

DRAINAGE STATEMENT

Ote Hall Farm
Jane's Lane
Burgess Hill RH15 0SR

Client

Ote Hall Farm
Jane's Lane
Burgess Hill
RH15 0SR

Ref: 2021-103
Issue: 3
Date: 09 April 2025

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Instruction

Owens Consulting Engineers Ltd were instructed by the client, Ote Hall Farm, to produce a detailed foul and surface water drainage design to aid in discharge of Planning Condition No.4 of Mid Sussex District Council Planning Approval reference DM/21/3607. Planning Condition No.4 reads as follows:

“The development hereby permitted shall not commence unless and until details of the proposed foul and surface water drainage and means of disposal have been submitted to and approved in writing by the local planning authority. The building shall not be occupied until all the approved drainage works have been carried out in accordance with the agreed details.

Reason: To ensure that the proposal is satisfactorily drained and to accord with the NPPF requirements Policy DP41 of the District Plan (2014 - 2031).”

A Site Drainage plan and Details to satisfy this Condition are in Appendix 4. This report accompanies the Site Drainage plan by providing a textual description of the design and site conditions. Calculations supporting the design are in Appendix 5.

Limitations

This report is intended for our client’s private and confidential use and for their professional and legal advisors. It should not be reproduced in whole or in part or relied upon by third parties for any use whatsoever, without our express written authority.

Site Conditions

The site’s bedrock geology is Weald Clay according to a Ground Investigation report by AVZ GeoEng Ltd – refer to Appendix 2.

As part of the same Ground Investigation, soakage tests were undertaken during November 2021. The water in the 2No test pits failed to drain below the 75% level over the duration. Due to the low permeability of the soils as revealed by the soakage tests, infiltration is considered unsuitable for this site.

As site visit was undertaken by GTA Civils & Transport Ltd on the 10th January 2022 to establish the condition of the existing receiving ditch and its connection to the wider ditch network. Photos from the site visit are in Appendix 1. These show that the receiving ditch running along the site's east boundary is regular, well defined and in good condition. A culvert, estimated to be 150mm diameter, connects the north end of the receiving ditch to another ditch on the opposite side of the road. This ditch drains north and is present on the EA's online river mapping, which shows it flowing north and then northwest to connect to World's End Stream (a Main River) at a distance of approximately 750m northeast of the site. World's End Stream is a tributary of the River Adur.

Proposed Site Drainage

The SuDS hierarchy was applied. As set out in the previous section, soakage testing has shown that the geology is of low permeability; therefore, infiltration has been discounted.

The site's surface water will be routed to a new outfall headwall. The Site Drainage drawing and Drainage Details are shown in Appendix 4. These show a combination of attenuation pond and cellular underground tank. Surface water from the site is to be routed into the pond, where it will benefit from UV treatment. An offline underground attenuation tank shall be placed under the car parking area.

The car park is mainly to drain via its parking bays which are to be surfaced in Geotech Grass Rubber Matting, which is a porous surface. The construction of the car park is to be lined and surface water will discharge to the piped system via distribution blocks located in the sub-base layer. The sub-base layer itself will be in porous aggregate material comprising 4-20mm clean angular hard stone with no fines (30% voids). Refer to Appendix 4 for External Works Plans and Details.

The attenuation tank and pond have a combined volume of 417m^3 ($316 + 101$) and are sized to store the volume of storm water from the critical '1 in 100 year plus 45% climate change' storm event - thereby complying with the NPPF. The system has been simulated as a network in Flow drainage software and the calculation sheets are provided in Appendix 5 show that the volume generated in the critical 1 in 100 years + 45% climate change event is 356m^3 ($311 + 45$). As this is over and above the maximum attenuation volume requirement, the system will not flood.

The overhead of 61m³ (417 - 356) between the required and actual volume figures is explained by the inclusion of 322mm of freeboard in the pond design (bank level of 44.950 less max water level of 44.628), which is a requirement set by the LLFA.

The Volumetric Run-off Coefficient (Cv) used in the design is 1.0 for both winter and summers storms and the rainfall data set applied is FEH2022 - refer to the simulation criteria in the calculations sheets within Appendix 5.

The offsite flow rate will be limited to Qbar, namely 1.9 l/s. This is the greenfield runoff rate for the development's contributing area (proposed impermeable catchment comprising roofs, hardstandings and lined pond) as described in the Flood Risk Assessment Report at Planning stage.

A new outfall headwall will be formed on the ditch watercourse for surface water discharge. This will require Ordinary Watercourse Consent from the LLFA.

Foul drainage is to discharge by gravity to an existing 150mm foul drain present within the field on the opposite side of the road to the site. This foul drain connects to an existing private pump station which serves the Ote Hall Business Park. From the pump station, foul water is pumped to the garden of Grove House to the east where it connects to a gravity manhole before discharging into the main Southern Water sewer network. An analysis of the existing pump station's capacity to receive inflow from the proposed development is to be undertaken.

A CCTV drainage survey report showing the existing foul network to which the site is proposed to connect is contained in Appendix 3.

The new foul connection will require Section 106 Consent from Southern Water.

The proposed works including widening the existing access road over a section of ditch. The Site Drainage Plan in Appendix 4 shows the ditch culverted with a 300mm pipe under the access road. A walkover survey included measurements of the existing culverts at 225mm diameter along the line of the ditch – refer to the photos in Appendix 1. The proposed 300mm culvert will therefore have more capacity than the existing culverts.

A Drainage Maintenance and Management Plan is contained in Appendix 6.

Prepared by: John Roberts BSc (Hons)

For and on behalf of Owens Consulting Engineers Ltd

Photo 1: Looking north along access road with receiving ditch on left hand side



Photo 2: Looking south along access road with receiving ditch on right hand side



Photo 3: Culvert outlet from receiving ditch entering ditch on opposite side of access road, viewed from the east



Photo 4: Culvert outlet from receiving ditch entering ditch on opposite side of access road, viewed from the south



Photos 5 and 6: Measurements of existing culverts showing 225mm diameter



Screenshot: Extract from the EA's online mapping showing the ditch on the opposite side of the access road draining north and then northeast to connect to World's End Stream (a tributary of the River Adur).

Source:

<https://www.arcgis.com/apps/webappviewer/index.html?id=17cd53dfc524433980cc333726a56386>





***Ote Hall Farmshop, Janes Ln, Burgess Hill,
RH15 0SR***

Mrs Carola Godman Irvine

GEOTECHNICAL GROUND INVESTIGATION REPORT

Project No. 1689-21



November, 2021

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APPENDIX A Borehole Logs

APPENDIX B Geotechnical Test Results

Your ref:
Our ref: SKZ_1689/21

Mrs Carola Godman Irvine
Ote Hall Farms,
Janes Ln,
Burgess Hill,
RH15 0SR

Dear Carola,

**REPORT ON GEOTECHNICAL GROUND INVESTIGATION AT
OTE HALL FARMSHOP, JANES LN, BURGESS HILL, RH15 0SR**

1. INTRODUCTION

AVZGeoEng Limited have been commissioned by Mr Gary Thompson of Crowther Associates Architects LLP ('the Client') to carry out a Geotechnical Investigation in regards to the proposed redevelopment at the above site as indicated on the engineering drawings provided by the client and in accordance with the AVZGeoEng quotation ref: SKZ_1689/21.

The proposed is intended to assess the above site in regards to the proposed development as indicated by the client.

2. THE SITE

The site, which may be found by approximate National Grid reference OS Grid Ref: E:533097 N: 120004 is situated at Ote Hall Farm, Janes Ln, Burgess Hill, RH15 0SR.

An extract of the Ordnance Survey map showing the location of the site is included in **Figure 1**.

The published 1:50,000 scale geological map of the area indicates that the site is underlain by Weald Clay Formation - Mudstone as bedrock geology. Superficial Deposits are not indicated on the published Geological maps and records of the area.

The highest part of the Wealden, the Weald Clay Group, up to 400m thick, probably formed at a time when the London-Brabant Massif was at its lowest. It contains a number of marine horizons, which

record short lived breaching of the Weald mud-plains by the Boreal Sea (Gale, 2000). Detailed heavy mineral provenance studies have shown that most of the detritus was derived from the Jurassic and to a lesser extent Palaeozoic rock of the London Platform to the north. However, in the upper part of the Hastings Group, detritus originating from Cornubia spilled over from the Wessex Basin. The general abundance of detritus derived from the west, which includes material from the Iberian Peninsula, points to doming on the continental margin west of the UK during Early Cretaceous times.

The overlying Weald Clay has also been proved cyclic in nature, predominantly comprising grey shales and mudstones with intervening clastic rich layers representing periods of higher energy. The Weald Clay mudstones are characteristically bioturbated-laminated clays. There is common cyclicity throughout the clays. The fresh colour of the clays is characteristically a dark-medium green grey, and when weathered these changes to an orange ochre-brown type colour. There are bands of red mudstones associated with sandstone horizons and rootlet beds, diagnostic of periods of uplift to the surface.

The cyclicity and lithology changes outlined above may be attributed to environmental changes. The arenaceous formations, including sand and pebbly units is believed to have been deposited during periods of progradation of alluvial fans.

The existing topography and history of development of the site suggest that in addition to these natural strata some made ground may be present on the site.

3. LIMITATIONS

Any opinions and interpretations expressed in this report are based on the ground conditions encountered during the site work and on the results of tests made in the field, together with AVZGeoEng conjectural interpretation between exploratory holes. There may, however, be other conditions prevailing at the site which have not been revealed by the investigation and which have therefore not been taken into account in this report. While the report may offer opinions on the possible configuration of strata, both between the excavations and below the maximum depth achieved by the investigation, these comments are for guidance only. It should also be noted that groundwater levels vary due to seasonal or other effects and may at times differ to those measured during the investigation. For investigations, which include environmental issues, the data obtained relate to the conditions which are relevant at the time of the investigation.

This report is not an engineering design and the figures and calculations enclosed to the report should be used by the Structural Engineer taking note that variations may apply depending on design loading, in techniques used, and in site conditions. Our recommendations should therefore not supersede the Engineer's design.

This report has been prepared by AVZGeoEng limited. No individual is personally liable in connection with the preparation of this report. By receiving this report and acting on it, the client or any other person accepts that no individual is personally liable whether in contract, tort, for breach of statutory duty or otherwise.

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expenses (including any consequential damages) resulting from the use of this Report or any information contained in this Report by a third party.

4. GROUND INVESTIGATION

The site work was carried out on 24th November 2021, aimed to obtain geotechnical parameters in regards to the proposed development. The investigation and soil descriptions were carried out in general accordance with BS5930:2015 – Code of Practice for Site Investigations.

The ground investigation comprised the following works:

- 3No boreholes advanced by drive-in sampler technique to a max 5.0m depth;
- 4No CBR tests using Dynamic Cone Probing;
- In situ testing and logging.

The borehole locations were determined approximately by reference to physical features present on the site at the time of investigation and the ground level at the borehole locations was not determined.

The locations of the exploratory holes are presented on **Figure 2**, the exploratory hole logs and the geotechnical testing results are presented in the **Appendix A** and **Appendix B**, respectively.

5. GEOTECHNICAL TESTING

The programme of geotechnical tests undertaken on samples obtained from the intrusive investigation is presented in **Table 1**, the main purpose of which was to classify the ground beneath the site and assist in determining its physical and mechanical properties. Where appropriate, testing was undertaken in accordance with BS 1377:1990 & EN ISO 14688-2 2004+A1:2013 Method of Tests for Soils for Civil Engineering Purposes and was carried out by the AVZGeoEng Ltd in house laboratory.

Tests carried out in order to classify the concrete class required on site have been undertaken following the procedures within BRE SD1:2005 by a UKAS accredited laboratory (The Environmental Laboratory Ltd).

Table 1 – Summary of Geotechnical Testing Programme

Strata	Tests undertaken	No of Tests
Weald Clay Formation	Natural Moisture Content	5
	Plasticity Index	5
	pH & Water Soluble Sulphates	3

6. GROUND CONDITIONS

The exploratory holes revealed that the site is underlain by layer of Made Ground with limited thickness over stratum classified as Weald Clay Formation at depth. This appears to generally confirm the stratigraphical succession suggested by the published geological records.

The ground conditions are summarised in **Table 2** below.

Table 2 - General succession of strata encountered

Brief Description	Depth to top of stratum m.bgl	Thickness (m)
Made Ground	G.L	0.25 to 0.3
Weald Clay Formation	0.25 to 0.3	Not proven

The made ground encountered during the site investigation comprised melange of light brown and grey clay and silt and sand.

The stratum revealed under the made ground is classified as Weald Clay Formation recovered as firm at the top of the stratum silty clay, turning into stiff and very stiff light grey and brown, occasionally with black spots and laminated, silty clay and weak mudstone.

The measured and inferred soil parameters for the stratum are listed in **Table 3** below.

Table 3 – Summary of Soil Parameters for the Weald Clay Formation

Soil Parameters	Range	Results
Liquid Limit (%)	41 to 67	Appendix B
Plastic Limit (%)	20 to 26	Appendix B
Plastic Index (%)	21 to 41	Appendix B
Modified Plasticity Index (%)	21 to 41	Appendix B
Plasticity Term	Intermediate to High	
Volume Change Potential (NHBC)	Medium to High	
Moisture Content (%)	17.8 to 28.5	Appendix B
SPT 'N' Values	14 to 62	Appendix A, Figure 3
Undrained Shear Strength (kN/m ²) inferred by SPT ⁽¹⁾	59 to 260	Figure 4
Undrained Shear Strength (kN/m ²) inferred by HV ⁽²⁾	75 to 93	Appendix A, Figure 4
Strength Term	Firm to Hard	

⁽¹⁾ SPT – Standard Penetration Tests

⁽²⁾ HV – Hand Vane Tests

7. GROUNDWATER CONDITIONS

A groundwater seepage was recorded in borehole BH1 at level of 3.5mbgl. The groundwater level measured at the end of shift was 3.8mbgl measured as presented on the drilling logs in **Appendix A**. Boreholes BH2 and BH3 remained dry.

8. ENGINEERING CONSIDERATIONS

FOUNDATIONS

The ground conditions appear suitable for the design and construction of relatively shallow spread foundations for the proposed development. Alternatively, piled foundations could be adopted, particularly for any moderate to heavy or sensitive foundation loads.

Table 4 – Design and Construction of Spread Foundations

Design/construction considerations	Design/construction recommendations						
Founding stratum	Weald Clay Formation						
Depth	Foundations should be taken to a minimum depth of 1m below finished ground level and at least 0.1m into the founding stratum below any overlying made ground or to any greater depth required in respect of the special design considerations given below.						
Special design considerations	Due to the presence of shrinkable soils foundations should be designed taking into account all the normal precautions, including minimum depths, to minimise the risk of future foundation movements in accordance with NHBC Standards, or similar. The findings of the ground investigation indicate that foundations should be designed for shrinkable soils of high volume change potential.						
Net Allowable Bearing Capacity for range of strip footings and square bases founded in the Weald Clay Formation	Net allowable bearing pressure kN/m ²						
	Strip Footings			Square bases			
	Width	0.6m	0.75m	1m	1.0m	1.5m	2.0m
	Depth						
	1.0m	104	105	105	123	123	123
	1.5m	139	140	141	164	164	164
	2.0m	157	157	158	184	184	184
Basis of allowable bearing pressures	Each allowable bearing pressure includes an overall factor of safety of 3 against bearing capacity failure and with total settlements associated with the bearing pressure estimated to be less than 25mm.						

ROADS AND HARDSTANDING

In the 1m to 1.5m below the proposed finished ground level the exploratory holes have revealed a soil profile comprising thin layer of made ground – topsoil that would need to be removed during the construction, over firm silty clay (Weald Clay Formation).

In road/pavement design terms, the groundwater conditions are anticipated to comprise a low water table at least 1m below the pavement formation level.

The results of in situ DCP testing are summarised in **Table 5**.

Table 5 Summary of CBR values derived from in situ DCP tests

Test Location	Material Type	Minimum CBR value determined at or just below anticipated formation level
DCP1	Made ground/ Weald Clay Formation	2% (average > 5%)
DCP2	Made ground Glacial Sand and Gravel	3% (average > 5%)
DCP3	Made ground Glacial Sand and Gravel	2% (average > 4%)
DCP4	Made ground Glacial Sand and Gravel	2% (average > 4%)

The cohesive sub-grade soils do not appear susceptible to improvement by rolling with conventional compaction plant.

The in situ CBR test results are related to the ground properties at the time of the testing, as these could vary significantly with change of the moisture content of the material. If the drainage and water table position make probability of the material saturating in service possible than the Equilibrium CBR values should be used in the design.

9. SOAKAWAYS

Soakaways are used to store the immediate surface water run-off from hard surfaced areas, such as roofs or car parks, and allow for infiltration into the adjacent soil. They need to provide the necessary capacity to receive run-off from a subsequent storm. The time taken for discharge depends upon the soakaway shape and size, and the surrounding soil's infiltration characteristics. Soakaway may not be an appropriate solution in areas of ground that have low permeability and where the maximum seasonal water table may be at or above the base of the proposed soakaway.

A soakaway test was carried out in shallow borehole and trial pit at location advised by the engineer as potentially suitable for the proposed soakaway, following the analogy and recommendations given in the BRE 365.

Due to low infiltration rates, the water level in the SKW1 and SKW2 failed to drain below the 75% level, within the time available for the test, results are presented in the **Figures 7.1** and **7.2**. The low permeability recorded are considered to be a function of the typically high fines (clay and silt) contents of the sub-soils, hence the location is considered unsuitable for traditional shallow pit soakaways.

10. RADON

Indicative Atlas of Radon in the UK indicates that the property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level and no radon protective measures are necessary. However, it should be noted that radon need to be considered in relation to any development with a basement regardless of the location.

Additional information about Radon Affected Areas could be obtained from the publication 'Radon - Guidance on protective measures for new buildings BRE211 (BRE and HPA, 2007)' and the "Indicative Atlas of Radon in England and Wales" published by the Health Protection Agency and British Geological Survey, see www.ukradon.org for more details.

11. CHEMICAL ATTACK ON BURIED CONCRETE

The results of chemical tests carried out on soil samples from the made ground and natural soil indicate 2:1 water soil extract sulphate with max content of 70 mg/l with slightly acidic to slightly alkaline pH values.

These results indicate that, in accordance with BRE Special Digest 1:2005 Concrete in aggressive ground, the Aggressive Chemical Environment for Concrete (ACEC) Classification is **AC-1** with a Design Sulphate Class for the site of **DS-1**.

This assumes nominally static groundwater conditions and that no significantly disturbed clay comes into contact with concrete foundations or structures. This would apply for designing the concrete class for shallow foundations and concrete elements.

If significantly disturbed clay is likely to come into contact with concrete foundations or structures it will be necessary to carry out additional tests on the soil to investigate its total potential sulfate content. This will facilitate a re-evaluation of the ACEC Classification and Design Sulfate Class for the material, to take into consideration potential oxidation of available sulphides (e.g. pyrite), as defined in Table C1 (natural ground sites) or C2 (brownfield sites) BRE Special Digest 1: 2005.

12. RECOMMENDATION IN RELATION TO FOUNDATIONS

From the results of site investigation, the following recommendations are given in respect to ground engineering and foundation design of the underlying soils:

- The site investigation consisted of three drive-in sampler boreholes up to 5.0mbgl aimed to confirm the ground profile below the site and recover samples for laboratory testing. A groundwater seepage was recorded in borehole BH1 at level of 3.5mbgl.
- The investigation found that site is underlain by Made Ground/topsoil with limited thickness over stratum that could be classified as Weald Clay Formation at depth. The investigation revealed

ground conditions appear feasible for the design and construction of conventional spread foundations for the proposed development.

- Foundations should be taken at least 1.0m below the finishing ground level below any overlying made ground or to any greater depth required in respect of the special design considerations given below. Depends on the depth and shape of the proposed footings, spread foundations should be designed using a net allowable bearing pressure of between 104kN/m² and 184kN/m² as advised in the **Table 4** of this Report. This advice is appropriate for the Ground Investigation Report (GIR), in accordance with the current standards (BS EN 1997-1: 2004+A1:2013), the design should confirm that the actual structural loads imposed on the ground would satisfy the ULS and SLS safety factors and provide satisfactory utilisation of the soil bearing capacity.
- The water-soluble soil extract sulphate contents tests indicate that, in accordance with BRE Special Digest 1:2005 Concrete in aggressive ground, the Aggressive Chemical Environment for Concrete (ACEC) Classification is **AC-1** with a Design Sulphate Class for the site of **DS-1**.
- All foundation excavations should be inspected and any made ground, soft, organic or otherwise unsuitable materials removed and replaced with mass concrete.

We trust that the above meets with your requirements, however, if should wish to discuss any of the matters further, please do not hesitate to contact us.

Yours Sincerely,

For AVZGeoEng Ltd

Author:

BSc (Hons) Silvanka Kadieva-Zarkovska
Senior Geotechnical Engineer

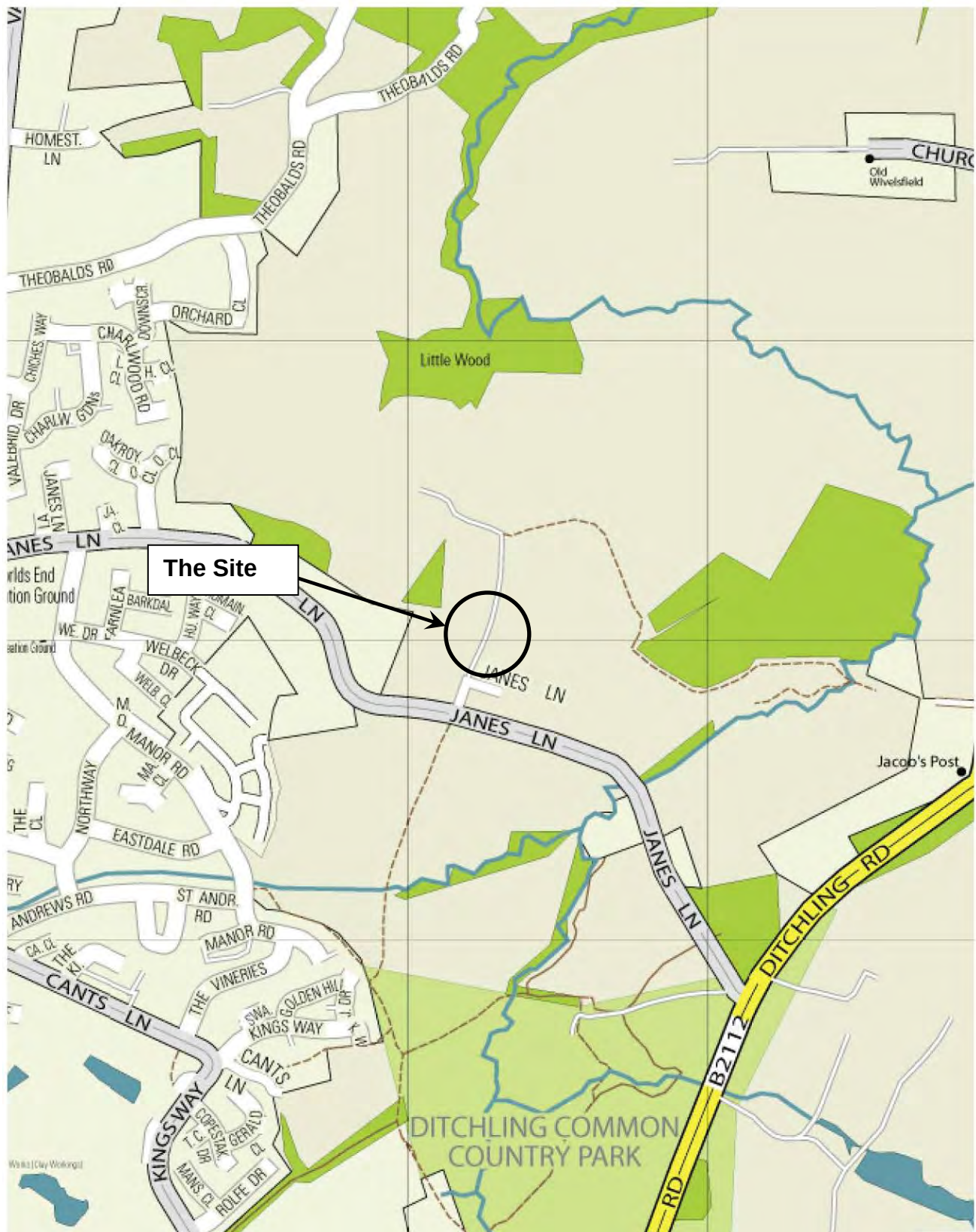


Approved:

Dipl. Ing. Boban Zarkovski CEng MICE



FIGURES



Client: Mrs Carola Godman Irvine

Scale: NTS

Site: Ote Hall Farmshop, Janes Ln, Burgess Hill, RH15 0SR

SITE LOCATION PLAN

Job No: 1689/21

Figure No: 1



LEGEND:

- BH - Borehole
- SKW - Soakaway test
- CBR - CBR Test



Birch Grove
70 Copthorne Road
Felbridge, Surrey
RH19 2NU
United Kingdom

Email: info@avzgeoeng.co.uk
Web: www.avzgeoeng.co.uk
Mob: 07885977732
Tel: 01342457117

Client
Mrs Carola Godman Irvine

Project Title
Ote Hall Farmshop, Janes Ln,
Burgess Hill, RH15 0SR

Drawing Title
Layout Investigation
Points Plan

Drawn	Date	Checked	Date	Approved	Date
SKZ	11/12/2021	BZ	11/12/2021	BZ	11/12/2021
Scale	Orig Size			Dimensions	
NTS				M	
Project No.			Drawing File		
1689/21					
Drawing No.				Rev.	
FIGURE_2					

	Site	SPT N Vs Depth Profile	
	Ote Hall Farmshop, Janes Ln, Burgess Hill, RH15 0SR	Client: Mrs Carola Godman Irvine	Job Number 1689/21

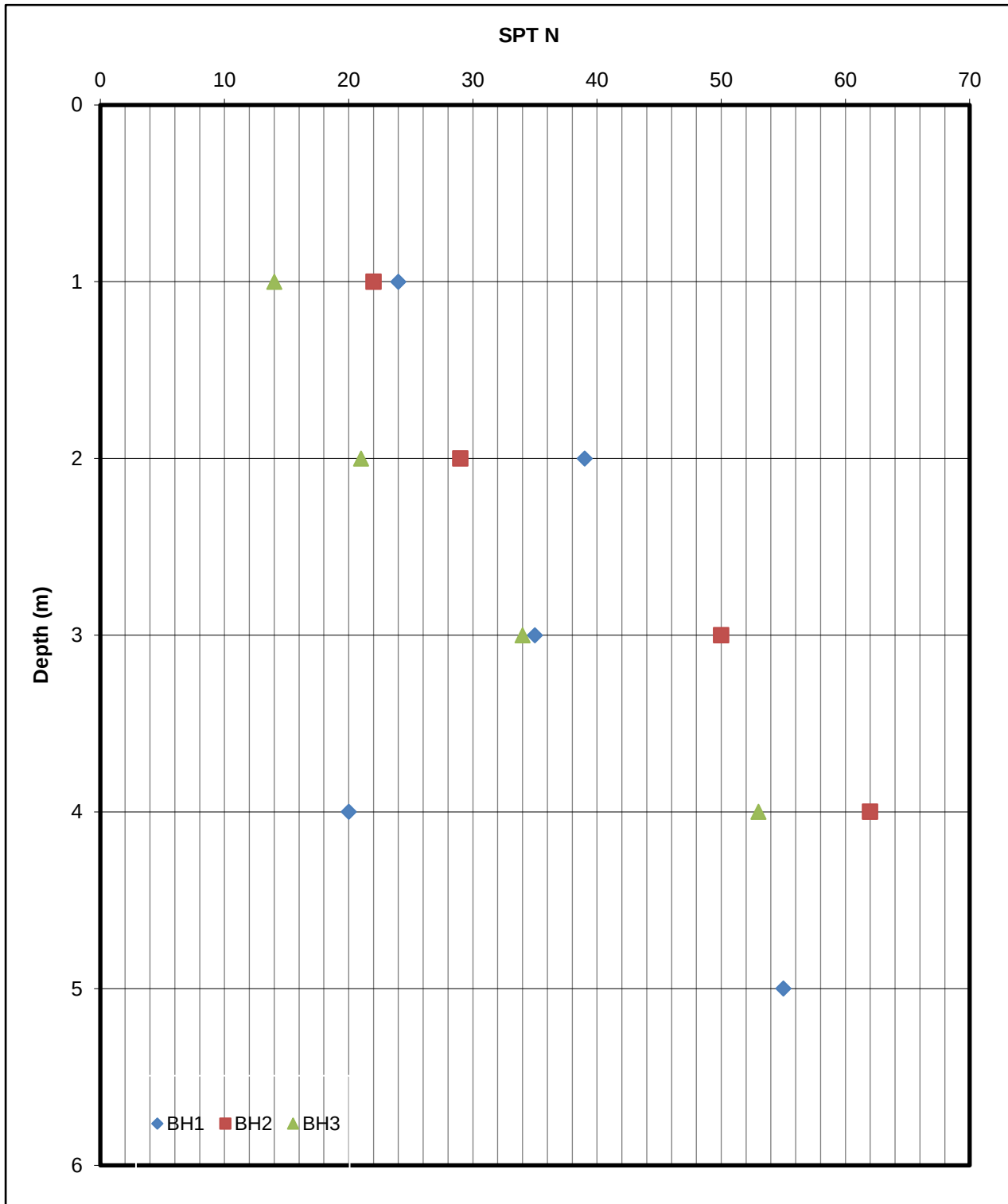


Figure 3

	Site	c_u Vs Depth Profile	
	Ote Hall Farmshop, Janes Ln, Burgess Hill, RH15 0SR	Client: Mrs Carola Godman Irvine	Job Number 1689/21

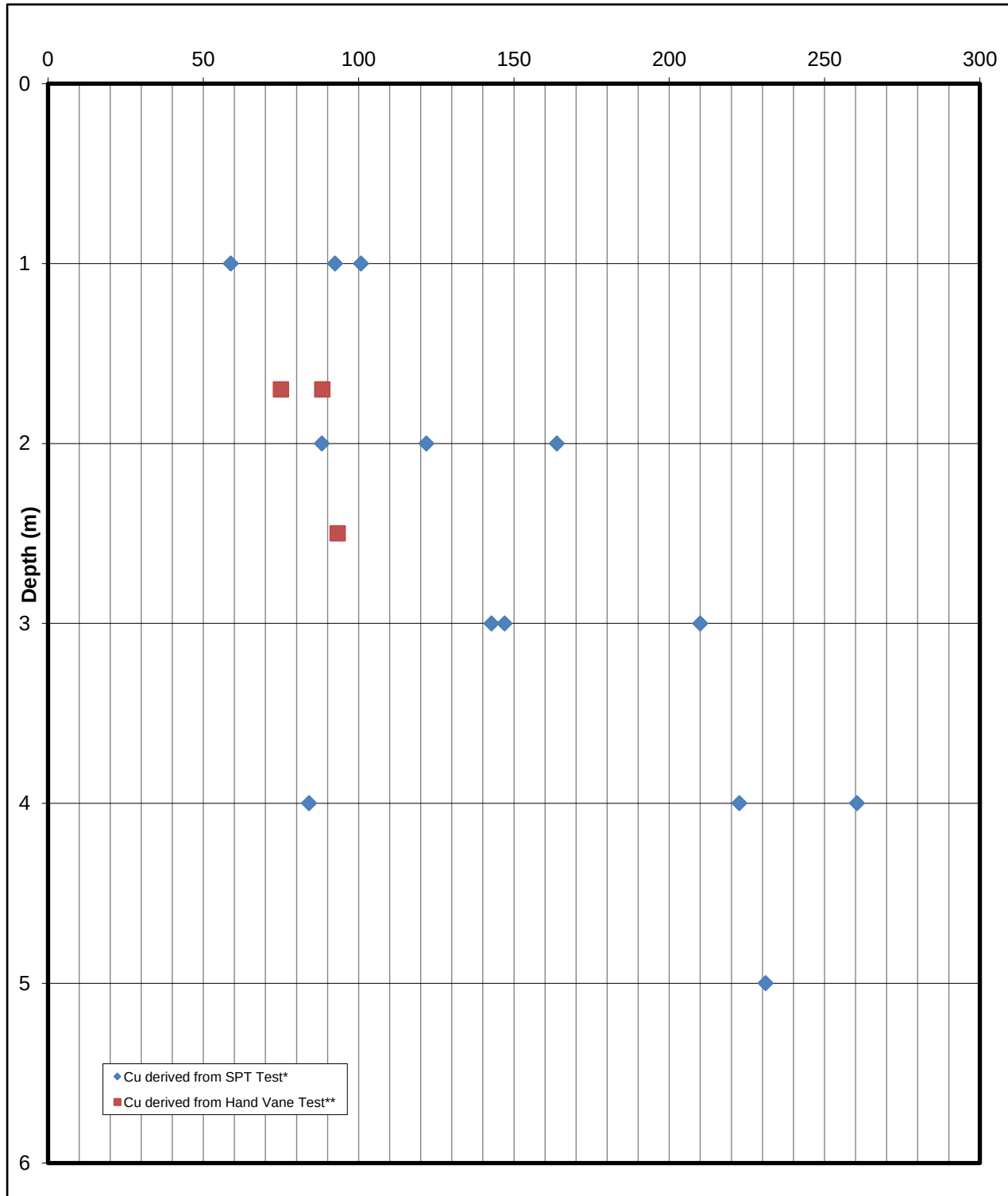


Figure 4

		Factual Report on Ground Investigation		PHOTOGRAPHIC LOG	
Client: Mrs Carola Godman Irvine		Site: Ote Hall Farmshop, Janes Ln, Burgess Hill, RH15 0SR			Job No: 1689/21
Photo No.1	Figure 5				
Description: Terrier Rig Performing Drilling at the location					
Photo No.2	Figure 5				
Description: Core Recovered From BH1					

Figure 5

Photo No.3	Figure 5	
Description: Core Recovered From BH2		

Photo No.4	Figure 5	
Description: Core Recovered From BH3		

Figure 5

Photo No.5	Figure 5	
Description: CBR Test		

Photo No.6	Figure 5	
Description: Core recovered from Soakaway test		

Figure 5

Photo No.7	Figure 5	
Description: Core recovered from Soakaway test		

Figure 5

IN SITU DCP TEST

DCP1

Site:

Ote Hall Farmshop, Janes Ln, Burgess Hill, RH15 0SR

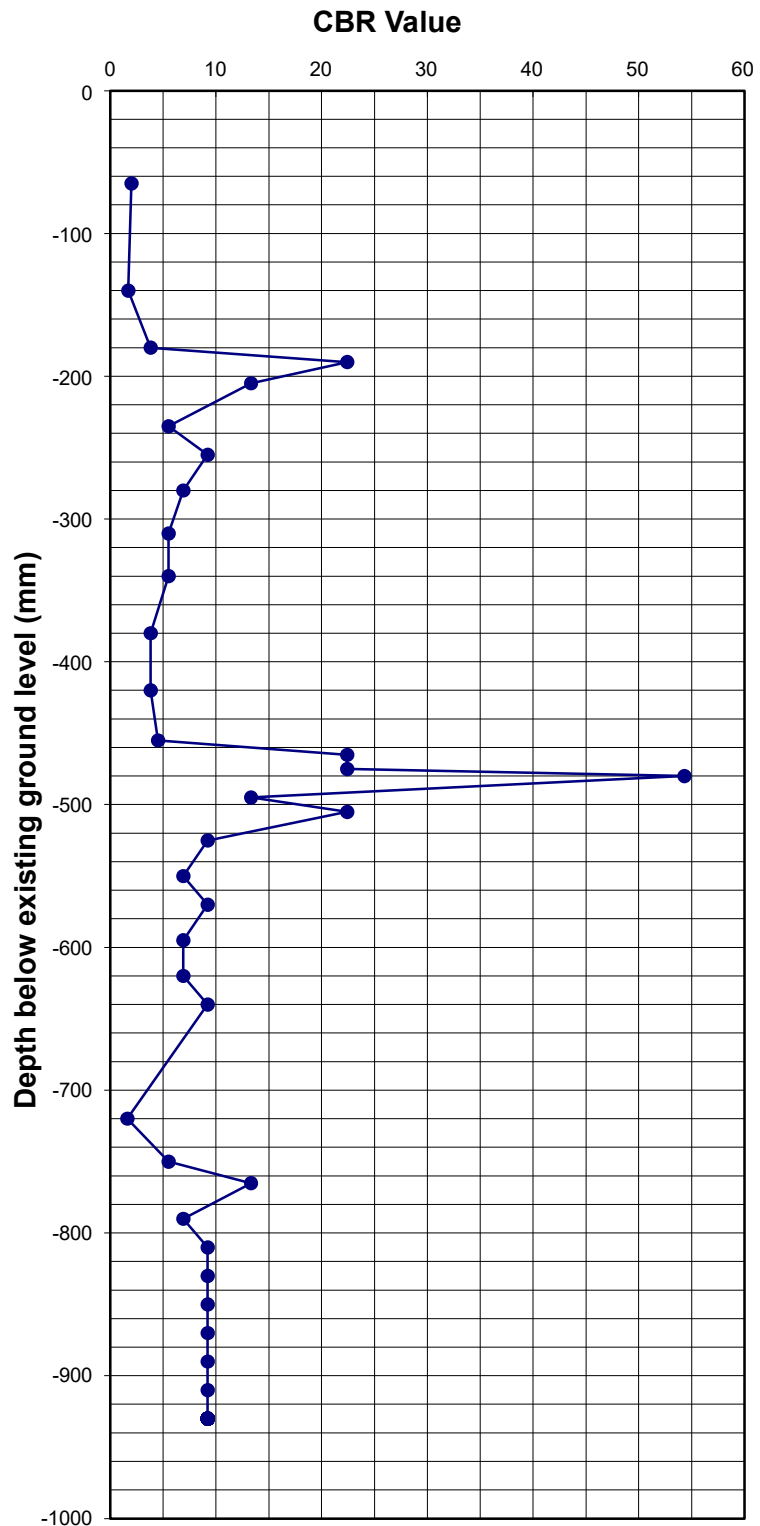
Client:

Mrs Carola Godman Irvine

Depth (mm)

0

Number of blows	Reading (mm)	Pen/ blow (mm)	Depth (mm)	CBR
0	60	0	0	
1	125	65	-65	2
2	200	75	-140	2
3	240	40	-180	4
4	250	10	-190	22
5	265	15	-205	13
6	295	30	-235	6
7	315	20	-255	9
8	340	25	-280	7
9	370	30	-310	6
10	400	30	-340	6
11	440	40	-380	4
12	480	40	-420	4
13	515	35	-455	5
14	525	10	-465	22
15	535	10	-475	22
16	540	5	-480	54
17	555	15	-495	13
18	565	10	-505	22
19	585	20	-525	9
20	610	25	-550	7
21	630	20	-570	9
22	655	25	-595	7
23	680	25	-620	7
24	700	20	-640	9
25	780	80	-720	2
26	810	30	-750	6
27	825	15	-765	13
28	850	25	-790	7
29	870	20	-810	9
30	890	20	-830	9
31	910	20	-850	9
32	930	20	-870	9
33	950	20	-890	9
34	970	20	-910	9
35	990	20	-930	9



Comments:

Job Number: 1689/19

Figure: 6.1

IN SITU DCP TEST

DCP2

Site:

Ote Hall Farmshop, Janes Ln, Burgess Hill, RH15 0SR

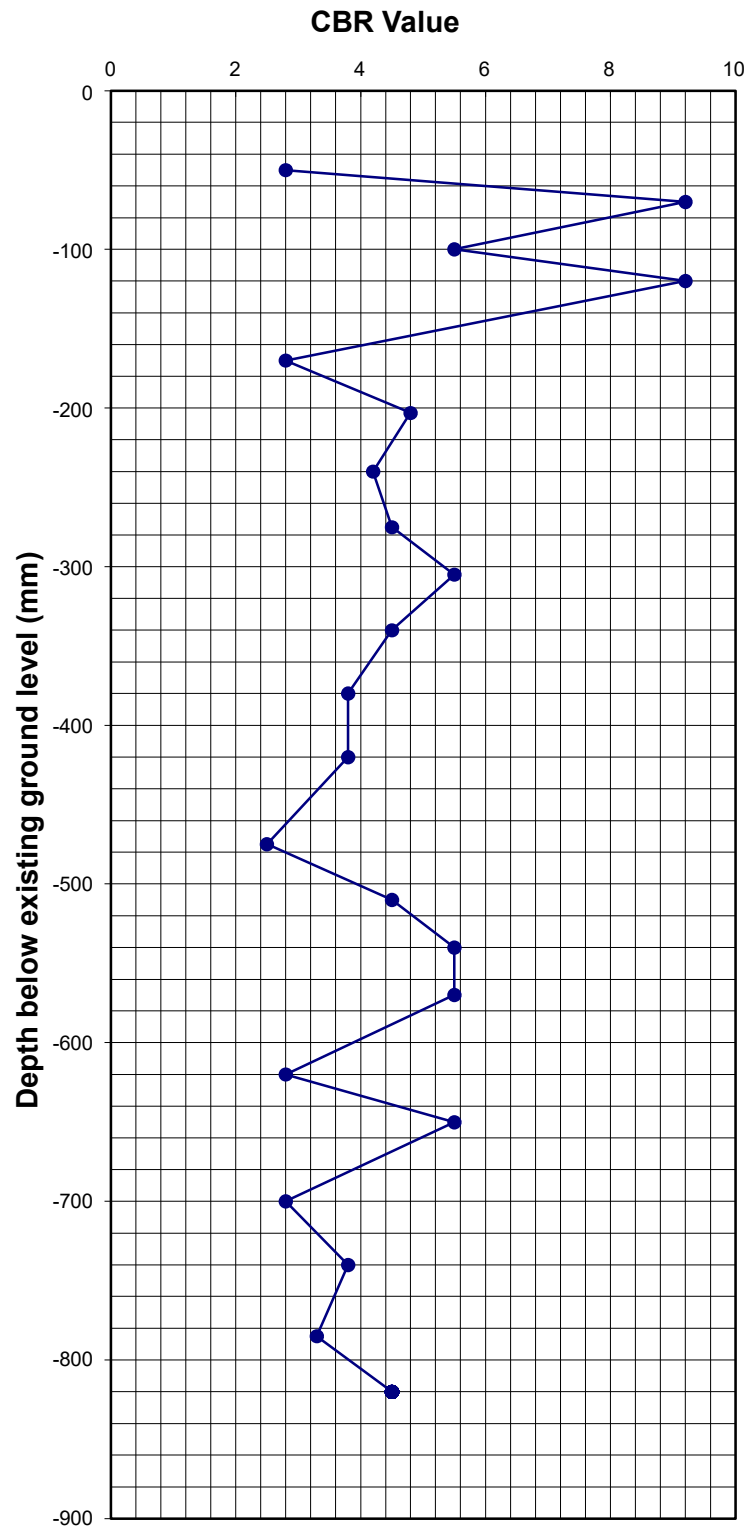
Client:

Mrs Carola Godman Irvine

Depth (mm):

0

Number of blows	Reading (mm)	Pen/ blow (mm)	Depth (mm)	CBR
0	120	0	0	
1	170	50	-50	3
2	190	20	-70	9
3	220	30	-100	6
4	240	20	-120	9
5	290	50	-170	3
6	323	33	-203	5
7	360	37	-240	4
8	395	35	-275	5
9	425	30	-305	6
10	460	35	-340	5
11	500	40	-380	4
12	540	40	-420	4
13	595	55	-475	3
14	630	35	-510	5
15	660	30	-540	6
16	690	30	-570	6
17	740	50	-620	3
18	770	30	-650	6
19	820	50	-700	3
20	860	40	-740	4
21	905	45	-785	3
22	940	35	-820	5



Comments: DCP Test Started from GL, tools sunk between GL and 0.120mbgl

Job Number: 1689/19

Figure: 6.2

IN SITU DCP TEST

DCP3

Site:

Ote Hall Farmshop, Janes Ln, Burgess Hill, RH15 0SR

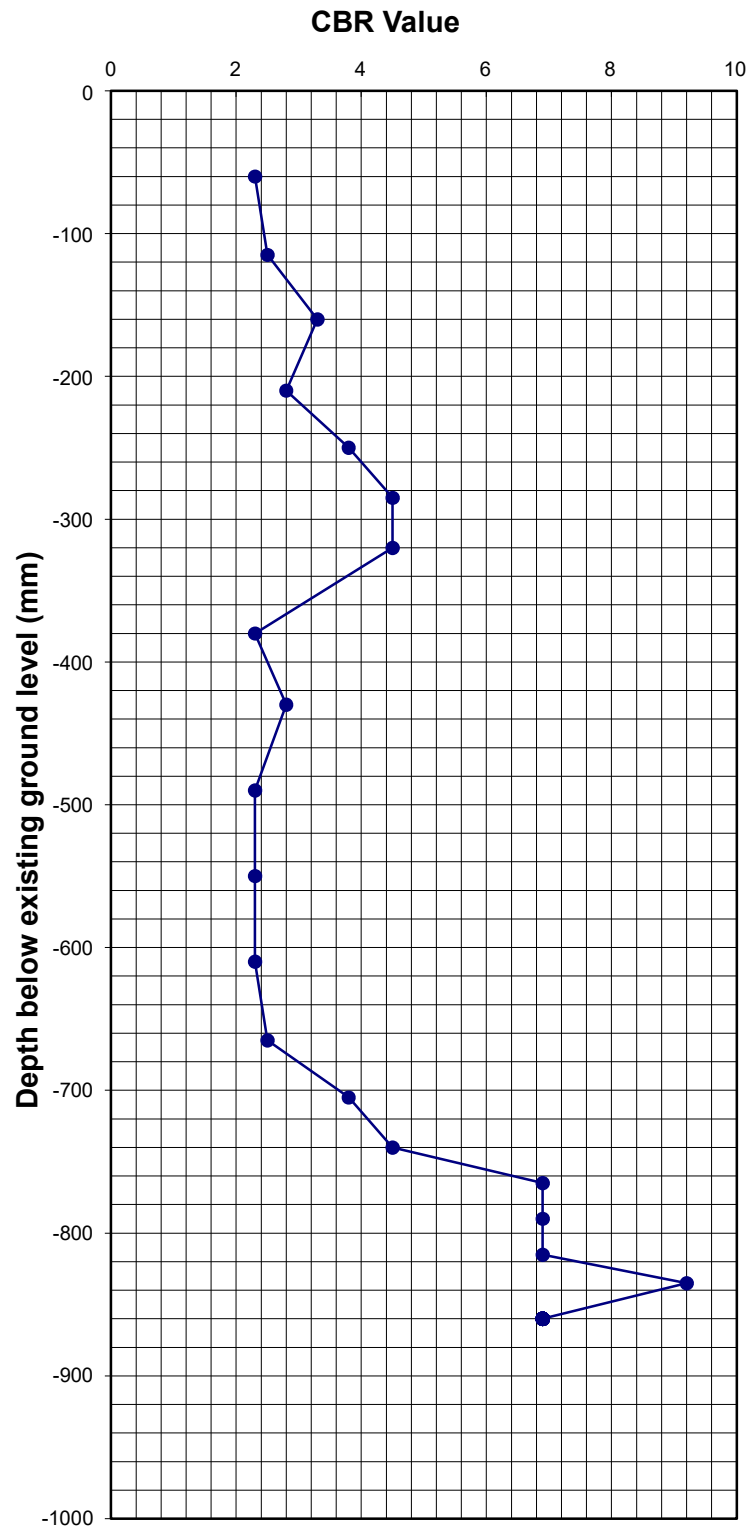
Client:

Mrs Carola Godman Irvine

Depth (mm):

0

Number of blows	Reading (mm)	Pen/ blow (mm)	Depth (mm)	CBR
0	130	0	0	
1	190	60	-60	2
2	245	55	-115	3
3	290	45	-160	3
4	340	50	-210	3
5	380	40	-250	4
6	415	35	-285	5
7	450	35	-320	5
8	510	60	-380	2
9	560	50	-430	3
10	620	60	-490	2
11	680	60	-550	2
12	740	60	-610	2
13	795	55	-665	3
14	835	40	-705	4
15	870	35	-740	5
16	895	25	-765	7
17	920	25	-790	7
18	945	25	-815	7
19	965	20	-835	9
20	990	25	-860	7



Comments: DCP Test Started from GL, tools sunk between GL and 0.130mbgl

Job Number: 1689/19

Figure: 6.3

IN SITU DCP TEST

DCP4

Site:

Ote Hall Farmshop, Janes Ln, Burgess Hill, RH15 0SR

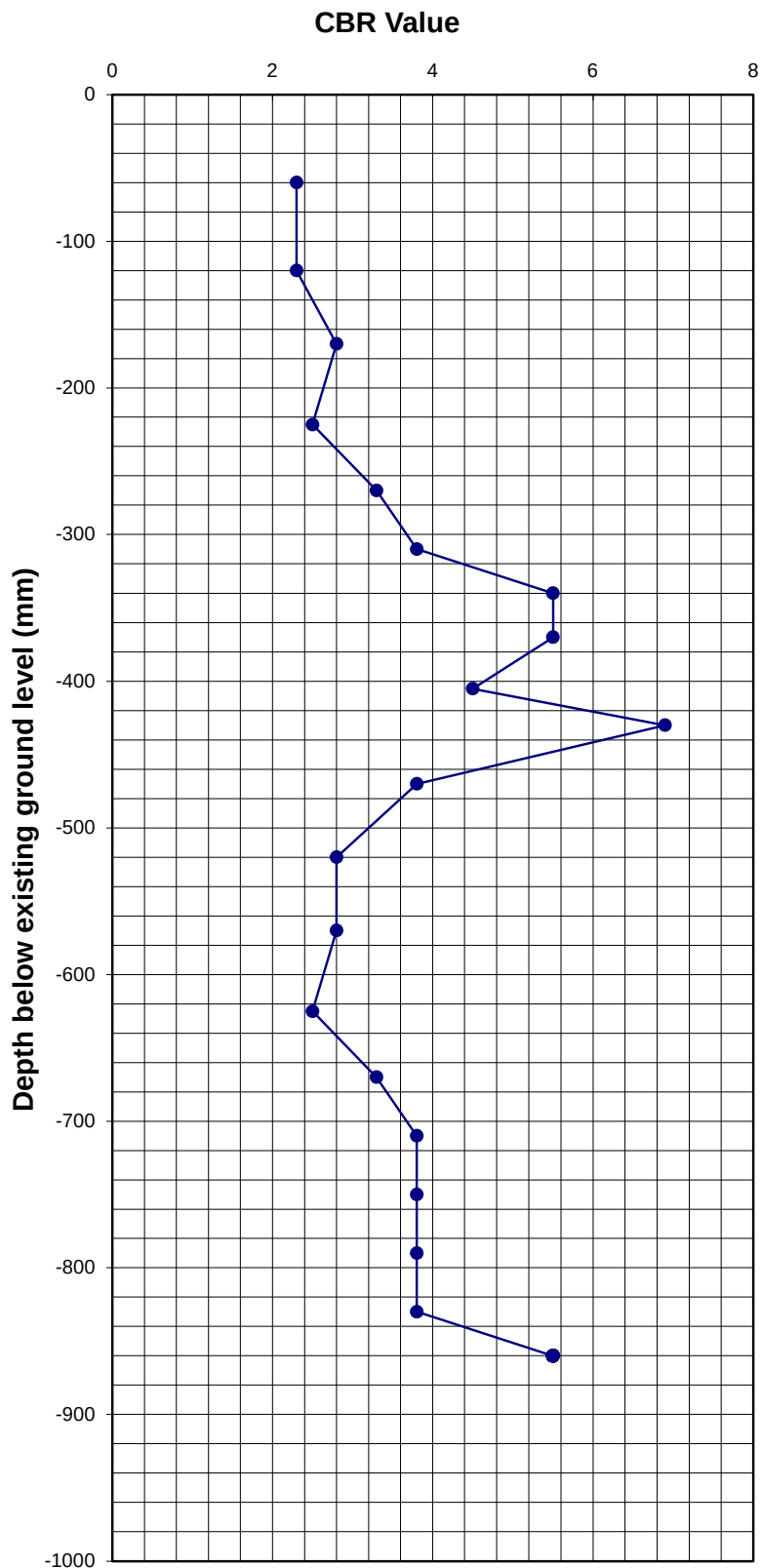
Client:

Mrs Carola Godman Irvine

Depth (mm):

0

Number of blows	Reading (mm)	Pen/ blow (mm)	Depth (mm)	CBR
0	120	0	0	
1	180	60	-60	2
2	240	60	-120	2
3	290	50	-170	3
4	345	55	-225	3
5	390	45	-270	3
6	430	40	-310	4
7	460	30	-340	6
8	490	30	-370	6
9	525	35	-405	5
10	550	25	-430	7
11	590	40	-470	4
12	640	50	-520	3
13	690	50	-570	3
14	745	55	-625	3
15	790	45	-670	3
16	830	40	-710	4
17	870	40	-750	4
18	910	40	-790	4
19	950	40	-830	4
20	980	30	-860	6



Comments: DCP Test Started from GL, tools sunk between GL and 0.120mbgl

Job Number: 1689/19

Figure: 6.4

BOREHOLE SOAKAWAY TEST			
Location	Ote Hall Farmshop, Janes Ln, Burgess Hill,	Test No	SKW2
Client	Mrs Carola Godman	Internal Borehole Diameter (m)	0.13
Job Number	1689/21	Water level at start (mbgl)	0.07
Date	24-Nov-21	Depth to Base (m)	2.00
Operator	BZ		

[illegible]

Vp 75-25 (m3)	0.0087
ap 50 (m2)	0.407
tp 75-25 (s)	NA
Infiltration Rate (m/s)	NA

Value determined from graph



Figure 7.2



Ote Hall Farmshop, Janes Ln,
Burgess Hill, RH15 0SR
Ref: SKZ_1689/21_November 2021

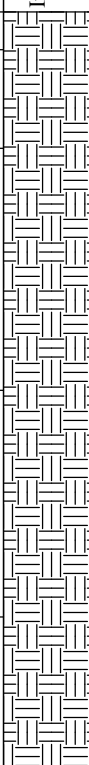
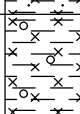
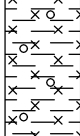
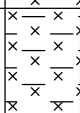
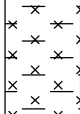
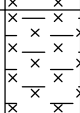
APPENDIX A



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Registered office
70 Cophorne Road • East Grinstead • West Sussex • RH19 2NU • UK
Registered in England No. 7824020
www.avzgeoeng.co.uk

BOREHOLE LOG

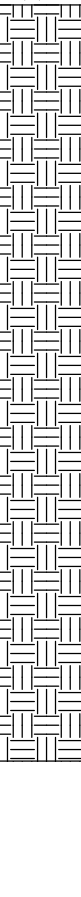
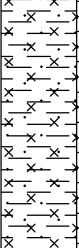
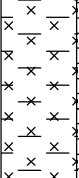
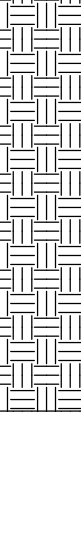
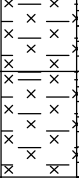
Project Ote Hall Farmshop, Janes Ln, Burgess Hill, RH15 0SR				BOREHOLE No BH1	
Job No SKZ_1689/21	Date 24-11-21 24-11-21	Ground Level (m)	Co-Ordinates (Local)		
Contractor AVZGeoEng Ltd				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA			Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)		
1,00-1,45 1,00	SPT1	N24				0,25	MADE GROUND: Light brown to light grey clayey silt and sand - topsoil.	
						(0,65) 0,90	Light brown to light grey slightly orange with occasional black spots, occasionally sandy SILT and CLAY with sandstone/mudstone fragments. (Weald Clay Formation)	
						(1,60)	Firm to stiff, light brown light grey mottled, occasionally sandy CLAY and SILT with occasional weak mudstone and siltstone. (Weald Clay Formation)	
						2,50		
						(1,50)	Firm to stiff, brown occasionally grey SILT and CLAY and weak mudstone/siltstone. (Weald Clay Formation)	
1,70	HV1	75,75,75				4,00		
2,00-2,45 2,00	SPT2	N39				(1,00) 5,00	Stiff to very stiff, grey occasionally brown and orange mottled, SILT and CLAY and weak mudstone/siltstone. (Weald Clay Formation)	
2,50	HV2	95,90,95						
3,00-3,45 3,00	SPT3	N35						
4,00-4,45 4,00	SPT4	N20						
5,00-5,45 5,00	SPT5	N55						

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Depth	Date	Time	Depth	Casing Dia. mm	Water Depth	From	To	Hours	From	To	
											The location was CAT scanned and inspection pit excavated by hand prior the commencement of the drilling. The borehole was backfilled with arisings on completion. Groundwater seepage at 3.5mbgl, on completion of work 3.8mbgl.
All dimensions in metres Scale 1:50			Client Mrs Carola Godman Irvine			Method/ Plant Used Terrier Drive in Sampling					

BOREHOLE LOG

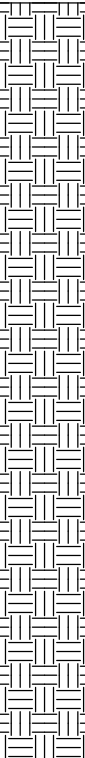
Project Ote Hall Farmshop, Janes Ln, Burgess Hill, RH15 0SR				BOREHOLE No BH2	
Job No SKZ_1689/21	Date 24-11-21 24-11-21	Ground Level (m)	Co-Ordinates (Local)		
Contractor AVZGeoEng Ltd				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA					Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION			
1,00-1,45 1,00 1,70 2,00-2,45 2,00 3,00-3,45 3,00 4,00-4,45 4,00	SPT1	N22			0,25	MADE GROUND: Light brown to light grey clayey silt and sand - topsoil.				
					(1,75)	Firm to stiff, light brown to light grey slightly orange with occasional black spots, occasionally sandy CLAY and SILT with sandstone/mudstone fragments. (Weald Clay Formation)				
	HV1	90,85,90				2,00				
	SPT2	N29					Firm to stiff, brown occasionally grey SILT and CLAY and weak mudstone/siltstone. (Weald Clay Formation)			
						(2,30)				
	SPT3	N50				4,30				
	SPT4	N62				(0,70)	Stiff to very stiff, grey occasionally brown and orange mottled, SILT and CLAY and weak mudstone/siltstone. (Weald Clay Formation)			
					5,00					

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	From	To	Hours	From	To	
											The location was CAT scanned and inspection pit excavated by hand prior the commencement of the drilling. The borehole was backfilled with arisings on completion. Borehole remained dry.
All dimensions in metres Scale 1:50			Client Mrs Carola Godman Irvine			Method/ Plant Used Terrier Drive in Sampling			Logged By B Žarkovski		

BOREHOLE LOG

Project Ote Hall Farmshop, Janes Ln, Burgess Hill, RH15 0SR				BOREHOLE No BH3	
Job No SKZ_1689/21	Date 24-11-21 24-11-21	Ground Level (m)	Co-Ordinates (Local)		
Contractor AVZGeoEng Ltd				Sheet 1 of 1	

SAMPLES & TESTS			Water	Reduced Level	Legend	Depth (Thickness)	STRATA	Geology	Instrument/Backfill
Depth	Type No	Test Result					DESCRIPTION		
1,00-1,45 1,00	SPT1	N14				0,30	MADE GROUND: Light brown to light grey clayey silt and sand - topsoil.		
						(2,30)	Firm, light brown to light grey slightly orange with occasional black spots, occasionally sandy CLAY and SILT with and stone/mudstone fragments. (Weald Clay Formation)		
2,00-2,45 2,00	SPT2	N21				2,60			
3,00-3,45 3,00	SPT3	N34				(2,40)	Firm to stiff, brown occasionally grey SILT and CLAY and weak mudstone/siltstone. (Weald Clay Formation)		
4,00-4,45 4,00	SPT4	N53				5,00			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	From	To	Hours	From	To	
											The location was CAT scanned and inspection pit excavated by hand prior the commencement of the drilling. The borehole was backfilled with arisings on completion. Borehole remained dry.
All dimensions in metres Scale 1:50			Client Mrs Carola Godman Irvine			Method/ Plant Used Terrier Drive in Sampling				Logged By B Žarkovski	



Ote Hall Farmshop, Janes Ln,
Burgess Hill, RH15 0SR
Ref: SKZ_1689/21_November 2021

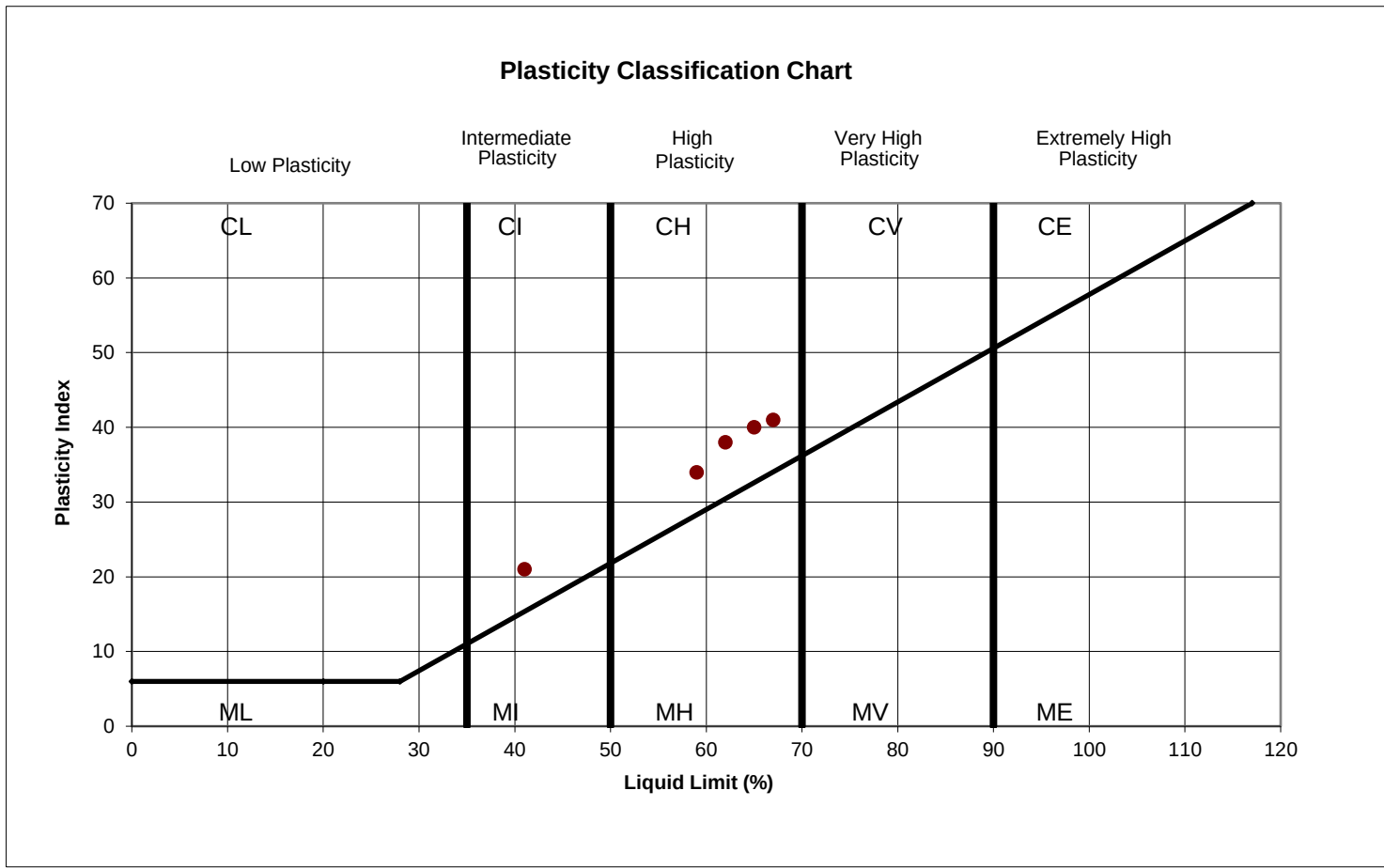
APPENDIX B



AVZGeoEng Ltd
Registered office
70 Cophorne Road • East Grinstead • West Sussex • RH19 2NU • UK
Registered in England No. 7824020
www.avzgeoeng.co.uk

PLASTICITY SHART - PI Vs LL

In accordance with BS5930;2015
Testing in accordance with BS1377-2 (BS EN ISO 17892-12)



Liquid Limit - LL (%)

Sample Identification			BS Test Method #	Preparation Method +	MC (%)	LL(%)	PL (%)	PI (%)	PI' (%)	<425 (%)
Exploratory Position ID	Sample	Depth (m)								
BH1	D	0.9-2.5	3.2/4.3/5.3/5.4	4.2.3	24.6	59	25	34	34	99.3
BH2	D	0.3-2.0	3.2/4.3/5.3/5.4	4.2.3	28.5	67	26	41	41	99.4
BH2	D	2.0-4.3	3.2/4.3/5.3/5.4	4.2.3	25.4	65	25	40	40	100.0
BH3	D	0.3-2.6	3.2/4.3/5.3/5.4	4.2.3	26.3	62	24	38	38	97.9
BH3	D	2.6-5.0	3.2/4.3/5.3/5.4	4.2.3	17.8	41	20	21	21	98.7

# Tested in accordance with the following clauses of BS1377-2;1990. 3.2 - Moisture Content 4.3 - Cone Penetrometer Method 4.4 - One Point Cone Penetrometer Method 4.6 - Three Point Casagrande Method 5.3 - Plastic Limit Method 5.4 - Plasticity Index Key: * = Non standard test, NP = Non Plastic	Tested in accordance with the following clauses of BS1377-2;1990. 4.2.3 - Natural State 4.2.4 - Wet Sieved	
	Client:	Mrs Carola Godman Irvine
	Site:	Ote Hall Farmshop, Janes Ln, Burgess Hill, RH15 0SR

	AVZGeoEng Ltd Registered office Birch Grove 70 Copthorne Road Felbridge Surrey RH19 2NU Registered in England No. 7824020 Email: info@avzgeoeng.co.uk Web: www.avzgeoeng.co.uk Mob: 07885977732 Tel: 01342457117	
	Date:	12/12/2021
Completed by:		SKZ
Project No:		SKZ_ 1689/21
Appendix B		



Unit A2
Windmill Road
Ponswood Industrial Estate
St Leonards on Sea
East Sussex
TN38 9BY
Telephone: (01424) 718618

cs@elab-uk.co.uk
info@elab-uk.co.uk

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 21-37520

Issue: 1

Date of Issue: 13/12/2021

Contact: Silvanka K. Zarkovska

Customer Details: AVZ GeoEng Ltd
Birch Grove
70 Copthorne Road
Felbridge
Surrey RH19 2NU

Quotation No: Q20-01700

Order No: SKZ_1689/21

Customer Reference: Not Supplied

Date Received: 07/12/2021

Date Approved: 13/12/2021

Details: Ote Hall Farmshop, Janes Lane, Burgess Hill, RH15 0SR

Approved by:

Mike Varley, General Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

This report may only be reproduced in full



Sample Summary

Report No.: 21-37520, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
260167	BH1 0.25 - 0.90	24/11/2021	07/12/2021	Silty clayey loam	
260168	BH1 0.90 - 2.50	24/11/2021	07/12/2021	Silty clayey loam	
260169	BH2 0.30 - 2.00	24/11/2021	07/12/2021	Silty clayey loam	



Results Summary

2683

Report No.: 21-37520, issue number 1

ELAB Reference	260167	260168	260169
Customer Reference			
Sample ID			
Sample Type	SOIL	SOIL	SOIL
Sample Location	BH1	BH1	BH2
Sample Depth (m)	0.25 - 0.90	0.90 - 2.50	0.30 - 2.00
Sampling Date	24/11/2021	24/11/2021	24/11/2021

Determinand	Codes	Units	LOD			
Soil sample preparation parameters						
Moisture Content	N	%	0.1	18.2	17.9	19.6
Material removed	N	%	0.1	< 0.1	< 0.1	< 0.1
Description of Inert material removed	N		0	None	None	None
Anions						
Water Soluble Sulphate	M	g/l	0.02	0.05	0.07	0.04
Miscellaneous						
pH	M	pH units	0.1	8.3	7.3	6.3



Method Summary

Report No.: 21-37520, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
pH	M	Air dried sample	10/12/2021	113	Electromeric
Water soluble anions	M	Air dried sample	09/12/2021	172	Ion Chromatography

Report Information

Report No.: 21-37520, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"
LOD	LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination. Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed. ELAB are unable to provide an interpretation or opinion on the content of this report. The results relate only to the sample received. PCB congener results may include any coeluting PCBs Uncertainty of measurement for the determinands tested are available upon request Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

a	No date of sampling supplied
b	No time of sampling supplied (Waters Only)
c	Sample not received in appropriate containers
d	Sample not received in cooled condition
e	The container has been incorrectly filled
f	Sample age exceeds stability time (sampling to receipt)
g	Sample age exceeds stability time (sampling to analysis)

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

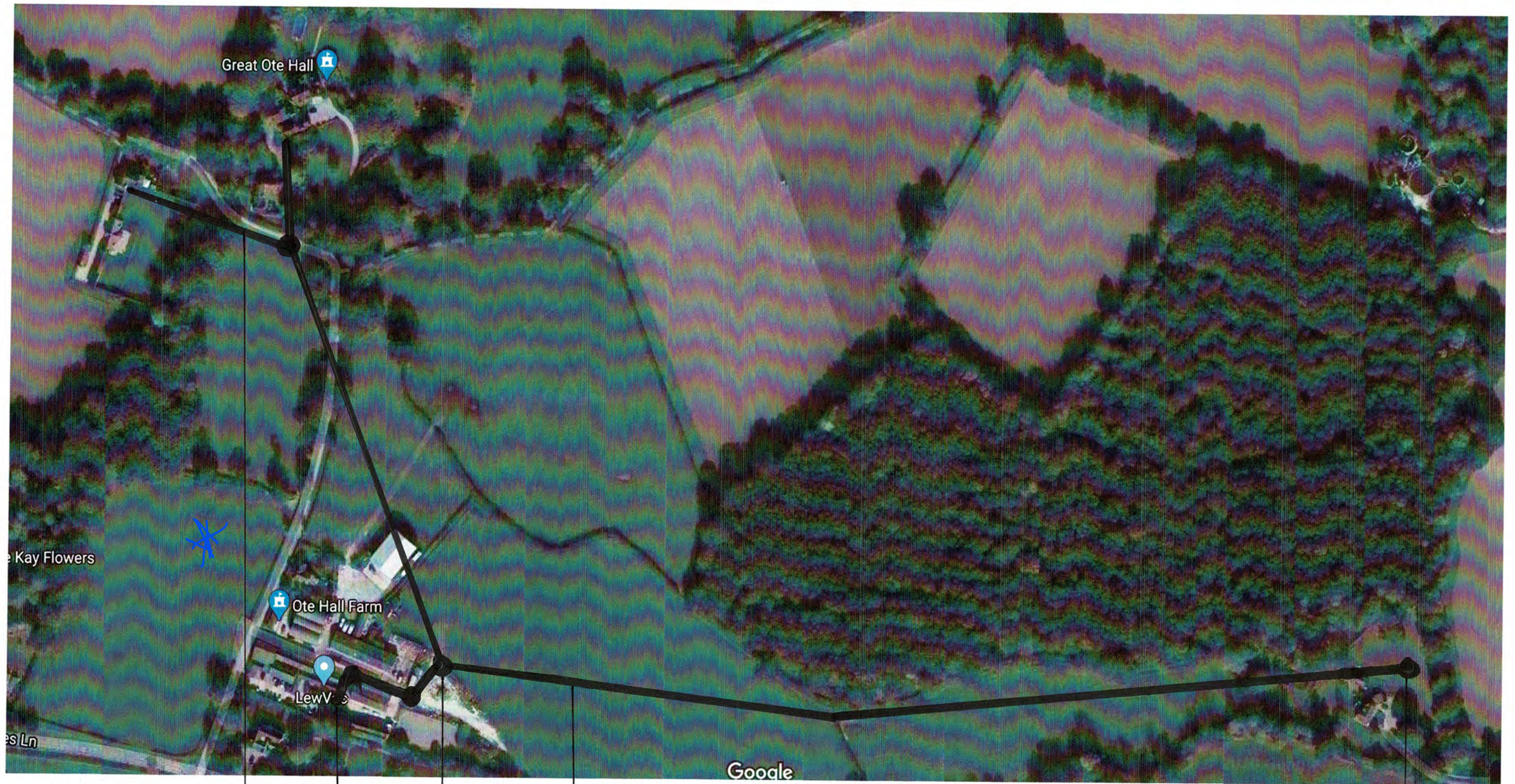
All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage

TPH Classification - HWOL Acronym System

HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
2D	GC-GC - Double coil gas chromatography
#1	EH_Total but with humics mathematically subtracted
#2	EH_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry



GRAVITY
DRAINS
FROM OTE HALL
+ GARDEN COTTIS.

GRAVITY DRAIN
FROM FARM
HOUSE + WTT'S

PUMP STATION

PUMPED RISING MAIN

CONNECTION TO
MAIN SEWER
AT GROVE
HOUSE.

OTE - DRAIN LAYOUT 4/8/20.

**Project****Project Name:** Ote Hall Farm**Project Description:** CCTV Survey, Trace & Plot**Project Status:** Complete**Project Date:** 24/11/2021**Inspection Standard:** MSCC5 Sewers & Drainage GB (SRM5 Scoring)

EYES ON DRAINAGE

SPECIALIST CCTV SURVEYING

**Table of Contents****Project Name**
Ote Hall Farm**Project Number****Project Date**
24/11/2021

Project Information	P-1
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Section Profile	P-5
Section Summary	P-6
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Section: 2; FW4 > FW3 (FW4X)	3
Section: 3; FW3 > FW2 (FW3X)	9
Section: 4; A > FW5 (AX)	11
Section: 5; FW5 > FW2 (FW5X)	13
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Section: 7; FW2 > Pump (FW2X)	17
Disclaimer	19

**Project Information****Project Name**
Ote Hall Farm**Project Number****Project Date**
24/11/2021**Client****Company:** Owens Consulting Engineers Ltd**Site****Department:** Ote Hall Farm**Street:** Janes Lane**Town or City:** Burgess Hill**County:** West Sussex**Post Code:** RH15 0SR**Contractor****Company:** Eyes On Drainage Services Ltd**Contact:** Jay Young**Street:** Merrion House**Town or City:** Partridge Green**County:** West Sussex**Post Code:** RH13 8EH**Phone:** 01403 710971**Mobile:** 07711 184951**Email:** info@eyesondrainage.co.uk

Project Information

Project Name
Ote Hall Farm

Project Number

Project Date
24/11/2021

Project Drawing, Page 'Ote Hall Farm'



Scoring Summary

Project Name
Ote Hall Farm

Project Number

Project Date
24/11/2021

Structural Defects

Grade 3: Best practice suggests consideration should be given to repairs in the medium term.

Grade 4: Best practice suggests consideration should be given to repairs to avoid a potential collapse.

Grade 5: Best practice suggests that this pipe is at risk of collapse at any time. Urgent consideration should be given to repairs to avoid total failure.

Section	PLR	Grade	Description
2	FW4X	3	Multiple defects

Service / Operational Condition

Grade 3: Best practice suggests consideration should be given to maintenance activities in the medium term.

Grade 4: Best practice suggests consideration should be given to maintenance activity to avoid potential blockages.

Grade 5: Best practice suggests that this pipe is at a high risk of backing up or causing flooding.

Section	PLR	Grade	Description
2	FW4X	5	Attached deposits, grease from 9 o'clock to 3 o'clock, 25% cross-sectional area loss, finish
3	FW3X	3	Joint displaced, medium

Information

These scoring summaries are based on the SRM grading from the WRc.



Project Pictures

Project Name
Ote Hall Farm

Project Number

Project Date
24/11/2021



Pumping Chamber



Pumping Chamber

Section Profile

Project Name
Ote Hall Farm

Project Number

Project Date
24/11/2021

Circular, 100 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
1	Pump	FW1	24/11/2021	Janes Lane	Vitrified clay	2.90 m	2.90 m
2	FW4	FW3	24/11/2021	Janes Lane	Polyvinyl chloride	51.00 m	51.00 m

Total: 2 Inspections x Circular 100 mm = 53.90 m Total Length and 53.90 m Inspected Length

Circular, 150 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
3	FW3	FW2	24/11/2021	Janes Lane	Polyvinyl chloride	14.80 m	14.80 m
4	A	FW5	24/11/2021	Janes Lane	Polyvinyl chloride	30.00 m	30.00 m
5	FW5	FW2	24/11/2021	Janes Lane	Polyvinyl chloride	160.00 m	142.40 m
6	FW5	FW2	24/11/2021	Janes Lane	Polyvinyl chloride	160.00 m	29.30 m
7	FW2	Pump	24/11/2021	Janes Lane	Polyvinyl chloride	0.60 m	0.60 m

Total: 5 Inspections x Circular 150 mm = 365.40 m Total Length and 217.10 m Inspected Length

Total: 7 Inspections = 419.30 m Total Length and 271.00 m Inspected Length

Section Summary

Project Name Ote Hall Farm	Project Number	Project Date 24/11/2021
--------------------------------------	-----------------------	-----------------------------------

Number of sections	7
Total length of sections	419.30 m
Total length of inspected sections	271.00 m
Total length of abandoned inspections	148.30 m
Number of abandoned inspections	2
Number of section inspection photos	39
Number of section inspection videos	7
Number of section inspection scans	0
Number of section inclination measurements	0

PLR:	Pump X	Upstream Node:	Pump
Inspection Direction:	Upstream	Downstream Node:	FW1
Inspected Length:	2.90 m	Dia/Height:	100 mm
Total Length:	2.90 m	Material:	Vitrified clay

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: FW1
2	0.00	WL	Water level, 10% of the vertical dimension
3	2.90	SC	Pipe size changes, new size(s), 50mm high
4	2.90	MCP	Pipe material changes to polypropylene at this point
5	2.90	MHF	Finish node, manhole, reference: Pump

PLR:	FW4X	Upstream Node:	FW4
Inspection Direction:	Downstream	Downstream Node:	FW3
Inspected Length:	51.00 m	Dia/Height:	100 mm
Total Length:	51.00 m	Material:	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: FW4
2	0.00	WL	Water level, 0% of the vertical dimension
3	1.70	WL	Water level, 10% of the vertical dimension
4	1.80	WL	Water level, 20% of the vertical dimension
5	1.90	WL	Water level, 30% of the vertical dimension
6	1.90	DEG	Attached deposits, grease from 9 o'clock to 3 o'clock, 20% cross-sectional area loss, start
7	2.00	DEG	Attached deposits, grease from 9 o'clock to 3 o'clock, 25% cross-sectional area loss, change
8	2.20	CUW	Loss of vision, camera under water
9	2.20	WL	Water level, 20% of the vertical dimension
10	2.20	DEG	Attached deposits, grease from 9 o'clock to 3 o'clock, 25% cross-sectional area loss, finish
11	2.30	WL	Water level, 10% of the vertical dimension

Section Summary

Project Name Ote Hall Farm	Project Number	Project Date 24/11/2021
--------------------------------------	-----------------------	-----------------------------------

No.	m+	Code	Observation
12	2.50	WL	Water level, 0% of the vertical dimension
13	3.60	MCVC	Pipe material changes to vitrified clay at this point
14	5.10	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock
15	14.00	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock
16	18.50	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock
17	39.90	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock
18	40.60	MCPF	Pipe material changes to pitch fibre at this point
19	42.80	MCVC	Pipe material changes to vitrified clay at this point
20	44.40	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock
21	46.70	RFJ	Roots, fine at joint
22	48.20	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock
23	48.80	FCJ	Fracture, circumferential at joint from 11 o'clock to 6 o'clock
24	49.40	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock
25	50.00	WL	Water level, 10% of the vertical dimension
26	51.00	MHF	Finish node, manhole, reference: FW3

PLR:	FW3X	Upstream Node:	FW3
Inspection Direction:	Downstream	Downstream Node:	FW2
Inspected Length:	14.80 m	Dia/Height:	150 mm
Total Length:	14.80 m	Material:	Polyvinyl chloride

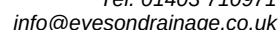
No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: FW3
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.30	JDM	Joint displaced, medium
4	0.30	RFJ	Roots, fine at joint
5	0.30	LR	Line deviates right
6	12.60	LD	Line deviates down
7	14.80	MHF	Finish node, manhole, reference: FW2

PLR:	AX	Upstream Node:	A
Inspection Direction:	Upstream	Downstream Node:	FW5
Inspected Length:	30.00 m	Dia/Height:	150 mm
Total Length:	30.00 m	Material:	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: FW5
2	0.00	WL	Water level, 5% of the vertical dimension
3	30.00	MHF	Finish node, manhole, reference: A

PLR:	FW5X	Upstream Node:	FW5
Inspection Direction:	Downstream	Downstream Node:	FW2
Inspected Length:	142.40 m	Dia/Height:	150 mm
Total Length:	160.00 m	Material:	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: FW5
2	0.00	WL	Water level, 0% of the vertical dimension





Section Inspection - 24/11/2021 - Pump X

Item No. 1	Insp. No. 1	Date 24/11/21	Time 9:10	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned No	PLR PUMP X
Operator JY		Vehicle BV21 CDX		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Burgess Hill	Inspection Direction:	Upstream	Upstream Node:	PUMP
Road:	Janes Lane	Inspected Length:	2.90 m	Upstream Pipe Depth:	
Location:	Gardens (private)	Total Length:	2.90 m	Downstream Node:	FW1
Surface Type:	Grass	Joint Length:		Downstream Pipe Depth:	
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection	Lining Material:	No Lining		

Comments:

Recommendations:

Scale: 1:50 Position [m] Code Observation Grade

Depth: m

FW1



0.00

MH

Start node, manhole, reference: FW1

0.00

WL

Water level, 10% of the vertical dimension: Live

2.90

SC

Pipe size changes, new size(s), 50mm high

2.90

MCP

Pipe material changes to polypropylene at this point

2.90

MHF

Finish node, manhole, reference: Pump: To pump outlet

Depth: m

Construction Features

Structural Defects

Miscellaneous Features

Service & Operational Observations

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



Section Pictures - 24/11/2021 - Pump X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
1	Upstream	PUMP X		



1, 00:00:00, 0.00 m
Start node, manhole, reference: FW1



2, 00:00:28, 0.00 m
Water level, 10% of the vertical dimension, Live



3, 00:00:46, 2.90 m
Pipe size changes, new size(s), 50mm high



4, 00:01:08, 2.90 m
Finish node, manhole, reference: Pump, To pump outlet



Section Inspection - 24/11/2021 - FW4X

Item No. 2	Insp. No. 1	Date 24/11/21	Time 9:49	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned No	PLR FW4X
Operator JY		Vehicle BV21 CDX		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Burgess Hill	Inspection Direction:	Downstream	Upstream Node:	FW4
Road:	Janes Lane	Inspected Length:	51.00 m	Upstream Pipe Depth:	
Location:	Other walkway	Total Length:	51.00 m	Downstream Node:	FW3
Surface Type:	Ballast	Joint Length:		Downstream Pipe Depth:	
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection	Lining Material:	No Lining		

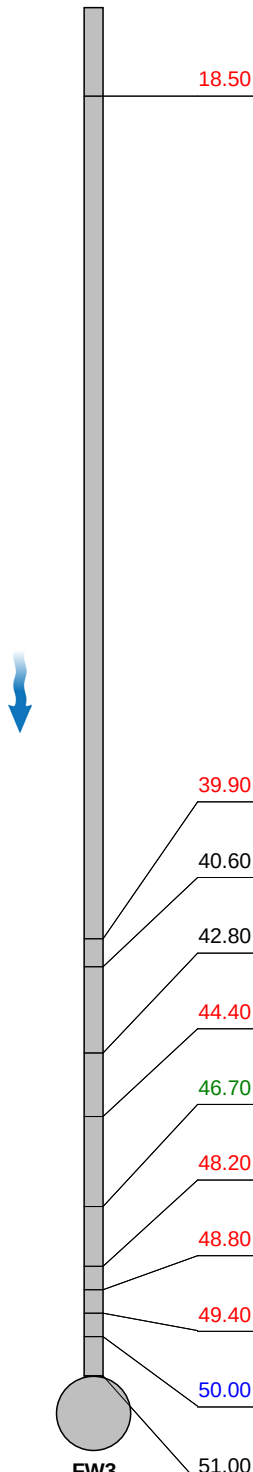
Comments:

Recommendations:

Scale: 1:192	Position [m]	Code	Observation	Grade
Depth: m FW4				
0.00		MH	Start node, manhole, reference: FW4	
0.00		WL	Water level, 0% of the vertical dimension	
1.70		WL	Water level, 10% of the vertical dimension	
1.80		WL	Water level, 20% of the vertical dimension	
1.90		WL	Water level, 30% of the vertical dimension	
1.90	S01	DEG	Attached deposits, grease from 9 o'clock to 3 o'clock, 20% cross-sectional area loss, start	
2.00	C01	DEG	Attached deposits, grease from 9 o'clock to 3 o'clock, 25% cross-sectional area loss, change	
2.20		CUW	Loss of vision, camera under water	
2.20		WL	Water level, 20% of the vertical dimension	
2.20	F01	DEG	Attached deposits, grease from 9 o'clock to 3 o'clock, 25% cross-sectional area loss, finish	5
2.30		WL	Water level, 10% of the vertical dimension	
2.50		WL	Water level, 0% of the vertical dimension	
3.60		MCVC	Pipe material changes to vitrified clay at this point	
5.10		FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock	3 / 2
14.00		FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock	3 / 2

Section Inspection - 24/11/2021 - FW4X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
2	1	24/11/21	9:49	Not Specified	No Rain Or Snow	No	FW4X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
JY		BV21 CDX		Not Specified	Not Specified	Private Drain	Not Specified

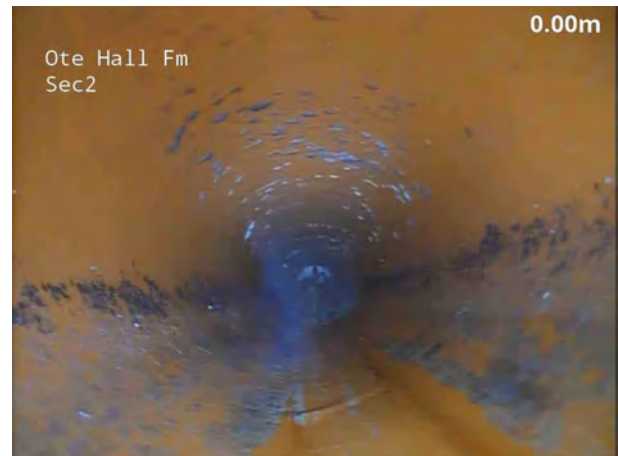
Scale:	1:192	Position [m]	Code	Observation	Grade				
	18.50	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock	3 / 2					
	39.90	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock	3 / 2					
	40.60	MCPF	Pipe material changes to pitch fibre at this point						
	42.80	MCVC	Pipe material changes to vitrified clay at this point						
	44.40	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock	3 / 2					
	46.70	RFJ	Roots, fine at joint	2					
	48.20	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock	3 / 2					
	48.80	FCJ	Fracture, circumferential at joint from 11 o'clock to 6 o'clock	3 / 2					
	49.40	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock	3 / 2					
	50.00	WL	Water level, 10% of the vertical dimension						
FW3 Depth: m	51.00	MHF	Finish node, manhole, reference: FW3: Not located						
Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
8	40.0	0.0	320.0	3.0	10	10.0	0.0	19.0	5.0

Section Pictures - 24/11/2021 - FW4X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
2	Downstream	FW4X		



1, 00:00:00, 0.00 m
Start node, manhole, reference: FW4



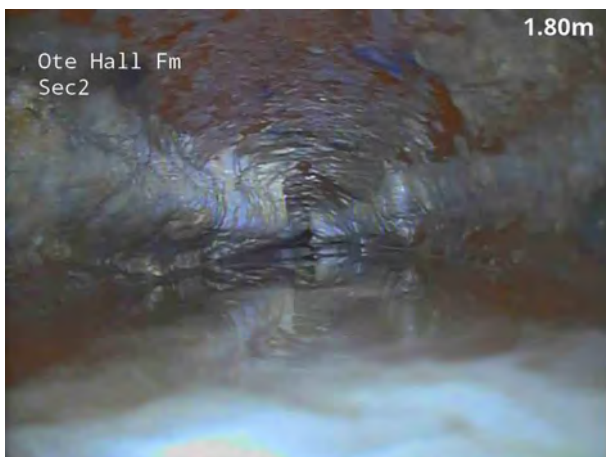
2, 00:00:08, 0.00 m
Water level, 0% of the vertical dimension



3, 00:00:18, 1.70 m
Water level, 10% of the vertical dimension



4, 00:00:20, 1.80 m
Water level, 20% of the vertical dimension



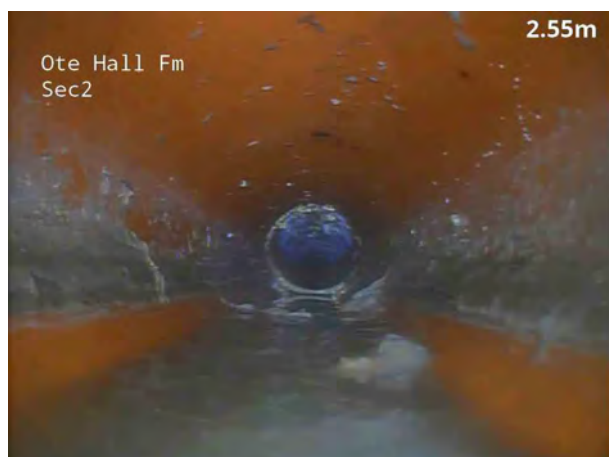
5, 00:00:24, 1.90 m
Attached deposits, grease from 9 o'clock to 3 o'clock, 20% cross-sectional area loss, start



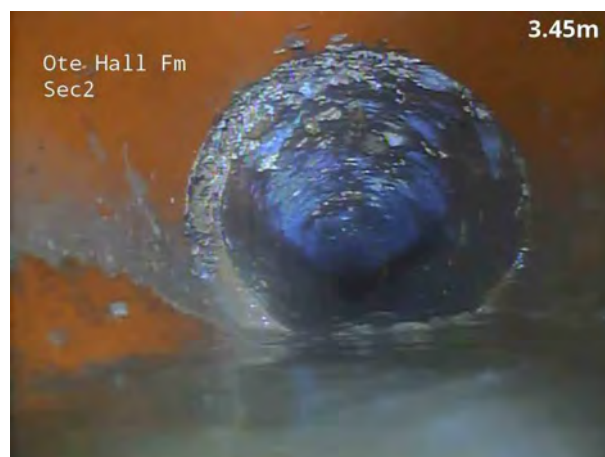
6, 00:00:29, 2.00 m
Attached deposits, grease from 9 o'clock to 3 o'clock, 25% cross-sectional area loss, change

Section Pictures - 24/11/2021 - FW4X

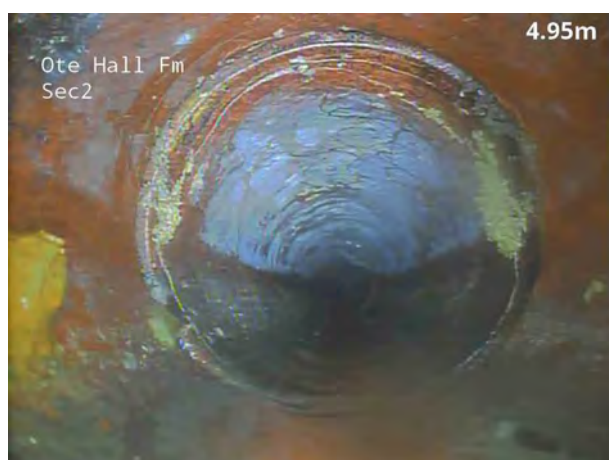
Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
2	Downstream	FW4X		



7, 00:06:15, 2.50 m
Water level, 0% of the vertical dimension



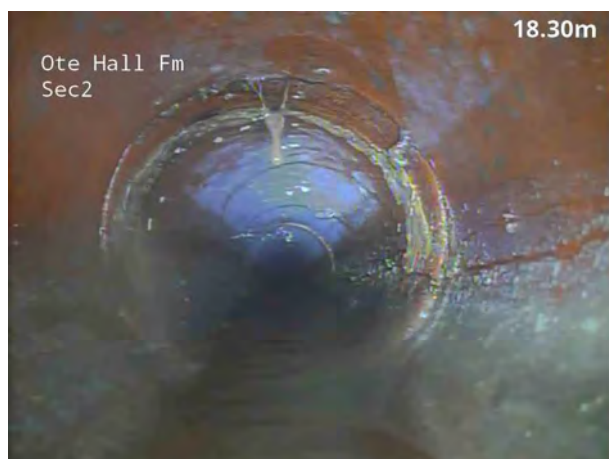
8, 00:06:17, 3.60 m
Pipe material changes to vitrified clay at this point



9, 00:06:06, 5.10 m
Fracture, circumferential at joint from 12 o'clock to 12 o'clock



10, 00:05:23, 14.00 m
Fracture, circumferential at joint from 12 o'clock to 12 o'clock



11, 00:05:04, 18.50 m
Fracture, circumferential at joint from 12 o'clock to 12 o'clock

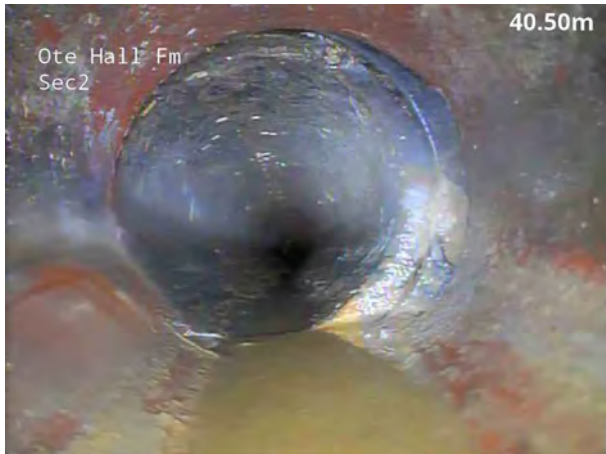


12, 00:03:18, 39.90 m
Fracture, circumferential at joint from 12 o'clock to 12 o'clock

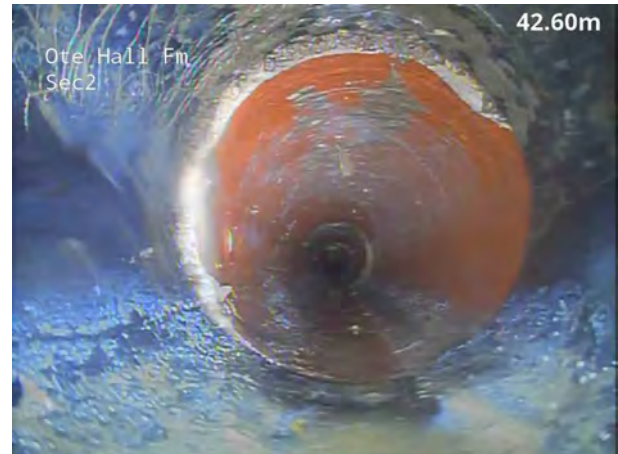


Section Pictures - 24/11/2021 - FW4X

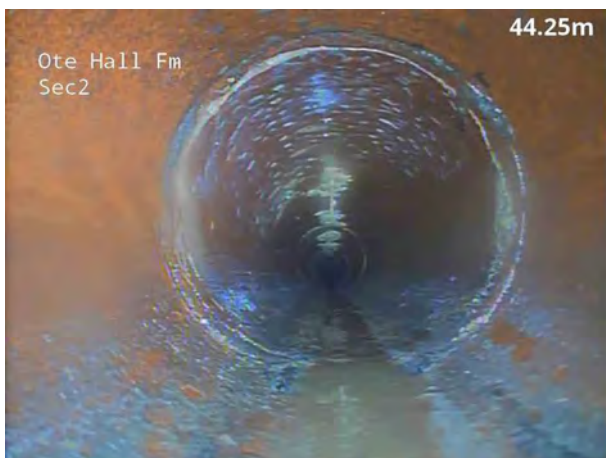
Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
2	Downstream	FW4X		



13, 00:03:11, 40.60 m
Pipe material changes to pitch fibre at this point



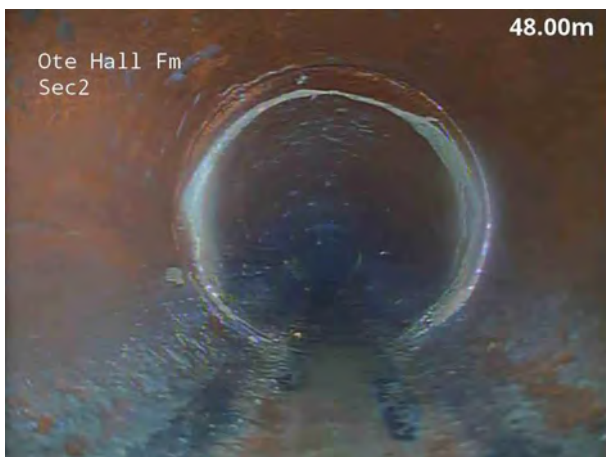
14, 00:02:55, 42.80 m
Pipe material changes to vitrified clay at this point



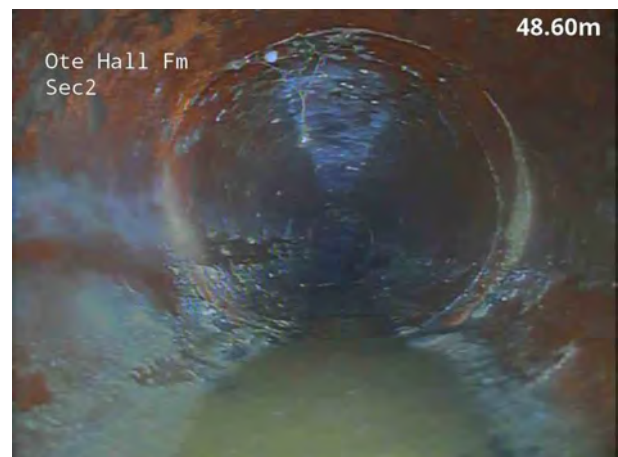
15, 00:02:38, 44.40 m
Fracture, circumferential at joint from 12 o'clock to 12 o'clock



16, 00:02:21, 46.70 m
Roots, fine at joint



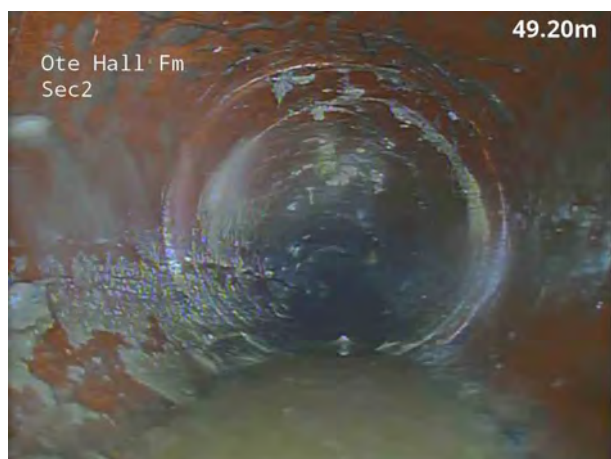
17, 00:02:12, 48.20 m
Fracture, circumferential at joint from 12 o'clock to 12 o'clock



18, 00:02:05, 48.80 m
Fracture, circumferential at joint from 11 o'clock to 6 o'clock

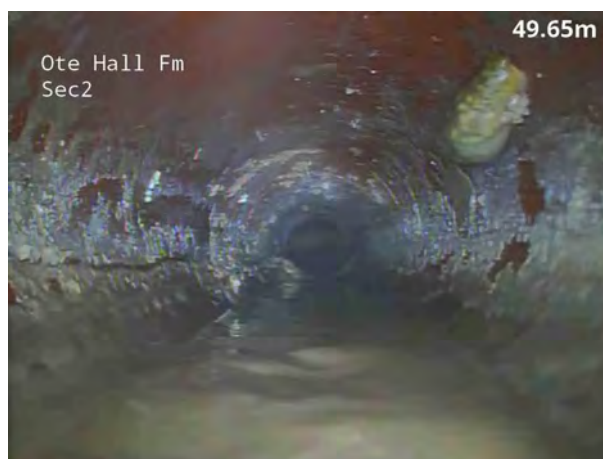
Section Pictures - 24/11/2021 - FW4X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
2	Downstream	FW4X		



19, 00:01:57, 49.40 m

Fracture, circumferential at joint from 12 o'clock to 12 o'clock



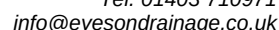
20, 00:01:53, 50.00 m

Water level, 10% of the vertical dimension



21, 00:01:47, 51.00 m

Finish node, manhole, reference: FW3, Not located



Section Pictures - 24/11/2021 - FW3X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
3	Downstream	FW3X		



1, 00:00:01, 0.00 m
Water level, 0% of the vertical dimension



2, 00:00:11, 0.30 m
Roots, fine at joint



3, 00:00:16, 0.30 m
Line deviates right



4, 00:00:45, 12.60 m
Line deviates down, At tumbler



5, 00:00:45, 12.60 m
Line deviates down, At tumbler



6, 00:01:09, 14.80 m
Finish node, manhole, reference: FW2



Section Inspection - 24/11/2021 - AX

Item No. 4	Insp. No. 1	Date 24/11/21	Time 10:13	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned No	PLR AX
Operator JY		Vehicle BV21 CDX		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Burgess Hill	Inspection Direction:	Upstream	Upstream Node:	A
Road:	Janes Lane	Inspected Length:	30.00 m	Upstream Pipe Depth:	
Location:	Fields, farmland etc	Total Length:	30.00 m	Downstream Node:	FW5
Surface Type:	Grass	Joint Length:		Downstream Pipe Depth:	
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm		
Flow Control:	No flow control	Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection	Lining Material:	No Lining		

Comments:

Recommendations:

Scale: 1:259 Position [m] Code Observation Grade

Depth: m

FW5



0.00

MH

Start node, manhole, reference: FW5

0.00

WL

Water level, 5% of the vertical dimension: Live

30.00

MHF

Finish node, manhole, reference: A

A

Depth: m

Construction Features

Structural Defects

Miscellaneous Features

Service & Operational Observations

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



Section Pictures - 24/11/2021 - AX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
4	Upstream	AX		



1, 00:00:02, 0.00 m
Water level, 5% of the vertical dimension, Live

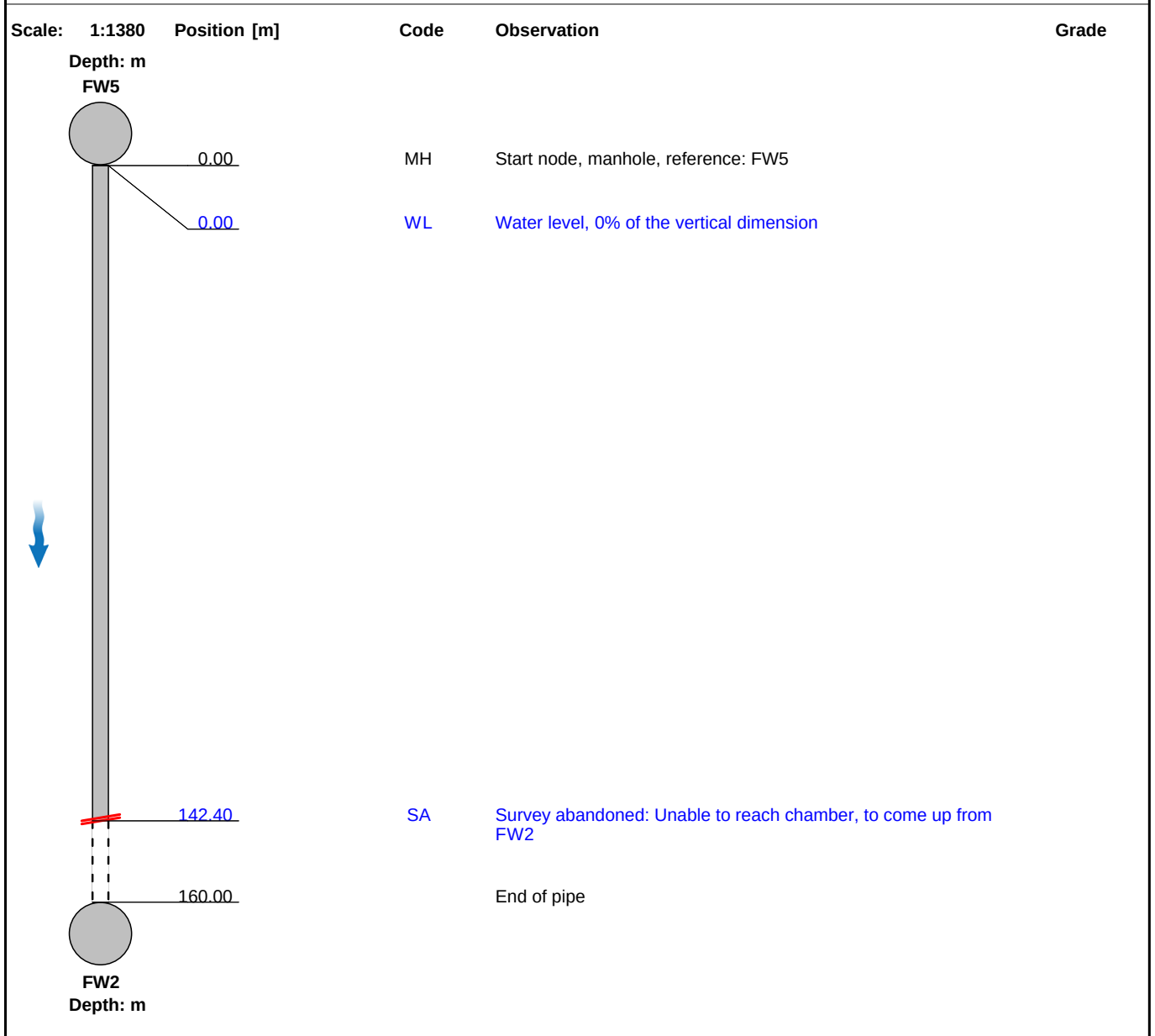


Section Inspection - 24/11/2021 - FW5X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
5	1	24/11/21	10:38	Not Specified	No Rain Or Snow	No	FW5X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
JY		BV21 CDX		Not Specified	Not Specified	Private Drain	Not Specified

Town or Village:	Burgess Hill	Inspection Direction:	Downstream	Upstream Node:	FW5
Road:	Janes Lane	Inspected Length:	142.40 m	Upstream Pipe Depth:	
Location:	Fields, farmland etc	Total Length:	160.00 m	Downstream Node:	FW2
Surface Type:	Grass	Joint Length:		Downstream Pipe Depth:	
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm		
Flow Control:	No flow control	Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection	Lining Material:	No Lining		

Comments:
Recommendations:



Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



Section Pictures - 24/11/2021 - FW5X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
5	Downstream	FW5X		



1, 00:00:01, 0.00 m
Water level, 0% of the vertical dimension

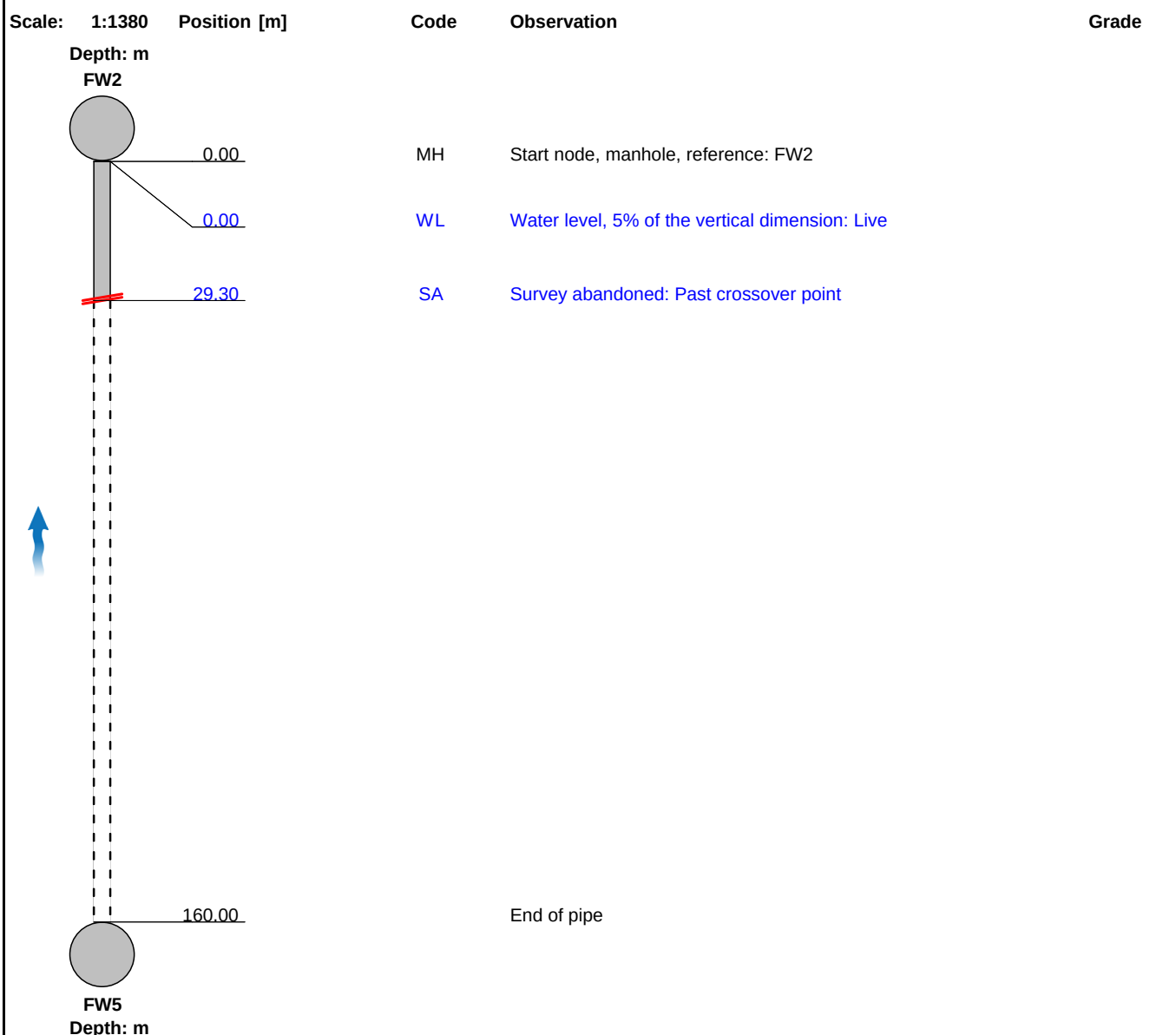


2, 00:05:11, 142.40 m
Survey abandoned, Unable to reach chamber, to come up from FW2

Section Inspection - 24/11/2021 - FW5X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
6	1	24/11/21	11:05	Not Specified	No Rain Or Snow	No	FW5X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
JY		BV21 CDX		Not Specified	Not Specified	Private Drain	Not Specified

Town or Village:	Burgess Hill	Inspection Direction:	Upstream	Upstream Node:	FW5
Road:	Janes Lane	Inspected Length:	29.30 m	Upstream Pipe Depth:	
Location:	Other walkway	Total Length:	160.00 m	Downstream Node:	FW2
Surface Type:	Ballast	Joint Length:		Downstream Pipe Depth:	
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm		
Flow Control:	No flow control	Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection	Lining Material:	No Lining		

Comments:
Recommendations:

Construction Features
Structural Defects
Miscellaneous Features
Service & Operational Observations

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

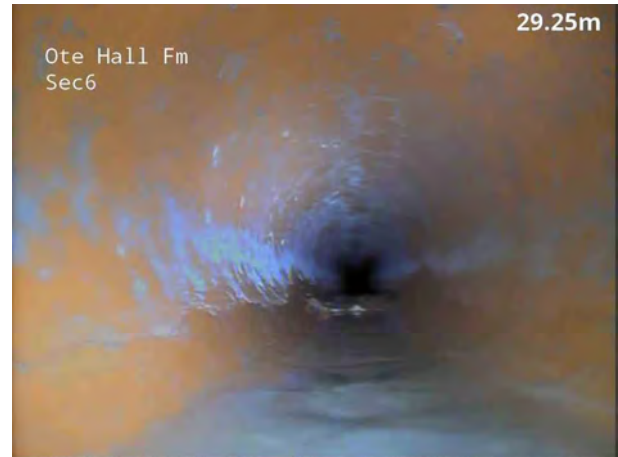


Section Pictures - 24/11/2021 - FW5X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
6	Upstream	FW5X		



1, 00:00:06, 0.00 m
Water level, 5% of the vertical dimension, Live



2, 00:01:14, 29.30 m
Survey abandoned, Past crossover point

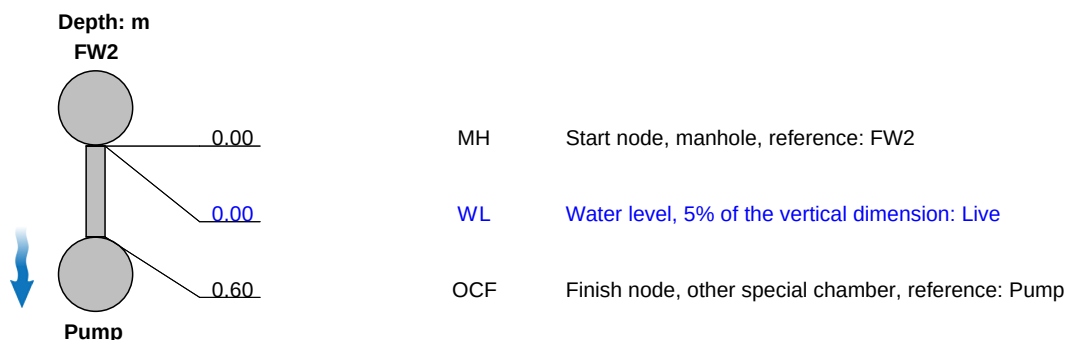
Section Inspection - 24/11/2021 - FW2X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
7	1	24/11/21	11:09	Not Specified	No Rain Or Snow	No	FW2X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
JY		BV21 CDX		Not Specified	Not Specified	Private Drain	Not Specified

Town or Village:	Burgess Hill	Inspection Direction:	Downstream	Upstream Node:	FW2
Road:	Janes Lane	Inspected Length:	0.60 m	Upstream Pipe Depth:	
Location:	Other walkway	Total Length:	0.60 m	Downstream Node:	PUMP
Surface Type:	Ballast	Joint Length:		Downstream Pipe Depth:	
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm		
Flow Control:	No flow control	Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection	Lining Material:	No Lining		

Comments:
Recommendations:

Scale: 1:50 Position [m] Code Observation Grade



Depth: m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Pictures - 24/11/2021 - FW2X

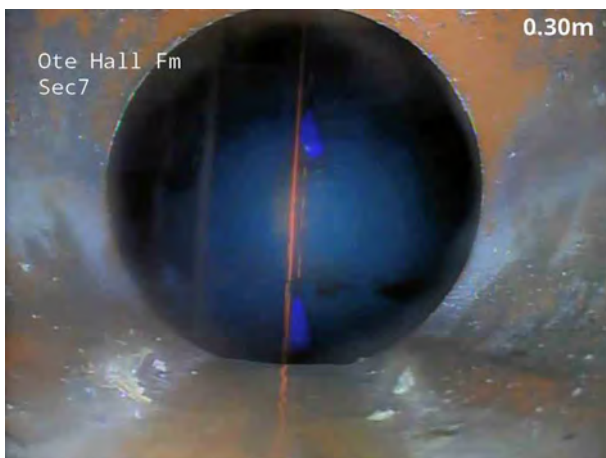
Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
7	Downstream	FW2X		



1, 00:00:00, 0.00 m
Start node, manhole, reference: FW2



2, 00:00:27, 0.00 m
Water level, 5% of the vertical dimension, Live



3, 00:00:45, 0.60 m
Finish node, other special chamber, reference: Pump

Disclaimer

Although every effort has been made to produce a thorough and precise report, Eyes On Drainage Services Ltd cannot be held liable for any discrepancies or omissions.

Furthermore Eyes On Drainage Services Ltd cannot be held responsible for any actions taken based on the information supplied within this report.



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Date: 20/12/21

Scale: 1:1250

Map Centre: 533120,119898

Data updated: 23/11/21

Our Ref: 740951 - 1

Wastewater Plan A2

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2021 Ordnance Survey 100031673. This map is to be used for the purposes of viewing the location of Southern Water plant only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.

cfagan@gtacivils.co.uk

10536 - Ote Hall



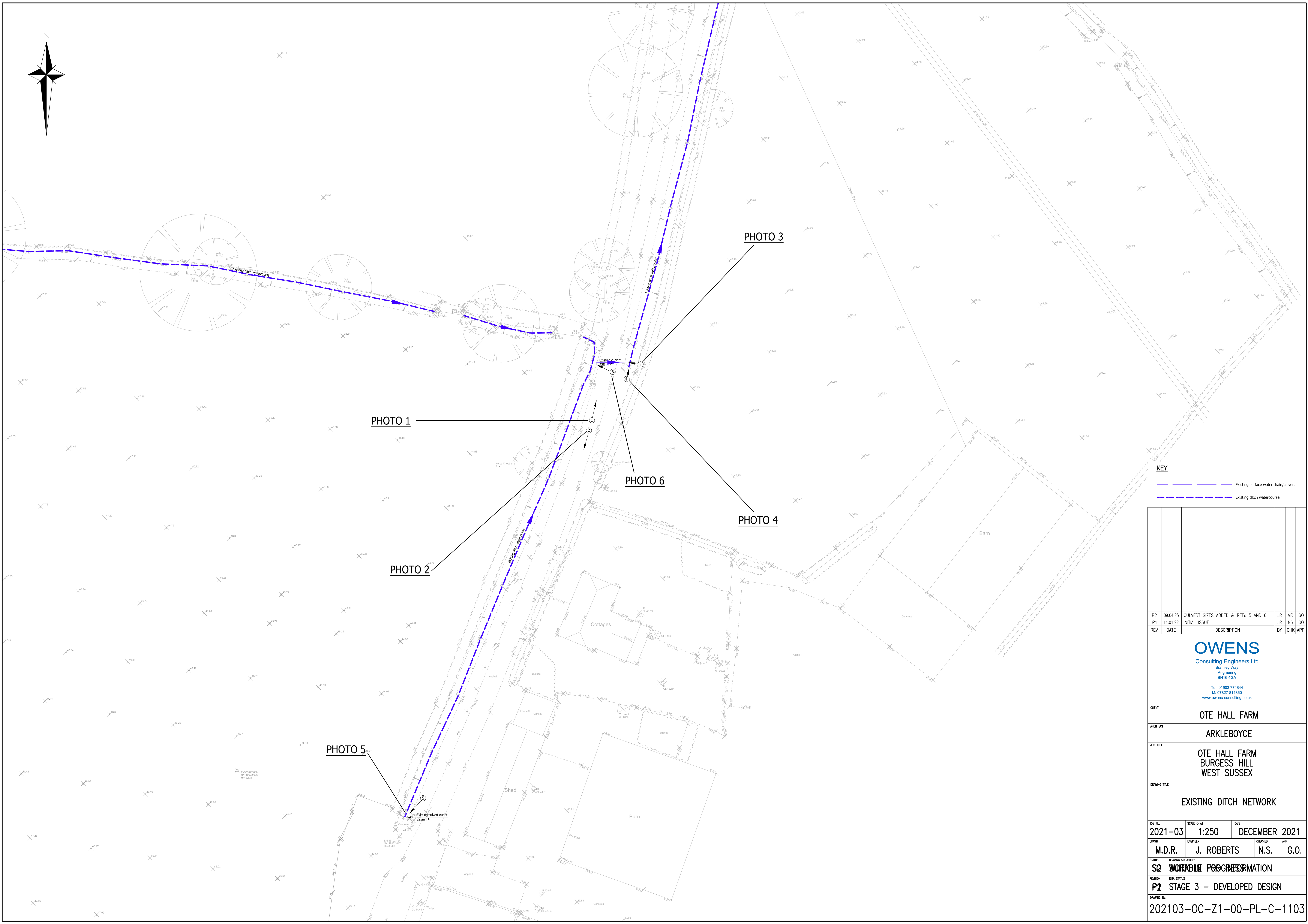


PHOTO 5.

— Existing surface water drain/culvert
 — Existing ditch watercourse

OWENS
Consulting Engineers Ltd
Bramley Way
Angmering
BN16 4GA
Tel: 01903 774844
M: 07827 814860
www.owens-consulting.co.uk

JOB TITLE

OTE HALL FARM
BURGESS HILL
WEST SUSSEX

DRAWING TITLE

EXISTING DITCH NETWORK

STATUS	DRAWING SUITABILITY
S2	NOBABLE PROGRESS
REVISION	REBA STATUS
P2	STAGE 3 – DEVELOPED DESIGN

202103-OC-Z1-00-PL-C-1103

SPECIFICATION NOTES

All drainage shall be constructed and commissioned in accordance with BS EN 295 & BS EN 752, Building Regulations Doc. H and any particular requirements of the Building Control Officer.

Drainage pipelines shall be in PVC-u below ground as Marley or similar approved, or vitrified clay.

This drawing shall be read in conjunction with all other relevant drainage drawings, architectural drawings and structural drawings.

For manhole details, gully details, bedding etc. refer to gta detail sheets.

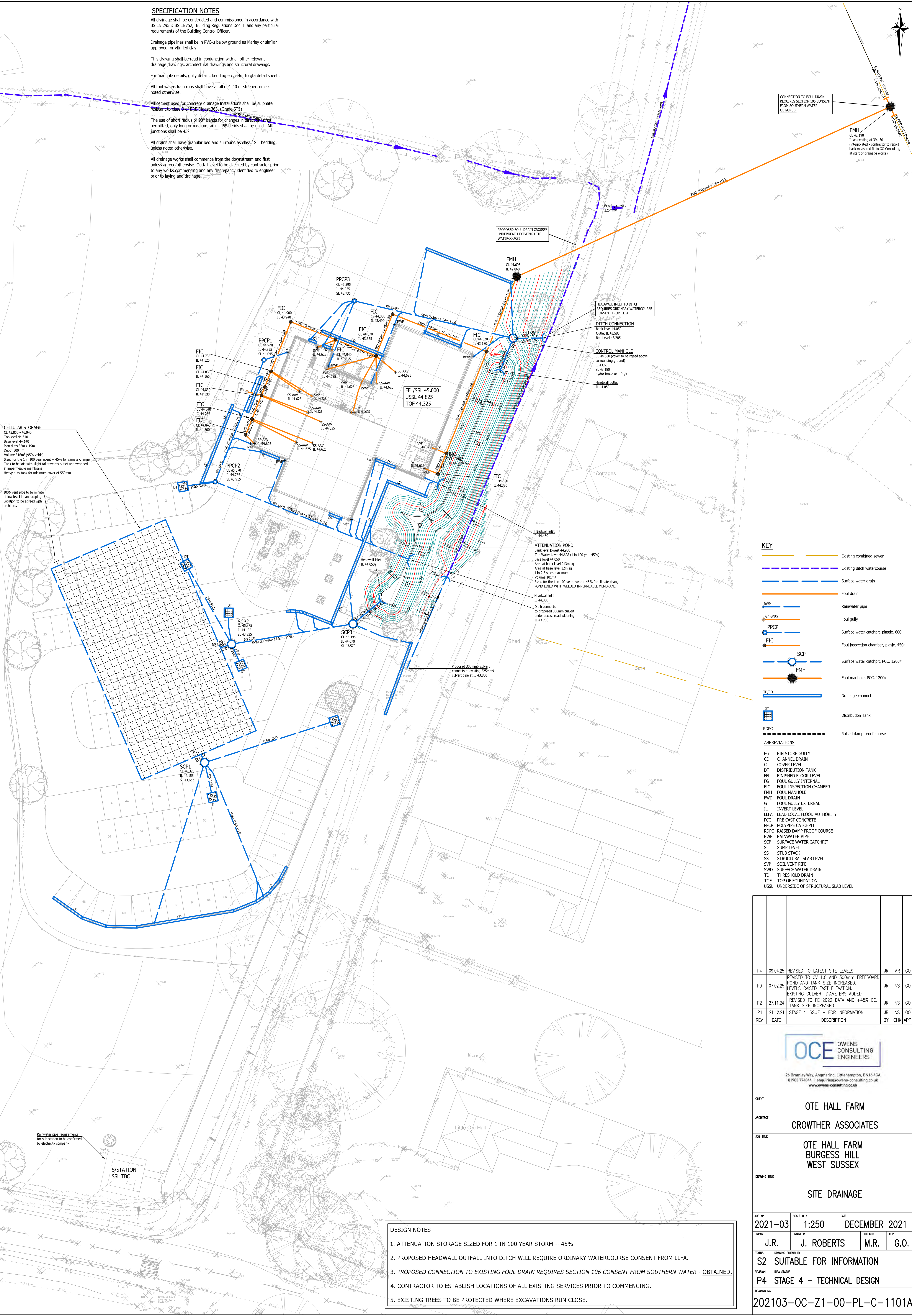
All foul water drain runs shall have a fall of 1:40 or steeper, unless noted otherwise.

All cement used for concrete drainage installations shall be sulphate resistant class 35 (Grade S75).

The use of short radius or 90° bends for changes in direction is permitted, only long or medium radius 45° bends shall be used. All junctions shall be 45°.

All drains shall have granular bed and surround as class 'S' bedding, unless noted otherwise.

All drainage works shall commence from the downstream end first unless agreed otherwise. Outfall level to be checked by contractor prior to any works commencing and any discrepancy identified to engineer prior to laying and drainage.



KEY

- Existing combined sewer
- Existing ditch watercourse
- Surface water drain
- Foul drain
- Rainwater pipe
- Foul gully
- Surface water catchpit, plastic, 600
- Foul inspection chamber, plastic, 450
- Surface water catchpit, PCC, 1200
- Foul manhole, PCC, 1200
- Drainage channel
- Distribution Tank
- Raised damp proof course

ABBREVIATIONS

- BG BIN STORE GULLY
- CD CHANNEL DRAIN
- CL COVER LEVEL
- DT DISTRIBUTION TANK
- FEL FINISHED FLOOR LEVEL
- FG FOUL GULLY INTERNAL
- FIC FOUL INSPECTION CHAMBER
- FMH FOUL MANHOLE
- FWD FOUL DRAIN
- G FOUL GULLY EXTERNAL
- IL INVERT LEVEL
- LLFA LEAD LOCAL FLOOD AUTHORITY
- PCC PRE CAST CONCRETE
- PPCP POLYPIPE CATCHPIT
- RDPD RAISED DAMP PROOF COURSE
- RWP RAINWATER PIPE
- SCP SURFACE WATER CATCHPIT
- SL SUMP LEVEL
- SS STUB STACK
- SSL STRUCTURAL SLAB LEVEL
- SVP SOIL VENT PIPE
- SWD SURFACE WATER DRAIN
- TD THRESHOLD DRAIN
- TOP TOP OF FOUNDATION
- USSL UNDERSIDE OF STRUCTURAL SLAB LEVEL

DESIGN NOTES

- ATTENUATION STORAGE SIZED FOR 1 IN 100 YEAR STORM + 45%.
- PROPOSED HEADWALL OUTFALL INTO DITCH WILL REQUIRE ORDINARY WATERCOURSE CONSENT FROM LLFA.
- PROPOSED CONNECTION TO EXISTING FOUL DRAIN REQUIRES SECTION 106 CONSENT FROM SOUTHERN WATER - OBTAINED.
- CONTRACTOR TO ESTABLISH LOCATIONS OF ALL EXISTING SERVICES PRIOR TO COMMENCING.
- EXISTING TREES TO BE PROTECTED WHERE EXCAVATIONS RUN CLOSE.

P4	09.04.25	REVISED TO LATEST SITE LEVELS	JR	MR	GO
P3	07.02.25	REVISED TO CV 1.0 AND 500mm FREEBOARD. POND AND TANK SIZE INCREASED. LEVELS RAISED EAST ELEVATION. EXISTING CULVERT DIAMETERS ADDED.	JR	NS	GO
P2	27.11.24	REVISED TO FEH2022 DATA AND +45% CC. TANK SIZE INCREASED.	JR	NS	GO
P1	21.12.21	STAGE 4 ISSUE - FOR INFORMATION	JR	NS	GO
REV	DATE	DESCRIPTION	BY	CHK	APP



26 Bramley Way, Angmering, Littlehampton, BN16 4GA
01903 774844 | enquiries@owens-consulting.co.uk
www.owens-consulting.co.uk

CLIENT	OTE HALL FARM				
ARCHITECT	CROWTHER ASSOCIATES				
JOB TITLE	OTE HALL FARM BURGESS HILL WEST SUSSEX				
DRAWING TITLE	SITE DRAINAGE				
JOB No.	SCALE @ A1	DATE			
S21	2021-03	1:250	DECEMBER 2021		
DRAWN	ENGINEER	CHECKED		APP	
J.R.	J. ROBERTS	M.R.		G.O.	
STATUS	DRAWING SUITABILITY				
S2	SUITABLE FOR INFORMATION				
REVISION	RISK STATUS				
P4	STAGE 4 – TECHNICAL DESIGN				
DRAWING No.					
202103-OC-Z1-00-PL-C-1101A					

Diagram illustrating the construction of a 1000mm diameter manhole structure, showing the layers and dimensions.

Dimensions:

- Overall Diameter: 1000mm
- Wall Thickness: 300mm MIN
- Depth: 600 mm OR GREATER

Construction Layers (from top to bottom):

- GROUND LEVEL
- SELECTED FILL (see specification) COMPACTED IN LAYERS NOT EXCEEDING 250 mm
- 1000mm MIN. UNLESS ADDITIONAL PROTECTION IS PROVIDED ON MAIN SITE TRAFFIC ROUTES
- SELECTED GRANULAR FILL (see specification) COMPACTED BY HAND
- SELECTED FILL (see specification) WELL COMPACTED
- GRANULAR BED WELL COMPACTED
- TEMPORARY DRAIN IF REQUIRED

The diagram shows a cross-section of a manhole. The central pipe has a diameter of 900mm. It is surrounded by a concrete layer of 200mm thickness. This concrete is further encased in a 375mm thick layer of impregnated fibre board. The entire assembly is set within a trench. Dimensions are indicated: 'Bd' for the total diameter, 'Bc' for the concrete layer thickness, and 'LESS THAN 600' for the trench width. A note specifies '150 mm SURROUNDED UP TO 300 mm Dia Pipe (*200mm SURROUND ON 375 mm AND ABOVE OF CURB CONCRETE, SHARPED FORMERS OF 15 mm POLYSTYRENE OF FITCH IMPREGNATED FIBRE BOARD TO BE INSTALLED ON EACH JOINT ON ROCKER PIPES AT MANHOLES ETC. AND EVERY THIRD JOINT (NOT EXCEEDING 5 METRES) ON RUNS OF DRAIN

GROUND LEVEL

☐ 900mm MIN. UNLESS ADDITIONAL PROTECTION IS PROVIDED ON MAIN SITE TRAFFIC ROUTES.
 PROVIDE CONCRETE SURROUND TO PIPES IN AREAS LIABLE TO PENETRATION OF TREE ROOTS

150 mm SURROUNDED UP TO 300 mm Dia Pipe (*200mm SURROUND ON 375 mm AND ABOVE OF CURB CONCRETE, SHARPED FORMERS OF 15 mm POLYSTYRENE OF FITCH IMPREGNATED FIBRE BOARD TO BE INSTALLED ON EACH JOINT ON ROCKER PIPES AT MANHOLES ETC. AND EVERY THIRD JOINT (NOT EXCEEDING 5 METRES) ON RUNS OF DRAIN

- IN ROCK, CONCRETE OR MIXED SOILS CONTAINING ROCK BANDS, BOULDERS, LARGE FLINTS OR STONES OR OTHER IRREGULAR HARD SPOTS THAT RESULT IN UNEVEN TRENCH BOTTOM $Y=1/4 B_c$ OR 200 mm WHICH EVER IS THE GREATER, BUT NOT LESS THAN 50mm UNDER COLLARS

- IN SOILS THAT PERMIT AN EVEN TRENCH BOTTOM TO BE EXCAVATED $Y=1/6 B_c$ OR 150 mm WHICH EVER IS GREATER, BUT NOT LESS THAN 50 mm UNDER COLLARS

- 1) FOR PIPES EXCEEDING 600 mm DIA REFER TO ENGINEER
- 2) IN WET OR SOFT GROUND SEEK GUIDANCE FROM ENGINEER
- 3) THE BEDDINGS MAY BE MODIFIED FOR CERTAIN SUB-SOIL CONDITIONS AT THE ENGINEERS DISCRETION
- 4) THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADDITIONAL PROTECTION IN AREAS SUBJECT TO LOADS FROM SITE TRAFFIC. THE CONTRACTOR SHALL IDENTIFY THESE ZONES AND RESTRICT TRAFFIC ELSEWHERE
- 5) SEE ALSO BS 8301
- 6) FOR GREATER TRENCH WIDTHS SEEK GUIDANCE FROM ENGINEER

GRANULAR MATERIAL	
PIPE SIZE	AGGREGATE
100 mm	10 mm SINGLE SIZE
150 mm	OR 14-5 mm GRADED
	10,14,20 SINGLE SIZE OR
150 mm-	20-25 mm GRADED
500 mm	10,14,20 OR 40 mm SINGLE
600 mm	CRUSHED ROCK OR 40-45 mm GRADED

Diagram illustrating the construction of a manhole structure, showing layers and dimensions:

- FINISH LEVEL**
- FORMATION LEVEL**
- SELECTED FILL COMPACTED IN LAYERS NOT EXCEEDING 250mm** (1000mm MIN. UNLESS ADDITIONAL PROTECTION IS PROVIDED ON MAIN SITE TRAFFIC ROUTES)
- SELECTED FILL COMPACTED BY HAND**
- GRANULAR BED WELL COMPACTED**
- TEMPORARY DRAIN (IF REQUIRED)**

Dimensions and Notes:

- 300mm MIN. (Well Diameter)
- 100mm (Bed Thickness)
- 150mm (Drain Thickness)
- 150mm (Drain Width)
- 150mm (Drain Depth)
- 150mm (Drain Width)
- 150mm (Drain Depth)

Pipe Size	Trench Width
100 mm	0.6 m
150 mm	0.6 m
225 mm	0.7 m
300 mm	0.8 m
375 mm	1.0 m

900 mm 2.95 ft
600 mm 1.97 ft

FINISH LEVEL
FORMATION LEVEL

SELECTED FILL COMPACTED IN LAYERS NOT EXCEEDING 250mm

1000mm MIN. UNLESS ADDITIONAL PROTECTION IS PROVIDED ON MAIN SITE TRAFFIC ROUTES

GRANULAR SURROUND IN CONTROLLED LAYERS

CONCRETE BED & SURROUND (C.B.S.)

GRANULAR MATERIAL

	FINISH LEVEL	GRADED
	FORMATION LEVEL	150 mm- 600 mm 20-25 mm GRADED 600 mm
	SELECTED FILL COMPACTED	10,14,20 OR 40 mm SINGLE CRUSHED ROCK OR 40-45 mm GRADED
	900mm MIN. UNLESS ADDITIONAL PROTECTION IS PROVIDED ON MAIN SITE TRAFFIC ROUTES 150 mm SURROUNDED UP TO 300 mm Dia PIPE (*200mm SURROUND ON 375 mm AND ABOVE OF C20/ CONCRETE, SHAPED FORMERS OF 25 mm POLYSTYRENE OF PITCH IMPREGATED FIBRE BOARD TO BE INSTALLED ON EACH JOINT ON ROCKER PILES AT MANHOLES ETC. AND EVERY THIRD JOINT (NOT EXCEEDING 5 METRES) ON RUNS OF DRAIN	

- IN ROCK, CONCRETE OR MIXED SOILS CONTAINING ROCK BANDS, BOULDERS, LARGE FLINTS OR STONES OR OTHER IRREGULAR HARD SPOTS THAT RESULT IN UNEVEN TRENCH BOTTOM $Y=1/4 Bc$ OR 200 mm WHICH EVER IS THE GREATER, BUT NOT LESS THAN 50mm UNDER COLLARS

- IN SOILS THAT PERMIT AN EVEN TRENCH BOTTOM TO BE EXCAVATED $Y=1/6 B_c$ OR 150 mm WHICH EVER IS GREATER BUT NOT LESS THAN 50 mm UNDER COLLARS

- 1) FOR PIPES EXCEEDING 600 mm DIA REFER TO ENGINEER
- 2) IN WET OR SOFT GROUND SEEK GUIDANCE FROM ENGINEER
- 3) THE BEDDINGS MAY BE MODIFIED FOR CERTAIN SUB-SOIL CONDITIONS AT THE ENGINEERS DISCRETION
- 4) THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADDITIONAL PROTECTION IN AREAS SUBJECT TO LOADS FROM SITE TRAFFIC. THE CONTRACTOR SHALL IDENTIFY THESE ZONES AND RESTRICT TRAFFIC ELSEWHERE
- 5) SEE ALSO BS 8301
- 6) FOR GREATER TRENCH WIDTHS SEEK GUIDANCE FROM ENGINEER

Diagram illustrating the cross-section of a trench and manhole structure, showing various layers and dimensions.

Dimensions:

- Bd**: Trench width
- Bc**: Trench depth
- 1000 mm**: Layer thickness (indicated as 1000 mm OR GREATER)
- 1200 mm OR GREATER**: Layer thickness
- 300mm MIN**: Minimum layer thickness

Layers (from top to bottom):

- FINISH LEVEL
- FORMATION LEVEL
- DOT TYPE 1 MATERIAL COMPACTED IN LAYERS NOT EXCEEDING 250mm
- DOT TYPE 1 MATERIAL COMPACTED BY HAND
- SELECTED FILL WELL COMPACTED (DOT TYPE 1 MAY BE USED)
- GRANULAR BED WELL COMPACTED
- TEMPORARY DRAIN (IF REQUIRED)

Table: Pipe Size vs. Trench Width

Pipe Size	Trench Width
100 mm	0.6 m
150 mm	0.6 m
225 mm	0.7 m
300 mm	0.8 m
375 mm	1.0 m

The diagram shows a cross-section of a concrete curb and granular material. The curb is a circular structure with a diameter of 1200 mm. It is surrounded by granular material. The granular material is divided into two layers: a top layer of 500 mm and a bottom layer of 600 mm. The total height of the granular material is 1100 mm. The curb is labeled 'CONCRETE CURB & GRANULAR SURROUND (C.R.C.)'. The granular material is labeled 'GRANULAR MATERIAL'. The diagram also shows a 'FINISH LEVEL' and a 'FORMATION LEVEL'. The curb is labeled 'DOT TYPE 1 MATERIAL COMPACTED IN LAYERS NOT EXCEEDING 250mm'. A note states: '1000mm MIN. UNLESS ADDITIONAL PROTECTION IS PROVIDED ON MAIN SITE TRAFFIC ROUTES'. The curb is labeled 'GRANULAR SURROUND IN CONTROLLED LAYERS'. The diagram also shows a 'Bd' dimension for the curb width and a 'Bc' dimension for the curb depth. The curb is labeled 'MIN. 500 mm' for the bottom layer height.

500 mm	1.2 m
600 mm	1.4 m

FINISH LEVEL

FORMATION LEVEL

DOT TYPE 1 MATERIAL COMPACTED IN LAYERS NOT EXCEEDING 250mm

1000mm MIN. UNLESS ADDITIONAL PROTECTION IS PROVIDED ON MAIN SITE TRAFFIC ROUTES

GRANULAR SURROUND IN CONTROLLED LAYERS

CONCRETE CURB & GRANULAR SURROUND (C.R.C.)

GRANULAR MATERIAL

	FINISH LEVEL									
	FORMATION LEVEL									
	DOT TYPE 1 MATERIAL									
	QAT									
		<table border="1"> <tr> <td>150 mm-500 mm</td> <td>GRADED</td> </tr> <tr> <td>20-25 mm GRADED</td> <td>10,14,20 SINGLE SIZE OR</td> </tr> <tr> <td>600 mm</td> <td>10,14,20 or 40 mm SINGLE</td> </tr> <tr> <td></td> <td>CRUSHED ROCK OR 40-45 mm GRADED</td> </tr> </table>	150 mm-500 mm	GRADED	20-25 mm GRADED	10,14,20 SINGLE SIZE OR	600 mm	10,14,20 or 40 mm SINGLE		CRUSHED ROCK OR 40-45 mm GRADED
150 mm-500 mm	GRADED									
20-25 mm GRADED	10,14,20 SINGLE SIZE OR									
600 mm	10,14,20 or 40 mm SINGLE									
	CRUSHED ROCK OR 40-45 mm GRADED									
	900mm MIN. UNLESS ADDITIONAL PROTECTION IS PROVIDED ON MAIN SITE TRAFFIC ROUTES									
150 mm SURROUNDED UP TO 300 mm Dia PIPE ("200mm SURROUND ON 375 mm AND ABOVE) OF C20 CONCRETE. SHAPED FORMERS OF 25 mm POLYSTYRENE OF PITCH IMPREGNATED FIBRE BOARD TO BE INSTALLED ON EACH JOINT ON ROOFR PIPES AT MANHOLES ETC. AND EVERY THIRD JOINT (NOT EXCEEDING 5 METRES) ON RUNS OF DRAIN										

	IRREGULAR HARD SPOTS THAT RESULT IN UNEVEN TRENCH BOTTOM $Y=1/4$ Bc OR 200 mm WHICH EVER IS THE GREATER, BUT NOT LESS THAN 50mm UNDER COLLARS
NOTES	- IN SOILS THAT PERMIT AN EVEN TRENCH BOTTOM TO BE EXCAVATED $Y=1/6$ Bc OR 150 mm WHICH EVER IS GREATER, BUT NOT LESS THAN 50 mm UNDER COLLARS

- IN SOILS THAT PERMIT AN EVEN TRENCH BOTTOM TO BE EXCAVATED $Y=1/6 B_c$ OR 150 mm WHICH EVER IS GREATER, BUT NOT LESS THAN 50 mm UNDER COLLARS

- 1) FOR PIPES EXCEEDING 600 mm DIA REFER TO ENGINEER
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- 3) THE BEDDINGS MAY BE MODIFIED FOR CERTAIN SUB-SOIL CONDITIONS AT THE ENGINEERS DISCRETION
- 4) THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADDITIONAL PROTECTION IN AREAS SUBJECT TO LOADS FROM SITE TRAFFIC. THE CONTRACTOR SHALL IDENTIFY THESE ZONES AND RESTRICT TRAFFIC ELSEWHERE
- 5) SEE ALSO BS 8301
- 6) FOR GREATER TRENCH WIDTHS SEEK GUIDANCE FROM ENGINEER

PIPE DIA. Dn mm	RECOMMENDED TRENCH WIDTH Bd mm
100 mm	550
150 mm	600
225 mm	700
300 mm	750

100mm

10mm SINGLE SIZE
GRANULAR MATERIAL
WELL COMPACTED

GRANULAR SUB-BASE
M.O.T. TYPE 2

A

Dn

Bd

GRANULAR BED

('A' IS GREATER THAN 300mm)

CONCRETE SURROUND

BUILDING SLAB

NOTE
WHEN DIMENSION 'A' IS GREATER THAN 300mm GRANULAR BED SHALL APPLY. IF LESS THAN 300mm THEN CONCRETE SURROUND. THIS DETAIL IS FOR PIPES LAID IN DRY UNIFORM SOILS ONLY. FOR WET SOILS ADD 75mm THICK LAYERS OF WEAK MIX CONCRETE UNDER BED.

BUILDING SLAB

CONCRETE SURROUND

UNDERSLAB PIPEWORK MATERIAL
AS SPECIFICATION

100mm

18mm THICK COMPRESSIBLE BOARD TO BS 1142
CUT TO PIPE PROFILE & INSERTED AT EACH
JOINT

BEDDING DETAILS PIPE UNDERBUILDING

MANHOLE COVER AS MANHOLE SCHEDULE

250mm LOCAL CONCRETE SURROUND

MANUFACTURERS LIGHT DUTY COVER TO BE REMOVED

INSPECTION CHAMBER LOCATED CAR PARK AREAS.

STANDARD COVER REFERENCE UCL1 OR AS NOTED ON MANHOLE SCHEDULE OR LAYOUT

350mm REDUCER IF DEEPER THAN 1m TO SOFFIT

1.2m

CHAMBER RISER UCR2

110mm DRAIN

150mm C20 CONCRETE SURROUND & BASE

450mm INSPECTION CHAMBER BASE UCC3

NOTE! ANY 450mm INSPECTION CHAMBER WITH A DEPTH EXCEEDING 1.2m THE INSPECTION CHAMBER MUST REDUCE TO 350mm dia AT THE 1.2m DEPTH TO THE COVER LEVEL. AS DETAIL ABOVE.

NOTE: ANY 450mm INSPECTION CHAMBER WITH A DEPTH EXCEEDING 1.2m THE INSPECTION CHAMBER MUST REDUCE TO 350mm dia AT THE 1.2m DEPTH TO THE COVER LEVEL, AS DETAIL ABOVE.

The drawing consists of two parts: an elevation view and a section view.

ELEVATION: This view shows the front of a brickwork structure. It features a central rectangular section with a circular opening. Above this section is a coping. Dimensions are indicated on the right side: 100 for the coping height, 300 for the main structure height, and 225 for the base height. A label 'WIDTH DEPENDANT ON PIPE SIZE' points to the top width, and 'B.O.E. COPING' points to the coping itself.

SECTION: This view shows a cross-section of the structure. It includes two pipes at the base, with 'JOINTS' labeled. The pipes are supported by a '225 mm SEMI-ENGINEERING BRICKWORK, ON CONCRETE FOUNDATION.' The structure is topped with 'PAVING SLABS TO PROTECT OPPOSITE BANK'. Dimensions are given: 600 for the main body width, and 150 for the base and coping widths.

SPIGOT OF DRAIN TO
TERMINATE 125MM BELOW FFL

PROVIDE TEMPORARY CAP TO
SEAL OFF DRAIN

75 100 150 OR 200 DIA PIPE SEE GROUND
FLOOR LAYOUT (FOR 200 DIA RWP
CONNECTION TO DRAIN USE 225 X 200
DIMINISHING PIECE)

TRANSITIONAL COUPLING

STRUCTURAL
SLAB

MAKE UP PIECE IF REQUIRED

350X350X200 DEEP RECESS IN FLOOR TO BE
FILLED WITH CONCRETE AFTER CONNECTION TO
ABOVE GROUND PLUMBING IS MADE

FLOOR CONSTRUCTION MAY VARY REFER TO
ARCHITECTS AND STRUCTURAL ENGINEERS
DRAWINGS

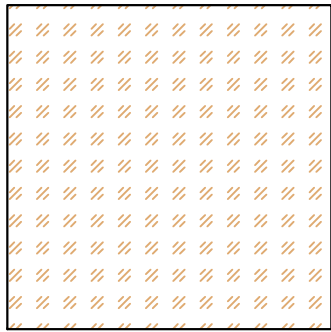
90 DEGREE UPVC REST BEND

MIN DEPTHS OF INVERT FROM FFL

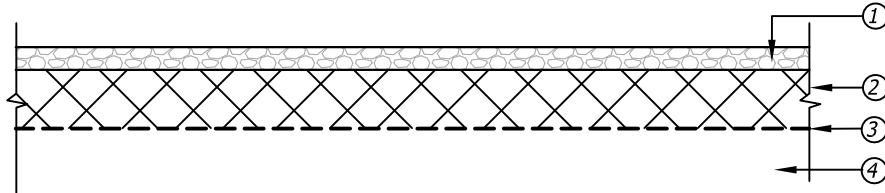
100 DIA	= -500MM
150 DIA	= -550MM
225 DIA	= -760MM

(SEE LAYOUT DRG FOR INVERT)

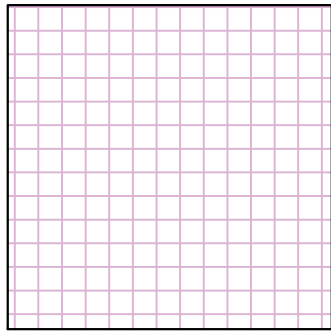
P1	21.12.21	STAGE 4 ISSUE -- FOR INFORMATION					JR	NS	GO
REV	DATE	DESCRIPTION					BY	CHK	APP
OWENS Consulting Engineer Ltd Bramley Way Angmering BN15 4GA M: 07927 614860									
CLIENT									
OTE HALL FARM									
ARCHITECT									
ARKLEBOYCE									
JOB TITLE									
OTE HALL FARM BURGESS HILL WEST SUSSEX									
DRAWING TITLE									
SITE DRAINAGE DETAILS SHEET 1 OF 2									
JOB No:		SCALE: 1/1		DATE					
2021-03				DECEMBER 2021					
DRAWN		ENGINEER		CHECKED			APP		
J.R.		J. ROBERTS		N.S.			G.O.		
STATUS DRAWING STATUS									
S2 SUITABLE FOR INFORMATION									
REVISION		RBA STATUS							
P1		STAGE 4 -- TECHNICAL DESIGN							
DRAWING No:									
202103-OC-Z1-00-DT-C-5101									



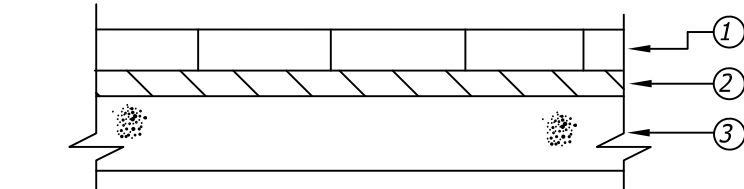
SELF-BINDING GRAVEL
BREEDON AMBER



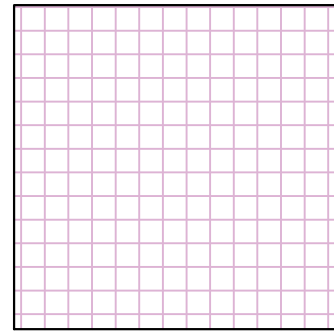
- 50mm thick self-setting gravel graded 0-12mm, Breedon gravel, to the architects specification, laid with min 1/60 crossfall, rolled and compacted in accordance with manufacturers instructions
- Vehicular areas: 325mm thick Sub-Base Type 1 material to Clause 803
Pedestrian areas: 150mm thick Sub-Base Type 1 material to Clause 803
- Terram 1000 geotextile over compacted Sub-grade
- In areas of fill use selected material to Class 2C in accordance with specification for highway works and compacted to Clause 612 Tab 6/4 method 2.



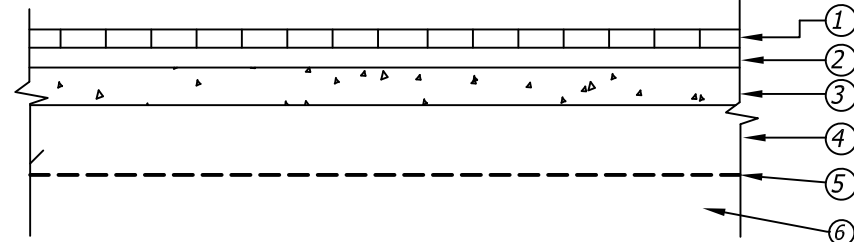
COBBLE SETTS
PEDESTRIAN ONLY TRAFFIC



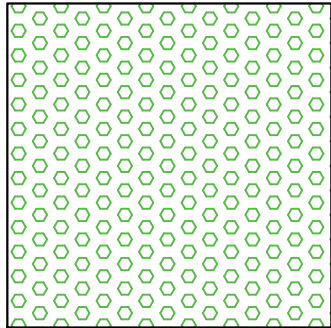
- Cobble Setts to architect's specification
- 30mm sand bed
- 150mm Sub-Base Type 1 material to Clause 803



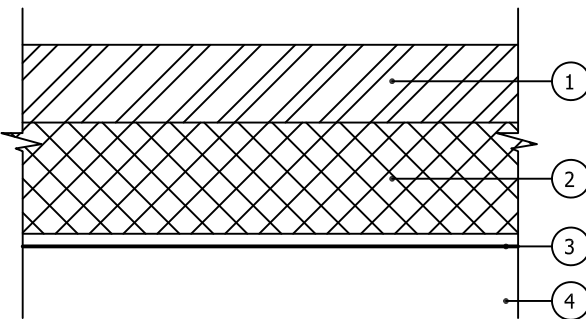
COBBLE SETTS
VEHICULAR ONLY TRAFFIC
OR SHARED SURFACE



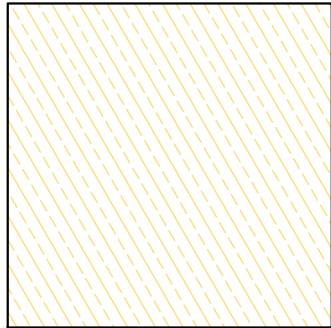
- Cobble Setts to architect's specification
- 50mm thick compacted sand to BS7533-3:2003 + A1:2009.
- 70mm thick Base, Dense Asphalt Concrete, AC32 Dense Base 40/60 to BSEN13108-1. To form temporary running surface during site construction. Surface to be sealed with bituminous grit, 50mm dia, drainage holes to be drilled at 2m centres and at low points prior to block laying. Holes to be filled with 6mm clean chippings. Drain hole to be covered with Terram 1000 geotextile material extending min 200mm either side.
- Sub-Base Type 1 material to Clause 803, and compacted to Specification for Highway Works Clause 802 and Table 8/4. See table opposite for depth.
- Terram 1000 geotextile over formation.
- In areas of fill use selected material to Class 2C in accordance with specification for highway works and compacted to Clause 612 Tab 6/4 method 2.



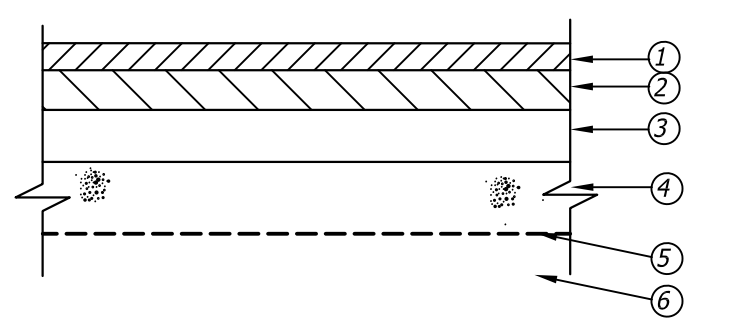
GEOTECH GRASS
RUBBER MATTING
(LINED SYSTEM)



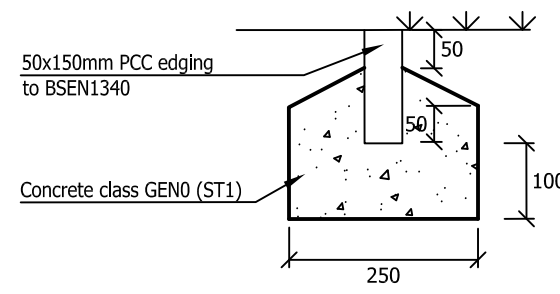
- GEOTECH GRASS RUBBER MATTING TO ARCHITECT'S SPECIFICATION
- 325mm THICK 4-20mm SUB-BASE CLEAN ANGULAR HARD STONE NO FINES.
- IMPERMEABLE GEOMEMBRANE
- IN AREAS OF FILL USE SELECTED MATERIAL TO CLASS 2C IN ACCORDANCE WITH SPECIFICATION FOR HIGHWAY WORKS AND COMPACTED TO CLAUSE 612 TAB 6/4 METHOD 2.



BITUMINOUS ROADWAY
CONSTRUCTION

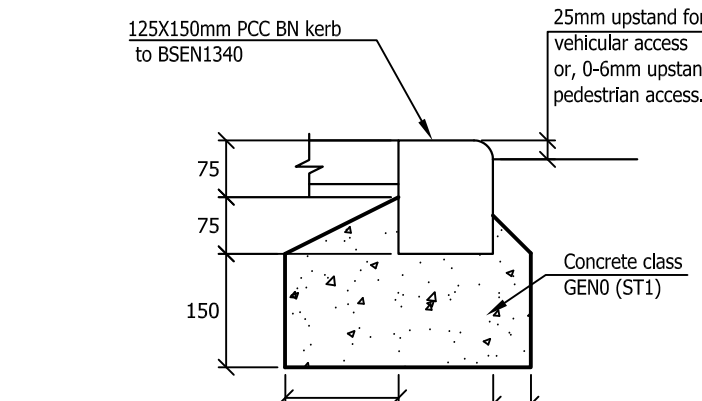


- 30mm Surface course, Dense Asphalt Concrete AC10 to BSEN13108-1. 100-150 Pen. PSV 55, AAV 14.
- 60mm thick Binder course, Dense Asphalt Concrete, AC20 dense bin 40/60 to BSEN13108-1.
- 100mm thick Base, Dense Asphalt Concrete, AC32 Dense Base 40/60 to BSEN13108-1.
- 325mm Sub-Base Type 1 material to Clause 803, and compacted to Clause 802 and Table 8/4. See table below for depth.
- Terram 1000 geotextile over formation.
- In areas of fill use selected material to Class 2C in accordance with specification for highway works and compacted to Clause 612 Tab 6/4 method 2.



PCC EDGING KERB

As denoted by

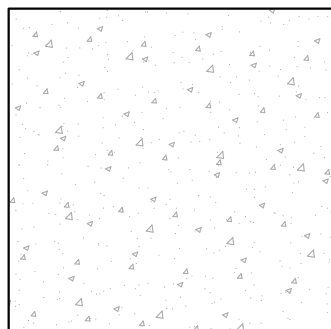


DROPPED BN KERB DETAIL

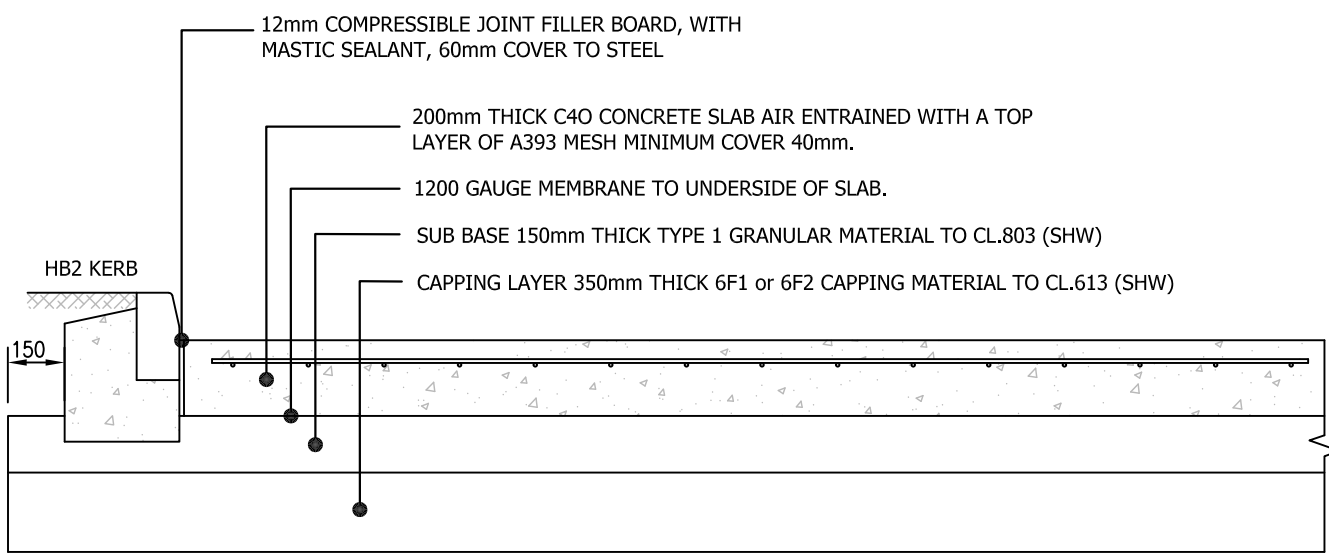
As denoted by

25mm upstand
DK 0-6mm upstand

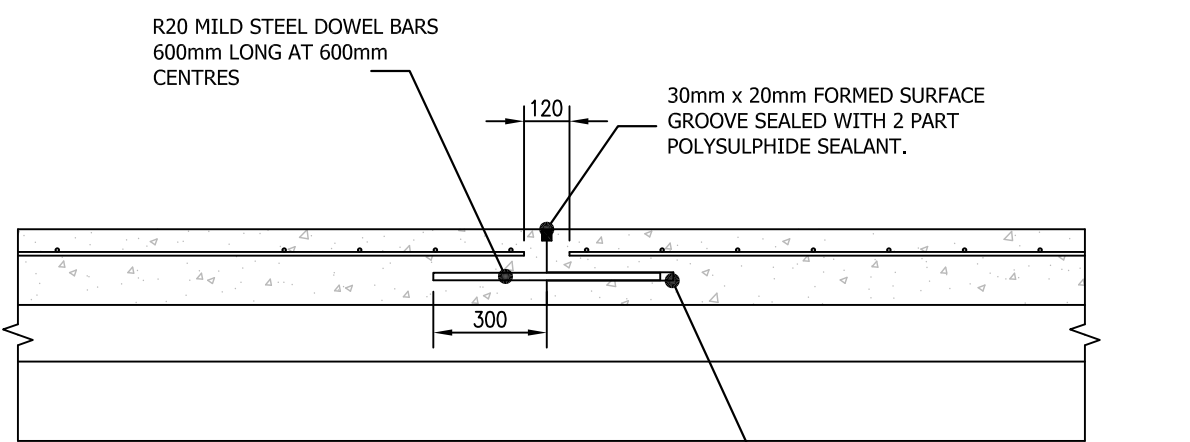
STRUCTURAL PAVEMENT LAYERS SIZED ON A CBR OF 2% AS PER MINIMUM RECORDED IN-SITU CBR TEST RESULT FROM GEOTECHNICAL GROUND INVESTIGATION REPORT BY AVZ GEOTECH LTD, PROJECT REFERENCE 1689-21 DATED NOVEMBER 2021



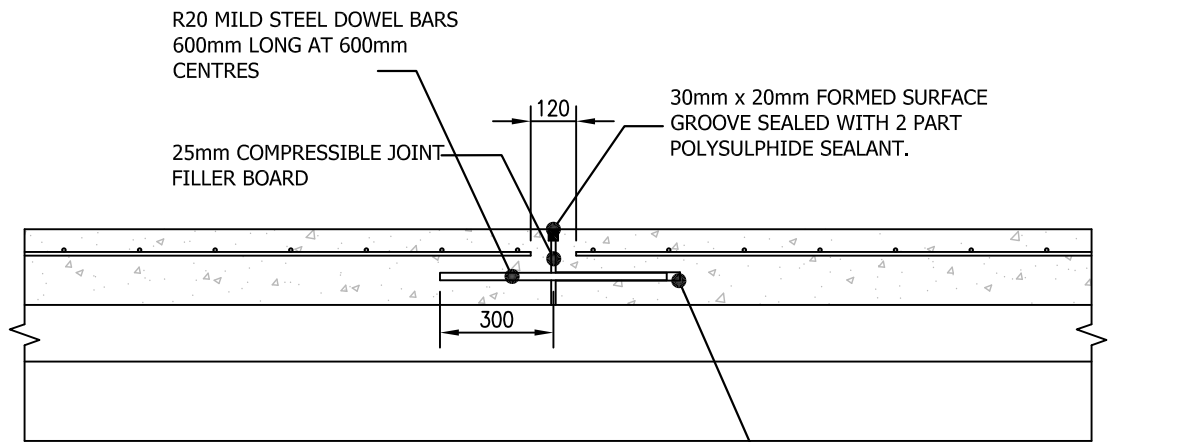
CONCRETE
HARDSTANDING



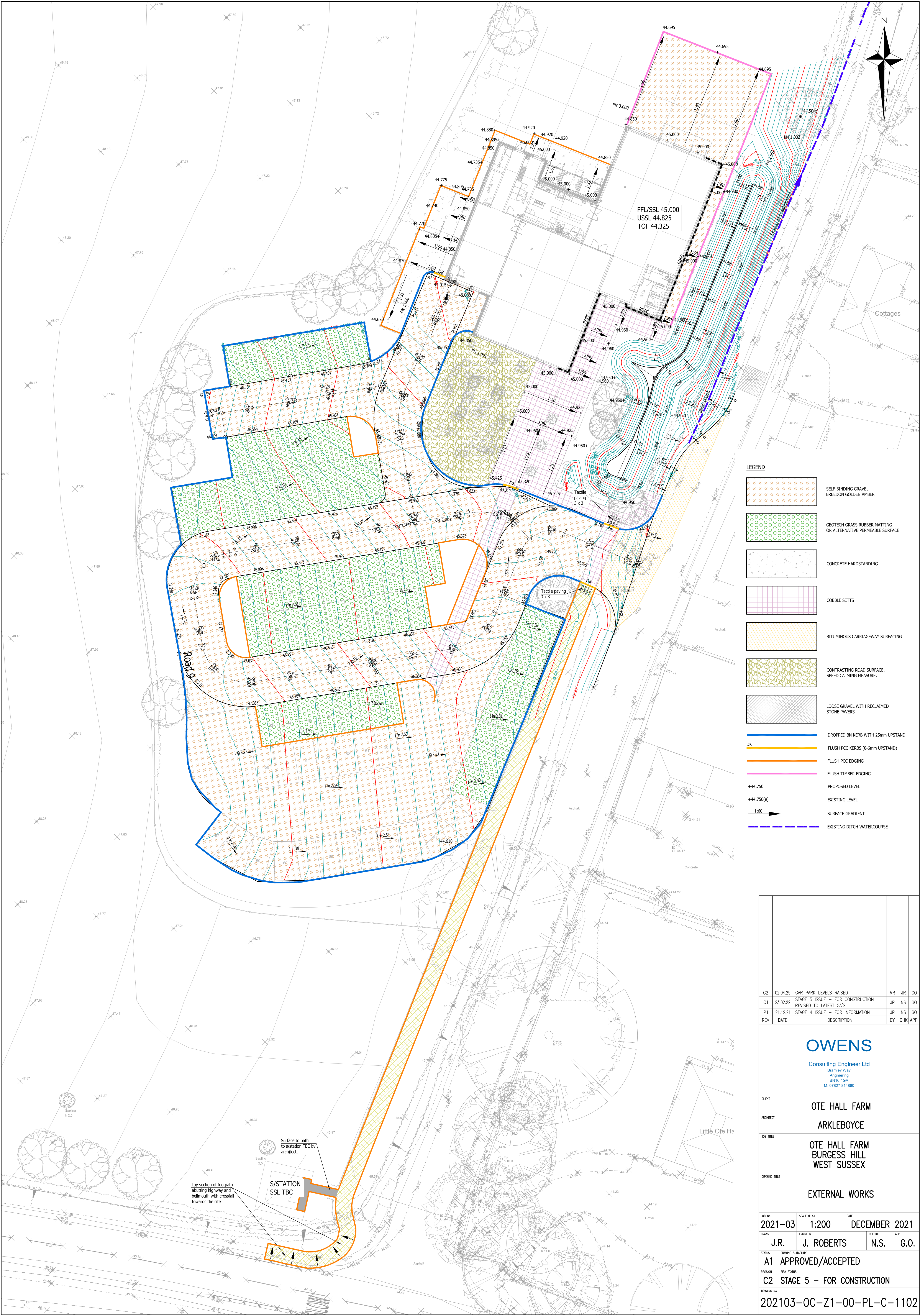
TRADITIONAL CONCRETE SLAB
ISOLATION JOINT



TRADITIONAL CONCRETE SLAB
CONTRACTION JOINT



TRADITIONAL CONCRETE SLAB
DEBONDED LONGITUDINAL JOINT



Nodes

Name	Area (ha)	T of E (mins)	Add Inflow (l/s)	Cover Level (m)	Manhole Type	Diameter (mm)	Depth (m)
PPCP1	0.010	5.00	0.0	44.770	Adoptable	600	0.375
PPCP2	0.025	5.00	0.0	45.370	Adoptable	600	1.105
SCP1	0.085	5.00	0.0	46.370	Adoptable	1200	2.215
SCP2	0.164	5.00		45.875	Adoptable	1200	1.740
SCP3	0.021	5.00	0.0	45.395	Adoptable	600	1.325
CONTROL M/HOLE	0.014	5.00	0.0	44.650	Adoptable	1200	1.015
OUTFALL	0.000	5.00	0.0	44.050	Adoptable	1200	0.465
PPCP3	0.037	5.00	0.0	44.950	Adoptable	1200	0.915

Links (Results)

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.051	41.8	1.4	0.150	0.880	0.010	0.0	28	0.483
1.001	1.823	72.5	4.7	0.880	0.790	0.035	0.0	39	1.043
2.000	1.572	111.1	11.5	1.915	1.440	0.085	0.0	65	1.026
2.001	0.920	65.0	33.7	1.440	1.025	0.249	0.0	153	0.928
2.002	1.480	104.6	36.6	1.025	0.715	0.270	0.0	122	1.352
3.000	1.691	67.2	5.0	0.690	0.790	0.037	0.0	42	1.006
1.003	2.010	142.1	48.2	0.715	0.165	0.356	0.0	120	1.824

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)
1.000	20.000	153.8	225	Circular	44.770	44.395	0.150	45.370	44.265	0.880
1.001	32.565	51.7	225	Circular	45.370	44.265	0.880	44.650	43.635	0.790
2.000	2.000	100.0	300	Circular	46.370	44.155	1.915	45.875	44.135	1.440
2.001	18.775	288.8	300	Circular	45.875	44.135	1.440	45.395	44.070	1.025
2.002	49.000	112.6	300	Circular	45.395	44.070	1.025	44.650	43.635	0.715
3.000	24.000	60.0	225	Circular	44.950	44.035	0.690	44.650	43.635	0.790
1.003	3.070	61.4	300	Circular	44.650	43.635	0.715	44.050	43.585	0.165

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	PPCP1	600	Manhole	Adoptable	PPCP2	600	Manhole	Adoptable
1.001	PPCP2	600	Manhole	Adoptable	CONTROL M/HOLE	1200	Manhole	Adoptable
2.000	SCP1	1200	Manhole	Adoptable	SCP2	1200	Manhole	Adoptable
2.001	SCP2	1200	Manhole	Adoptable	SCP3	600	Manhole	Adoptable
2.002	SCP3	600	Manhole	Adoptable	CONTROL M/HOLE	1200	Manhole	Adoptable
3.000	PPCP3	1200	Manhole	Adoptable	CONTROL M/HOLE	1200	Manhole	Adoptable
1.003	CONTROL M/HOLE	1200	Manhole	Adoptable	OUTFALL	1200	Manhole	Adoptable

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Additional Storage (m³/ha)	0.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	45	0	0

Node CONTROL M/HOLE Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	43.635	Product Number	CTL-SHE-0065-1900-1015-1900
Design Depth (m)	1.015	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	1.9	Min Node Diameter (mm)	1200

Node SCP2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	44.135
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

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	665.0	665.0	0.500	665.0	665.0	0.501	0.0	665.0

Node CONTROL M/HOLE Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	44.050
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	12.0	19.0	0.900	213.0	235.0

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 98.19%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	PPCP1	1380	44.627	0.232	0.4	0.0658	0.0000	FLOOD RISK
1440 minute winter	PPCP2	1380	44.627	0.362	1.4	0.1026	0.0000	SURCHARGED
1440 minute winter	SCP1	1380	44.628	0.473	3.5	0.5345	0.0000	SURCHARGED
1440 minute winter	SCP2	1380	44.628	0.493	11.2	311.7636	0.0000	SURCHARGED
1440 minute winter	SCP3	1380	44.628	0.558	2.6	0.1578	0.0000	SURCHARGED
1440 minute winter	CONTROL M/HOLE	1380	44.627	0.992	3.4	45.2979	0.0000	FLOOD RISK
1440 minute winter	OUTFALL	1380	43.609	0.024	1.9	0.0000	0.0000	OK
1440 minute winter	PPCP3	1380	44.627	0.592	1.5	0.6701	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	PPCP1	1.000	PPCP2	0.4	0.240	0.010	0.7954	
1440 minute winter	PPCP2	1.001	CONTROL M/HOLE	1.3	0.071	0.018	1.2951	
1440 minute winter	SCP1	2.000	SCP2	3.5	0.632	0.031	0.1408	
1440 minute winter	SCP2	2.001	SCP3	2.3	0.435	0.035	1.3221	
1440 minute winter	SCP3	2.002	CONTROL M/HOLE	2.2	0.078	0.021	3.4505	
1440 minute winter	CONTROL M/HOLE	1.003	OUTFALL	1.9	0.678	0.013	0.0084	162.2
1440 minute winter	PPCP3	3.000	CONTROL M/HOLE	1.5	0.062	0.022	0.9545	

Appendix 6 – Drainage Management and Maintenance Plan

Maintenance Responsibilities

It is the responsibility of the site owners to ensure that the below ground drainage Infrastructure is maintained in accordance with this Management and Maintenance Plan. As there are shared elements in the drainage network, the responsibilities can be contracted out to a management company if desire.

Contamination or Dilution of Spillage

The Environment Agency would prefer all spillages on any highway to be contained to prevent any downstream contamination. However, this cannot always be achieved, depending on the nature of the spillage. In all circumstances involving the spillage of substances on the highway it is important that the Environment Agency are notified as soon as possible so that they can provide advice and take appropriate action.

Prompt action following a spillage can prevent or reduce its effects, whilst inappropriate action may cause or worsen the pollution effects. In the design of the drainage on this site, a measure has been put in place to prevent any pollution entering the groundwater, this being permeable paving. The permeable paving sub-base is lined with an impermeable membrane.

In the event of a spillage on site it is the responsibility of the site owners to clear up any spillage before it enters the drainage system. The primary method of dealing with any spillage of Hydrocarbons should be to use sand to soak up the leak and prevent any Hydrocarbons entering the drainage system. Once sand has been contaminated it should not be washed into the drainage system but disposed of by a Licensed Contractor.

Environment Agency – Emergency Contact Number

In the event of a spillage the Environment Agency should be contacted to notify the event and seek advice. The Environment Agency's Incident Hotline is **0800 80 70 60** (Freephone 24hrs).

Health and Safety

All those responsible for and involved in the maintenance of the site drainage systems should be safety-conscious and comply with the relevant health and safety legislation. This includes:

- The Health and Safety at Work etc Act 1974
- The Management of Health and Safety at Work Regulations 1999
- The Workplace (Health, Safety and Welfare) Regulations 1992

The site owners are responsible for suitable risk assessment and management to ensure safe working conditions and practices.

Specialist contractors used should work to industry guidelines and be able to demonstrate safe working practices.

Operatives should be trained for working near water. Risks of contaminated water should be considered. Checking for open cuts and using nitrile gloves, waterproof plasters etc is advised.

Entry of pipes, chambers, tanks and culverts should be avoided wherever possible. Work should be carried out from the surface using appropriate equipment. In the event that entry cannot be avoided to perform a critical task, the required safety training, protection measures and precautions must be implemented prior to entry. Lone working should never be attempted.

For further information refer to Section 36 of The SuDS Manual (CIRIA C753).

Drains, Manholes, Silt Catchpits

Regular inspection and maintenance are required to ensure the effective long-term operation of private drains and manholes.

Post Completion: a CCTV survey is to be carried out on all new and retained existing drainage systems and any downstream receiving systems.

The report will be used to prove the integrity of the as-built drainage system prior to issue of practical completion certificate and will be handed over to the site owners for future reference.

All drains and manholes are private and to be maintained by the site owners.

Operation and maintenance requirements for drains, gullies and silt pits are described in the following table:

Schedule	Action	Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	6 Monthly intervals
	Debris removal from gullies & silt pits, channel drains (where may cause risks to performance).	Weekly
	Lift and inspect receiving manholes to check for any blockages. Particular attention should be given to the control manhole containing the flow control device	Six-monthly
Remedial Actions	Repair any damaged gully gratings or manhole covers	As required
	Replace / fix any loose channel drain covers	As required
Monitoring	Carry out full CCTV survey to confirm ongoing integrity of all drains. Inspect all gullies and silt pits & drainage channels during the survey	10-yearly intervals

Where appropriate refer also to specialist drainage manufacturer's information and maintenance requirements.

In all instances, inspection and cleaning should be carried out only by a specialist contractor and in accordance with the guidelines given in 'Safe Working in Sewers and at Sewage Works' published by National Joint Health and Safety Committee for the Water Services.

Control Chamber

Inspection Frequency and Maintenance Requirements: as per table below.

Schedule	Action	Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove sediment from catchpits	Half yearly or as required
Remedial Actions	Repair/rehabilitate inlets, outlets, overflows and vents	As required
Monitoring	Inspect/check all inlets & outlets, to ensure they are in good condition and operating properly	Annually
	Survey inside for sediment build-up and remove if necessary	Every 5 years or as required
Control Chambers and Hydro-brakes	Check hydrobrake orifice is clear and retention tank door is closed; check function of retention tank door and oil if necessary	First 2 years of occupation – monthly, then annually

Collector/Distribution Tank and Porous Sub-bases

Recommended design life: the collector/distribution tanks and porous sub-base have a service design life in excess of 50 years.

Exact timing of decommission should be identified via the ongoing maintenance and inspection regime. Once replacement need is identified, the tanks will be removed and replaced depending on the new requirements. The decommissioned tank should be recycled as per manufacturer's guidelines.

The technologies and framework implemented now to design and build these assets could change significantly during the design life of the product. The decommissioning strategy should therefore be reviewed appropriately over time.

Inspection Frequency and Maintenance Requirements: as per table below (overleaf)

Schedule	Action	Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then annually
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial Actions	Repair/rehabilitate inlets, outlet, overflows and vents.	As required

	Reconstruct soakaway and/or replace or clean granular layers and infiltration blanket, if performance deteriorates or failure occurs	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed.	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

To be inspected & checked for blockage **6 monthly** and jetted/cleared if necessary.

A CCTV Drainage Survey of the perforated pipe should be carried out every **5 Years** and any of blockage/silt build up should be jet washed or removed.

Attenuation Tank

Recommended design life: a service design life of more than 50 years is typical.

Exact timing of decommission should be identified via the ongoing maintenance and inspection regime. Once replacement need is identified, the complete tank will be removed and replaced depending on the new requirements. The decommissioned tank should be recycled as per manufacturer's guidelines.

The technologies and framework implemented now to design and build these assets could change significantly during the design life of the product. The decommissioning strategy should therefore be reviewed appropriately over time.

Inspection Frequency and Maintenance Requirements: as per table below (overleaf):

Schedule	Action	Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then annually
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial Actions	Repair/rehabilitate inlets, outlet, overflows and vents.	As required
	Reconstruct soakaway and/or replace or clean granular layers and infiltration blanket, if performance deteriorates or failure occurs	As required

Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed.	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

To be inspected & checked for blockage **6 monthly** and jetted/cleared if necessary.

A CCTV Drainage Survey of the perforated pipe should be carried out every **5 Years** and any of blockage/silt build up should be jet washed or removed.

Attenuation Pond

Schedule	Action	Frequency
Regular	Remove litter and debris	Monthly (or as required)
Maintenance	Cut the grass	Monthly (or as required)
	Cut the meadow grass	Half yearly (spring, before nesting season, and autumn)
	Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years)	Monthly (at start, then as required)
	Inspect inlets, outlets, banksides, structures, pipework etc for evidence of blockage and/or physical damage	Monthly
	Inspect water body for signs of poor water quality	Monthly (May-October)
	Inspect silt accumulation rates in any forebay and in main body of the pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options	Half yearly
	Hand cut submerged and emergent aquatic plants (at minimum of 0.1 m above pond base; include max 25% of pond surface)	Half yearly
	Remove 25% of bank vegetation from water's edge to a minimum of 1 m above water level	Annually
	Tidy all dead growth (scrub clearance) before start of growing season (Note: tree maintenance is usually part of overall landscape management contract)	Annually

	Remove sediment and planting from one quadrant of the main body of ponds without sediment forebays	Every 1-5 years, or as required
Occasional Maintenance	Remove sediment from the main body of big ponds when pool volume is reduced by 20%	With effective pre-treatment, this will only be required rarely, e.g. every 25-50 years
	Repair erosion or other damage	As required
	Replant, where necessary	As required
Remedial Actions	Aerate pond when signs of eutrophication are detected	As required
	Realign rip-rap or repair other damage	As required
	Repair/rehabilitate inlets, outlets and overflows	As required