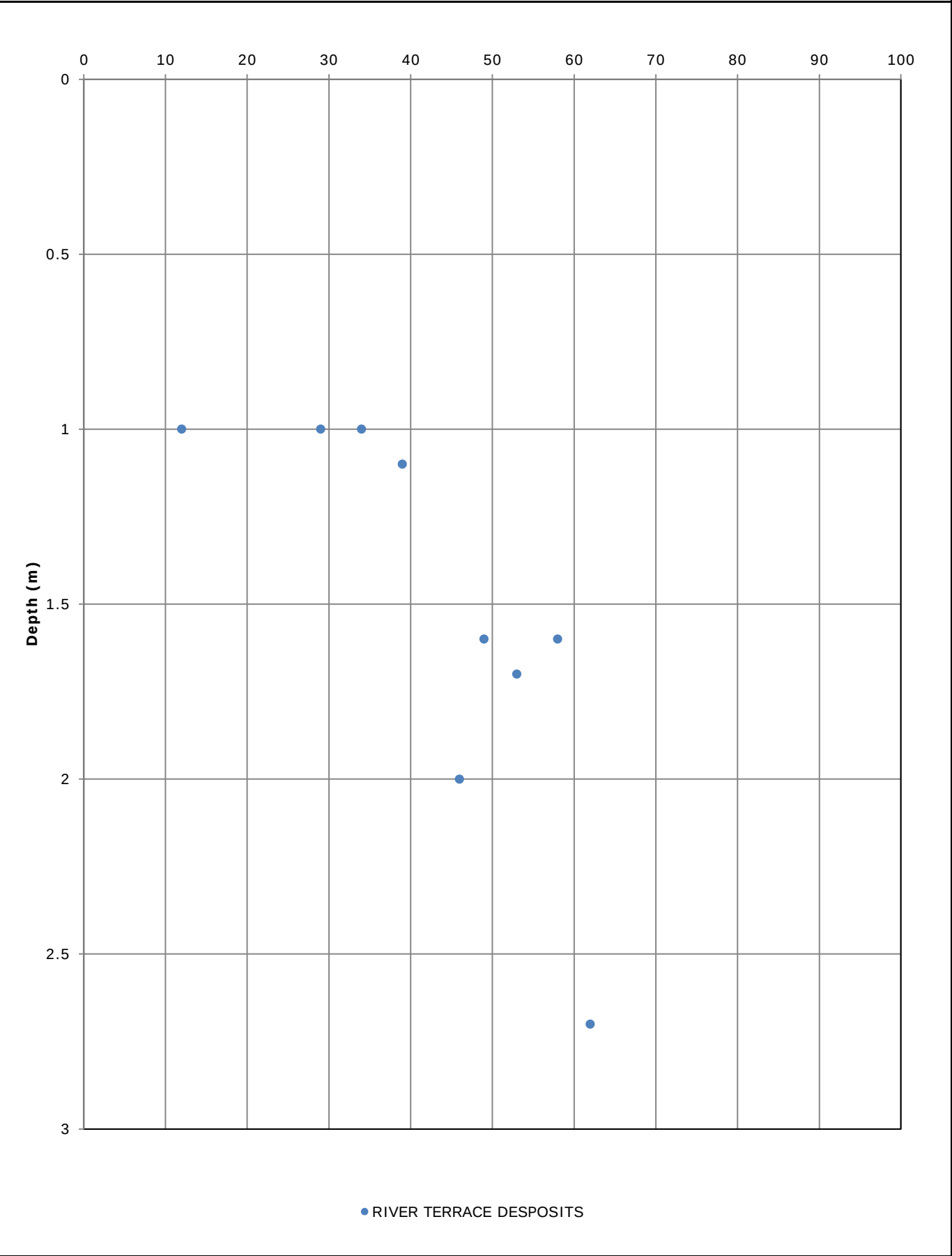
Sedimentation	
Size (μm)	% passing

Sample proportions	%
Cobbles	0
Gravel	40
Sand	54
Fines (<0.063mm)	6

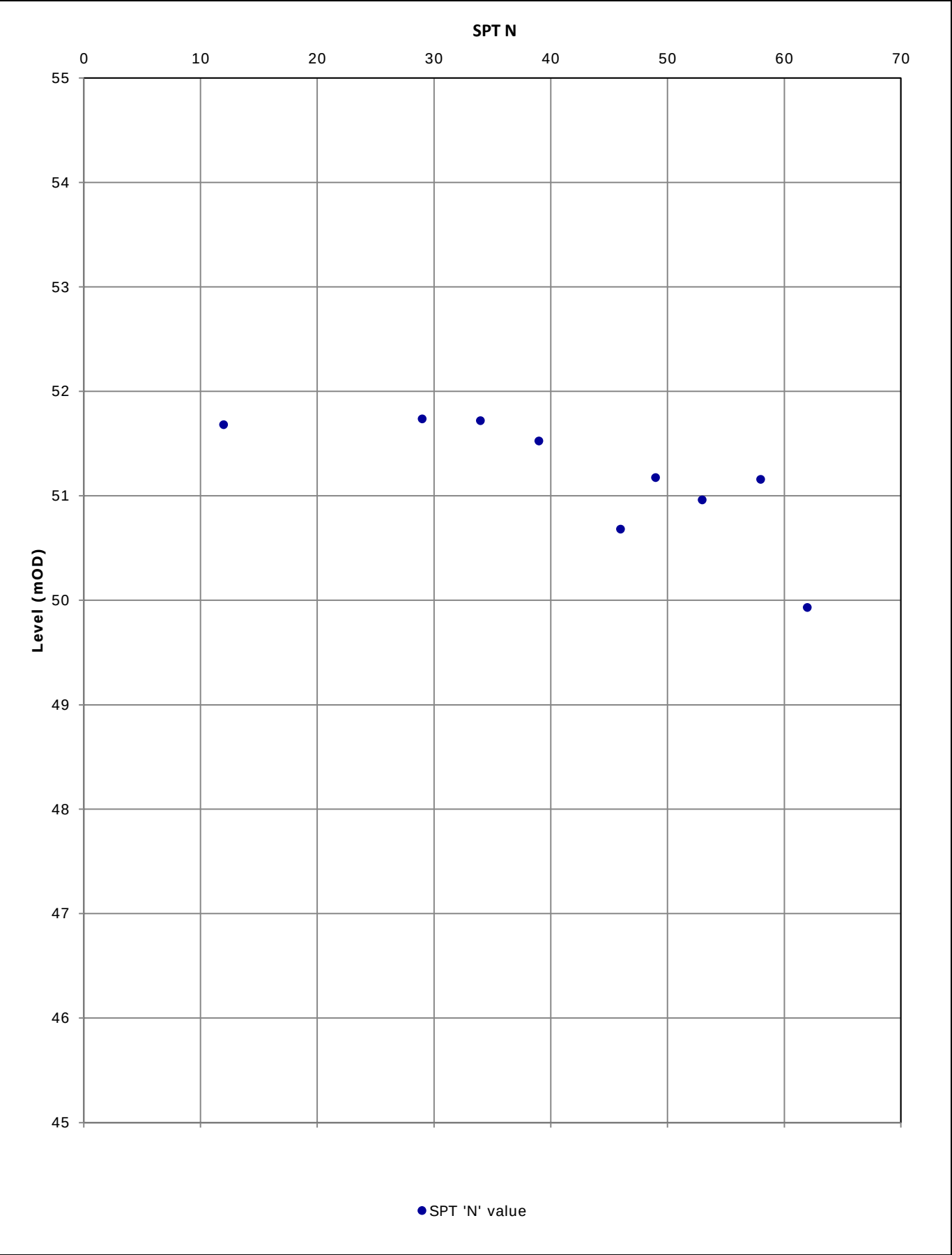
Grading analysis		
D60	mm	2
D30	mm	1
D10	mm	0
Uniformity Coefficient		11
Curvature Coefficient		1

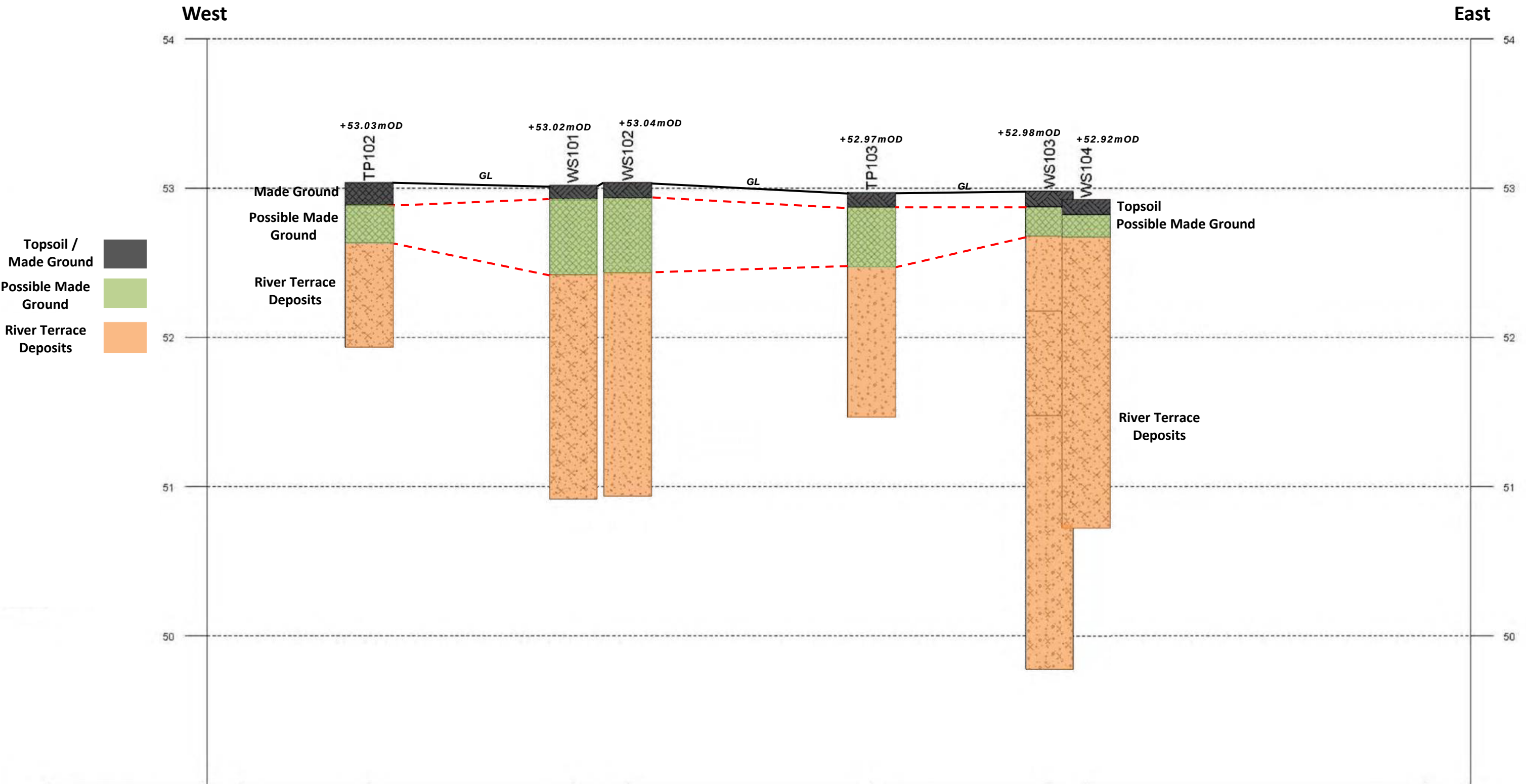
Test method and date	
Method: BS EN ISO 17892-4:2016	
- Wet sieving method	
Reporting date:	29 Aug 25

SPT-N vs depth



SPT-N vs level





NOTE: Strata boundaries are indicative

FOREWORD TO CONTAMINATION TESTING AND ASSESSMENT

The following statements are designed to inform and guide the Client and other potential parties intending to rely upon this report, with the express intent of protecting them from misunderstanding as to the extent and thus the potential associated risks that may result from proceeding without further evaluations or guidance.

- 1] Unless otherwise stated in this report, the testing of soils and waters is based on a range of commonly occurring potential contaminants for the specific purpose of providing a general guidance evaluation for the proposed form of development. Thus, the range of potential contaminants is neither exhaustive nor specifically targeted to any previous known uses or influences upon the site.
- 2] The amount and scope of the testing should not be assumed to be exhaustive but has been selected, at this stage, to provide a reasonable, general view of the site ground conditions. In many cases this situation is quite sufficient for the site to be characterised for the purposes of development and related Health and Safety matters for persons involved in or directly affected by the site development works. It must be understood, however, that in certain circumstances aspects or areas of the site may require further investigation and testing in order to fully clarify and characterise contamination issues, both for regulatory compliance and for commercial reasons.
- 3] The scope of the contamination testing must not automatically be regarded as being sufficient to fully formulate a remediation scheme. For such a scheme it may be necessary to consider further testing to verify the effectiveness of the remedial work after the site has been treated. It must be understood that a remediation scheme which brings a site into a sufficient state for the proposed development (“fit for purpose”) under current legislation and published guidance, may result in some contamination being left in-situ. It is possible that forthcoming legislation may result in a site being classified by the Local Authority and assigned a “Degree of Risk” related to previous use or known contamination.
- 4] The scope of the environmental investigation and contamination testing must not be automatically regarded as sufficient to satisfy the requirements in the wider environmental setting. The risks to adjacent properties and to the water environment are assessed by the regulatory authorities and there may be a requirement to carry out further exploration, testing and, possibly monitoring in the short or long term. It is not possible to sensibly predict the nature and extent of such additional requirements as these are the direct result of submissions to and liaison with the regulatory authorities. It is imperative, therefore, that such submissions and contacts are made as soon as possible, especially if there are perceived to be critical features of the site and proposed scheme, in this context.
- 5] New testing criteria have been implemented by the Environment Agency to enable a waste disposal classification to be made. The date of implementation of this Waste Acceptance Criteria [WAC] was July 2005. It is this testing that will be used by the waste regulatory authorities, including waste disposal sites, to designate soils for disposal in landfill sites. In certain circumstances, to satisfy the waste regulations, there may be the necessity to carry out additional testing to clarify and confirm the nature of any contamination that may be present. If commercial requirements are significant then this process may also necessitate further field operations to clarify the extent of certain features. Thus, the waste classification must be obtained from the waste regulation authorities or a licensed waste disposal site and we strongly recommend that this classification is obtained as soon as possible and certainly prior to establishing any costings or procedures for this or related aspects of the scheme.

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DETS Report No: 25-06899

Site Reference: Sonning Golf Club: Phase 1 Works & Proshop

Project / Job Ref: 11043/CA

Order No: 11043/CA

Sample Receipt Date: 28/07/2025

Sample Scheduled Date: 28/07/2025

Report Issue Number: 1

Reporting Date: 05/08/2025

Authorised by:



Steve Knight
Customer Support Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Soil Analysis Certificate						
DETS Report No: 25-06899	~Date Sampled	21/07/25	21/07/25	21/07/25	21/07/25	22/07/25
Soil Consultants Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Sonning Golf Club: Phase 1 Works & Proshop	~TP / BH No	WS101	WS103	WS103	WS104	TP101
~Project / Job Ref: 11043/CA	~Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Order No: 11043/CA	~Depth (m)	0.60-1.20	0.10-0.30	1.20	0.85-1.00	0.20-0.60
Reporting Date: 05/08/2025	DETS Sample No	784216	784217	784218	784219	784220

Determinand	Unit	RL	Accreditation	(n)	(n)	(n)	(n)	(n)
pH	pH Units	N/a	ISO17025	7.3	6.6	6.8	7.0	7.1
Total Sulphate as SO ₄	mg/kg	< 200	ISO17025	< 200	278	< 200	< 200	< 200
Total Sulphate as SO ₄	%	< 0.02	ISO17025	< 0.02	0.03	< 0.02	< 0.02	< 0.02
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	ISO17025	< 10	< 10	< 10	< 10	< 10
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	ISO17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Sulphur	%	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02

Soil Analysis Certificate - Sample Descriptions

DETS Report No: 25-06899	
Soil Consultants Ltd	
~Site Reference: Sonning Golf Club: Phase 1 Works & Proshop	
~Project / Job Ref: 11043/CA	
~Order No: 11043/CA	
Reporting Date: 05/08/2025	

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
784216	WS101	None Supplied	0.60-1.20	5.1	Light brown sandy gravel with stones
784217	WS103	None Supplied	0.10-0.30	4.3	Brown sandy gravel with stones and vegetation
784218	WS103	None Supplied	1.20	9.6	Green sandy gravel with stones
784219	WS104	None Supplied	0.85-1.00	4.8	Light brown sandy gravel with stones
784220	TP101	None Supplied	0.20-0.60	2.1	Brown sandy gravel with stones

Moisture content is part of procedure E003 & is not an accredited test

Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 25-06899

Soil Consultants Ltd

~Site Reference: Sonning Golf Club: **Phase 1 Works & Proshop**

~Project / Job Ref: 11043/CA

~Order No: 11043/CA

Reporting Date: 05/08/2025

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphénylcarbazine followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of FOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Certificate Key

Symbol	Description
F	Filtered sample
UF	Unfiltered sample
D	Dried sample
AR	As received sample
RL	Reporting limit
~	Sample details provided by customer and can affect the validity of results
M/S	Missing Sample
*	The Dutch 10 PAH compounds consist of Naphthalene, Anthracene, Phenanthrene, Fluoranthene, Benz(a)anthracene, Chrysene, Benzo(k)fluoranthene, Benzo(a)pyrene, Benzo(g,h,i)perylene, and Indeno(1,2,3-cd)pyrene
**	Total EPA-16 PAHs consist of the following polycyclic aromatic hydrocarbons: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenzo(a,h)anthracene, and Benzo(ghi)perylene.
***	Total WAC-17 PAHs consist of the following polycyclic aromatic hydrocarbons: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenzo(a,h)anthracene, Benzo(ghi)perylene and Coronene.
^	No sampling date provided; unable to confirm if samples are within acceptable holding times
n	Please note that we are MCERTS soil accredited (UK soils only) for sand, loam, and clay, and UKAS accredited for groundwater, tap water, surface water, and generated leachates. Other matrices are outside our scope of accreditation.
U	UKAS accredited test

Chris Avalos
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Chiltern House
Earl Howe Road
Holmer Green
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Buckinghamshire
HP15 6QT

Normec DETS Limited
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ME17 2JN
t: 01622 850410

DETS Report No: 25-07503

Site Reference: Sonning Golf club: Phase 1 Works & Proshop

Project / Job Ref: 11043/CA

Order No: 11043/CA

Sample Receipt Date: 20/08/2025

Sample Scheduled Date: 20/08/2025

Report Issue Number: 1

Reporting Date: 22/08/2025

Authorised by:



Steve Knight
Customer Support Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

For Topsoil and WAC analysis the expanded uncertainty measurement should be considered while evaluating results against compliance values.

Soil Analysis Certificate						
DETS Report No: 25-07503	~ Date Sampled	18/08/25	18/08/25	18/08/25		
Soil Consultants Ltd	~ Time Sampled	None Supplied	None Supplied	None Supplied		
~ Site Reference: Sonning Golf club: Phase 1 Works & Proshop	~ TP / BH No	HP01	HP01	WAC Composite		
~ Project / Job Ref: 11043/CA	~ Additional Refs	None Supplied	None Supplied	None Supplied		
~ Order No: 11043/CA	~ Depth (m)	0.10	0.10 - 0.30	0.00 - 0.30		
Reporting Date: 22/08/2025	DETS Sample No	786913	786914	786915		

Determinand	Unit	RL	Accreditation	(n)		(n)	
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected		
pH	pH Units	N/a	MCERTS	7.2	7.2		
Electrical Conductivity	uS/cm	< 5	NONE	131	70		
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1		
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	363	202		
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.04	0.02		
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	< 10	< 10		
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	< 0.01	< 0.01		
Total Sulphur	%	< 0.02	NONE	0.03	< 0.02		
Organic Matter (SOM)	%	< 0.1	MCERTS	4.4	2.1		
Arsenic (As)	mg/kg	< 2	MCERTS	7	7		
W/S Boron	mg/kg	< 1	NONE	< 1	< 1		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	8	9		
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2		
Copper (Cu)	mg/kg	< 4	MCERTS	8	11		
Lead (Pb)	mg/kg	< 3	MCERTS	41	32		
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	5	6		
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2		
Zinc (Zn)	mg/kg	< 3	MCERTS	21	27		
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2		

Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 25-07503	~ Date Sampled	18/08/25	18/08/25			
Soil Consultants Ltd	~ Time Sampled	None Supplied	None Supplied			
~ Site Reference: Sonning Golf club: Phase 1	~ TP / BH No	HP01	HP01			
Works & Proshop						
~ Project / Job Ref: 11043/CA	~ Additional Refs	None Supplied	None Supplied			
~ Order No: 11043/CA	~ Depth (m)	0.10	0.10 - 0.30			
Reporting Date: 22/08/2025	DETS Sample No	786913	786914			

Determinand	Unit	RL	Accreditation	(n)		
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	0.13	0.14	
Pyrene	mg/kg	< 0.1	MCERTS	0.13	0.14	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	
Chrysene	mg/kg	< 0.1	MCERTS	0.12	0.12	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.17	0.16	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.14	0.13	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.12	0.12	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	
**Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	

Soil Analysis Certificate - EPH Banded (Type F)						
DETS Report No: 25-07503	~ Date Sampled	18/08/25	18/08/25			
Soil Consultants Ltd	~ Time Sampled	None Supplied	None Supplied			
~ Site Reference: Sonning Golf club: Phase 1	~ TP / BH No	HP01	HP01			
Works & Proshop						
~ Project / Job Ref: 11043/CA	~ Additional Refs	None Supplied	None Supplied			
~ Order No: 11043/CA	~ Depth (m)	0.10	0.10 - 0.30			
Reporting Date: 22/08/2025	DETS Sample No	786913	786914			

Determinand	Unit	RL	Accreditation	(n)		
EPH (>C8 - C10)	mg/kg	< 1	MCERTS	< 1	< 1	
EPH (>C10 - C12)	mg/kg	< 1	MCERTS	< 1	< 1	
EPH (>C12 - C16)	mg/kg	< 1	MCERTS	< 1	< 1	
EPH (>C16 - C21)	mg/kg	< 1	MCERTS	< 1	< 1	
EPH (>C21 - C40)	mg/kg	< 6	MCERTS	7	6	
EPH (C8 - C40)	mg/kg	< 6	MCERTS	7	6	

Waste Acceptance Criteria Analytical Certificate																																							
DETS Report No: 25-07503		~Date Sampled		18/08/25		<table border="1"> <thead> <tr> <th colspan="3">Landfill Waste Acceptance Criteria Limits</th> </tr> <tr> <th>Inert Waste Landfill</th> <th>Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill</th> <th>Hazardous Waste Landfill</th> </tr> </thead> <tbody> <tr> <td>3%</td> <td>5%</td> <td>6%</td> </tr> <tr> <td>--</td> <td>--</td> <td>10%</td> </tr> <tr> <td>6</td> <td>--</td> <td>--</td> </tr> <tr> <td>1</td> <td>--</td> <td>--</td> </tr> <tr> <td>500</td> <td>--</td> <td>--</td> </tr> <tr> <td>100</td> <td>--</td> <td>--</td> </tr> <tr> <td>--</td> <td>>6</td> <td>--</td> </tr> <tr> <td>--</td> <td>To be evaluated</td> <td>To be evaluated</td> </tr> </tbody> </table>				Landfill Waste Acceptance Criteria Limits			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	3%	5%	6%	--	--	10%	6	--	--	1	--	--	500	--	--	100	--	--	--	>6	--	--	To be evaluated	To be evaluated
Landfill Waste Acceptance Criteria Limits																																							
Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill																																					
3%	5%	6%																																					
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100	--	--																																					
--	>6	--																																					
--	To be evaluated	To be evaluated																																					
Soil Consultants Ltd		~Time Sampled		None Supplied																																			
~Site Reference: Sonning Golf club: Phase 1 Works & Proshop		~TP / BH No		WAC Composite																																			
~Project / Job Ref: 11043/CA		~Additional Refs		None Supplied																																			
~Order No: 11043/CA		~Depth (m)		0.00 - 0.30																																			
Reporting Date: 22/08/2025		DETS Sample No		786915																																			
Determinand	Unit	MDL																																					
TOC ^{MU}	%	< 0.1		2																																			
Loss on Ignition ^{MU}	%	< 0.01		4.15																																			
BTEX ^{MU}	mg/kg	< 0.05		< 0.05																																			
Sum of PCBs	mg/kg	< 0.1		< 0.1																																			
Mineral Oil ^{MU}	mg/kg	< 10		< 10																																			
Total PAH ^{MU}	mg/kg	< 1.7		< 1.7																																			
pH ^{MU}	pH Units	N/a		7.2																																			
Acid Neutralisation Capacity	mol/kg (+/-)	< 1		< 1																																			
Eluate Analysis				10:1			Cumulative 10:1 * mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)																															
Arsenic			0.0014			0.014	0.5	2	25																														
Barium			0.0111			0.111	20	100	300																														
Cadmium			< 0.0002			< 0.002	0.04	1	5																														
Chromium			0.0009			0.009	0.5	10	70																														
Copper			0.0165			0.165	2	50	100																														
Mercury			< 0.00004			< 0.0004	0.01	0.2	2																														
Molybdenum			0.0007			0.007	0.5	10	30																														
Nickel			0.0020			0.020	0.4	10	40																														
Lead			0.0023			0.023	0.5	10	50																														
Antimony			< 0.0002			< 0.002	0.06	0.7	5																														
Selenium			0.0003			0.003	0.1	0.5	7																														
Zinc			0.022			0.22	4	50	200																														
Chloride			9.2			92	800	15000	25000																														
Fluoride			< 0.5			< 5	10	150	500																														
Sulphate			2.7			27	1000	20000	50000																														
TDS			54			540	4000	60000	100000																														
Phenol Index			< 0.01			< 0.1	1	-	-																														
DOC			16.4			164	500	800	1000																														
Leach Test Information																																							
Sample Mass (kg)				0.09																																			
Dry Matter (%)				96.5																																			
Moisture (%)				3.8																																			
Stage 1																																							
Volume Eluate L10 (litres)				0.90																																			
Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion Stated limits are for guidance only and Normec DETS Limited cannot be held responsible for any discrepancies with current legislation																																							

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 25-07503	
Soil Consultants Ltd	
~Site Reference: Sonning Golf club: Phase 1 Works & Proshop	
~Project / Job Ref: 11043/CA	
~Order No: 11043/CA	
Reporting Date: 22/08/2025	

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
786913	HP01	None Supplied	0.10	4.6	Brown sandy clay with stones and vegetation
786914	HP01	None Supplied	0.10 - 0.30	3.2	Brown sandy gravel with stones and vegetation
786915	WAC Composite	None Supplied	0.00 - 0.30	3.6	Brown sandy gravel with stones

Moisture content is part of procedure E003 & is not an accredited test

Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 25-07503

Soil Consultants Ltd

~Site Reference: Sonning Golf club: **Phase 1 Works & Proshop**

~Project / Job Ref: 11043/CA

~Order No: 11043/CA

Reporting Date: 22/08/2025

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphénylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of FOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

Water Analysis Certificate - Methodology & Miscellaneous Information				
DETS Report No: 25-07503				
Soil Consultants Ltd				
~Site Reference: Sonning Golf club: Phase 1 Works & Proshop				
~Project / Job Ref: 11043/CA				
~Order No: 11043/CA				
Reporting Date: 22/08/2025				

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser.	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	F	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	UF	Biological Oxygen Demand (BOD)	Determination using BOD sensors measuring the change of pressure	E133
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	F	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	F	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	F	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detection	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	F	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E115
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Acidification, followed by high-temperature oxidation and IR detection.	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Parameter	Matrix Type	Expanded Uncertainty Measurement	Unit
TOC	Soil	11	%
Loss on Ignition	Soil	24	%
BTEX	Soil	11	%
Sum of PCBs	Soil	30	%
Mineral Oil	Soil	9	%
Total PAH	Soil	17	%
pH	Soil	0.2	Units
Acid Neutralisation Capacity	Soil	18	%
Clay Content	Soil	15	%
Silt Content	Soil	14	%
Sand Content	Soil	13	%
Loss on Ignition	Soil	24	%
pH	Soil	0.2	Units
Carbonate	Soil	12	%
Total Nitrogen	Soil	12	%
Phosphorus (Extractable)	Soil	24	%
Potassium (Extractable)	Soil	20	%
Magnesium (Extractable)	Soil	26	%
Zinc	Soil	26	%
Copper	Soil	24	%
Nickel	Soil	29	%
Available Sodium	Soil	23	%
Available Calcium	Soil	23	%
Electrical Conductivity	Soil	10	%

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Certificate Key

Symbol	Description
F	Filtered sample
UF	Unfiltered sample
D	Dried sample
AR	As received sample
RL	Reporting limit
~	Sample details provided by customer and can affect the validity of results
M/S	Missing Sample
*	The Dutch 10 PAH compounds consist of Naphthalene, Anthracene, Phenanthrene, Fluoranthene, Benz(a)anthracene, Chrysene, Benzo(k)fluoranthene, Benzo(a)pyrene, Benzo(g,h,i)perylene, and Indeno(1,2,3-cd)pyrene
**	Total EPA-16 PAHs consist of the following polycyclic aromatic hydrocarbons: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, and Benzo(ghi)perylene.
***	Total WAC-17 PAHs consist of the following polycyclic aromatic hydrocarbons: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(ghi)perylene and Coronene.
^	No sampling date provided; unable to confirm if samples are within acceptable holding times
n	Please note that we are MCERTS soil accredited (UK soils only) for sand, loam, and clay, and UKAS accredited for groundwater, tap water, surface water, and generated leachates. Other matrices are outside our scope of accreditation.
S	Subcontracted analysis
M	MCERTS accredited test
U	UKAS accredited test

Site & Location	Sonning Golf Club: Phase 1 Works & Proshop Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ	Report No: 11043b/CA
Site photographs		

Photo No 1	
Description: View of wooden structure present onsite to be removed. Hut is used for score keeping	
Direction: Looking NNE Date: 21/07/25	

Photo No 2	
Description: View of hardstanding vehicle parking area to SW of site	
Direction: Looking SW Date: 21/07/25	

Site & Location	Sonning Golf Club: Phase 1 Works & Proshop Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ	Report No: 11043b/CA
Site photographs		

Photo No 3	
Description: View of site area including existing wooden structure	
Direction: Looking NW Date: 21/07/25	

Photo No 4	
Description: View of wider golf course that site is situated within	
Direction: Looking NW Date: 21/07/25	

Site & Location	Sonning Golf Club: Phase 1 Works & Proshop Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ	Report No: 11043b/CA
Site photographs		

Photo No 5

Description:
View of site
area (wooden
hut) with
hardstanding
parking area
and clubhouse

Direction:
Looking SW

Date:
21/07/25

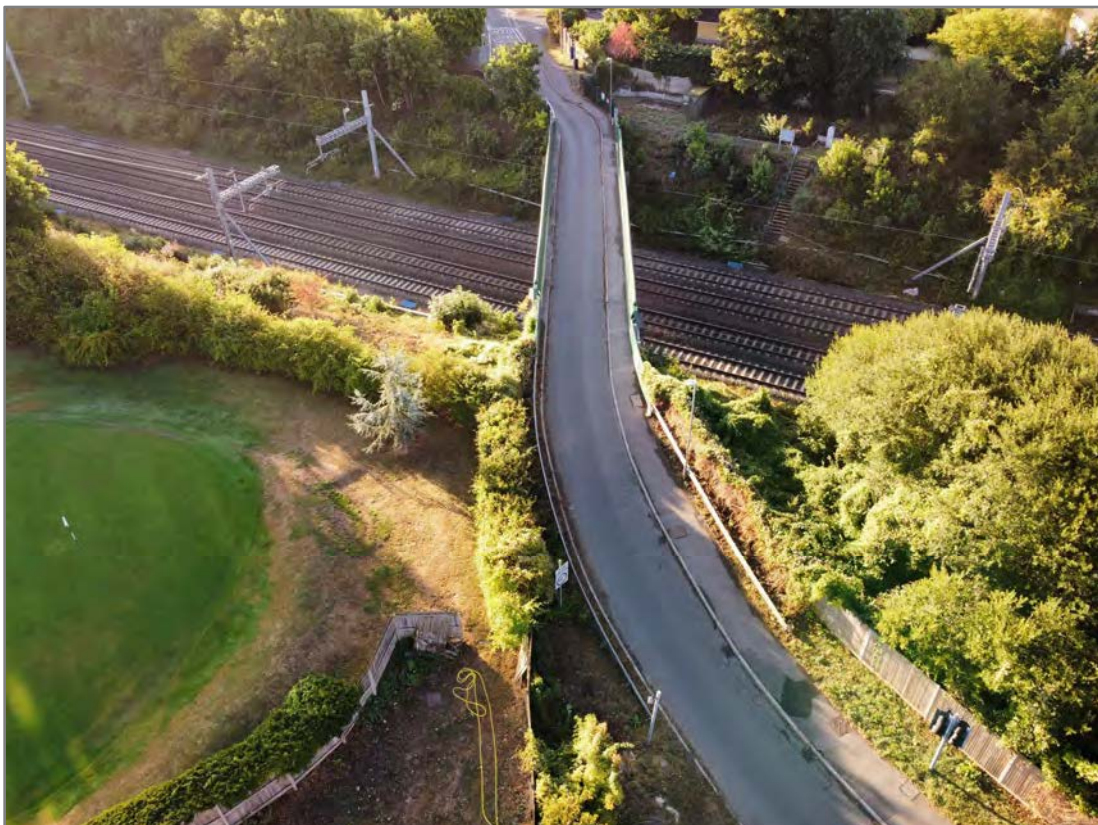


Photo No 6

Description:
View of
nearby railway
tracks located
approx. 105m
ESE

Direction:
Looking NNE

Date:
21/07/25



Site & Location	Sonning Golf Club: Phase 1 Works & Proshop Duffield Road, Sonning, Reading, Berkshire, RG4 6GJ	Report No: 11043b/CA
Site photographs		

Photo No 7

Description:
View of
clubhouse
with site area
in background

Direction:
Looking SW

Date:
21/07/25



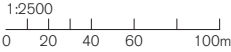
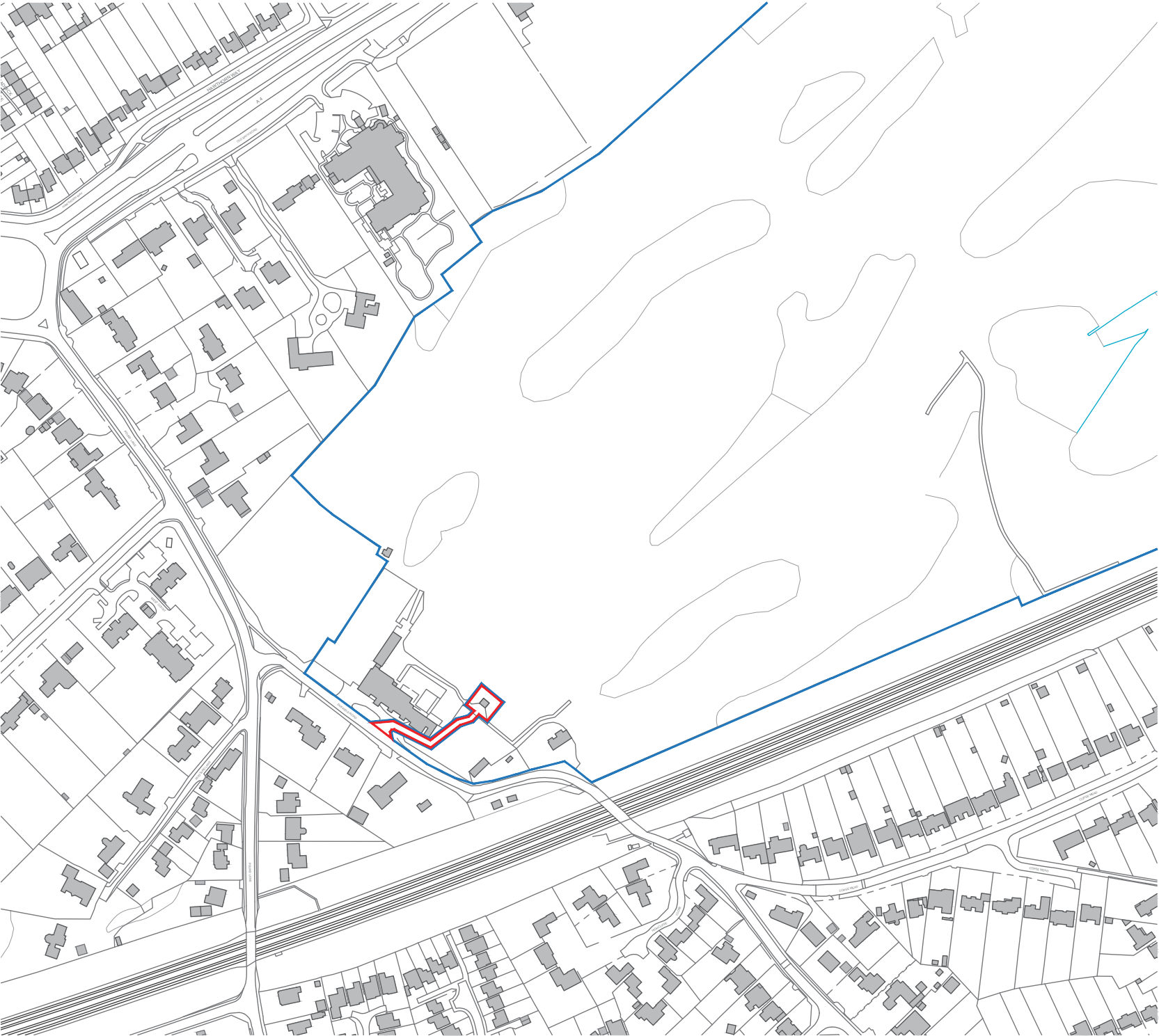
Photo No 8

Description:
View of small
gas box
located to
front of
clubhouse,
approx. 55m
SW of site

Direction:
Looking NNE

Date:
21/07/25





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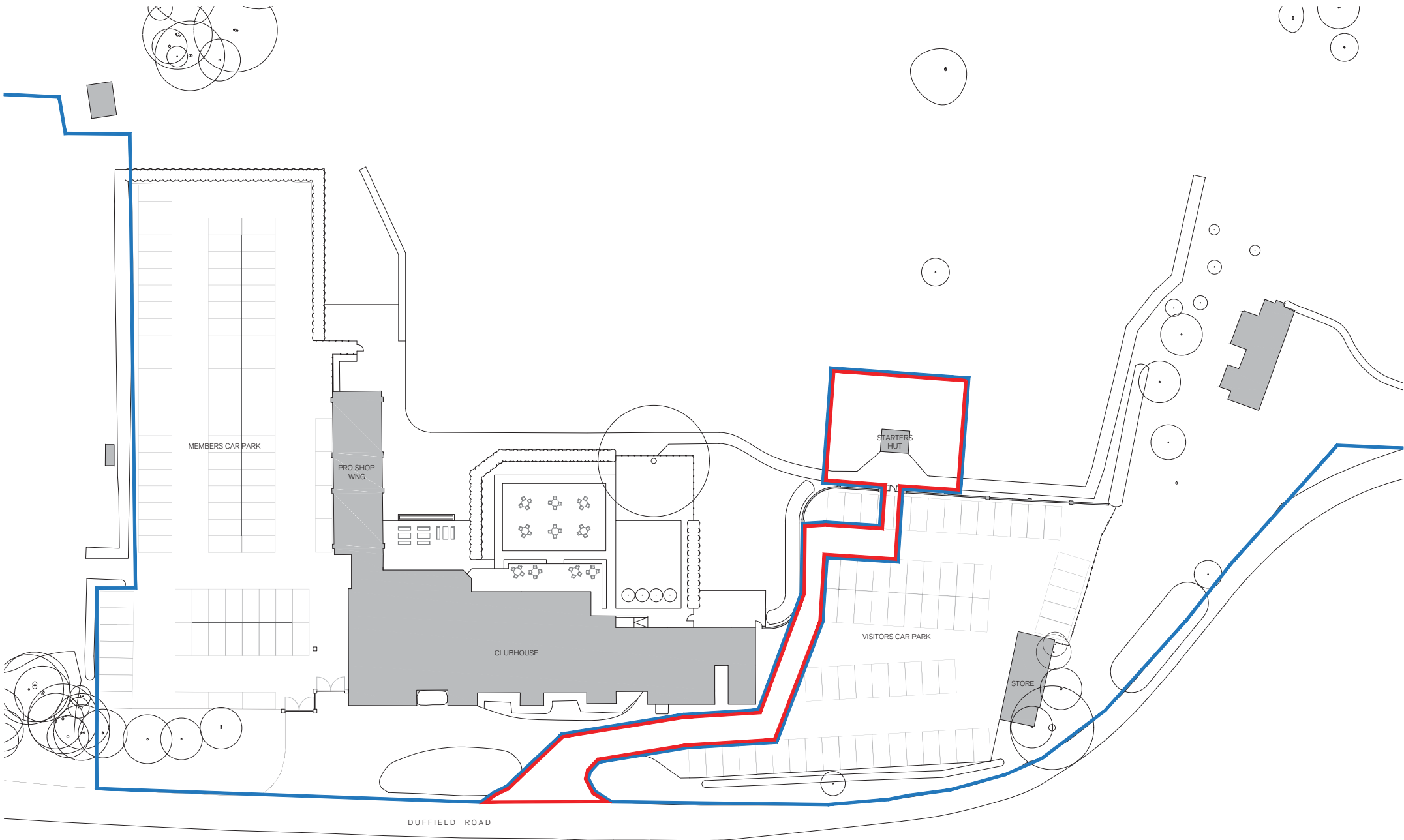
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PROJECT /DESCRIPTION	DATE	SCALE AT A3	JOB NO
Sonning Golf Club Duffield Road, Sonning Reading, RG4 6 GJ	Nov 2024	1:2500	24.017
Site Location Plan - Pro Shop	STATUS Planning	DRAWING NO PL.500	
CLIENT Sonning Golf Club	DRAWN CD	CHECKED ST	REV -

SPRATLEY & PARTNERS
7 CENTENARY BUSINESS PARK, STATION ROAD,
HENLEY-ON-THAMES, OXFORDSHIRE RG9 1DS.
01491 411277

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THIS DRAWING TO BE READ IN CONJUNCTION
WITH ALL CONSULTANTS INFORMATION. ALL
DIMENSIONS TO BE CHECKED ON SITE. DO NOT
SCALE. THIS DRAWING IS COPYRIGHT.

S
& P



1:500
0 5 15 25m

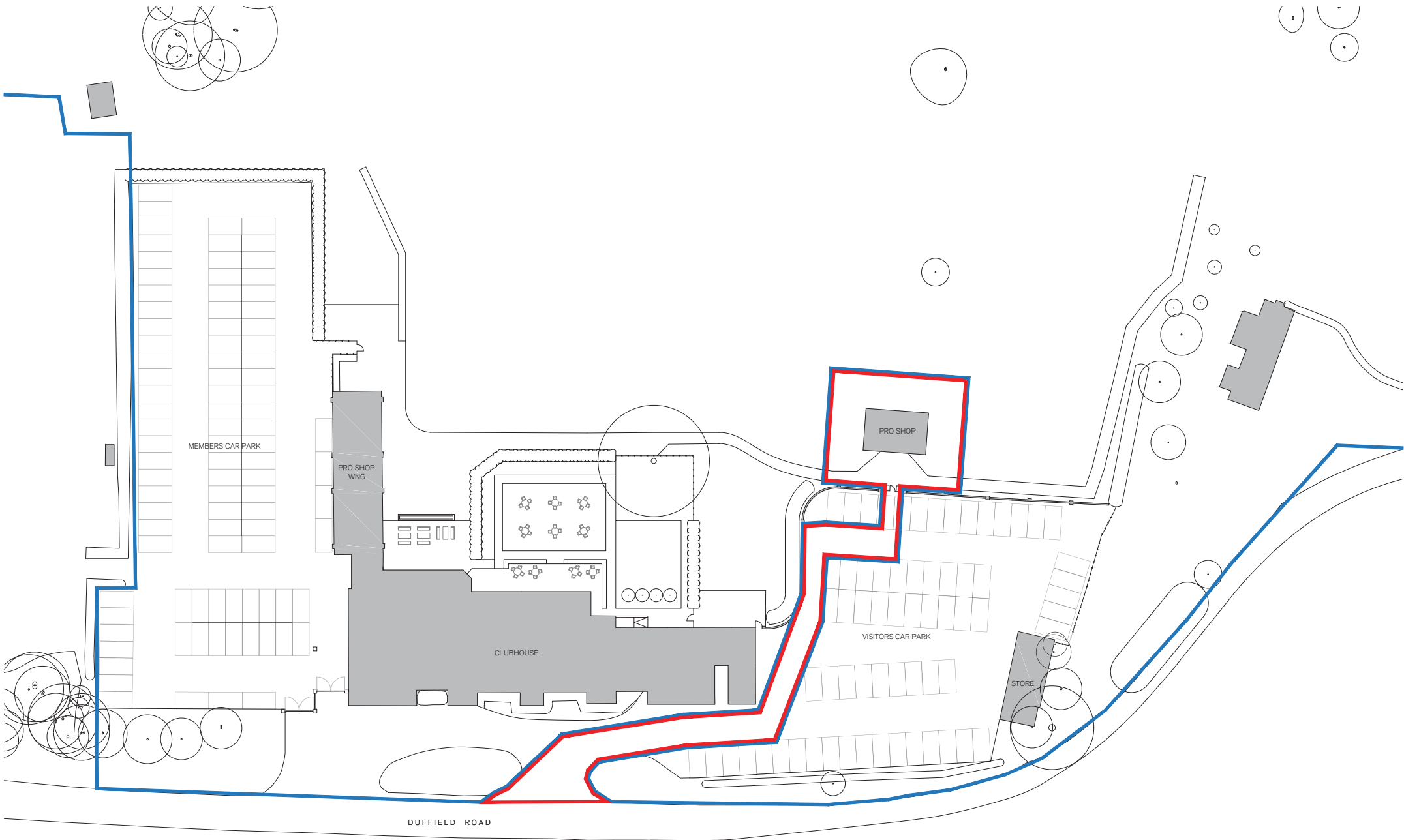
SPRATLEY & PARTNERS . 7 CENTENARY BUSINESS PARK, STATION ROAD,
HENLEY-ON-THAMES, OXFORDSHIRE RG9 1DS . 01491 411277

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REV.	ISSUED	DESCRIPTION	DRAWN	CHECKED
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PROJECT /DESCRIPTION	DATE	SCALE AT A3	JOB NO
Sonning Golf Club Duffield Road, Sonning Reading	Nov 2024	1:500	24.017
Existing Block Plan - Pro Shop	STATUS Planning		DRAWING NO PL.501
CLIENT Sonning Golf Club	DRAWN CD	CHECKED ST	REV -

S
& P



1:500
0 5 15 25m

↑ N

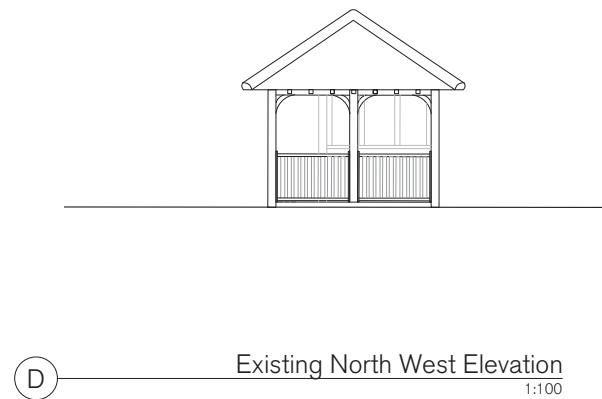
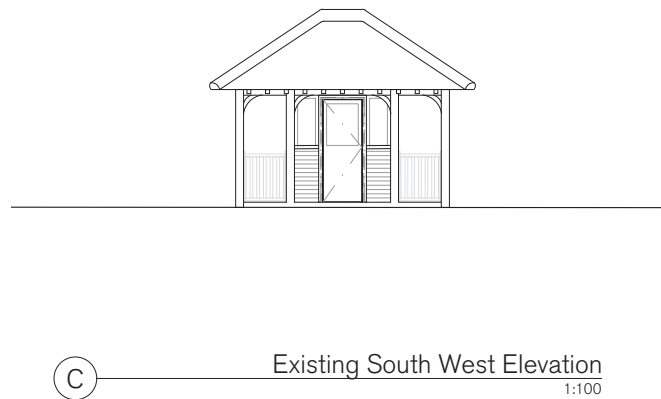
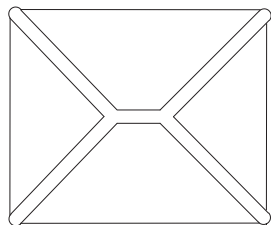
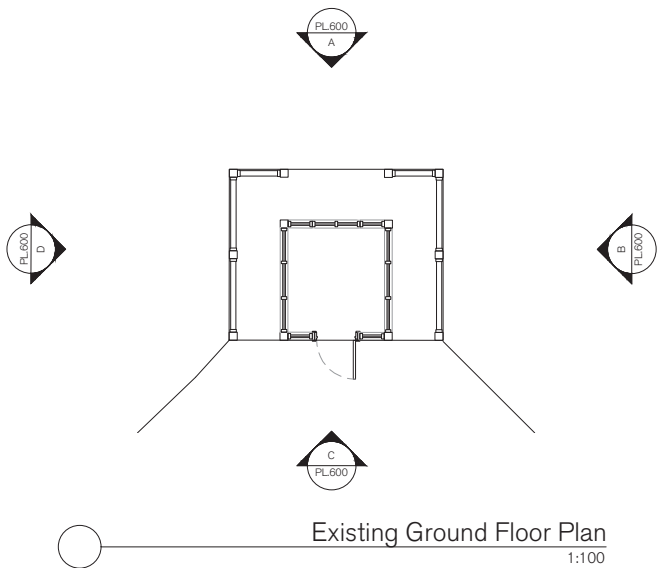
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PROJECT /DESCRIPTION	DATE	SCALE AT A3	JOB NO
Sonning Golf Club Duffield Road, Sonning Reading	Nov 2024	1:500	24.017
Proposed Site Plan - Pro Shop	STATUS Planning		DRAWING NO PL.510
CLIENT Sonning Golf Club	DRAWN CD	CHECKED ST	REV -

S
& P



1:100
0 1 2 3 4 5m



SPRATLEY & PARTNERS, 7 CENTENARY BUSINESS PARK, STATION ROAD,
HENLEY-ON-THAMES, OXFORDSHIRE RG9 1DS. 01491 411277

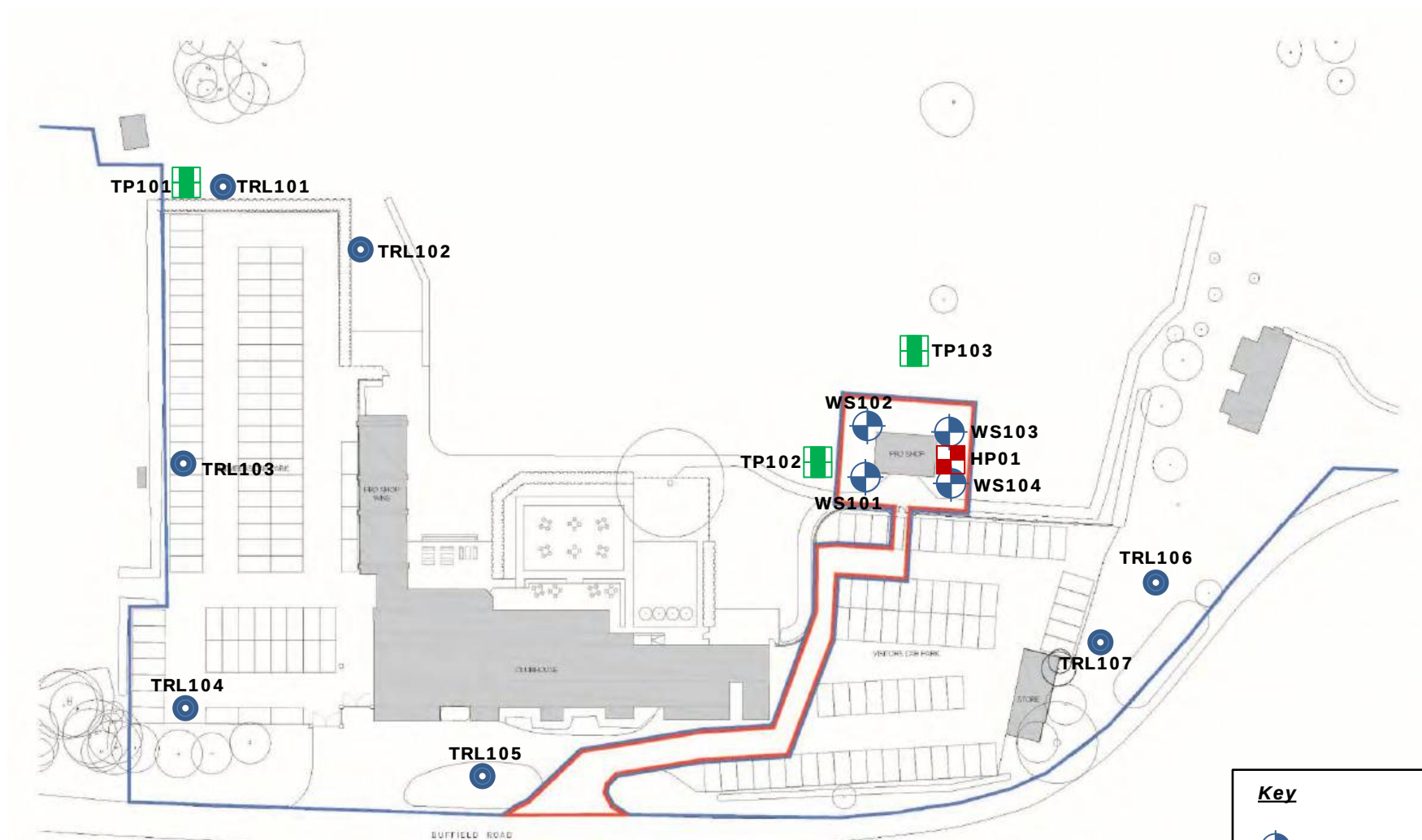
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REV.	ISSUED	DESCRIPTION	DRAWN	CHECKED
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PROJECT /DESCRIPTION	DATE	SCALE AT A3	JOB NO
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Existing Plans and Elevations - Starters Hut	STATUS Planning	DRAWN CD	DRAWING NO PL.600
CLIENT Sonning Golf Club	CHECKED ST	REV -	

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& P

Site Plan

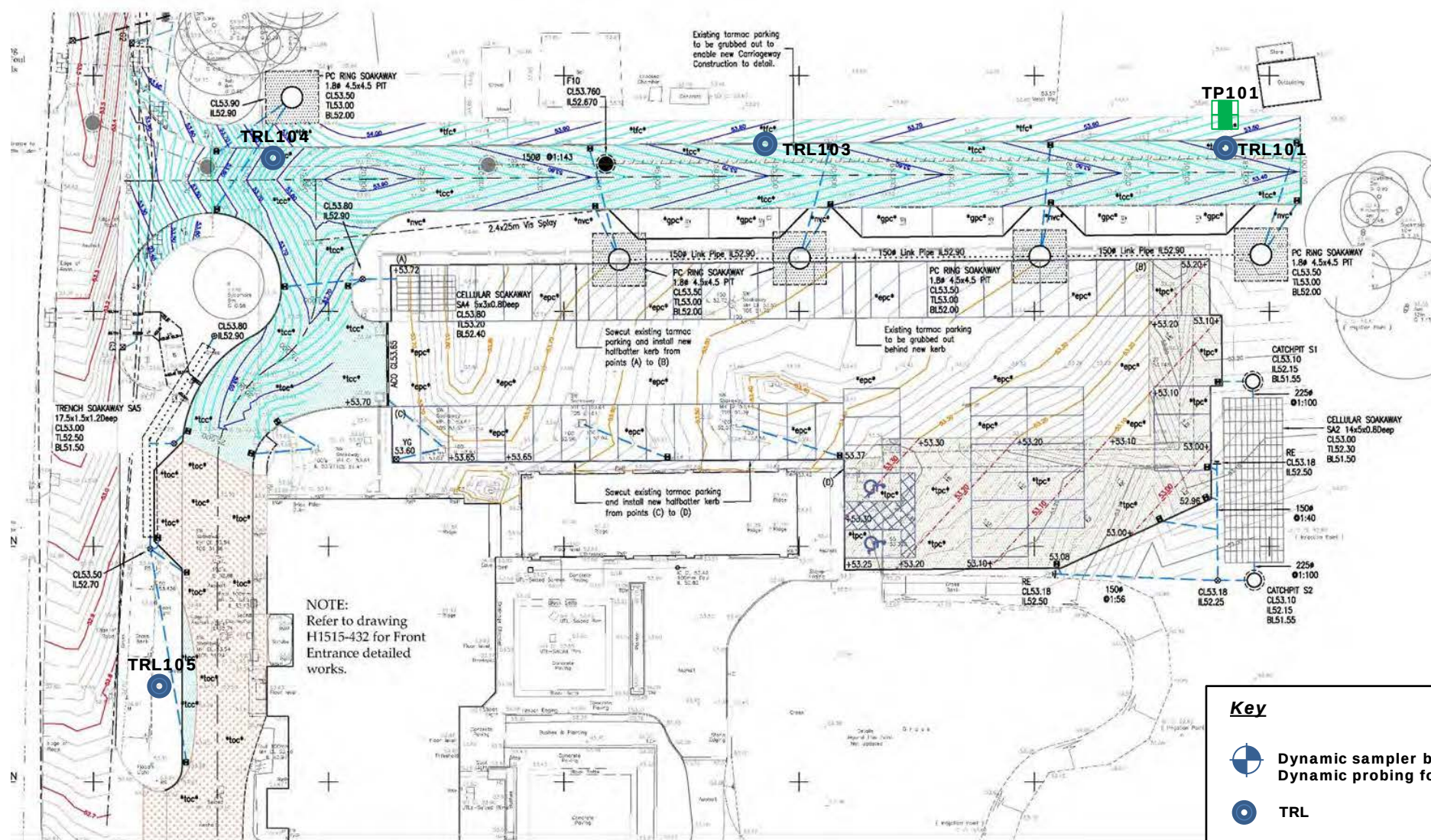


Key

-  Dynamic sampler borehole with Dynamic probing follow on
-  TRL
-  Soakage test pit
-  Hand excavated trial pit

0 50m
Scale = approx 1:1000@A4

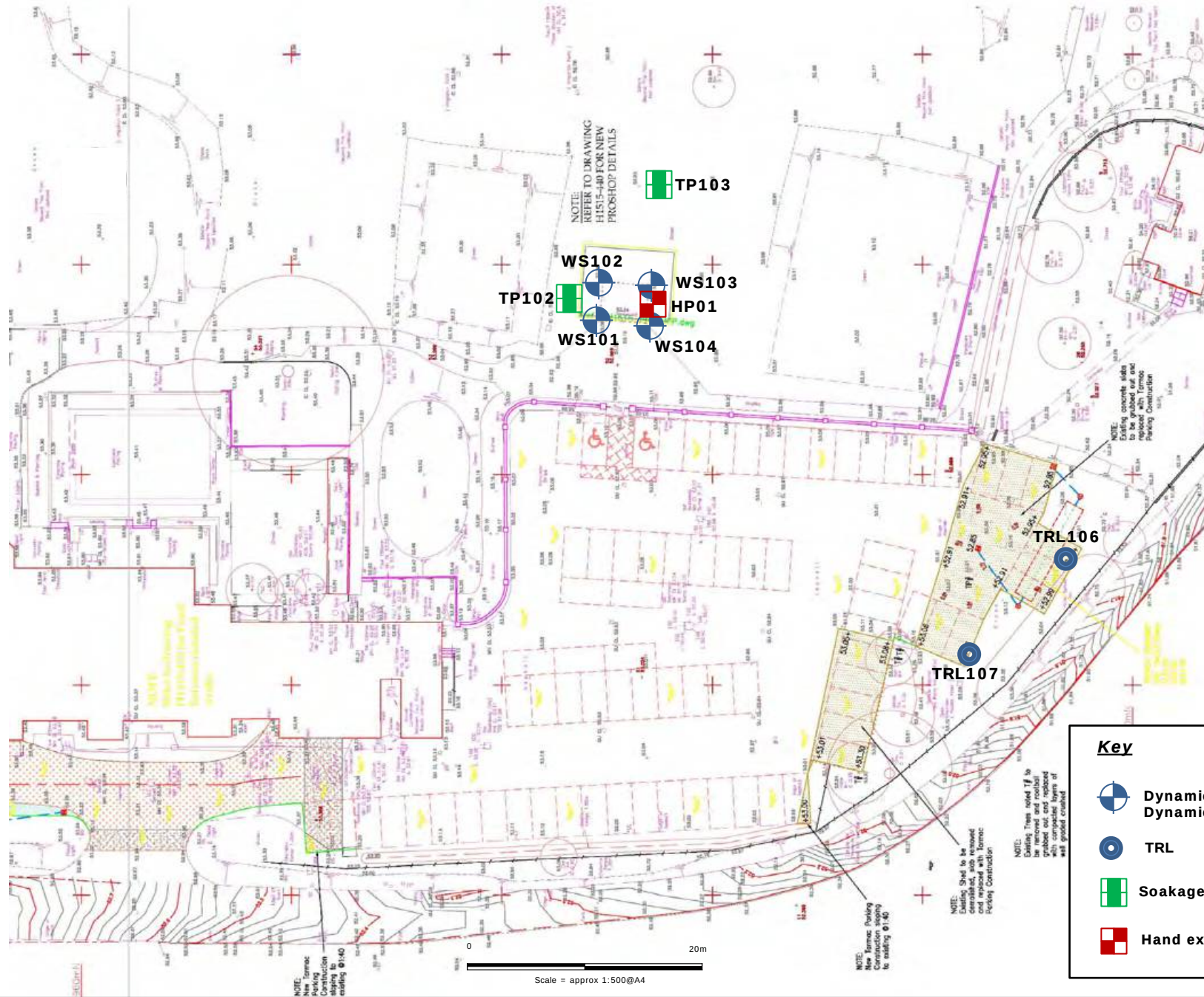
Site Plan - 1



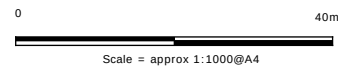
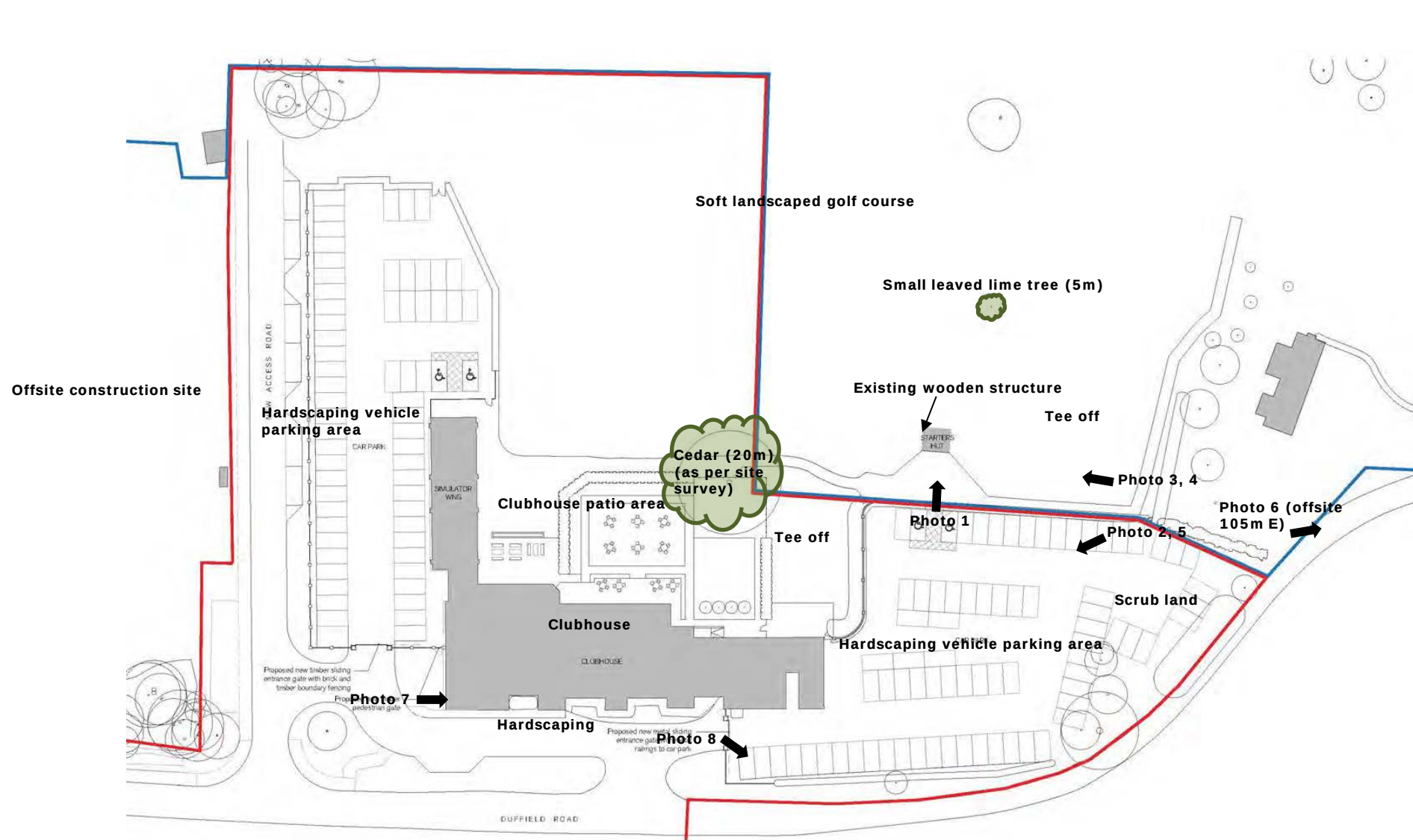
Key

- Dynamic sampler borehole with Dynamic probing follow on
- TRL
- Soakage test pit
- Hand excavated trial pit

0 20m
Scale = approx 1:500@A4



Site Walkover Plan



Site Service Plan



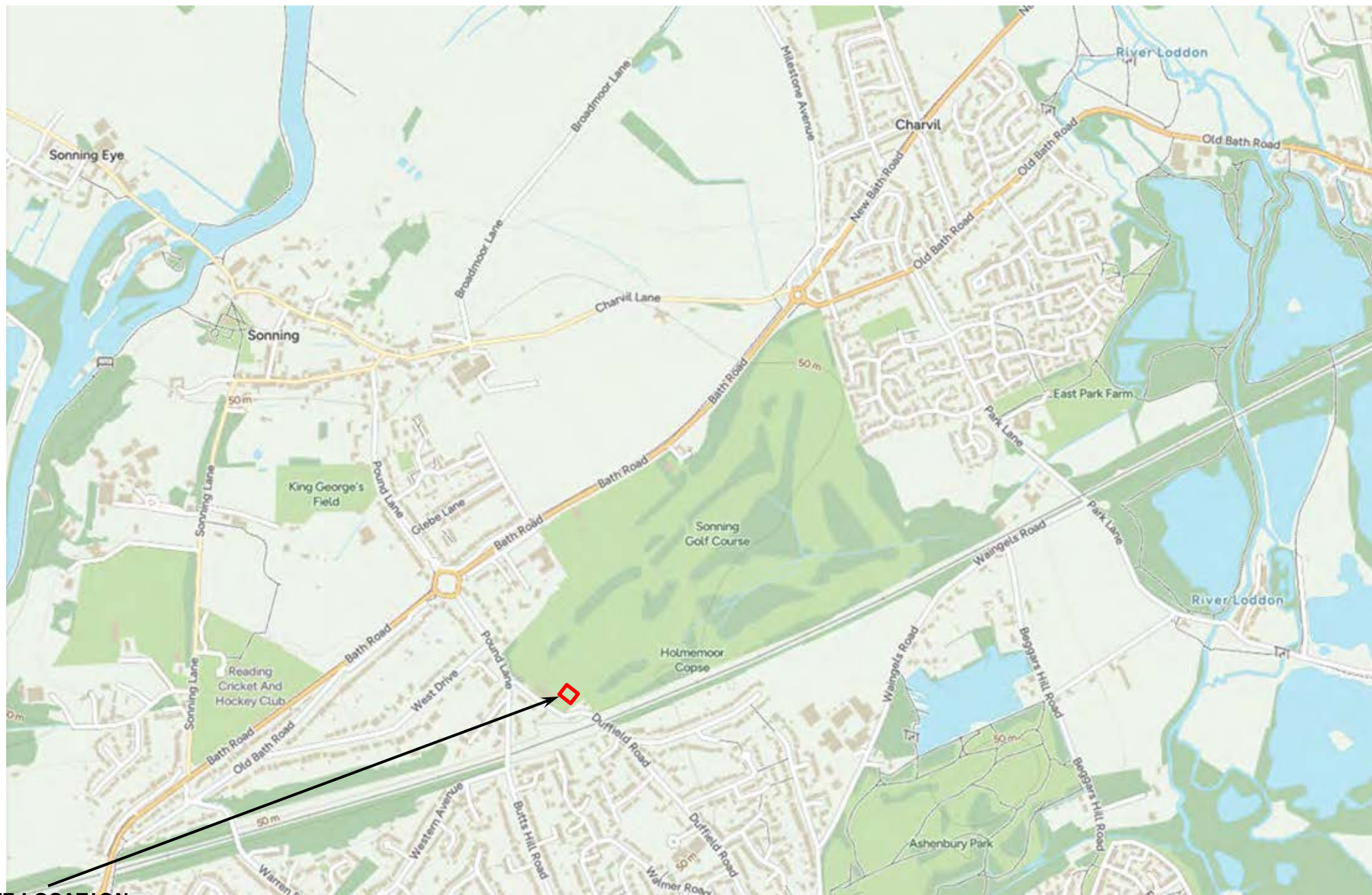
General Notes

- 125mm HDPE Pipework c/w Signal Cable
- 90mm HPPE / MDPE Pipework c/w Signal Cable
- 63mm MDPE Pipework c/w Signal Cable
- Toro 834 / 835 Series Sprinkler
- Toro 810 Series Sprinkler
- Greens Isolation Valve Assembly
- Solenoid Valve Assembly
- Approach Valve (old) / Water Point
- Manual Watering Point (QCV / Mini Reel Connection)
- Air Valve / Washout Valve
- Drain Valve
- Cable Joint
- Mainline Isolation Valve Assembly
- Location of Pump
- Location of Controller

Signal cable ducted into control system position.

- 50mm PE PIPE - LATERALS [12.5 BAR]
- 63mm PE PIPE - LATERALS [12.5 BAR]
- APPROACH SPRINKLER[ASSUMED EXISTING LOCATION]
- TORO FLEX 834/6 FAIRWAY SPRINKLER (FULL or PART CIRCLE)
- GREENS ISOLATION VALVE ASSEMBLY (EXISTING)
- MAINS ISOLATION VALVE ASSEMBLY (EXISTING)
- TEE SOLENOID VALVE ASSEMBLY (EXISTING)
- FAIRWAY CONNECTION POINT

Site Location Map



SITE LOCATION

Image taken from online open-source data

APPENDIX E

EXTERNAL WORKS DRAWINGS

Private Drainage Key

Rodding Eye
Shallow Inspection Chamber
450Ø Inspection Chamber
450Ø IC with 300mm sump
450Ø IC Restricted Access

Trench Soakaway

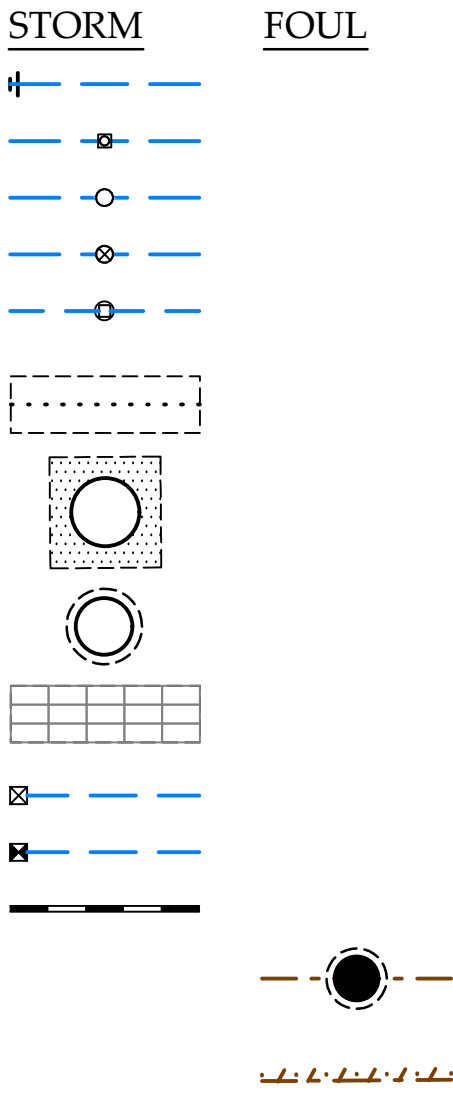
PC Ring & Pit Soakaway

Catchpit Manhole

Cellular Crate Storage / Soakaway

Private Yard Gully
Private Road Gully
ACO channel MD100
PCC Manhole

Foul Rising Main to pump
manufacturers Specification



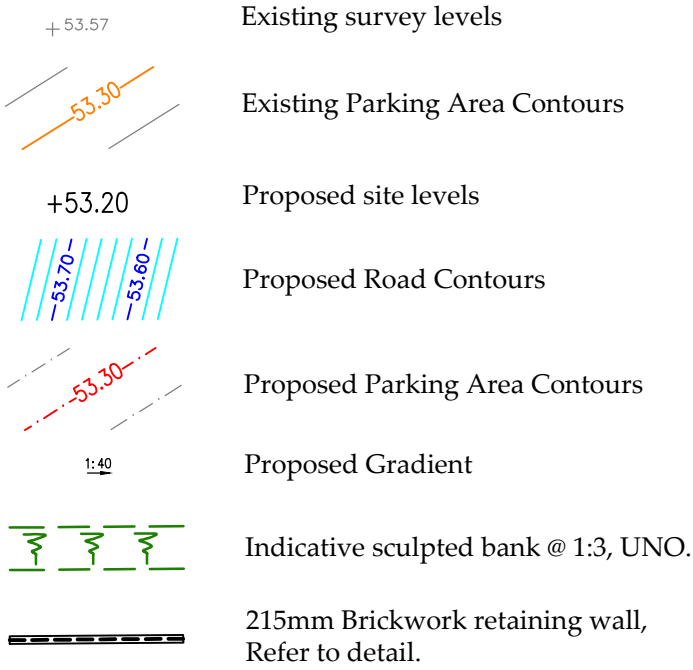
PRIVATE DRAINAGE NOTES

- 3.1 All private drainage works to be in accordance with Part H of the current Building Regulations and BS 8301.
- 3.2 All private drainage to be either:-
PVCu to BS EN 1401-1 (BS 4660/5481) by Osma, Marley or similar.
OR
Vitrified Clayware to BS 65 and BS EN 295.
OR
Concrete to BS 5911 and flexibly jointed.
- The drainage design shown on this drawing has been based upon a PVCu drainage system.
- 3.3 All private drainage to be 100mm diameter unless noted otherwise. Gully laterals to be sized to suit gully outlets. Connections to public sewers to be 150mm dia unless noted otherwise.
- 3.4 Foundations adjacent to drain runs are to be constructed so that the difference between the formation level of the foundation and invert level of any drain must not exceed the horizontal distance minus 500mm.
- 3.5 Where foul and surface water sewers cross and there is less than 100mm clearance short lengths of both runs are to be encased in concrete.
- 3.6 All RWP, SVP and foul drainage positions are to be confirmed by the Architect.
- 3.7 Where RWP's are connected direct to drain, rodding access plates are to be provided.
- 3.8 For pipe bedding and backfill details refer to drawing number H1515/437.

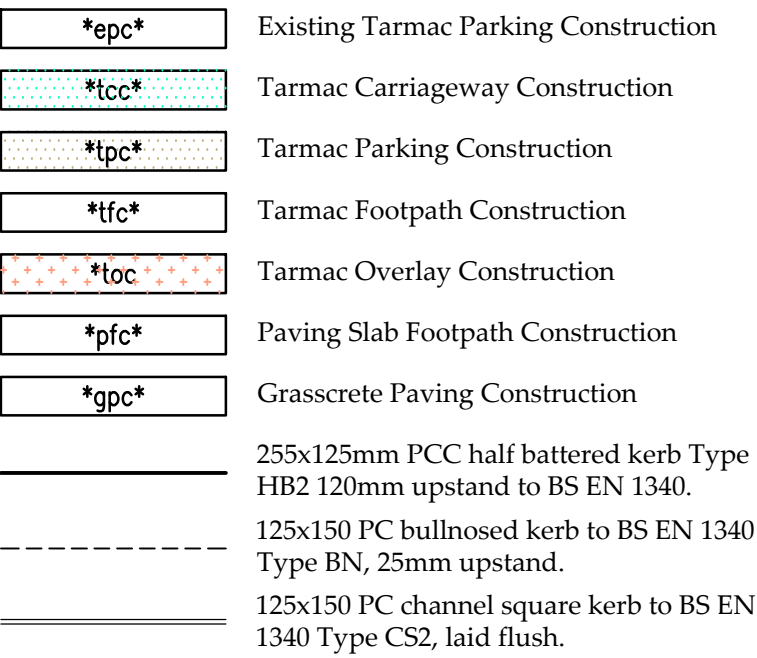
SOAKAWAY NOTES

- 4.1 Site investigation report by Soil Consultants Ref: 11043b/CA has shown the infiltration rate to be 9.45x10-6m/s (0.034m/h). Soakaways have been designed to accord with BRE365 & Ciria Report 156 utilising this value.
- 4.2 All soakaways to be sited 5m minimum from any building or wall, existing or proposed, or any other soakaway.
- 4.3 No soakaway bases to penetrate water table level.
- 4.4 No soakaway to be constructed in contaminated ground.

Levels Key



Private Areas



FILL SPECIFICATION
Fill under adoptable carriageway and other vehicularised areas to be to Department of Transport 'Specification for Highway Works Part 1' Table 6/1 Class 1 (General Granular Fill) and compacted in accordance with Table 6/4. Subject to the final approval of the adopting Authority.

Fill under gardens and other landscaped areas to be as raised from site excavations and compaction shall be sufficient to remove large voids and to produce a coherent mass whilst preventing overcompaction and any build up of excess pore pressures.

Notes:

- 1.1 Do not scale from this drawing.
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- 1.8 The grid relates to a local datum.
- 1.9 The Contractor must check the levels of all existing drainage outfalls prior to construction of any drainage, unless otherwise agreed, to ensure the proposed design may be achieved. Any discrepancies must be reported immediately to Aventus Design.
- 1.10 Sulphates have been determined as class 1 (DS-1) for design purposes in accordance with BRE Special Digest 1 (2001). Buried Concrete to be in accordance with ACCEC Site Class AC-1.
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- 1.12 All adoptable highway works to be in accordance with the Local Authorities Specifications.
- 1.13 All adoptable drainage works to be in accordance with the Water Authorities standard guidelines for connections etc.
- 1.14 Formation to road/hardstanding to be proof rolled and any soft spots in subgrade of road/Hardstanding areas are to be excavated and replaced with well compacted sub-base or free draining granular material to Department of Transport Specification for Highway Works Part 2' Table 6/1 Class 1 (General Granular Fill) and compacted in accordance with Table 6/4.

CDM REGULATIONS 2015

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PRELIMINARY ISSUE

F	01.05.26	Soakaway references amended.	SU	PP
E	06.03.26	Footway link to Duffield Road and northern carpark amended, taxi drop off and gates added.	SU	PP
D	23.12.25	Tactile crossing to Duffield Road added.	SU	PP
C	03.12.25	Access road parking bays amended.	SU	PP
B	25.11.25	8 Parallel parking bays added.	SU	PP
A	31.10.25	Finishes hatching added, access road soakaways changed to PC Ring/Pits. Layout to site frontage amended.	SU	PP
REV.	DATE	DESCRIPTION	CHK	APP

Aventus Design Ltd
Unit 5 - Leaches Farm
Business Centre
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Kingswood
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Bucks HP18 0RF
Tel: 01296 770066
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Web: www.aventusdesign.co.uk

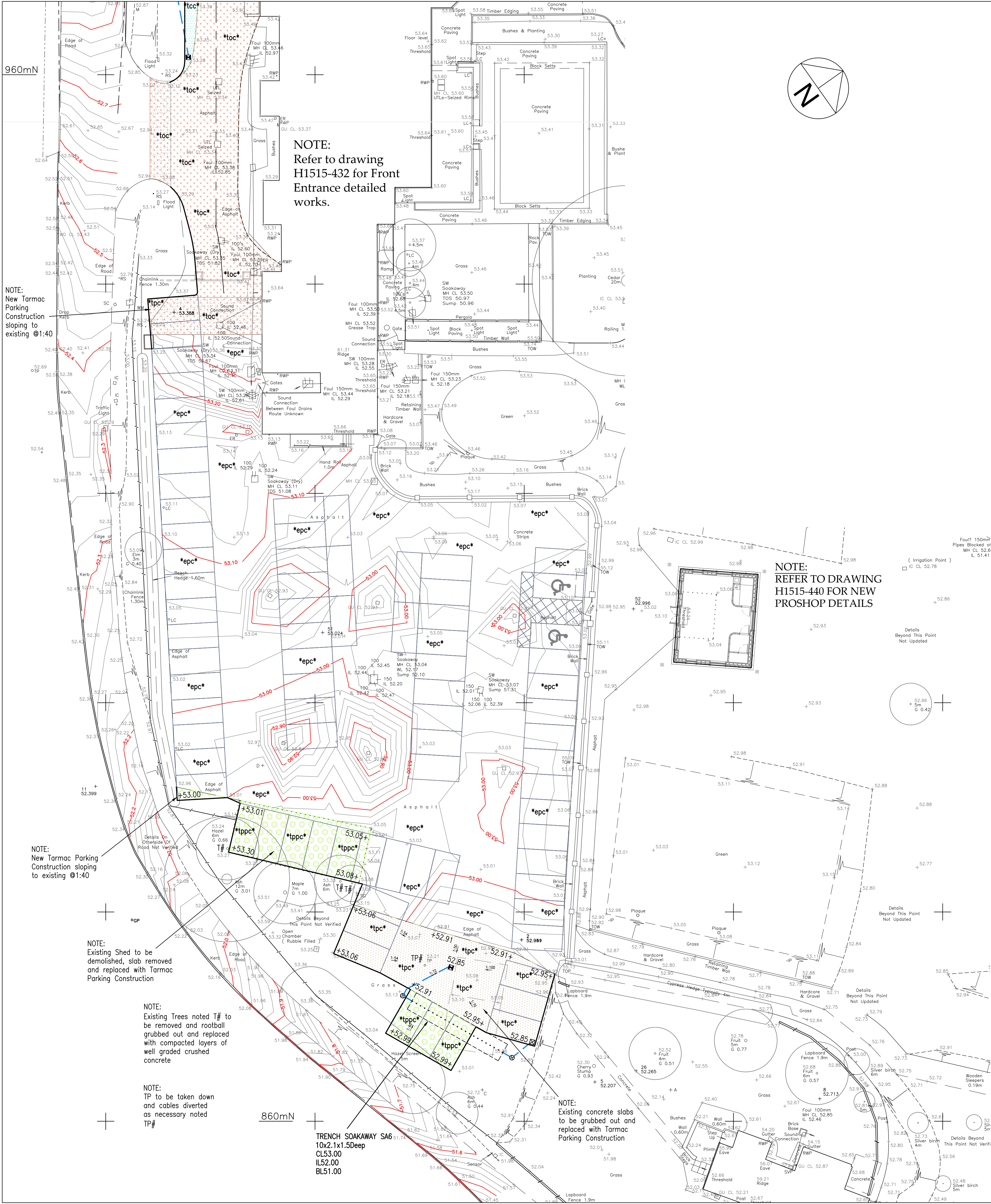
Client: Sonning Golf Club

Site: Sonning Golf Club,
Duffield Road, Sonning
RG4 6GJ

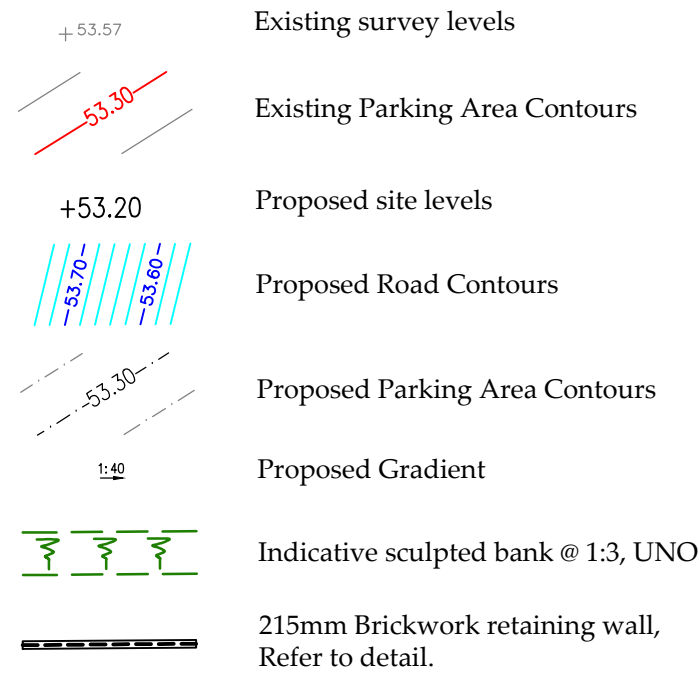
Title: External Works Sh 1 of 2

Issue:	Scale: 1:200 @ A1	Checked: PP	Date: Oct '25
F	Drn: S.U.	Date: Sept 25	Approve: SU

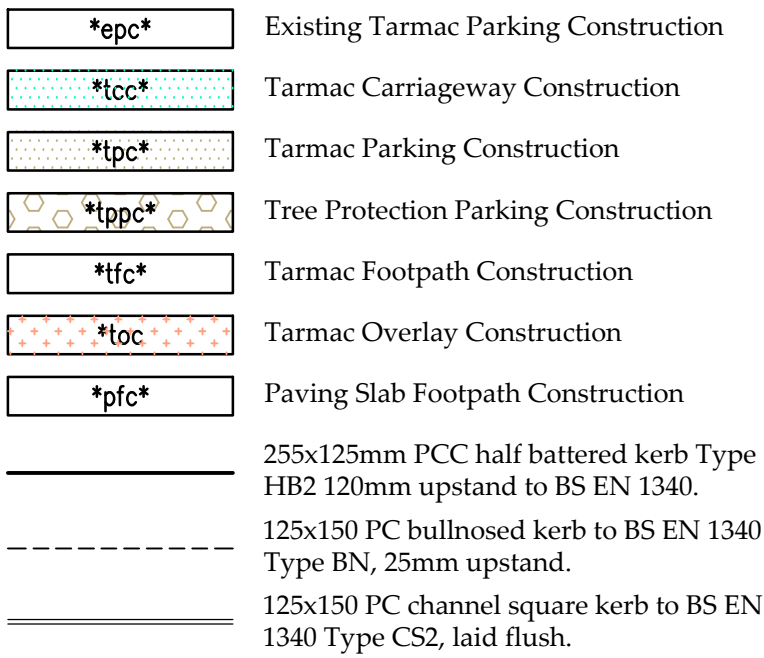
50mm
100mm
150mm
200mm
250mm
ORIGINAL SIZE - A1



Levels Key



Private Areas



FILL SPECIFICATION

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Fill under gardens and other landscaped areas to be as raised from site excavations and compaction shall be sufficient to remove large voids and to produce a coherent mass whilst preventing overcompaction and any build up of excess pore pressures.

PRIVATE DRAINAGE NOTES

- All private drainage works to be in accordance with Part H of the current Building Regulations and BS 8301.
- All private drainage to be either:-
 - PVCu to BS EN 1401-1 (BS 4660/5481) by Osma, Marley or similar.
 - OR
 - Vitrified Clayware to BS 65 and BS EN 295.
 - OR
 - Concrete to BS 5911 and flexibly jointed.The drainage design shown on this drawing has been based upon a PVCu drainage system.
- All private drainage to be 100mm diameter unless noted otherwise. Gully laterals to be sized to suit gully outlets. Connections to public sewers to be 150mm dia unless noted otherwise.
- Foundations adjacent to drain runs are to be constructed so that the difference between the formation level of the foundation and invert level of any drain must not exceed the horizontal distance minus 500mm.
- Where foul and surface water sewers cross and there is less than 100mm clearance short lengths of both runs are to be encased in concrete.
- All RWP, SVP and foul drainage positions are to be confirmed by the Architect.
- Where RWP's are connected direct to drain, rodding access plates are to be provided.
- For pipe bedding and backfill details refer to drawing number H1515/437.

SOAKAWAY NOTES

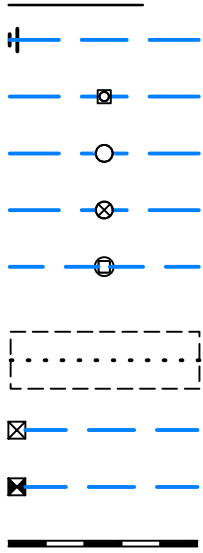
- Site investigation report by Soil Consultants Ref: 11043b/CA has shown the infiltration rate to be 1.59x10⁻⁵ > 5.67x10⁻⁶m/s (0.0204m/h). Soakaways have been designed to accord with BRE365 & Ciria Report 156 utilising the lowest value.
- All soakaways to be sited 5m minimum from any building or wall, existing or proposed, or any other soakaway.
- No soakaway bases to penetrate water table level.
- No soakaway to be constructed in contaminated ground.

Private Drainage Key

- Rodding Eye
- Shallow Inspection Chamber
- 450Ø Inspection Chamber
- 450Ø IC with 300mm sump
- 450Ø IC Restricted Access

- Trench Soakaway
- Private Yard Gully
- Private Road Gully
- ACO channel MD100

STORM



Notes:

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- The grid relates to a local datum.
- The Contractor must check the levels of all existing drainage outfalls prior to construction of any drainage, unless otherwise agreed, to ensure the proposed design may be achieved. Any discrepancies must be reported immediately to Aventus Design.
- Sulphates have been determined as class 1 (DS-1) for design purposes in accordance with BRE Special Digest 1 (2001). Buried Concrete to be in accordance with ACCE Site Class AC-1.
- All external building dimensions are to be checked against the Architects drawings prior to any construction commencing.
- All adoptable highway works to be in accordance with the Local Authorities Specifications.
- All adoptable drainage works to be in accordance with the Water Authorities standard guidelines for connections etc.
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Drawing Status	PRELIMINARY ISSUE	
----------------	-------------------	--

F	01.05.26	Soakaway references amended.	SU	PP
E	06.03.26	Gates added.	SU	PP
D	05.12.25	Tree Protection Parking surface added.	SU	PP
C	03.12.25	Access road parking bays amended.	SU	PP
B	25.11.25	Private parking layout amended.	SU	PP
A	31.10.25	Finishes hatching added, layout to site frontage amended.	SU	PP
REV.	DATE	DESCRIPTION	CHK	APP

Aventus Design Ltd
Unit 5 - Leaches Farm
Business Centre
Bicester Road
Kingswood
Aylesbury
Bucks HP18 0RF
Tel: 01296 770066
Email: mail@aventusdesign.co.uk
Web: www.aventusdesign.co.uk

Client: Sonning Golf Club

Site: Sonning Golf Club,
Duffield Road, Sonning
RG4 6GJ

Title: External Works Sh 2 of 2

Drawing no. H1515 - 431

Issue:	Scale: 1:200 @ A1	Checked: PP	Date: Oct '25
F	Drn: S.U.	Date: Sept '25	Approve: SU

50mm
100mm
150mm
200mm
250mm
ORIGINAL SIZE - A1

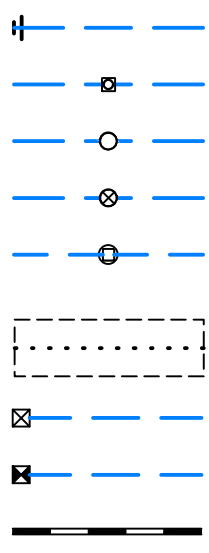
Private Drainage Key

- Rodding Eye
Shallow Inspection Chamber
450Ø Inspection Chamber
450Ø IC with 300mm sump
450Ø IC Restricted Access

Trench Soakaway

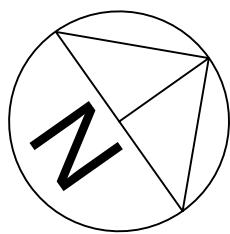
Private Yard Gully
Private Road Gully
ACO channel MD100

STORM



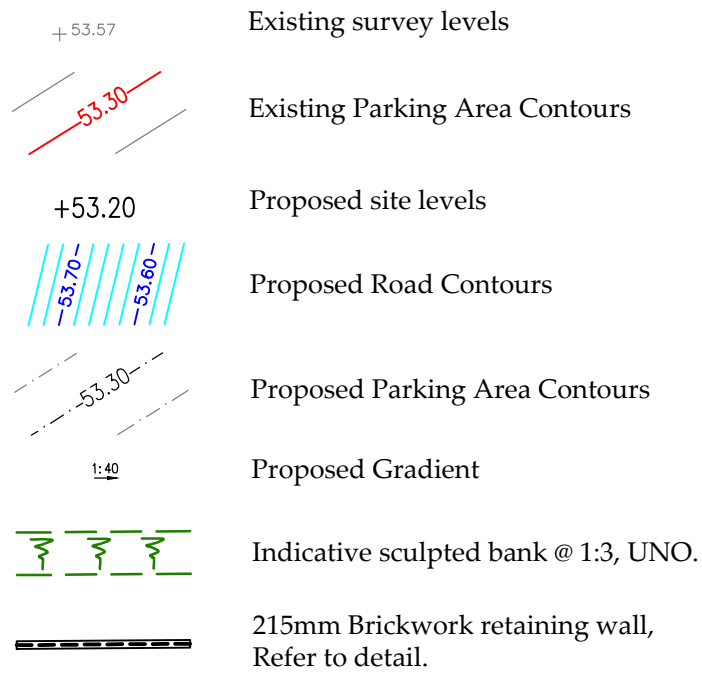
- PRIVATE DRAINAGE NOTES**
- 3.1 All private drainage works to be in accordance with Part H of the current Building Regulations and BS 8301.
- 3.2 All private drainage to be either:
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- SOAKAWAY NOTES**
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- 4.3 No soakaway bases to penetrate water table level.
- 4.4 No soakaway to be constructed in contaminated ground.

Levels Key



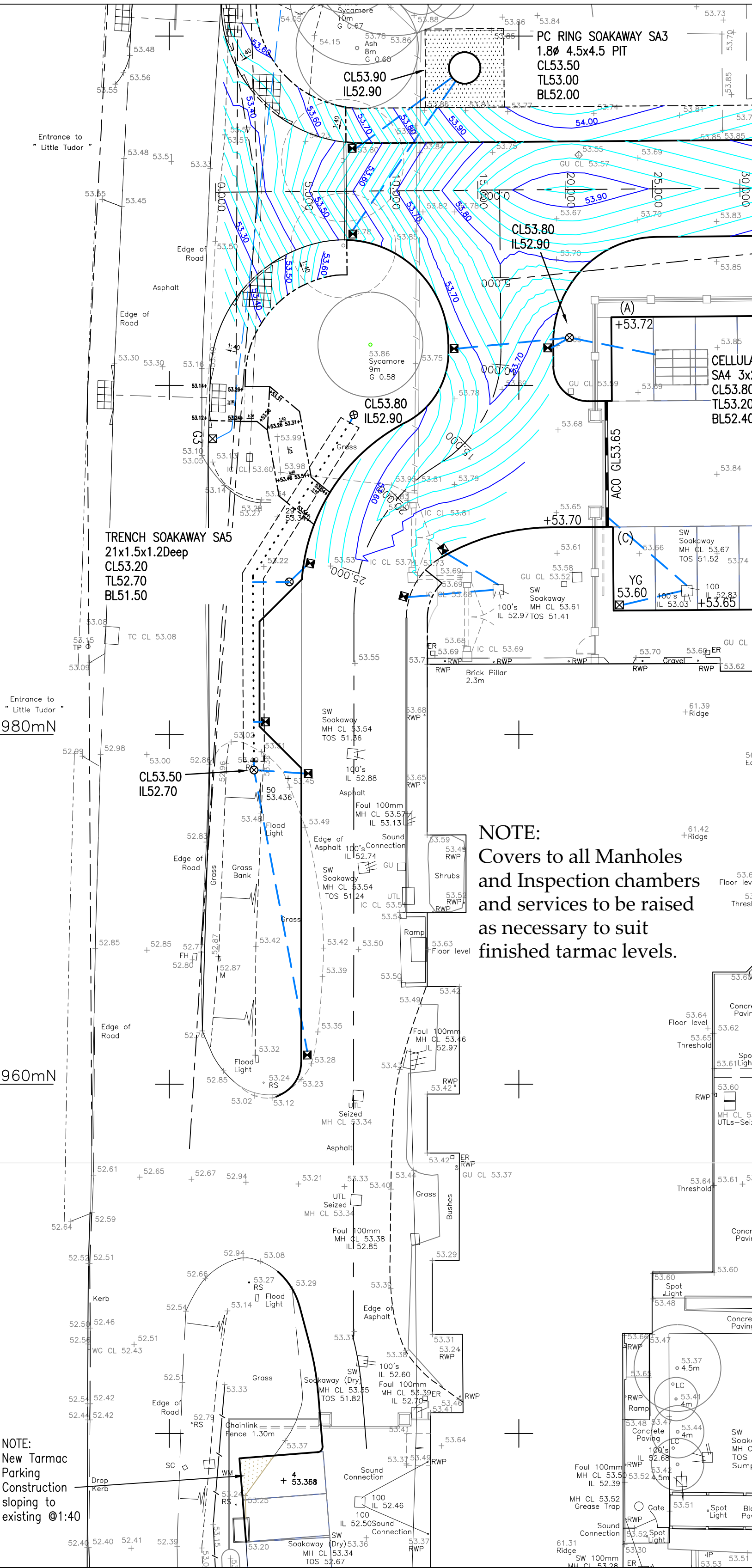
Private Areas

- *epc* Existing Tarmac Parking Construction
tcc Tarmac Carriageway Construction
tpc Tarmac Parking Construction
tfc Tarmac Footpath Construction
toc Tarmac Overlay Construction
pfc Paving Slab Footpath Construction

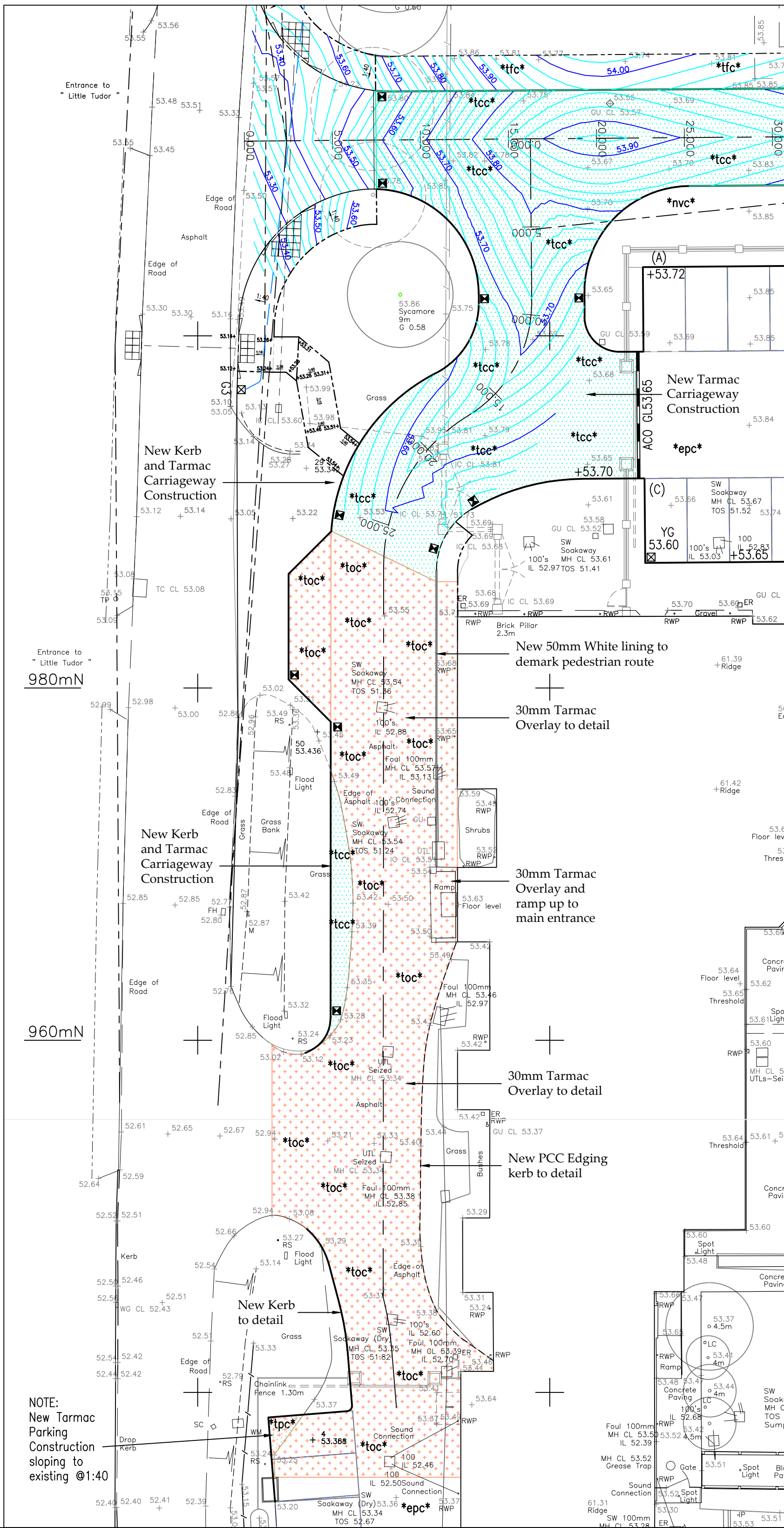
255x125mm PCC half battered kerb Type HB2 120mm upstand to BS EN 1340.
125x150 PC bullnosed kerb to BS EN 1340 Type BN, 25mm upstand.
125x150 PC channel square kerb to BS EN 1340 Type CS2, laid flush.

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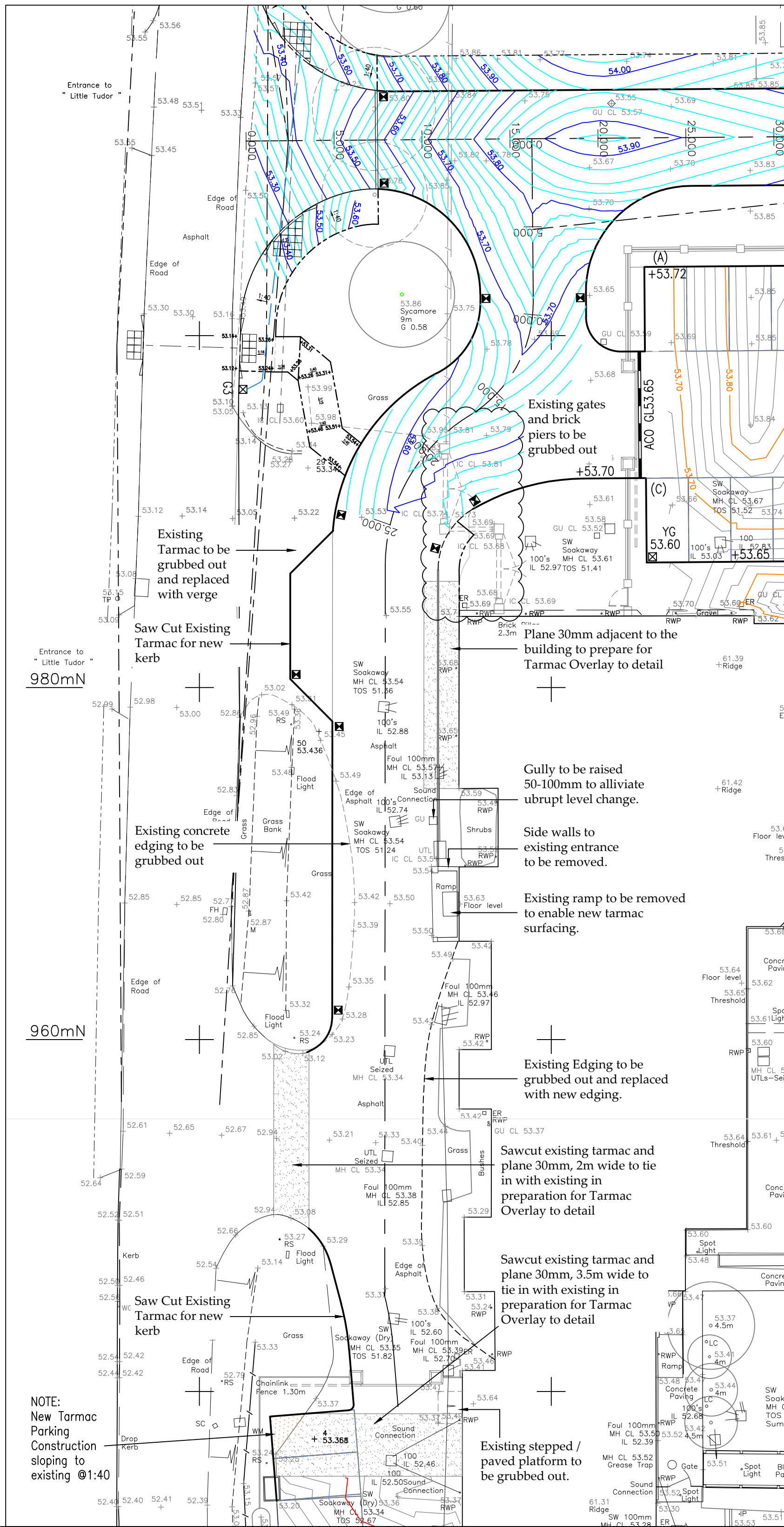
Drainage Layout



Surfacing Plan



Site Clearance



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Drawing Status: PRELIMINARY ISSUE

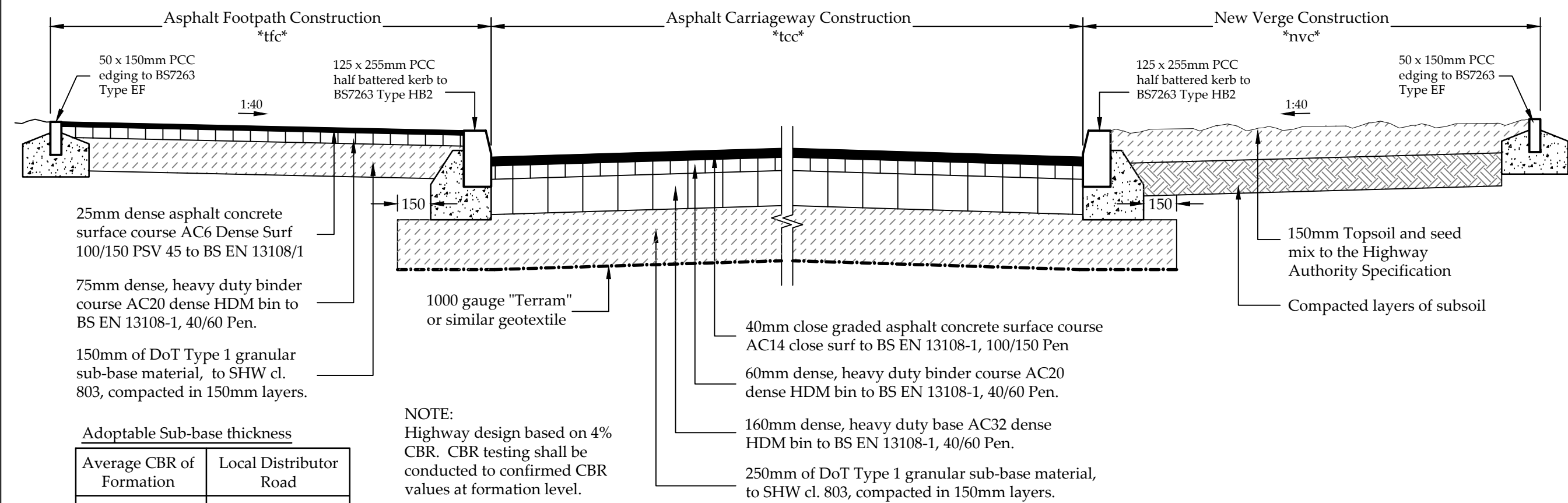
REV.	DATE	DESCRIPTION	CHK	APP
E	01.05.26	Soakaway references amended.	SU	PP
D	06.03.26	Footway link to Duffield Road and northern carpark amended, taxi drop off and gates added.	SU	PP
C	03.12.25	Access road parking bays amended.	SU	PP
B	25.11.25	Private parking layout amended.	SU	PP
A	31.10.25	Finishes hatching added, access road soakaways changed to PC Ring/Pits. Layout to site frontage amended.	SU	PP

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Web: www.aventusdesign.co.uk

Client: Sonning Golf Club
Site: Sonning Golf Club,
Duffield Road, Sonning
RG4 6GJ
Title: Access Road Link

Drawing no. H1515 - 432
Issue: E
Scale: 1:200 @ A1
Dwn: S.U.
Date: Sept 25
Checked: PP
Approve: SU
Date: Oct 25

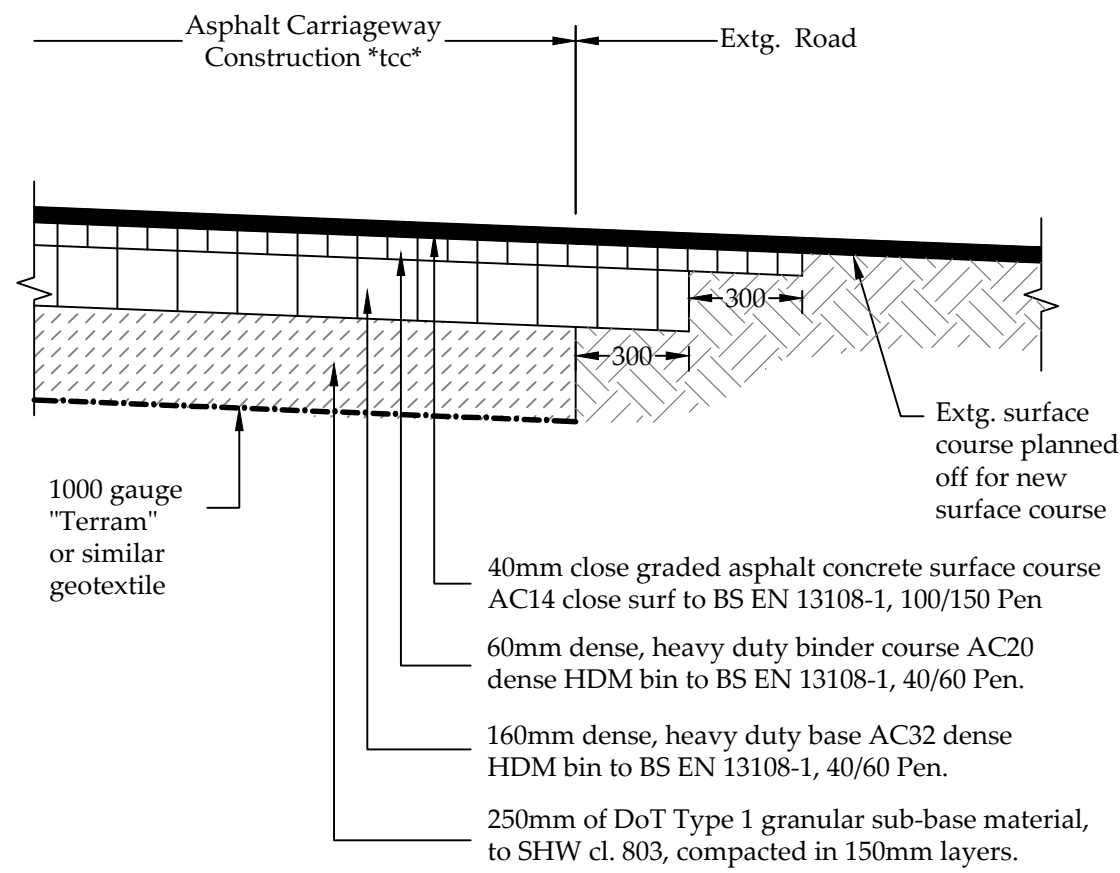
ORIGINAL SIZE - A1



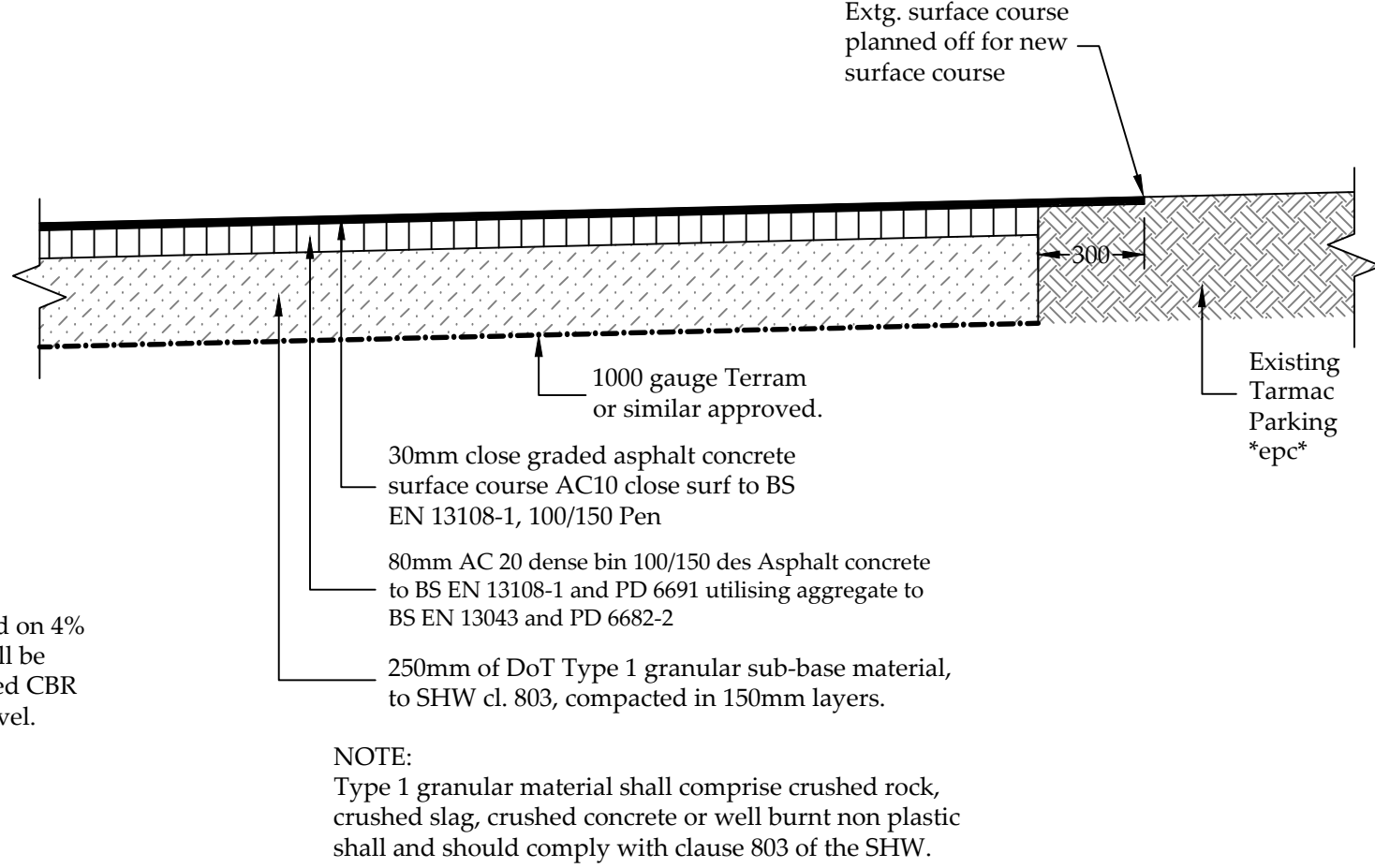
Adoptable Sub-base thickness	
Average CBR of Formation	Local Distributor Road
5%	200mm
4%	250mm
3%	320mm
2.5%	370mm
2%	430mm

NOTE:
Highway design based on 4% CBR. CBR testing shall be conducted to confirmed CBR values at formation level.

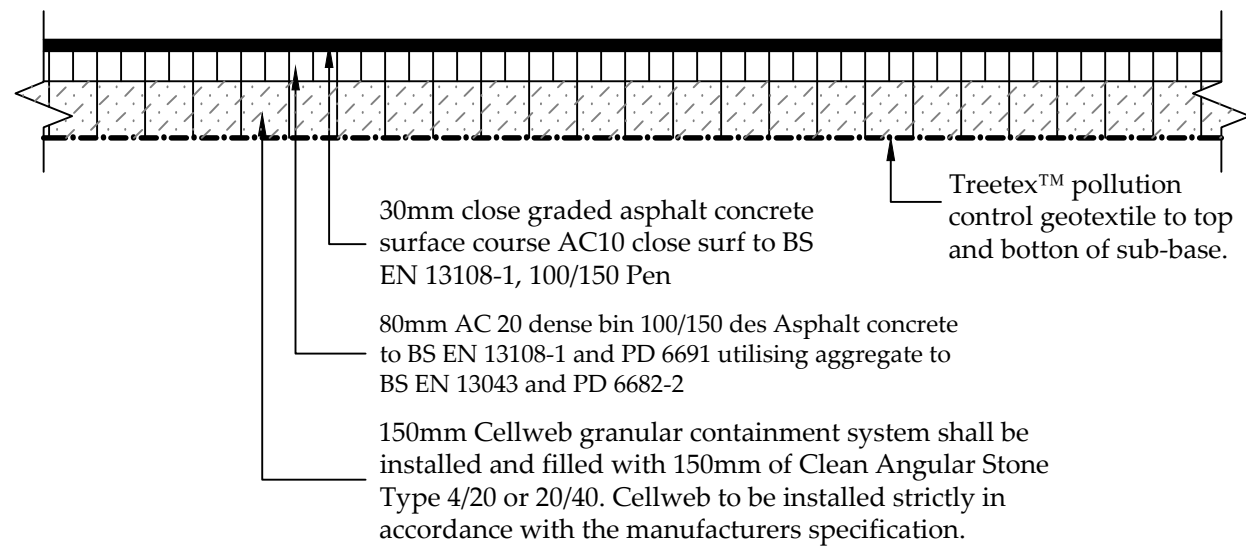
Asphalt Carriageway Construction Typical Section - New Access Road *TCC*



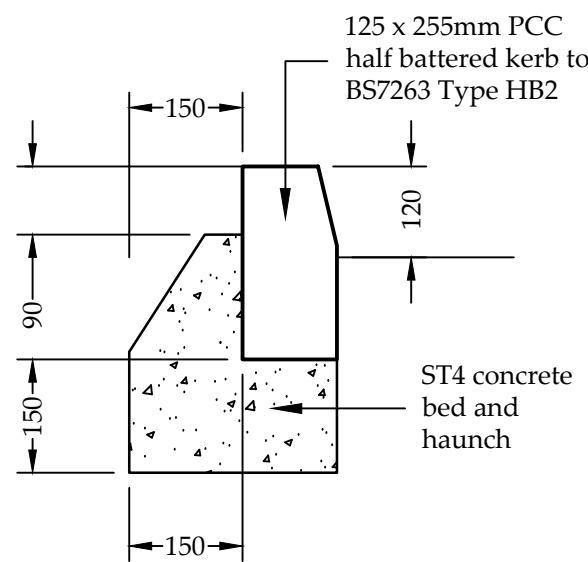
Carriageway Construction Tie in detail



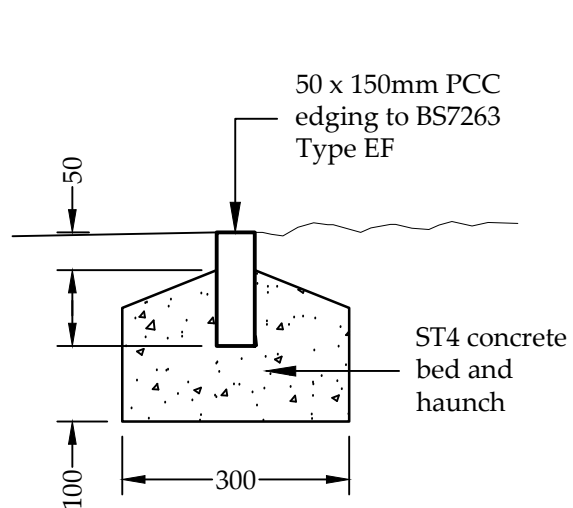
Tarmac Parking Construction *tpc*



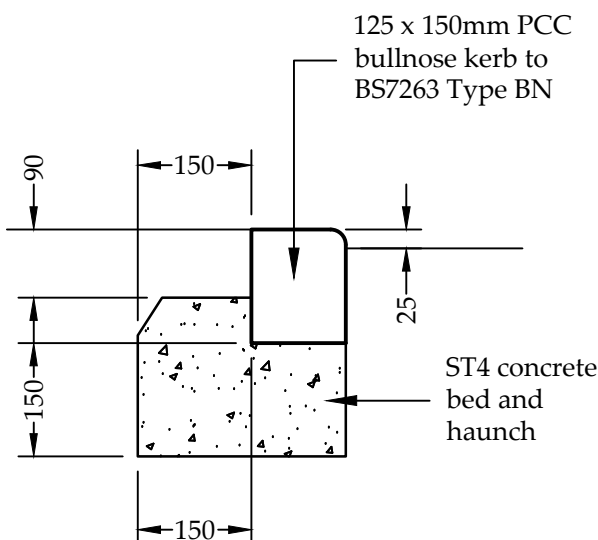
Tree Protection Parking Construction *tppc*



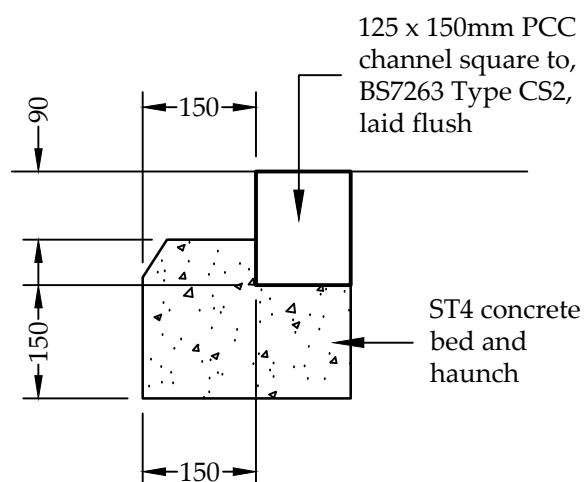
Half Battered Kerb Detail 1:10



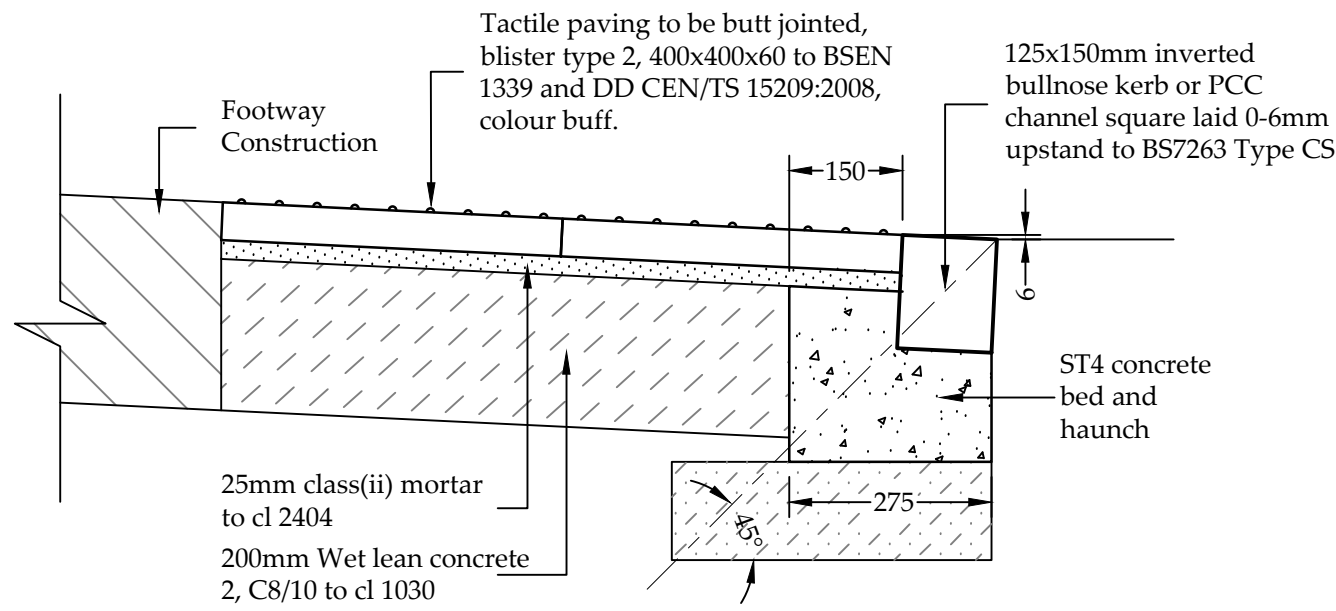
Edging Detail 1:10



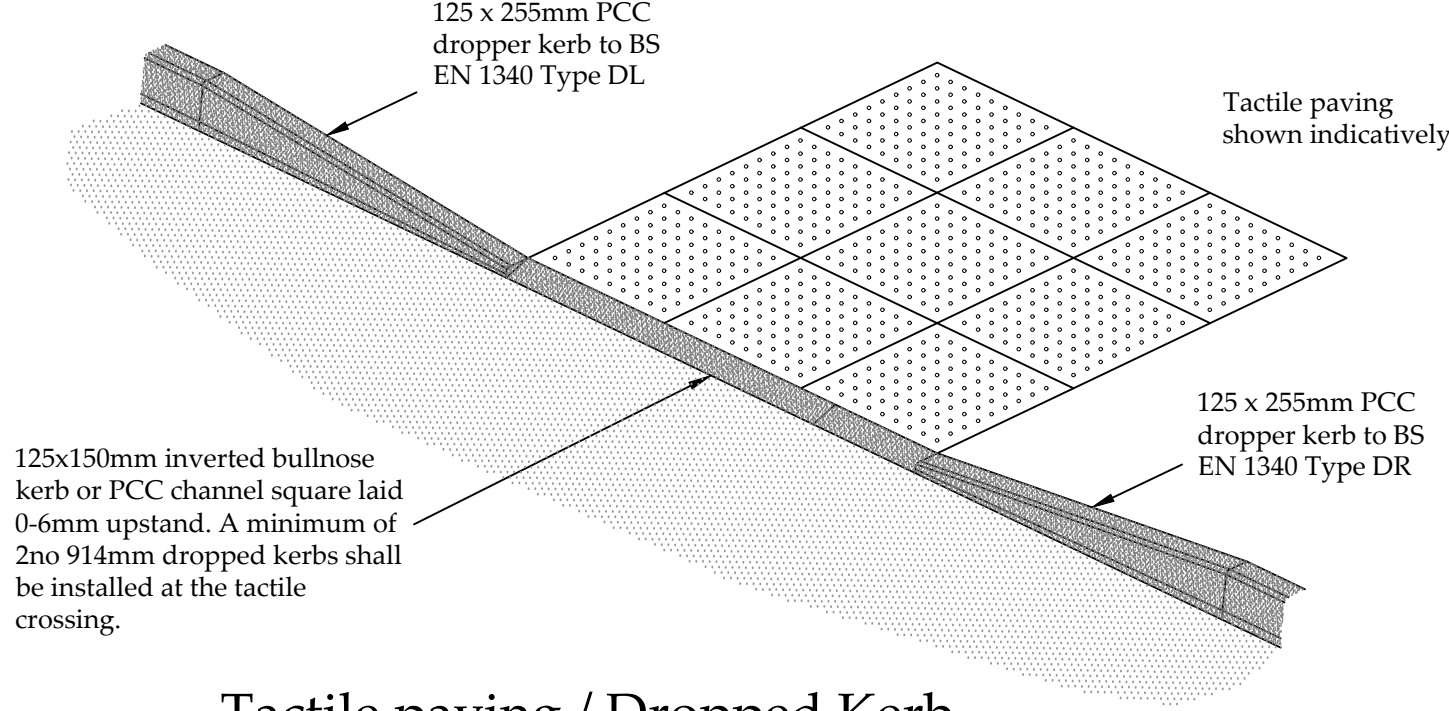
Bullnose Kerb Detail 1:10



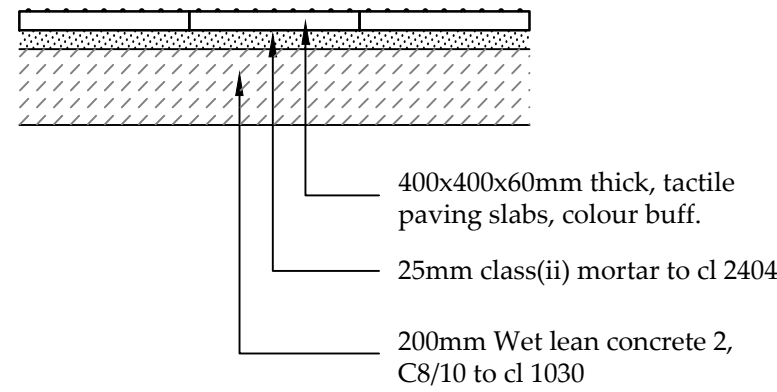
Channel Square Kerb Detail 1:10



Drop Crossing Detail 1:10



Tactile paving / Dropped Kerb



Tactile Paving Construction (1:20)

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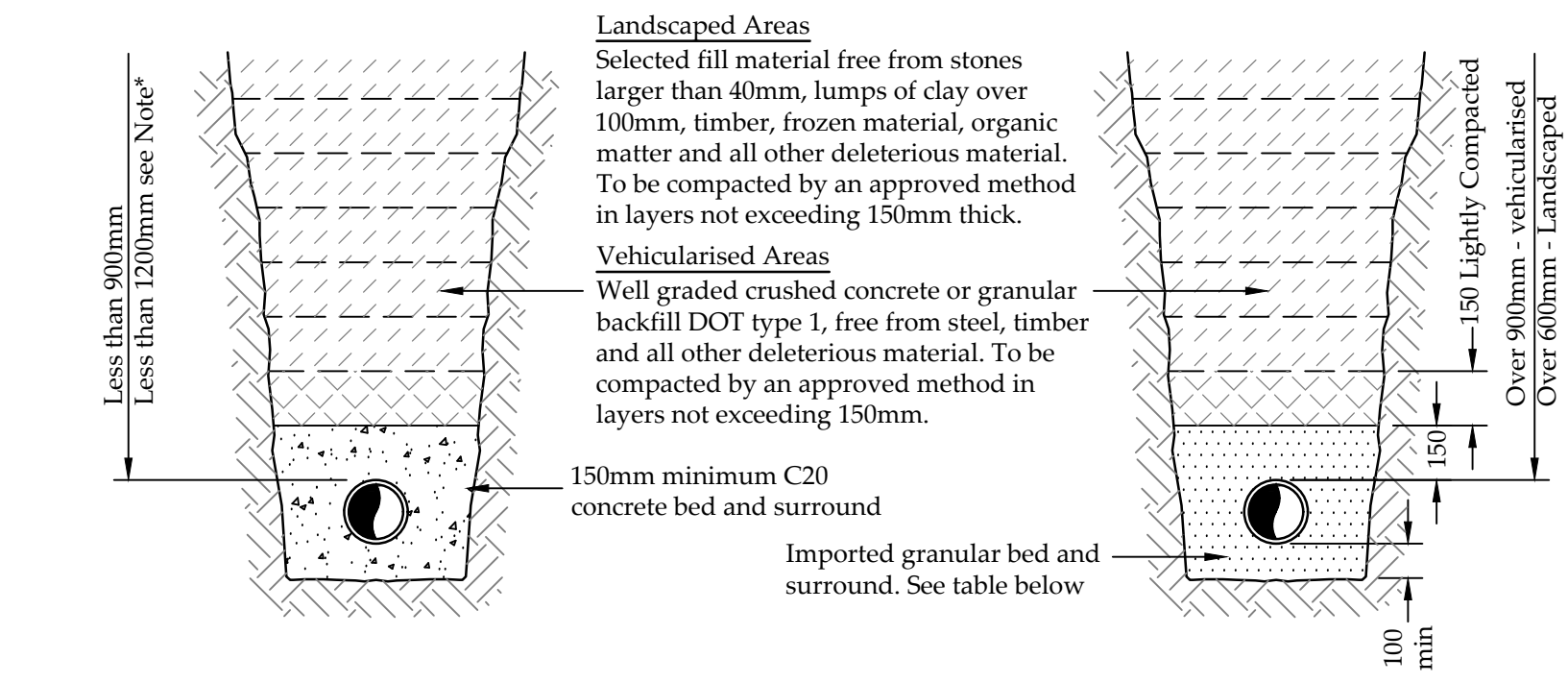
Drawing Status	For Technical Review	
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REV.	DATE	DESCRIPTION	CHK	APP
A	05.12.25	Tree Protection Tarmac detail added.	CU	SU

Aventus Design Ltd Unit 5 - Leaches Farm Business Centre Bicester Road Kingswood Aylesbury Bucks HP18 0RF Tel: 01296 770066	Aventus DESIGN Civil & Structural Engineers Email: mail@aventusdesign.co.uk Web: www.aventusdesign.co.uk
--	--

Client:	Sonning Golf Club			
Site:	Sonning Golf Club, Duffield Road, Sonning RG4 6GJ			
Title:	Private Highway Details			
Drawing no.	H1515 - 435			
Issue:	Scale: 1:20 @ A1		Checked: PP	Date: Oct '25
A	Dwn: S.U.	Date: July '25	Approv: SU	Date: Oct '25

50mm
100mm
150mm
200mm
250mm
ORIGINAL SIZE - A1



Under 900mm
(under 1200mm see Note*)

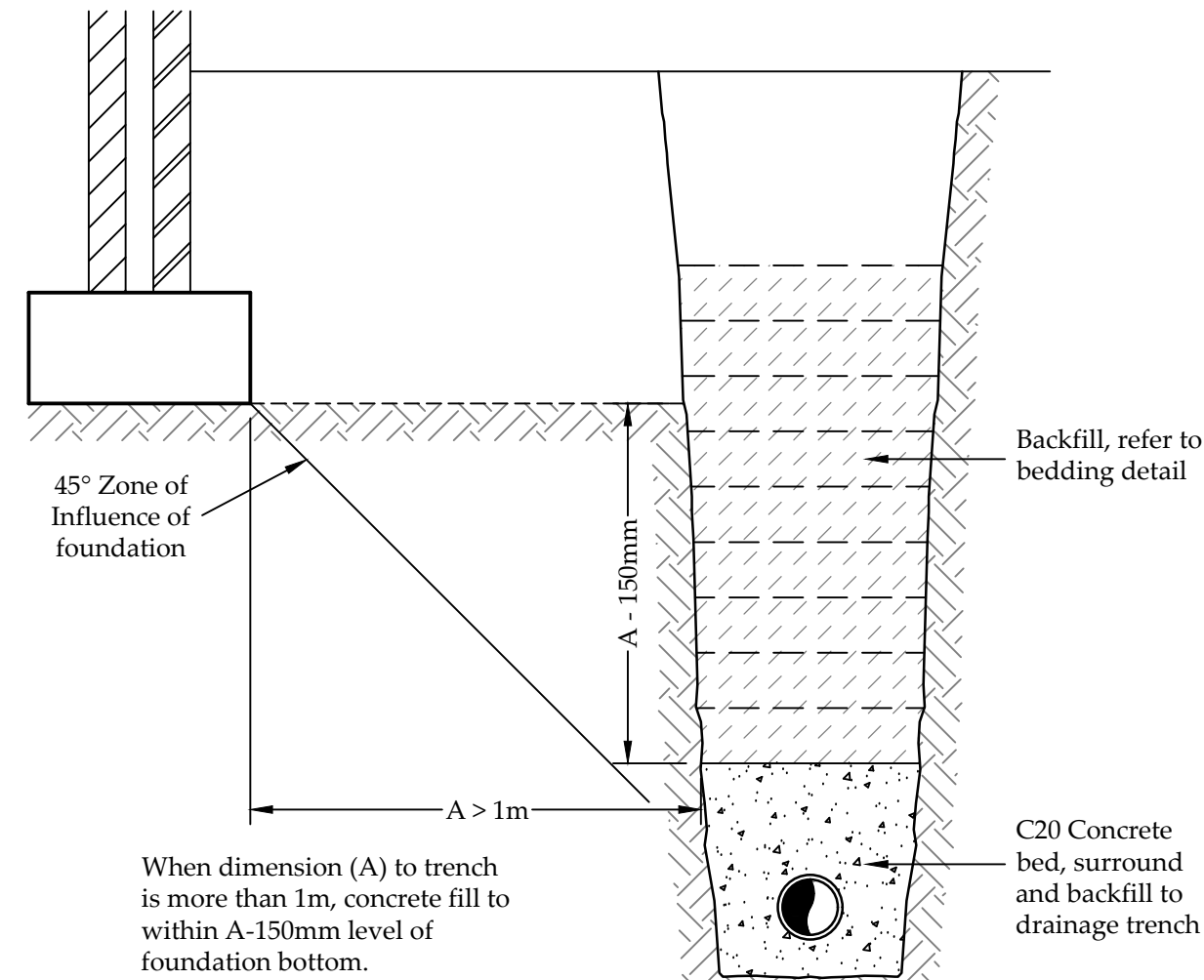
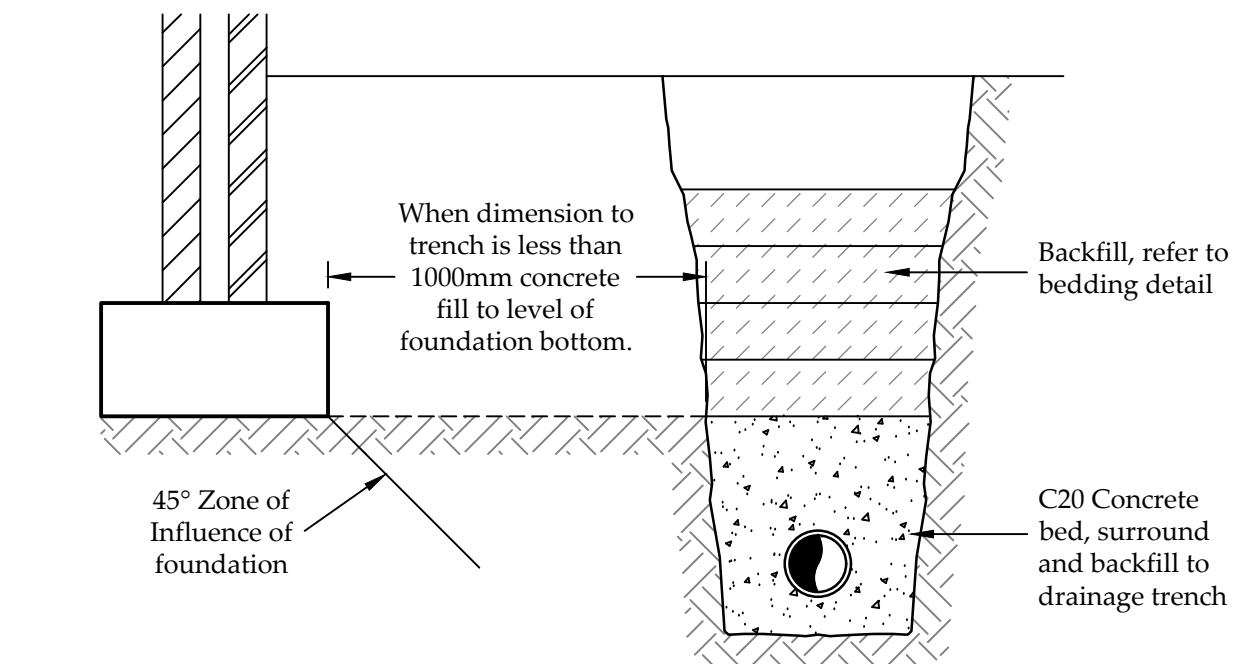
Over 900mm-Vehicular
Over 600mm-Landscaped

Granular materials for Pipe Bedding
Single sized or graded aggregate
complying with Table 4 of BS882
and BS EN 1610 Annex B Table B.15

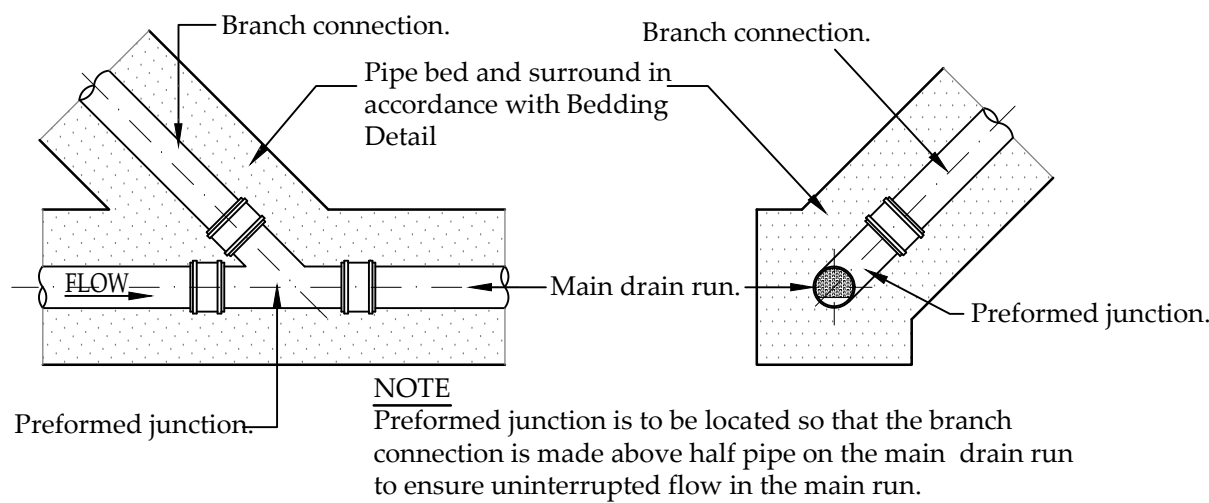
Pipe Size	Material Size
100mm	5-10mm
150mm	14mm
150-600mm	20mm
+600mm	40mm

Pipe Bedding Details Concrete, Clay & PVCu Pipes

Pipe Materials:
Vitrified Clay to BS65 & BS EN 295
Concrete to BS 5911
PVCu to BS EN 1401



Pipe Runs Near Buildings

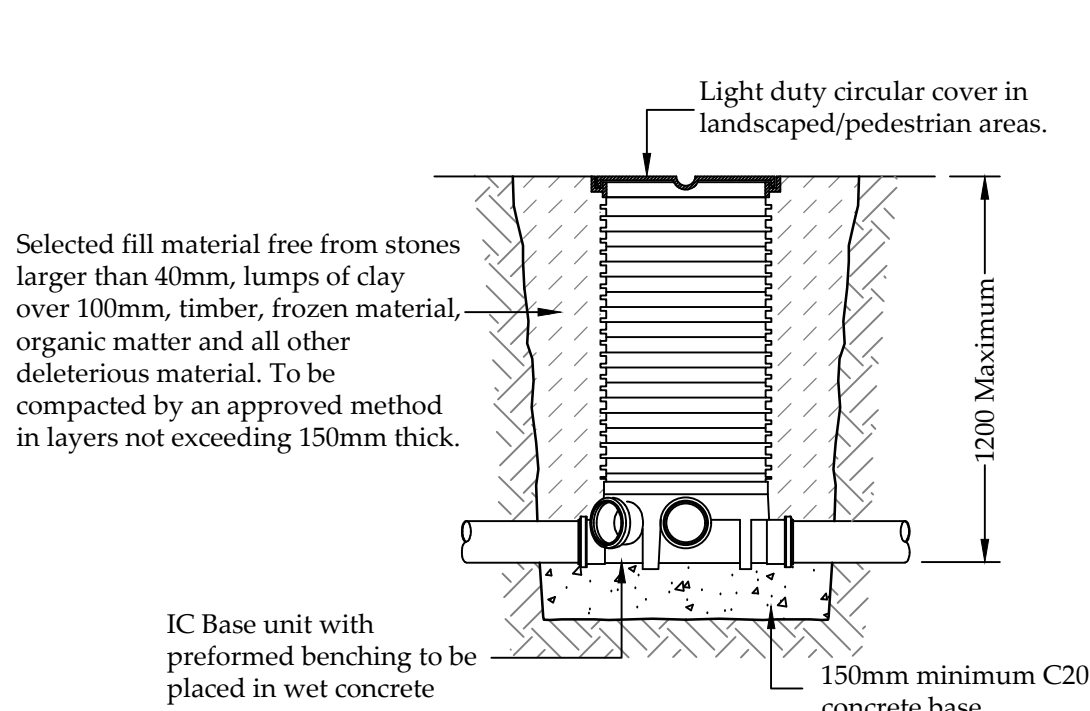


Plan

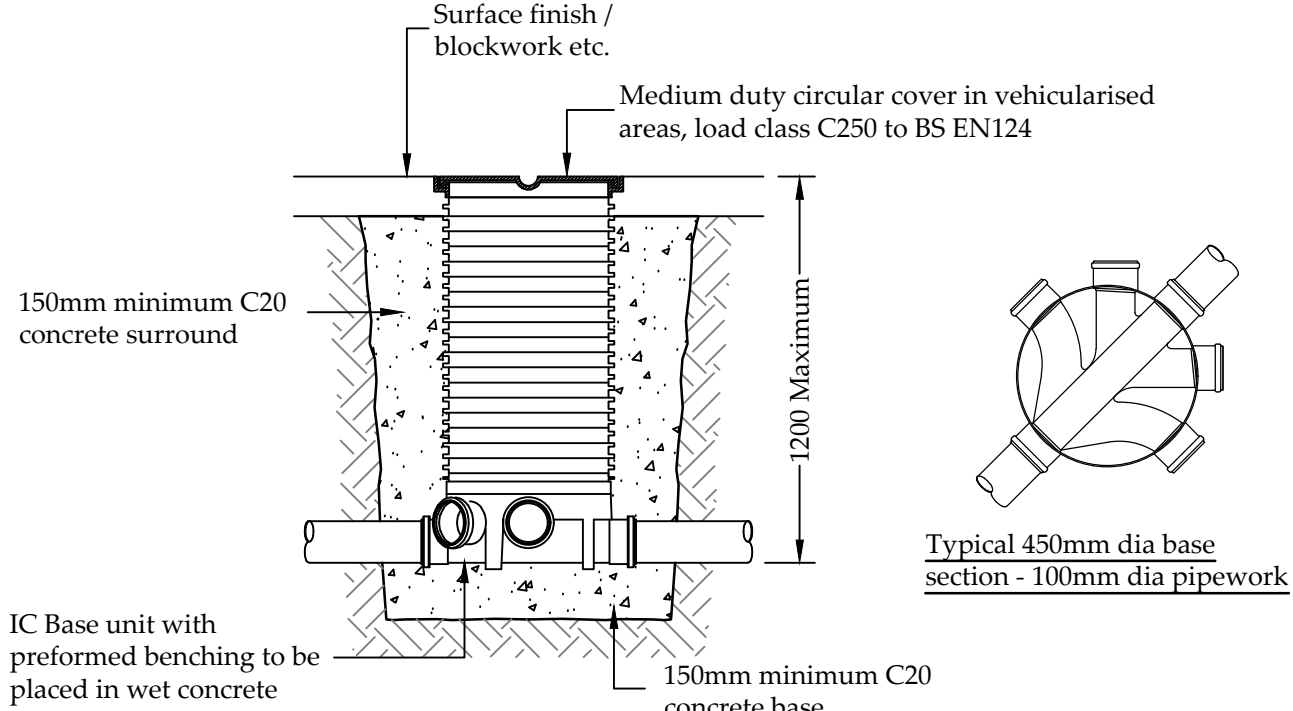
Section

Preformed Junction Detail

1:20

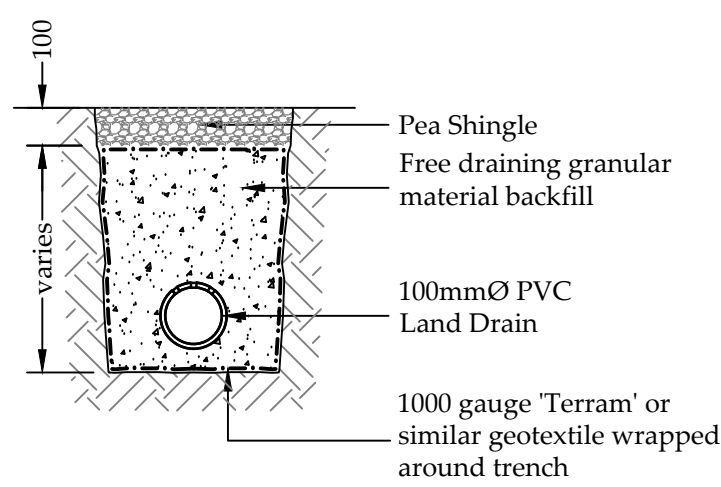


450 Dia Plastic Inspection Chamber Detail For Use in Landscaped/Pedestrian Areas

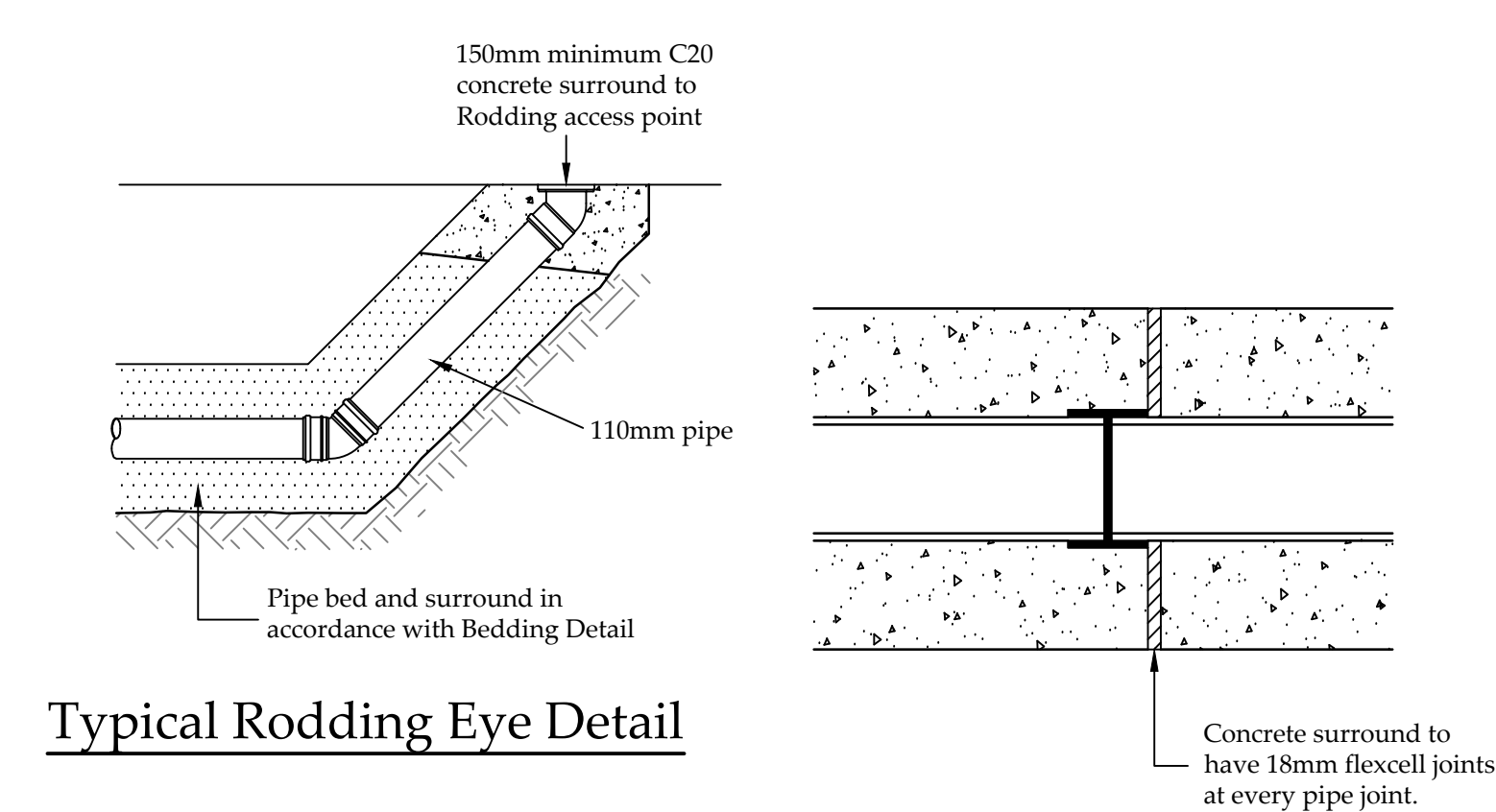


450 Dia Plastic Inspection Chamber Detail For Use in Vehicular Areas

Note:
Contractor is to install land
drainage as necessary to
alleviate any potential surface
water ponding in accordance
with the NHBC guidelines.



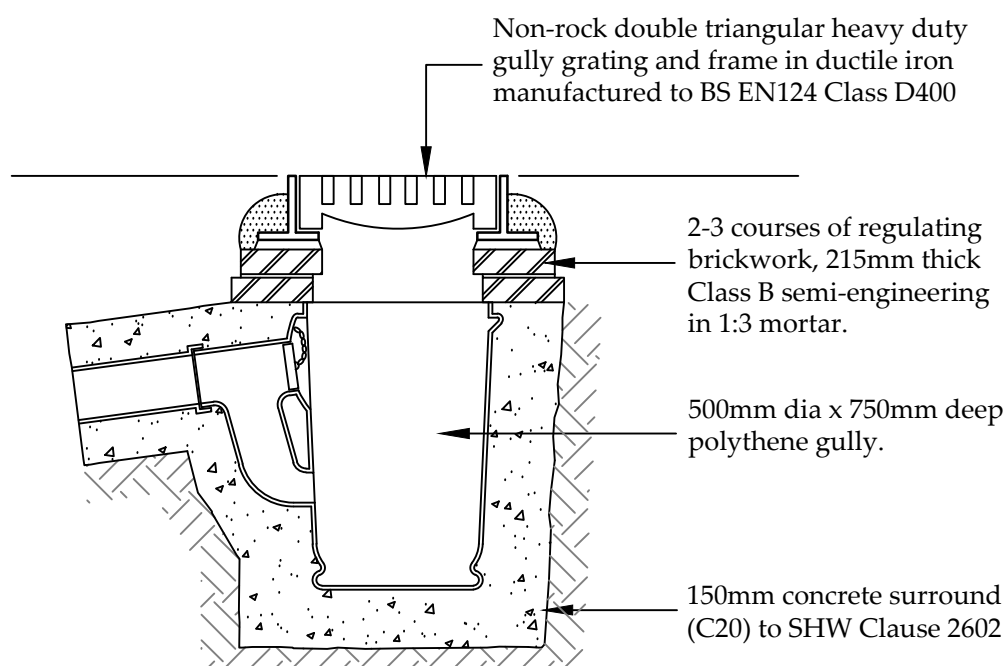
Land Drain Detail



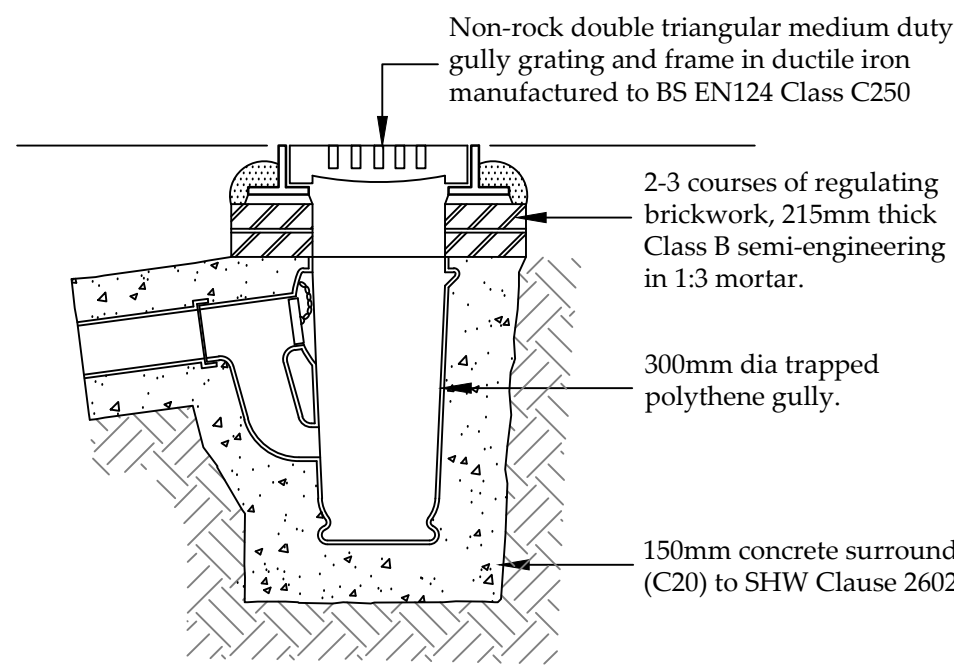
Typical Rodding Eye Detail

Expansion Joint Detail to Pipe Concrete Bed & Surround

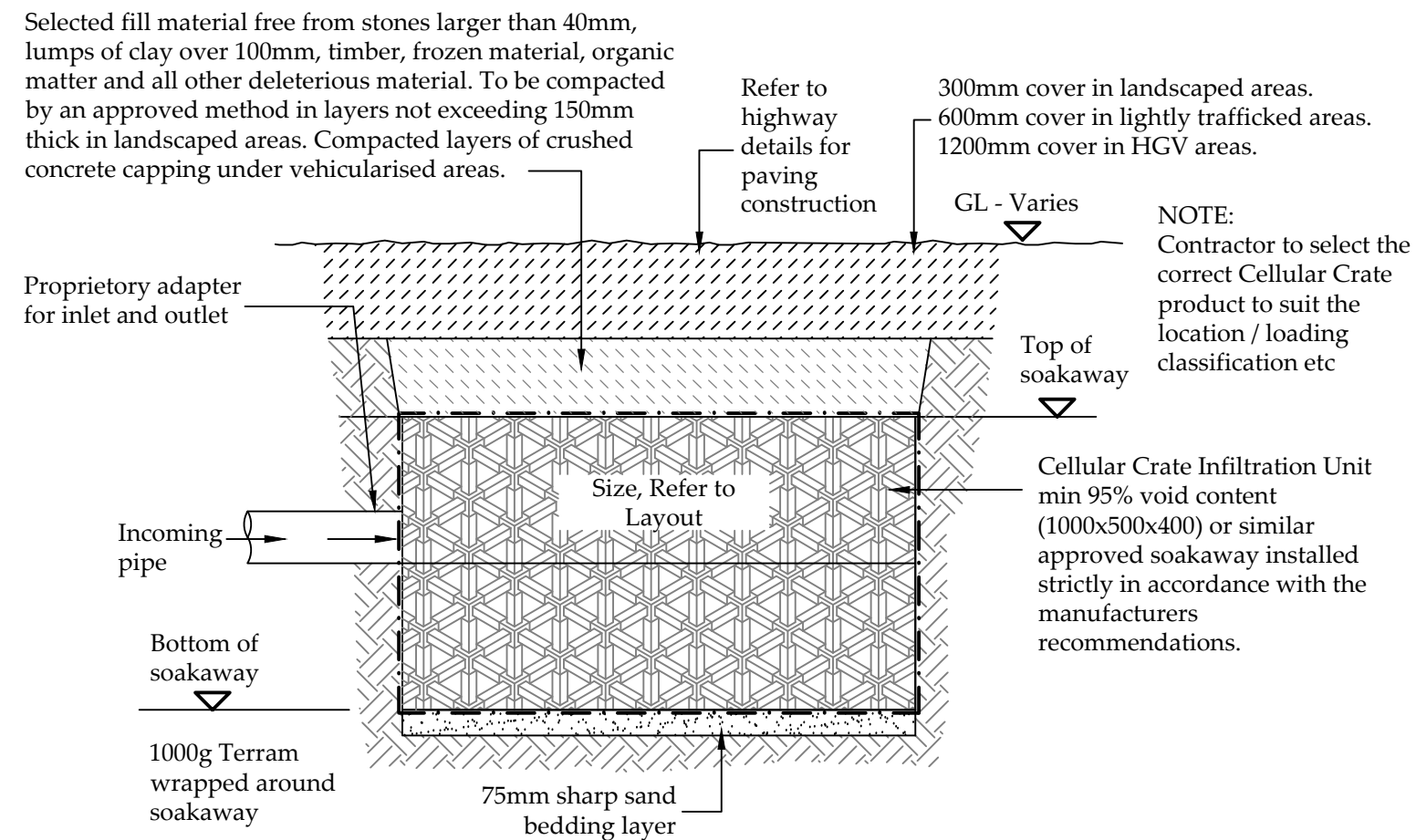
1:10



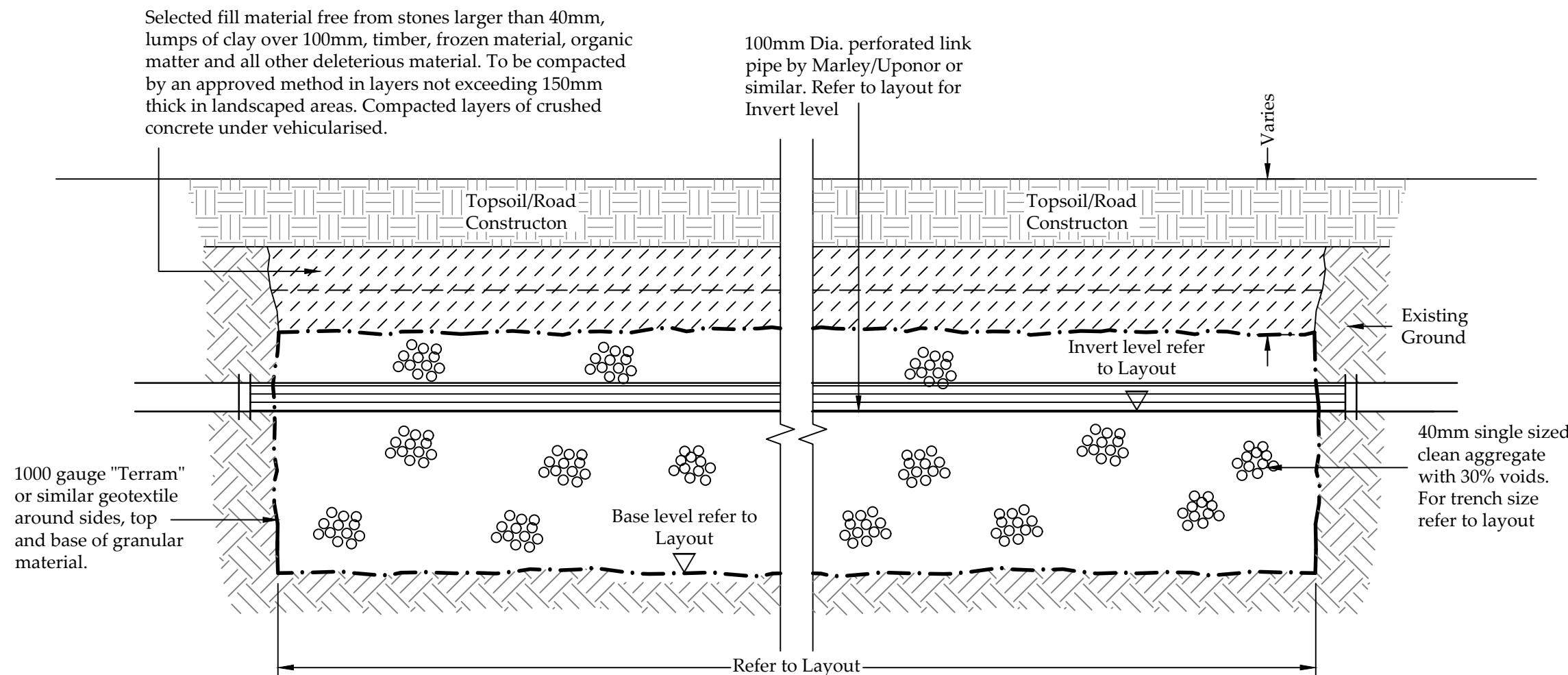
Road Gully Detail



Yard Gully Detail



Cellular Crate / Soakaway Detail



Trench Soakaway Detail

Designed in accordance with BRE Digest 365.

- PRIVATE DRAINAGE NOTES
- All private drainage works to be in accordance with Part H of the current Building Regulations and BS 8301.
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PVCu to BS EN 1401-1 (BS 4660/5481) by Osma, Marley or similar.
OR
Vitrified Clayware to BS 65 and BS EN 295.
OR
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 - All RWP, SVP and foul drainage positions are to be confirmed by the Architect.
 - Where RWP's are connected direct to drain, rodding access plates are to be provided.

Notes:

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CDM REGULATIONS 2015

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RISK NUMBERS 4 - 6 on Risk Register

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Drawing Status	PRELIMINARY ISSUE	
----------------	-------------------	--

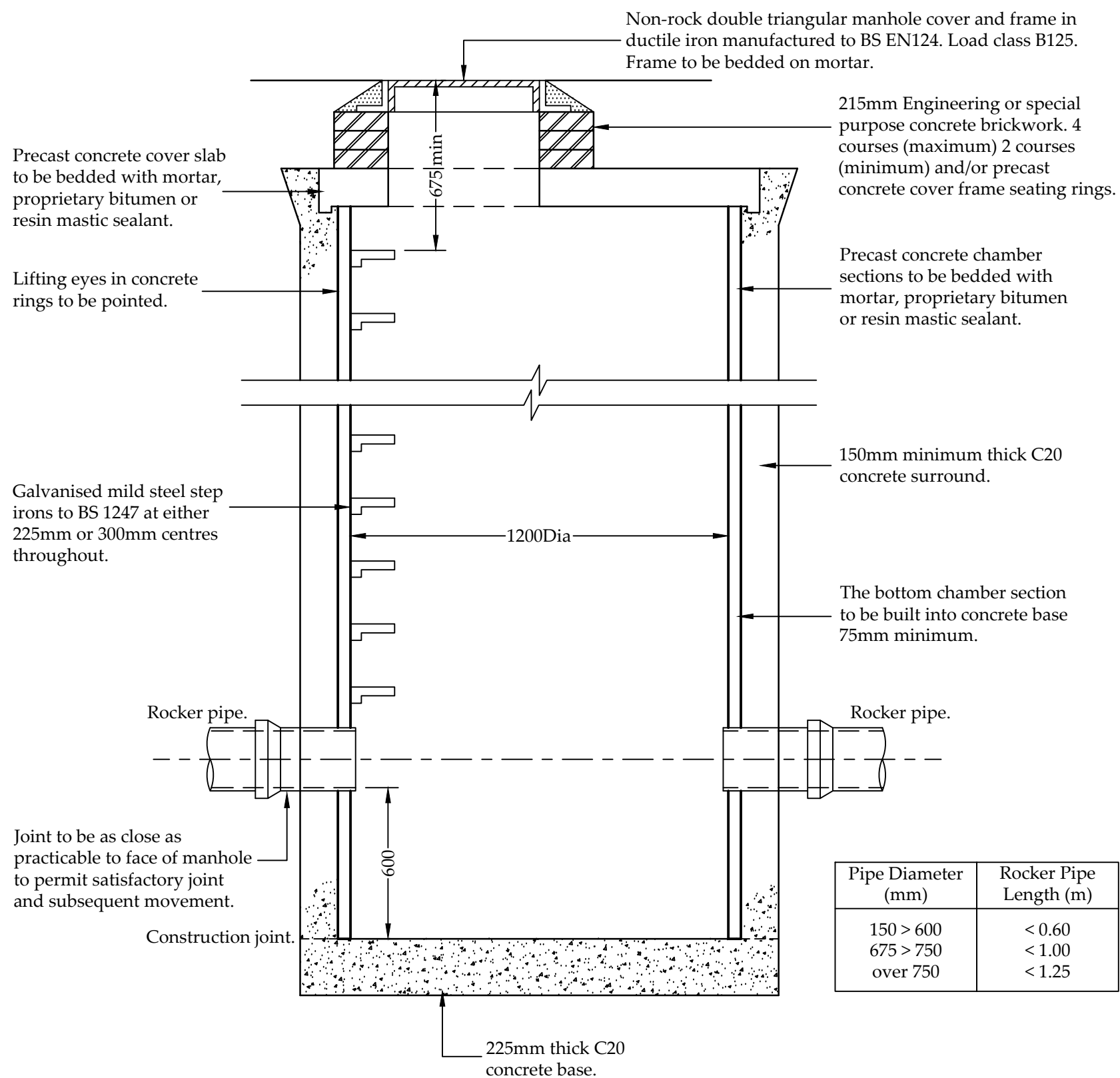
REV.	DATE	DESCRIPTION	CHK	APP
-	-	-	-	-

Aventus Design Ltd
Unit 5 - Leaches Farm
Business Centre
Bicester Road
Kingswood
Aylesbury
Bucks HP18 0RF
Tel: 01296 770066
Email: mail@aventusdesign.co.uk
Web: www.aventusdesign.co.uk

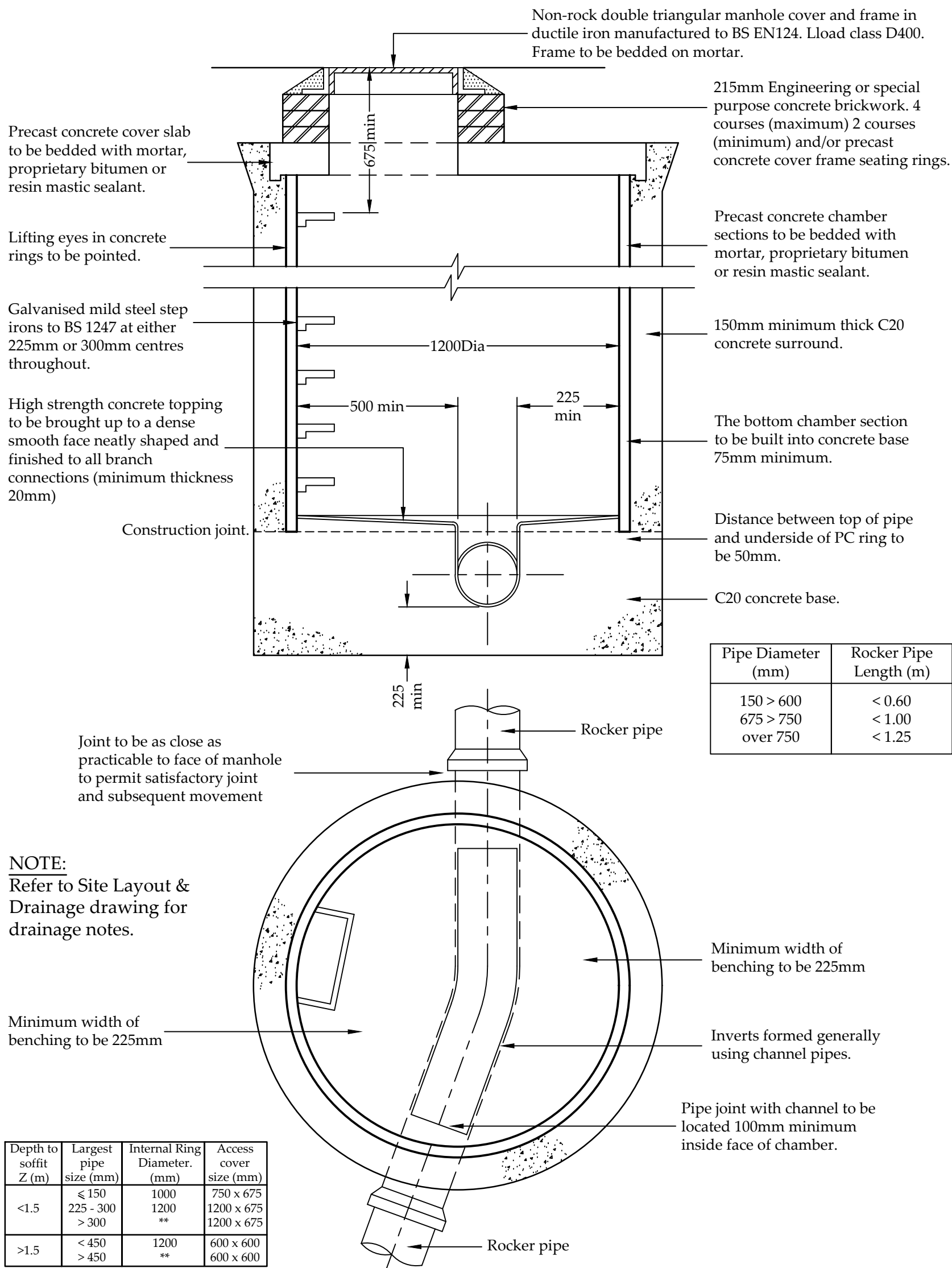
Client: Sonning Golf Club
Site: Sonning Golf Club,
Duffield Road, Sonning
RG4 6GJ
Title: Carpark Drainage Details 1 of 2
Drawing no. H1515 - 437

Issue: Scale: 1:20 @ A1
Dm: C.U. Date: Sept 25
Checked: JPP Date: Sept 25
Approved: SU Date: Sept 25

50mm
100mm
150mm
200mm
250mm
ORIGINAL SIZE - A1



PC Ring Catchpit Manhole Detail S1 & S2



PC Ring Foul Manhole Detail F10

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- 1.11 All external building dimensions are to be checked against the Architects drawings prior to any construction commencing.
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Drawing Status	PRELIMINARY ISSUE	☒		
REV.	DATE	DESCRIPTION	CHK	APP
-	-	-	-	-
Aventus Design Ltd Unit 5 - Leaches Farm Business Centre Bicester Road Kingswood Aylesbury Bucks HP18 0RF Tel: 01296 770066				
Client: Sonning Golf Club				
Site: Sonning Golf Club, Duffield Road, Sonning RG4 6GJ				
Title: Carpark Drainage Details 2 of 2				
Drawing no. H1515 - 438				
Issue:	Scale: 1:20 @ A1	Checked: PP	Date: Sept '25	
-	Drn: C.U.	Date: Sept '25	Approve: SU	Date: Sept '25

Site Levels

[illegible]

Setting Out

NOTE:
Setting Out co-ordinates are to external face of 140mm inner blockwork, ignoring any timber cladding etc.

NOTE:
All buildings to be set out
using Co-ordinates. Check
dimensions shown thus #
are for dimensional
checking purposes only.

STATION CO-ORDINATES			
NO.	EASTING	NORTHING	LEVEL
2	939.745	877.342	52.951
9	989.747	873.457	52.952
13	897.567	1023.095	53.669
23	1118.959	1000.930	52.426
24	1227.176	987.442	54.055
26	1062.958	1036.517	53.667
27	989.844	101.390	53.145
29	906.168	992.476	53.342
30	1131.529	1081.861	53.956
31	1183.416	1081.780	54.297
32	1165.254	995.689	53.315
33	1183.416	1081.780	54.297
34	1230.354	1079.420	54.167
35	194.683	994.733	53.447
36	1023.686	1023.686	53.331
39	1368.510	1023.686	53.331

+ 53.04	Existing survey levels
+53.175	Proposed site levels

age design is modeled on the
near storm + 40% for climate
and been checked to ensure
ing of buildings does not occur.

Land Drainage Note:
Contractor is to install land drainage as necessary to alleviate any potential surface water ponding in accordance with the NHBC guidelines.

Rodding Eye
Shallow Inspection Chamber
450Ø Inspection Chamber
450Ø IC with 300mm sump
450Ø IC Restricted Access
Trench Soakaway
Soil and Vent Pipe
Stub Stack
Rainwater Pipe
Hex drain to level thresholds

FOUL

STORM

11b

1. To determine the effect of the concentration of the solution on the rate of reaction.

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- 3.7 Where RWPs are connected direct to drain, rodding access plates are to be provided.
- 3.8 For pipe bedding and backfill details refer to drawing number H1515/441.

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CDM REGULATIONS 2015

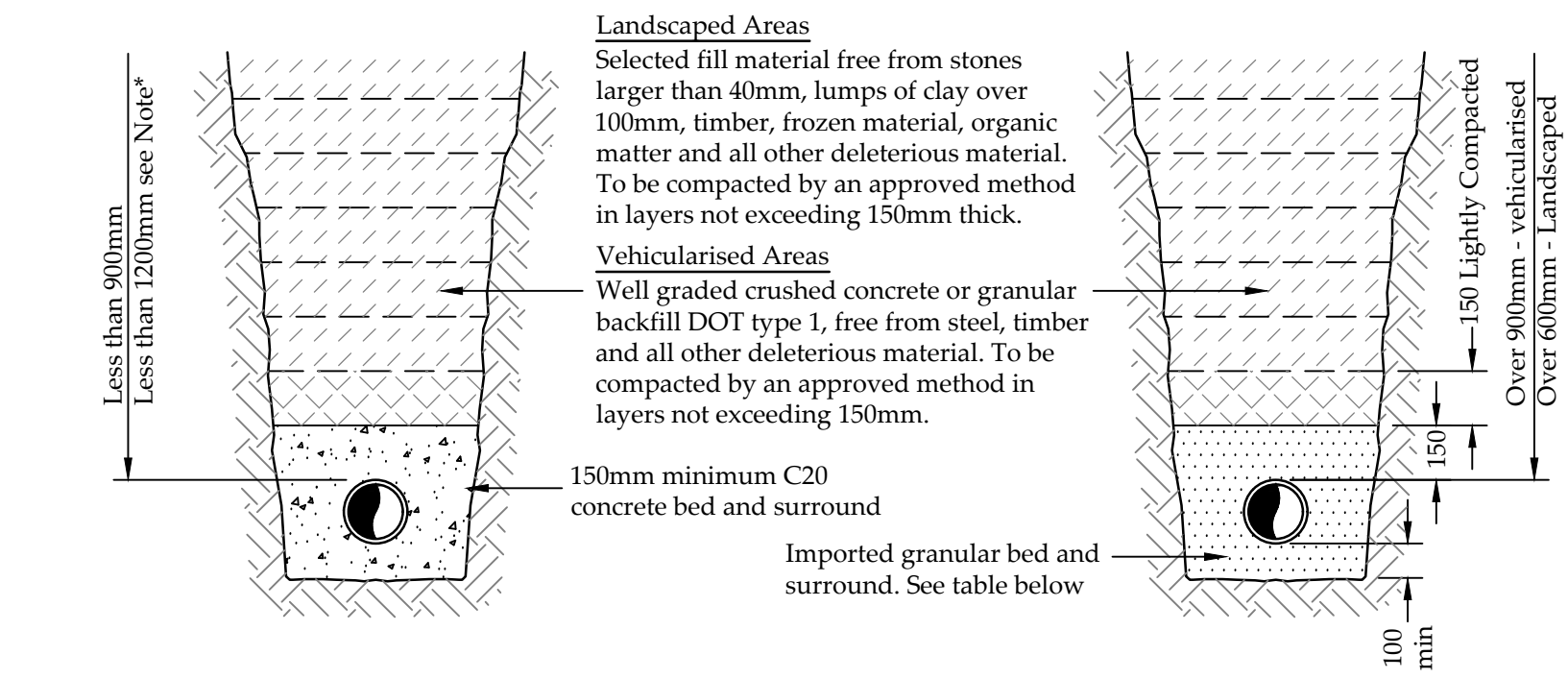
Aventis Design have considered and where reasonably practicable avoided foreseeable risks in the preparation of the design shown on this drawing and related drawings. Significant risks which remain and associated control measures are identified in the Risk Register and should be given particular attention by the main contractor on site.

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RISK NUMBERS 4 - 6 on Risk Register

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Drawing Status		PRELIMINARY ISSUE		X	
D	01.05.26	Soakaway references amended.		SU	PP
C	12.02.26	FSL and level at front door revised.		CU	SU
B	03.02.26	Proshoph amended, foul drain added.		CU	SU
A	31.10.25	Proshoph lengthened 1.2m.		CU	SU
REV.	DATE	DESCRIPTION		CHK	APP
Aventus Design Ltd Unit 5 - Leaches Farm Business Centre Bicaster Road Kingswood Aylesbury Bucks HP18 0RF Tel: 01298 770066 Aventus DESIGN Civil & Structural Engineers Email: mail@aventusdesign.co.uk Web: www.aventusdesign.co.uk					
Client: Sonning Golf Club					
Site: Sonning Golf Club, Duffield Road, Sonning RG4 6GJ					
Title: Proshoph Levels and Drainage					
Drawing no. H1515 - 440					
Issue:	Scale:	1:200 @ A1		Checked:	PP
D	Drw: C.U.	Date:	Sept 25	Approved:	SU
				Date:	Sept '25



Under 900mm
(under 1200mm see Note*)

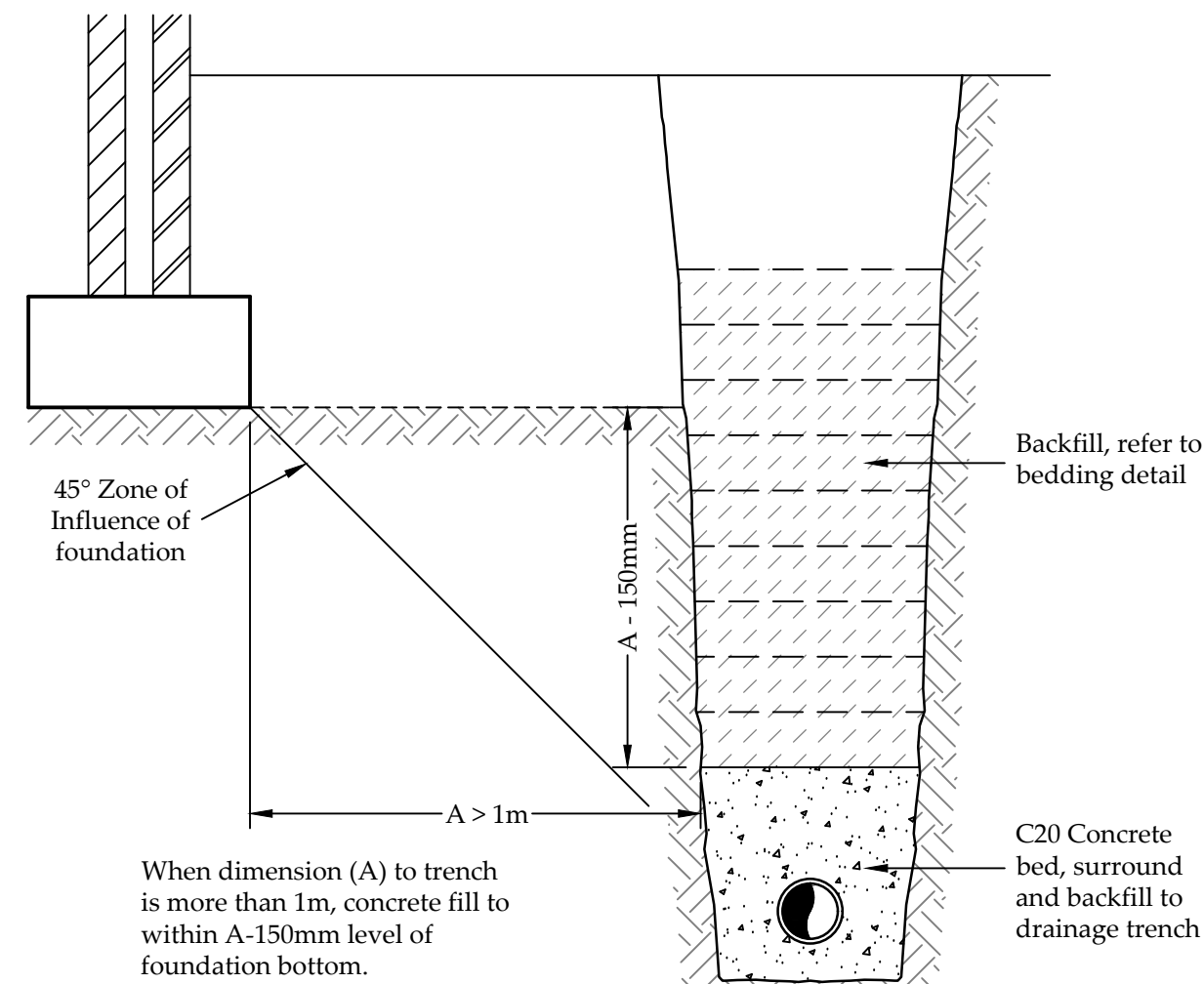
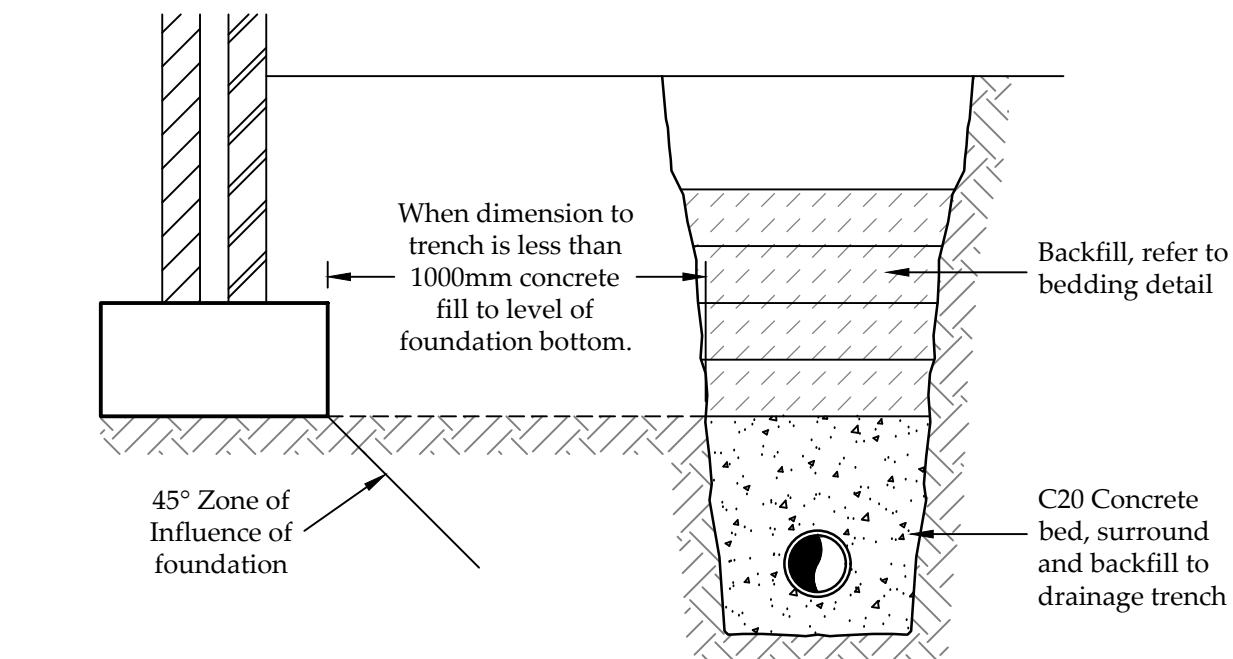
Over 900mm-Vehicular
Over 600mm-Landscaped

Granular materials for Pipe Bedding
Single sized or graded aggregate
complying with Table 4 of BS882
and BS EN 1610 Annex B Table B.15

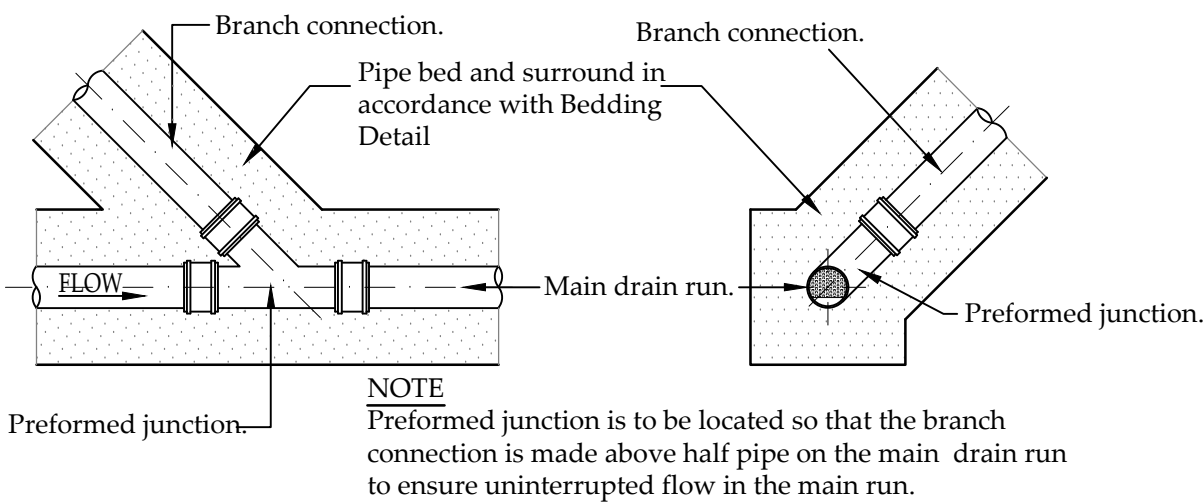
Pipe Size	Material Size
100mm	5-10mm
150mm	14mm
150-600mm	20mm
+600mm	40mm

Pipe Bedding Details Concrete, Clay & PVCu Pipes

Pipe Materials:
Vitrified Clay to BS65 & BS EN 295
Concrete to BS 5911
PVCu to BS EN 1401



Pipe Runs Near Buildings

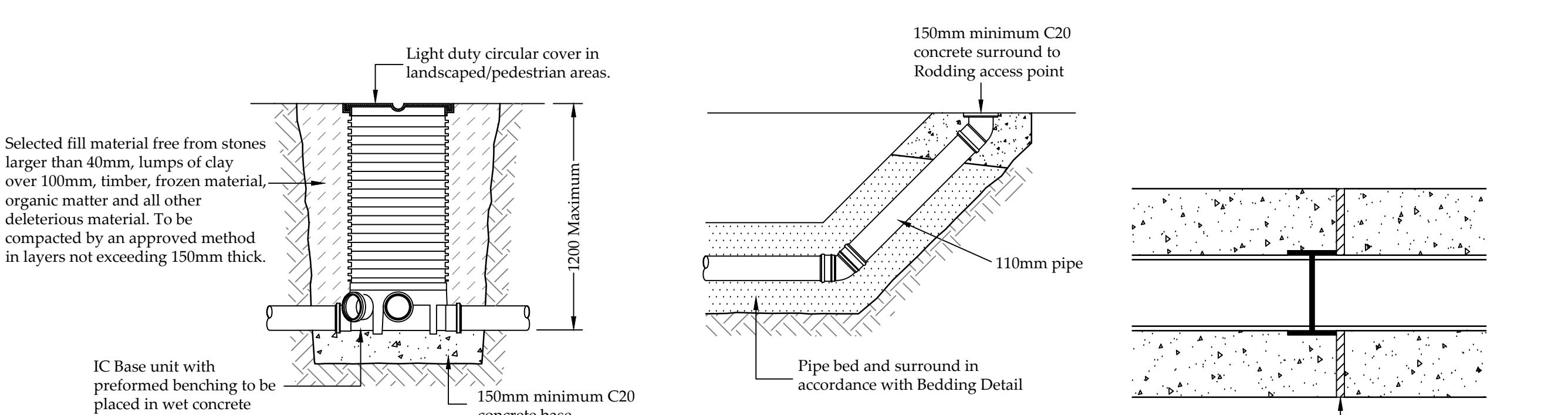


Plan

Section

Preformed Junction Detail

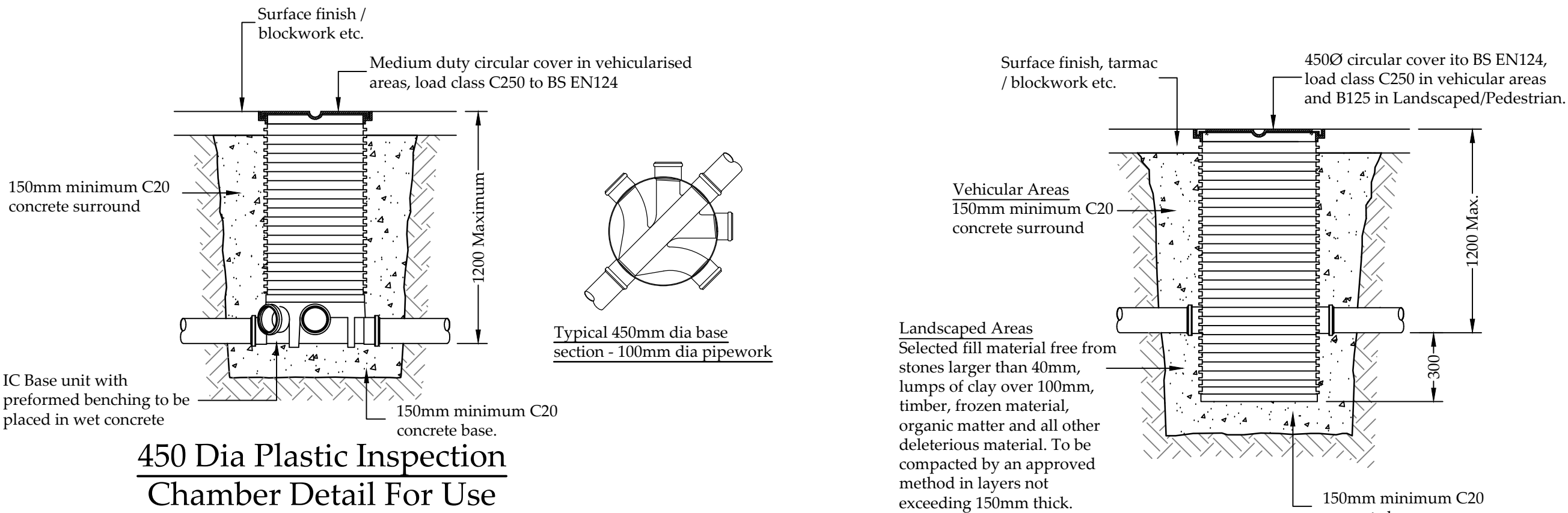
1:20



Typical Rodding Eye Detail

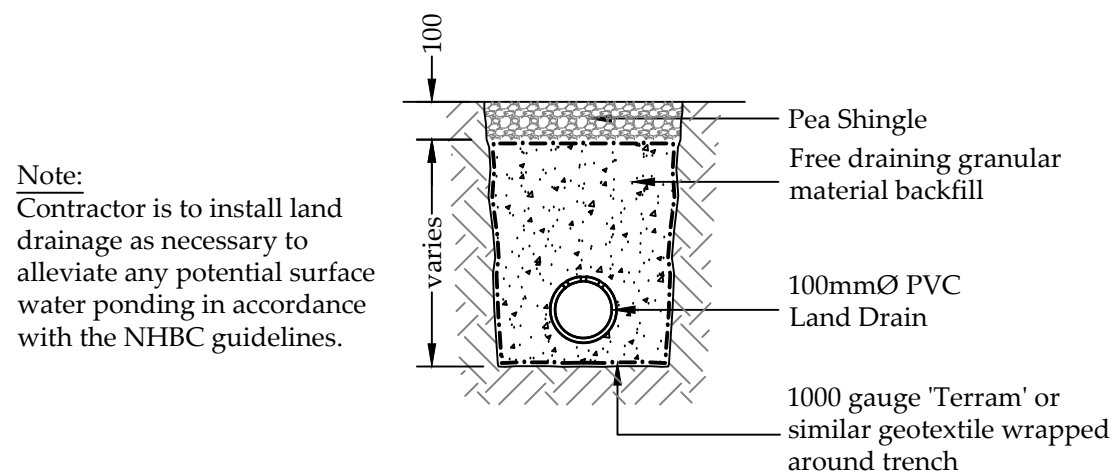
Expansion Joint Detail to Pipe Concrete Bed & Surround

1:10

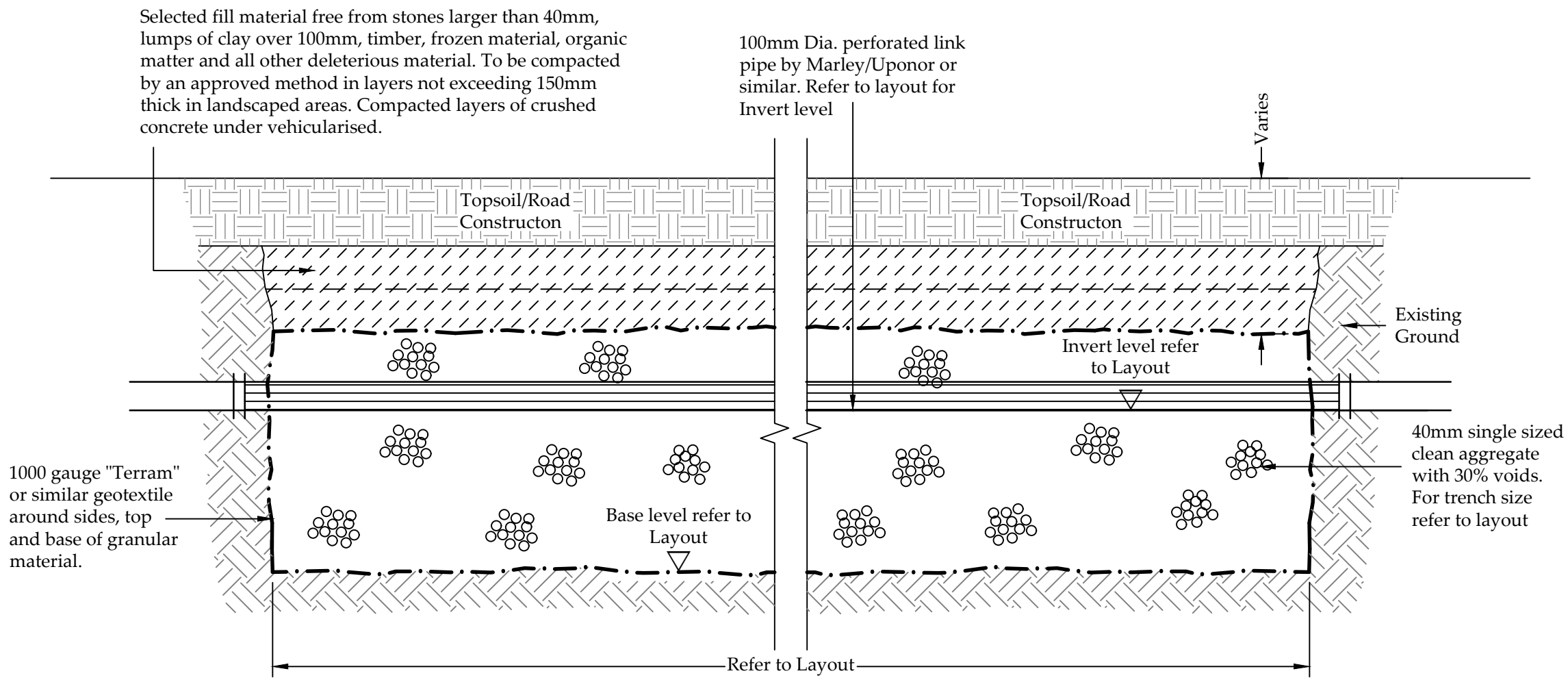


450 Dia Plastic Inspection Chamber Detail For Use in Vehicular Areas

450Ø Dia Plastic Inspection Chamber, Catchpit



Land Drain Detail



Trench Soakaway Detail

Designed in accordance with BRE Digest 365.

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Drawing Status	PRELIMINARY ISSUE	✗
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REV.	DATE	DESCRIPTION	CHK	APP
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Aventus Design Ltd
Unit 5 - Leaches Farm
Business Centre
Bicester Road
Kingswood
Aylesbury
Bucks HP18 0RF
Tel: 01296 770066
Email: mail@aventsdesign.co.uk
Web: www.aventsdesign.co.uk

Aventus DESIGN
Civil & Structural Engineers

Client: Sonning Golf Club

Site: Sonning Golf Club,
Duffield Road, Sonning
RG4 6GJ

Title: Proshop Drainage Details

Drawing no. H1515 - 441

Issue:	Scale: 1:20 @ A1	Checked: JPP	Date: Sept '25
Drn: C.U.	Date: Sept '25	Approve: SU	Date: Sept '25

50mm
100mm
150mm
200mm
250mm
ORIGINAL SIZE - A1

APPENDIX F

CAUSEWAY "FLOW" CALCULATIONS

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	40	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
1	0.040	5.00	53.500	Manhole	450	100.000	100.000	1.000	52.500
2	0.039		53.500	Manhole	450	112.000	100.000	1.200	52.300

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
PIPE	1	2	12.000	0.600	Colebrook-White	52.500	52.300	0.200	60.0	225	Circular_Default Sewer Type	5.12	50.0

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
PIPE	1	2	1.691	67.2	7.6	0.775	0.975	0.775	0.975	0.040	0.0	51	1.125

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
PIPE	12.000	60.0	225	Circular_Default Sewer Type	53.500	52.500	0.775	53.500	52.300	0.975

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
PIPE	1	450	Manhole	Adoptable	2	450	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	MH Type	Connections	Link	IL (m)	Dia (mm)	Link Type
1	100.000	100.000	53.500	1.000	450	Manhole	Adoptable					
								0	PIPE	52.500	225	Circular_Default Sewer Type
2	112.000	100.000	53.500	1.200	450	Manhole	Adoptable					
								1	PIPE	52.300	225	Circular_Default Sewer Type

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.750	Additional Storage (m³/ha)	20.0
Rainfall Events	Singular	Winter CV	0.840	Starting Level (m)	
FSR Region	England and Wales	Analysis Speed	Normal	Check Discharge Rate(s)	x
M5-60 (mm)	20.000	Skip Steady State	x	Check Discharge Volume	x
Ratio-R	0.400	Drain Down Time (mins)	240		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	------

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	40	0	0

Node 2 Lined Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.03400	Porosity	0.30	Ring Diameter (m)	1.800	Depth (m)
Side Inf Coefficient (m/hr)	0.03400	Invert Level (m)	52.000	Pit Width (m)	4.500	Inf Depth (m)
Safety Factor	2.0	Time to half empty (mins)	536	Pit Length (m)	4.500	Number Required 4

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	1	352	53.371	0.871	3.4	0.8349	0.0000	FLOOD RISK
360 minute winter	2	352	53.371	1.071	6.6	43.9368	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
360 minute winter	1	PIPE	2	3.2	0.749	0.048	0.4773
360 minute winter	2	Infiltration		0.8			

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	40	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
1	0.040	5.00	53.000	Manhole	450	100.000	100.000	0.500	52.500
2	0.045		53.000	Manhole	450	110.000	100.000	0.700	52.300

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
PIPE	1	2	10.000	0.600	Colebrook-White	52.500	52.300	0.200	50.0	150	Circular_Default Sewer Type	5.12	50.0

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
PIPE	1	2	1.426	25.2	7.6	0.350	0.550	0.350	0.550	0.040	0.0	57	1.252

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
PIPE	10.000	50.0	150	Circular_Default Sewer Type	53.000	52.500	0.350	53.000	52.300	0.550

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
PIPE	1	450	Manhole	Adoptable	2	450	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	MH Type	Connections	Link	IL (m)	Dia (mm)	Link Type
1	100.000	100.000	53.000	0.500	450	Manhole	Adoptable					
								0	PIPE	52.500	150	Circular_Default Sewer Type
2	110.000	100.000	53.000	0.700	450	Manhole	Adoptable					
								1	PIPE	52.300	150	Circular_Default Sewer Type

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.750	Additional Storage (m³/ha)	20.0
Rainfall Events	Singular	Winter CV	0.840	Starting Level (m)	
FSR Region	England and Wales	Analysis Speed	Normal	Check Discharge Rate(s)	x
M5-60 (mm)	20.000	Skip Steady State	x	Check Discharge Volume	x
Ratio-R	0.400	Drain Down Time (mins)	240		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	40	0	0

Node 2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.03400	Safety Factor	2.0	Invert Level (m)	51.500
Side Inf Coefficient (m/hr)	0.03400	Porosity	0.95	Time to half empty (mins)	1477

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	70.0	70.0	0.800	70.0	93.7	0.900	0.0	93.7

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	11	52.660	0.160	25.0	0.2819	0.0000	SURCHARGED
720 minute winter	2	705	52.478	0.178	4.2	56.7832	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	1	PIPE	2	24.2	1.525	0.960	0.1633
720 minute winter	2	Infiltration		0.4			

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	40	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
1	0.006	5.00	53.500	Manhole	450	100.000	100.000	1.000	52.500
2	0.005		53.500	Manhole	450	112.000	100.000	1.200	52.300

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
PIPE	1	2	12.000	0.600	Colebrook-White	52.500	52.300	0.200	60.0	225	Circular_Default Sewer Type	5.12	50.0

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
PIPE	1	2	1.691	67.2	1.1	0.775	0.975	0.775	0.975	0.006	0.0	21	0.647

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
PIPE	12.000	60.0	225	Circular_Default Sewer Type	53.500	52.500	0.775	53.500	52.300	0.975

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
PIPE	1	450	Manhole	Adoptable	2	450	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	MH Type	Connections	Link	IL (m)	Dia (mm)	Link Type
1	100.000	100.000	53.500	1.000	450	Manhole	Adoptable					
								0	PIPE	52.500	225	Circular_Default Sewer Type
2	112.000	100.000	53.500	1.200	450	Manhole	Adoptable					
								1	PIPE	52.300	225	Circular_Default Sewer Type

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.750	Additional Storage (m³/ha)	20.0
Rainfall Events	Singular	Winter CV	0.840	Starting Level (m)	
FSR Region	England and Wales	Analysis Speed	Normal	Check Discharge Rate(s)	x
M5-60 (mm)	20.000	Skip Steady State	x	Check Discharge Volume	x
Ratio-R	0.400	Drain Down Time (mins)	240		

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period	Climate Change	Additional Area	Additional Flow
(years)	(CC %)	(A %)	(Q %)
100	40	0	0

Node 2 Lined Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.03400	Porosity	0.30	Ring Diameter (m)	1.800	Depth (m)	
Side Inf Coefficient (m/hr)	0.03400	Invert Level (m)	52.000	Pit Width (m)	4.500	Inf Depth (m)	
Safety Factor	2.0	Time to half empty (mins)	536	Pit Length (m)	4.500	Number Required	1

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	1	344	52.672	0.172	0.5	0.0481	0.0000	OK
360 minute winter	2	344	52.672	0.372	0.9	5.3723	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
360 minute winter	1	PIPE	2	0.5	0.467	0.007	0.4344
360 minute winter	2	Infiltration		0.2			

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	40	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
1	0.003	5.00	53.800	Manhole	450	100.000	100.000	1.300	52.500
2	0.003		53.800	Manhole	450	110.000	100.000	1.500	52.300

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
PIPE	1	2	10.000	0.600	Colebrook-White	52.500	52.300	0.200	50.0	150	Circular_Default Sewer Type	5.12	50.0

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
PIPE	1	2	1.426	25.2	0.6	1.150	1.350	1.150	1.350	0.003	0.0	16	0.580

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
PIPE	10.000	50.0	150	Circular_Default Sewer Type	53.800	52.500	1.150	53.800	52.300	1.350

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
PIPE	1	450	Manhole	Adoptable	2	450	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	MH Type	Connections	Link	IL (m)	Dia (mm)	Link Type
1	100.000	100.000	53.800	1.300	450	Manhole	Adoptable					
								0	PIPE	52.500	150	Circular_Default Sewer Type
2	110.000	100.000	53.800	1.500	450	Manhole	Adoptable					
								1	PIPE	52.300	150	Circular_Default Sewer Type

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.750	Additional Storage (m³/ha)	20.0
Rainfall Events	Singular	Winter CV	0.840	Starting Level (m)	
FSR Region	England and Wales	Analysis Speed	Normal	Check Discharge Rate(s)	x
M5-60 (mm)	20.000	Skip Steady State	x	Check Discharge Volume	x
Ratio-R	0.400	Drain Down Time (mins)	240		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	40	0	0

Node 2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.03400	Safety Factor	2.0	Invert Level (m)	52.400
Side Inf Coefficient (m/hr)	0.03400	Porosity	0.95	Time to half empty (mins)	1035

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	6.0	6.0	0.800	6.0	12.9	0.900	0.0	12.9

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 93.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	1	960	52.974	0.474	0.1	0.0972	0.0000	SURCHARGED
1440 minute winter	2	960	52.974	0.674	0.2	3.4110	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
1440 minute winter	1	PIPE	2	0.1	0.015	0.004	0.1760
1440 minute winter	2	Infiltration		0.1			

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	40	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
1	0.013	5.00	53.500	Manhole	450	100.000	100.000	1.000	52.500
2	0.012		53.500	Manhole	450	112.000	100.000	1.200	52.300

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
PIPE	1	2	12.000	0.600	Colebrook-White	52.500	52.300	0.200	60.0	225	Circular_Default Sewer Type	5.12	50.0

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
PIPE	1	2	1.691	67.2	2.5	0.775	0.975	0.775	0.975	0.013	0.0	29	0.812

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
PIPE	12.000	60.0	225	Circular_Default Sewer Type	53.500	52.500	0.775	53.500	52.300	0.975

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
PIPE	1	450	Manhole	Adoptable	2	450	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	MH Type	Connections	Link	IL (m)	Dia (mm)	Link Type
1	100.000	100.000	53.500	1.000	450	Manhole	Adoptable					
								0	PIPE	52.500	225	Circular_Default Sewer Type
2	112.000	100.000	53.500	1.200	450	Manhole	Adoptable					
								1	PIPE	52.300	225	Circular_Default Sewer Type

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.750	Additional Storage (m³/ha)	20.0
Rainfall Events	Singular	Winter CV	0.840	Starting Level (m)	
FSR Region	England and Wales	Analysis Speed	Normal	Check Discharge Rate(s)	x
M5-60 (mm)	20.000	Skip Steady State	x	Check Discharge Volume	x
Ratio-R	0.400	Drain Down Time (mins)	240		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	40	0	0

Node 2 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.03400	Porosity	0.30	Pit Width (m)	1.500	Inf Depth (m)	1.200
Side Inf Coefficient (m/hr)	0.03400	Invert Level (m)	51.500	Pit Length (m)	21.000	Number Required	1
Safety Factor	2.0	Time to half empty (mins)	342	Depth (m)	1.200		

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	228	53.112	0.612	1.5	0.2564	0.0000	SURCHARGED
240 minute winter	2	232	53.111	0.811	2.9	11.6360	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
240 minute winter	1	PIPE	2	1.5	0.689	0.022	0.4773
240 minute winter	2	Infiltration		0.4			

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	40	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
1	0.009	5.00	53.000	Manhole	450	100.000	100.000	0.800	52.200
2	0.008		53.000	Manhole	450	112.000	100.000	1.000	52.000

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
PIPE	1	2	12.000	0.600	Colebrook-White	52.200	52.000	0.200	60.0	225	Circular_Default Sewer Type	5.12	50.0

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
PIPE	1	2	1.691	67.2	1.7	0.575	0.775	0.575	0.775	0.009	0.0	24	0.716

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
PIPE	12.000	60.0	225	Circular_Default Sewer Type	53.000	52.200	0.575	53.000	52.000	0.775

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
PIPE	1	450	Manhole	Adoptable	2	450	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	MH Type	Connections	Link	IL (m)	Dia (mm)	Link Type
1	100.000	100.000	53.000	0.800	450	Manhole	Adoptable					
								0	PIPE	52.200	225	Circular_Default Sewer Type
2	112.000	100.000	53.000	1.000	450	Manhole	Adoptable					
								1	PIPE	52.000	225	Circular_Default Sewer Type

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.750	Additional Storage (m³/ha)	20.0
Rainfall Events	Singular	Winter CV	0.840	Starting Level (m)	
FSR Region	England and Wales	Analysis Speed	Normal	Check Discharge Rate(s)	x
M5-60 (mm)	20.000	Skip Steady State	x	Check Discharge Volume	x
Ratio-R	0.400	Drain Down Time (mins)	240		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	40	0	0

Node 2 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.02040	Porosity	0.30	Pit Width (m)	2.100	Inf Depth (m)	1.500
Side Inf Coefficient (m/hr)	0.02040	Invert Level (m)	51.000	Pit Length (m)	10.000	Number Required	1
Safety Factor	2.0	Time to half empty (mins)	710	Depth (m)	1.500		

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	1	900	52.649	0.449	0.4	0.1726	0.0000	SURCHARGED
960 minute winter	2	900	52.649	0.649	0.7	9.6605	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
960 minute winter	1	PIPE	2	0.4	0.461	0.006	0.4773
960 minute winter	2	Infiltration		0.2			

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	40	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
1	0.007	5.00	53.170	Manhole	450	100.000	100.000	0.570	52.600
2	0.000		53.170	Manhole	450	112.000	100.000	0.770	52.400

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	Velocity Equation	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
PIPE	1	2	12.000	0.600	Colebrook-White	52.600	52.400	0.200	60.0	100	Circular_Default Sewer Type	5.20	50.0

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
PIPE	1	2	0.996	7.8	1.3	0.470	0.670	0.470	0.670	0.007	0.0	28	0.739

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
PIPE	12.000	60.0	100	Circular_Default Sewer Type	53.170	52.600	0.470	53.170	52.400	0.670

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
PIPE	1	450	Manhole	Adoptable	2	450	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	MH Type	Connections	Link	IL (m)	Dia (mm)	Link Type
1	100.000	100.000	53.170	0.570	450	Manhole	Adoptable					
								0	PIPE	52.600	100	Circular_Default Sewer Type
2	112.000	100.000	53.170	0.770	450	Manhole	Adoptable					
								1	PIPE	52.400	100	Circular_Default Sewer Type

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.750	Additional Storage (m³/ha)	20.0
Rainfall Events	Singular	Winter CV	0.840	Starting Level (m)	
FSR Region	England and Wales	Analysis Speed	Normal	Check Discharge Rate(s)	x
M5-60 (mm)	20.000	Skip Steady State	x	Check Discharge Volume	x
Ratio-R	0.400	Drain Down Time (mins)	240		

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	40	0	0

Node 2 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.02040	Porosity	0.30	Pit Width (m)	1.500	Inf Depth (m)	1.000
Side Inf Coefficient (m/hr)	0.02040	Invert Level (m)	51.500	Pit Length (m)	8.000	Number Required	1
Safety Factor	2.0	Time to half empty (mins)	492	Depth (m)	1.000		

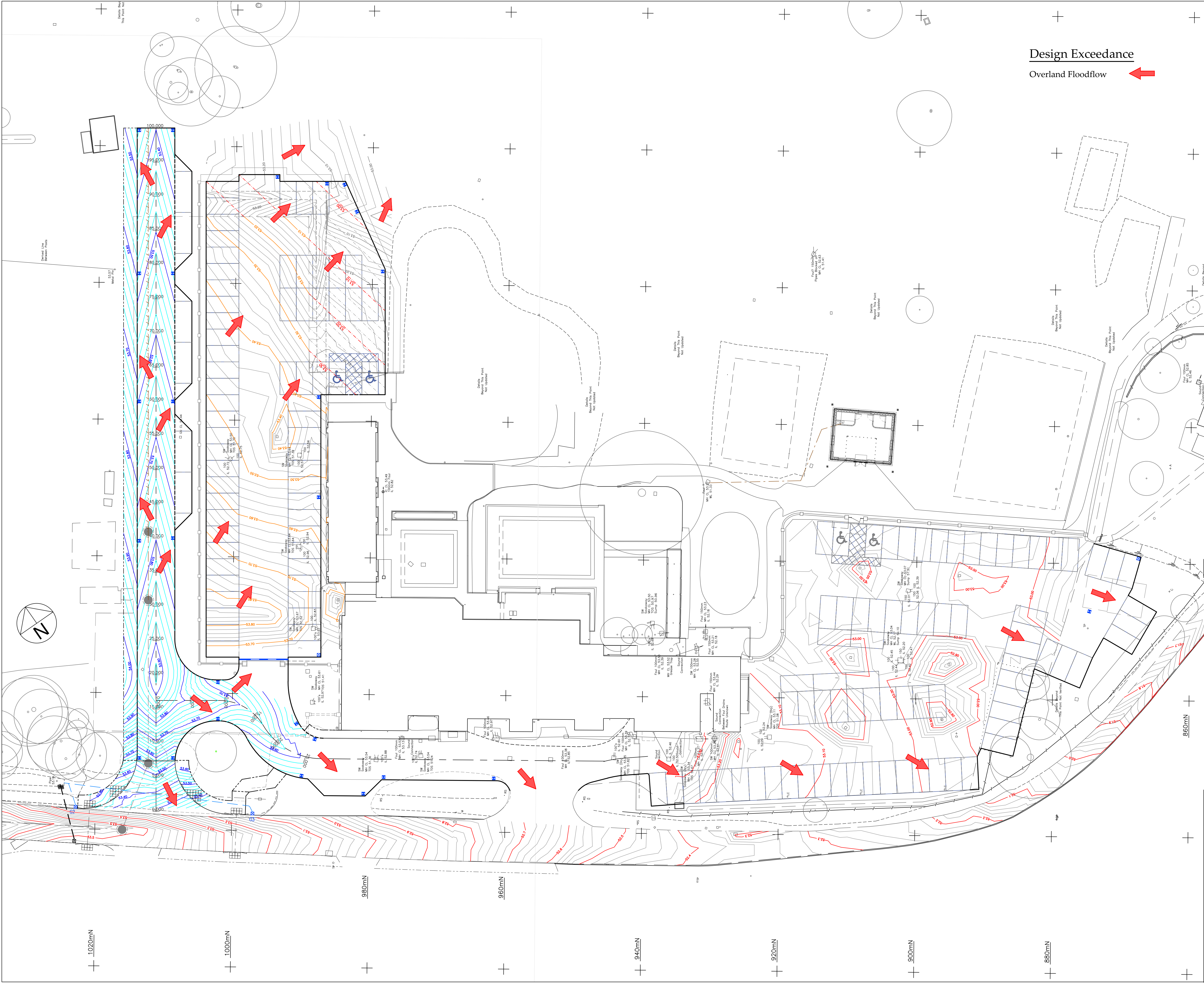
Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	1	352	52.711	0.111	0.6	0.0451	0.0000	SURCHARGED
360 minute winter	2	352	52.711	0.311	0.6	3.6514	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
360 minute winter	1	PIPE	2	0.6	0.585	0.077	0.0939
360 minute winter	2	Infiltration		0.1			

APPENDIX G

DESIGN EXCEEDANCE



Design Exceedance

Overland Floodflow



Notes:

- 1.1 Do not scale from this drawing.
- 1.2 All dimensions are in m unless otherwise specified.
- 1.3 In case of any discrepancies in drawings or details refer to engineer for clarification. Unilateral decisions by the contractor will not be accepted.
- 1.4 This drawing is to be read in conjunction with all related Architects, Consultants & Sub-Contractors drawings and specifications.
- 1.5 The Contractor is to ensure that all design drawings and information are read concurrently and any discrepancies or omissions reported directly to Aventus Design.
- 1.6 This drawing is based upon the survey by KND Surveys Ltd, reference E 12 22 dated 31st May 2022 provided in digital format.
- 1.7 Levels are related to previous KND Surveys Drawing (A0515-T).
- 1.8 The grid relates to a local datum.
- 1.9 The Contractor must check the levels of all existing drainage outfalls prior to construction of any drainage, unless otherwise agreed, to ensure the proposed design may be achieved. Any discrepancies must be reported immediately to Aventus Design.
- 1.10 Sulphates have been determined as class 1 (DS-1) for design purposes in accordance with BRE Special Digest 1 (2001). Buried Concrete to be in accordance with ACCEC Site Class AC-1.
- 1.11 All external building dimensions are to be checked against the Architects drawings prior to any construction commencing.
- 1.12 All adoptable highway works to be in accordance with the Local Authorities Specifications.
- 1.13 All adoptable drainage works to be in accordance with the Water Authorities standard guidelines for connections etc.
- 1.14 Formation to road/hardstanding to be proof rolled and any soft spots in subgrade of road/Hardstanding areas are to be excavated and replaced with well compacted sub-base or free draining granular material to Department of Transport Specification for Highway Works Part 2' Table 6/1 Class 1 (General Granular Fill) and compacted in accordance with Table 6/4.

CDM REGULATIONS 2015

Aventus Design have considered and where reasonably practicable avoided foreseeable risks in the preparation of the design shown on this and related drawings. Significant risks which remain and associated control measures are identified in the Risk Register and should be given particular attention by the main contractor on site.

RISKS RELATING TO THIS DRAWING:
RISK NUMBERS 4 - 6 on Risk Register
NOTE: The Risk Register records only those elements considered unusual, difficult to manage or outside the anticipated expertise of a competent contractor.

Drawing Status: **PRELIMINARY ISSUE**

REV.	DATE	DESCRIPTION	CHK	APP
-	-	-	-	-
Aventus Design Ltd Unit 5 - Leaches Farm Business Centre Bicester Road Kingswood Aylesbury Bucks HP18 0RF Tel: 01296 770066 Email: mail@aventusdesign.co.uk Web: www.aventusdesign.co.uk				
Client: Sonning Golf Club				
Site: Sonning Golf Club, Duffield Road, Sonning RG4 6GJ				
Title: Design Exceedance				
Drawing no. H1515 - 453				
Issue:	Scale: 1:200 @ A1	Checked: PP	Date: Apr 26	
-	Drn: S.U.	Date: Apr 26	Approve: SU	Date: Apr 26

50mm
100mm
150mm
200mm
250mm
ORIGINAL SIZE - A1

APPENDIX H

SURFACE WATER MAINTENANCE PLAN

Surface Water Disposal Maintenance Plan

Project:

Sonning Golf Club, Duffield Road, Sonning. RG4 6GJ

1.0 Why is a maintenance plan needed?

- 1.1 Regular maintenance is required to ensure that the surface water drainage system operates efficiently and does not cause flooding to the property or surrounding buildings and land.
- 1.2 Such work is part of the day-to-day responsibility of the individual property owner.
- 1.3 Maintenance is most effective when carried out regularly, on a planned cycle.
- 1.4 Good maintenance needs the regular investment of small amounts of time and money, but the cost of preparing and carrying out a planned maintenance programme should be far less than the costs resulting from a series of unplanned major repairs, and will help plan future financial commitments.

2.0 What is maintenance?

- 2.1 Maintenance is the routine work which is necessary to protect the drainage system.
- 2.2 When carried out on a planned basis, maintenance helps to prevent the types of failure which occur predictably within the life drainage system.
- 2.3 Maintenance falls into three main categories:
 - Inspection to assess condition, report any problems and decide whether repair or other work is necessary.
 - specific tasks such as clearing debris from drainage channels, manholes, inspection chambers, catchpits, storage tanks and pipes.
 - minor repairs such as fixing loose covers and channel gratings.
- 2.4 Maintenance differs from repair which is work carried out to put right defects or damage and work to return the drainage system to a good condition on a long-term basis.

3.0 Rainwater Goods

- 3.1 Rainwater goods are to be inspected twice a year preferably in May and November.
- 3.2 Clear debris from gutters / outlets and ensure outlets are free running.
- 3.3 Inspect for cracks and leaks and repair or replace as necessary.

4.0 Slot Drainage

- 4.1 Slot drainage is to be inspected twice a year preferably in May and November for damage.
- 4.2 Slot drainage is to be cleared of vegetation and debris monthly between April and September.
- 4.3 Drainage slots and exposed edges of channels should be examined for signs of any damage resulting from stones lodged in the channel or from local impact loads. Broken channels and gratings should be replaced.
- 4.4 Grating locking system if fitted should be inspected and checked for tightness.
- 4.5 The efficiency of the sumps or should be checked by inspection. The bucket should be removed twice a year or following an intense storm and checked for blockages.
- 4.6 The inspections should be carried out in conjunction with an inspection of the underground drainage connection out of the channel system.
- 4.7 Water should be poured into the sump twice a year to check that it disperses freely.
- 4.8 Where exposed the concrete haunch to the drain should be inspected once a year for signs of damage. Both the haunch and channel should be checked for level and compared with installation drawings. Undulations of the haunch, or channel, which may impair the efficiency of the system could possibly be attributed to ground conditions and engineering advice may be necessary.
- 4.9 Levels of paved areas should be checked once a year and compared with the installation drawings. Block paving should be regularly checked for signs of lateral movement (opening or closing of joints). The side of the channel must not be laterally loaded.
- 4.10 The channels should be cleaned out carefully twice a year or following an intense storm ensuring the surface finish is not damaged. A shaped shovel (e.g. a trowel) may be used within channels.

- 4.11 On completion of cleaning operations, the channel bore should be flushed through with water and any damaged surfaces repaired. Where provided joint sealant should be repaired in accordance with the relevant manufacturer's instructions.
- 4.12 Twice a year or following an intense storm the buckets of sumps should be removed, emptied, cleaned and their drain holes cleared. Silt etc. should be removed from the bottom of the sump. Ensure that the bucket is replaced within the sump (or gully) with an easy fit.

5.0 Below Ground Drainage

- 5.1 Below ground drainage, manholes, inspection chambers, catchpit's and soakaways are to be inspected twice a year preferably in May and November or after an intense storm for blockages.
- 5.2 Manholes and inspection chambers are to be opened up and checked that they are free from silt and debris and that water discharges freely to the outlets.
- 5.3 On completion of cleaning operations to the manholes and inspection chambers the underground drainage pipes should be flushed through with water to ensure that they are free from silt and debris and that water discharges freely.

6.0 Cellular Soakaway Crates

- 6.1 When all upstream drainage elements have been cleaned and all silt removed, underground storage tanks are to be jetted from the garden water supply. Clean water shall be jetted into the tank and all silt shall be collected and removed from the downstream catchpit. General gardening / maintenance equipment shall be used for carrying out regular maintenance tasks.

7.0 Summary

The following summary chart is produced for easy reference and is to be read in conjunction with the maintenance instructions above.

Maintenance Plan

Reference	Element	Maintenance Task	Frequency
3.2	Rainwater Goods	Clear debris from gutters and outlets	Twice a year
3.3	Rainwater Goods	Inspect for cracks and leaks	Twice a year
4.2	Slot Drainage	Clear vegetation and debris	Monthly April – September
4.3	Slot Drainage	Examine drainage slots and exposed edges of channel for damage	Twice a year
4.4	Slot Drainage	Examine grating locking system if fitted	Twice a year
4.5 – 4.7	Slot Drainage	Inspect sumps and buckets	Twice a year or after intense storm
4.8	Slot Drainage	Inspect concrete haunch to drain where exposed	Once a year
4.9	Slot Drainage	Inspect levels of paved areas	Once a year
4.10	Slot Drainage	Clean channels	Twice a year or after intense storm
4.11	Slot Drainage	Flush channel with water	Twice a year or after intense storm
4.12	Slot Drainage	Clean sump buckets	Twice a year or after intense storm
5.1	Below Ground Drainage	Inspect for blockages	Twice a year or after intense storm
5.2	Below Ground Drainage	Remove silt and debris from manholes and inspection chambers	Twice a year or after intense storm
5.3	Below Ground Drainage	Flush underground pipes with water	Twice a year or after intense storm
6.1	Cellular Soakaway Crates	Flush Soakway with water and remove silt	Twice a year or after intense storm